SYSTEM INTEGRATION WITH MULTIPLE SYSTEM FLOW TOOLS

By

YAP HAO YIH

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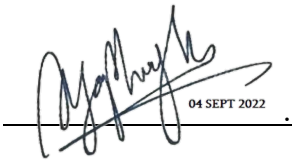
Signature : 

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I, Yap Hao Yih, one of the students from Universiti Tunku Abdul Rahman (UTAR) that currently pursuing my ungraduated study program under the Faculty of Information and Communication (FICT) in Bachelor of Business Information Systems degree.

First and foremost, I would like to take this opportunity to express my sincere thanks and appreciation to my supervisor, Dr Choo Peng Yin who has given me this bright opportunity to engage in my entire final year project. It is a great honor for me to have Dr Choo as my supervisor to assist me in my entire project and providing me so much of new knowledge in the IT field that was difficult for me to learn those experiences from my studies and these will be help me in my future. It can be said that this is a good opportunity for me to start my first step to establish a “likely career project” in this field and for that, I would like to deliver my million thanks to my supervisor and my beloved university which giving me a chance to handling with this project.

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ABSTRACT

In this project, we will be concerning few workflow automations tools that provided by different provider such as n8n, Zapier and Microsoft Power Automate in letting us to create a complicated system integration workflow using multiple system integration tools. By using API services, these workflow automation tools can enable you write business-critical documents, assign tasks, digitally sign, send, and save or transfer data and files across different platforms. n8n is an open-source and expandable workflow automation platform that used to deploy the smart workflow automation by using the services provided by assist not just industries, marketing, or company, but also individuals from various backgrounds by automating their daily workflow tasks, whether at work or in their everyday lives. While Zapier is an easy-to-use automation workflow platform that allows developers and businessmen to automate workflows by integrating their programmes with hundreds of APIs for various apps. But, in Zapier, it required user to pay for certain amount of money in order to use the services provided by them. Microsoft Power Automate was originally known as Microsoft Flow. It is an automation workflow platform that allows users to construct automated workflows that will help them manage all of their daily regular workflows more efficiently and effectively. However, it was only providing 90 days of free licence on using the Power Automate. This project is a low code project and aims to let student know the power of automation that may improve their life. For each of us, time is quite valuable. Almost everyone does the same things every day, which causes them to be inefficient in completing their tasks and, as a result, to have poor time management. With automation, their work or task may be completed at the same time, allowing them to increase their productivity. Aside from that, their great efficiency allows them to better manage their time.

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LIST OF ABBREVIATIONS

API	Application Program Interface
CSS	Cascading Style Sheets
JSON	JavaScript Object Notation
RAM	Random Access Memory
RPA	Robotic Process Automation
URL	Uniform Resource Locator
MS	Microsoft
VPS	Virtual Private Server
CRM	Customer Relationship Management system
DPA	Digital Process Automation
RPA	Robotic Process Automation
BPA	Business Process Automation

CHAPTER 1 INTRODUCTION

1.1 Project Background

Recently, automation is becoming one of the trends that lead to the business and industries to release their burden workflow that causes the people not able to handle their work very well. Many industries are beginning to embrace workflow automation in their operations, and it offers numerous benefits to the company. So, before we going deep to our topic, what is workflow? Workflow is a process in manufacturing, office environment or even in daily life that typically consist of a number of well-defined actions that known as tasks. Proper authorization systems and some work procedure must be in place to ensure that theses action is carried out by authorized users or processes [1]. Usually, workflow is something like a procedure or methodological way of doing something so that achieve some objectives and usually those process of workflow will involve many sophisticated tasks and need to be doing recursively. Hence, here's come to the introduction of our tools in this topic, that is workflow automation tool. The term "automation" refers to a method of operating anything automatically in order to save our time as well as easy the work and minimized error in doing some recursively and repeated task that should followed a certain procedure or methodology in our daily life. So, workflow automation tool is a tool that involved the process of developing, simplifying, executing, and automating a set of processes that are routed automatically between humans, technology, and data according to pre-defined business rules.

Before starting of the project on creating automated workflow using those platforms that provided, there are few factors that we need to concern with when we think of creating any workflow. In that, we need to think of what is the task that we do frequently and when we needed. It also needs to concern on What is the task that make us feeling boring as those tasks that are part of our workflow that are needed to be done recursively in our daily life and at the same time consuming much of our time to do the tasks. When we able to think based on these concept or factors, here's comes to our design of creating the automation tools. These platforms are providing a way of creating those workflow automation process with a very least of coding needed and these have brought a convenient way of helping those people that are not familiarized with coding able to use these platforms to perform their workflow automation.

1.2 Problem Statement and Motivation

These days, IT has been one of the trends that are becoming a part of our everyday lives, especially since the emergence of the Covid-19 pandemic, many individuals have opted to shift their business or even learning online. IT automation, in particular, has become one of the trends that are assisting us in making our lives more efficient, as more and more data are generated as a result of the growth of IT in various sectors, and those data involve a massive number of sophisticated transactions that are running at the back of the system. However, human intervention is still required in converting those data to become meaningful information, which involves a certain workflow or method that must be followed, causing the jobs of humans to become overburdened.

Although IT automation has made our lives more efficient, many individuals are still unaware of its existence, despite the fact that in our everyday lives, certain apps already integrate automation. It is because no one cares as they only care about the app's functionality rather than knowing the components, which leads them to rely on the automation provided by the system rather than creating their own automation routine that they can tweak. Not only that, but most individuals would believe that they do not need automation in their lives since automation is better suited for industrial application than personal use. As a result, they will be unable to benefit from the strong automation that can make their lives more efficient.

As previously stated, massive growth in the number of jobs has resulted from an increase in the number of tasks. Many hours of planning are required in order to fulfil such jobs. It makes the job inefficient, and it is torturous for someone to accomplish a specific large quantity of duty repeatedly, and it may put pressure on the person in charge. It makes our job tough, and numerous errors may occur while we are under pressure. As a result, the use of automation is critical in any workflow management.

The goal of this thesis is to develop a useful and complicated flow with the help of a multi-system flow software tool. In order to comprehend the concept of system flow tools and identify how they operate; we will need to learn how to install those tools and utilize the template that has been made by others. This will be necessary for us to learn in this project. As a result, while dealing with all of the sophisticated and recursive tasks, the complex flow that has been constructed through workflow automation technologies will make our lives simpler.

It will also assist in saving the time of the human in performing the tasks in a workflow and minimizing the possibility of errors occurring during the workflow progress by the human itself, as the system automating will have a consistent workflow rule in dealing with each task once the workflow has been established and configured. So that we can go forward and help them achieve success in their businesses, it is possible to make many people's jobs as well as sectors more efficient. At the same time, it will make it simpler for the individuals to handle the daily tasks that they wish to complete on their own.

1.4 Project Scope

The project's goal is including to produce effective integrated workflow automation using multi-system flow technologies provided by many vendors with the goal of improving the efficiency of the workflow process of our everyday life tasks or business tasks. Furthermore, there are numerous automation tools available on the market. This proposed project will conduct an evaluation of some existing automation tools in order to select a better automation tool that will be easier to use for the end user. At the same time, we will examine the integration tools given by various vendors and gain an awareness of their capabilities in order to develop a tangible workflow procedure that will make our jobs easier.

In addition, we will learn how to use the system flow template that is available on the platform in order to assist us become more understandable about the procedure, concept, and how the workflow process is being carried out on the platform. We will be developing some new workflow process ideas as a result of this, which will make our daily tasks that are recursively performed and complicated to do easier to complete. To ensure the continued success of our development, we will create our automation workflow on the basis of the idea that was generated. As a result, we will be learning how to construct a new simple system flow that is inspired by our ideas. Lately, after we have gained a thorough understanding of the overall concept and have mastered the technique of developing automated system workflow, we will proceed to the creation of a useful and complex workflow with multi-system flow tools that will improve the efficiency of our everyday lives.

The generated function will be tested, as evaluation is a critical step in ensuring the success of the proposed project's implementation. As a result, it is necessary to evaluate this project in order to collect input from consumers and enhance the system in the future.

1.5 Project Objectives

The project's aim is to evaluate existing automation technologies to determine which ones are appropriate, easy to use, and understandable so that we may become more familiar with them as time goes on. Several automation tools have been developed and are currently available on the market. We must analyse the existing automation tools in order to select a better and simpler automation tool that we can grasp. This will allow the project to progress smoothly and allow the students to benefit from the power of automated learning.

Moreover, the project also aims to learn and understanding way of deploying the workflow automation technologies, so that we are able to use the service provided by those platforms efficiently and also to establishing an optimal workflow integration during the process of development. Each of the platform are offering with several types of way in installing their application into our devices in order to use their services. Thus, learning about how installing is necessary in order to use their service provided.

Furthermore, the project is intended to learn of using the system flow template that exist in each system flow tool platform in order understanding the overall concept and technique of developing the workflow automation and inspiring newer idea on development of new workflow automation tools.

Next, it also aims to learn on how to construct new system automation flow based the concept gained from learning so that it able to deliver functions that can ease and enhancing the quality of our workflow.

Lastly, the major objectives of the project are to creating a useful and complex flow with multi-system flow tool in order to make our daily task workflow efficiently and minimal error arises during performing task.

1.6 Impact, Significance, and Contributions

In this project, we will offer a tool that will assist in easing the effort of completing some workflows that involve numerous processes and generating a useful and complex workflow by using several workflow automation tools and integrating them into a functional system. The

project will begin with defining and understanding all of the requirements for automated workflow in the real world, as well as learning how to install the necessary tools in order to begin our project's implementation. The focus will then switch to learning how to use the system flow templates that are available on each platform, as well as understanding their approaches to working within their respective systems. Following that, it will be based on the information and understanding gained to construct a new simple system flow that is functioning. Finally, once we have gained a thorough understanding of the material, we will proceed to design our helpful and complex workflow utilizing a multi-system flow tool that is offered by a variety of different platforms.

From this project, it will be allowing to be understanding more about the current trend on automation. Our world is moving toward to a IT revolution where most of the people are started to using the IT devices to do their daily task. Due to the tremendously increase of people using, the data around the world have been more and more and the work of task of doing work using IT manually are suitable anymore for helping to ease the human works. So, automation of workflow will help the human to do the daily and repeat task at certain period or trigger when something happens automatically without the intervention of human. These may reduce the workload of people in doing the same things every day or every time repeatedly as the time are most precious things nowadays to performing other work that need human intervention, thus automation is really important in helping the human to save their time well and perform job on those area that are not important.

Other than that, with the human intervention of doing works, it might be having more higher chances on having error although they are doing the same tasks every day. All this error or mistakes is an unknown and might be bring a huge amount of loss of monetary or benefits when they are doing wrongly. So, with the usage of automation workflow tools, since all the procedure and methodology of works have been set initially, thus machines or devices will just follow the instruction to doing certain task in a good order manner which might highly reducing possible error occurs during performing the daily tasks.

1.7 Report Organization

In this proposal project, it will be dividing it into few chapters which including the “Introduction” in Chapter 1, “Literature Reviews” in Chapter 2 and “Proposed Method/Approach” in Chapter 4 and in Chapter 5 and Chapter 6 are including “Preliminary

Work" and "Conclusion" accordingly. In the Chapter 1, it will introduce about the background, problem statement, motivation, project objective, project scope, project direction and contribution of work regarding to the project that going to research in next step. While in the "Literature Review" chapter, we will be going to review on the current workflow automation flow tools shown in the market and list out their pro and cons for us to knowing more deeper on the usage of tools. In this section of the project, we will also be going to figure out the way of installing those automation workflow tools as well as showing some other existing template that created before or template creating for us to testing on its functionalities. In the third chapter, it was mentioning about the overall system design and overall idea or concept of the workflow automation. It also mentioning the system requirement for the tools and the current system specification that we used in this project.

CHAPTER 2 LITERATURE REVIEWS

2.1 Review on Workflow Tools

2.1.1 Reviews of n8n

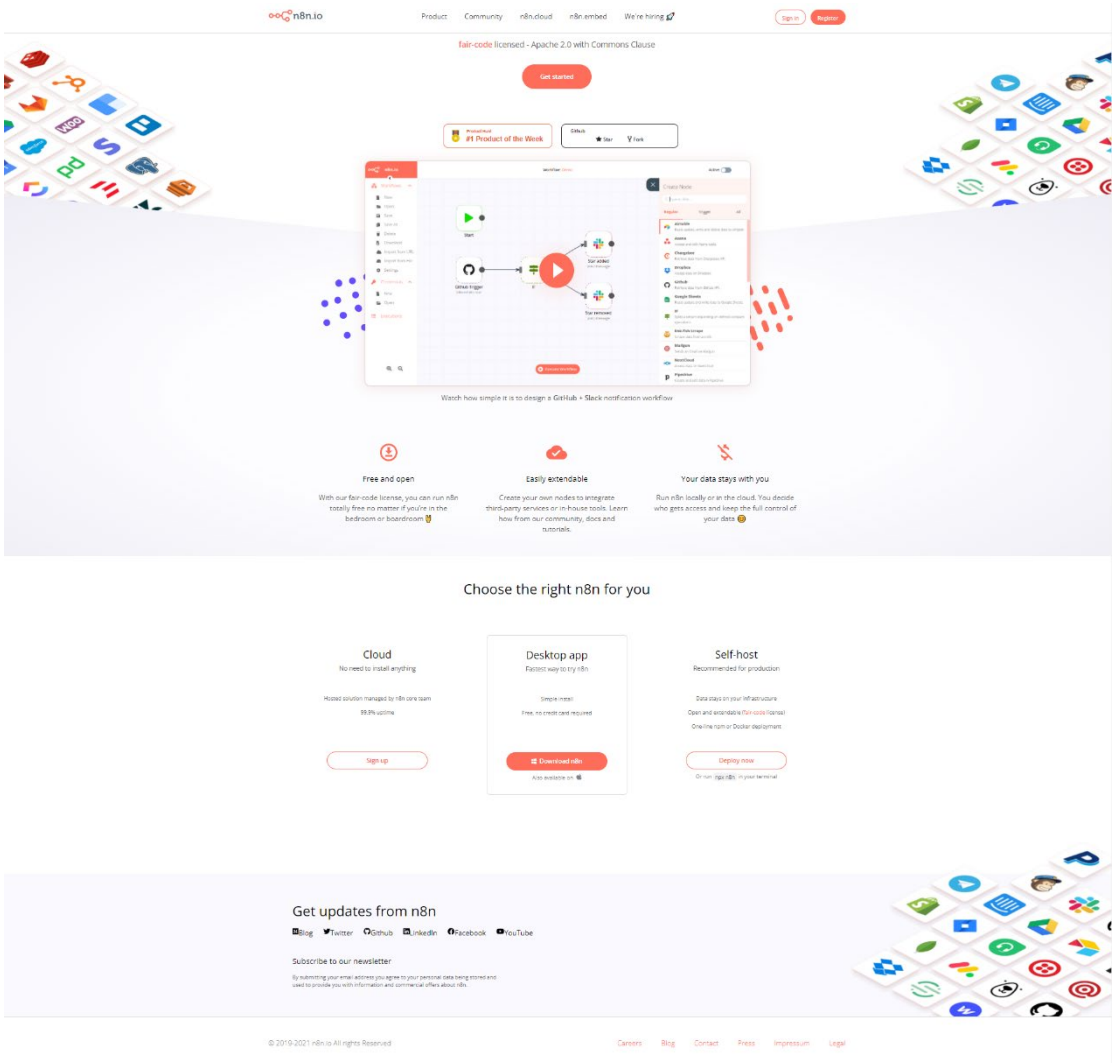

Figure 2.1.1 shows the homepage of n8n

n8n is a workflow automation solution that is open source and self-hosted. n8n facilitates the connection of every application with an Application Program Interface (API) around the world and the sharing of information between them. It is simple to use, intuitive to navigate, and very customizable. n8n is capable of allowing users to create their own workflow. n8n also provides various tutorials that are designed to assist users in understanding how the software works. n8n supports more than 200+ different applications that can be used directly [2]. Currently, n8n have been provided few ways of services such as cloud service, desktop app and self-hosted n8n to using the services providing by n8n. People use the n8n because it is a workflow automation solution that enables them to automate a variety of operations and integrate third-

party services in a simple and quick manner. In n8n, user manuals for their application, as well as certification for those who complete their quiz, are supplied by n8n to individuals who wish to learn more about how to create workflows using their programme.

Strengths

- **Learning curve** - Some concepts are a bit tough and complicated. A minimum technical level is necessary to accomplish your goals using n8n.
- **Workflow programmatically** - It is very useful for various circumstances such as machine to machine dialogue. Instead of developing workflow by hand, it would also be possible with API.
- **Flexible** - User able to design their new node whit highly flexibility for user who do have expertise in JavaScript.
- **Tutorial support –** They have provided user with some documentation on the knowledge of JSON as well as JavaSript for those users that doesn't have knowledge in this area as these knowledges are needed when creating the workflow.

Weakness

- **Lack of Phone support** - If the system cannot be accessed via a cell phone, the student will be unable to keep up with all of the latest updates.
- **Messy documentation** – The tutorial documentation provided are quite messy and need user to take some time to figure out or understanding their documentation.
- **Unclear explanation** – n8n does provided some videos tutorial on how to create workflow but the video is just a demo that without any sound or script in video that can assist user in understanding what they are delivering

2.1.2 Reviews of Zapier

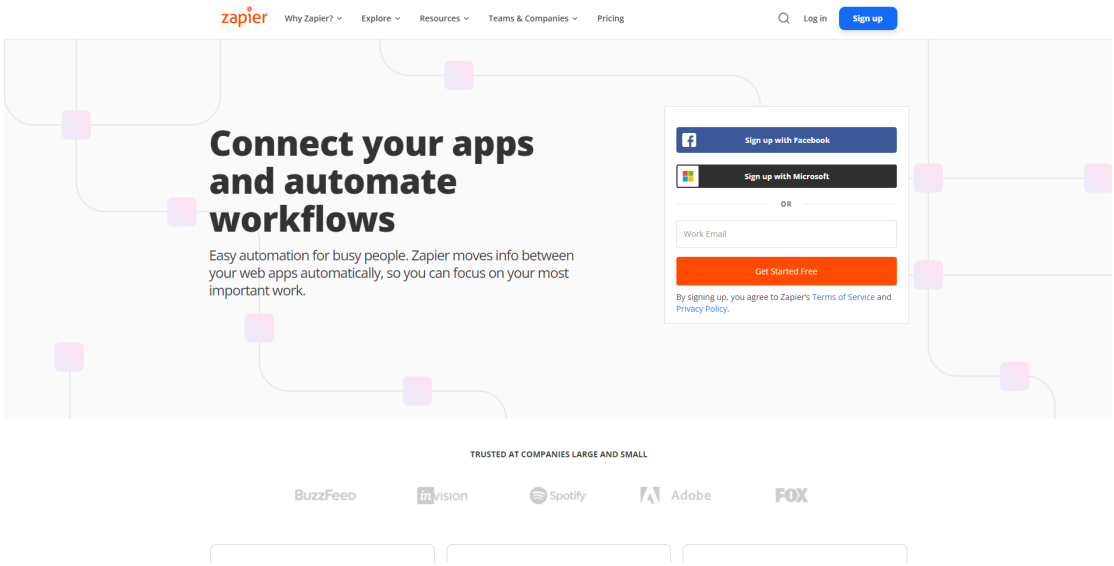

Figure 2.1.2 shows Homepage of Zapier

In addition to Gmail, Mautic, Facebook, Zoom, One Drive, and other apps, Zapier can connect with a vast number of other services as well. Support for over 3,000 applications is provided by Zappier. Zapier can be thought of it as a middleware application that allows different apps to communicate with one another. It is simple, and anyone can set up a workflow with a few clicks on their computer. Aside from that, Zapier is also very user-friendly and simple to understand. ZAPIER University is a workflow integration tool platform that offers some tutorial videos to help new users get started with their application. Zapier University is one of the workflow integration tool platforms that offers some tutorial videos to help new users get started with their application. Following that, users will be able to take part in their quiz in order to receive their certification. Some of the features on Zapier are only available for a fee. Aside from that, even though it is simple to use, it necessitates the use of critical thinking skills [3].

Strengths

- **Simple interface** - It has a straightforward layout that allows students to quickly grasp and operate the programme.
- **Excellent documentation and support** - When you get stuck, it is simple to discover a solution
- **Provides a complete job history** - It maintains a task history of the many tasks it has completed, notifying the user if anything goes wrong. This manner, the user can go back and double-check to be sure it wasn't set up incorrectly the first time.

- **Certification** - Users will be able to take part in their quiz in order to receive their certification.

Weakness

- **Expensive** – Although the price of a monthly subscription to Zapier is reasonable, the cost is prohibitively expensive for students. When it comes to purchasing power, students are limited. If students choose to utilise the free version of Zapier, they will not be able to take use of all of the features available to them, such as multi-step Zaps, filters, auto replay, and many others.
- **Lack of Phone support** - If the system cannot be accessed via a cell phone, the student will be unable to keep up with all of the latest updates.
- **No Desktop Apps** – Zapier unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **Complicated CLI Usage** – In Zapier, it do provide CLI way of creating workflow automation, however the way of they set up and configure not as easy like n8n which have UI interface for user to set up offline. Users require to have much CLI knowledge in using their CLI service.
- **Only support ordering workflow** – The workflow created only can be moving forward but cannot moving back step (A → B → C). However, can be using loop to solve this problem but required additional work to be done.

2.1.3 Reviews of Microsoft Power Automate

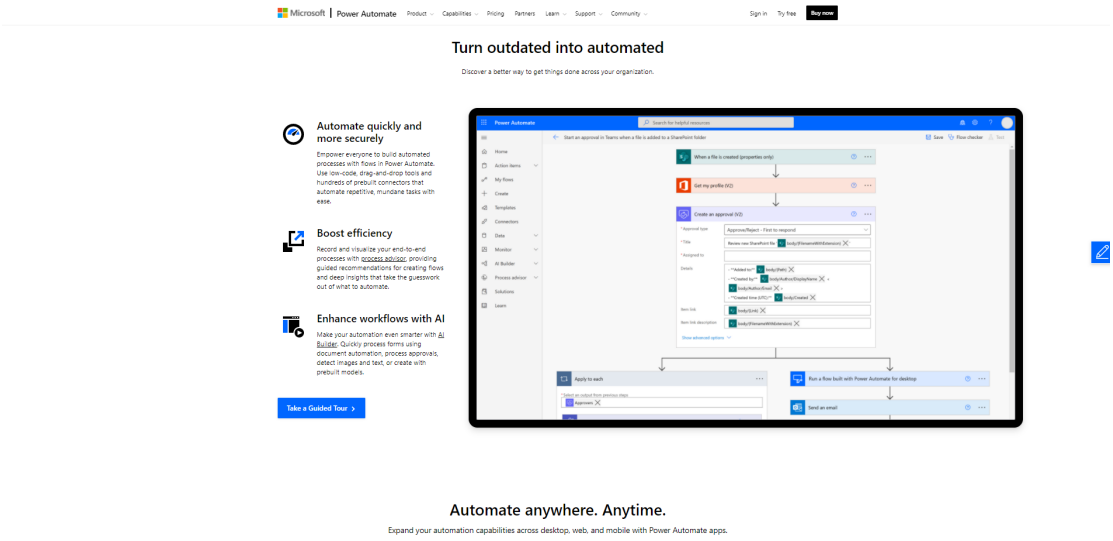

Figure 2.1.3 Homepage of MS Power Automate

With the aid of Microsoft Power Automate, you can automate workflow between apps and services in order to synchronise files, receive notifications, collect data and do a variety of other tasks. It makes use of hundreds of prebuilt connectors to integrate builds smoothly, allowing it to create time-saving processes for everything from single tasks to large-scale projects. Microsoft Power Automate also enables anyone to create a secure workflow with a low-code, no-code guided experience, allowing them to use robotic process automation (RPA) to automate daily routine operations, as demonstrated in the video below. It also automates time-consuming manual activities through the use of built-in artificial intelligence (AI) capabilities, allowing workers to devote more time to strategic, high-value possibilities. Microsoft Power Automate [4].

Strengths

- **Simple interface** - It has a click-flow designer layout that allows students to quickly grasp and operate the programme.
- **Test Flow function** – It provides with test flow function that enable the developer to test on the workflow created whether are functioning well and the data once loaded one time, we can use back the previous data loaded to test workflow whether functioning instead of trigger action every time need to test.
- **Error Guide** – It will present the error message and possible way to solve the error whenever the workflow tested have error.
- **Price-friendly** – Only required to subscribe the tools usage by using $15 per month

Weakness

- **Messy documentation** – The tutorial documentation provided are quite messy and need user to take some time to figure out or understanding their documentation.
- **Workflows Limitation** – every user is only limit to have maximum of 600 flows created own by their account, else need to pay for high costing for extending the flows limit
- **Only support ordering workflow** – The workflow created only can be moving forward but cannot moving back step (A → B → C). However, can be using loop to solve this problem but required additional work to be done.

2.2 Review on Other Workflow Tools in Market

2.2.1 Review of LambdaTest

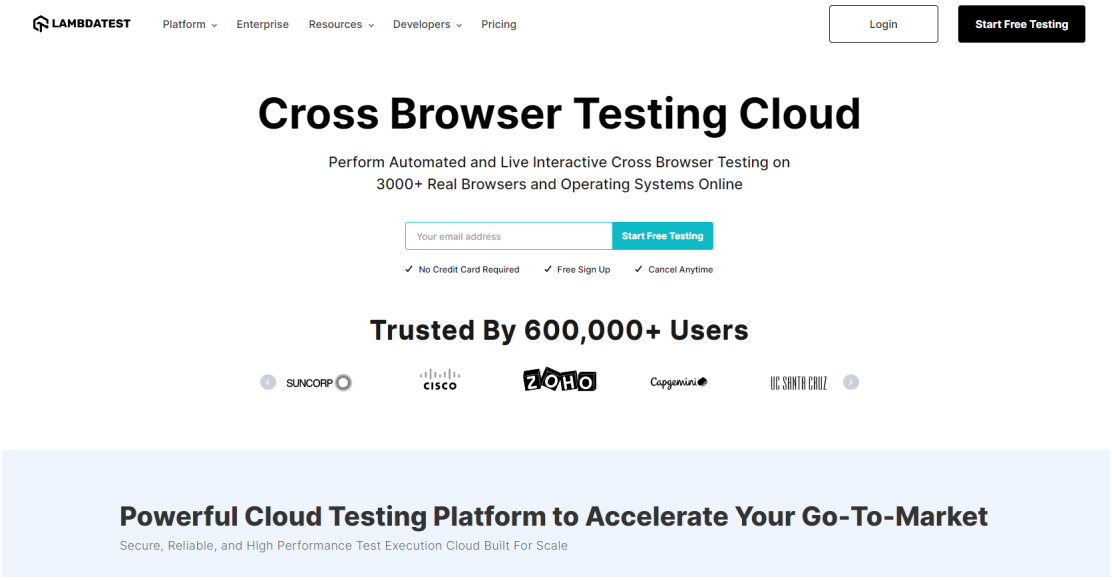

Figure 2.2.1 Homepage of LambdaTest

LambdaTest also was another workflow automation tools that allow us automated our workflow process by using this platform. It is a cloud-based cross-browser testing tool for online applications and desktop, Android, and iOS mobile browsers. It can test JavaScript, Flash, and other cross-browser technologies both manually and automatically [5]. Users can also test for Geographic-Blocking, Geographic-Targeting, and Geographic Localization in a variety of nations, including the United Kingdom, the United States, Japan, and Australia. Unlimited snapshots, unlimited real-time native application testing on emulator or simulator, unlimited reactive tests on all screen resolution, inbuilt issue tracker, and other capabilities are available in LambdaTest. There are no emulators or simulators required because it is a cloud-based testing tool [6].

Strengths

- **Detailed documentation** – The documentation/ user manual provided are quite useful and enough with all needed information.
- **Ease of cross browser testing** - Even on their free tier, LambdaTest made cross browser testing simple.

- **Virtual devices** - There is no real devices for the LambdaTest (only have emulators and simulators) which result to no need of infrastructure which might incurred costing when using it.
- **Good Customer Service** - LambdaTest offers in-app consumer chat support 24 hours a day, 7 days a week, which is extremely useful when customers encounter unsolvable issues. Users can directly message customer support (expertise) to seek assistance.

Weakness

- **Expensive** - The monthly subscription fee is determined by how many concurrent tests and users a company operates when using LambdaTest; the more concurrent tests and users a company runs, the higher the cost.
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.

2.2.2 Review of QMetry Automation Studio

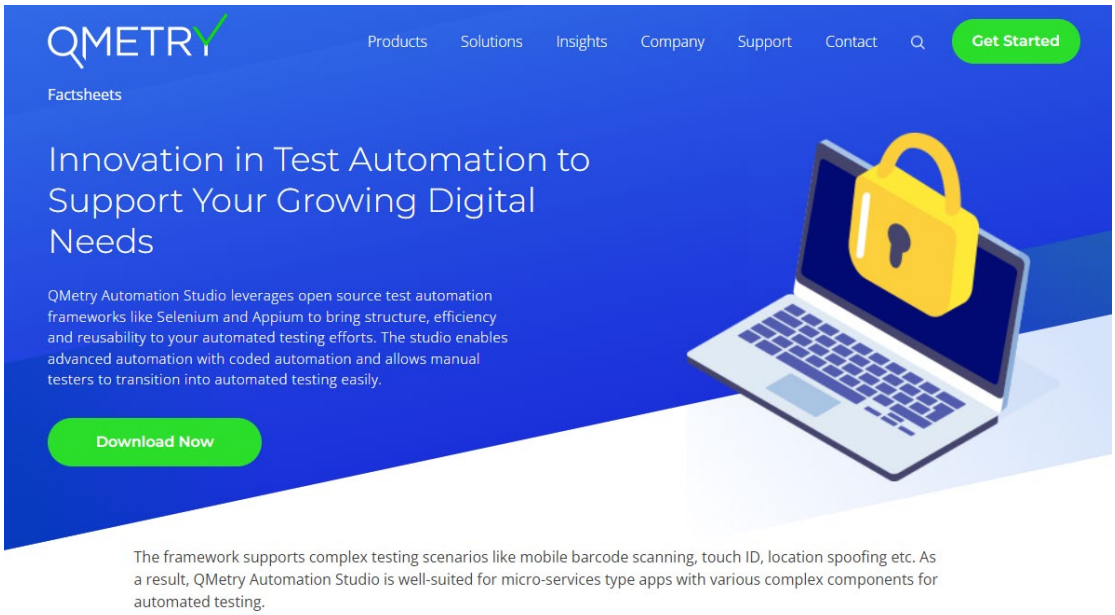

Figure 2.2.2 Homepage of QMetry Automation Studio

QMetry Automation Studio (QAS) is an open-source test automation that provides automated testing across multiplatform, including the web, web services/APIs, mobile, and Windows desktop [7]. It also makes use of open-source automated test frameworks such Selenium, and Appium which provide your automated testing efforts structure, efficiency, and reusability.

Advanced automation is possible with coded automation, and human testers can simply move to automated testing [8].

Strengths

- **Multi-platform support** – It provides multiple platform usage for user such as web, native mobile, desktop or web services. It also can be working with multiple automation framework such as Junit, Jasmine BDD or TestNG framework though the Gherkin Editor.
- **Various language support** - Other than that, the automated script for the platform can be written in any languages including Java, Python, Typescript and JavaScript.
- **Pre-built Workflow Steps** – It have been pre-building the workflow steps which is designed based on the Selenium native methods which will help users to generate their workflow scenario easily.
- **Workflow recorder functionality** – It will automatically store the workflow steps with appropriate locators to create the sample flow of testing scenarios.
- **Good Customer Service** – It offers consumer chat support 24 hours a day, 7 days a week, which is extremely useful when customers encounter unsolvable issues.
- **Good version control** – It let you retain the version of your workflows that created previously.

Weakness

- **Lack of Availability of Documentation** – It is difficult to find the documentation of the platform.
- **Recorded functionalities hang up when processing high** – When the background process are high, the recorded functionalities will stop unexpectedly

2.2.3 Review of Automate.io

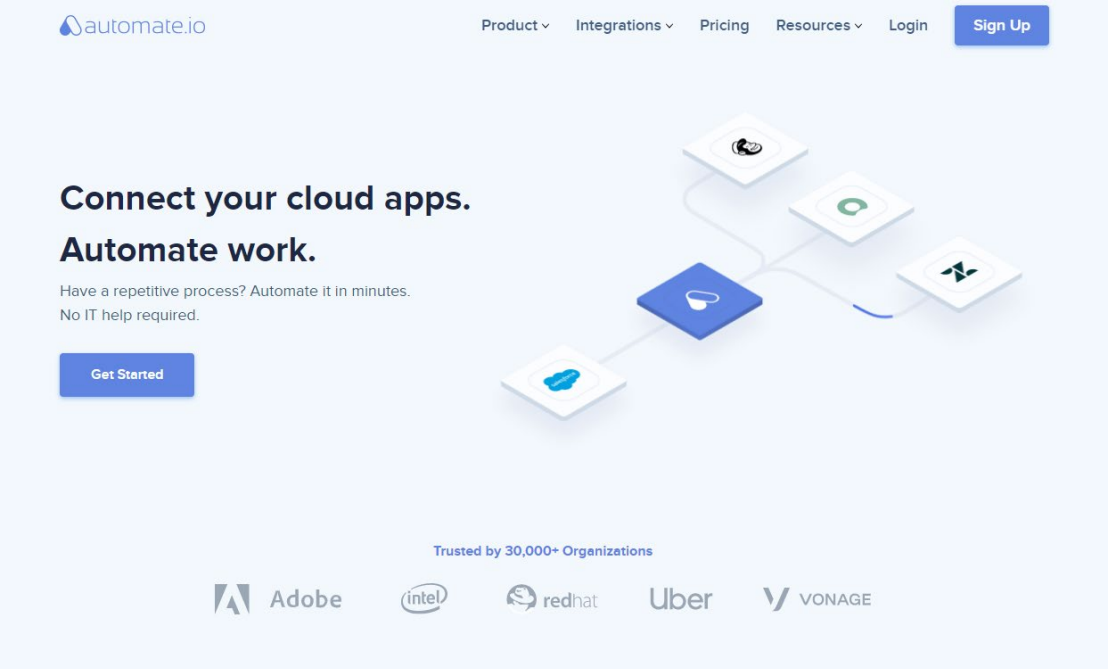

Figure 2.2.3 Homepage of Automate.io

Automate.io is a cloud/SaaS application integration platform. Consumers may develop basic one-to-one connectors or complicated workflows to automate sales, marketing, and business activities, according to the vendor. It uses a drag-and-drop interface to allow users to connect programmes without scripting. It can connect any programme/platform from their 200+ integrations library, which includes Salesforce, Infusionsoft, Hubspot, MailChimp, Facebook Lead Ads, Google Apps, and more, according to them. Users select the applications they want to include in their workflows [9].

Strengths

- **Multi-platform support** – It provides multiple platform usage for user such as web, native mobile, desktop or web services. It also can be working with multiple automation framework such as Junit, Jasmine BDD or TestNG framework though the Gherkin Editor.
- **Good Customer Service** – It offers consumer chat support 24 hours a day, 7 days a week, which is extremely useful when customers encounter unsolvable issues.
- **Simple interface** - It has a straightforward layout (drag & drops to setup) that allows students to quickly grasp and operate the programme.

- **Intuitive Usage** – It able to rebuild all the automation workflows from scratch very quickly
- **Price-friendly** – Only required to subscribe the tools usage by using $9.99 per month

Weakness

- **Slow speed** – It is sometimes needed quite a long time for it to load and the data list load very slowly or not at all, requiring a refresh.
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.

2.2.4 Review of Google Cloud Workflow

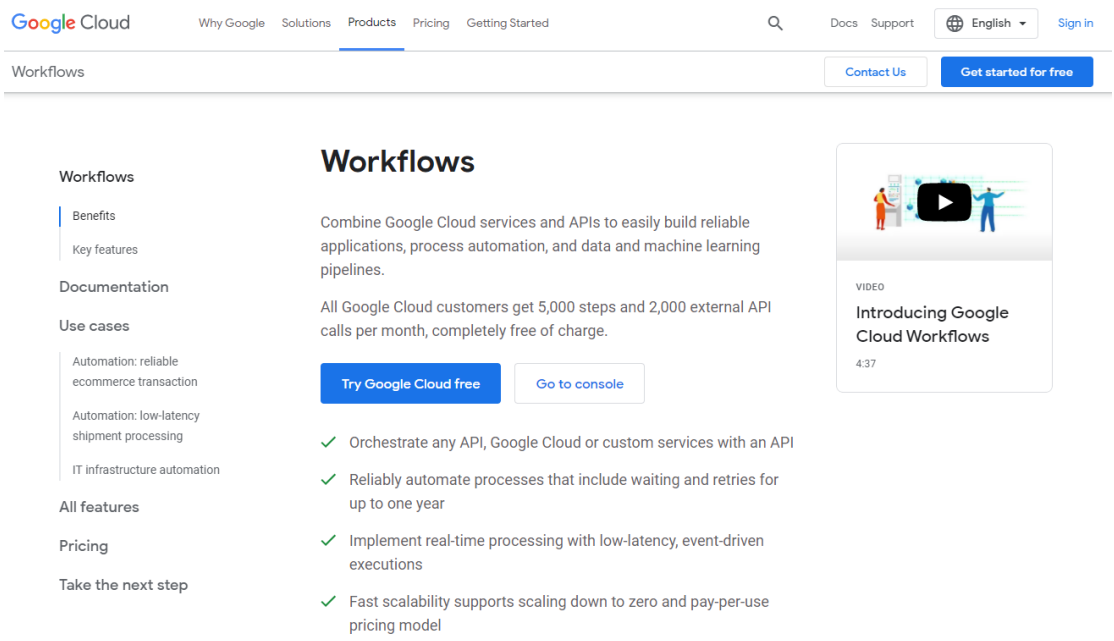

Figure 2.2.4 Homepage of Google Cloud Workflow

Google Cloud Workflow is the combination Google Cloud service and APIs to easily construct applications, process automation, and data and machine learning pipelines. It allows users to construct real-time processing with low-latency, event-driven executions by providing dependable automated processes that involve waiting and retries for up to a year. Other than

that, every month, all Google Cloud clients get 5,000 steps and 2,000 external API calls for free [10].

Strengths

- **Excellent integration with other Google services** – It provides
- **Fast Input and output**
- **Facilitates easy collaboration**
- **Designed for cloud-native business**
- **Free Trial for every user**
- **Available with detailed documentation**

Weakness

- **Expensive** - The monthly subscription fee is high.
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.

2.2.5 Review of Integromat

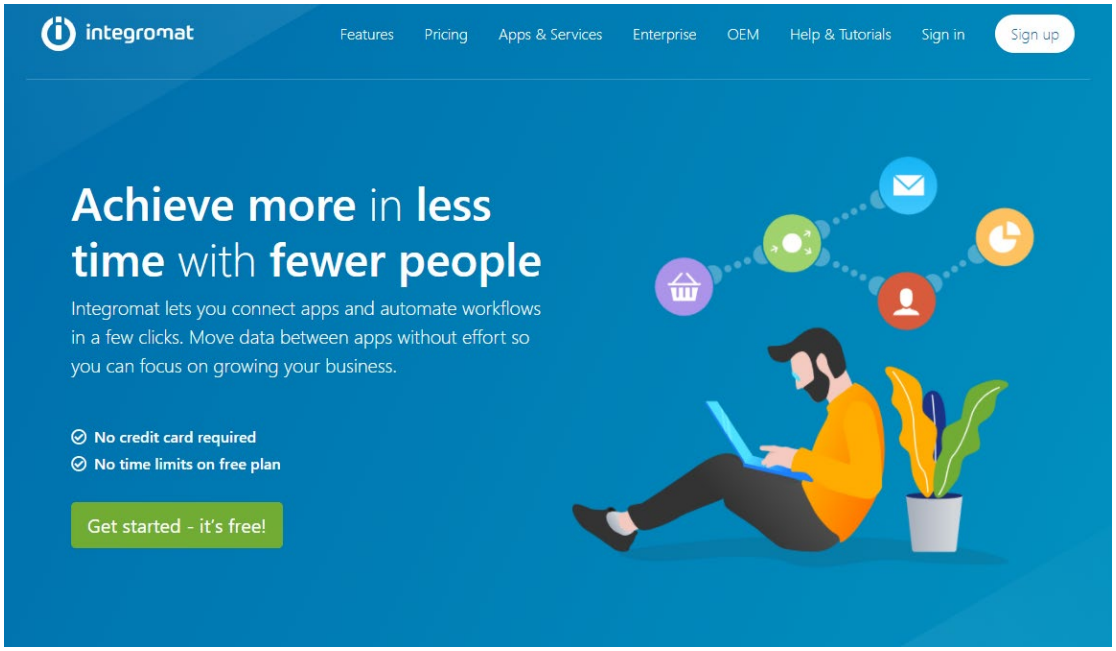

Figure 2.2.5 Homepage of Integromat

Integromat is a robust integration platform that lets you view, develop, and automate your work in a couple of minutes. They call themselves "the internet's glue," since they facilitate their users in connecting apps and services. Concentrate on your core business and let automation

handle the rest. Instead of requiring coding, Integromat has simplified these complex APIs into simple pieces that can be joined using drag-and-drop. These blocks are known as 'Modules,' and the visual links between them are known as 'Scenarios,' according to Integromat. Integromat operates 24 hours a day, seven days a week, operating in the background and requiring no maintenance [11].

Strengths

- **Simple interface** – It provides drag-and-drop builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Customization** – It allow user to customize their workflow align fields and how data needed for use case freely
- **Provides free usage** – IT provides free usage for first 1000 operation for 15 min and 100MB for each process and may pay for subscription for more usage from $9 per month.
- **Good documentation & tutorial** – It provides a clear view of documentation of how to use their platform and tutorial also provided
- **Detail execution information provided** – Each time of executions, the detail information of the process is clearly shown to users, so that they able to identify their error well

Weakness

- **Subscription high for extreme usage** – User may need to pay more for subscription so that able to use more features
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **No community platform that helps for solving error – Error are difficult to solve as no community platform are provided**
- **Difficult master for newbie –** It difficult to use for newbie and requires much instruction to master.

2.2.6 Review of Tray.io

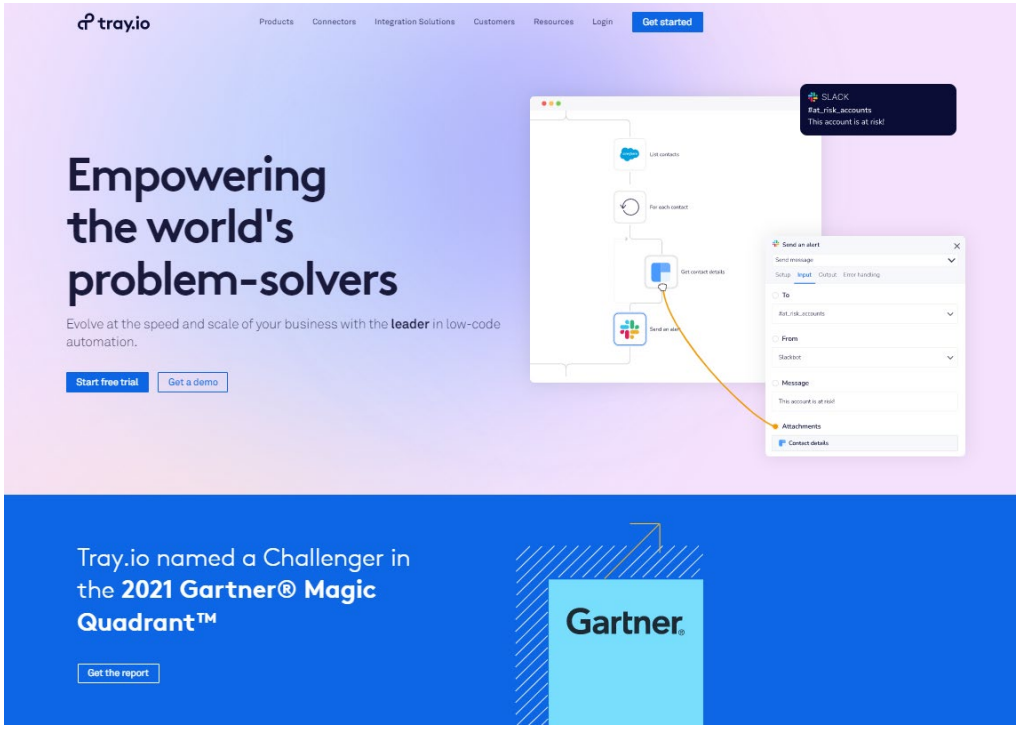

Figure 2.2.6 Homepage of Tray.io

The Tray.io platform is a customer-centric low-code automation platform that enables businesses to connect and run their daily web services in an automated and worry-free manner. The Tray Platform enables enterprises to sync all data, integrate deeply into applications, and establish customizable processes with a few clicks or lines of code [12]. It features an intuitive UI that enables users to drag-and-drop process builders as desired. The tool's simple visual editor assists you in streamlining your procedures nicely. Tray enables easy scaling from point-to-point integration to large business operations through the use of conditional logic and the execution of billions of tasks in milliseconds. Additionally, it incorporates a serverless architecture and APIs to provide an infinite number of alternatives [13].

Strengths

- **Simple interface** – It has a click-flow designer layout that allows students to quickly grasp and operate the programme
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Good documentation & tutorial** – It provides a clear view of documentation of how to use their platform and tutorial also provided
- **Good Customer Service** – It offers consumer chat support 24 hours a day, 7 days a week, which is extremely useful when customers encounter unsolvable issues.

- **Easy to use and deploy & various functionalities** – It provides many functionalities and easy interface for newbie user

Weakness

- **Subscription for usage** – It do not provides any free used for this platform are required to request for demo for try.
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **Option for choosing version of API calls** – For not technical person will not know how to choose for the API version for integration
- **Debugging difficulties** – It might much difficult for user to debugging error

2.2.7 Review of IFTTT

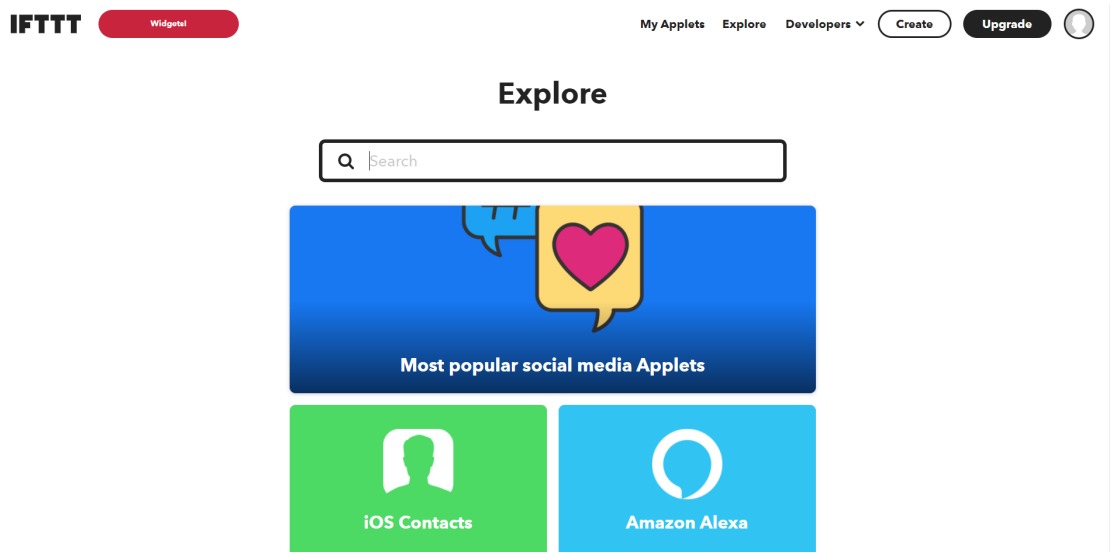

Figure 2.2.7 Homepage of IFTTT

IFTTT draws its name from the conditional expression "if this, then that" in programming. The company's software platform integrates applications, devices, and services from various developers in order to trigger one or more automations involving those apps, devices, and services. Automating tasks is achieved via applets, which are similar to macros in that they connect different programs to perform automated operations. You may activate or deactivate an applet using IFTTT's website or mobile applications (and/or the IFTTT widgets included in the mobile apps) [14]. Additionally, you may build your own applets or modify existing ones using IFTTT's simple, user-friendly interface [15]. IFTTT enables you to connect to services

from a variety of fields, including finance, subscription services, smart homes, and energy. With IFTTT, you can create intelligent processes for use cases such as smart homes that respond to indications such as shutting doors and welcoming delivery workers [13].

Strengths

- **Simple interface** – It has a click-flow designer layout that allows students to quickly grasp and operate the programme.
- **Easy to use –** IFTTT makes the automation process rules to be easy **for user to use**
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Good documentation & tutorial** – It provides a clear view of documentation of how to use their platform and tutorial also provided
- **Pre-defined applets (workflow template)** – It allow user to used their pre-defined workflow for automation without needed to create same functionalities of applets again and again if already exist.

Weakness

- **Subscription high for extreme usage** – User may need to pay more for subscription so that able to use more features
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **No multi-step support** – It does not provides a multiple action for one trigger as it only can have one action to be done for each trigger executed.
- **No enterprise-level support** – The IFFFT platform does not really support any sophisticated integration, so for enterprise level of integration are not support by IFFFT
- **Applets do not always perform as intended** - Some popular solutions are available in multiple "versions." If one of them doesn't really work, you may always try another.

2.2.8 Review of Tallyfy

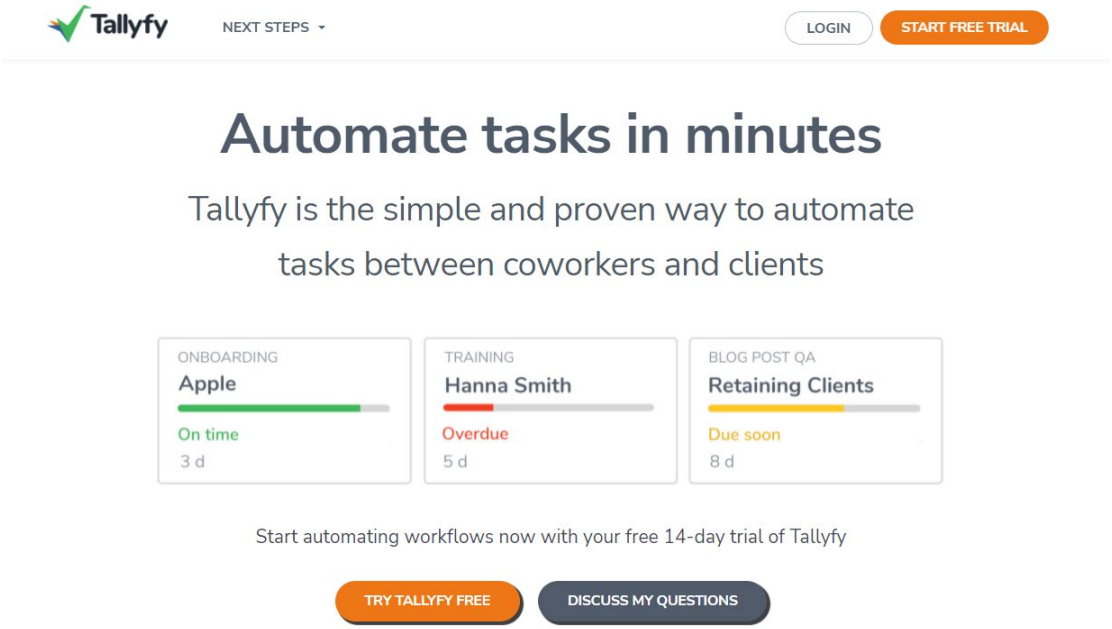

Figure 2.2.8 Homepage of Tallyfy

Tallyfy is a special workflow automation platform where it was using the concept of "Workflow Made Easy" as it's concept of presenting. It provides automation on all your forms, workflows, tasks, processes, approvals and even documents. It is also a workflow and process management platform that enables you to record and automate all of your company's processes without the need for coding, flowcharts, or complexity [16]. Apart from that, Tallyfy provides a novel and clear method for automating and documenting business activities. It enables you to store extensive data in your systems and build blueprints for their operation without the need for elaborate flowcharts, coding, or untidy paperwork. Tallyfy makes automation simple and powerful by rapidly converting approval workflows, forms, and procedures into traceable processes. Additionally, it enables all members of your team to monitor the progress of a task or request at any time, regardless of their location, so decreasing the need for frequent meetings, emails, and chats [13].

Strengths

- **Simple interface** – It provides click-flow designer builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library

- **Good documentation & tutorial** – It provides a clear view of documentation of how to use their platform and tutorial also provided
- **Unlimited & free task assignment** – It provides features of letting client to have unlimited and free assignment of task and perform automation .
- **Easy decision making** - Tallyfy have function that allow user to approve or reject the workflow task by only one click.

Weakness

- **Expensive subscription** – User may need to pay more as the subscription of services are based on the user basis per month.
- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **No pre-defined workflow template** – Tallyfy does not have any pre-defined workflow template exist for user to instant use
- **Limited customized on user dashboard** - Customization of the user dashboard for the Tallyfy is limited.
- **Customer support only supporting Asian country** – Tallyfy customer service is not presence on the time zone of European and Western country

2.2.9 Review of WP Fusion

Figure 2.2.9 Homepage of WP Fusion

WP Fusion is a marketing workflow process automation tools that provides user the ability of integrating their WordPress site with various services [17]. It provides a no-code solution that leverages plugins to enhance the functionality of your site and automates your linked marketing and CRM applications. WP Fusion supports a wide variety of WordPress plugins that enable you to link your store, membership site, customer relationship management system, and learning management system. Typical use cases include limiting access to content using CRM tags, sending form submissions to the CRM, tracking subscription and purchase statuses, and recovering abandoned carts [13].

Strengths

- **Simple interface** – It provides click-flow designer builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Provides free usage for Lite use** – It provides synchronization between WordPress users with HubSpot contact for lite usage freely to user
- **Good documentation** – It provides a clear view of documentation of how to use their platform

Weakness

- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **Mainly concentrate for WordPress usage –** The platform integration is more toward to the integration between the e-commerce platform between CRMs

2.2.10 Review of Catalytic

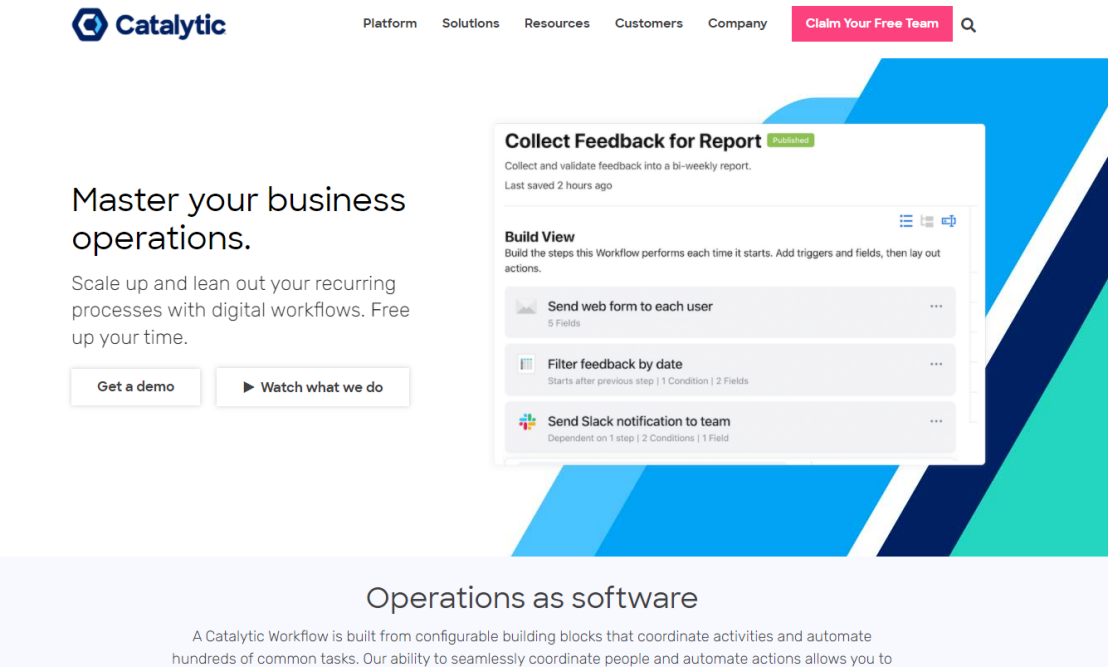

Figure 2.2.10 Homepage of Catalytic

Catalytic is a cloud-based platform that requires no installation [18]. It is an open-ended platform with rule-based processes. It enables you to create intelligent automation workflows without any coding knowledge. It creates workflows that prioritise your team and users. From data organisation to synchronising your business apps, it's got you covered. At the data level, Catalytic automates everything. It provides data security and predictive models to enable sophisticated automation. Create robust and dynamic automation processes using Catalytic [19].

Strengths

- **Simple interface** – It provides click-flow designer builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Provides free usage for explore use** – It provides free usage with max of 1000 action tokens as well as unlimited user & workflow support and data storage of 120 days.
- **Good documentation** – It provides a clear view of documentation of how to use their platform
- **Provide solution showcase (workflow template)** – It does provide pre-defined workflow template exist for user to instant use

- **Easy to manage API** – governance is centralized and granular access restrictions, audit logs, publishing rules, encryption, and data retention regulations can all be used to automatically enforce it.

Weakness

- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **Hard grasp on using the platform –** This platform are hard for user to learn to use and need some time for exploring before we can fully manage to use it.
- **Not free & expensive** – It require subscription on the paid plans starting from $1,500/month

2.2.11 Review of LeadsBridge

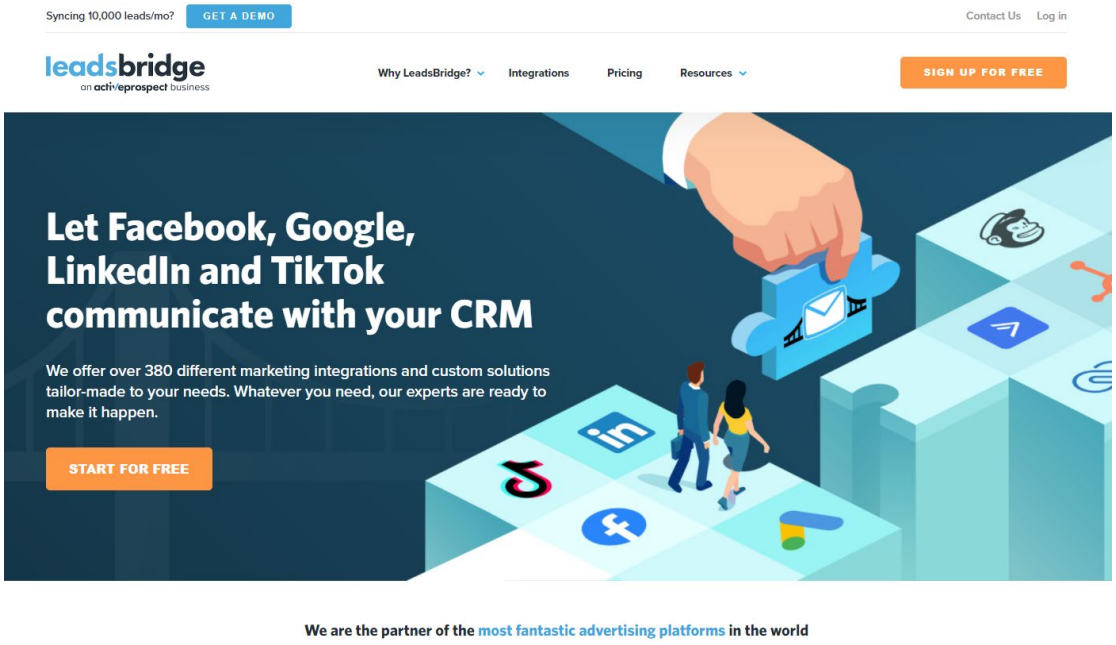

Figure 2.2.11 Homepage of LeadsBridge

LeadsBridge is a marketing and advertising integration platform that is ready to go at the push of a button. It connects your advertisements to your sales funnel [20]. It is primarily intended for the creation of automated sales and marketing workflows. If you're searching for a workflow automation platform that can connect your marketing and sales tools, LeadsBridge is an excellent option. LeadsBridge seamlessly integrates your LinkedIn, Facebook, and Google accounts with your CRM, thanks to its over 380 connectors. By design, the platform is

secure and fully compliant with GDPR, CCPA, and other applicable regulations. This excludes the storage of lead data, complete compliance with applicable privacy laws, and enhanced security measures. We are subjected to routine security audits, which include thorough penetration testing conducted by a third party [19].

Strengths

- **Simple interface** – It provides click-flow designer builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Provides free usage for explore use** – It provides free usage with 100 leads per month and 1 bridge (integration) only for exploring used.
- **Blog community** – It provides blog community for user to figure out the important information about the platform

Weakness

- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **Not free** – It require subscription on the paid plans starting from $22/month
- **No documentation** – The platform do not provides any documentation for their platform which might lead to difficulties of user when using it
- **Lagging usage** – It was the inexplicable latency between the user response and the lead magnet's delivery.

2.2.12 Review of API Fuse

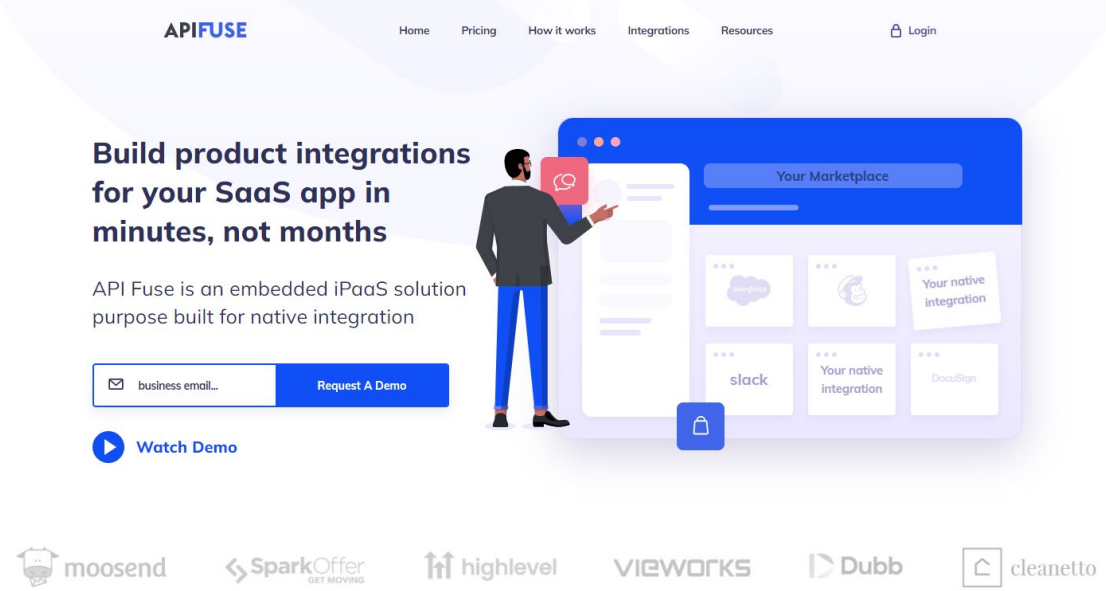

Figure 2.2.12 Homepage of API Fuse

API Fuse is a mashup of an app store and a platform for integration [21]. It markets itself as a platform for embedded integration for SaaS companies. API Fuse enables you to create and monetize a marketplace of integrations that you and your consumers require. On API Fuse, you may combine your SaaS product with a variety of third-party applications. As an API Fuse user, you have the ability to create the app connectors you require. It is aimed towards certain user personas such as product managers and chief technology officers. There is also opportunity to develop integrations for engineers and collaborations [19].

Strengths

- **Simple interface** – It provides click-flow designer builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library
- **Blog community** – It provides blog community for user to figure out the important information about the platform

Weakness

- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.

- **Not free & expensive** – It require subscription on the paid plans starting from $899/month
- **No documentation** - The platform do not provides any documentation for their platform which might lead to difficulties of user when using it

2.2.13 Review of Coupler.io

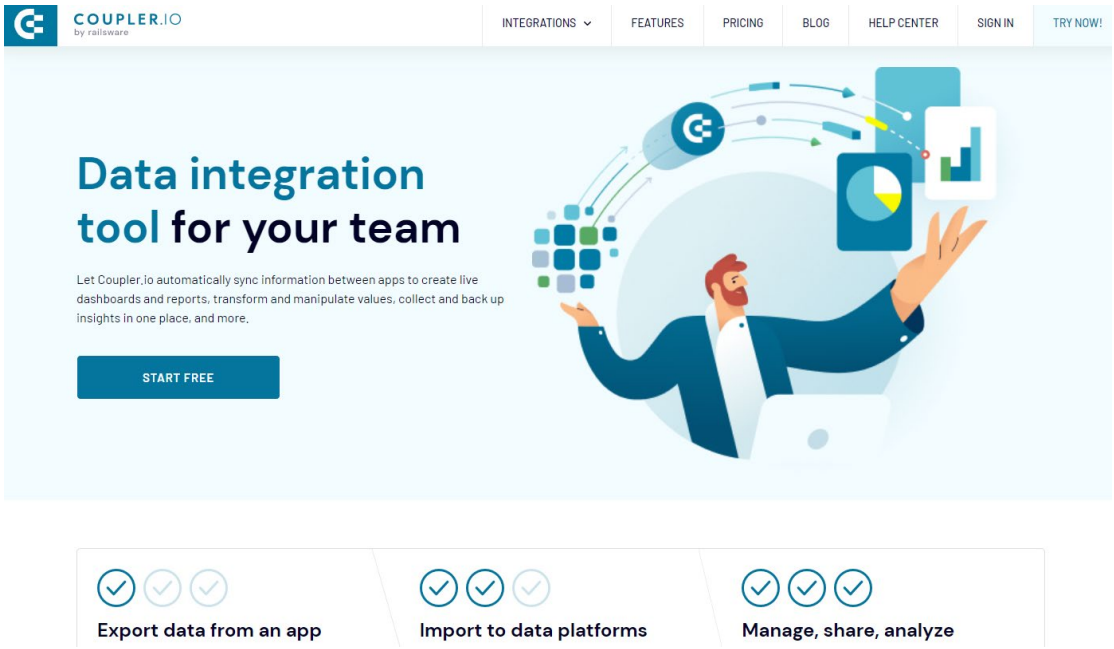

Figure 2.2.13 Homepage of Coupler.io

Coupler.io synchronises data between apps in real time to enable the creation of live dashboards and reports, the transformation and manipulation of values, the collection and backup of insights in one location, and more [22]. This tool enables you to import data from platforms and services into Google Sheets, Google BigQuery, or Microsoft Excel automatically. After that, you may export it automatically or utilize it for reporting and dashboard creation. Coupler.io makes it simple to connect to major tools and platforms like as Shopify, HubSpot, Trello, and Slack. The JSON API enables you to create a bespoke integration with any app you use. You can automate the export of JSON data to Excel, for example [19].

Strengths

- **Simple interface** – It provides click-flow designer builder which make the process of building workflow become much easier
- **Rich library** – It contained many apps that allowed the user for integration in its library

- **Good documentation** – It provides a clear view of documentation of how to use their platform
- **Blog community** – It provides blog community for user to figure out the important information about the platform
- **Free usage for lite use** – It provides a forever free plan by limiting the import size and run flow.
- **Automated reporting** – It provides a function for user to customized scheduling for automatic data refreshes based on preferable time manner.
- **Manage & share insight** – It also having function for user to create separate views and share them to your preferable teammates or other stakeholder for decision making.

Weakness

- **No Desktop Apps** – Google Cloud Workflow unlike others workflow automation tools they do not provide any desktop app for user to use in the machines.
- **Not free** – It require subscription on the paid plans starting from $24/month

2.3 Comparison of All Review Workflow Tools

Automation Workflow Tools/Platform	Features
n8n	• Open-source workflow tools • Self-hosted, desktop app or cloud service • Using API to integrate platform together le, no-code guided experience
Zapier	• Cloud service • Integrating app together automatically • Low-code, no-code guided experience
MS Power Automate	• Low-code, no-code guided experience • Synchronize files, receive notifications, collect data • Using API to integrate platform together
LambdaTest	• Cloud-based cross-browser testing tool • Real-time native application testing on emulator or simulator • Low-code, no-code guided experience • Using API to integrate platform together
QMetry Automation Studio	• Automated testing across multiplatform • Makes use of open-source automated test frameworks • Low-code, no-code guided experience • Using API to integrate platform together
Automate.io	• Cloud/SaaS application integration platform • Complicated workflows to automate sales, marketing, and business activities, according to the vendor • Low-code, no-code guided experience • Using API to integrate platform together
Google Cloud Workflow	• Combination Google Cloud service and APIs • Real-time processing with low-latency, event-driven executions • Low-code, no-code guided experience

Integromat	• Provide visualize in real-time on how automation is executed and how data flows through scenario • Operating in the background and requiring no maintenance • Low-code, no-code guided experience • Using API to integrate platform together
Tray.io	• Customer-centric low-code automation platform • Enables enterprises to sync all data, integrate deeply into applications, and establish customizable processes • Low-code, no-code guided experience • Using API to integrate platform together
IFTTT	• Automating tasks is achieved via applets • Build your own applets or modify existing ones • Connect to services from a variety of fields, including finance, subscription services, smart homes, and energy • Create intelligent processes for use cases such as smart homes • Low-code, no-code guided experience • Using API to integrate platform together
Tallyfy	• Provides automation on all your forms, workflows, tasks, processes, approvals and even documents • Record and automate all of your company's processes without the need for coding, flowcharts, or complexity • Simple and powerful by rapidly converting approval workflows, forms, and procedures into traceable processes • Enables all members of your team to monitor the progress of a task or request at any time • Low-code, no-code guided experience • Using API to integrate platform together
WP Fusion	• No-code solution that leverages plugins to enhance the functionality of your site

	• Automates your linked marketing and CRM applications • Supports a wide variety of WordPress plugins that enable you to link your store, membership site, customer relationship management system, and learning management system • Low-code, no-code guided experience • Using API to integrate platform together
Catalytic	• Open-ended platform with rule-based processes • Automation workflows without any coding knowledge • Provides data security and predictive models to enable sophisticated automation • Creates workflows that prioritize your team and users • Low-code, no-code guided experience • Using API to integrate platform together
LeadsBridge	• Marketing and advertising integration platform • Connects your advertisements to your sales funnel • Creation of automated sales and marketing workflows • Seamlessly integrates your LinkedIn, Facebook, and Google accounts with your CRM • Low-code, no-code guided experience • Using API to integrate platform together
API Fuse	• Mashup of an app store and a platform for integration • Platform for embedded integration for SaaS companies • Aimed towards certain user personas such as product managers and chief technology officers • Opportunity to develop integrations for engineers and collaborations • Low-code, no-code guided experience • Using API to integrate platform together
Coupler.io	• Synchronizes data between apps in real time

	• Enable the creation of live dashboards and reports, the transformation and manipulation of values, the collection and backup of insights in one location, and more • Can automate the export of json data to excel • Low-code, no-code guided experience • Using API to integrate platform together
Automation Workflow Tools/Platform	**Strength**
n8n	• Open source • Simple interface (drag-and-drop layout) • Learning curve (concepts are a bit tough and complicated) • Workflow programmatically (Instead of developing workflow by hand, it would also be possible with API) • Flexible designing node (for person don't know JavaScript) • Tutorial support • Pre-built Workflow template • Rich library
Zapier	• Simple interface (click-flow designer layout) • Excellent documentation and support • Provides a complete job history (notifying the user if anything goes wrong) • Certification • Pre-built Workflow template • Rich library
MS Power Automate	• Simple interface (click-flow designer layout) • Test Flow function • Error Guide • Price-friendly • Pre-built Workflow template
LambdaTest	• Detailed documentation

	• Ease of cross browser testing • Virtual devices (only have emulators and simulators, will not incurred costing for infra) • Good Customer Service (24/7) • Rich library
QMetry Automation Studio	• Multi-platform support (web, native mobile, desktop or web services) • Various language support (Java, Python, Typescript and JavaScript) • Pre-built Workflow Steps • Workflow recorder functionality • Good Customer Service (24/7) • Good version control (able retain the version of your workflows that created previously) • Rich library
Automate.io	• Multi-platform support (web, native mobile, desktop or web services) • Good Customer Service (24/7) • Simple interface (drag & drops to setup) • Intuitive Usage (able rebuild from scratch very quickly) • Price-friendly
Google Cloud Workflow	• Excellent integration with other Google services • Fast Input and output • Facilitates easy collaboration • Designed for cloud-native business • Free Trial for every user • Available with detailed documentation
Integromat	• Simple interface (drag-and-drop builder) • Rich library (many apps that allowed the user for integration) • Customization workflow • Provides free usage

	• Good documentation & tutorial • Detail execution information provided
Tray.io	• Simple interface (click-flow designer layout) • Rich library (contained many apps that allowed the user for integration) • Good documentation & tutorial • Good Customer Service (24/7) • Easy to use and deploy & various functionalities (for newbie user)
IFTTT	• Simple interface (click-flow designer layout) • Easy to use • Rich library • Good documentation & tutorial • Pre-defined applets (workflow template)
Tallyfy	• Simple interface (click-flow designer builder) • Rich library • Good documentation & tutorial • Unlimited & free task (flow) assignment • Easy decision making (approve or reject the workflow task by one click)
WP Fusion	• Simple interface (click-flow designer builder) • Rich library • Provides free usage for Lite use • Good documentation
Catalytic	• Simple interface (click-flow designer builder) • Rich library • Provides free usage for explore use • Good documentation • Provide solution showcase (workflow template) • Easy to manage API (governance is centralized and granular access restrictions, audit logs, publishing rules,

	encryption, and data retention regulations can all be used to automatically enforce it)
LeadsBridge	• Simple interface (click-flow designer builder) • Rich library • Provides free usage for explore use • Blog community
API Fuse	• Simple interface (click-flow designer builder) • Rich library • Blog community
Coupler.io	• Simple interface (click-flow designer builder) • Rich library • Good documentation • Blog community • Free usage for lite use • Automated schedule reporting • Manage & share different insight/views to preferable person for decision making.
Automation Workflow Tools/Platform	**Weakness**
n8n	• Lack of Phone support • Messy documentation • Unclear explanation (videos tutorial)
Zapier	• Expensive subscription fee • Lack of Phone support • No Desktop Apps • Complicated CLI Usage • Only support ordering workflow (cannot moving back step (A → B → C))
MS Power Automate	• Messy documentation • Workflows Limitation • Only support ordering workflow (cannot moving back step (A → B → C))

LambdaTest	• Expensive subscription cost • No Desktop Apps
QMetry Automation Studio	• Lack of Availability of Documentation • Recorded functionalities hang up when processing high
Automate.io	• Slow speed (needed quite a long time for it to load) • No Desktop Apps
Google Cloud Workflow	• Expensive subscription cost • No Desktop Apps
Integromat	• Subscription high for extreme usage • No Desktop Apps • No community platform that helps for solving error • Difficult master for newbie
Tray.io	• No free subscription for usage • No Desktop Apps • Option for choosing version of API calls (difficult for non-technical person) • Debugging difficulties
IFTTT	• Subscription high for extreme usage • No Desktop Apps • No multi-step support (not provide a multiple action for one trigger) • No enterprise-level support (not support any sophisticated integration) • Applets do not always perform as intended (certain version)
Tallyfy	• Expensive subscription fee • No Desktop Apps • No pre-defined workflow template • Limited customized on user dashboard • Customer support only supporting Asian country
WP Fusion	• No Desktop Apps

	• Mainly concentrate for WordPress usage
Catalytic	• No Desktop Apps • Hard grasp on using the platform (hard for user to learn) • Not free & expensive
LeadsBridge	• No Desktop Apps • Not free • No documentation • Lagging usage (inexplicable latency between the user response and the lead magnet's delivery)
API Fuse	• No Desktop Apps • Not free & expensive • No documentation -
Coupler.io	• No Desktop Apps • Not free

Table 2.3 shows Table of Comparison of Various Workflow Automation Tools.

CHAPTER 3: SYSTEM METHODOLOGY/APPROACH

3.1 System Theory

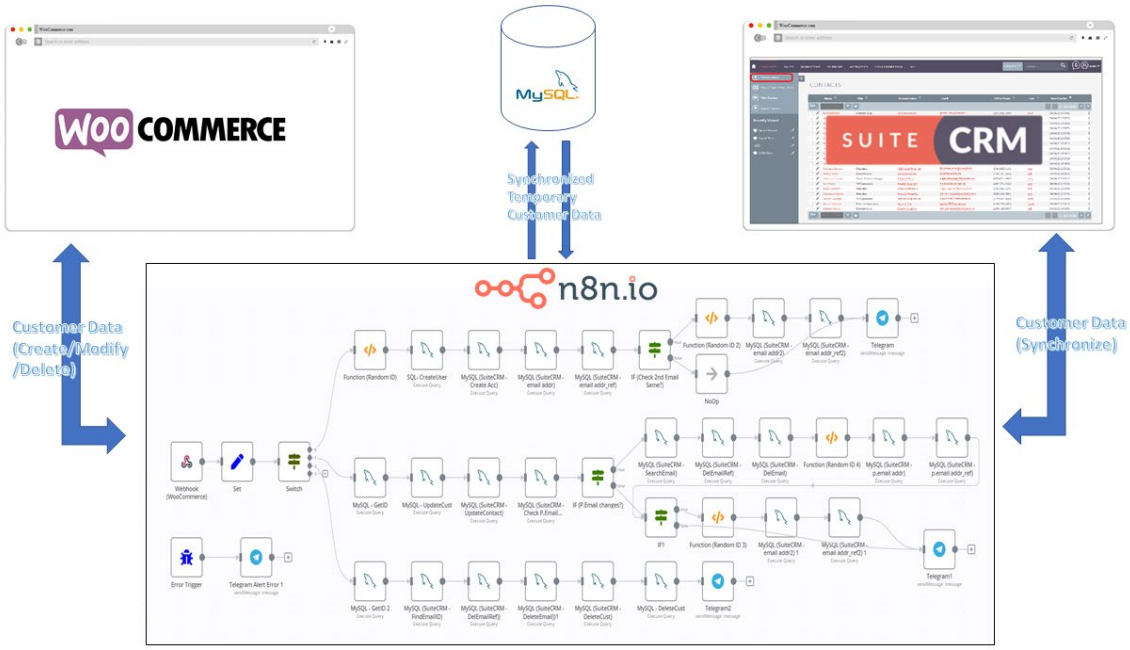

Figure 3.1 shows the Synchronization idea of synchronizing WooCommerce to SuiteCRM via n8n

The theory of this synchronization process is come from the idea of needed to integrating two or more platform together. However, different platform they will have different types of ways or methodology or even theory of setting up. Thus, the things that we able to do is by integrating the platform information together which we called synchronization. Ordinary, when we wish to synchronize data from one side to the other through API, we must write out the functions of transmitting data from one side to the other by using coding. However, with the assistance of platform integration solutions such as n8n, we are able to execute platform integration and even data synchronization.

The platform integration tools give a user interface that enables the user to integrate platforms using a code-free method in which drag-and-drop will be able to integrate the platforms utilising the API port that already exists on those platforms. It also serves as a workflow builder, automatically executing the tasks we perform in our everyday lives as workflows that we configure. These capabilities allow us to save so much time on recursive tasks that can initially be performed automatically by the computer. For instance, if we do not have the synchronisation capabilities configured, when new data is produced on one platform, we will have to manually enter the data into another platform, which will cause our jobs to become unreliable when dealing with a large volume of work. Therefore, with the assistance

of platform integration tools that execute digital process automation (DPA) workflow, we are able to save a significant amount of time and even necessary resources when using these tools for integrating platform.

Aside from that, the development of this tool has made it possible to integrate and synchronize not only the work that can be done by those programmers, but also the work that can be done by those people who do not have any knowledge of programming, such as businesspeople who want to integrate their business platform together on their own.

3.2 System Design Diagram

3.2.1 System Architecture Diagram

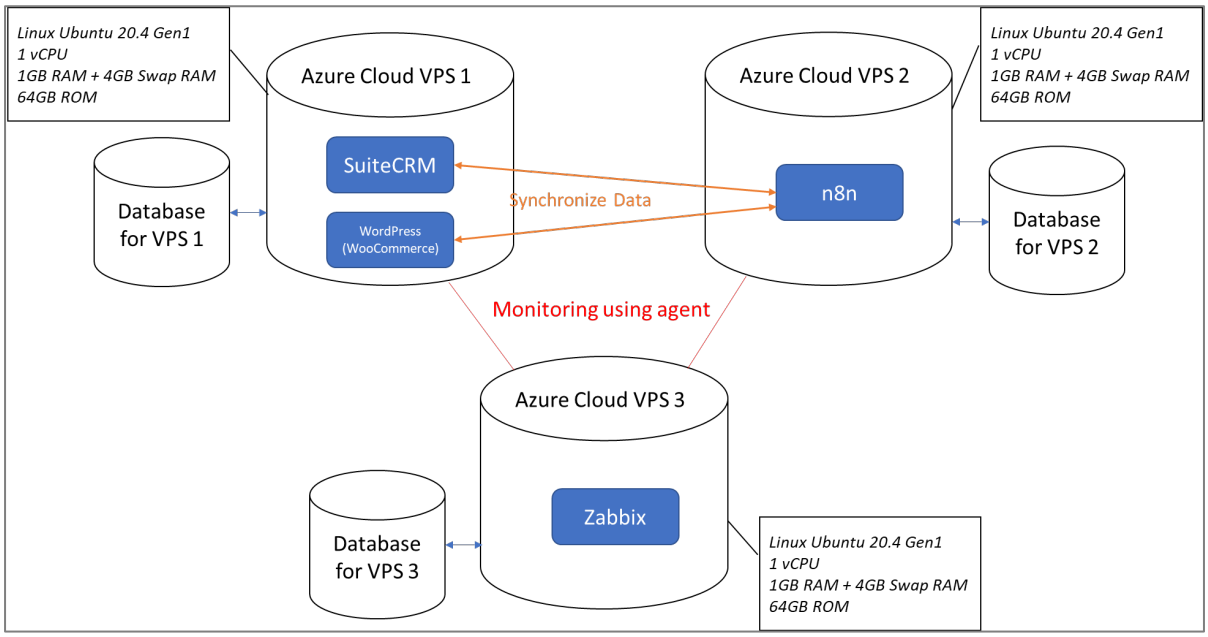

Figure 3.2.1 shows the hardware setup for the system

3.2.2 Use Case Diagram

3.2.2.1 Use Case Diagram for WooCommerce Platform Site on Data Synchronization Features

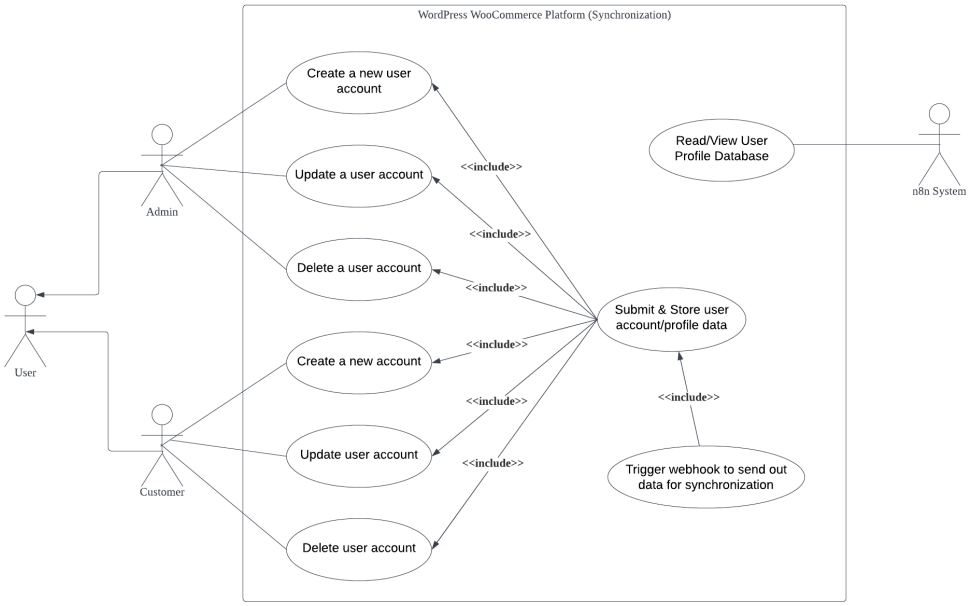

Figure 3.2.2.1 shows the Use Case Diagram for WooCommerce Platform Site on Data Synchronization Features

3.2.2.2 Use Case Diagram for SuiteCRM Platform Site on Data Synchronization Features

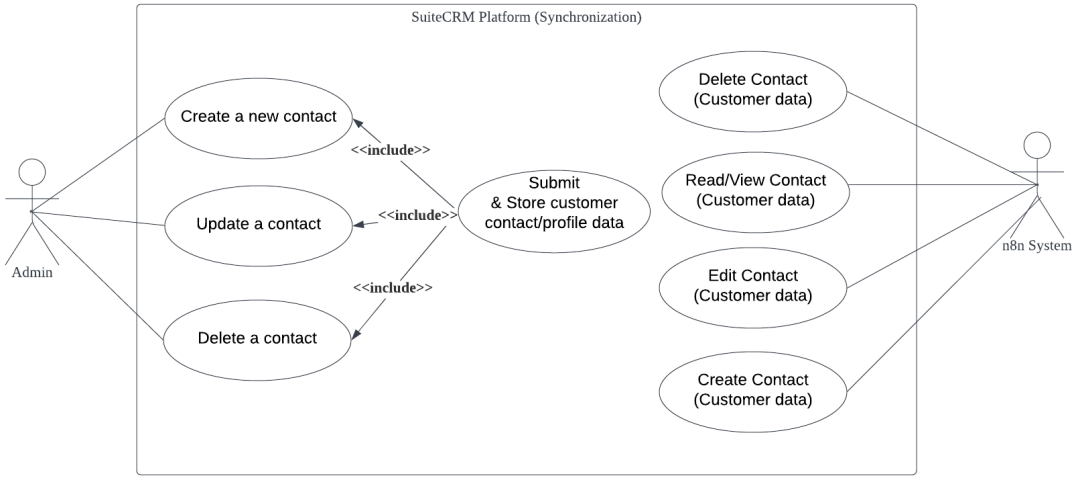

Figure 3.2.2.2 shows the Use Case Diagram for SuiteCRM Platform Site on Data Synchronization Features

3.2.2.3 Use Case Diagram for n8n Editor Platform

Figure 3.2.2.3 shows the Use Case Diagram for n8n Editor Platform

3.2.3 Activity Diagram

3.2.3.1 Activity Diagram for n8n

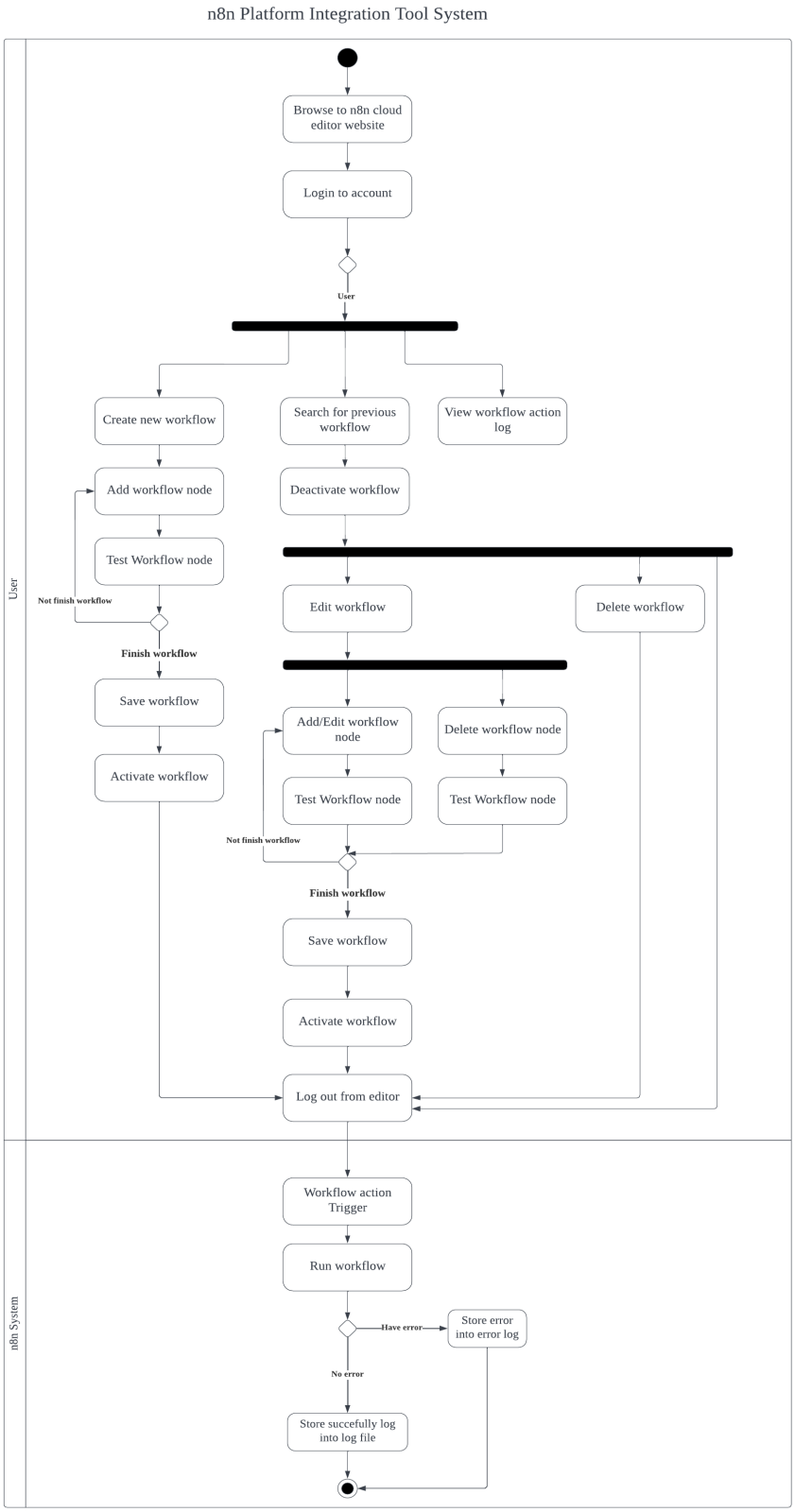

Figure 3.2.3.1 shows the Activity Diagram for n8n

3.2.3.2 Activity diagram of n8n in synchronizing WooCommerce & SuiteCRM Platform

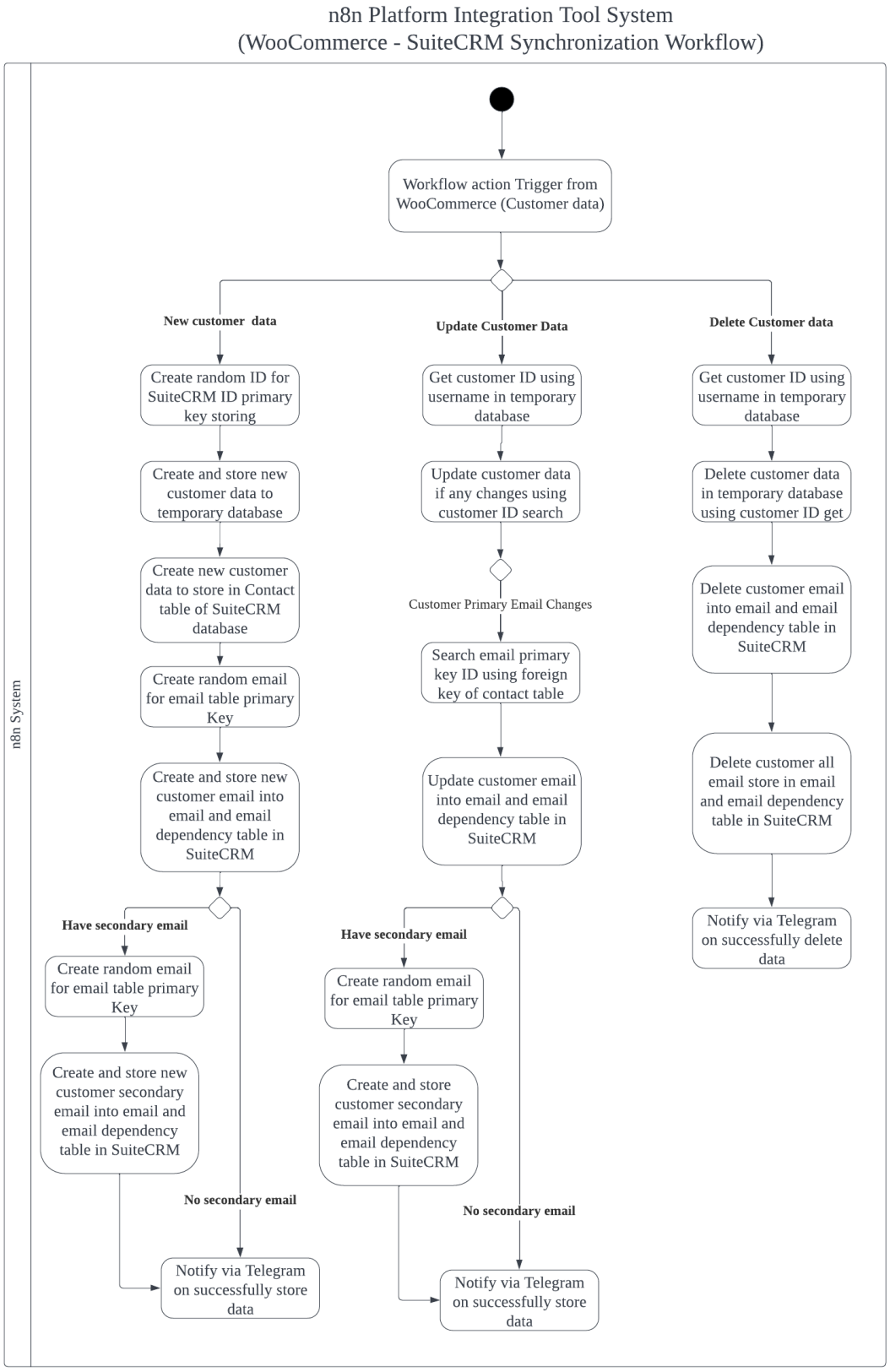

Figure 3.2.3.2 shows the Activity diagram of n8n in synchronizing WooCommerce & SuiteCRM Platform

CHAPTER 4: SYSTEM DESIGN

4.1 System Design

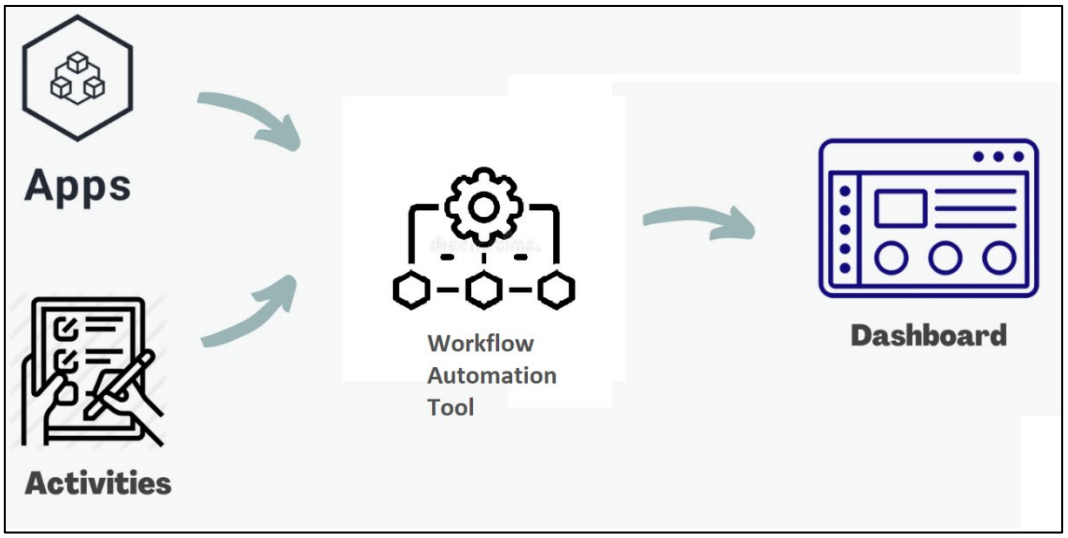

Figure 4.1.1 shows the system design overviews

The project system design overview for the automated workflow system is depicted in the figure above, which is based on the figure displayed above. From the figure, it appears to be a simple task to do, but it requires substantial understanding on how to build workflow tools and integrate APIs between applications. First and foremost, appropriate apps must be selected based on the workflow tasks that we perform on a frequent basis in our everyday lives, which often involve complex steps and require a significant amount of time to complete.

As a result, we must inspire the idea of creating automation based on the activities/tasks we perform on a daily basis and transforming it into a convenient way that provides significant benefits to us by utilizing the IT automation technologies that are currently available, otherwise we will be wasting the resources that we have. The apps that have been chosen will need to connect to APIs through the use of these "middle people," which is the workflow automation tool, in order for us to be able to develop an automation workflow that will make our lives more efficient. In order to set up our rule and procedure run in our workflow; we need to apply certain configuration as well as some function setup when we link the API authentication of each of the App nodes inside the workflow tool.

Before we can achieve success, we must first test the connectivity of the app node link to guarantee that no errors occur over the path of the execution process. Finally, a process will

be created and executed, and we will be able to view the activity that has been automated through the use of those workflow tools in the app's dashboard after it has been completed.

Figure 4.1.2 shows the concept of automation idea generated

From that it shown in the diagram above, when creating any automation application, you need to concern on when we need it and then what we will do for that. How we will use that in solving our problem which will make our life better is the core concept when we are creating automation workflow. Diagram below will be going to show the kick start on helping your generating idea of creating a good automation workflow.

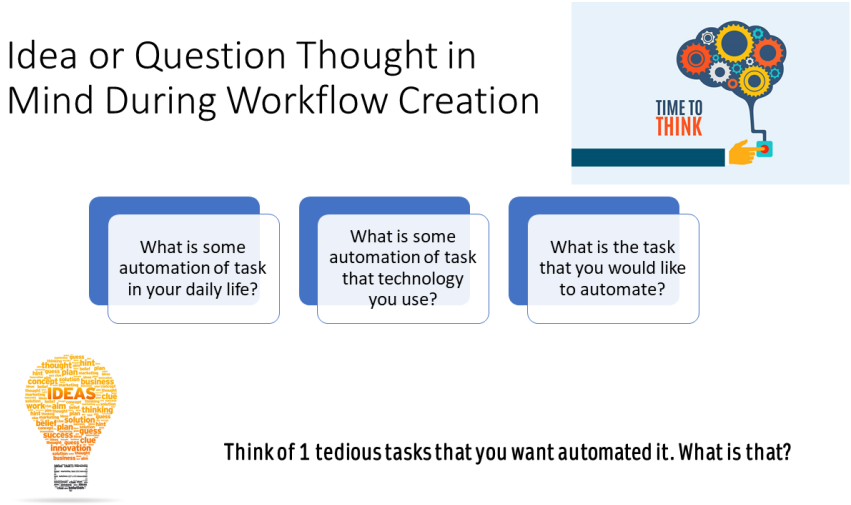

Figure 4.1.3 shows the idea concept in workflow creation diagram

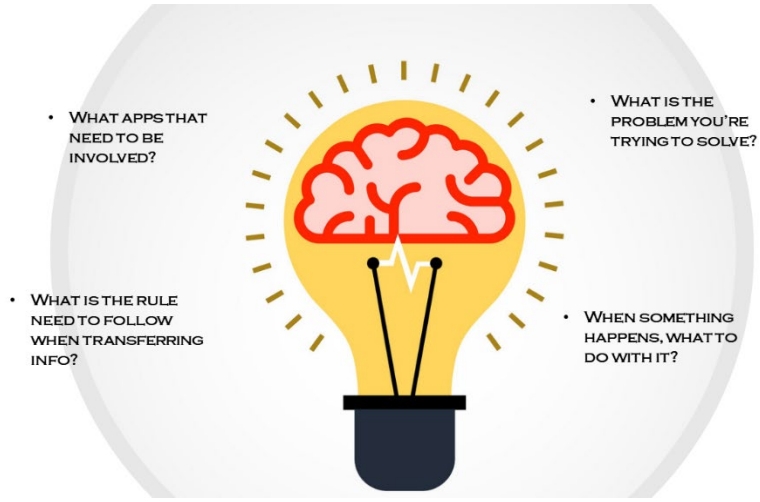

Figure 4.1.4 shows the concept of workflow automation idea

As what shown above, it stated the question that you need to think of when generating the idea of workflow automation that will brings convenience to you. It guides you step by step of thinking what to created and how to create the workflow automation.

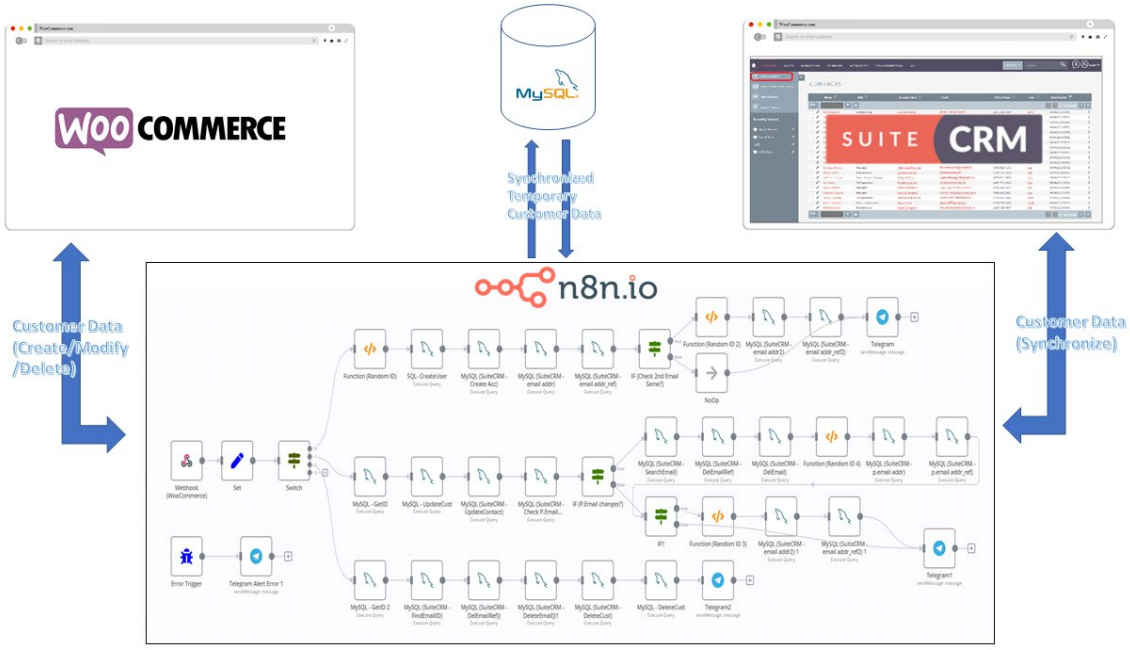

Figure 4.1.5 shows the Synchronization idea of synchronizing WooCommerce to SuiteCRM via n8n

4.2 System Requirement

4.2.1 Hardware Requirement

Since it is mostly run-on localhost, there are no prerequisites for using the workflow automation tool when it is being used. Because it is based on your computer having sufficient power to publish localhost or sufficient storage space to install their application, it will be able to function properly. However, the majority of them are still offering their web-based services, which means you will be able to access their cloud-based services using your web browser. The laptop and computer specifications that I used to construct workflow automation using the automation flow tool are shown in the table below.

Description	Specifications
Device Type	Desktop
Brand/Model	No brand-Own build PC (Asrock B560M-ITX)
Processor	11th Gen Intel(R) Core(TM) i5-11500 @ 2.70GHz 2.71 GHz
Operating System	64-bit Windows 10 Pro Operating system , x64-based processor
Graphic	-
Memory	Kingston HyperX Furry Beast 16.00GB
Storage	Adata XPG SSD 480GB + Toshiba PC P300 HDD 1TB

Table 4.2.1.1 Specifications of desktop

Description	Specifications
Device Type	Laptop
Brand/Model	Acer Aspire 3 A315-55G-59AE
Processor	Intel(R) Core(TM) i5-10210U CPU @ 1.60GHz 2.11 GHz
Operating System	64-bit Windows 11 Enterprise Operating system , x64-based processor
Graphic	Nvidia GeForce MX230 2GB
Memory	Kingston HyperX Furry Beast 20.00GB
Storage	Adata XPG SSD 480GB

Table 4.2.1.2 Specifications of laptop

4.2.2 Software Requirement

Web Browser

Figure 4.2.2.1 shows logo of different web browser

The web browser is prerequisite as it is used to let us browse to the website of each workflow automation tool platform to use their services or even browsing the application that install in our computer that hosting on our port.

Visual Studio Code

Figure 4.2.2.2 shows the logo of Visual Studio Code

Visual Studio Code is one of the source code editors that mainly use for programming languages editing. However, you are also able to use another editor as well as it is compatible to edit. It is because we will be involving very few of coding and basically it mainly used for some configuration such as like authenticate file in n8n to setup authentication password and do some minor modification on our JavaScript of our automation flow created (rare to use as using the UI interface for workflow setup provided by each workflow automation platform are easier to configure).

Docker Desktop

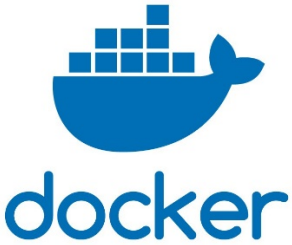

Figure 4.2.2.3 shows the logo of Docker Desktop

Docker Desktop application is a collection of platforms as a service solution that provide software in packages known as containers by utilizing operating system-level virtualization. We will be using it if we want to host the n8n ourselves in our localhost by set up the n8n inside container using Docker Desktop (not necessary, based on what type of installation we choose).

MS Azure

Figure 4.2.2.4 shows the logo of Microsoft Azure

Microsoft azure is a cloud service provider that able to build, run and manage application across multiple platforms. It is also not necessary if we do not want to host our n8n service in our server set up in MS Azure. IT will be needed if we want to set up a VPS to host the n8n service in our server so that we can used in on the cloud.

Postman & Webhook

Figure 4.2.2.5 & Figure 4.2.2.6 shows the logo of Postman and Webhook

Postman is an application that is used to test APIs (application programming interfaces). It is an HTTP client that tests HTTP requests through the use of a graphical user interface, by which we obtain various types of responses that must be validated once they have been received and processed. This apps are needed in order to let us test for some API by passing HTTP POST or

HTTP GET request to the workflow creating for testing or debugging. Webhook is also referred to as web callback, and it is a method for an application to transmit real-time information to other apps. When you use a webhook, data is delivered to other apps as it occurs, ensuring that you receive data instantly. It is used with the Postman to create a callback for us to test on our functionalities in our workflow created.

n8n UI

Figure 4.2.2.7 shows the logo of n8n

n8n desktop apps offer us to develop our workflow automation flow in our desktop. It is the easiest way of using n8n services since I just plug and play to use the service.

Power Automate Desktop

Figure 4.2.2.8 shows the logo of Power Automate Desktop

MS Power Automate is one of the workflow automations tools that provides us a platform of creating our workflow. Other than cloud-based version, it also provides desktop version of service for user to use it in their desktop. In fact, it is the easiest way of using the MS Power Automate services.

NodeJS & npm

Figure 4.2.2.9 show logo of NodeJS

Figure 4.2.2.10 shows logo of npm

Node JS is a cross platform, open-source backend runtime environment that allow Java Script code to run outside the web browser by running itself on the V8 engine. It works with the npm services, which are a package manager for the Java Script programming language and are maintained by npm. In this project, in order to make the function of the n8n services work, we need to download NodeJS so that we can use the npm services provided by npm, so that we can use n8n services provided by n8n platform which are running by using JavaScript.

CHAPTER 5: SYSTEM IMPLEMENTATION

5.1 Hardware Setup

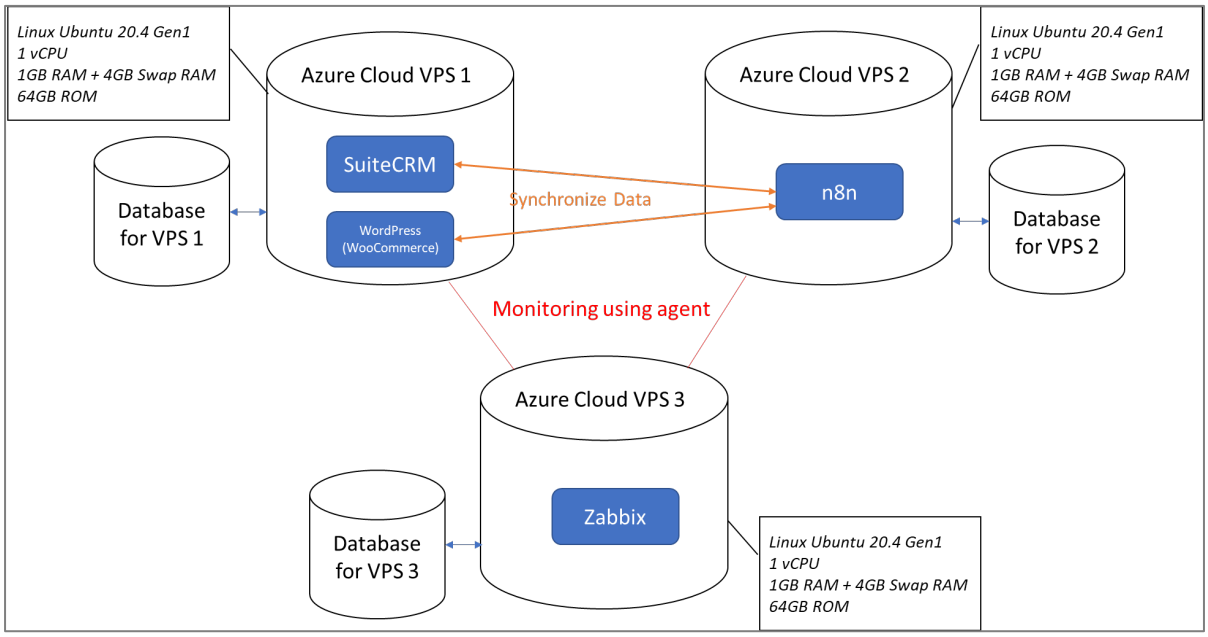

Figure 5.1 shows the hardware setup for the system

5.2 Software Setup

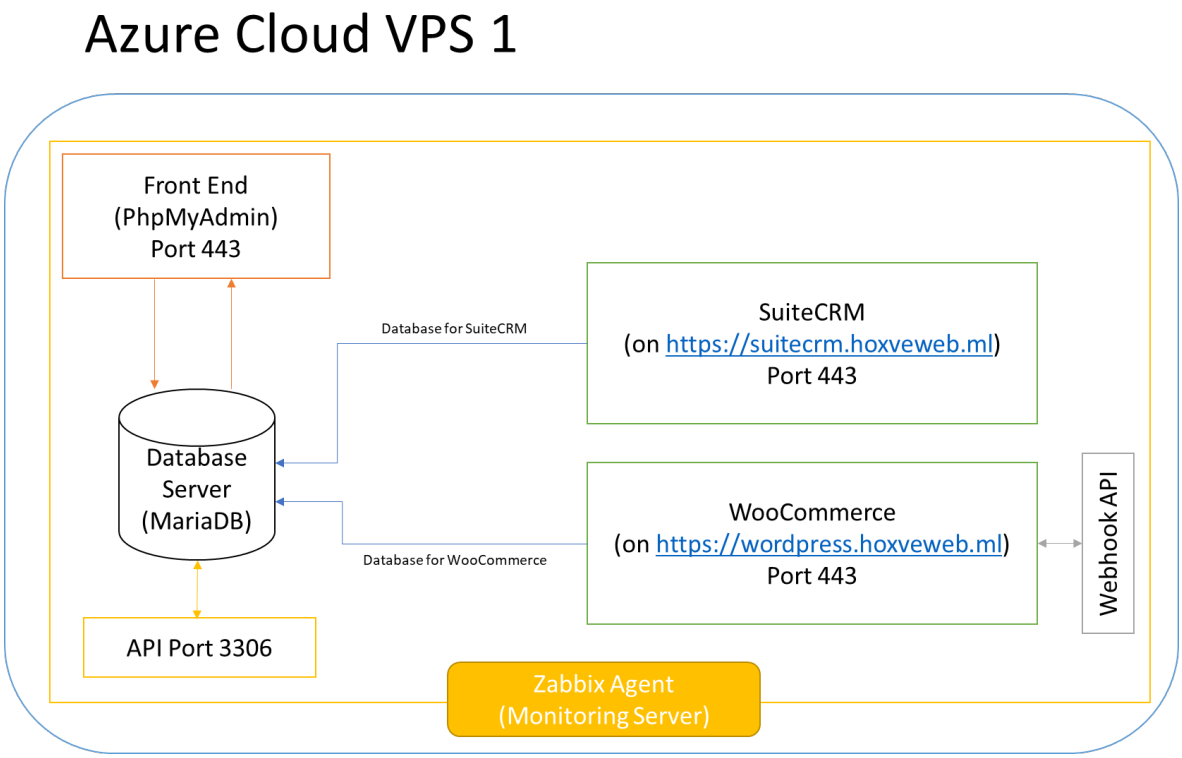

Figure 5.2.1 shows the Azure Cloud VPS Software Setup for SuiteCRM Platform and WordPress WooCommerce platform

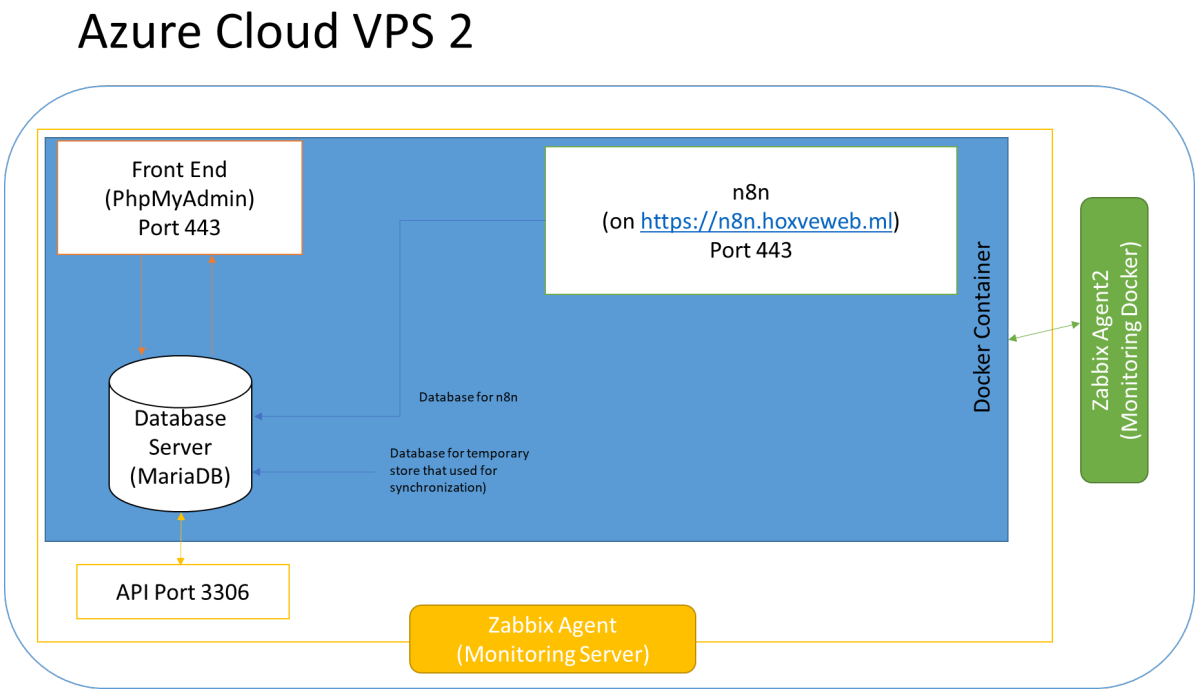

Figure 5.2.2 shows the Azure Cloud VPS Software Setup for n8nPlatform

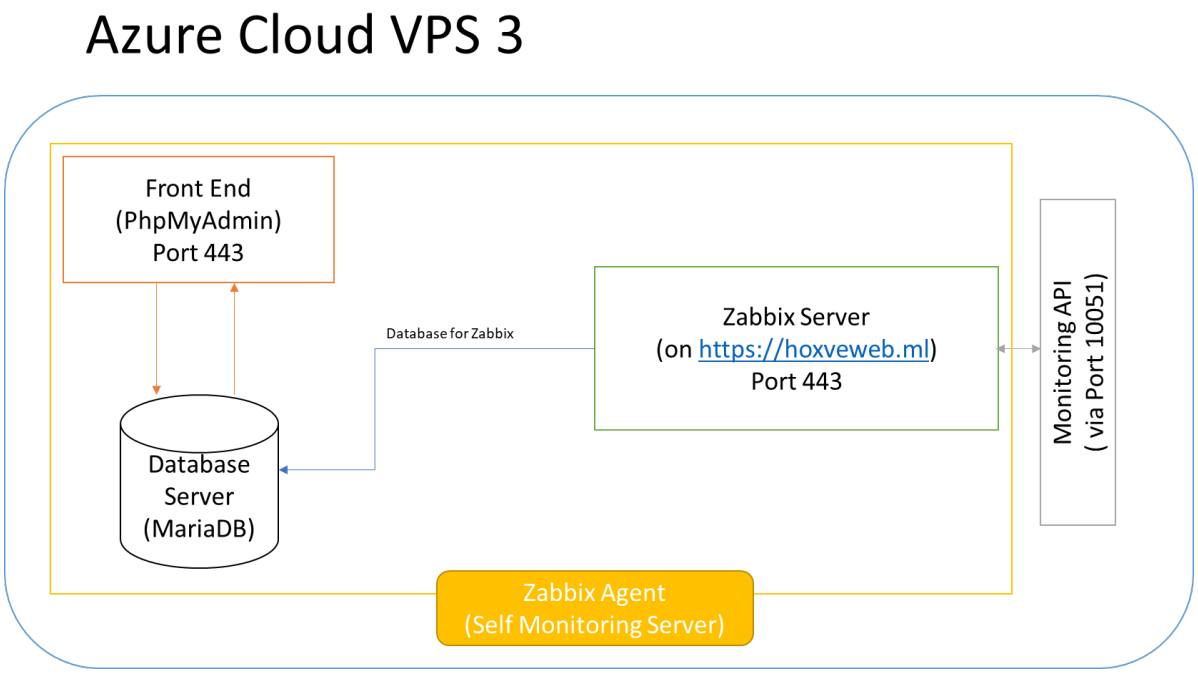

Figure 5.2.3 shows the Azure Cloud VPS Software Setup for Zabbix Server Platform

5.3 System Operation (with Screenshot)

5.3.1 Customer Create Operation

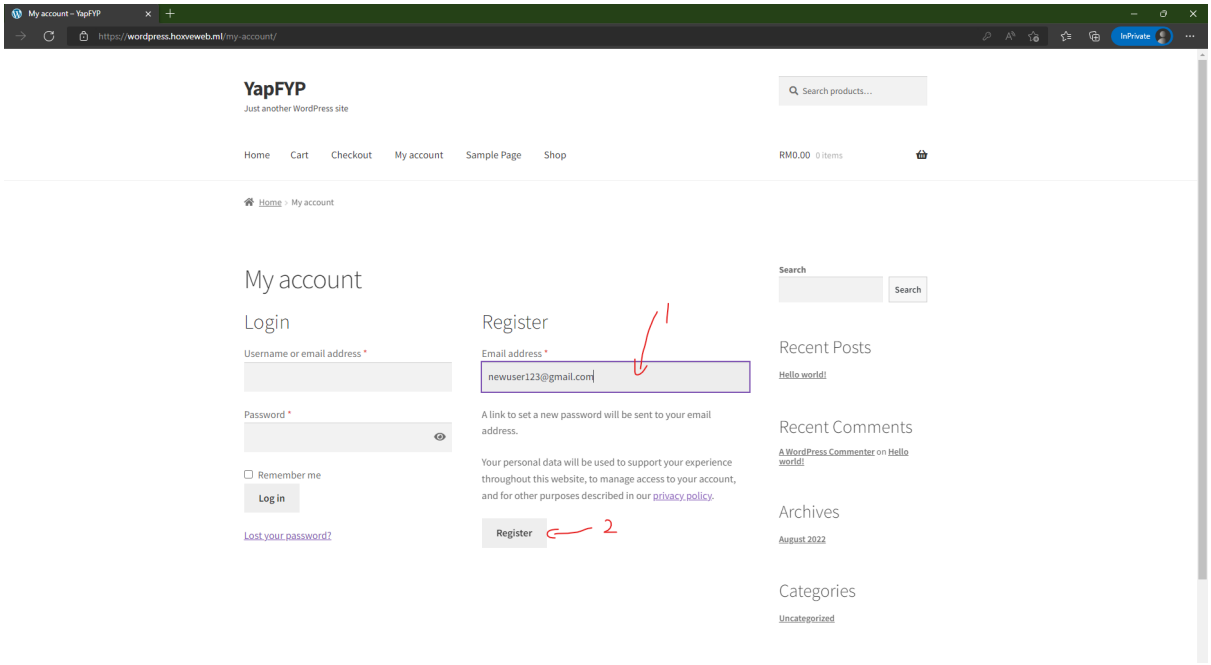

Figure 5.3.1 shows the WooCommerce store login page for customer to register an account.

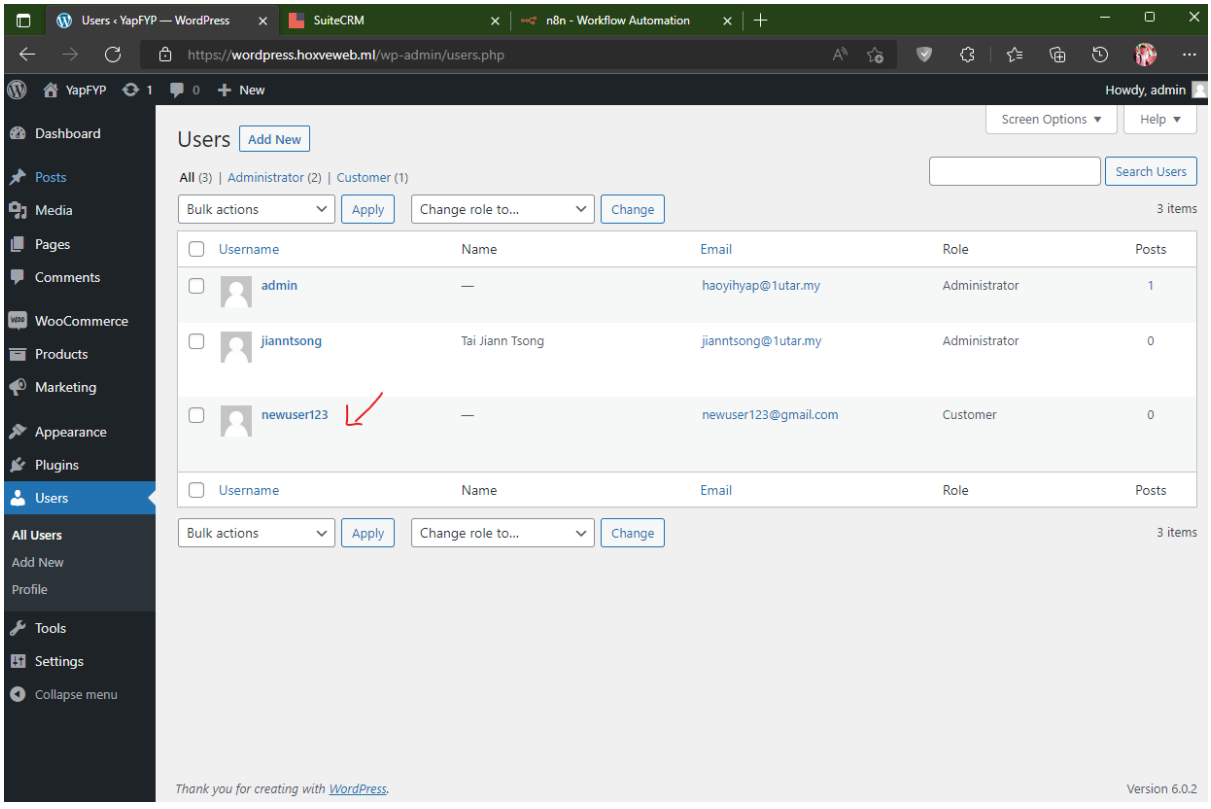

Figure 5.3.2 shows successfully creation of new account in the user management page of admin dashboard of the WooCommerce store

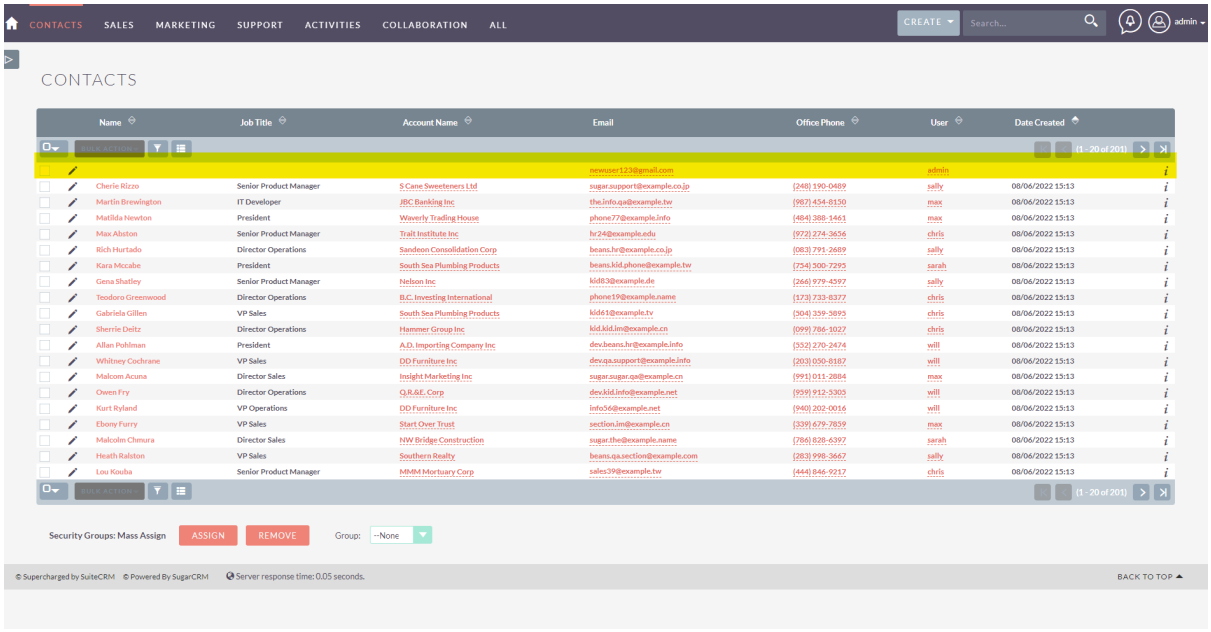

Figure 5.3.3 shows the successfully synchronization process from WooCommerce to SuiteCRM contact module

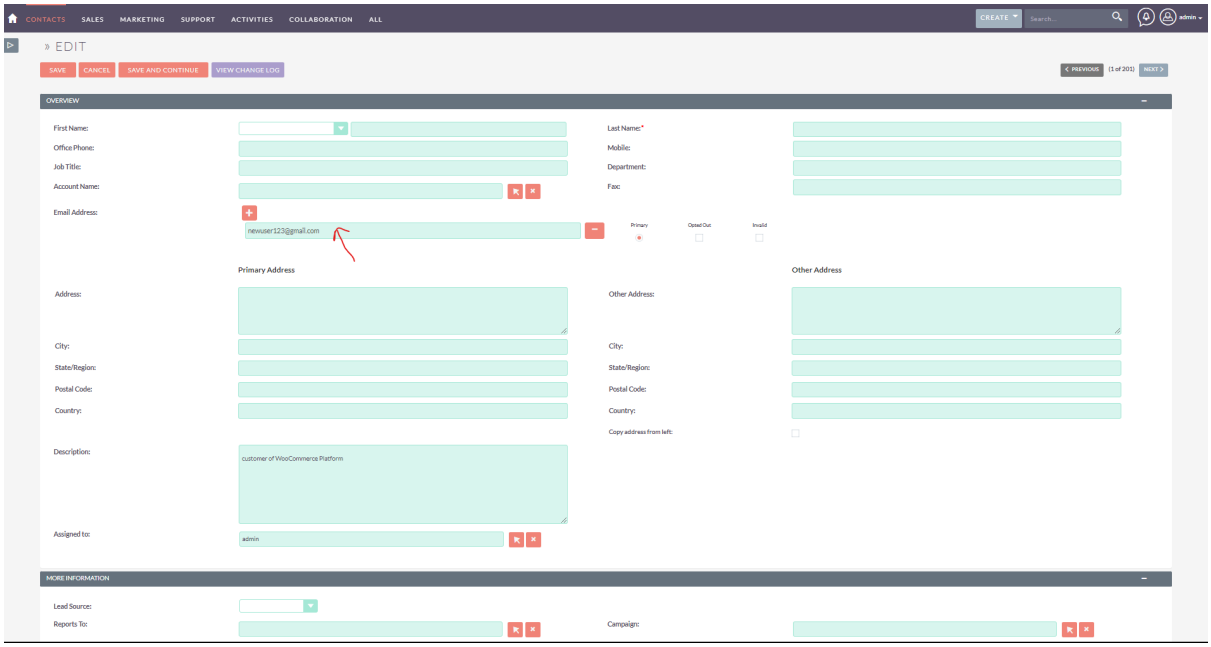

Figure 5.3.4 shows the particular of new customer creation in SuiteCRM by synchronization from WooCommerce

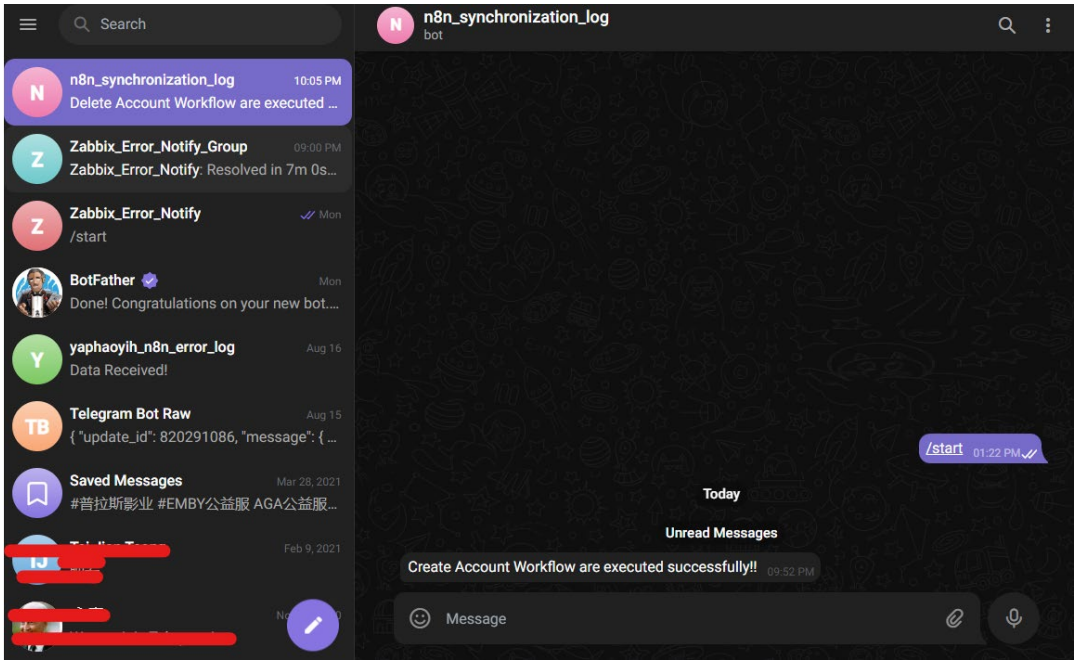

Figure 5.3.5 shows the notification on successfully workflow run message send from n8n to Telegram on the workflow success executed on creation new customer data

5.3.2 Customer Update Operation

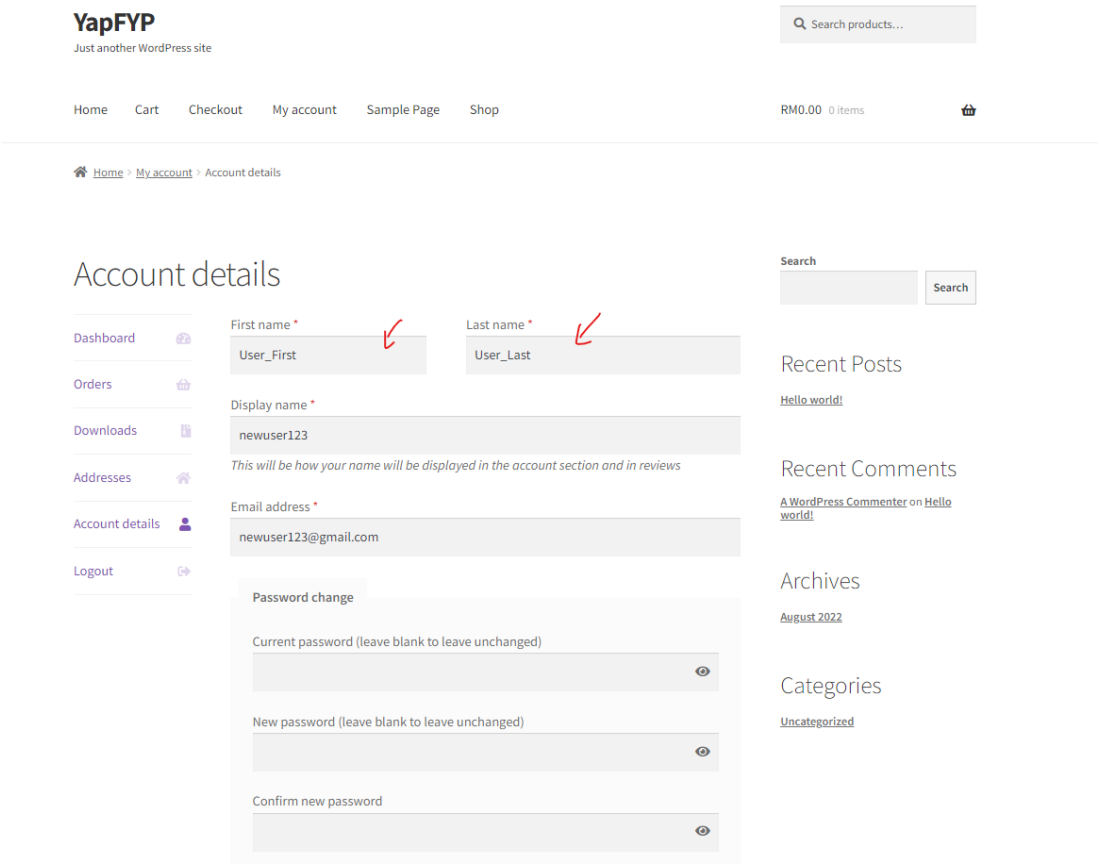

Figure 5.3.6 shows the action of customer updating profile in WooCommerce shop

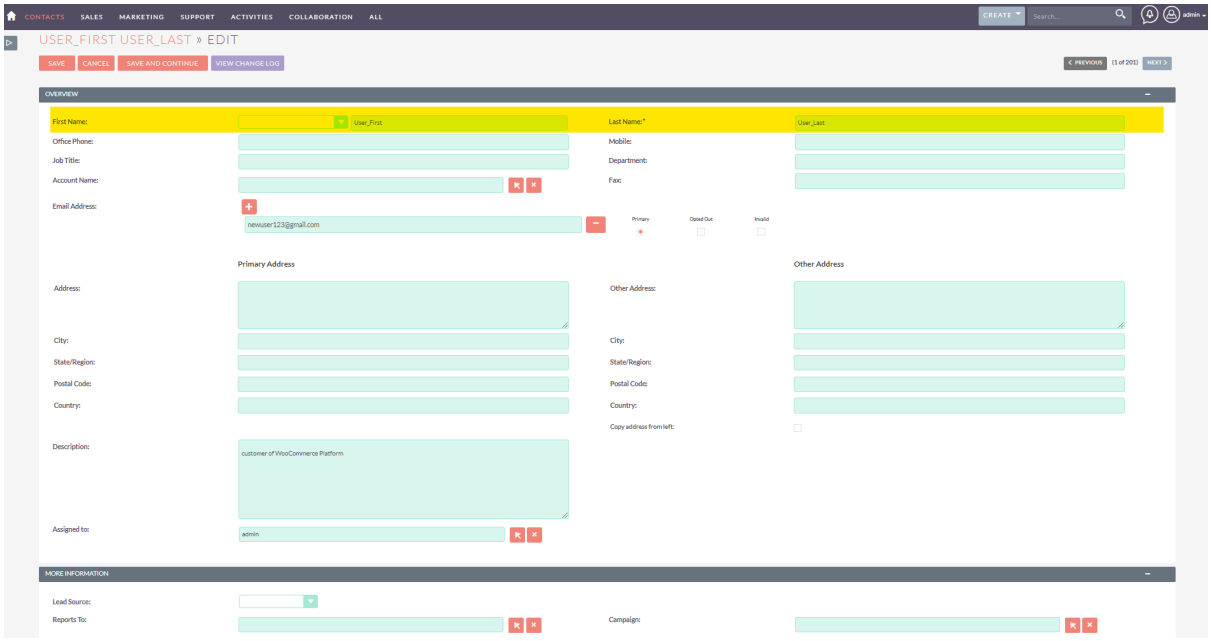

Figure 5.3.7 shows the successfully synchronization of data in SuiteCRM after the submission of customer on updating it's profile at WooCommerce store

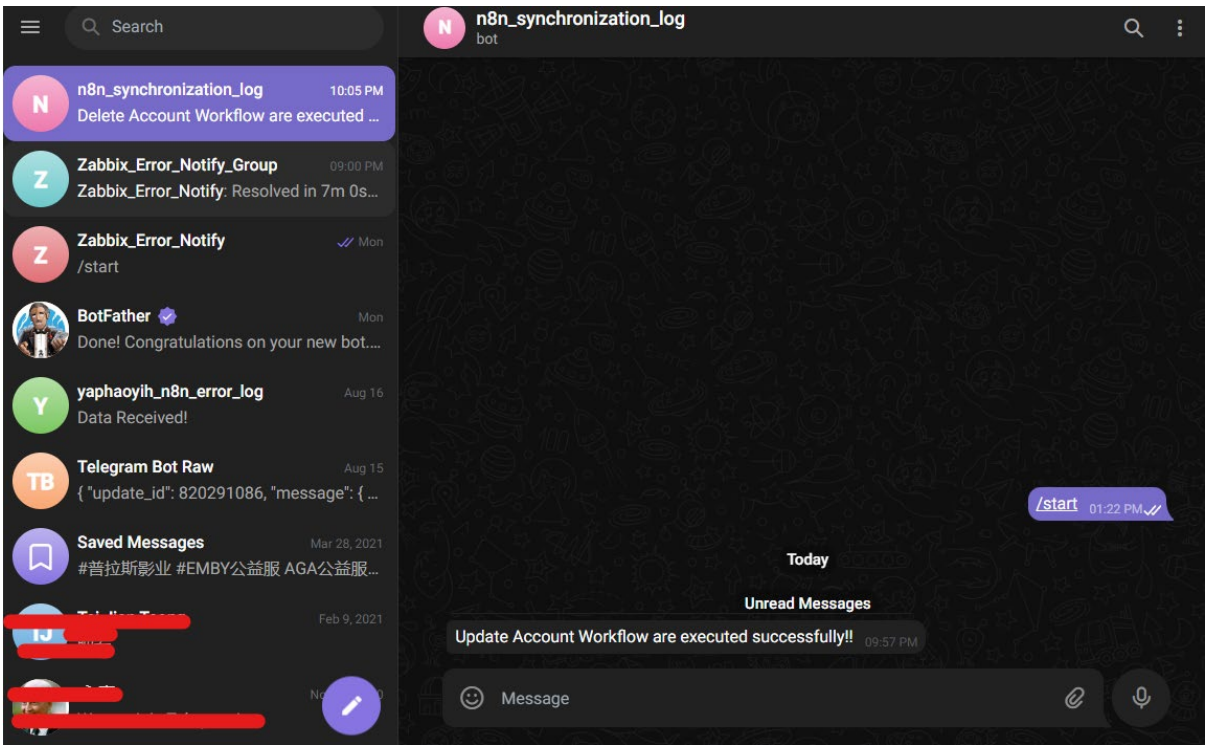

Figure 5.3.8 shows the notification on successfully workflow run message send from n8n to Telegram on the workflow success executed on updating customer data

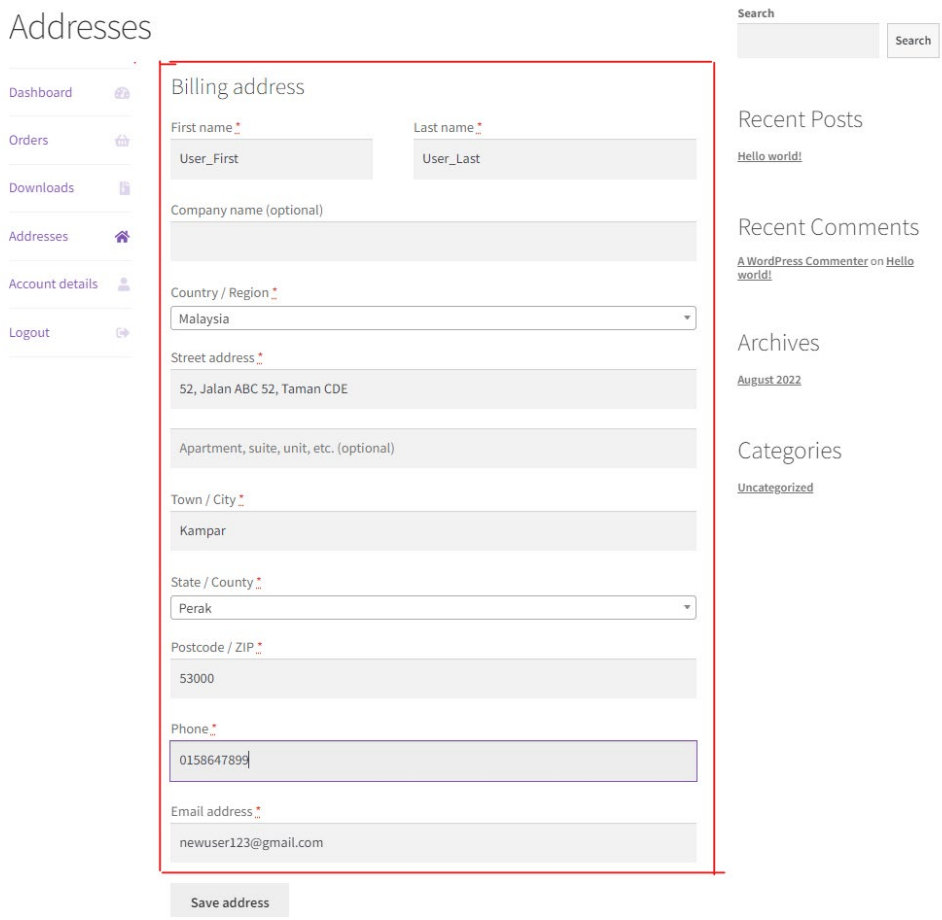

Figure 5.3.9 show the action of customer updating billing address in WooCommerce shop

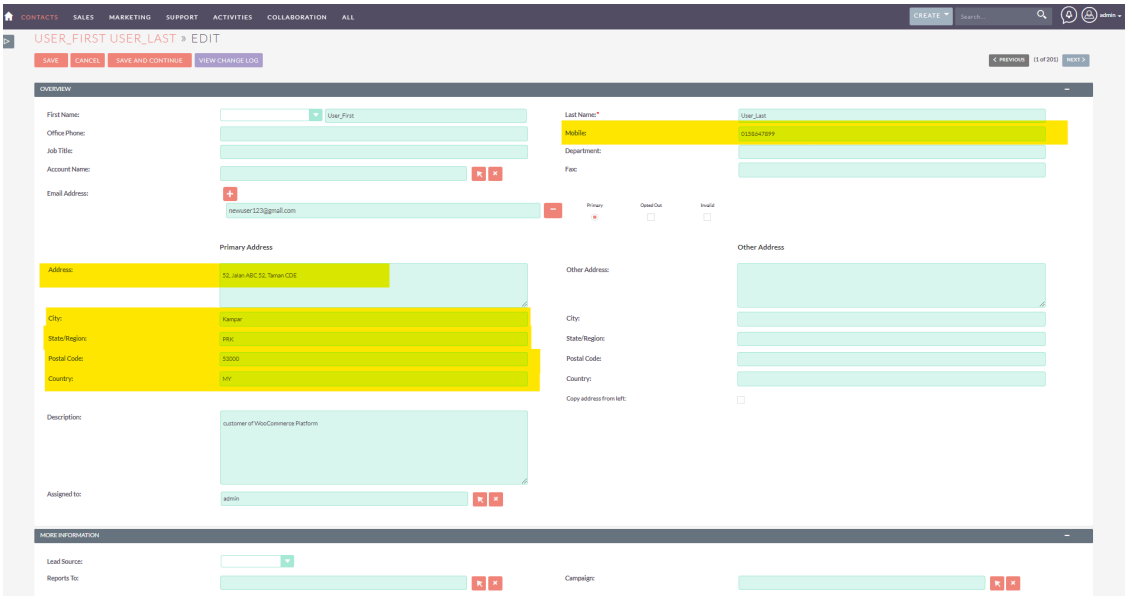

Figure 5.3.10 shows the successfully synchronization of data in SuiteCRM after the submission of customer on updating its billing address at WooCommerce store

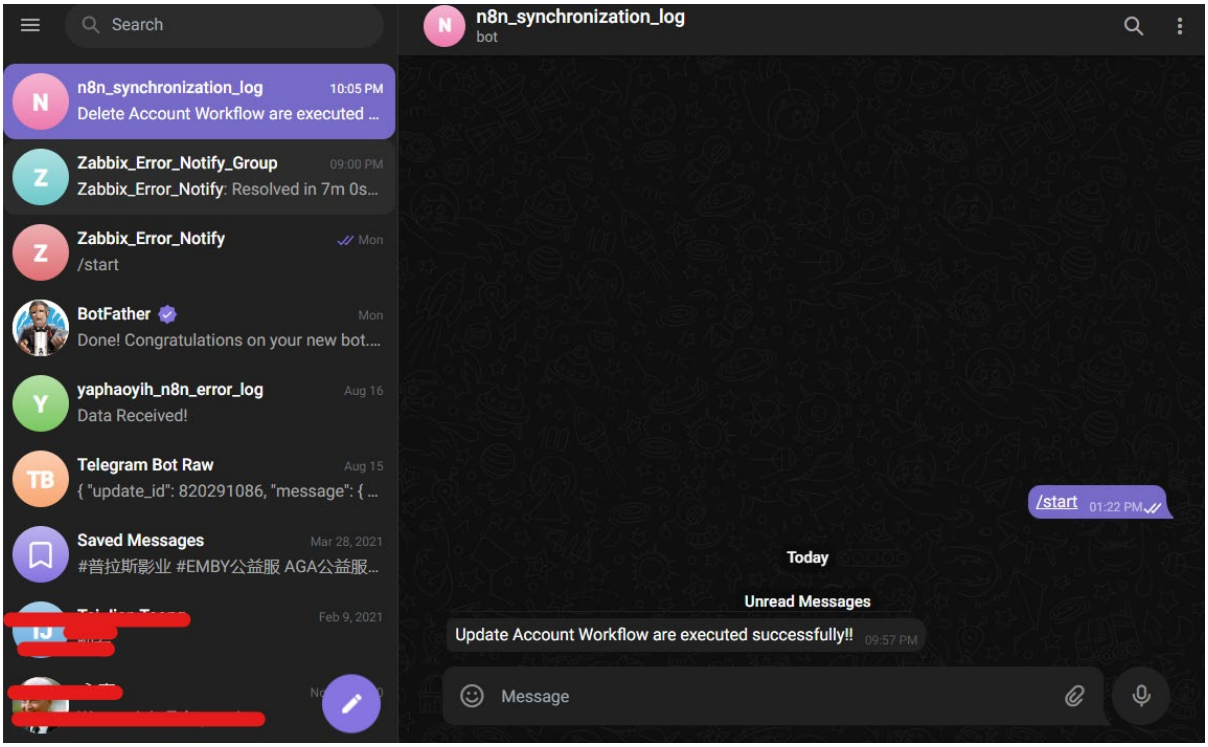

Figure 5.3.11 shows the notification on successfully workflow run message send from n8n to Telegram on the workflow success executed on updating customer data

5.3.3 Admin Delete Customer Operation

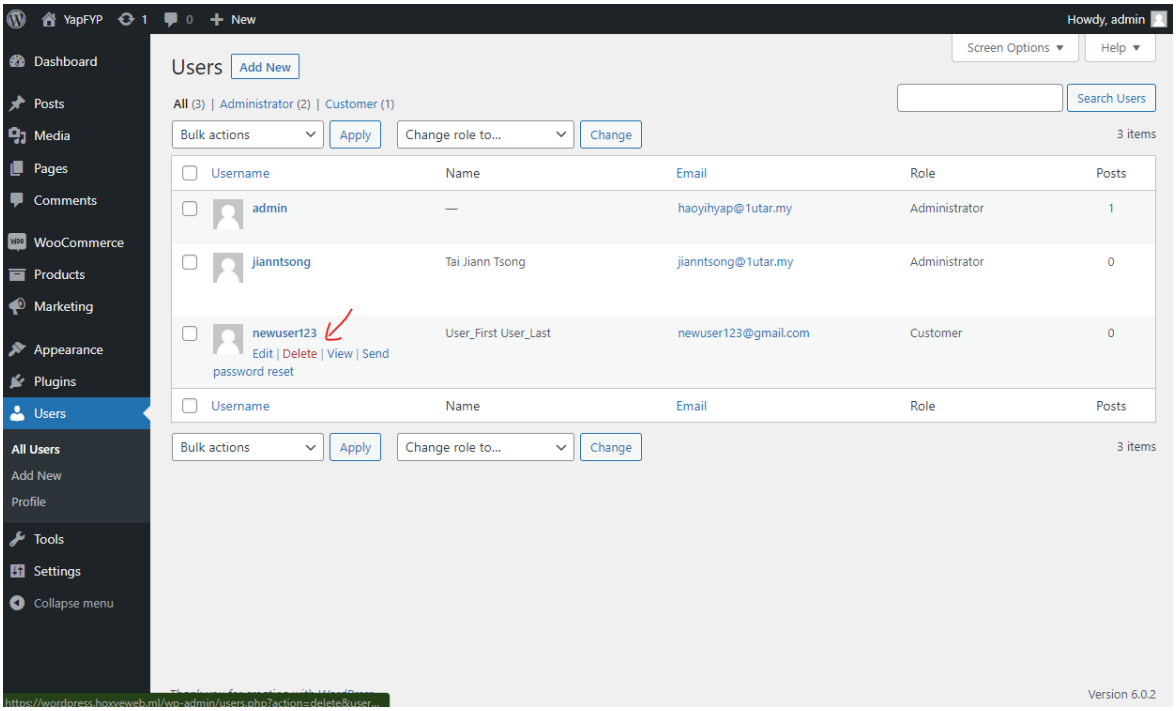

Figure 5.3.12 shows the action of admin in deleting user account at the WordPress WooCommerce admin dashboard

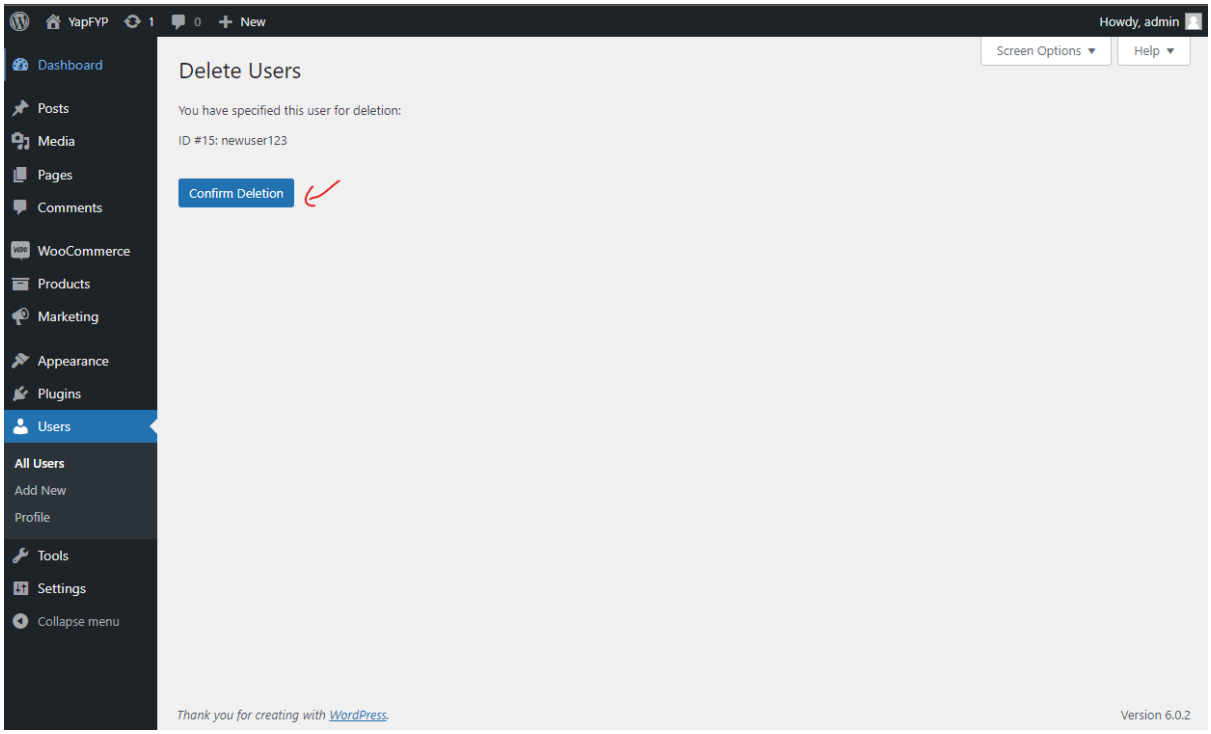

Figure 5.3.13 shows the confirmation message on deleting customer account in admin dashboard of WordPress WooCommerce platform

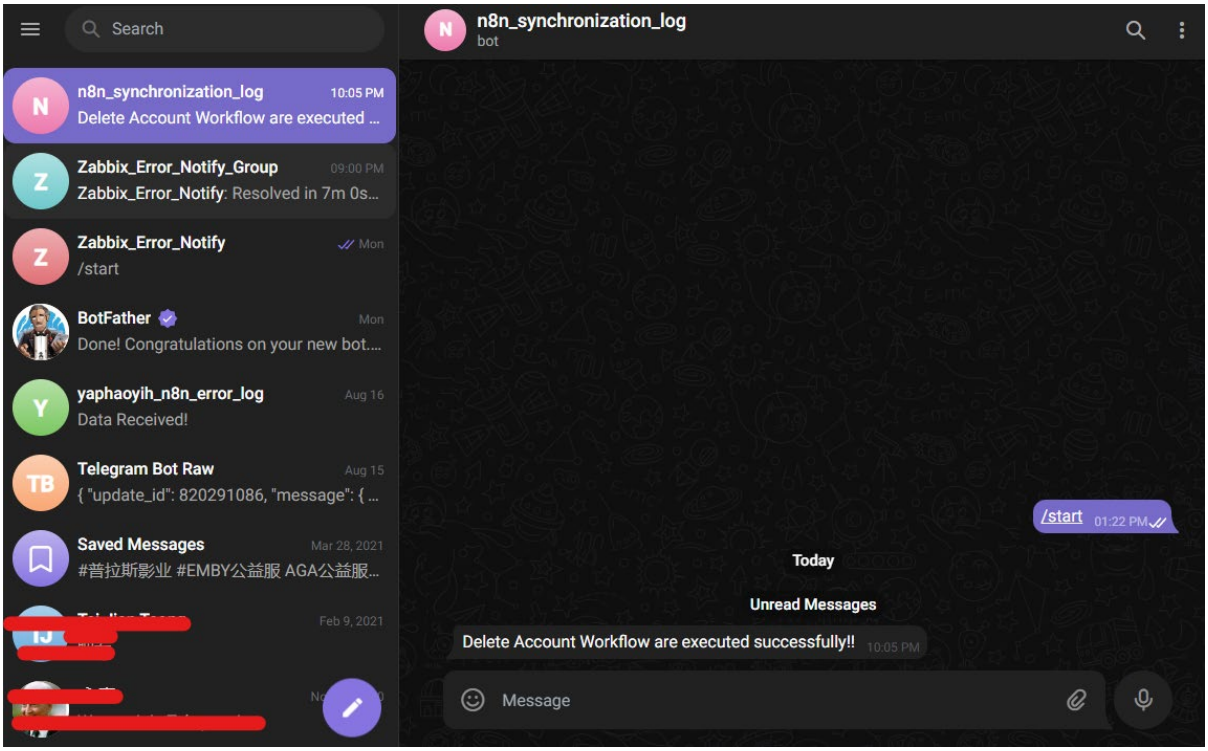

Figure 5.3.14 shows the notification on successfully workflow run message send from n8n to Telegram on the workflow success executed on deleting data

5.4 Timeline

FYP 1 Gantt Chart Timeline

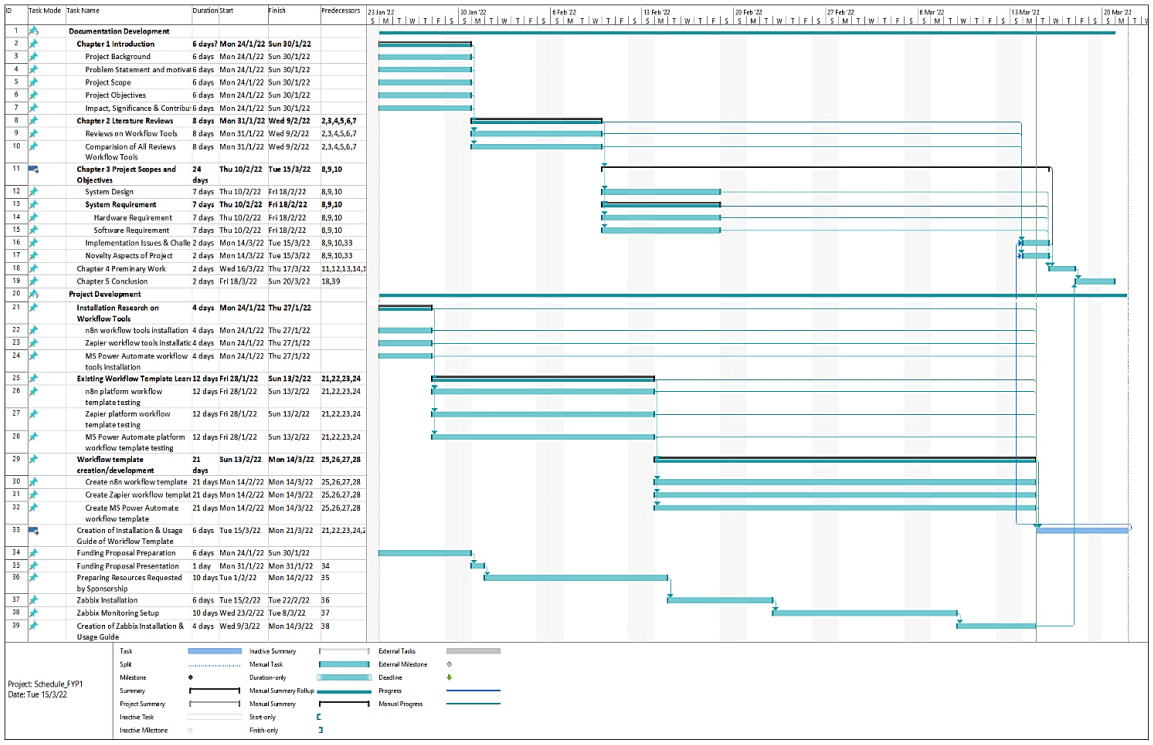

Figure 5.4.1 shows the Gantt Chart Timeline of FYP1

FYP 2 Gantt Chart Timeline

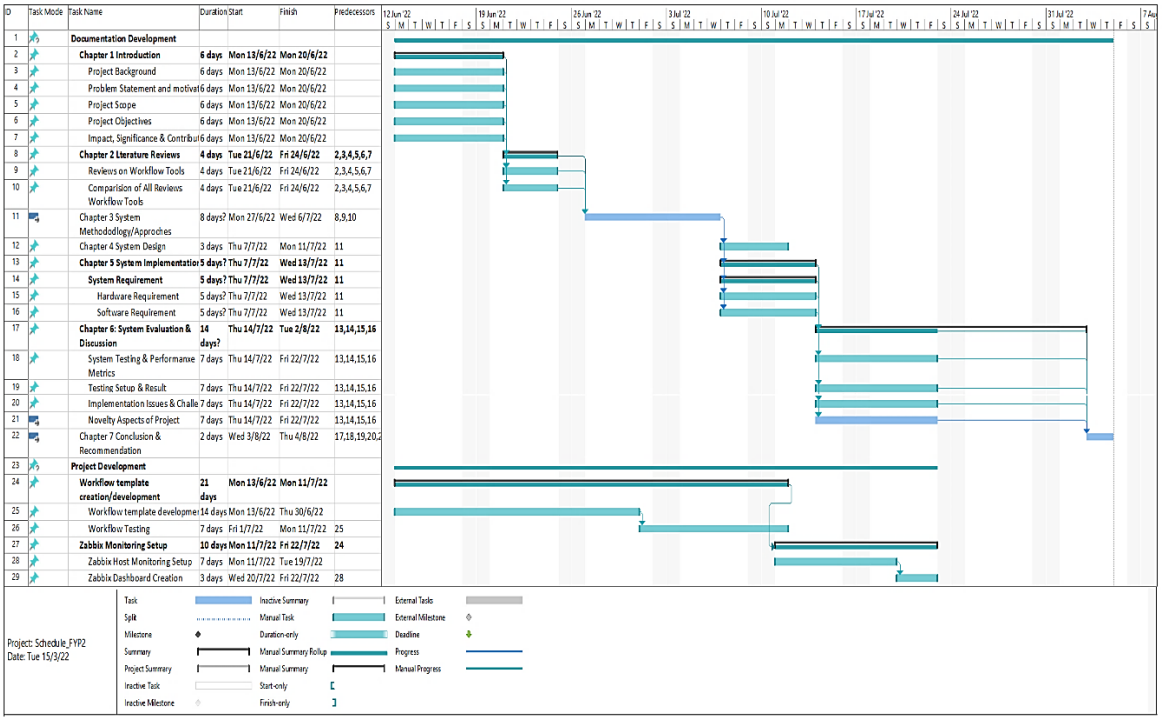

Figure 5.4.2 shows the Gantt Chart Timeline of FYP2

CHAPTER 6: SYSTEM EVALUATION AND DISCUSSION

6.1 System Testing and Performance Metrics

During the implementation process of the system, the synchronization od data from WooCommerce to SuiteCRM by using platform integration tools, n8n are seems not able to detect the speed of transfer and processing of data transfer during the process of transferring of data using the n8n. Other than that, since the platform are all running on the cloud, we could not identify when the time the server is down due to unauthorized attack or any other reason. This makes the server running on an unsecure manner; hence we are implementing another monitoring tools in another server where we called Zabbix.

Zabbix is an enterprise level of monitoring software tools that allow for real time monitoring on various kind of IT components as well as devices and importantly it is open-source software. By using Zabbix on monitoring the resources of our server on cloud, we able to keep track the status of server on real time and get alert on any changes that happen on the server via few platforms which includes email notification, SMS or even Telegram notification. Zabbix are said to be able to perform the network utilization monitoring, server resources monitoring, application monitoring, cloud monitoring or even service monitoring. Zabbix identify the problem on server based the sophisticated calculation and behavior of server to identify the problem and trigger the notification to notify user on the changes. It also enables us to create our pre-defined graph based on data collected as well as the dashboard creation for easy monitoring.

Zabbix server collecting the server information by using the Zabbix proxy installed on the devices that need to monitor. It can be setup to monitoring using passive way or even active way based on the situation of the IT devices setup as some of the devices do not have public IP that enable them to be detected from the Internet. Hence, it needs to be setup in a passive way where it collected its own data themselves by using the proxy that installed on them and send to the Zabbix server. So, for the architecture of Zabbix they only have few components which is the Zabbix server, Zabbix proxy, UI Interface and Zabbix agents on the monitored server side.

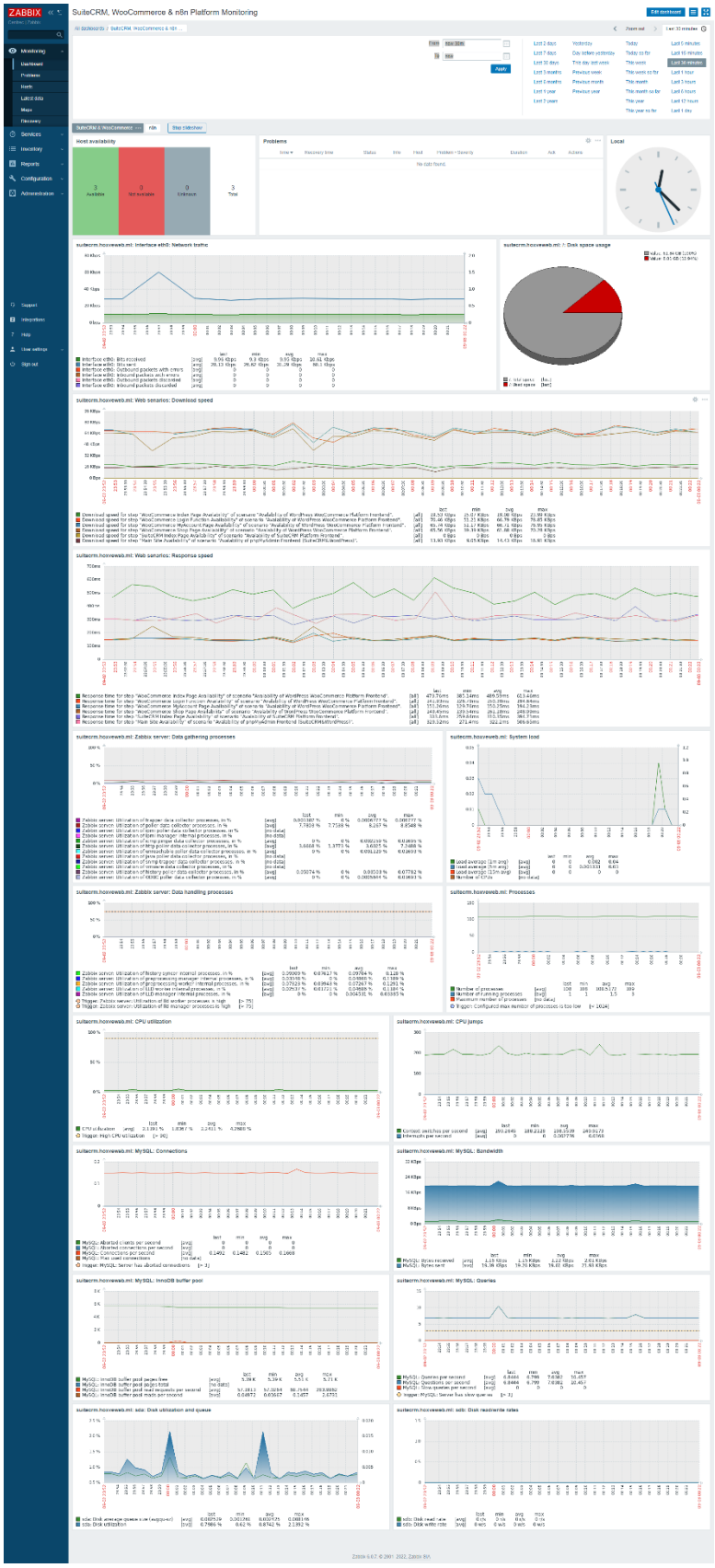

Figure 6.1.1 shows the Zabbix Dashboard of Monitoring Performance Metrix of Server for WordPress & SuiteCRM Platform

Figure 6.1.2 shows the Zabbix Dashboard of Monitoring Performance Metrix of Server for n8n Platform

6.2 Project Challenges

The implementation of this project turned out to be much more difficult than anticipated. There were a host of special challenges related to the unique nature of the project, and there were also some issues related to the complexity of the design and the novelty of the techniques being used. The implementation of this project has been complicated by a variety of factors.

Most of the people will be wondering why nowadays the usage of platform is more and more concerned by the people in the world. Nowadays, most of the Internet content and platform that found in the market have been comes to a fairy mature state where most of the industries have their own platform that are famous to the people and used by them. The new developed platform on same features is becoming more and more in the market which result the contribution of share market of most of the platform have been fully occupied. Thus, the development of new platform to targeting the market have becoming more and more difficult. So, instead of wasting our time to developing the integration platform using coding, why not we just using platform that have provides the function of integrating the platform and can also automated our workflow task, instead of wasting the funding and times to develop a new one and this also consume much of effort for us to targeting the market.

However, most of the platform are aimed to get subscription fees to provide the services to public. There is rarely platform that are providing open sources to the people to use their services. In this project, we found that the main issue or challenges that will be experiencing is about the needs of subscription fees for workflow automation tools in order to use some services provided by some platform to create a platform integration. In the project that researching, there are many platforms that providing the automation workflow services such as n8n, Zapier, MS Power Automate, LambdaTest, QMetry, Automate.io etc., but the only platform that we found which freely providing the services is n8n.

Other than that, in the process of learning to develop the workflow automation task, we need to look for the existing workflow template that exist on the websites of each platform, but some of the workflow template that are connecting the different API of different apps are requiring subscription fees from each platform that we want to integrate in order to use its API service. Some of the platform that we integrate will provides free trail for using their API service which causes the wasting of time for us to register a new account for testing the

integration or we need to take more time to research for similar platform that able to integrate to test for the existing workflow.

Moreover, the too rely on API of workflow platform to integrating data from one platform to another platform causes the limitation where not able to connecting or synchronizing two or more platform if they do not have API service provided or the API services provided the platform that need to integrate are weak or have error. Furthermore, the rate of transfer from one platform to another platform by automate workflow platform is unknown which results to the problem of users are not able to know whether the data will be stuck on middle process. The alerting function of fail automation flows are not details which will causes the users not able to know what's the problems to solves when the workflow process fails. When dealing of large set of data transferring during the implementation period, if one process of tasks is stuck all the process at back will be also stuck and this may lead to the loss of data during the workflow transfers.

In order to solve the error above, this project also implementing a server monitoring platform which is Zabbix to help in monitoring the inbound and outbound network of server to ensure the fluency of data transfer by monitoring the transfer speed/rate of the data. However, during the installation and implementation of Zabbix server, it required quite long time in order to successfully implemented. This is because the implementation process & installation process of Zabbix server are quite complicated. Others, in this project we also found that the lack of documentation provided by those workflow automation platform causes the longer time needed to explore or learning the usage of those platform tools.

Next, in the development of synchronizing the WooCommerce platform customer data with the SuiteCRM customer data, the process of synchronizing data is quite slow. The action scheduler that triggers the synchronizing processes are stuck due to the platform are installing on desktop and connect to the network for other to browsing by using the reverse proxy method, so the speed of process are fully depends on the network and desktop speed. The slow network and process of desktop which causes the process trigger to slow and down are required some time to transfer or even manual click of trigger action to synchronizing. However, this limitation will be solved when we are implementing the platform online, thus it still not a big issue on this moment.

6.3 Novel aspects of this project

The novelty aspect of this project is this project are using platform support to develop. It promotes the no-code or low-code on helping the user developing the synchronizing process of their task. It also helps the user to automate their daily task by setting up the workflow process only once and with low code. Thus, this way of development process idea can let anyone even those people that are not familiar with the IT Coding can be developing their own automating workflow process using those platforms. As mentioned above, anyone can develop their workflow process automation by using the platform when they have the idea, and this will allow the improvement on the speed and way of developing the business process.

The second novelty in this project is by using the automate workflow tools provided by different platform, user will be able to find the automate workflow idea from their platform and use it directly in their business. This might help them in saving their time and cost in developing a new feature on their current system. So, workflow automation tools are really awesome that it brings much of convenient for the people to build their websites feature on automating their daily repeated task.

Moreover, the third specialties in this project are the usage of Zabbix platform (Network resources platform) in monitoring the server or the web devices in the business so that the user can be alert on any problems that happening on their server immediately and automatically detected by the Zabbix server. User can develop their own special dashboard to monitoring on their infrastructures of business even though they do not have any IT knowledge as those platforms provides a good documentation and they are mainly codeless to build. Other than that, by using this platform, user able to be monitoring the inbound and outbound package of the network infrastructure especially their server for the web service such as VPS and monitoring on the speed of transfer. This will help them better in knowing the status about their infrastructure easily.

CHAPTER 7: CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The goal of this project is to provide effective automation using system flow tools for the user by utilizing the n8n programming environment. n8n is a set of open-source automation tools that may be used in everyday situations. The goal of this project is to provide user with the opportunity to experience the benefits of automation without any coding knowledge and they will be able to create their own workflow at any time. Integration of platform are a crucial task in previously, but with the aid of the workflow automation tools, it makes the process of integrating platform become easy and anyone can handle it. This can save the costing and timing for the businesspeople to create a platform integration features for their systems.

However, the workflow automation tools that integrating the system process of different platform together are using their API to transfer the data using JSON format from one platform to another. The high reliance of API node which causes a big limitation for the workflow automation tools as if the platform that want to integrated have no API service or having weak API services, it may result to the failure of the workflow automation process to be running. The usage of API service in integrating of platform we called it as Digital Process Automation (DPA), to solve the limitation we have another type of automation called Robotic Process Automation (RPA), which these types for workflow automation method is for us to integrating the platform or tools together using a task scheduler provided by the workflow tools to running the action setup. In an example, RPA was running based on the layout where like a human when you are performing some tasks on your desktop, you used your eyes see and click on the correct button or part to perform some tasks, it same as the concept for RPA. But, for human any updated on the application will be able to detect by human itself, but RPA cannot.

In conclusion, workflow automation tools are a great tools which able to save the time and money of the businesspeople or even an individual to automatically perform the task based on the workflow created when an action is trigger. The usage of those tools such as platform tools in building some features or websites like WooCommerce should be concerned on the world today as it brings much of benefits for the people in the world and “codeless” is the way out in the future.

7.2 Recommendation

Based on the researched and development made on the platform integration tools, we found that strong API setup is very important for any platform in order to allow the integration to be happen in DPA process. When developing a platform, the developer of that particular website must make sure that the API port of their platform is configure properly so that it can be function when the user wants to use it. Secondly, the security of the API port when transferring data should be configured well so that there is no leakage of data during the process.

Other than that, we found that in order to perform the workflow integration as well as the platform integration, combination of RPA and DPA should be introduced to covered each of their limitation. RPA is well use when it is dealing with those platforms that do not have well API port setup while DPA is good in transferring data from one site to another site when they have a good API port. DPA was also good in use when the platform to integrated do not have a good interface but have a good API port.

Moreover, the scheduling action of data transfer using platform integration tools should be well managed as when it deals with commercialized, it will need to handle tons of data in short time, so if the scheduling task is not well managed in the platform integration tool, it will become a big issue in the projects. The error log on unsuccessfully executed workflow should be log well and proceed with the next incoming workflow so that it does not any redundancy task which cause the system down happening.

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FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 1**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Done presentation and submission of FYP1 on previous semester.
- Meet with FYP supervisor for further instruction as well as discussion on direction on FYP2 in this semester.

2. WORK TO BE DONE

- Prepare proposal document and presentation slide to request for VPS server for Zabbix monitoring
- Present presentation to stakeholder to request for VPS server
- Implement and install Zabbix server in the VPS get from stakeholder
- Create some new template of workflow and manual for creating workflow using different tools.

3. PROBLEMS ENCOUNTERED

- -

4. SELF EVALUATION OF THE PROGRESS

- -

Supervisor's signature

04 SEPT 2022

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 3**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Done preparing proposal document and presentation slide to request for VPS server for Zabbix monitoring
- Done presentation to stakeholder to request for VPS server
- Done implementing and installing Zabbix server in the VPS get from stakeholder
- Done creating some new template of workflow and manual for creating workflow using different tools.

2. WORK TO BE DONE

- Identify other usage of Zabbix server

3. PROBLEMS ENCOUNTERED

- While implementing the Zabbix server, it required quite long of time to implementing the configuration but finally managed to do.
- Long time needed in development of workflow integration as they are having much complicated process which include register account of the platform by platform and configure it so that it can be used to transfer data from one to another.

4. SELF EVALUATION OF THE PROGRESS

- Currently everything is in progress and will proceed to finish the task on time.

Supervisor's signature

04 SEPT 2022

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 4**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Done fixing Chapter 1 and Chapter 2 as well as FYP template preparation

2. WORK TO BE DONE

- Progress on the creation of workflow template which allow the multiple platform integration
- Identify other usage of Zabbix server
- Revised on lab manual for the Zabbix and n8n installation
- Progress on the setting up the server and creation of workflow template which allow the multiple platform integration

3. PROBLEMS ENCOUNTERED

- Some of the API of platform are not fairy mature which causes us need to using a longer time to configure
- All platform needed to build from scratch which result to the long time needed in building and implementing platform.

4. SELF EVALUATION OF THE PROGRESS

- Currently everything is in progress and will proceed to finish the task on time.

Supervisor's signature

04 SEPT 2022

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 7**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Done creating new workflow template which allowing the multiple platform integration (WooCommerce → SuiteCRM Synchronization using Platform Intagration Tools – n8n \)
- Done revising lab manual of installation of n8n platform
- Installation of platform such as SuiteCRM, WooCommerce and n8n

2. WORK TO BE DONE

- Identify other usage of Zabbix server
- Creating the lab manual of Zabbix installation
- Creating the lab manual for Zabbix usage
- Developing the Platform integration using workflow automation tools

3. PROBLEMS ENCOUNTERED

- No problem on this moment

4. SELF EVALUATION OF THE PROGRESS

- Currently everything is in progress and will proceed to finish the task on time.

Supervisor's signature

04 SEPT 2022

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 8**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Done identify some Zabbix server features on monitoring another server
- Done creating the Zabbix server setup lab manual including the installing manual
- Done setup the WooCommerce platform and SuiteCRM Platform for data synchronizing on n8n platform
- Done setup the WooCommerce and SuiteCRM platform on Azure cloud

2. WORK TO BE DONE

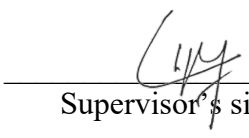
- Developing the Platform integration using workflow automation tools
- Continue finishing Chapter 3, 4, 5, 6, 7 of FYP project documentation.

3. PROBLEMS ENCOUNTERED

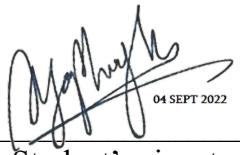
- The scheduler action of Woo Commerce platform is quite slow due to the platform are setting on desktop which might result the synchronizing process to be slower.
- SuiteCRM platforms are very concerned on the proxy used to redirect to its running port. Only “Apache2” proxy is allowed to be using so that the SuiteCRM can run.

4. SELF EVALUATION OF THE PROGRESS

- Currently everything is in progress and will proceed to finish the task on time.



Supervisor’s signature



Student’s signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 9**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Complete developing the platform integration using n8n by synchronizing WooCommerce customer data with the SuiteCRM platform data.
- Complete Chapter 3 & 4 FYP documentation.

2. WORK TO BE DONE

- Finalizing the FYP 2 project by following Supervisor instruction
- Preparing Presentation slide

3. PROBLEMS ENCOUNTERED

- The process of synchronizing data of both WooCommerce & SuiteCRM platform are slow and may needed manually run the scheduler process due to resources limitation. However, if in real world cloud network, this problem will not be happening.

4. SELF EVALUATION OF THE PROGRESS

- Currently everything is in progress and will proceed to finish the task on time.

Supervisor's signature

04 SEPT 2022

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 10**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Finalizing the FYP 2 project by following Supervisor instruction
- Complete Chapter 5, 6 & 7
- Present Work to Sponsorship Person

2. WORK TO BE DONE

- Preparing Presentation slide

3. PROBLEMS ENCOUNTERED

- -

4. SELF EVALUATION OF THE PROGRESS

- Currently everything is in progress and will proceed to finish the task on time.

Supervisor's signature

04 SEPT 2022

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project I)

Trimester, Year: Trimester 3, Year 3	**Study week no.: 13**
Student Name & ID: Yap Hao Yih (20ACB00072)	
Supervisor: Dr. Choo Peng Yin	
Project Title: System Integration with Multiple System Flow Tools	

1. WORK DONE

- Complete whole FYP2 project
- Completed presentation slide preparation
- Submit FYP2 project

2. WORK TO BE DONE

- Prepare for presentation

3. PROBLEMS ENCOUNTERED

- -

4. SELF EVALUATION OF THE PROGRESS

- Everything is finishing in progress and successfully created a good FYP2 report.

Supervisor's signature

04 SEPT 2022

Student's signature

POSTER

UNIVERSITI TUNKU ABDUL RAHMAN (UTAR)
Faculty of Information & Communication Technology (FICT)

SYSTEM INTEGRATION WITH MULTIPLE SYSTEM FLOW TOOLS

Workflow automation involved the automation of numerous platform or system integration together by using workflow automation tools to perform the platform integration process that involving tasks that will be done in daily life. Workflow automation tool is a tool that involved the process of developing, simplifying, executing, and automating a set of processes that are routed automatically between humans, technology, and data according to pre-defined business rules.

AUTHORS

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INTRODUCTION

Workflow automation able to helps in integrating multiple platform together as a tasks by using existing API port in each apps or platform and have becomes one of the trends today. It provide user with the opportunity to experience the benefits of automation without any coding knowledge and they will be able to create their own workflow at any time using the n8n platform. The usage of API service in integrating of platform we called it as Digital Process Automation (DPA) while Robotic Process Automation (RPA) was running based on the layout where like a human when you are performing some tasks on your desktop, you used your eyes see and click on the correct button or part to perform some tasks, it same as the concept for RPA.

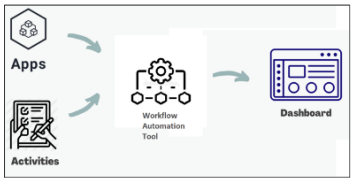
OBJECTIVE

The major objectives of this project are:

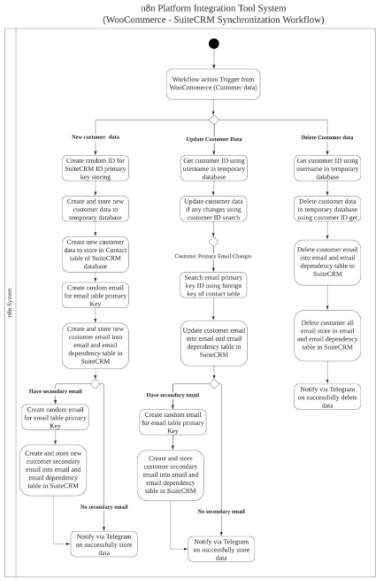
- To evaluate existing automation technologies
- To learn and understanding way of deploying the workflow automation technologies
- To learn of using the system flow template that exist in each system flow tool platform
- To learn on how to construct new system automation flow based the concept gained
- To creating a useful and complex flow with multi-system flow tool

SYSTEM DESIGN & CONCEPT

Workflow automation tools is a software that acts as an platform that use to integrating apps together and using the concept of activities flows design to integrating all apps together to performing duplicating and constant tasks for solving our daily activities.

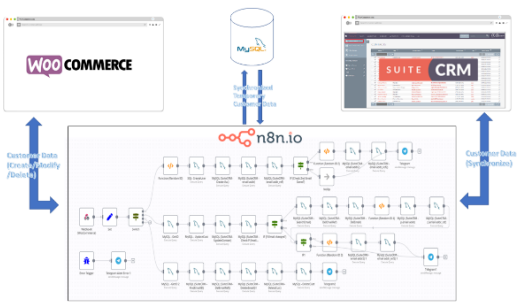


Synchronization process of WooCommerce to SUiteCRM:



RESULTS

This workflow automation is mainly to integrating/synchronizing the customer data of WooCommerce platform to the SuiteCRM platform. This will allow the company to easily managing all its customer data via their CRM easily and can ensuring the good management on their customer services.



Workflow Automation User Manual/ User Guide

N8N Workflow Tools Installation Guide

n8n.io is a powerful "Open source" workflow automation tools that used to deploy the smart workflow automation by using the services provided in order to power your products, services & business processes in an efficient manner to improve your work speed. It basically will automatically help you to generate business-critical documents, assign tasks and digitally sign, send and store data and file across multiple systems using the API services.

To use the services of n8n, it has 3 ways to performed:

1. n8n.cloud
2. n8n Desktop App
3. Self-hosting npm (node package manager) that power in Node.js (start service using CLI command in cmd)
4. Docker (start the n8n service inside Docker container using Docker)

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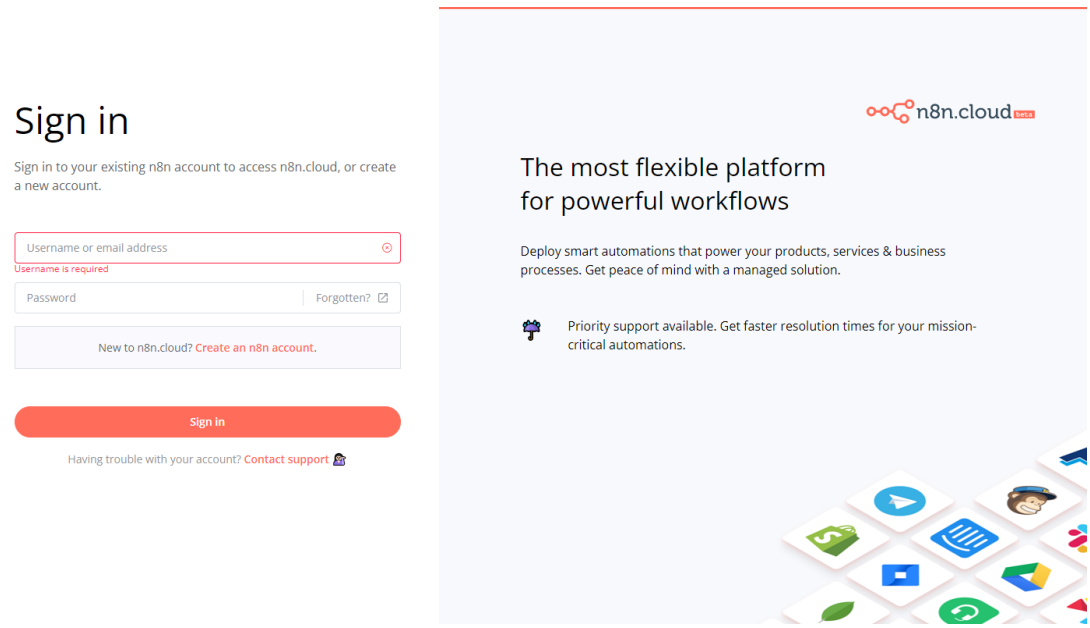
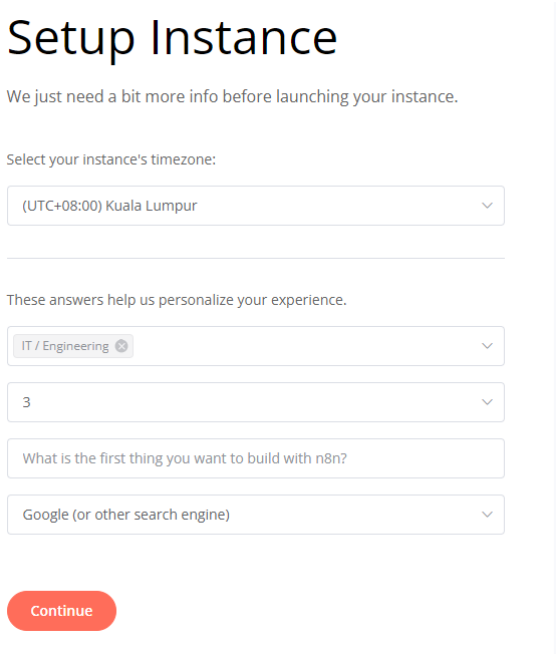
Way 1: n8n. Cloud

**However, for cloud version you need to pay for n8n in order to use the services online.*

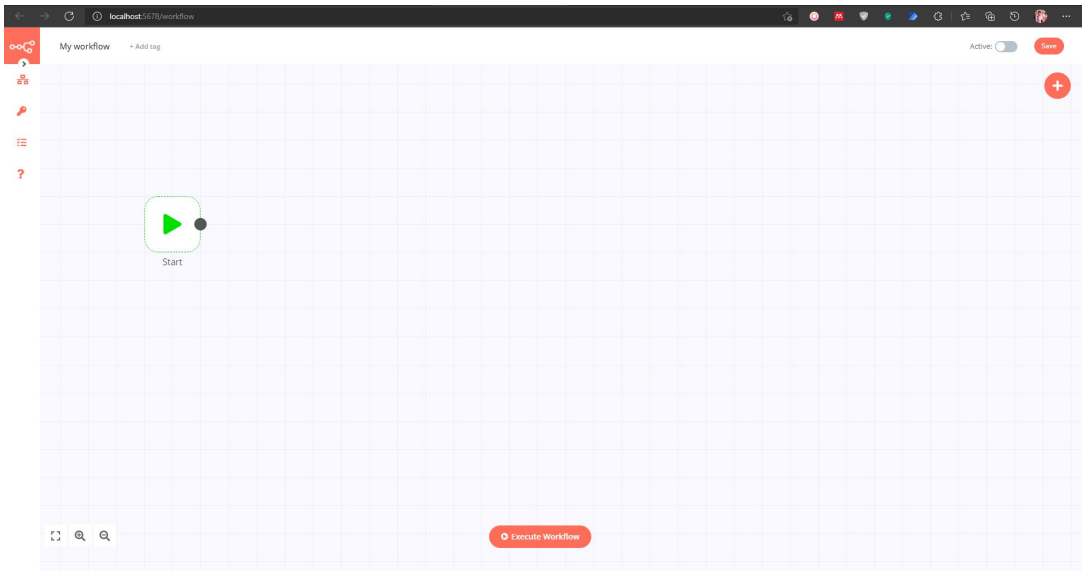


Here is the step of install or used the n8n in cloud:

1. Go to https://app.n8n.cloud/login by using browser.
2. Create an n8n account and sign in into n8n by using your account registered.
3. Set up for your account.



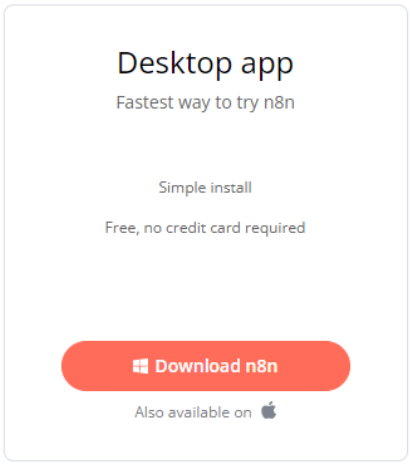
4. Here then you may start your workflow automation in the platform.

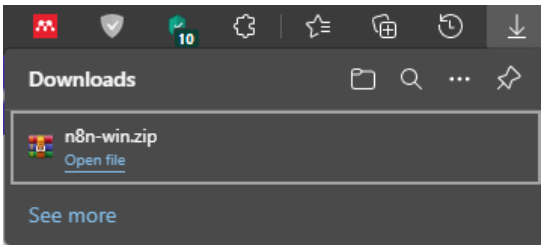


Way 2: n8n Desktop App

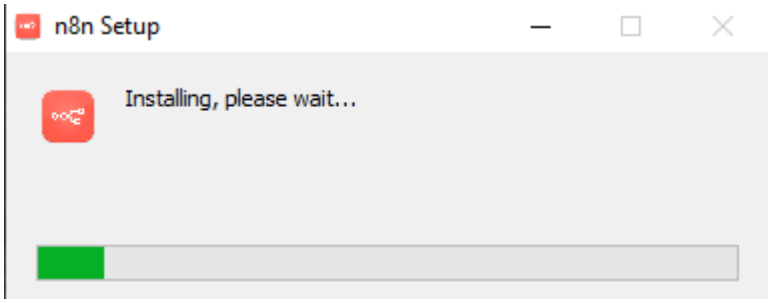
Since 04 Nov 2021, n8n have officially introduced their desktop version of n8n service and it can be downloaded from the official website of n8n. Here's the step of installation for the n8n service desktop version.

1. First download the n8n installer from the link given (https://downloads.n8n.io/file/n8n-downloads/n8n-win.zip).



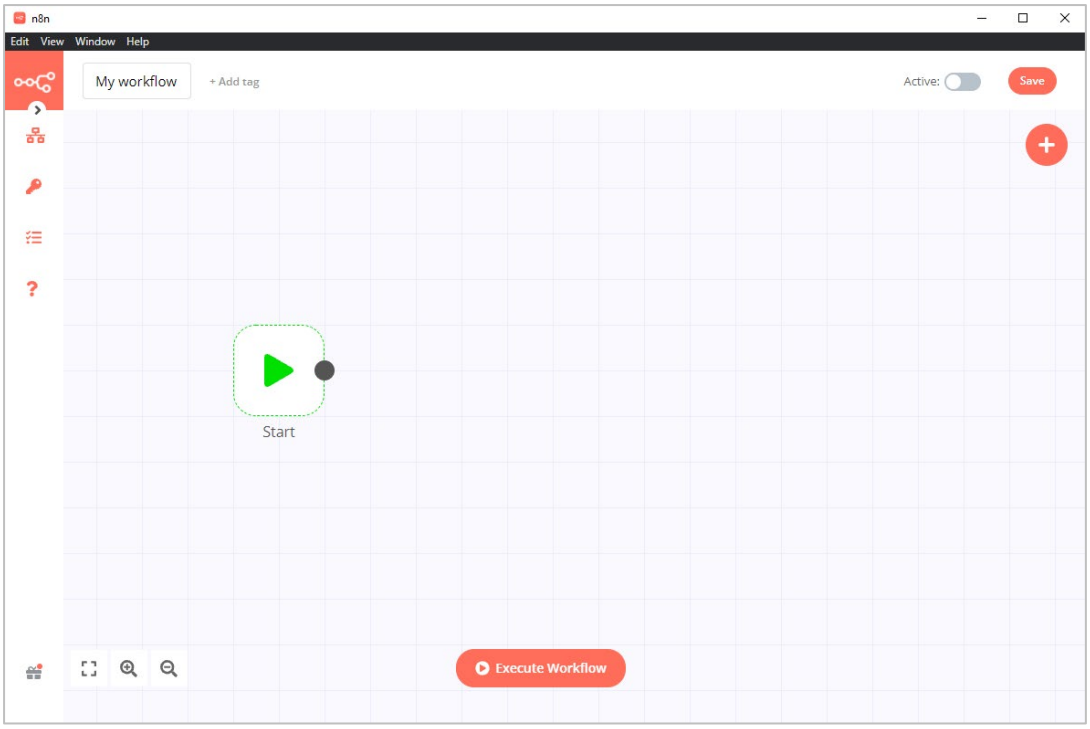


2. Then, you will get a zip file that named “n8n-win.zip” and you required to unzip the file and the installer will be shown.
3. Double click the installer to install n8n Desktop into your PC.



4. Wait until installation finish and you will see the n8n Desktop is downloaded into your desktop.

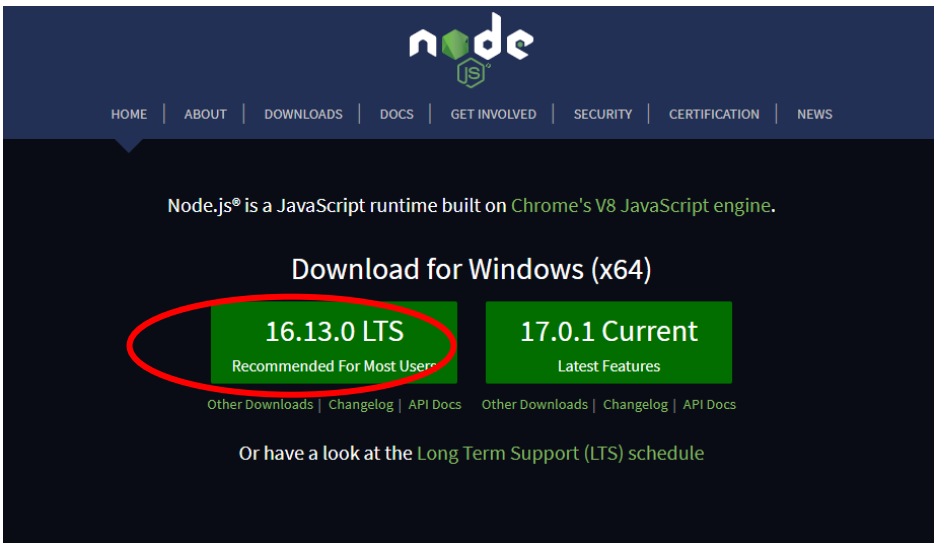
5. Now, you can double click the icon to start your workflow automation using the service provided by n8n.



Way 3: Self-hosting npm

The name npm (Node Package Manager) stems from when npm first was created as a package manager for Node. js. All npm packages are defined in files called package.

1. In order to use the npm services to host the n8n services on your machine, you need to download Node.js from the Official Websites. (https://nodejs.org/en/). Download the LTS version to ensure the stability of the program.



If you do not want to install the full version of n8n services, you can try n8n without installing it by using npx. The step performs this service is:

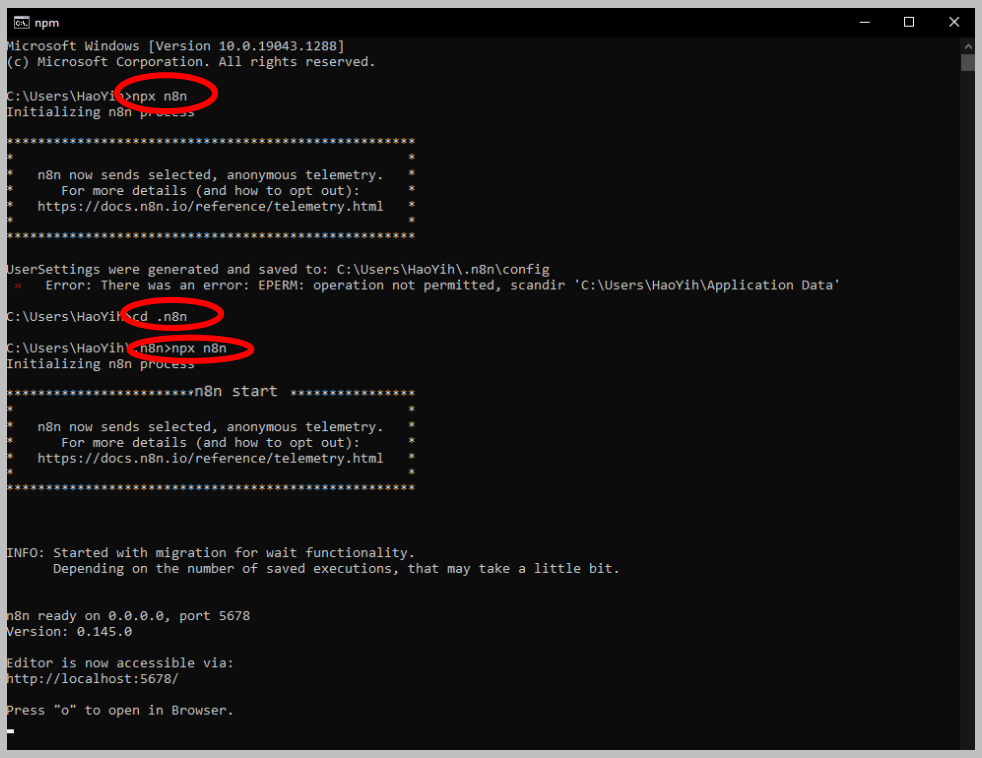
1. First, run the command below to download everything needed to start n8n.

```
npx n8n
```

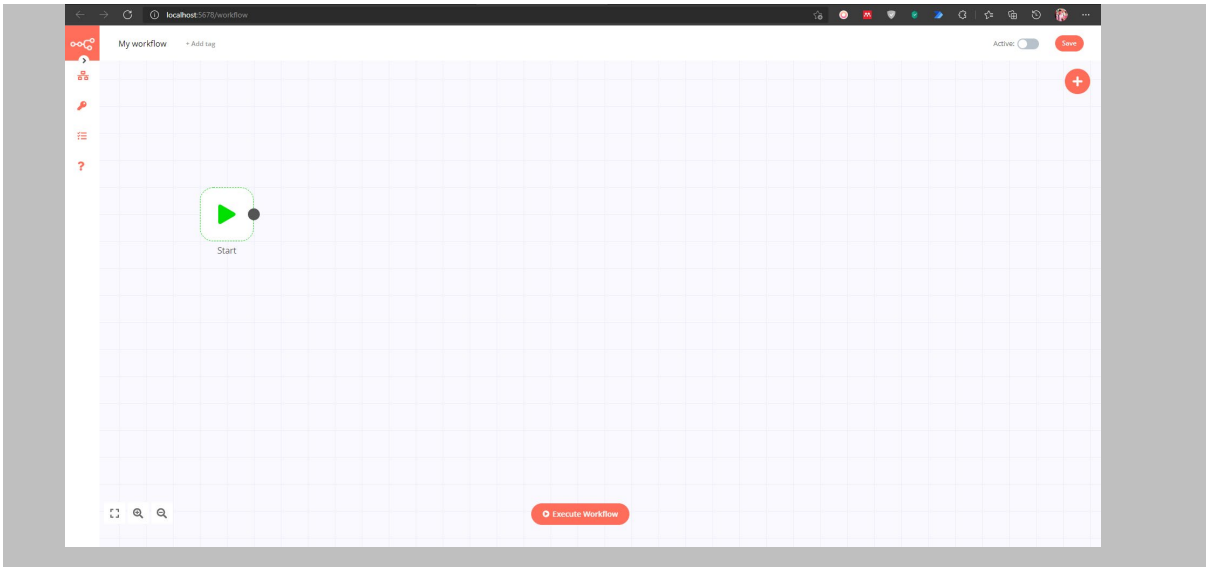
2. Then, to start your n8n service, you need to run code below in your command prompt terminal. *(Note: Must move to the .n8n directories first to start service)*

```
cd .n8n
n8n start
```

3. Please ensure that the command prompt terminal is not closed until you shut the services.



4. Now, you can access n8n and start building the workflow by opening http://localhost:5678 in your browser.
5. To close/end the connection, you can click on Ctrl+C to end the service.



2. To fully install n8n application as well as its library that globally execute by using npm, following command are needed to execute in your command prompt terminal:

npm install n8n -g

3. After the installation, you may start the n8n service by running the following command in the command prompt terminal every time you want to start the service:

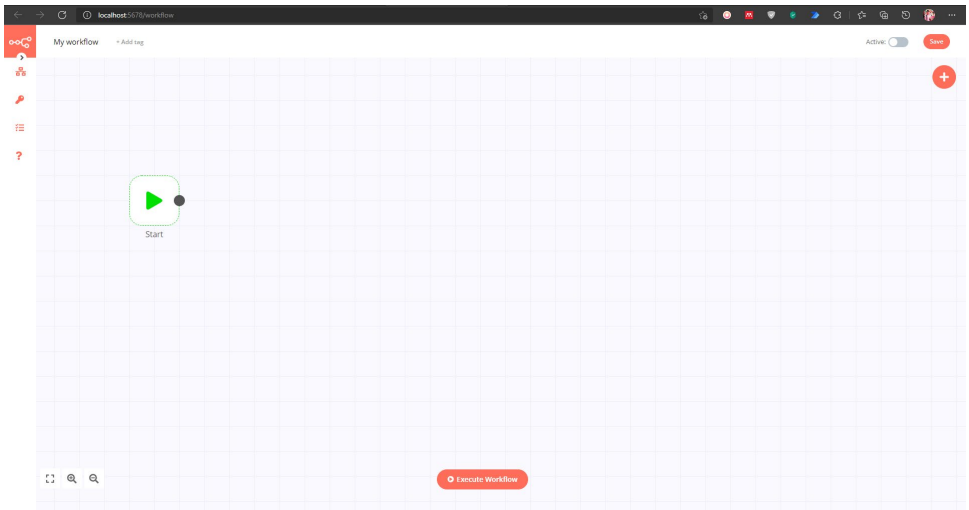
Note:
For window users, you must change your directory to the ~/.n8n directories before running n8n start.

```
cd .n8n
```

```
npn
# or
n8n start
```

```
C:\Users\HaoYi\.n8n>n8n start
Initializing n8n process

*****************************************************
*                                                   *
*   n8n now sends selected, anonymous telemetry.    *
*      For more details (and how to opt out):       *
*   https://docs.n8n.io/reference/telemetry.html    *
*                                                   *
*****************************************************

n8n ready on 0.0.0.0, port 5678
Version: 0.145.0

Editor is now accessible via:
http://localhost:5678/

Press "o" to open in Browser.
```

4. Now, you can access n8n and start building the workflow by opening http://localhost:5678 in your browser.



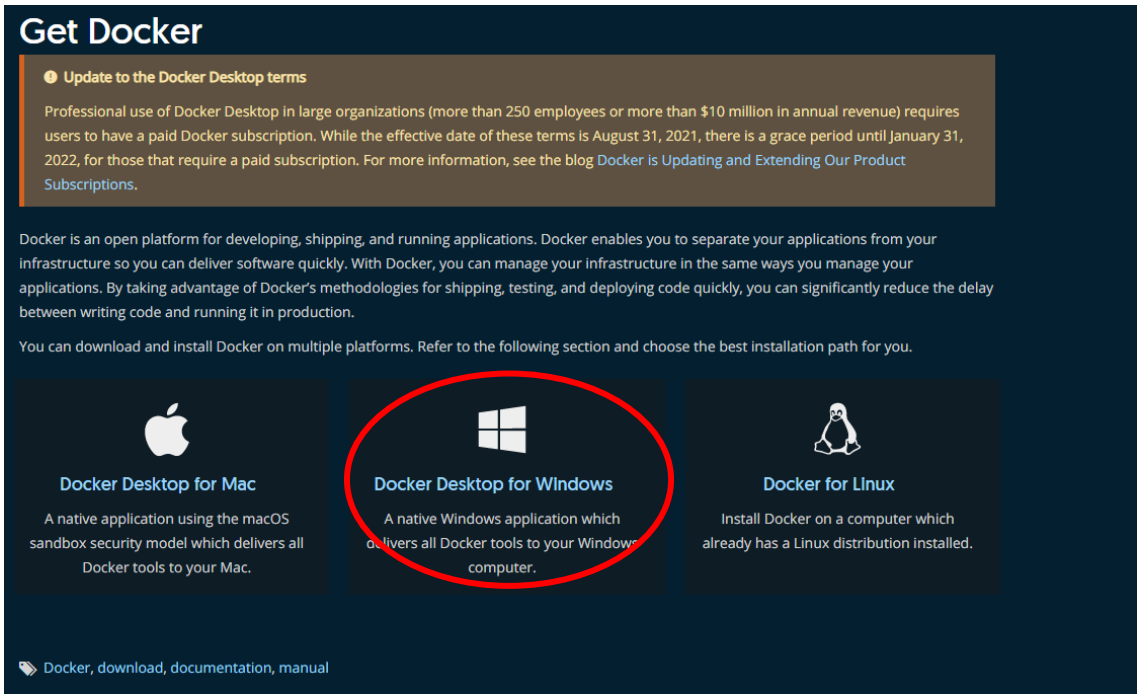
Note: To be able to use webhooks for trigger nodes of external services like GitHub, n8n has to be reachable from the web by connecting using a special tunnel service which redirects requests from the n8n servers to your local n8n instance (Warning: It use only for development and testing and should not use in production!). To connect using tunnel service, run the command below:

```
n8n start --tunnel
```

5. To close/end the connection, you can click on Ctrl+C to end the service.

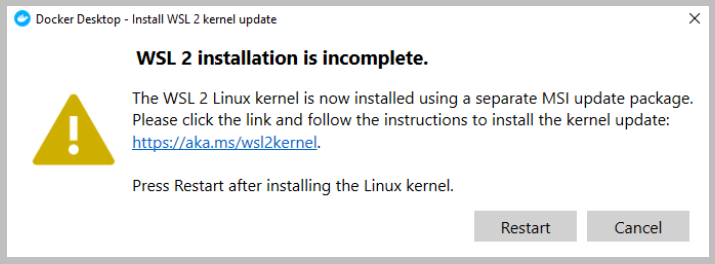
Way 4: Docker

1. Before proceeding the step of using n8n service, you must ensure that you have installed Docker Desktop in your window. (https://docs.docker.com/get-docker/)



2. After installation, follow the step to restart your machine.

Note:



If you see the error of "WSL2 installation is incomplete" when you try to start you Docker Desktop after restart, then you may follow the step below:

i. Go to http://aka.ms/wsl2kernel , you will see the title of "Step 4 - Download the Linux kernel update package". Download the lastest package of WSL2 Linux Kernel based on your machine type.

ii. After the installation, run the following command in Window Power Shell to set the WSL2 as default version.

```
wsl --set-default-version 2
```

```
PS C:\Users\HaoYih> wsl --set-default-version 2
For information on key differences with WSL 2 please visit https://aka.ms/wsl2
The operation completed successfully.
```

iii. After that, restart your window.

3. In order to use the services provided by n8n in Docker Container, you will need to install all the library of n8n by using the command below:

```
npm install n8n -g
```

4. After finishing the installation of n8n libraries and services, execute the command below to setup the n8n service . Please ensure that where is the directories of your .n8n file located in your machine as it needed to mention in your command.

Note:

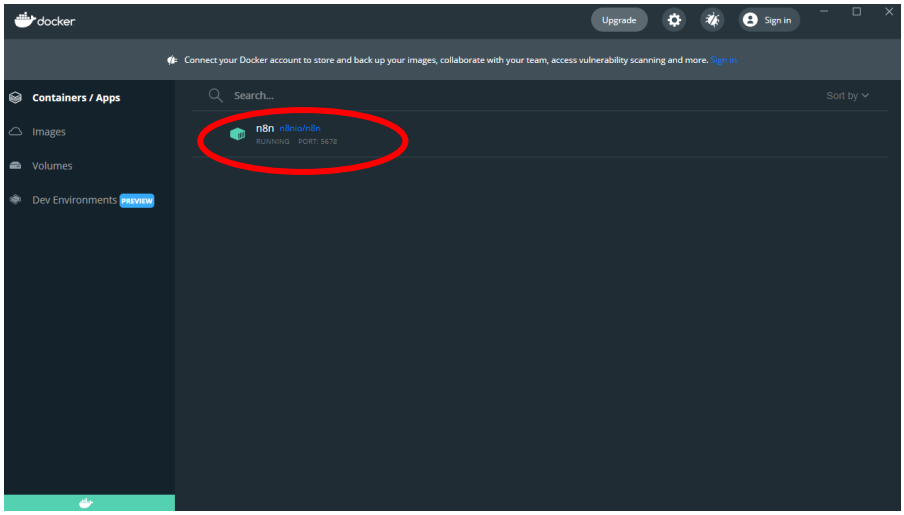
For window users, you must change your directory to the ~/.docker directories before running n8n start.

```
cd .docker
```

```
docker run -it --rm --name n8n -p 5678:5678 -v C:\Users\YourPCName\.n8n n8nio/n8n
```

```
C:\Users\HaoYih>cd .docker

C:\Users\HaoYih\.docker>docker run -it --rm --name n8n -p 5678:5678 -v C:\Users\HaoYih\.n8n n8nio/n8n
Initializing n8n process

*********************************************************
*                                                       *
*   n8n now sends selected, anonymous telemetry.        *
*      For more details (and how to opt out):           *
*   https://docs.n8n.io/reference/telemetry.html        *
*                                                       *
*********************************************************

UserSettings were generated and saved to: /home/node/.n8n/config


INFO: Started with migration for wait functionality.
      Depending on the number of saved executions, that may take a little bit.


Start migration UpdateWorkflowCredentials1630330987096
UpdateWorkflowCredentials1630330987096: 2.224ms
n8n ready on 0.0.0.0, port 5678
Version: 0.148.0

Editor is now accessible via:
http://localhost:5678/

Press "o" to open in Browser.
```

5. After the service started, go back to your Docker Desktop and you will see the n8n service is running and the terminal will be hosted at http://localhost:5678/workflow .But, this is not the end and you need proceed to set up the service in your Docker Desktop to make you easy to start-up the service next time.

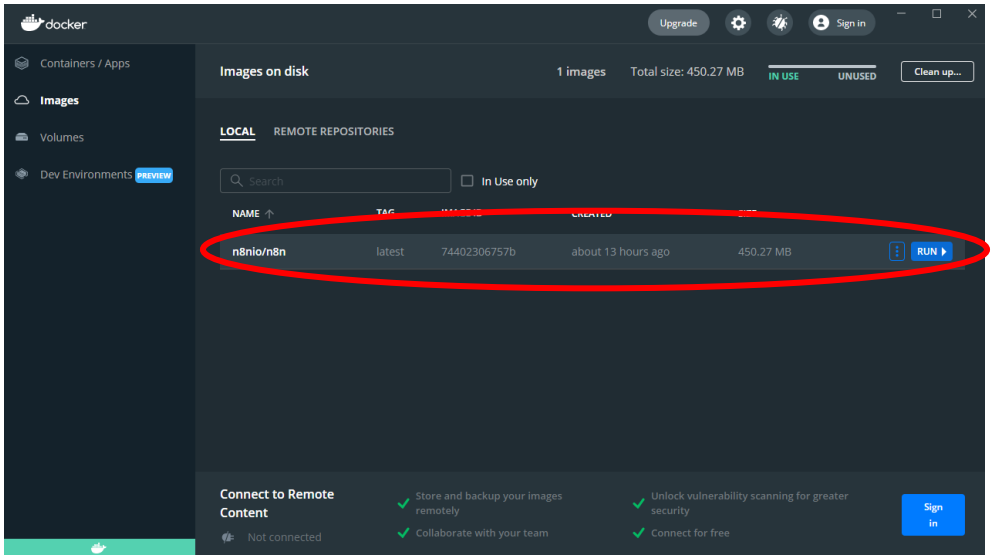


Note: To be able to use webhooks for trigger nodes of external services like GitHub, n8n has to be reachable from the web by connecting using a special tunnel service which redirects requests from the n8n servers to your local n8n instance (Warning: It use only for development and testing and should not use in production!). To connect using tunnel service, run the command below:

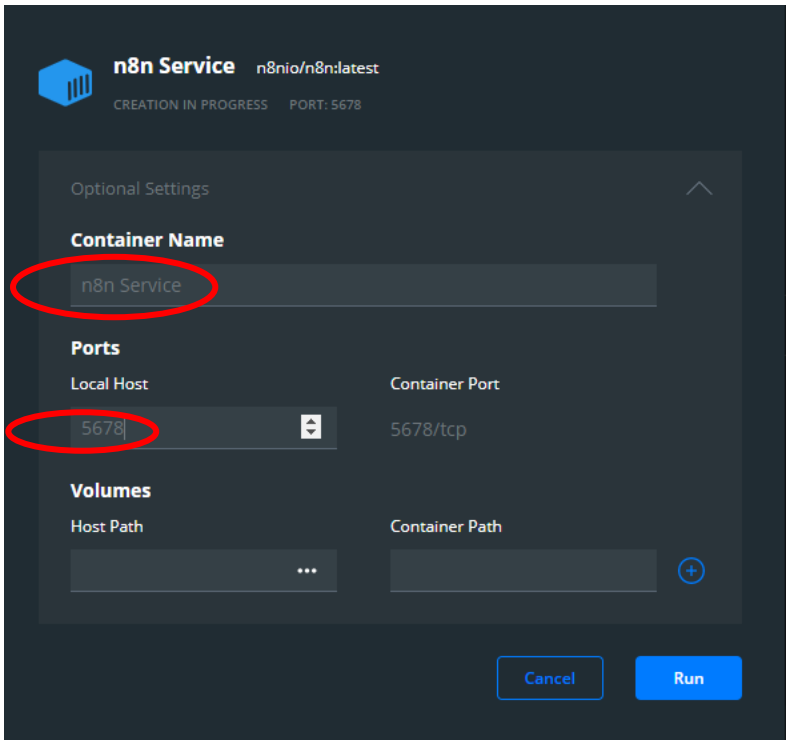
docker run -it --rm --name n8n -p 5678:5678 -v C:\Users\HaoYih\.n8n n8nio/n8n start --tunnel

6. Now, close your command Prompt terminal, you will find that your service is disappear in the Container/App Session in Docker Desktop. Then, go to the Images section in

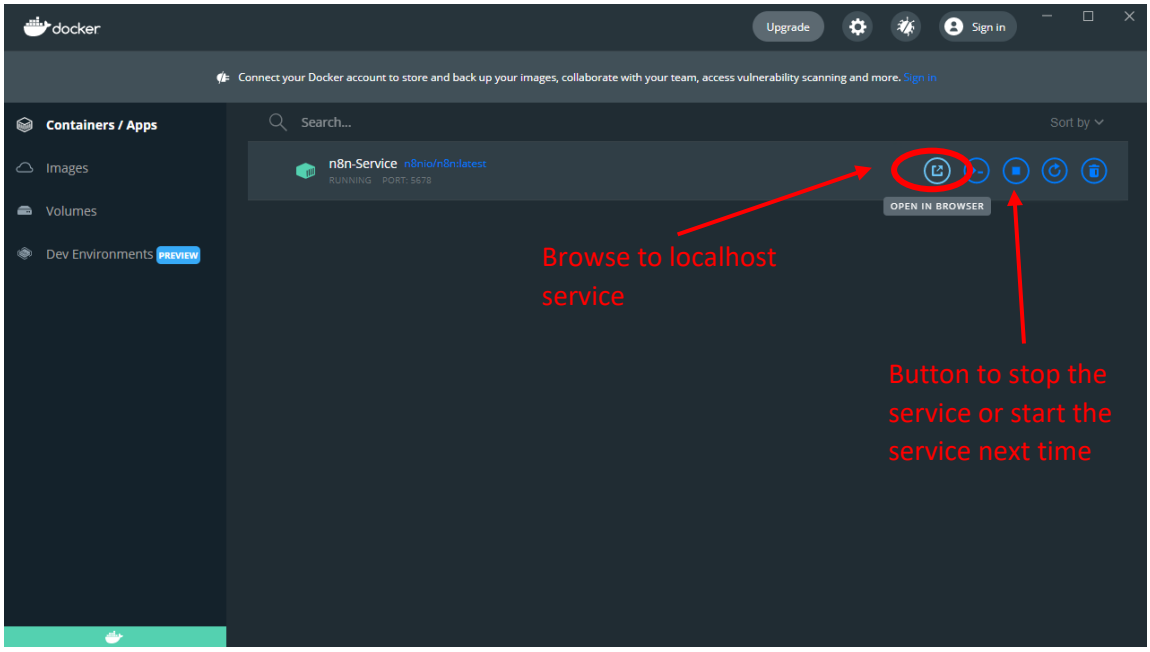
Docker Desktop, you will see a image that called “n8nio/n8n”. Click on the “Run” button to start the service.

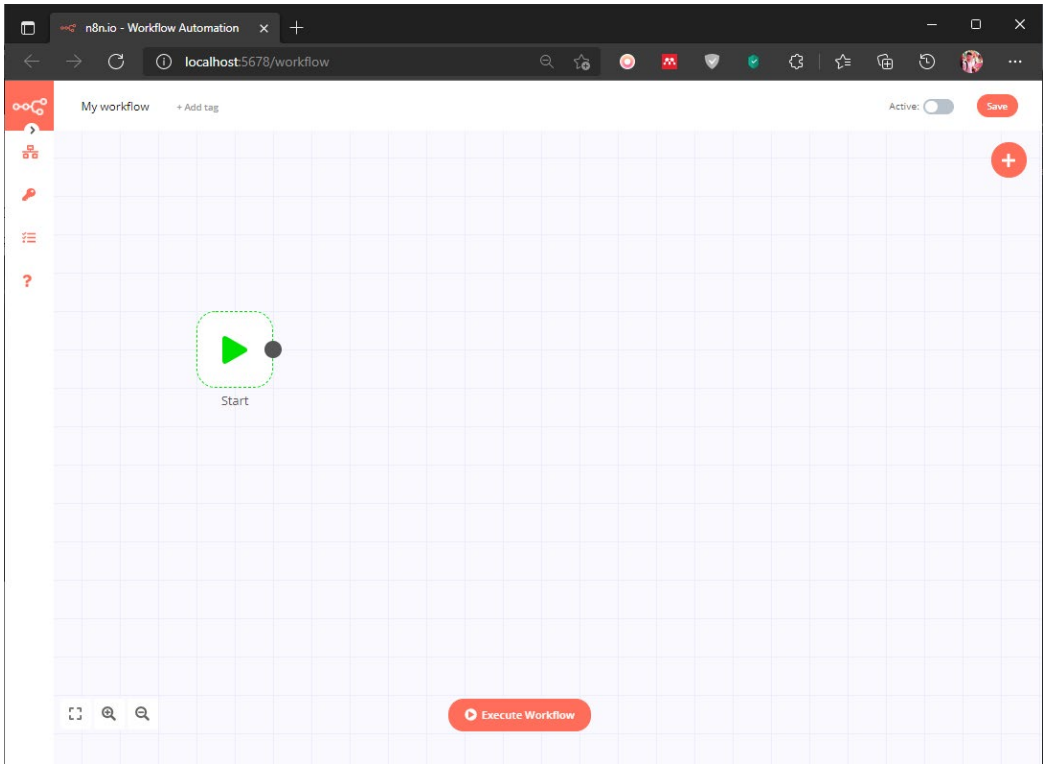


7. Then, a New Container Box will be appear. Click on the optional setting menu and named your container with “n8n-Service” and insert “5678” into the local host port field (*You are possible to change any other localhost port if the port is used by other program). Then, click on “Run” to start the service.



8. Now, you will see that the n8n service is started and you can click on the “Open in browser” button to open your terminal in the browser and now you are able to start your workflow design in the UI.





Other's configuration

Update n8n

In order to update your n8n to the latest version, you can run the CLI command below in your command prompt to update your self-hosted n8n service.

```
npm update -g n8n
```

```
docker pull n8nio/n8n
```
←**For update/install n8n service in Docker

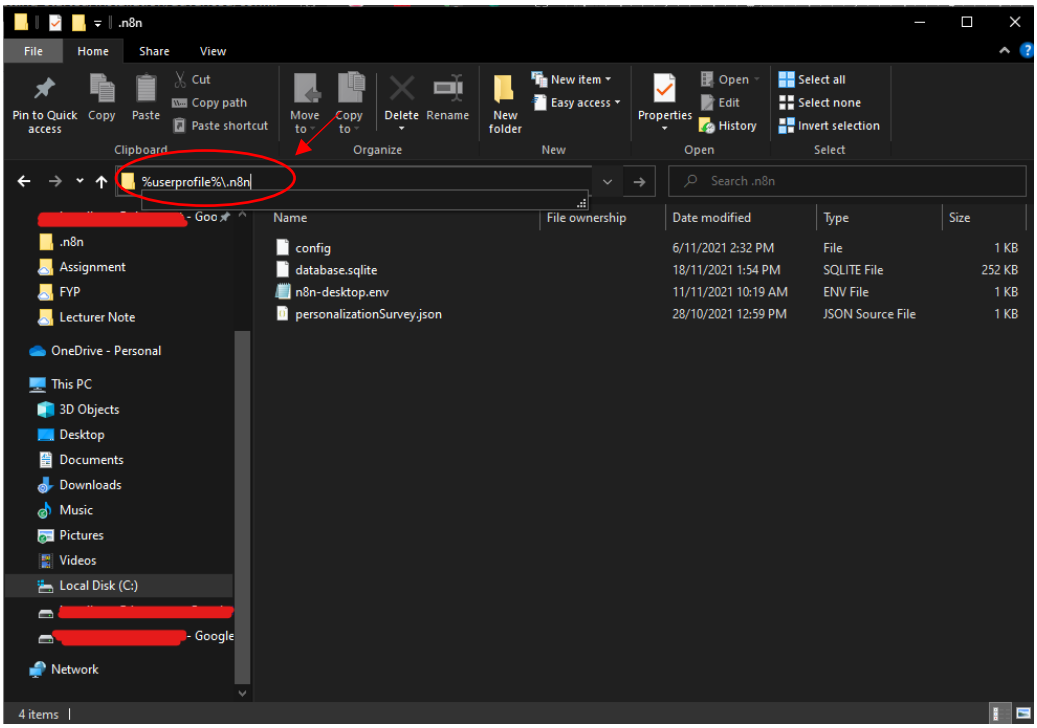
To update or install n8n of specific version, you can use the CLI command below by adding @ syntax and follow by the version that prefer to install/update to that particular version.

npm install n8n@version

docker pull n8nio/n8n:version ←**For update/install n8n service in Docker

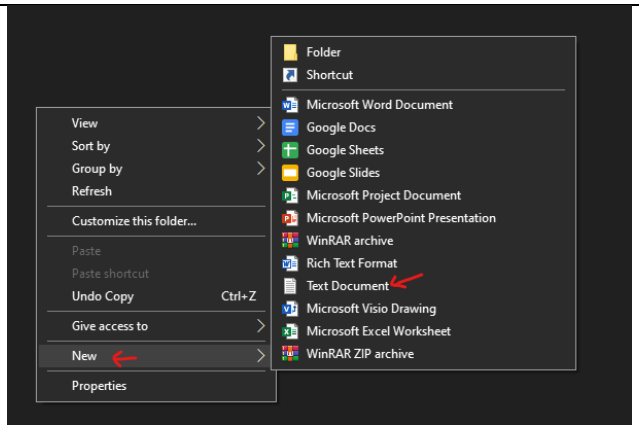
Configuration File

If you want to set up and authentication for your n8n hosted service or check the authentication username and password (if using desktop version), you need to go to you .n8n directories at C:\Users\PC_NAME\.n8n (or past this link in your File Explorer: %userprofile%\.n8n)



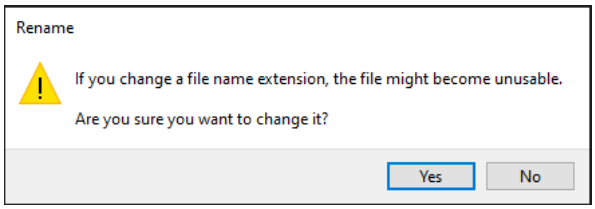
Then, you need to look for the file named, "n8n-desktop.env" to do configuration or to know your authentication password as it will be needed when you want to set up your API authentication service to successful when setup. If the file is not found and you want create an authentication to not allow others direct access to your workflow tools, you will need to create a file with the same name by following to the step below:

1. Right click on empty area and go to new then click on Text Document (**must be created inside .n8n folder).



2. Clear all the previous text in the folder name including the .txt extension. Then, insert "n8n-desktop.env" to rename the file.

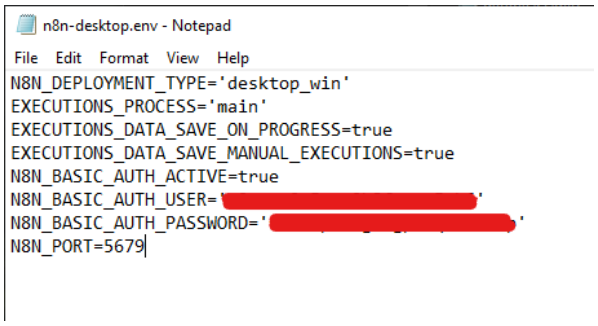
3. An error box that asking confirmation to change extension will prompt out and click on "Yes" to proceed.



4. Now, you have successfully created your configuration folder.

Authentication Password Reset

If you have previously set up automatically by your system, the content that shown will be included in the folder.



To change your username and password, you may change the value in the single quotation and click save to proceed.

Authentication Password Creation

To set up your authentication configuration, you need to paste the command below inside your "n8n-desktop.env" file to set up.

```
N8N_BASIC_AUTH_ACTIVE=true
N8N_BASIC_AUTH_USER=<user>
N8N_BASIC_AUTH_PASSWORD=<password>
N8N_PORT=5679
```

After you set your username and password in the column with single quotation, now you can click on Ctrl+s to save your folder and the authentication configuration done.

Set Up Configure Workflow Using JSON

If user want to create his workflow using configuration file of JSON instead of using UI interface. User may insert export pathway of file to create and configuration file for particular workflow. It can be including the command below in the "n8n-desktop.env" file.

```
# Single file
N8N_CONFIG_FILES=/folder/my-config.json
# Multiple files can be comma-separated
N8N_CONFIG_FILES=/folder/my-config.json,/folder/production.json
```

Execute All Workflow in Same Process

When you include the command below in the "n8n-desktop.env" file, it can avoid slow down your start time, but it will cause your different workflow to interrupt each other when one the workflow is big. SO, it is more recommend to enable this if you does not have a complicated workflow. Originally, all workflows get executed in their own separate process and this will caused to CPU intensive if you do not stated to run on main (work in same process).

```
EXECUTIONS_PROCESS='main'
```

Set Time zone For Workflow

Timezone of the workflow process are set default with "America/New_York". However, we can set different timezone by using code below to attach in your "n8n-

desktop.env" file, so that your workflow is execute based on your timezone. (** You can find your timezone name using this link: https://momentjs.com/timezone/)

```
GENERIC_TIMEZONE='Asia/Kuala_Lumpur'
```

Timeout Execution Configuration

If workflow are run in main process, it will timeout after the current node finishes (received something). While, if the workflow is run separately in its process, it will timeout after 1/5 of the given timeout duration. So, if user want to set certain duration to timeout, they need to include the code as below in the "n8n-desktop.env" file by stated the duration of timeout/max of timeout in second.

```
EXECUTIONS_TIMEOUT=3600
```
← 1 hour

```
#or set the max. execution time
EXECUTIONS_TIMEOUT_MAX=7200
```
← 2 hours

Saved Data Based on Situation

User can also set to store the workflow if certain event happening. It either can set to save workflow when ending in error or save when successful execution or save node progress for each execution or dun save manually launched execution by using those command below to attach in the "n8n-desktop.env" file.

```
// Save executions ending in errors
EXECUTIONS_DATA_SAVE_ON_ERROR=all
// Save successful executions
EXECUTIONS_DATA_SAVE_ON_SUCCESS=all
// Don't save node progress for each execution
EXECUTIONS_DATA_SAVE_ON_PROGRESS=false
// Don't save manually launched executions
EXECUTIONS_DATA_SAVE_MANUAL_EXECUTIONS=false
```

Data Pruning (Delete) After Certain Period

User can also enable the function of delete execution data that older than certain time by using command below in the "n8n-desktop.env" file by mentioning the period in the hours.

```
EXECUTIONS_DATA_PRUNE=true
```

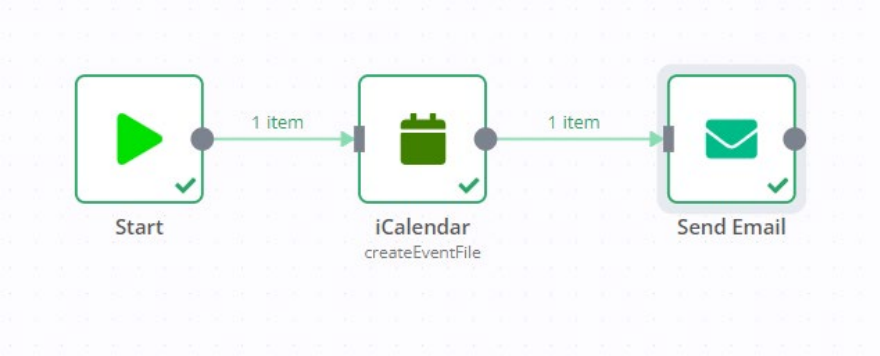
EXECUTIONS_DATA_MAX_AGE=168 ← 168 hours = 7 days

N8N Existing Workflow Template User Guide

Create Event File in n8n to send it as an email attachment.

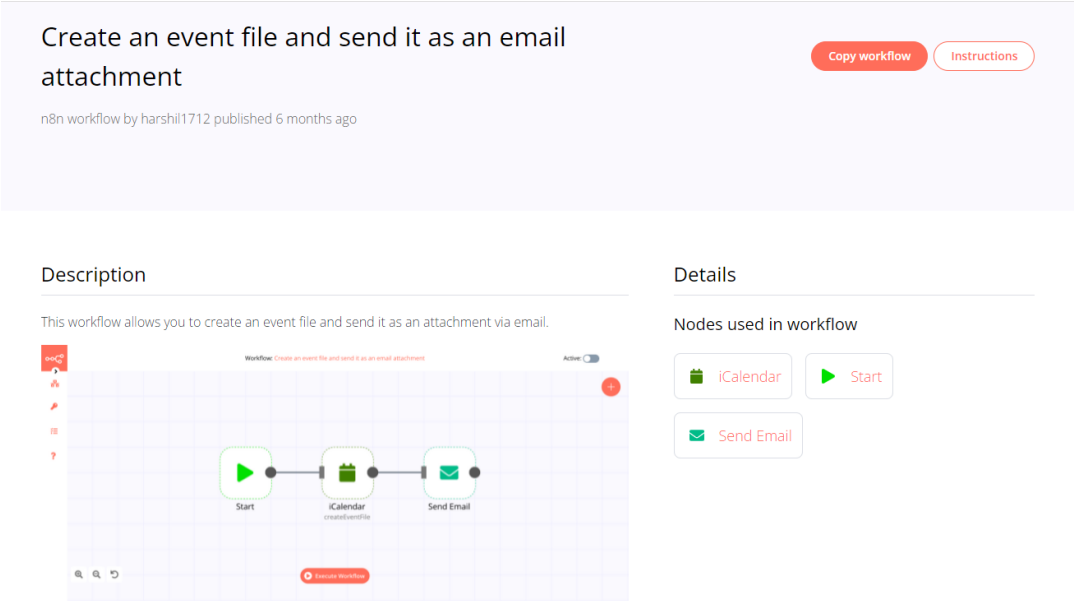
This workflow are mainly for us to create an event file by using the "iCalendar" node and send email via SMTP port connection.

Concept Idea:

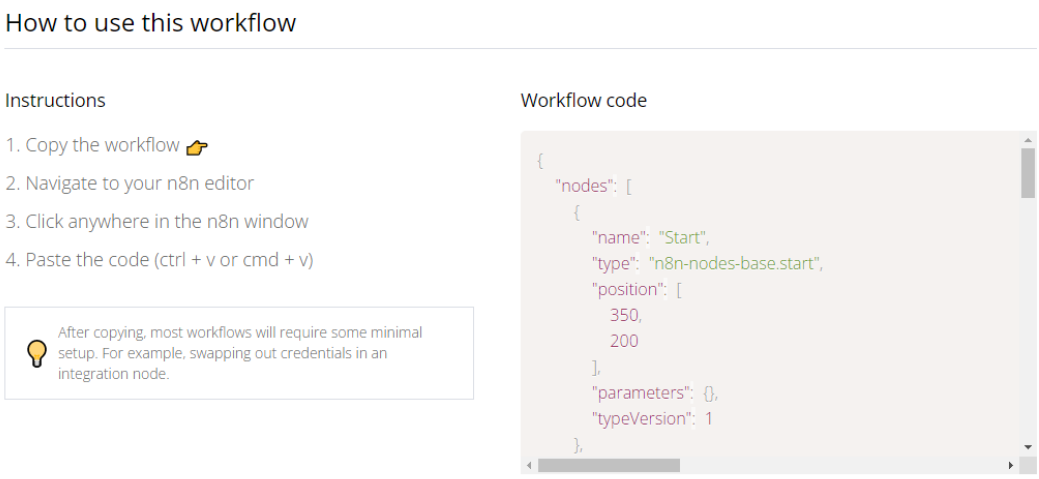


Step of using workflow template provided:

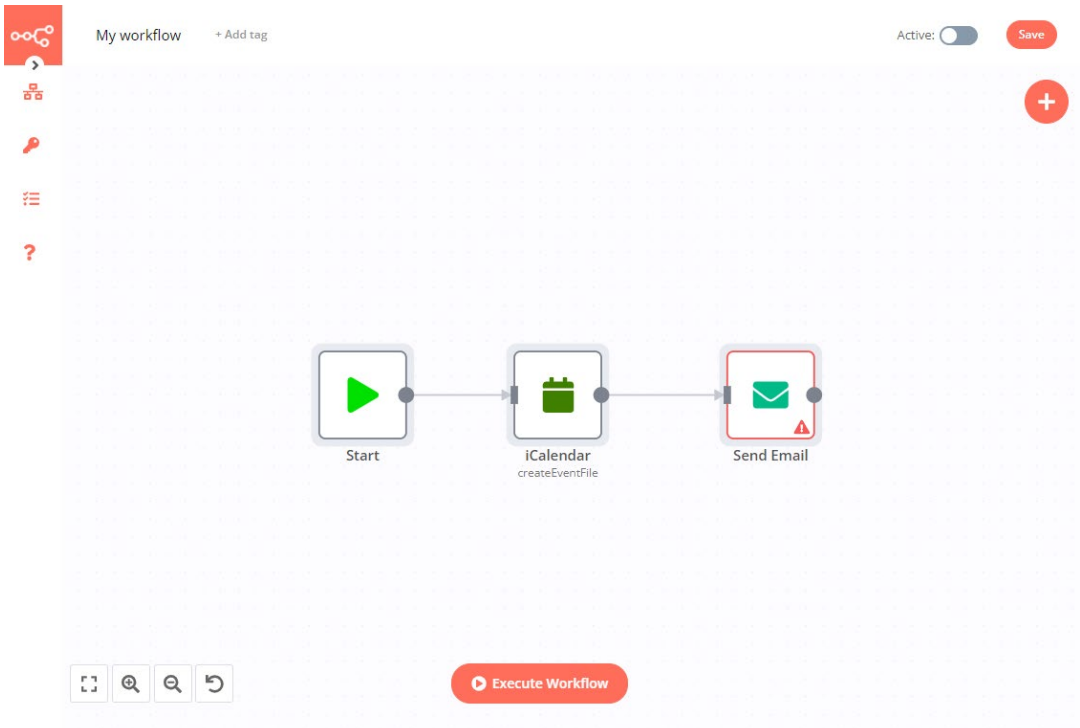
1. First of all, go to https://n8n.io/workflows/1083



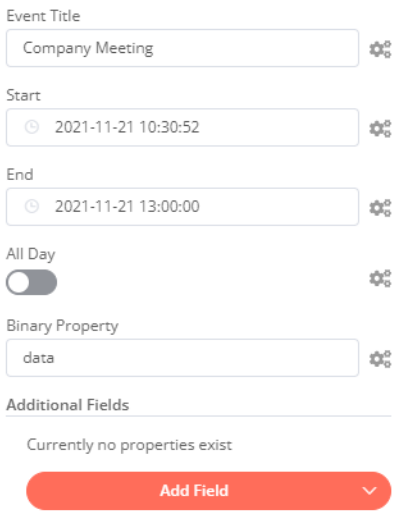
2. Scroll down and copy the workflow code by clicking the "Copy" button



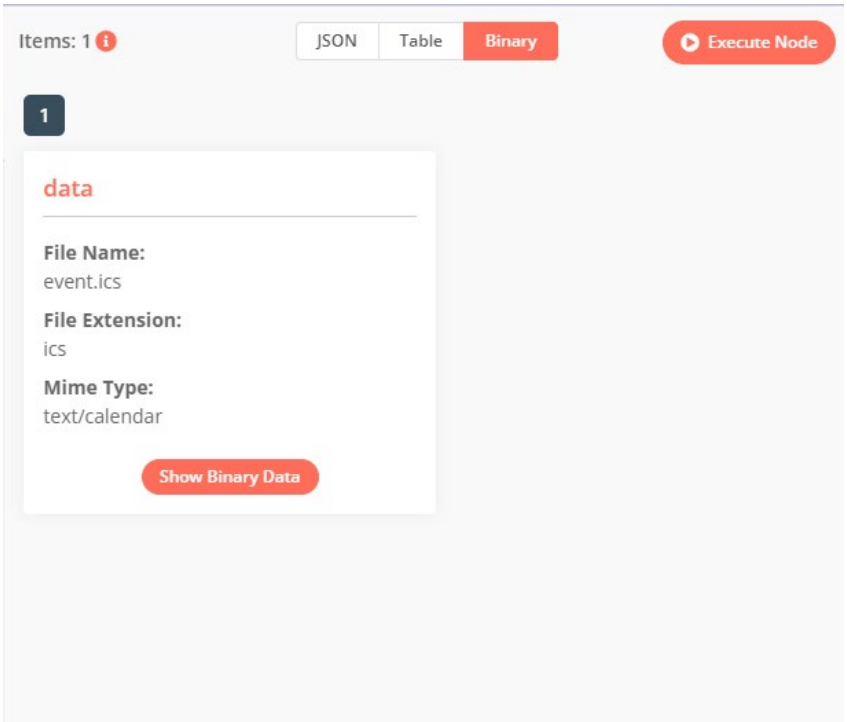
3. Then using the keyboard paste function (Ctrl+V) to paste the code at your n8n workflow editor. Then, you will see the workflow node are linked and shown in your editor.



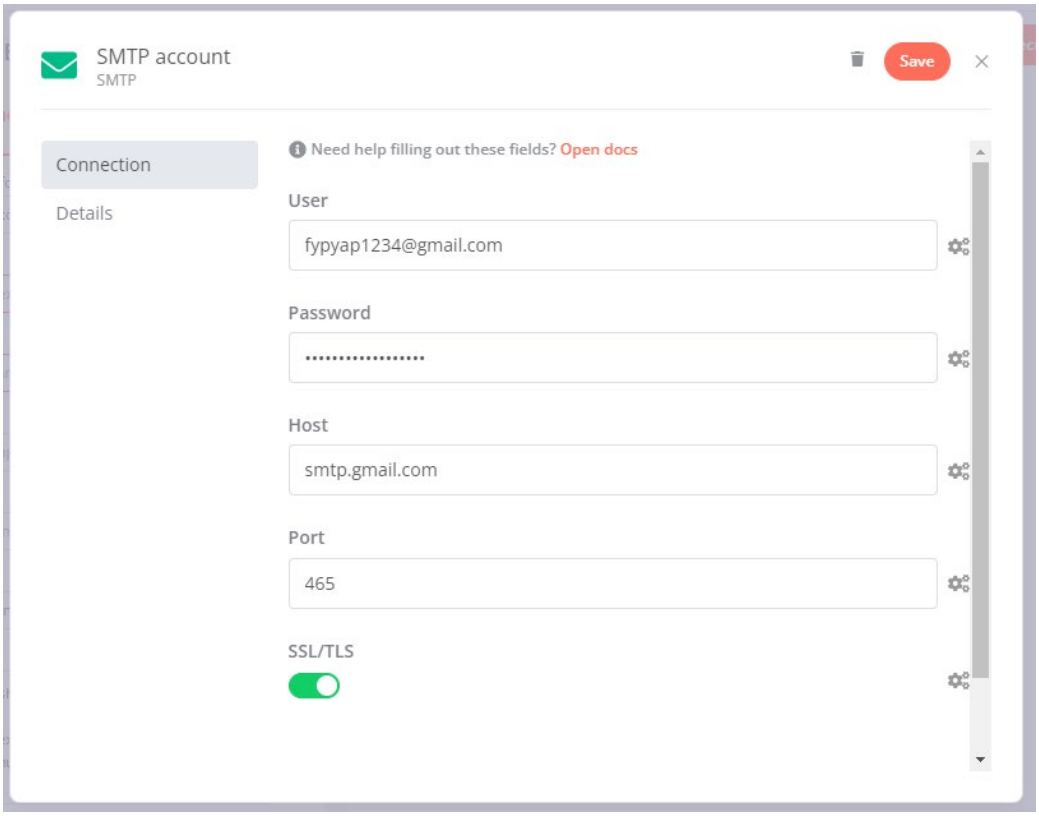
4. This node will be start with the "Start " trigger which indicates that once the workflow is executed, the node will be started. Then, in the next node which is the "iCalender" node, it is for us to specify our event to be schedule and creating an event file. Double click on the node.
5. Then, the configuration tab will be prompt out and you may insert your preferable event title and start and end date for the event.



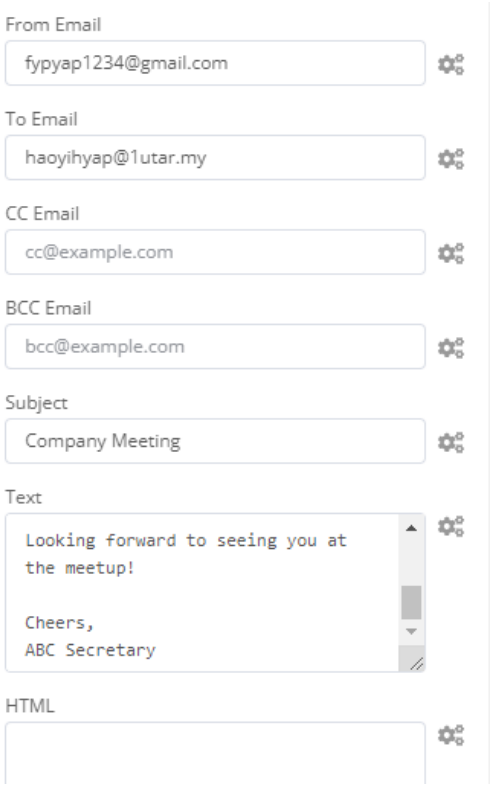
6. Then, click on the "Execute Node" button to test the functionalities of node. If it works, binary file will be shown in the tab.



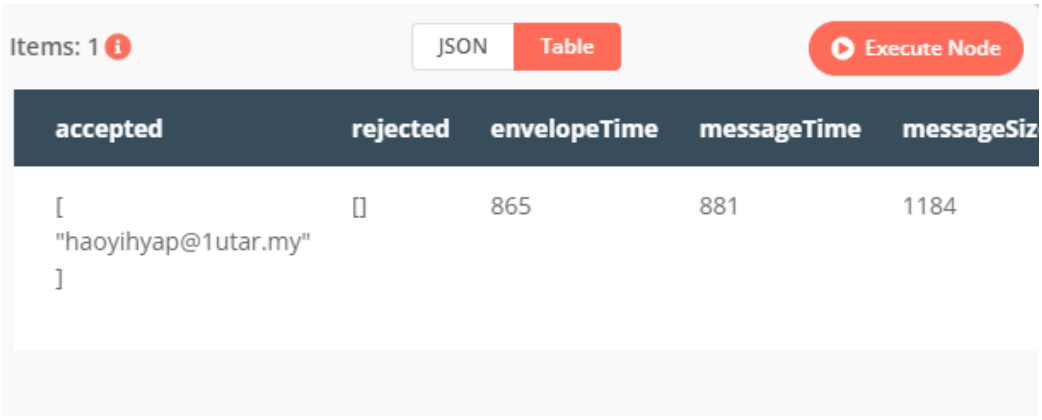
7. Double click on next node to open its configuration tab. Click on the "Create New" in the credential of SMTP column. Then, insert your email and password as well as the smtp host address and port of your email provider by searching it online. For this case, google are using smtp.gmail.com and 465 port as its SMTP email port. Toggle the SSL/TLS as activated then click on "Save" to proceed.

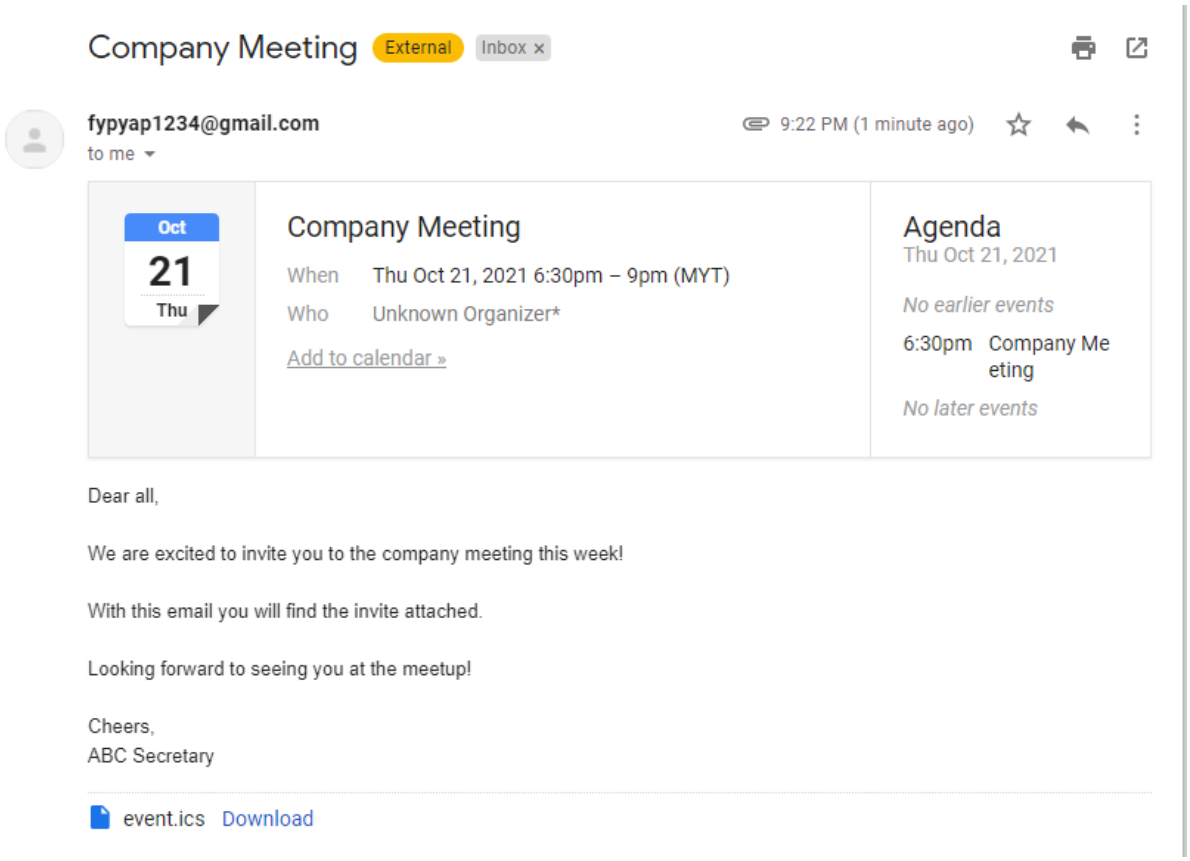


8. Then, insert from what email send from and to where it sent and specify your email subject and content. You can also cc or bcc the email in this node.



9. Once finished, click on “Execute node” to test the node whether working. When it successfully executed, you will see “Items: 1” and data return in the JSON format and table format and the email will be send to your receiver.

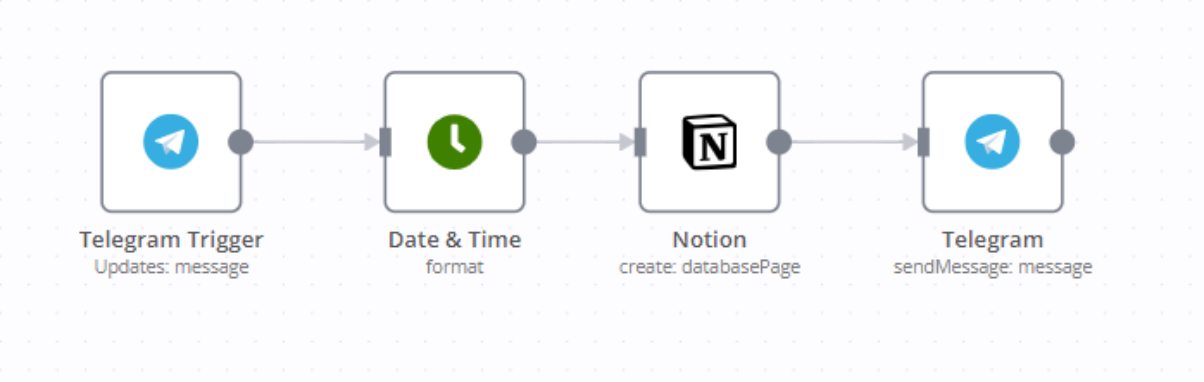




Add a record on Notion database when received message in Telegram

This workflow will be triggering the event to add a record to the Notion database when received a new message in Telegram. We can use this flow for us to store the note that we want by sending the Telegram BOT

Concept Idea:

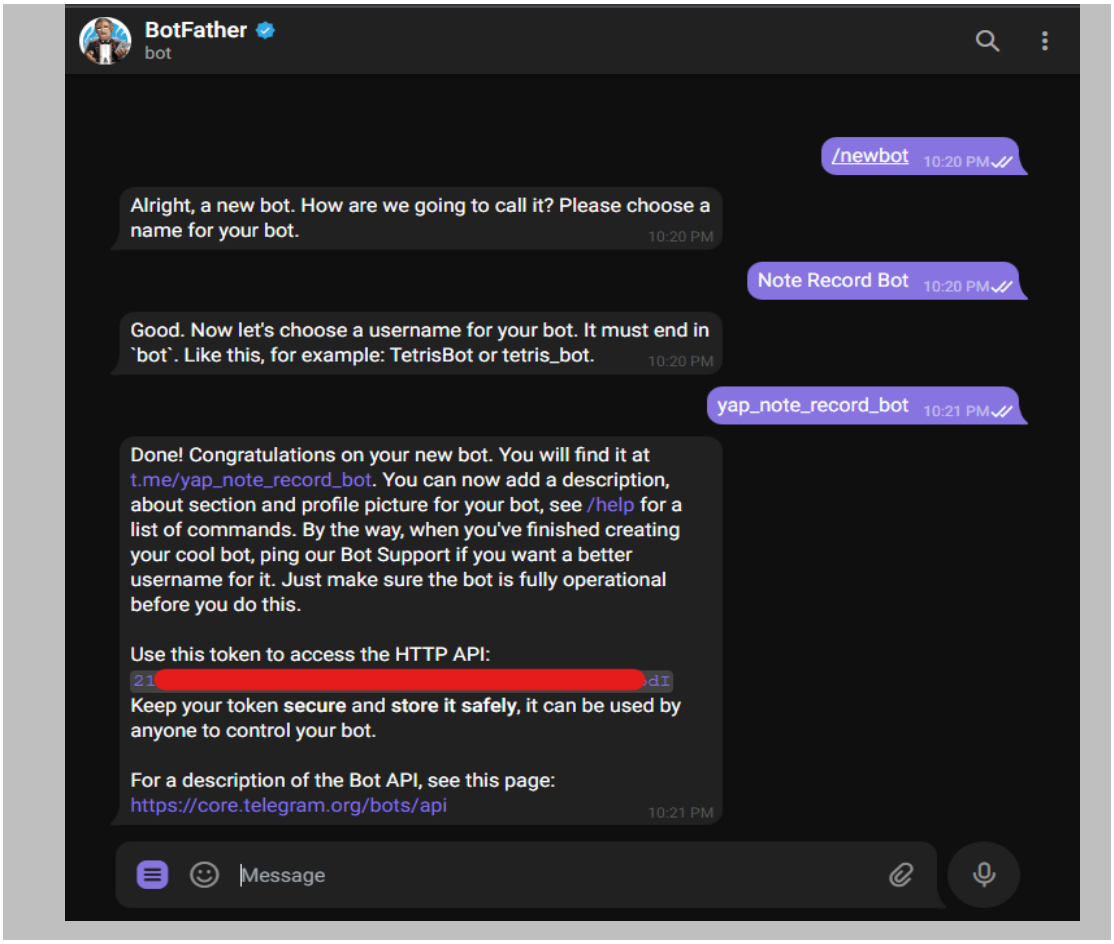


Prerequisite:

- Telegram account with bot setup

Way to setup bot:

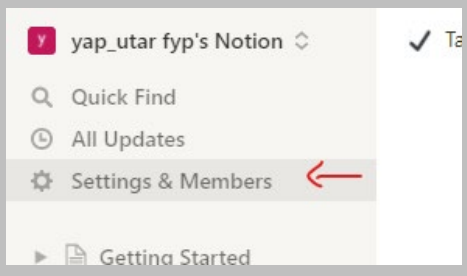
1. Register a Telegram account.
2. Start a chat with the Botfather (https://telegram.me/BotFather).
3. Insert /newbot and press enter to submit.
4. Then, reply a name for your BOT and username for it.
5. When successfully activated, you will be received and API token for future use.



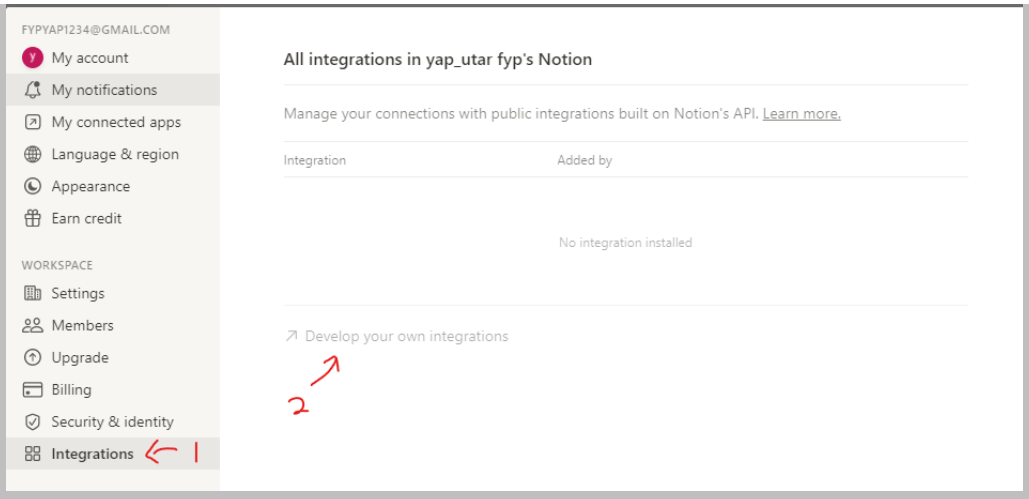
- Notion database with credential API registered & Page created.

Way to get API Token in Notion database:

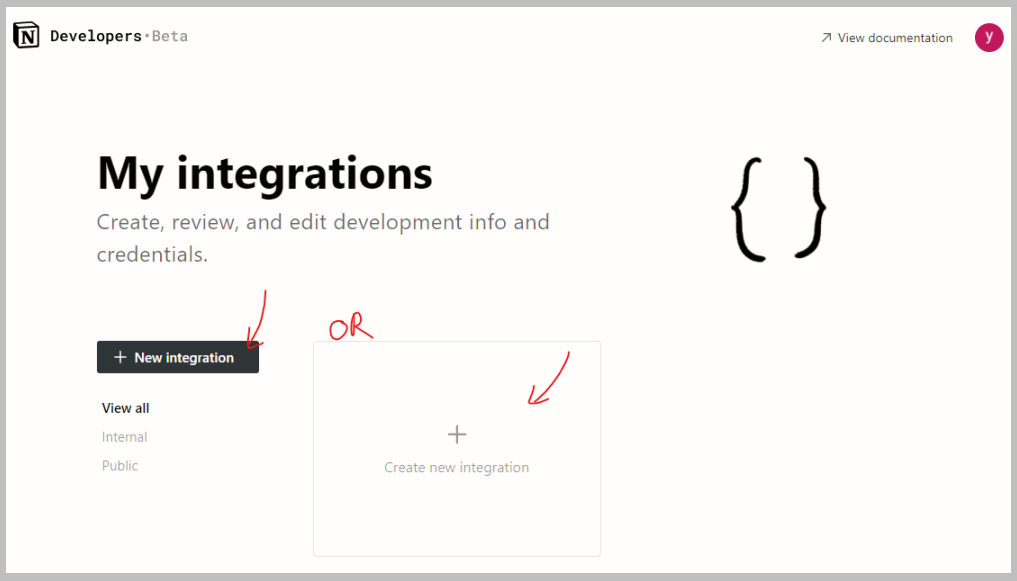
1. Go to your Notion dashboard
2. Select the “Setting & Members” selection from the left side bar.



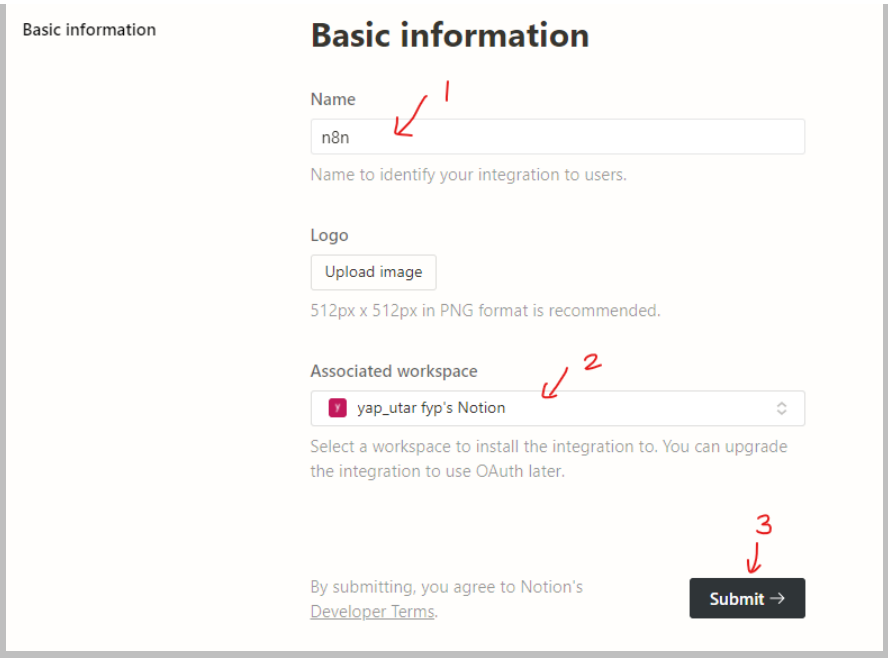
3. Under the “Integration” section, click on the “Develop your own integration” button to prompt to another page for credential creating.



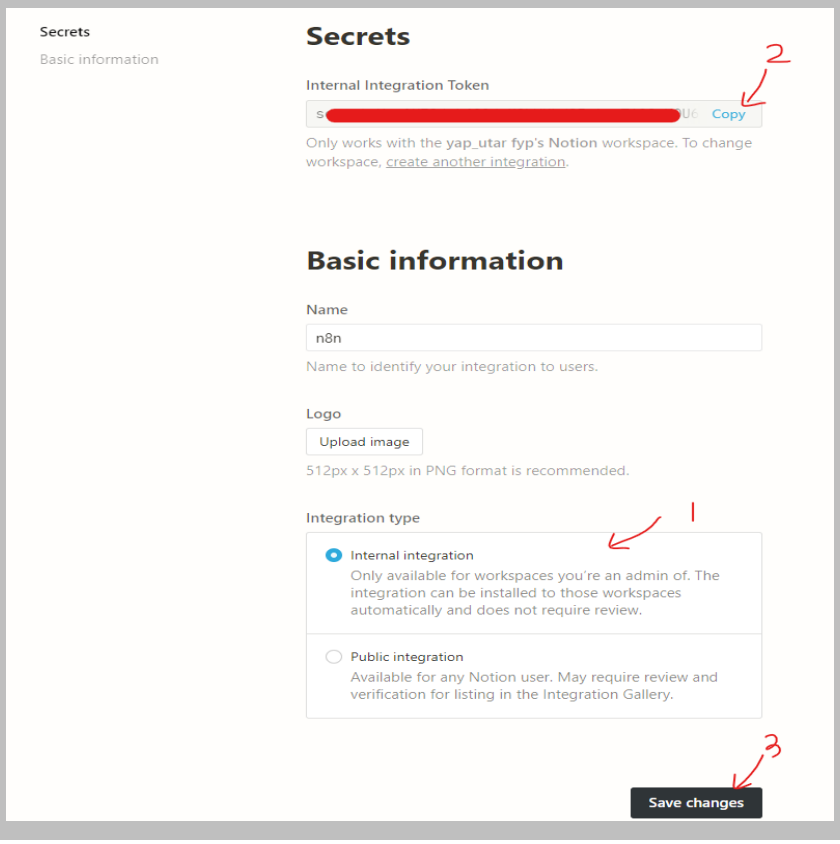
4. In the "My Integration" page, click on the "+ New integration" button or the Create new integration selection to create new integration token.



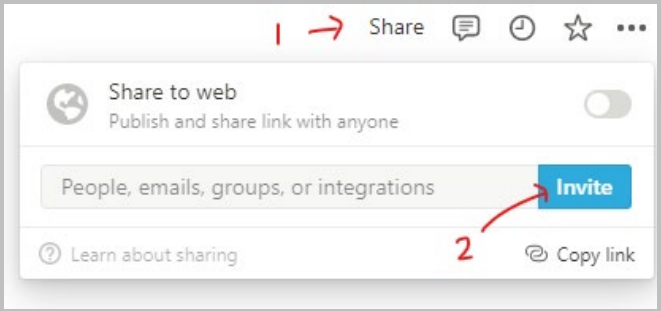
5. Insert your app name in the "name" column and select your workspace that you want to deal with the integration, then click "Submit"



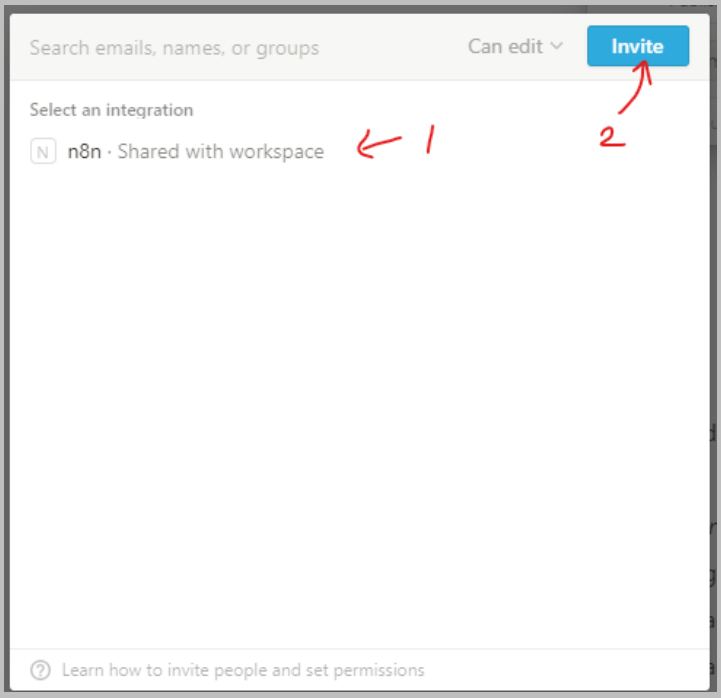
6. Select “Internal Integration” for the “Integration Type”, so that it only accept workspace that we admit to connect only. Then, click on show button beside the “Internal Integration Token” to show the API token of your Notion and copy it for future use. Then, click on “Save changes” to confirm the info is saved.



7. Then, there is an important step that you mut be configure so that your n8n can connect to the Notion. Go back to your Notion dashboard, click on the “Share” at the upper right of pages and click the “Invite” button.

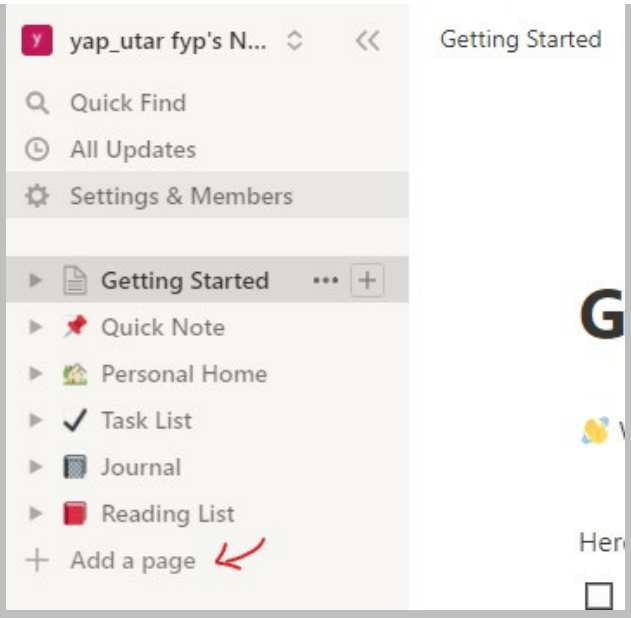


8. The, select the n8n integration node created previously and click “Invite”.

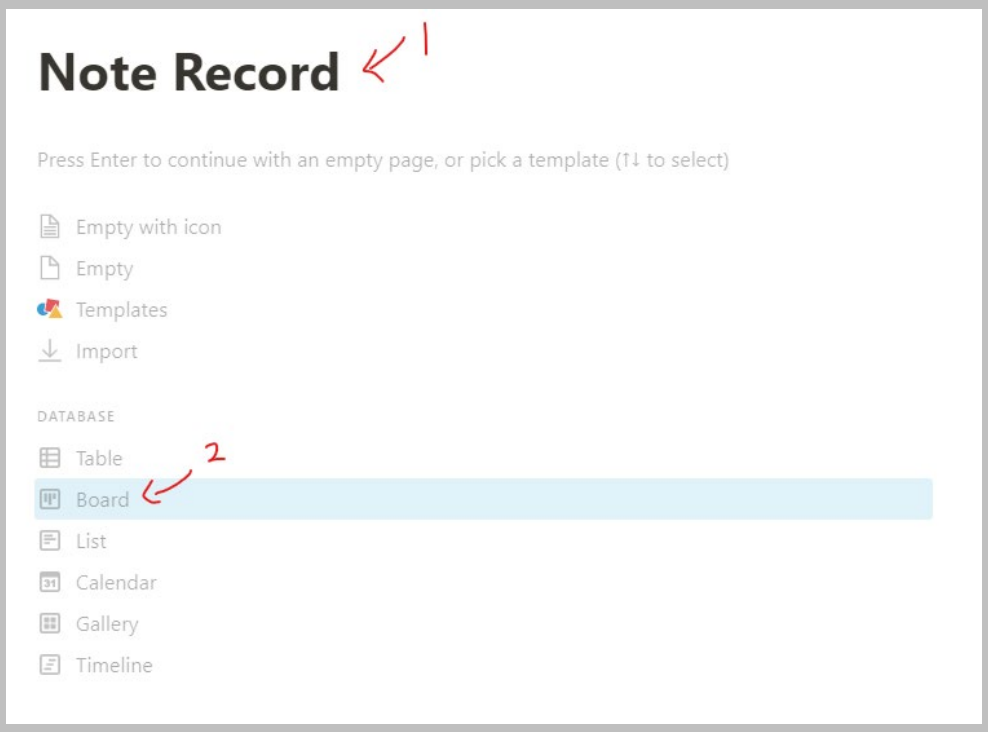


Way to create new page for this workflow use:

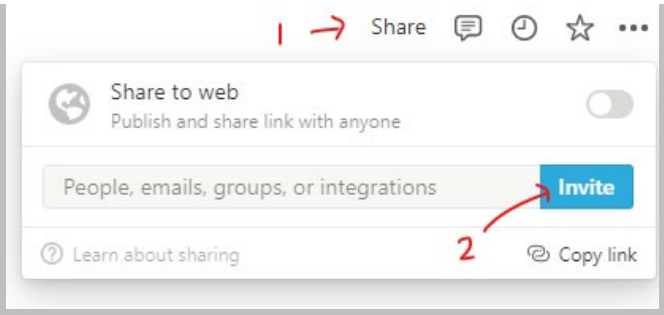
1. Open your Notion dashboard
2. Click on the “+ Add a page” selection from the left sidebar



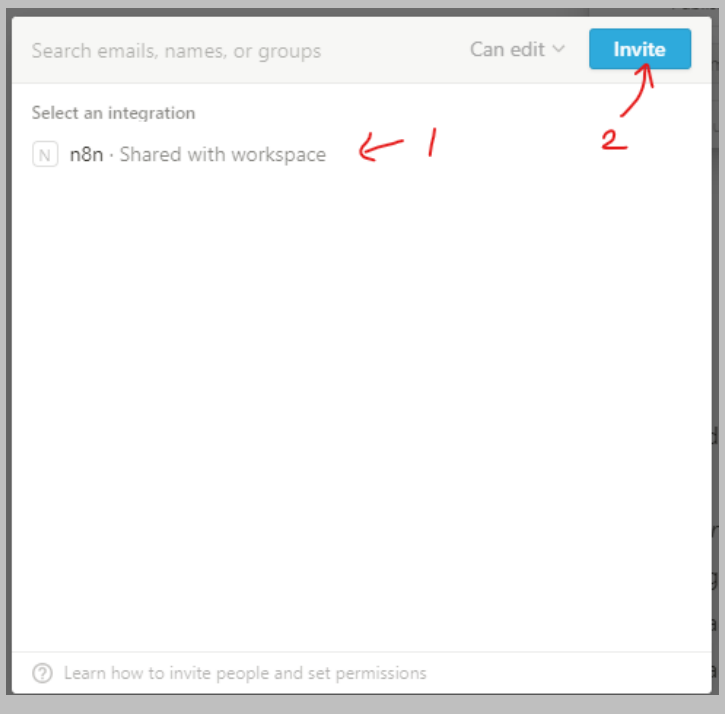
3. Give a name for your page and click on “Board” type of database.



4. Then, there is an important step that you mut be configure so that your n8n can connect to the Notion. Go back to your Notion dashboard, click on the “Share” at the upper right of pages and click the “Invite” button.

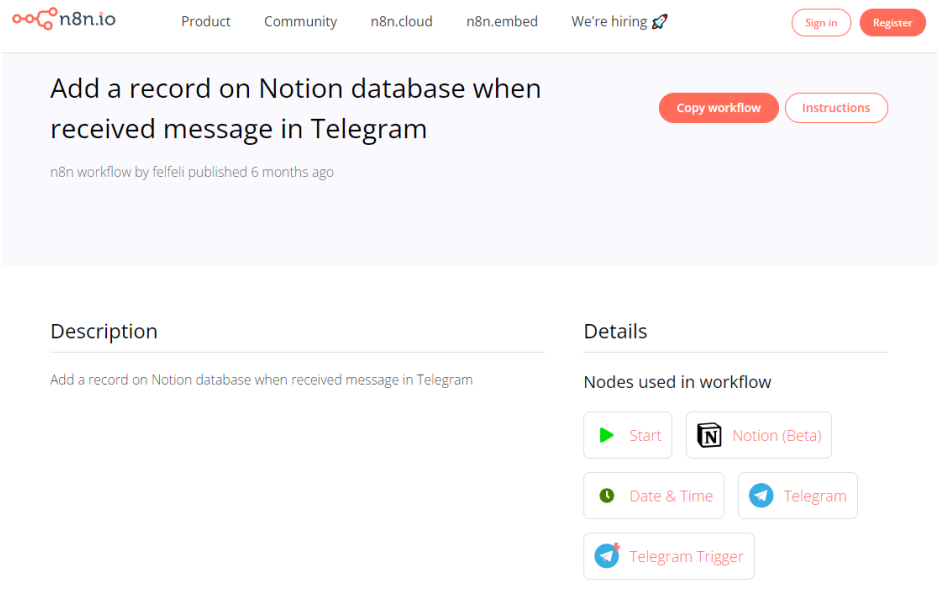


5. The, select the n8n integration node created previously and click “Invite”.

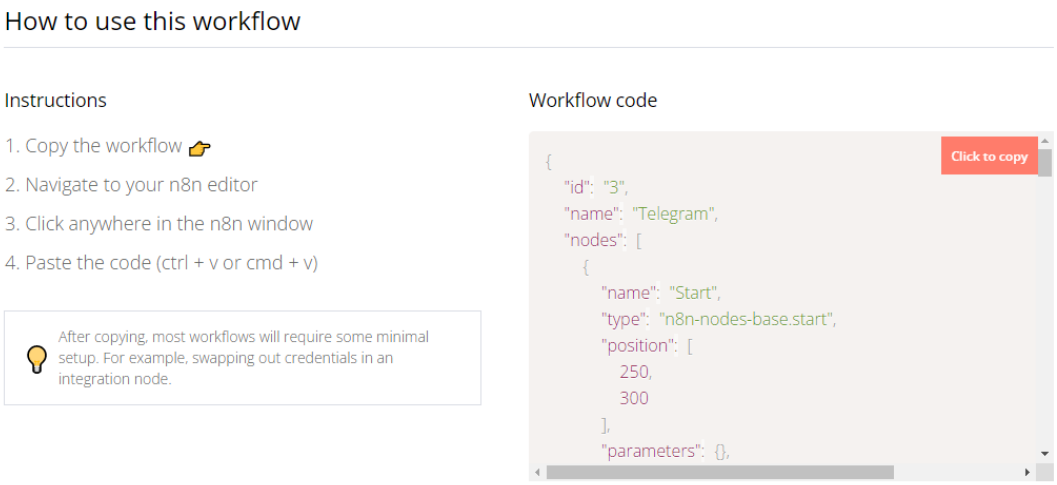


Step of using workflow template provided:

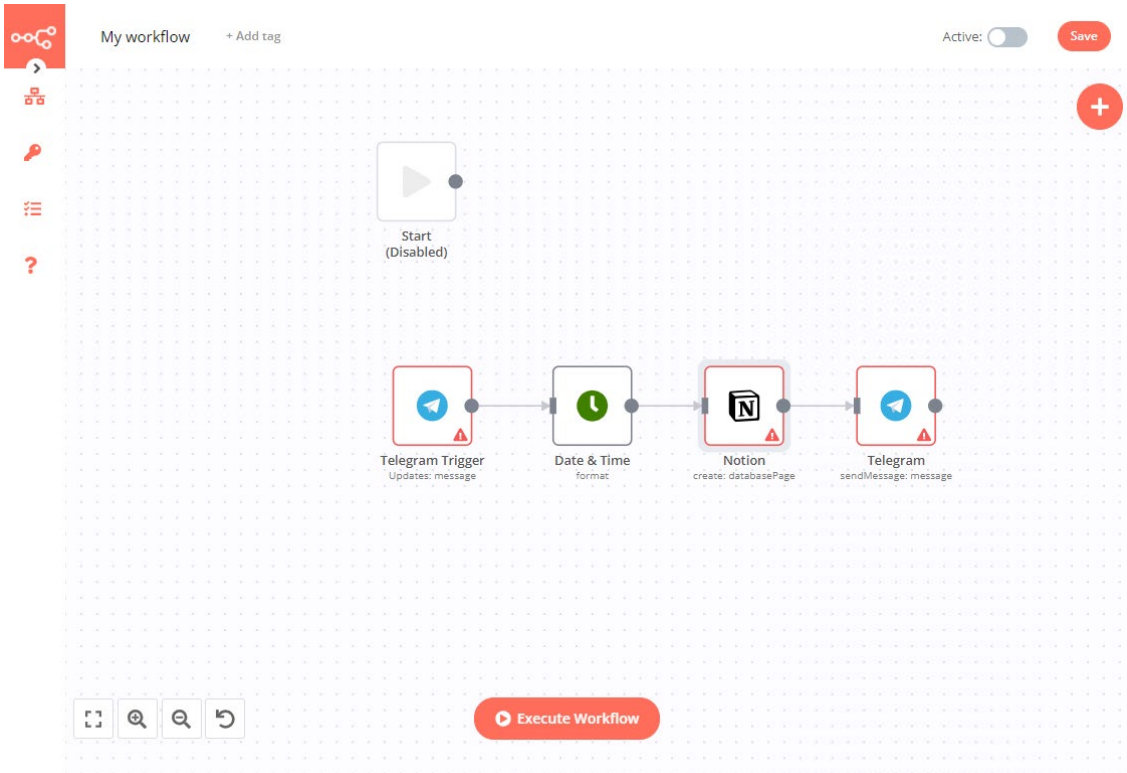
1. First of all, go to https://n8n.io/workflows/1119



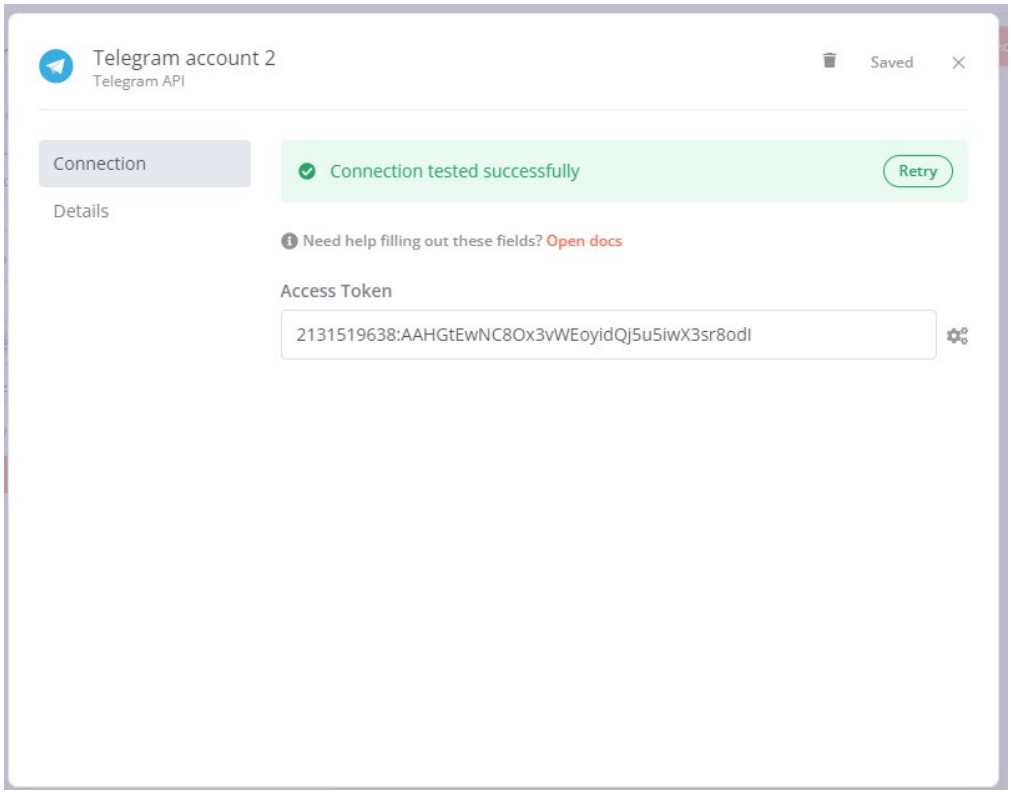
2. Then, scroll down to the workflow code section and click on the button of "Copy" to copy all the workflow code.



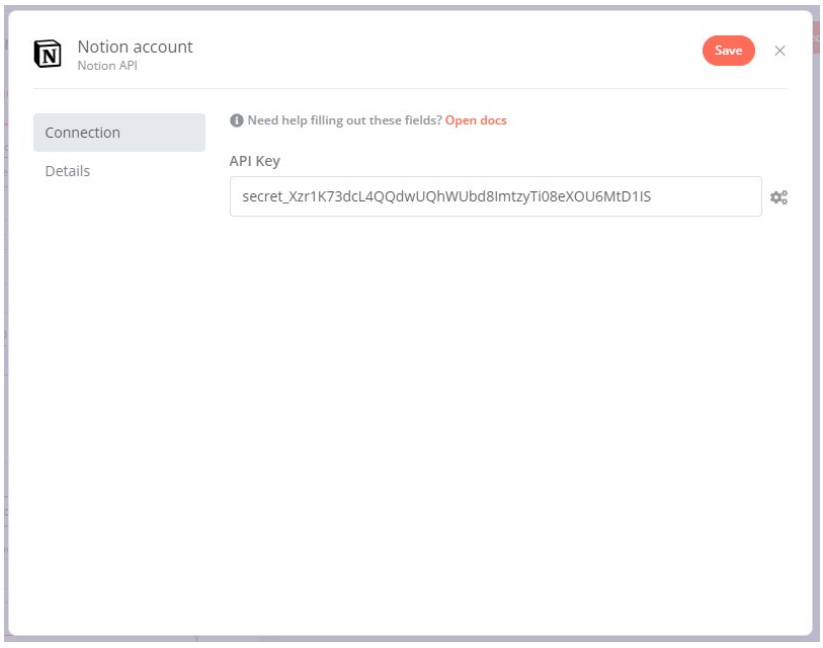
3. After that, paste your workflow code using Ctrl+V in your workflow editor and the workflow node will be shown in the editor. Before that, make sure your workflow are started with tunnel mode (CLI command: n8n start --tunnel).



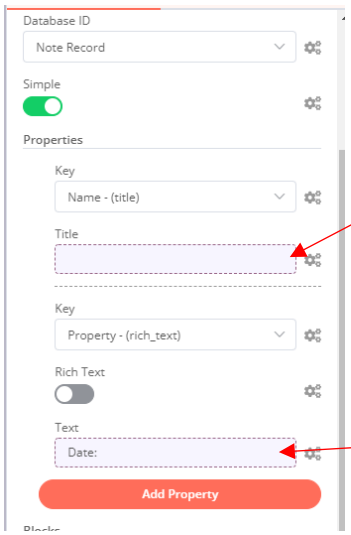
4. Now, double click on the Telegram trigger node to open the configuration tab, then at the credential field, select "Create New". Once the API configuration tab prompt out, paste the API Token get previously by BotFather to the "Access Token" column. Click "Save" to save your credential details and close it.



5. The "Date & Time" node is used to reformat the date and time format of the value get from the Telegram. Leaves the default value by ignore it.
6. Later on, double click the "Notion" node to prompt the Notion configuration tab in your editor. Select "create New" from the dropdown of credential column and the Notion API credential configuration tab will be prompt out. Paste the API Token get from Notion to the "API Key" column and click "Save" to save the info then close it.



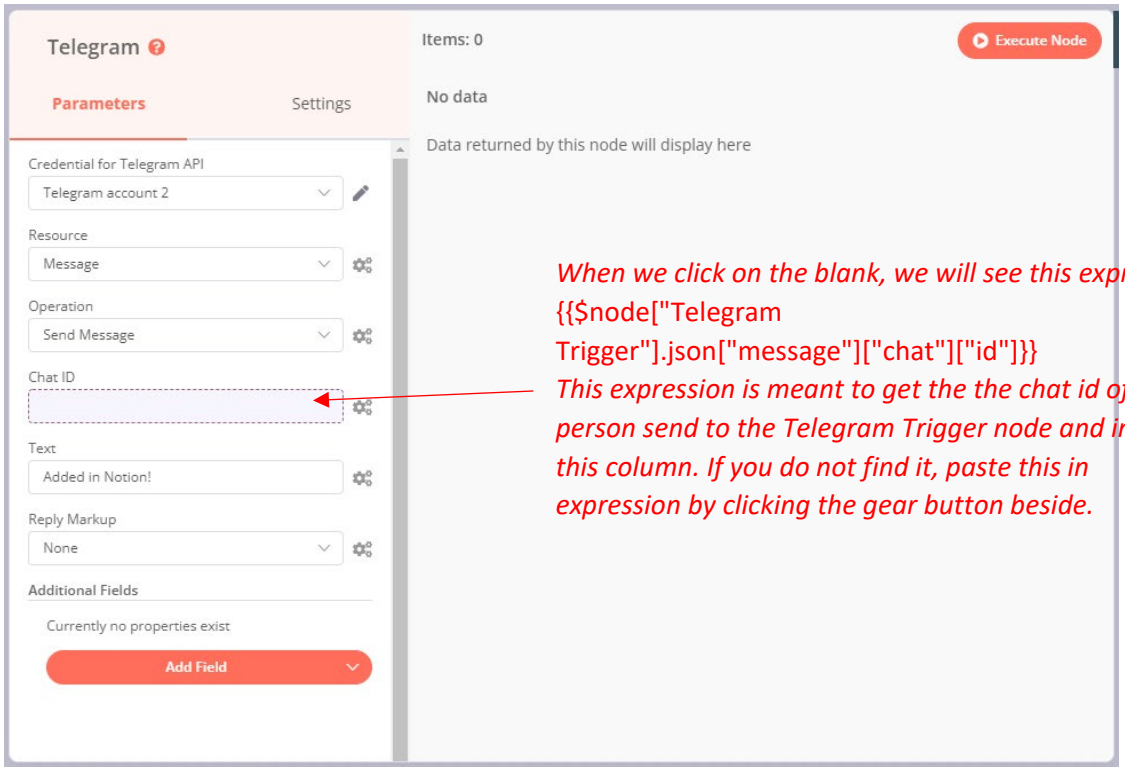
7. The, remain all the configuration in the “Notion” node. But, we need to fix the properties values to pass to the Notion by selecting “Name” from the key section of name and “Property –(rich_text)” as the key section of date. In the “Text” column of the date click on the blank and in the expression table add “Date:” before the expression. Then, delete the amount properties. We need to modify because our notion database design are different from the creator.



When we click on the blank, we will see this expression:
{{$json["message"]["text"]}}
This expression is meant to get the JSON message get from Telegram Trigger node to insert to this column. If you do not find it, paste this in expression by clicking the gear button beside.

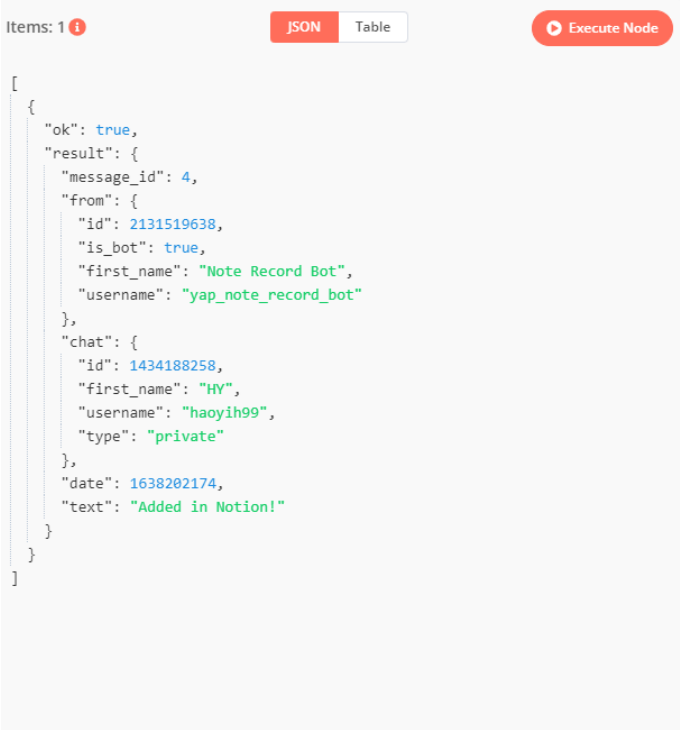
When we click on the blank, we will see this expression:
Date: {{$json["data_today"]}}
This expression is meant to get the JSON date get from Telegram Trigger node to insert to this column. If you do not find it, paste this in expression by clicking the gear button beside.

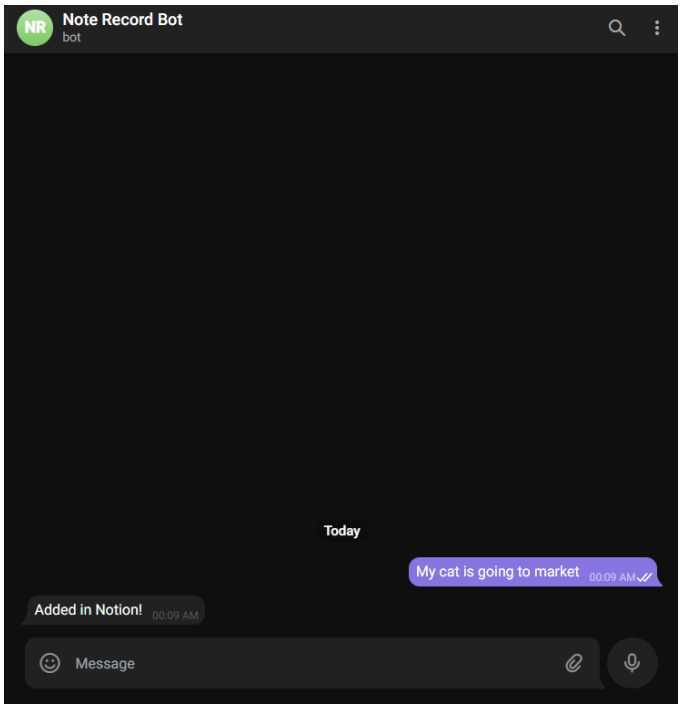
8. Close the “Notion” node and make sure the credential of last “telegram” node is selected the previous credential created and remain all other configuration.

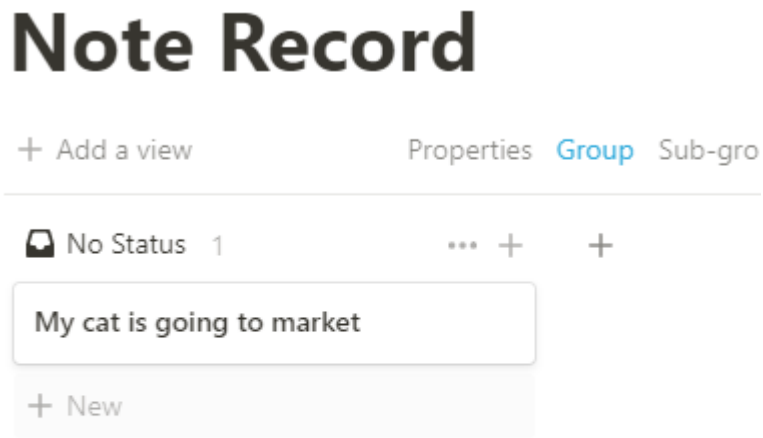


When we click on the blank, we will see this expression:
{{$node["Telegram Trigger"].json["message"]["chat"]["id"]}}
This expression is meant to get the the chat id of person send to the Telegram Trigger node and insert to this column. If you do not find it, paste this in expression by clicking the gear button beside.

9. Lastly, click on the “Execute Node” to test on our workflow and try to send a note to the Telegram bot to see whether it works.


Items: 1
JSON
Table
Execute Node
[
{
"ok": true,
"result": {
"message_id": 4,
"from": {
"id": 2131519638,
"is_bot": true,
"first_name": "Note Record Bot",
"username": "yap_note_record_bot"
},
"chat": {
"id": 1434188258,
"first_name": "HY",
"username": "haoyih99",
"type": "private"
},
"date": 1638202174,
"text": "Added in Notion!"
}
}
]

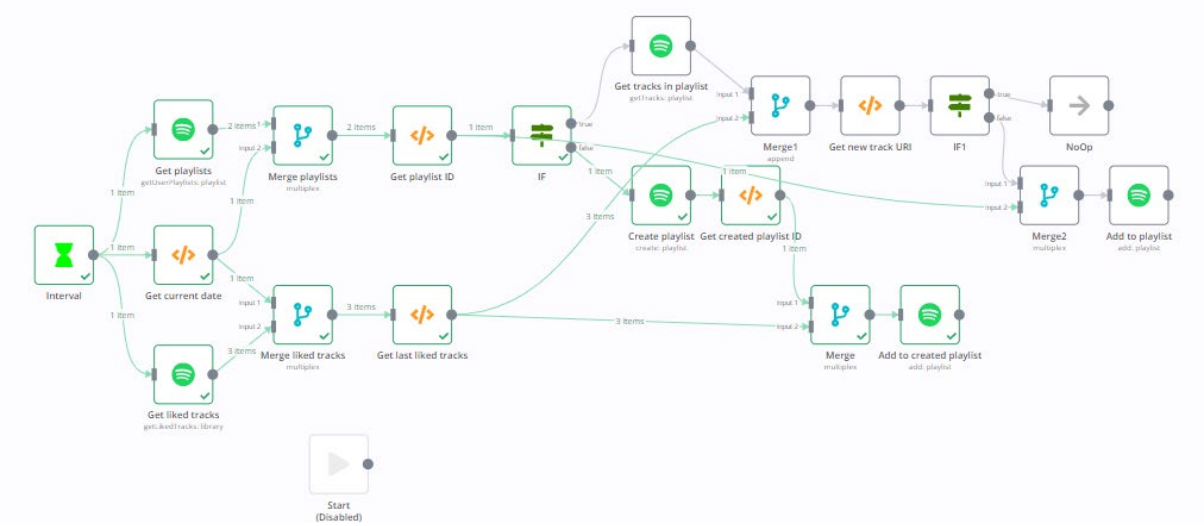

NR
Note Record Bot
bot
Today
My cat is going to market 00:09 AM
Added in Notion! 00:09 AM
Message



Add liked songs to a monthly playlist

This workflow is for saving your like song in Spotify into the monthly playlist. For example, if you like a song at Nov 2021, it will save the song to playlist of "Nov 21" else if the playlist folder is not exist it will create a new playlist with then month name.

Concept Idea:

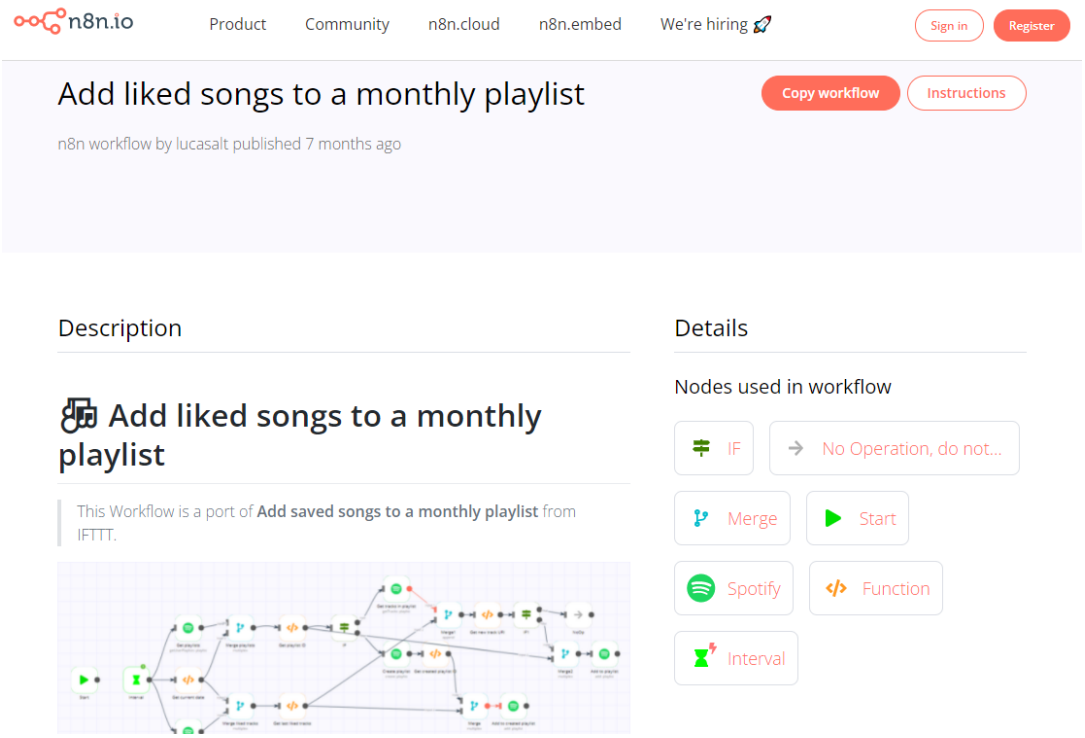


Prerequisite:

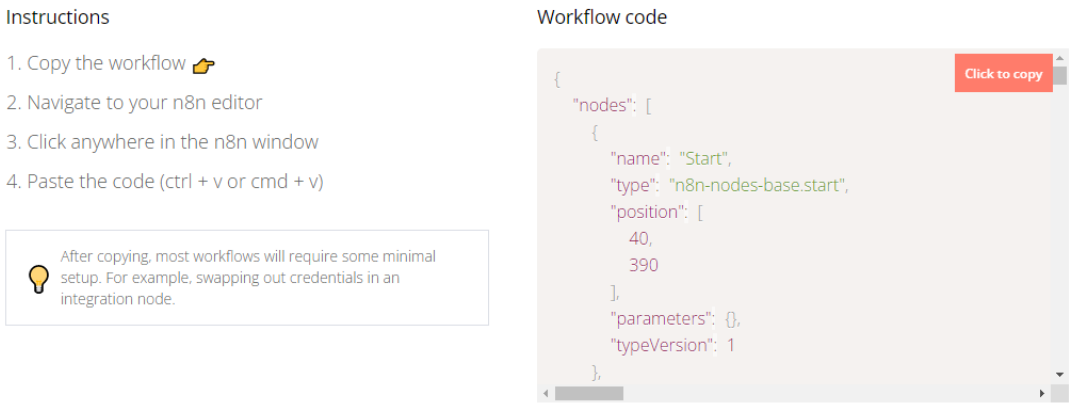
- Spotify account registered

Step of using workflow template provided:

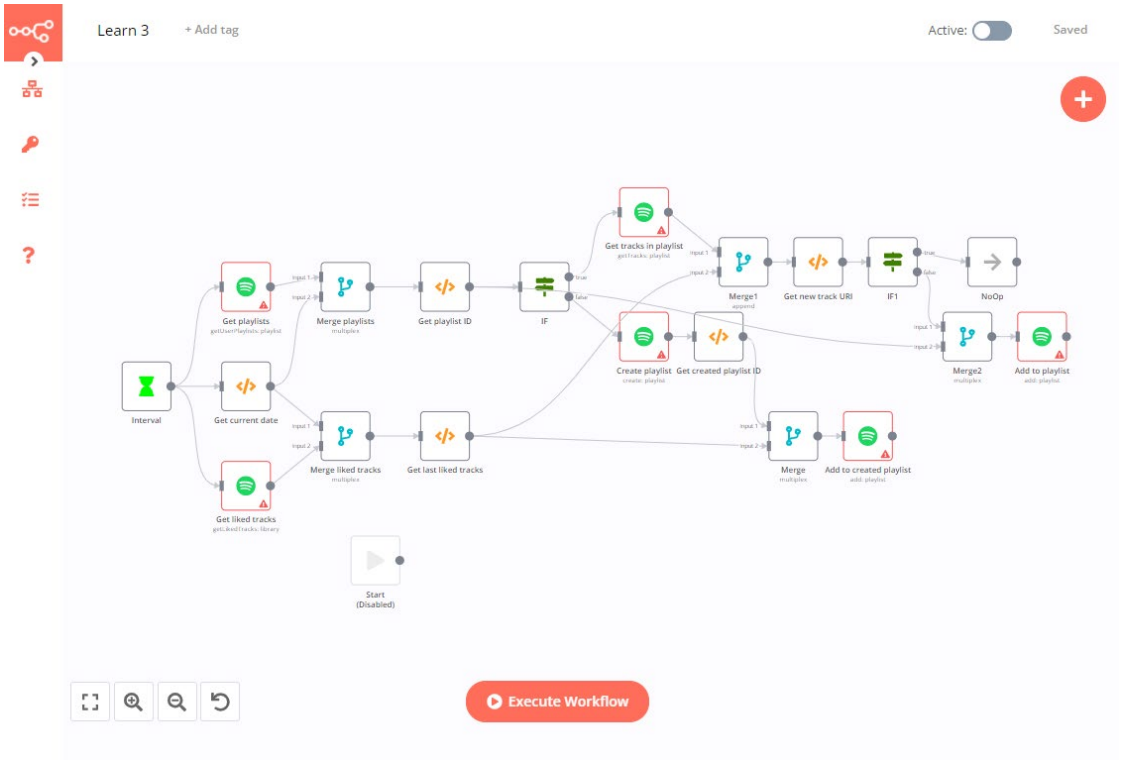
1. First and foremost, go to https://n8n.io/workflows/1074



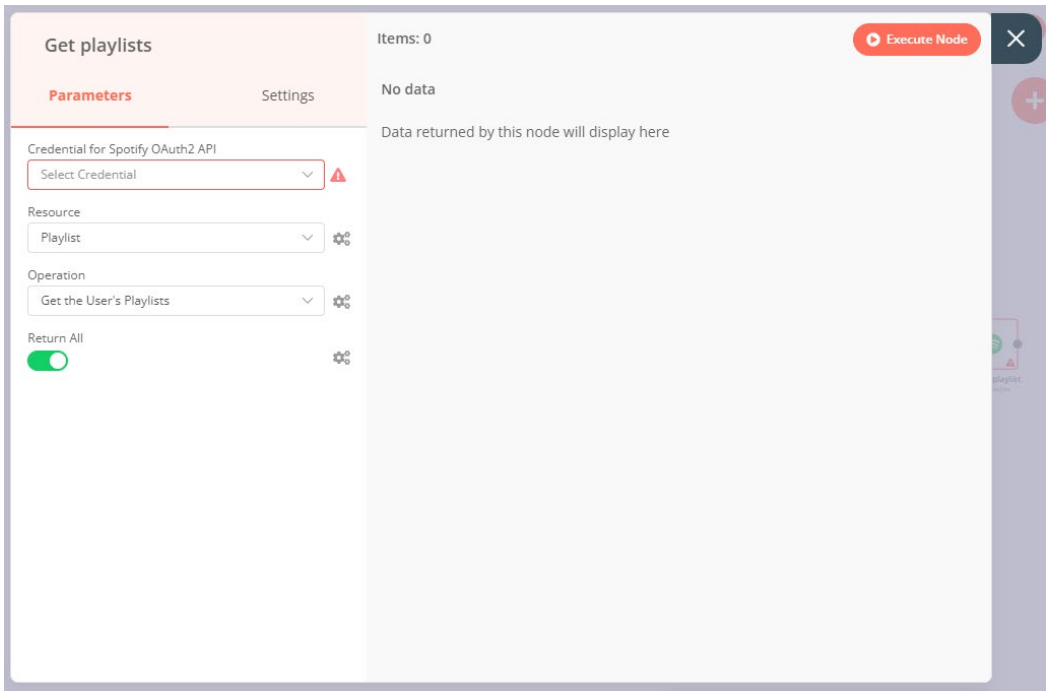
2. Then, scroll down the page to the workflow code section, copy the workflow code by clicking the "Copy" button at the side workflow code to get the workflow template we want.



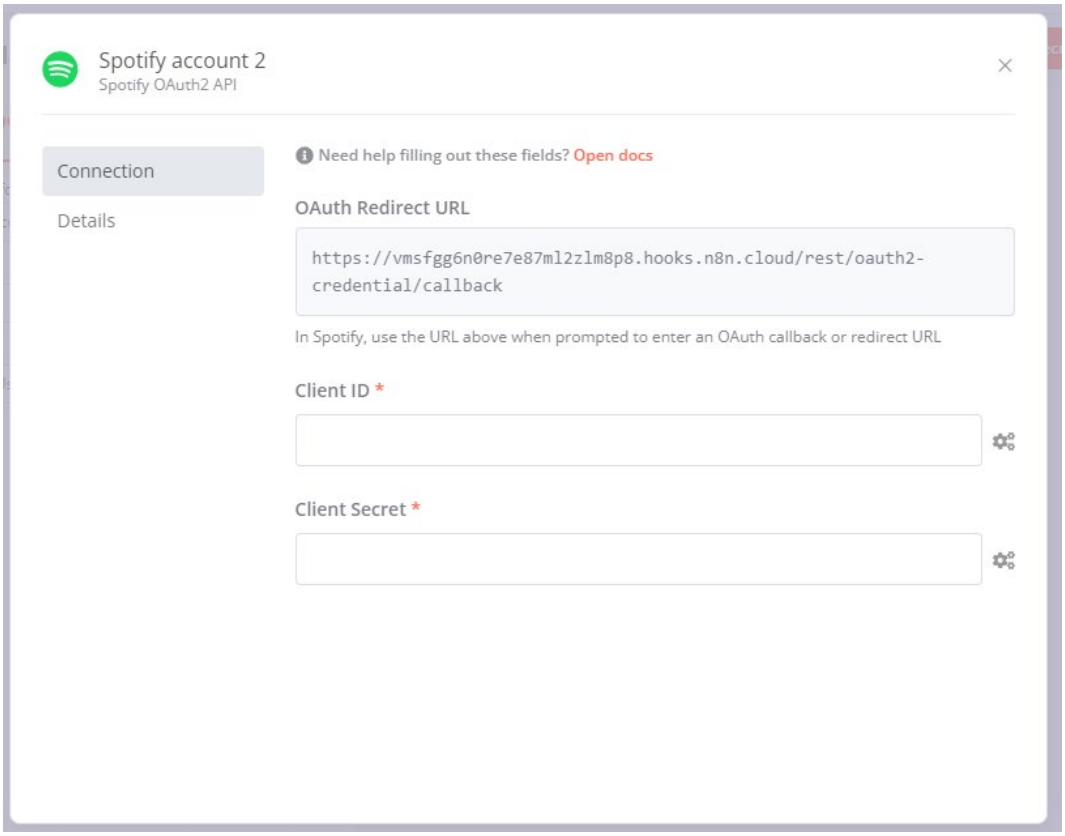
3. Then, using the Ctrl+V key on the keyboard, paste the code copy just now to the workflow editor and the workflow node and interface will be shown in editor.



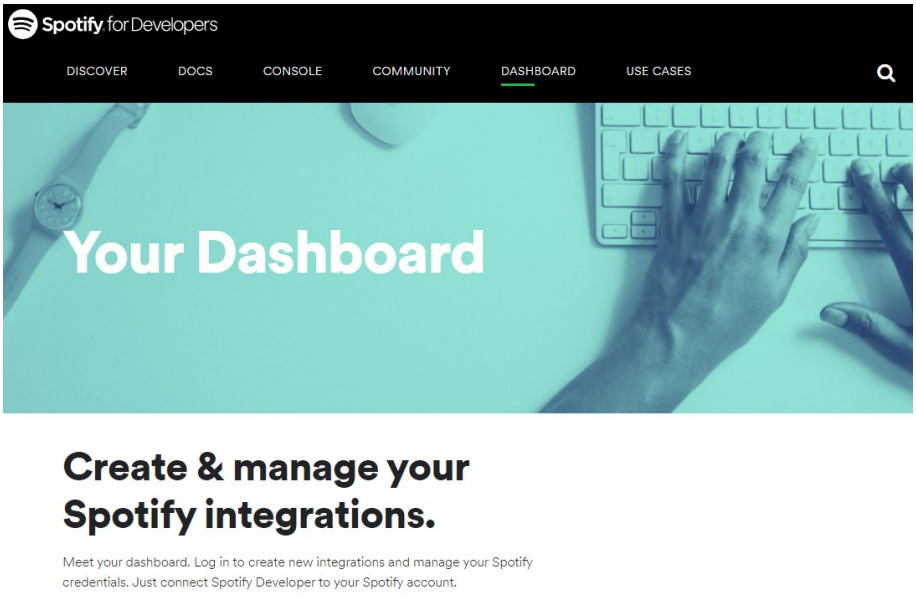
4. From the workflow, you will see the there is an triangle alert icon on all of the Spotify node. It indicates that the credentials of the node is haven't set, so double click on the "Get playlists" node to open its configuration tab.



5. Select the "Create New" from the dropdown of credential column and the API configuration box will be prompt out.



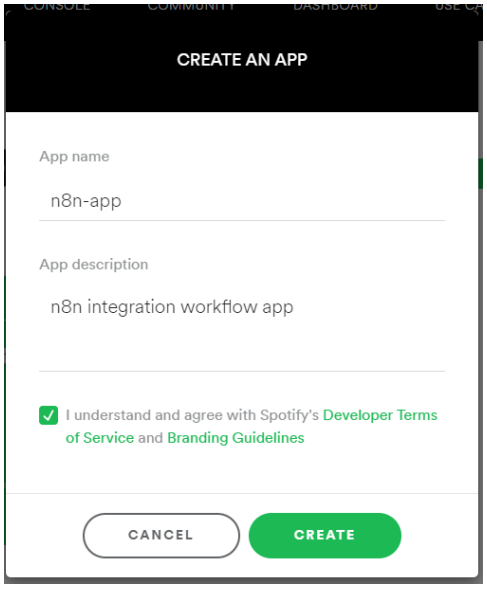
6. To get the API authentication from the Spotify, you need to go to the Spotify Developer website at https://developer.spotify.com/dashboard/login



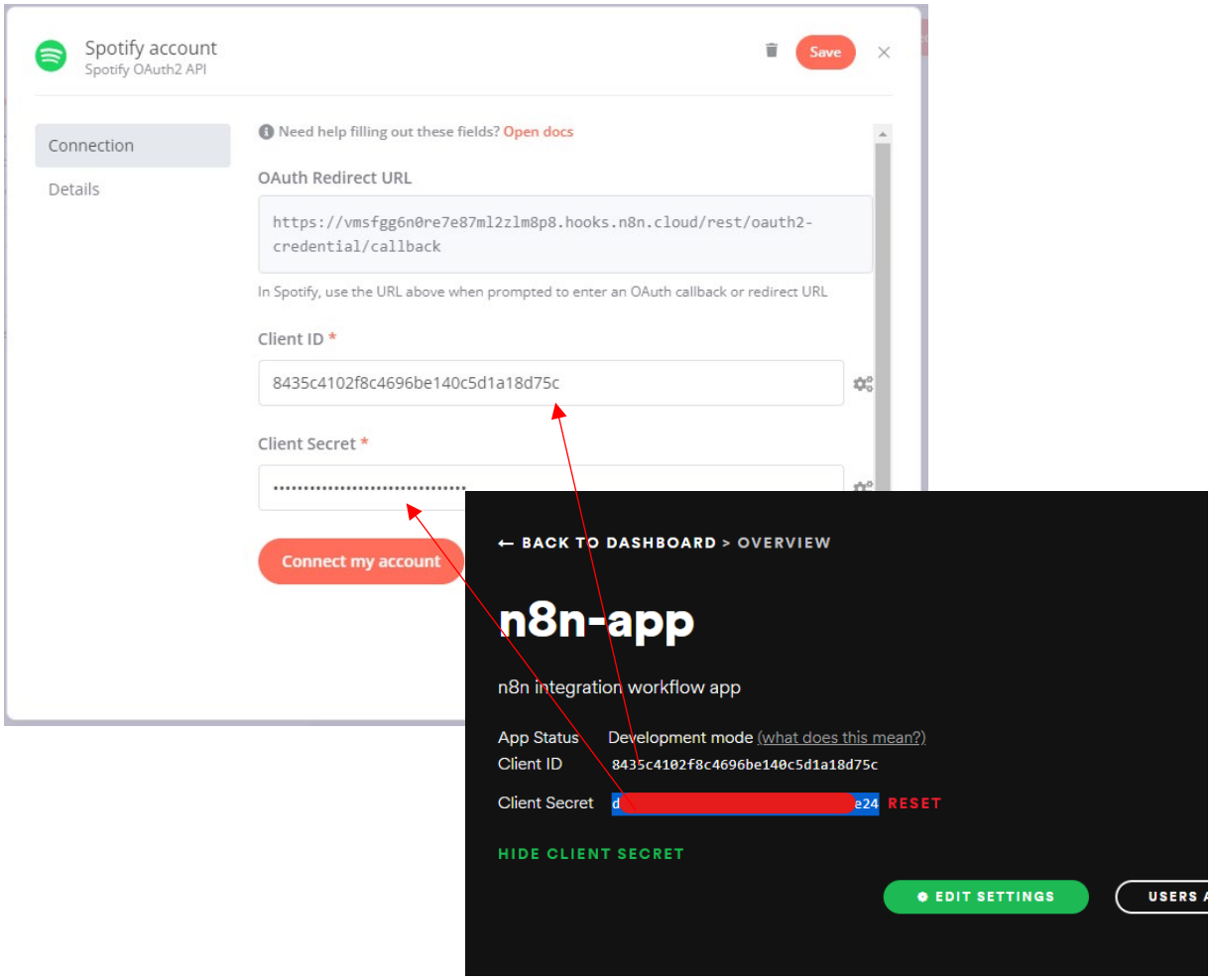
Create & manage your Spotify integrations.

Meet your dashboard. Log in to create new integrations and manage your Spotify credentials. Just connect Spotify Developer to your Spotify account.

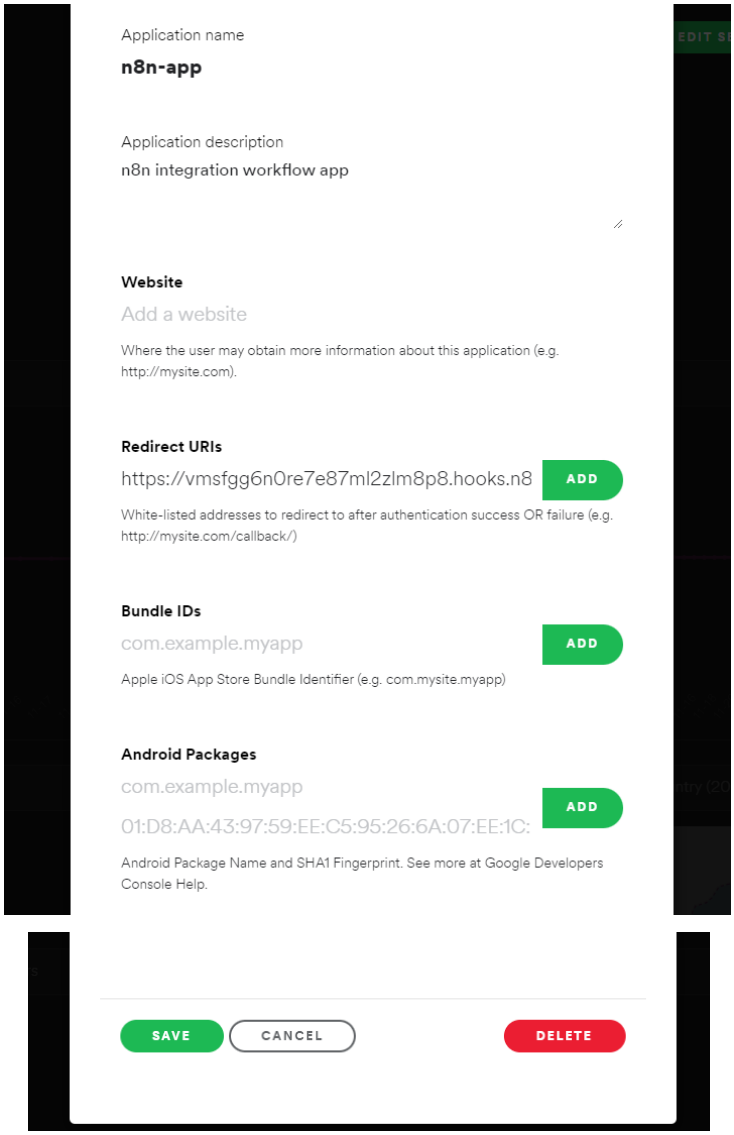
7. Then, click on the “Log In” button to login to your Spotify account. Then, click on the “Create an App” button at the top of your dashboard. Enter in the app's name and description and click Create.



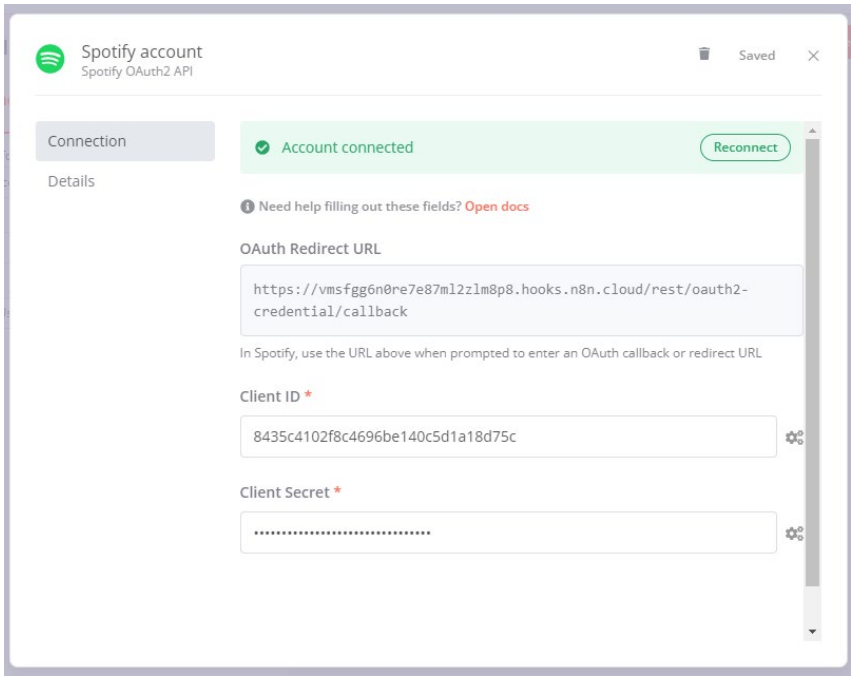
8. Then, you will see the Client ID of the integration created, copy the Client ID and paste at the Client ID section in n8n API configuration tab. Then, click on "Show client secret" and copy the "Client Secrete" to paste at the "Client Secret" of the n8n configuration.



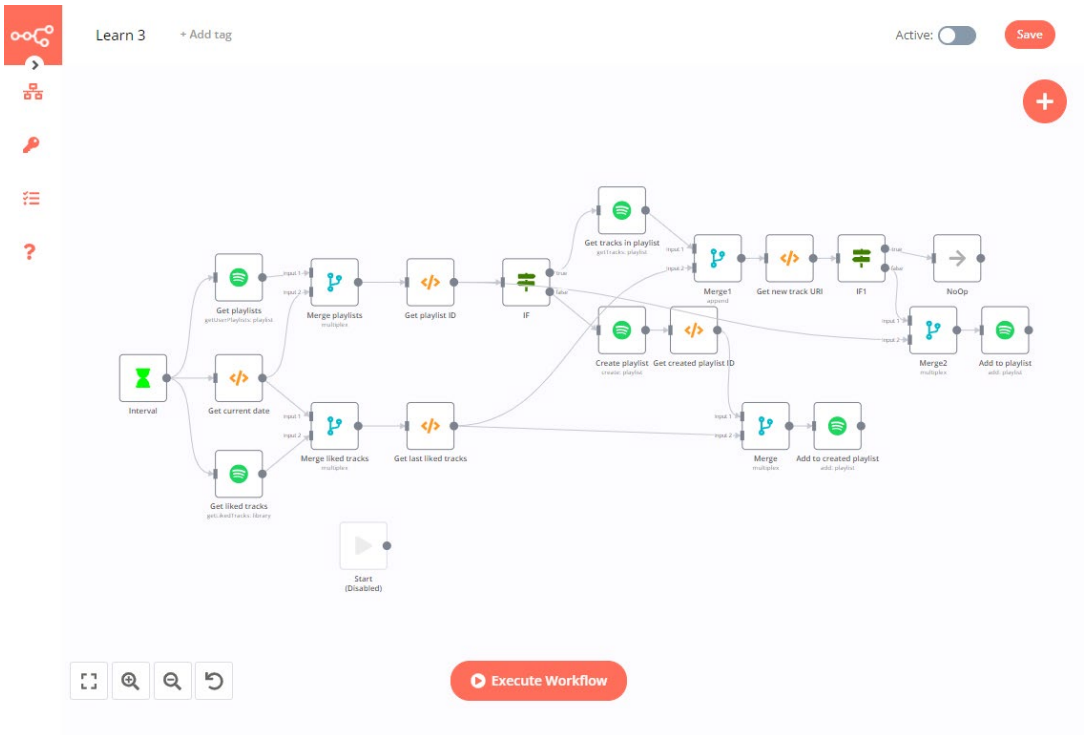
9. Then, copy the “OAuth Redirect URL” column in the n8n API configuration tab.
10. Back to the API dashboard of Spotify, click on the “Edit settings”, then paste the copy URL to the “Redirect URIs” column in Spotify. Then, click “Add” to add the link to integration and save it.



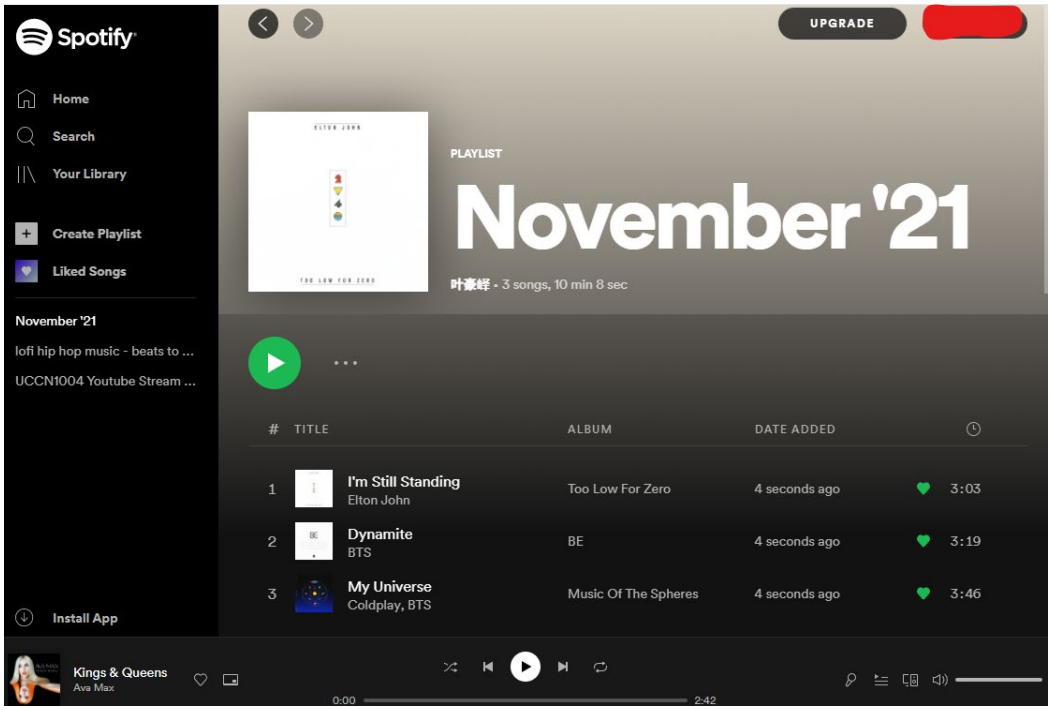
11. Once finish authenticate, click the “Save” button at the n8n API configuration tab to save all the API info. Then, click “Connect my account” button at the below and you will need to agree the API integration. Once finish, you will see account is connected and now you can close it.



12. Now, you will see all the triangle caution node disappear from all the "Spotify" node. It is because it will automatically connect the API once one of node is set up.



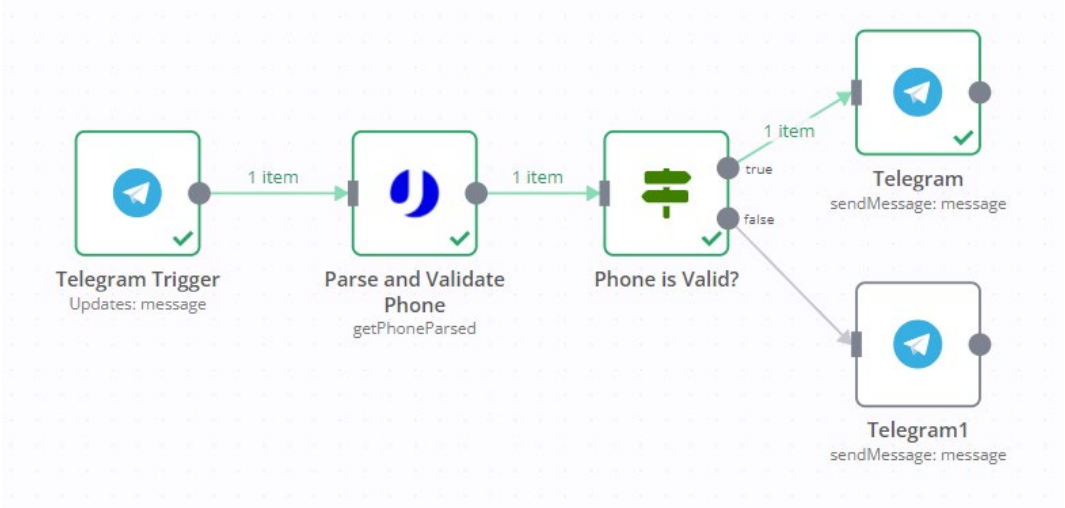
13. From now onward all is set up and you can click on "Execute Workflow" button to test the workflow and go to Spotify to like a music. Once successfully executed, you will see a new playlist is created using the month and all your like song in that month will be de put in that folder.



Verify a phone number with uProc via Telegram

This workflow let us to check the phone number given to us are valid or not buy sending the phone number to Telegram Bot and return with whether it is valid.

Concept Idea:

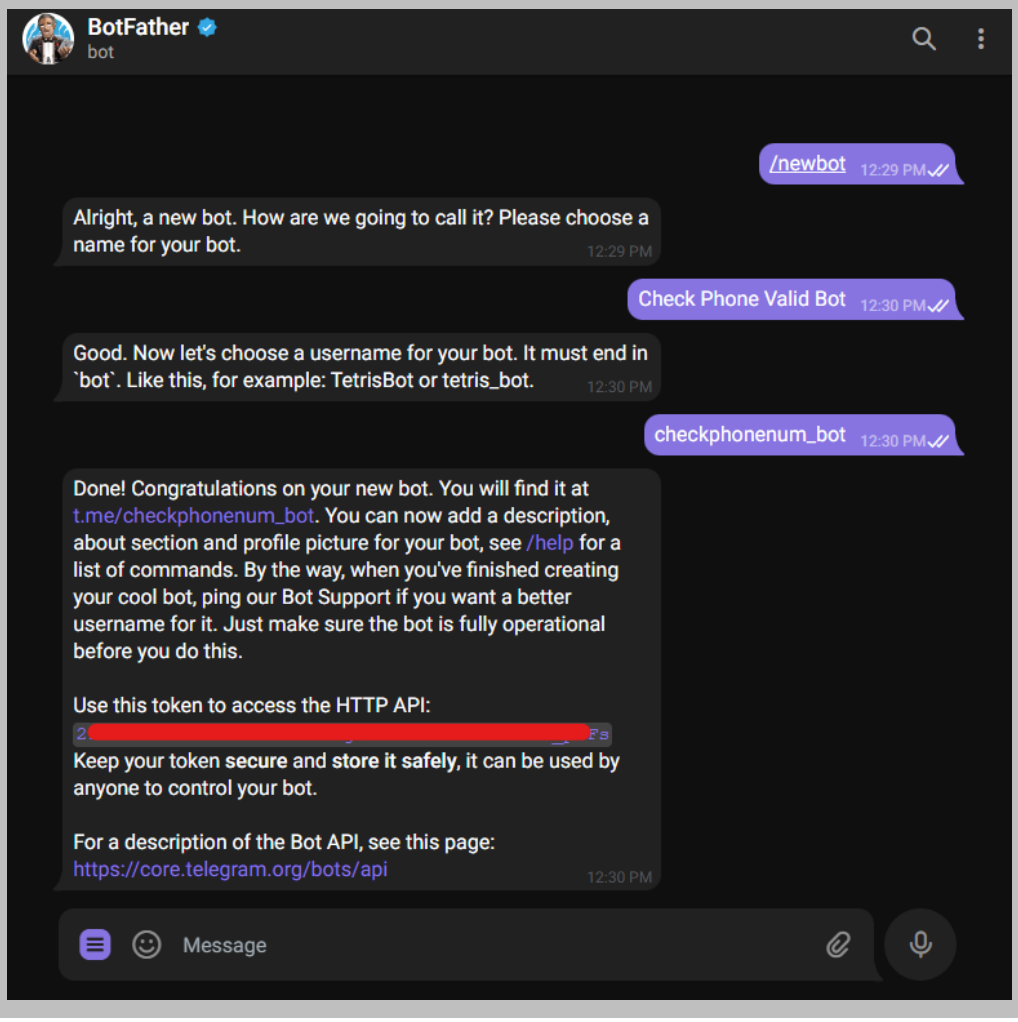


Prerequisite:

- Telegram account with Bot created

Way to setup bot:

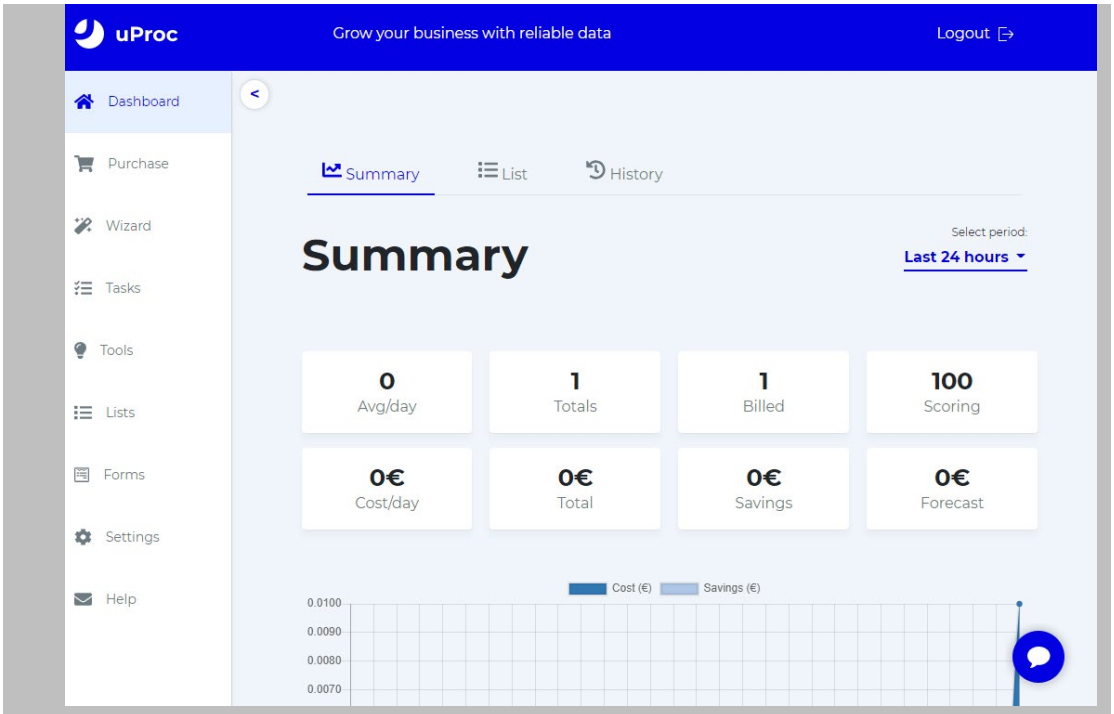
6. Register a Telegram account.
7. Start a chat with the Botfather (https://telegram.me/BotFather).
8. Insert /newbot and press enter to submit.
9. Then, reply a name for your BOT and username for it.
10. When successfully activated, you will be received and API token for future use.



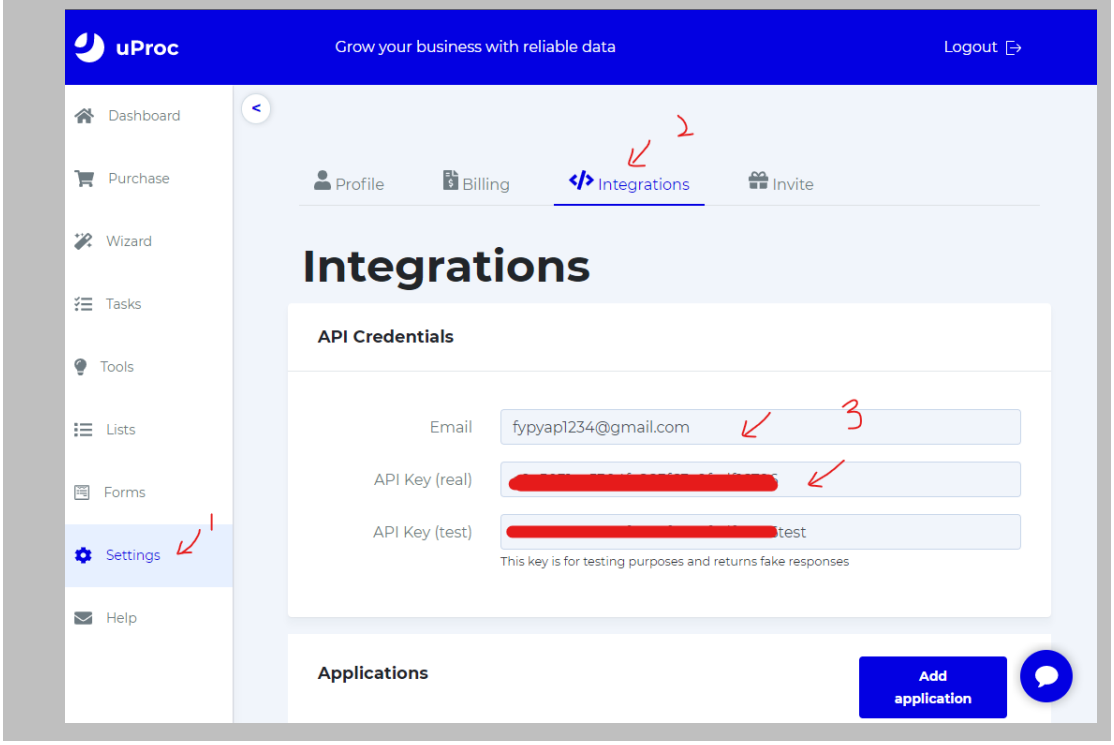
- uProc account created with integration API setup

Way to get the API token from uProc:

1. Go to your uproc dashboard once you registered the account at https://app.uproc.io/#/dashboard

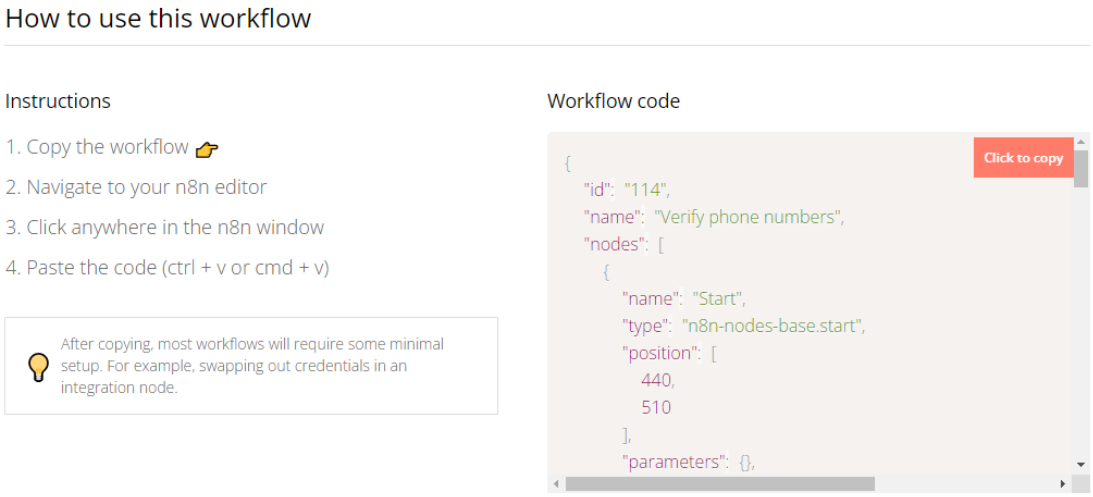


2. Then, under the "Settings" section, go to the integration tab. It will show your email and API key value at the box, you may copied it for future use.

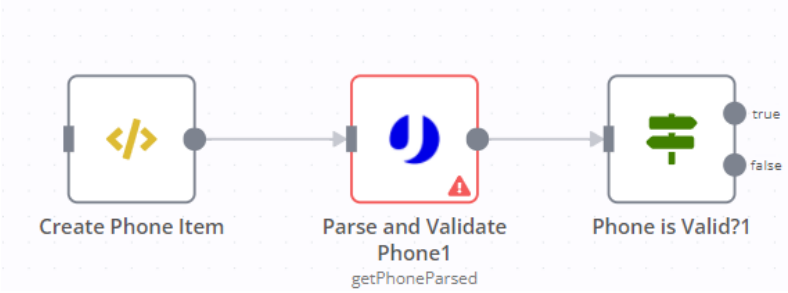


Step of using workflow template provided:

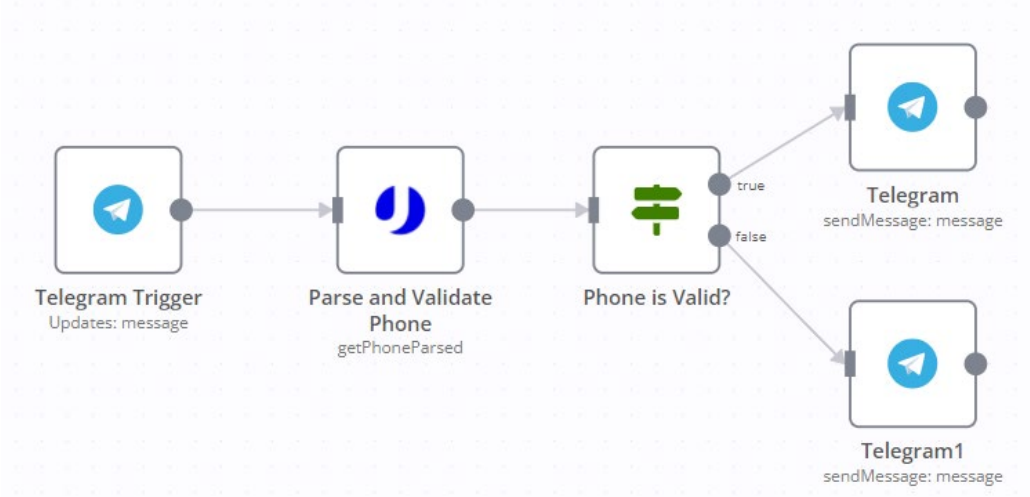
1. First, go to https://n8n.io/workflows/863 and copy the workflow code by scroll down to the workflow code section to get the code.



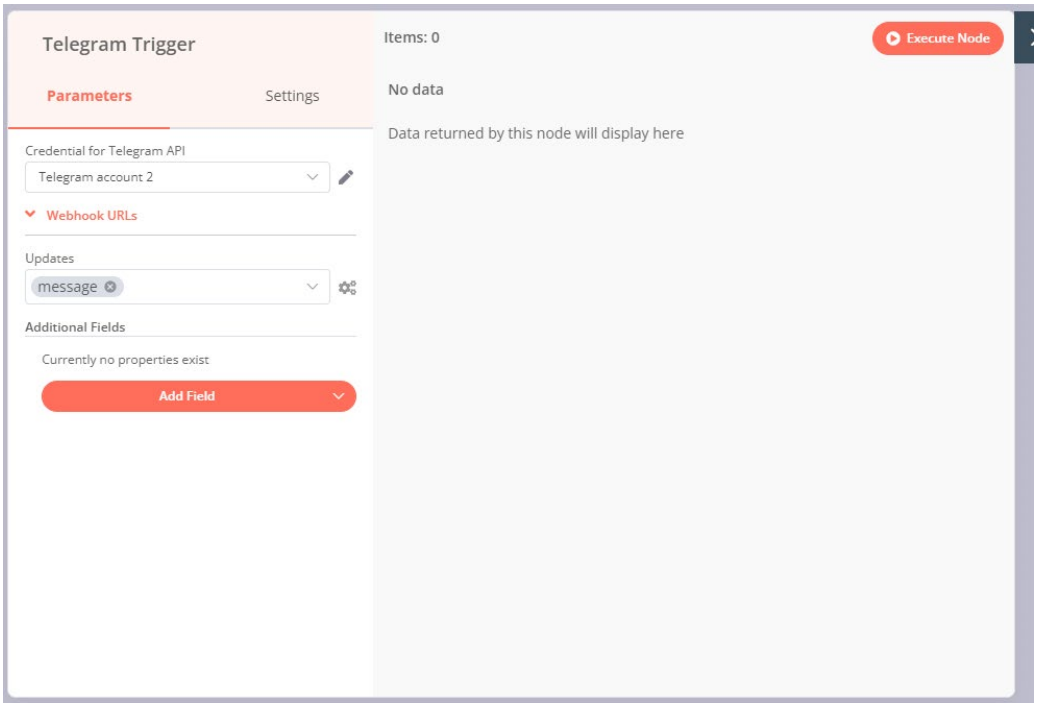
2. Then, paste the workflow code using Ctrl+V at the workflow editor and it will show all this workflow created. Now, delete the "Create Phone Item" node and we need to modify on this flow.



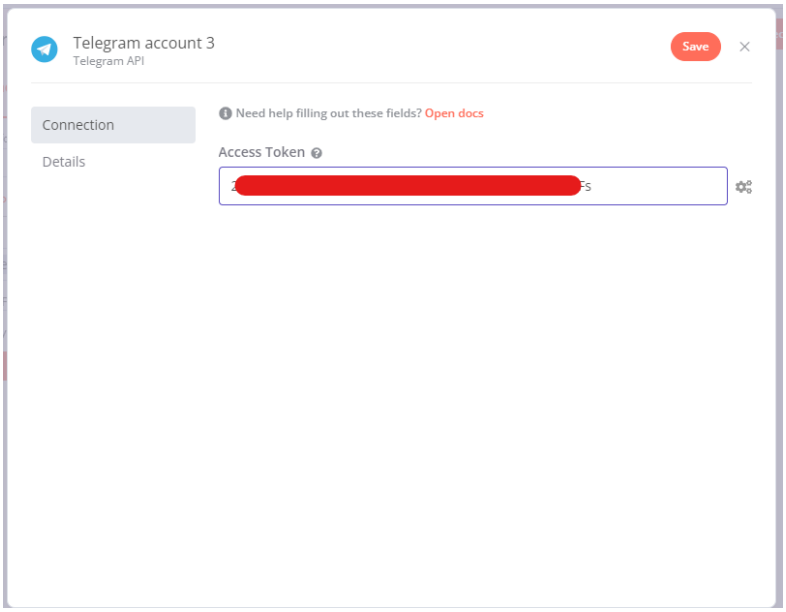
3. Add a "Telegram Trigger" node before the uProc node and link another two 'Telegram" node at the back of "Phone is Valid?" node.



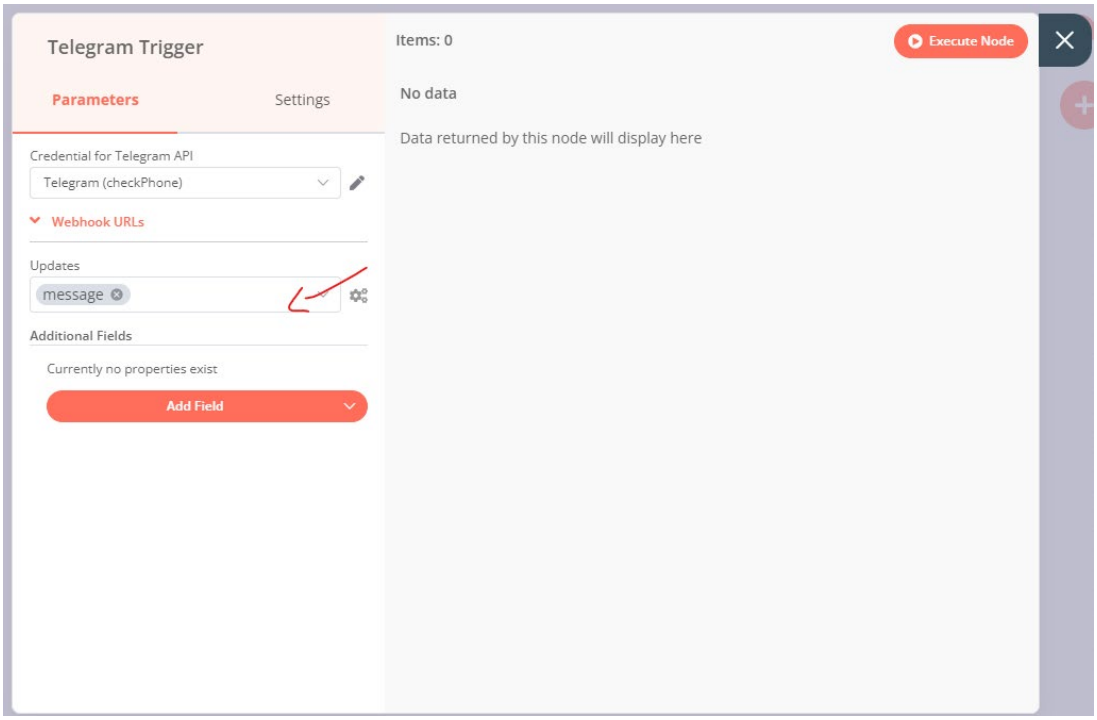
4. Now, double click on the "Telegram Trigger" node to open the configuration tab.



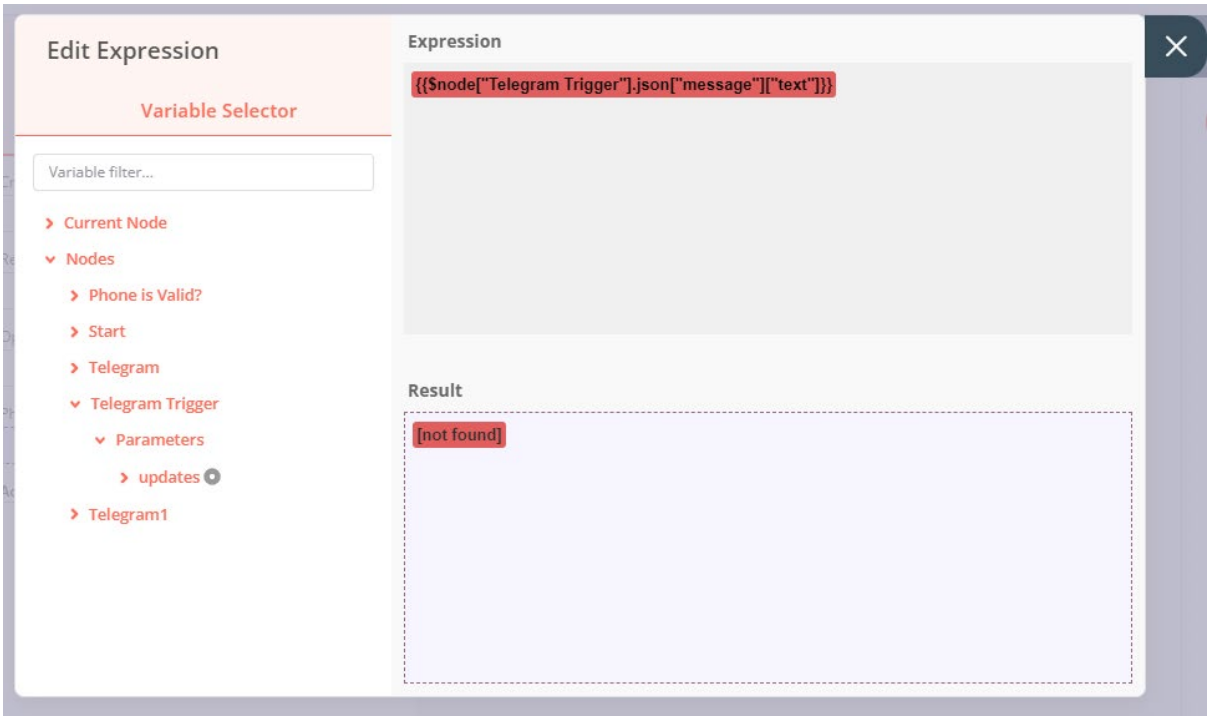
5. Then, at the credential column, select “Create New” and paste the API token get from the Telegram to the “Access Token” column. Save it and close the tab.



6. At the Updates section, select “message” to allow the node trigger when new message are incoming and then close it.

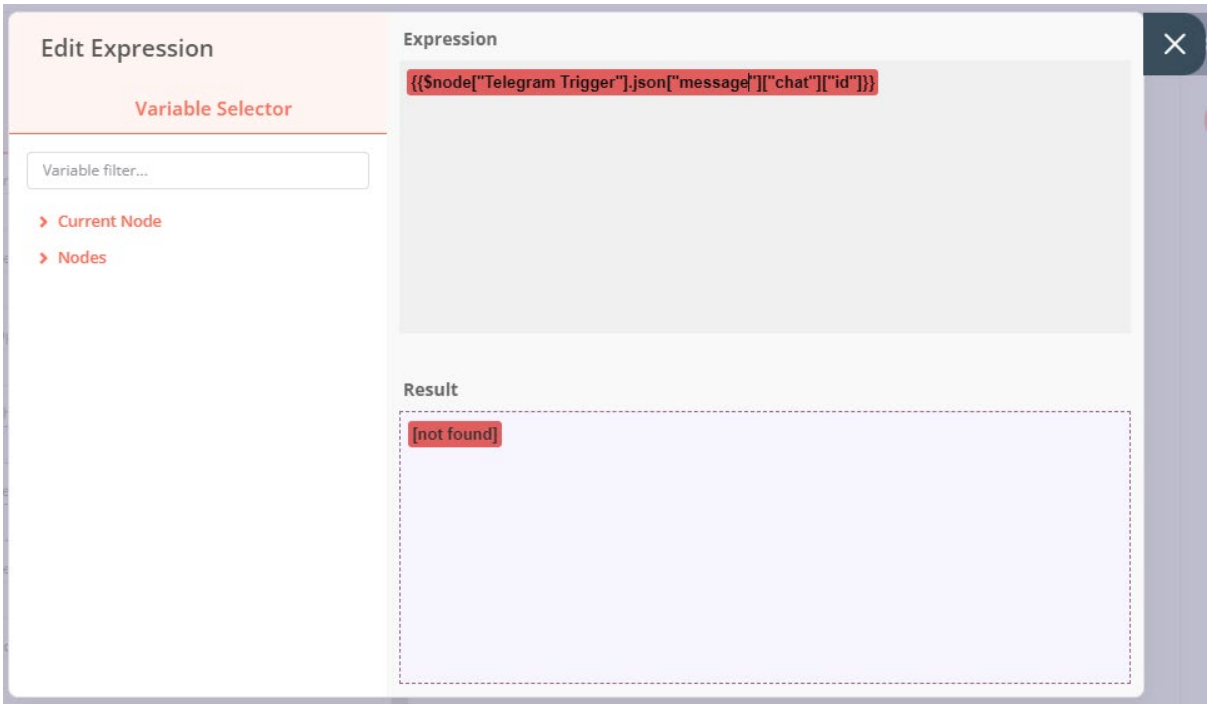


7. Then, double click on the "uProc" node and click on the "Phone" section to make change on the expression to pass in. Go to Telegram Trigger > Output > JSON > message > text,, click on it and close the tab. *(It not found ; you can run the first trigger node by passing some value in it to show the output)*

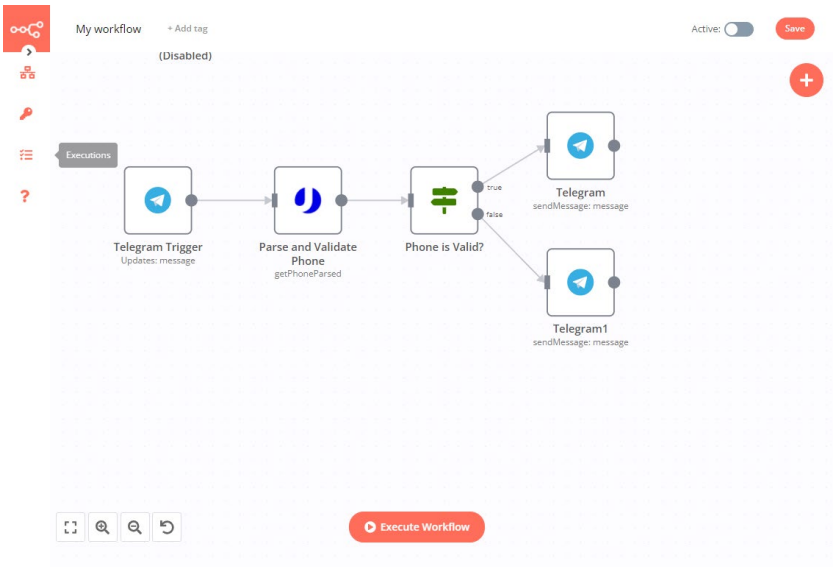


8. Go to the "Telegram" node at the last flow and make sure 2 node are connected their credential to the previous API created.

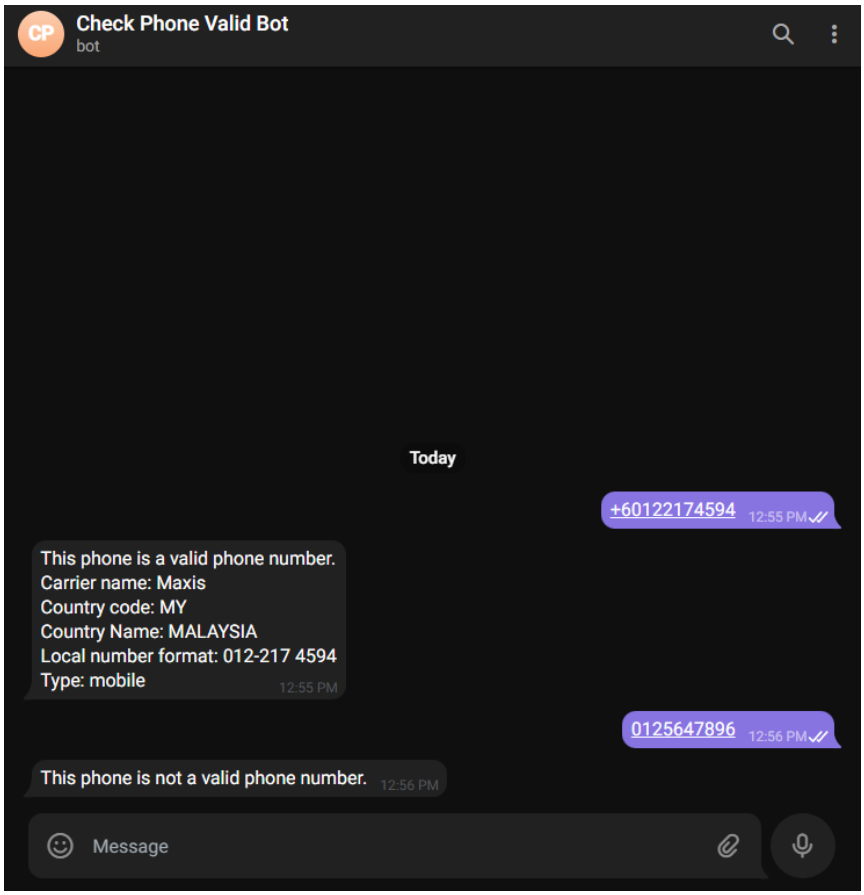
9. In the chat ID column, click on the gear button at side and click on “New Expression” to go to expression tab. Then, go to Telegram Trigger > output > json > message > chat > id and click on it, then close it.



10. On the text column u can insert some message that stated the phone number is valid.
11. Repeat the step on another Telegram node that connected to the false output of if statement. But this time the Text column replace with invalid text.
12. Now you can click on the “Execute workflow” button below to test the flow and paste some phone number that follow with country code in front (eg. +60123546987) via the Telegram bot. Make sure another Telegram account must be started a connection with Telegram first.



13. Now, you will see your telegram received with valid message of invalid message.

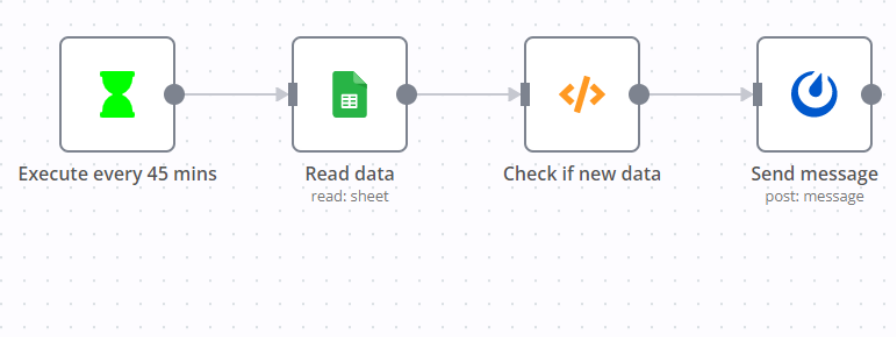


*** since this node are start with trigger check, so it might have problem of other people sending other value will make the trigger invalid. But you can add an if statement before parse to the uProc node whether it is a number with "+" and number.*

Monitor changes in Google Sheets every 45 mins

This workflow will be sending a message to the Mattermost every 45 minutes when new data are updated in Google Sheets. Mattermost is an internal communication platform in company that allow collaborator member in company to received updated , notification, announcement and communication platform via this platform.

Concept Idea:

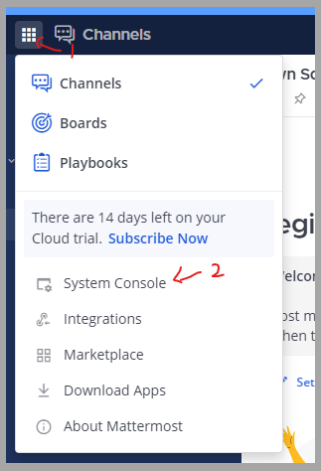


Prerequisite:

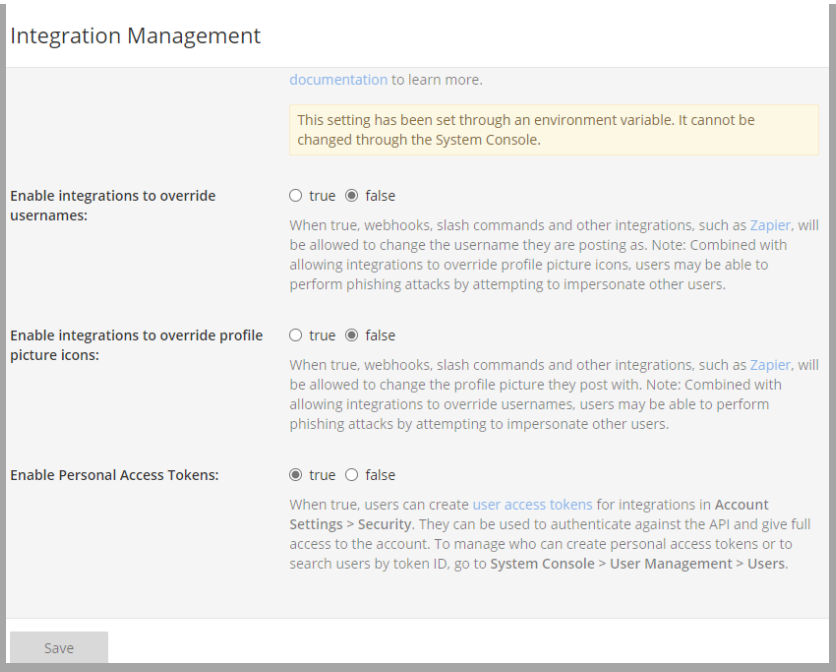
- Mattermost account registered with granted access by admin for user to generate an access token

Way to grant permissions to the users to generate access tokens:

1. Click on the button and select “System Console” from the dropdown list.



2. Scroll down the left sidebar and look for “Integration” section, then click on the “Integration Management”
3. Scroll down to the “Enable Personal Access Tokens” and enable personal access tokens then click on the Save button.

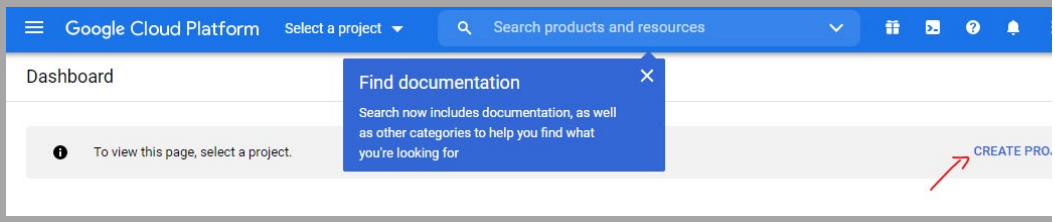


4. Then, scroll the left side bar again to look for "User management" section and click on "Users" and allow those user that needed the personal access token.

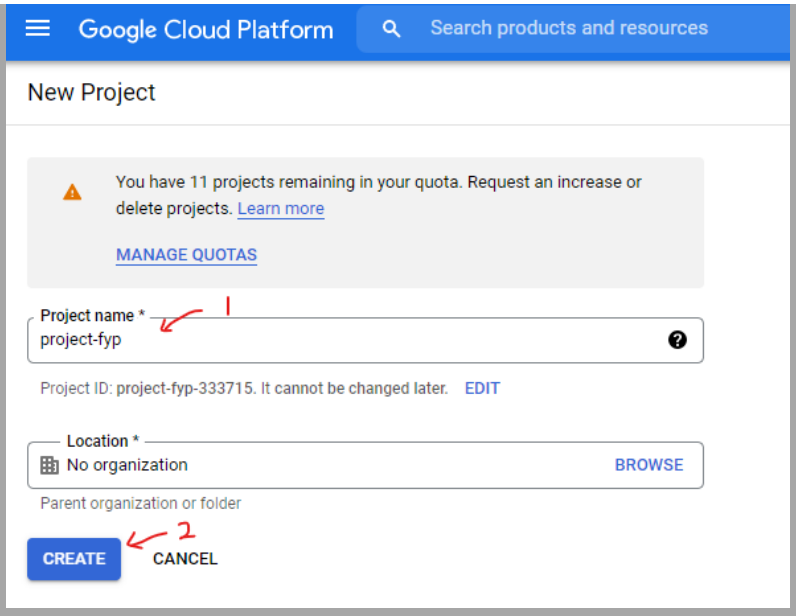
- Google account registered with OAuth set up

Way to setup Google OAuth 2.0 API Services for new user:

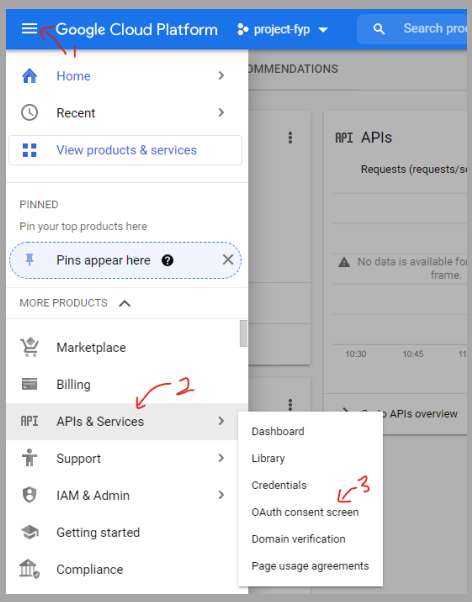
1. Go to Google Cloud Platform Console (https://console.cloud.google.com/).
2. In the Google Cloud Platform dashboard, click on "Create Project" to create a new Project if you are new to here.



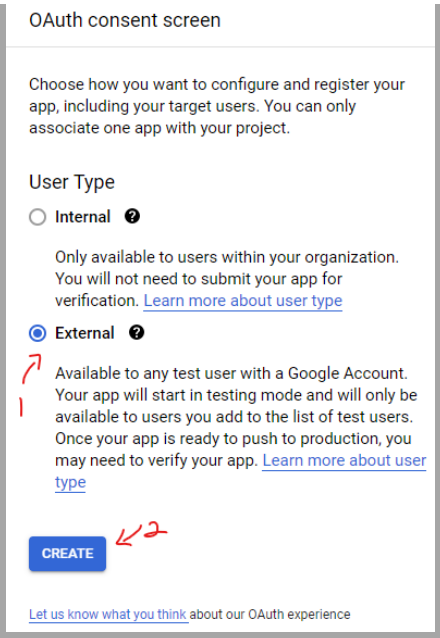
3. Insert a project name into the "Project name" and click "Create".



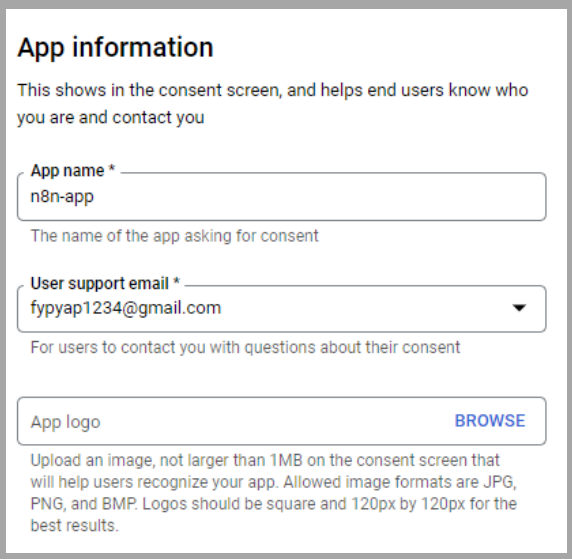
4. From the left sidebar of the project dashboard created, go to "API & Services" > "OAuth consent screen"



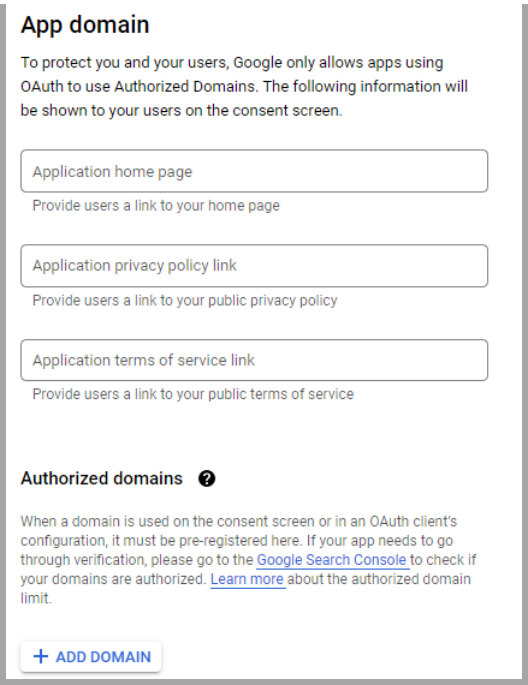
5. In the OAuth consent screen, select "External" as the User Type and then click on "Create" button to continue. The external is indicates that any user with Google Account will able to access the app via API.



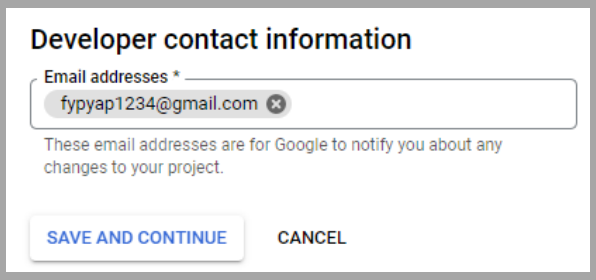
6. Under the "App information" section, insert "n8n-app" in the "App-name" column, then select a user support email that people can contact on you for authentication. If you have logo, it is possible to add that.



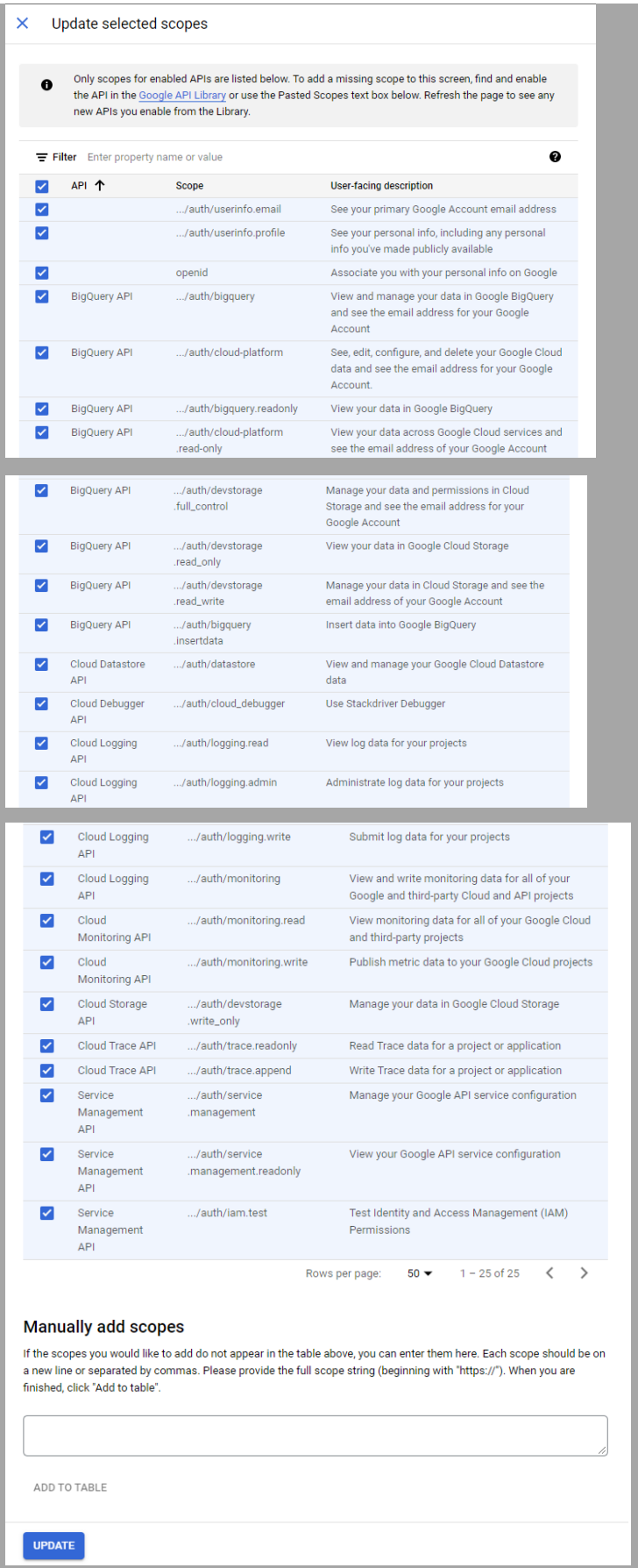
7. If your app created have already have a domain, privacy policy page set up you can fill in the section under the "App domain", but it is optional. So, for this case, we will leaves it blanks.



8. In next section, insert your email address that allow Google to notify you for any changes in your project. You can also use back the email of this account. After that, click on "Save and continue" to proceed.

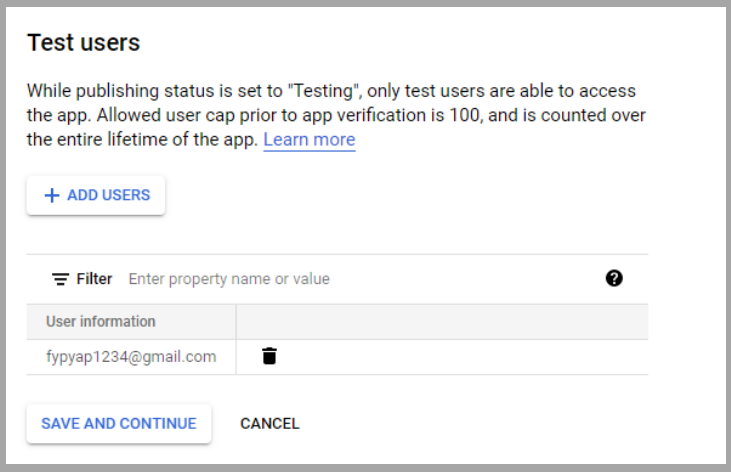


9. In the scope section, it is for you to set what type of data the API can be access and what is the scope area they can deal with. So, click on the "Add or remove Scopes" button, then in the "Update selected scopes" window tick all the scope to allow the full access using API. To allow all, youcan go doan to the "Row per page" column and select 100 then tick all and click "Update" button to confirm.



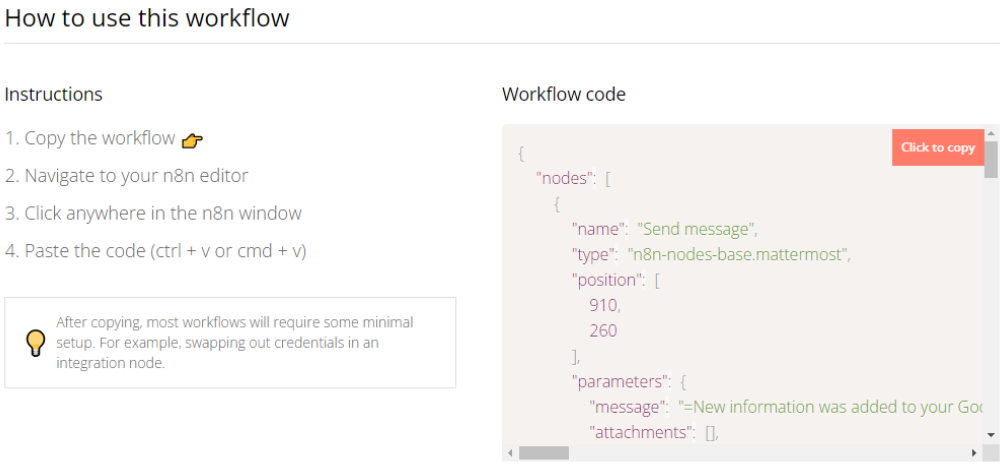
10. Then, click “Save and Continue” button again under the page to proceed.

11. Under the “Test User” section, click on the “Add Users” and add your current mail to the column and click “Add”, then click “Save and continue” button again to proceed.

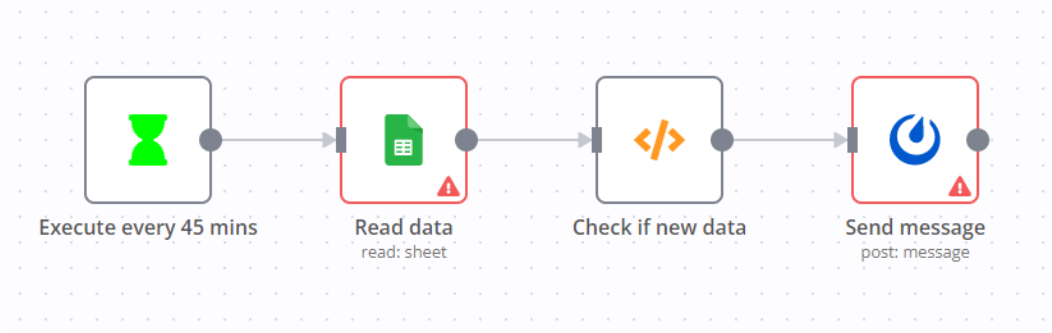


Step of using workflow template provided:

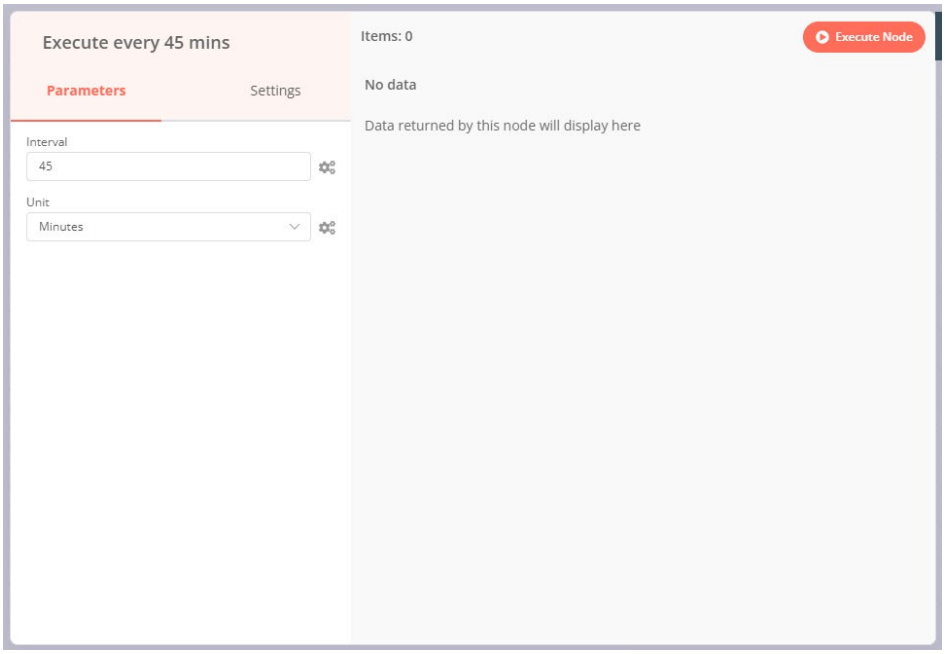
1. Go to https://n8n.io/workflows/864, then scroll down to the workflow code section and copy the code by clicking the “Copy” button.



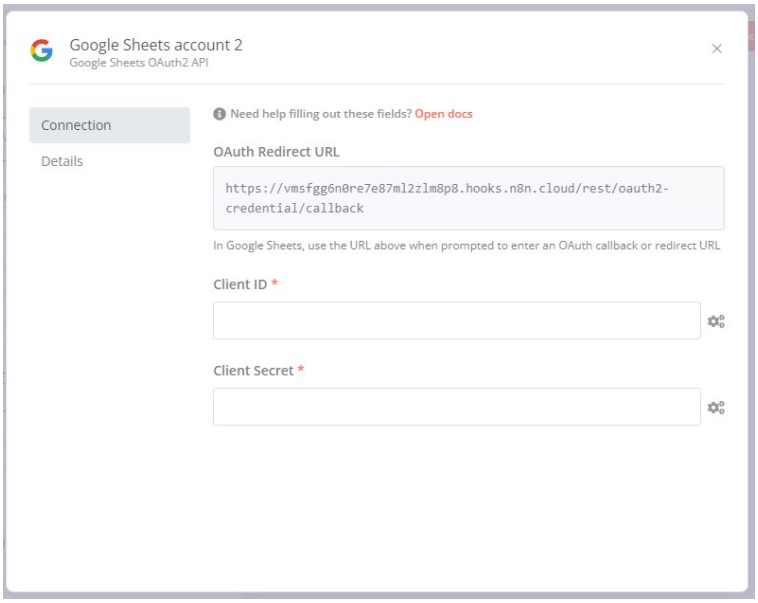
2. Then paste the code in the workflow editor by using Ctrl+V key on keyboard and the flow will be shown on the editor.



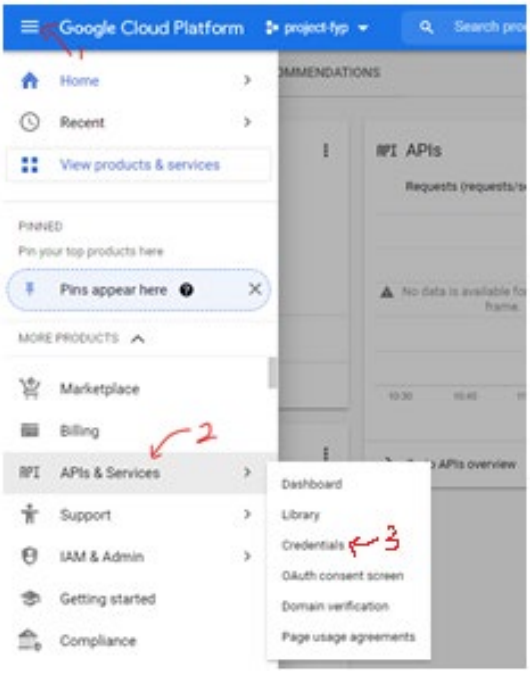
3. In the first flow, it is a trigger that will run every 45 minutes.



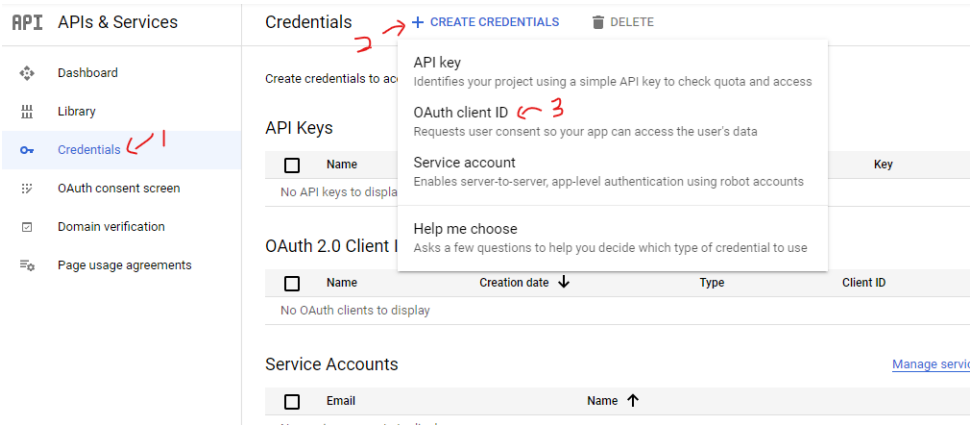
4. Double click on the next node which is the “Google Sheet” node to open its configuration tab. Then, select “Create New” from the dropdown of “Credential” column.



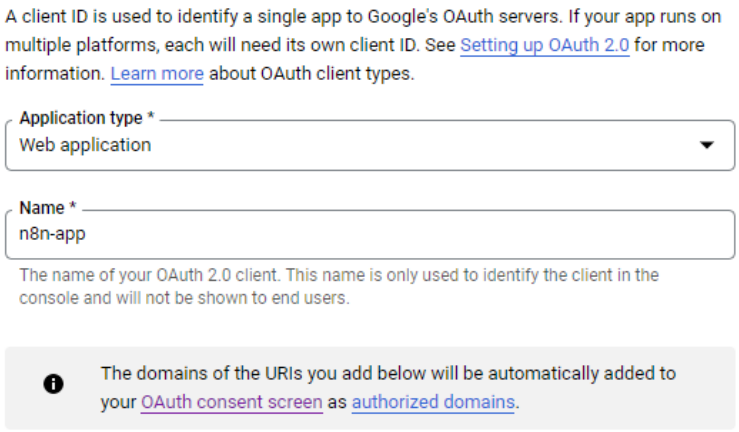
5. Now you need to go to the dashboard of the Google Cloud Platform Console (https://console.cloud.google.com/) and go to “API & Services” > Credentials that shown at the left sidebar.



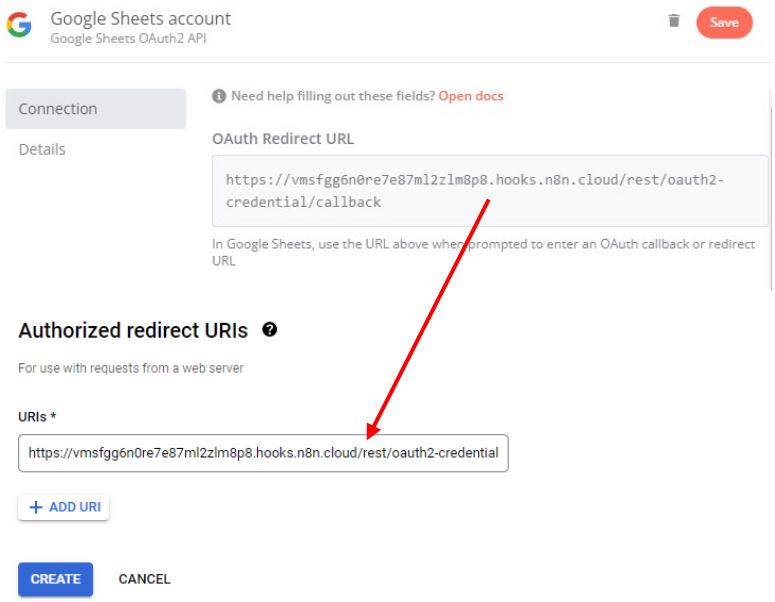
6. Under the “Credentials” tab and click on “+ Create Credentials” and select “OAuth client ID” to set up your API authentication module.



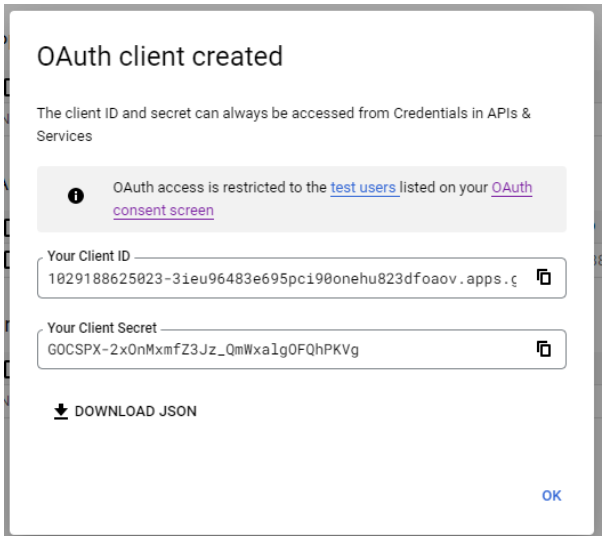
7. In next flow, select “Web application” from the dropdown menu of “Application type” column. Then, insert name of your app to the “Name” section.



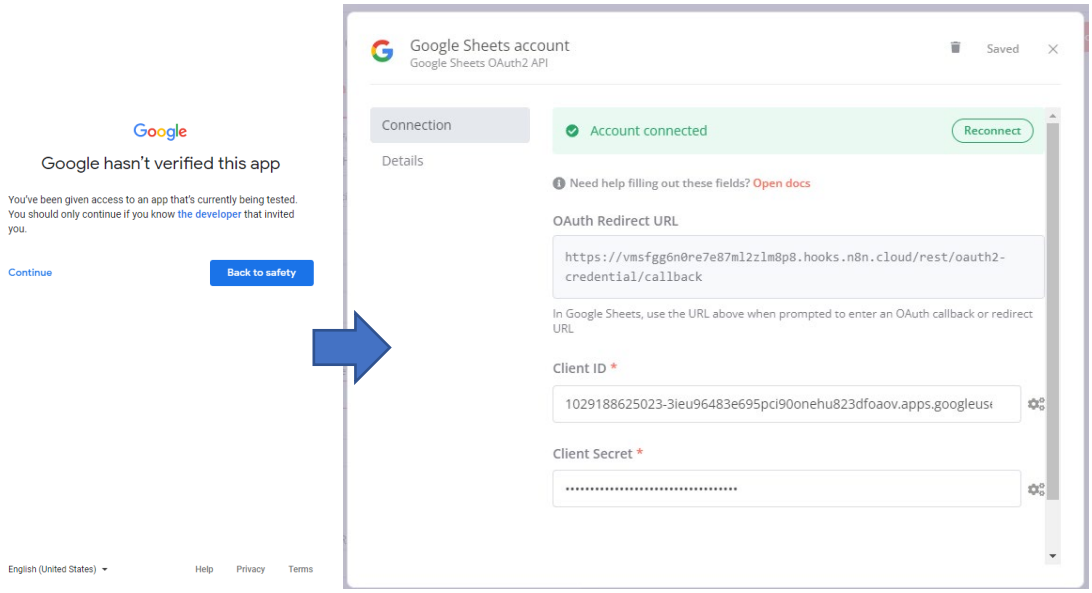
8. Then under the "Authorized redirect URIs" section, click on "+ Add URI" and paste the "OAuth Redirect URL" link get from n8n API configuration tab to the "URI" column. Then click "Create" to proceed.



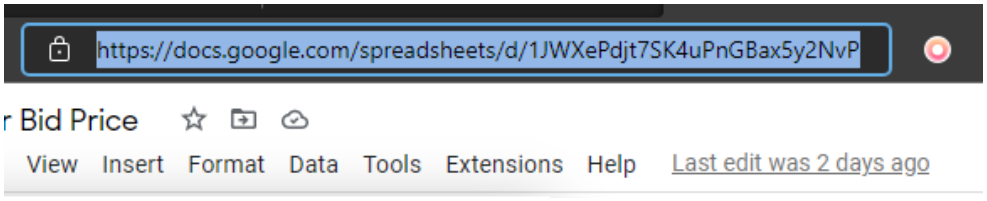
9. Once OAuth client created, it will show your client ID and client Secret, paste it into your n8n configuration tab based on the column. Then click "Save" to save all the information.



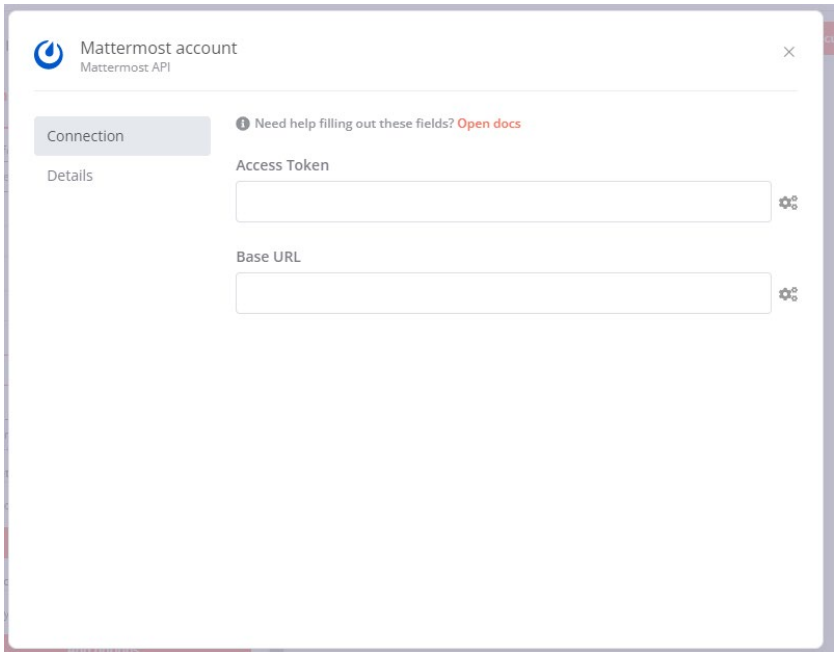
10. Once API info saved, click on "Sign in with Google" button and a box will prompt. But, since the you haven't get approved by the Google, so it will show some error. Now, click on "Continue" to proceed your set up and continue from that. Once it authenticated, it will show you have connected to google account and close it.



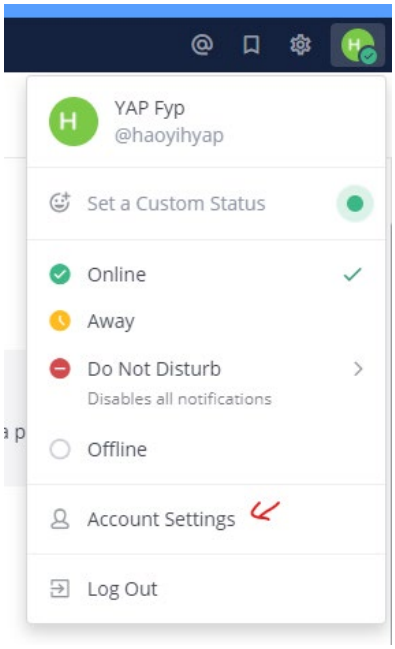
11. Then, under the Spreadsheet ID, clear all the value in it. Go to your Google Sheet that created, from the URL link above copy the code after the "https://docs.google.com/spreadsheets/d/" and paste it to the Spreadsheet ID column (Eg. "https://docs.google.com/spreadsheets/d/ 1JWXePdjt7SK4uPnGBax5y2NvPrKRhrTa1dvqp3LUuAs/edit#gid=0" red colour is your ID)



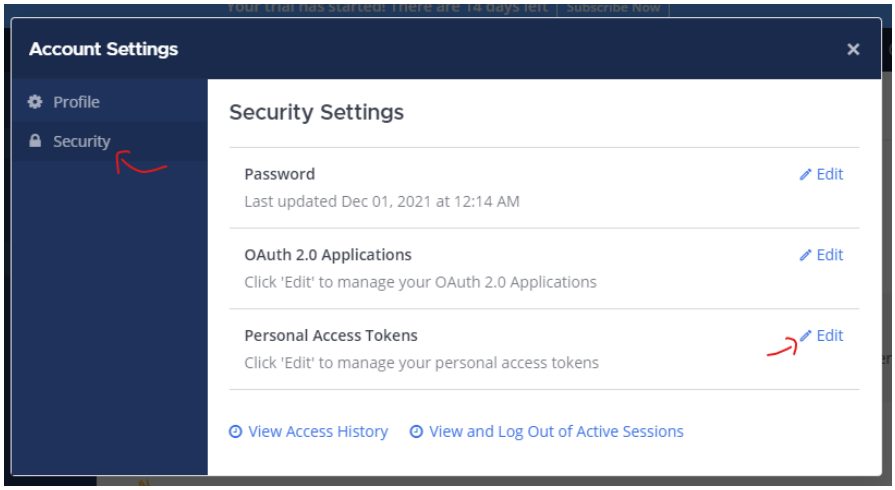
12. After that go to the last node (Mattermost node) then select on the “Create New” from the dropdown of credentials to prompt the configuration tab of API.



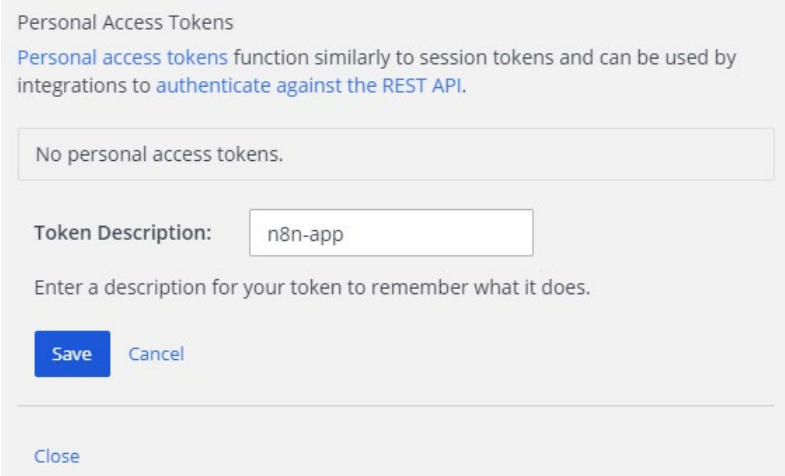
13. Later on, go to your Mattermost dashboard and under your user icon on the upper right of the webpage click on that and go to “Account setting”.



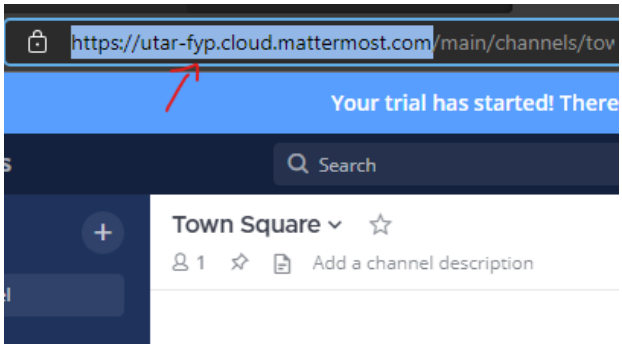
14. In the “Account setting” tab, go to the “Security” section and click on the “Edit” at the side of “Personal Access Tokens”.

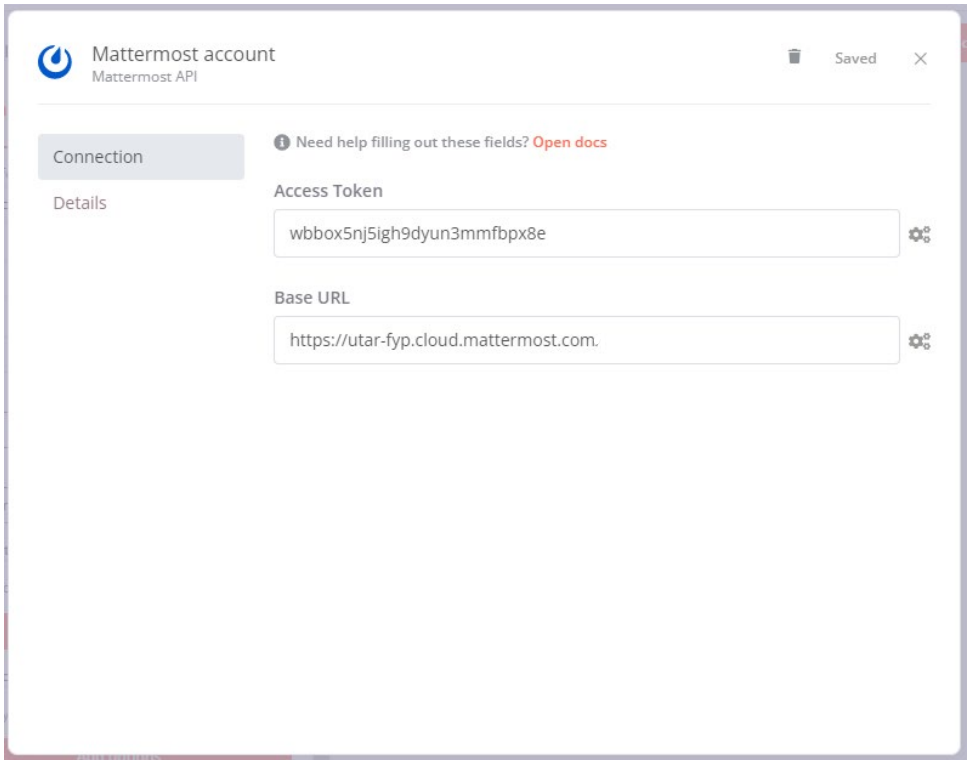


15. Then, click on the “Create Token”button and insert “n8n-app” into the “Token description” tab then click on “Save” button. Then click on “Yes, create” on the warn box.

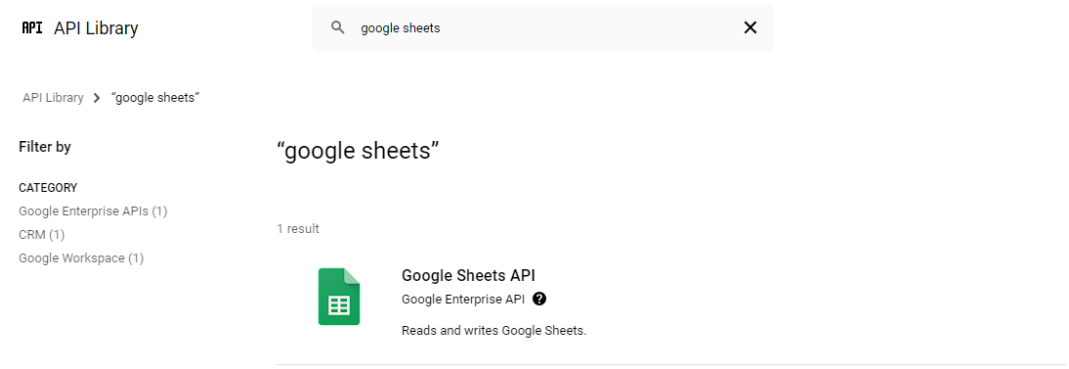


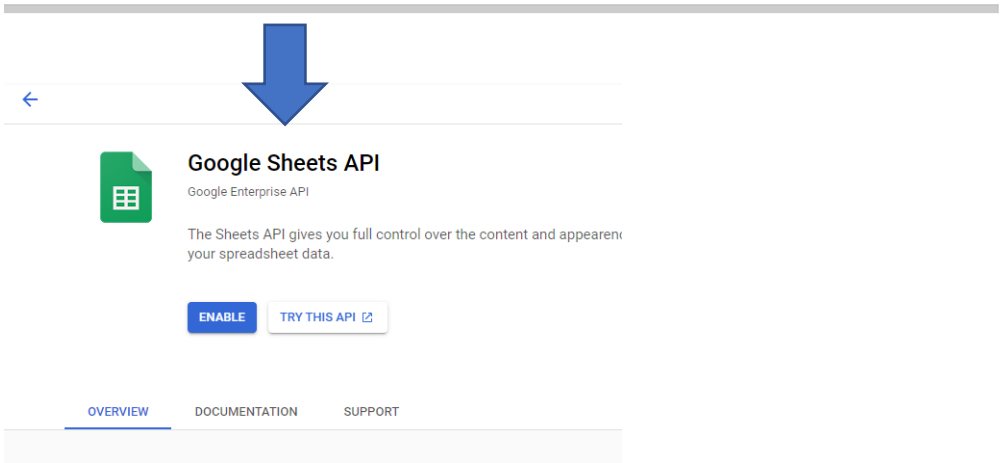
16. Once API token generated, copy the access token and paste it to the n8n API configuration tab while Base URL will be pasted by the link of your Mattermost URL above. Then click “Save” to save the configuration and close it in n8n.



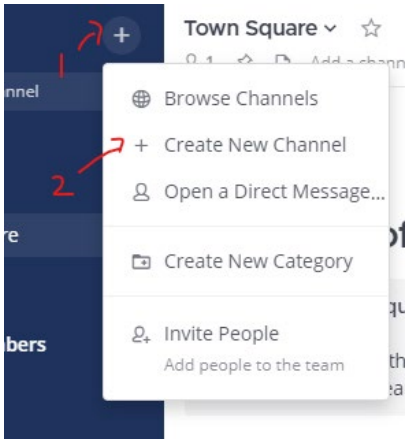


17. Before that, go back to the Google Cloud Platform and go to "APIs & Services" > Library, search for "Google sheets" and enable the API to access on it.

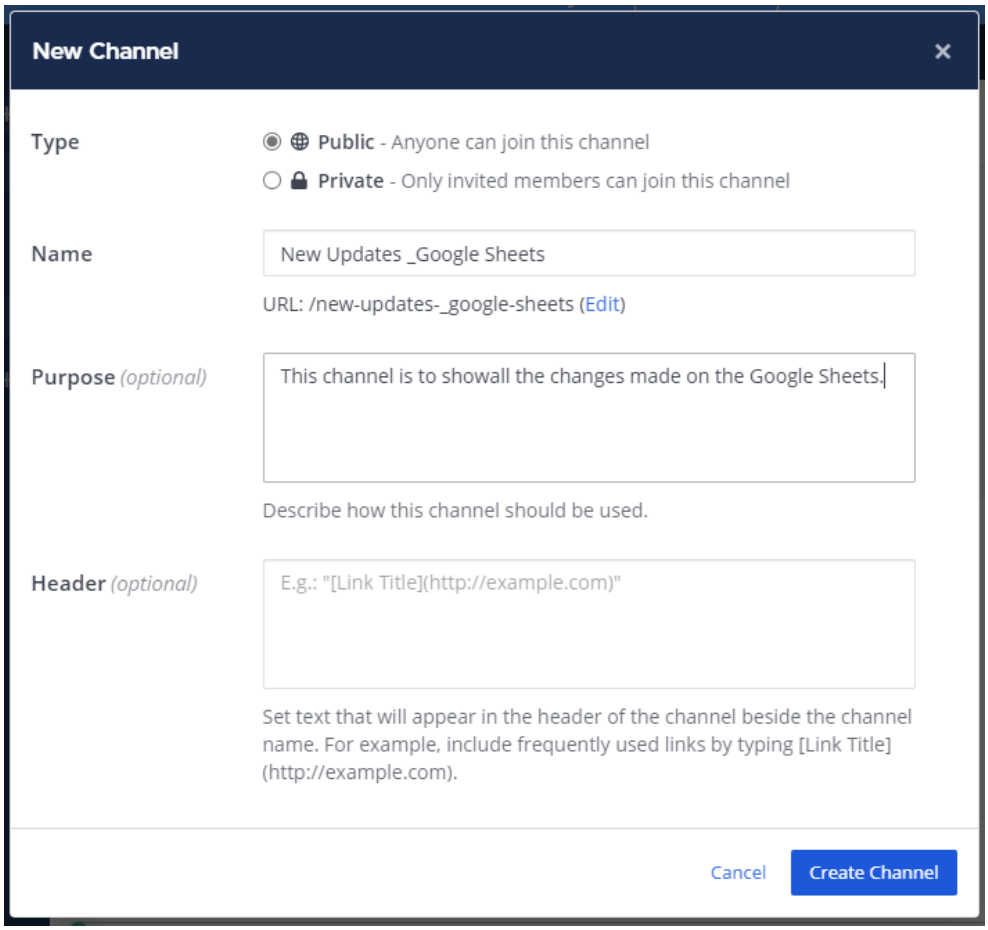




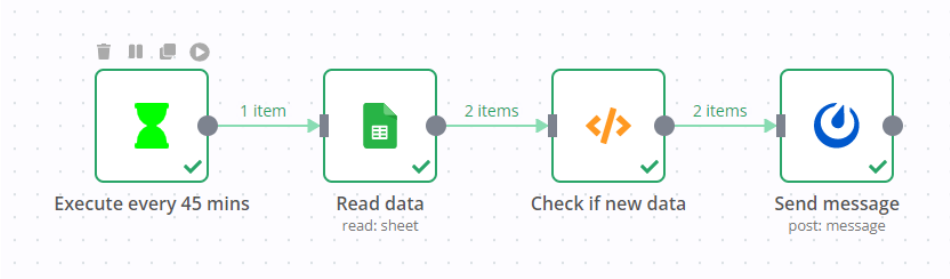
18. Now, in your Mattermost, click on the "+" button and select "+ Create New Channel" to create a new channel for receiving the changes.

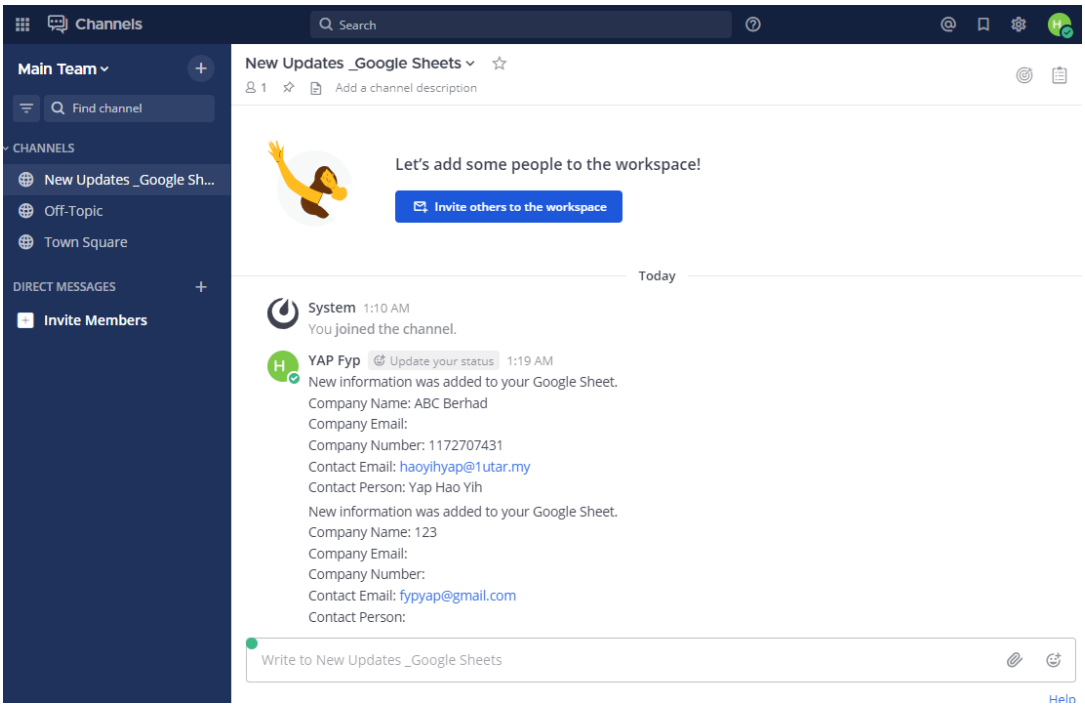


19. Then insert name of your channel and purpose and header on it based your preferences and click “Create Channel”



20. In the Mattermost configuration tab in n8n, select your creted channel name under the “Channel ID” section. If not found click on the gear button beside and refresh the list again. Then, close the configuration tab.
21. Now, click on the “Execute workflow” button below to test the workflow and try insert some data in the Google Sheets. Once it executed, you will see a new message is send to the Mattermost Channel.

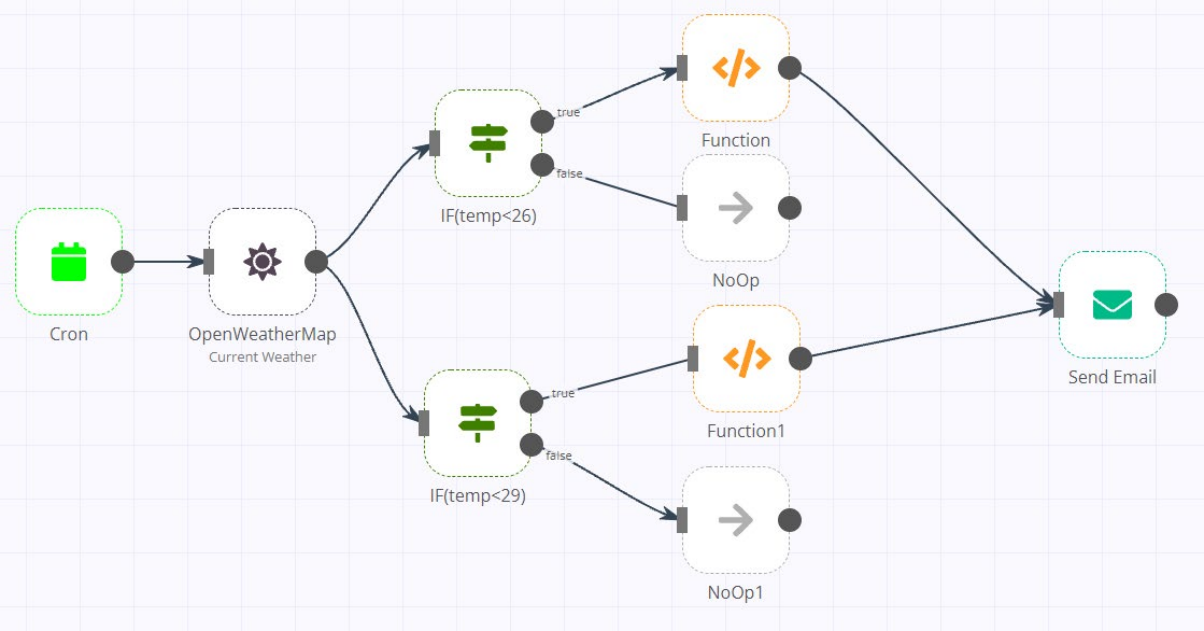




N8N Simple Workflow Developing Guide

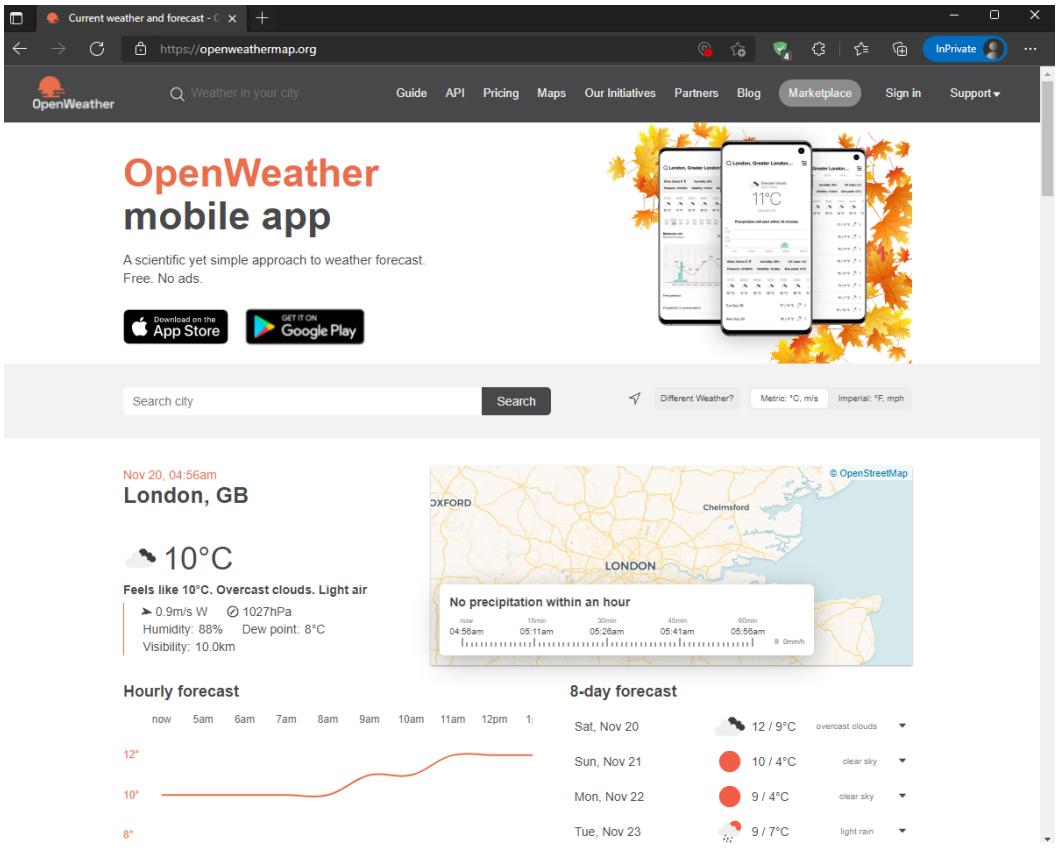
Daily Weather Notification with OpenWeatherMap and Gmail

Concept Design



Prerequisite

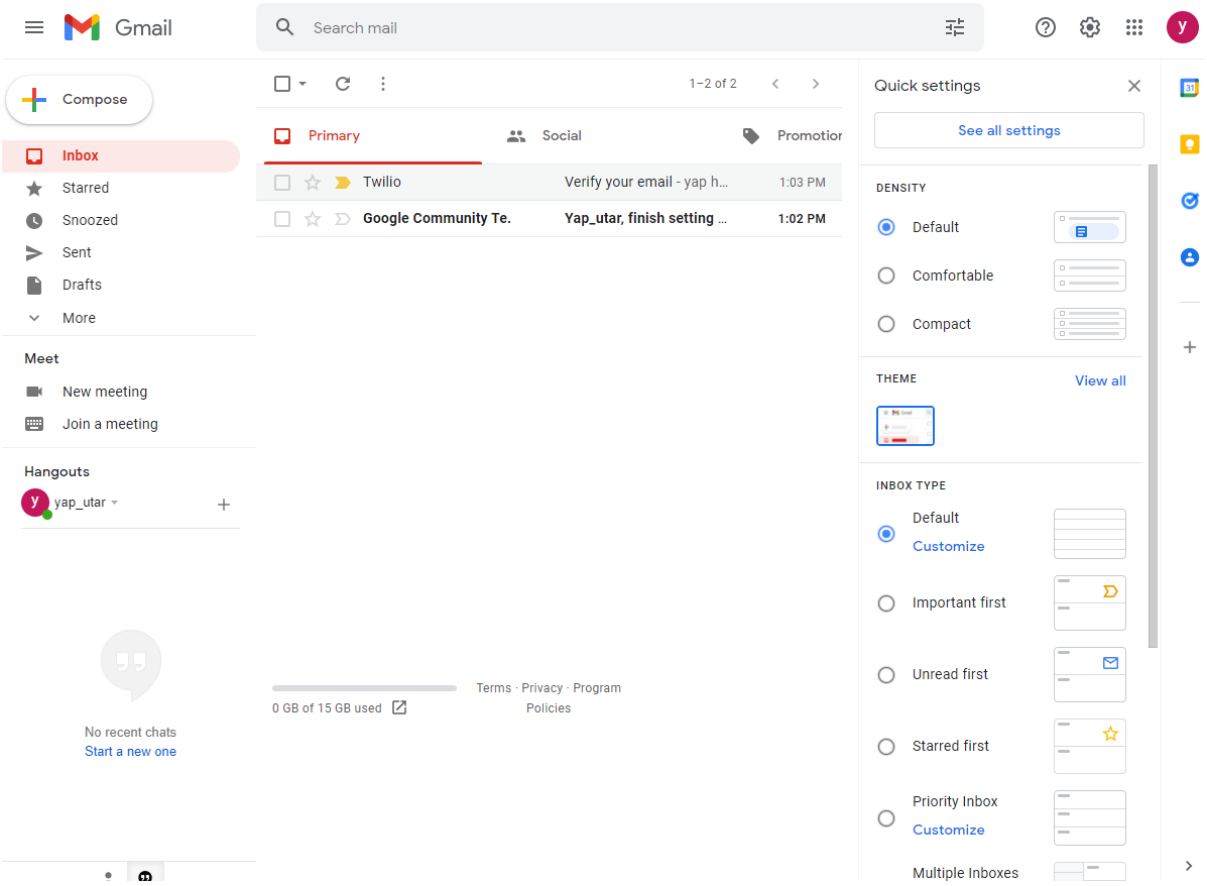
Register for an OpenWeatherMap Account at https://openweathermap.org/



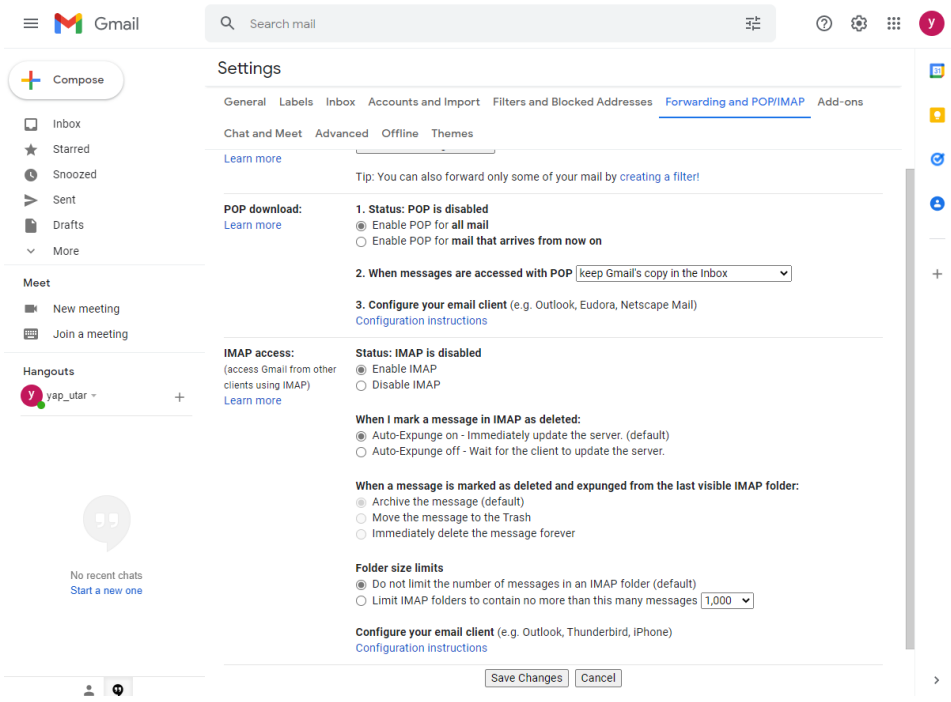
Register a Gmail account for us to send mail at https://mail.google.com/mail. Please ensure that you have turn on your smtp port in your mail to allow us able to send email by using

SMTP/IMAP/POP connection in our n8n. Here's show the step of activating the smtp connection.

1. In the Gmail go the setting button (⚙) and a side bar of setting will prompt out. Then, click on the "See all settings" button to go for mail setting.



2. Under the "Forwarding and POP/IMAP" section, enable the POP of all mail and enable for IMAP, then click "Sava Changes" button to save the configuration and now your account will be able access by third parties.



** If you are using Gmail account, you need to set your account to be Less Secure App Access activated which is located under the Security tab under your Gmail Account Dashboard in order to easier the authentication.

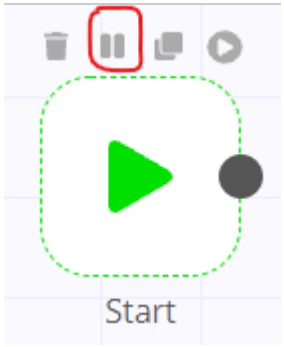
Working on Building the Workflow

Node needed by workflow:

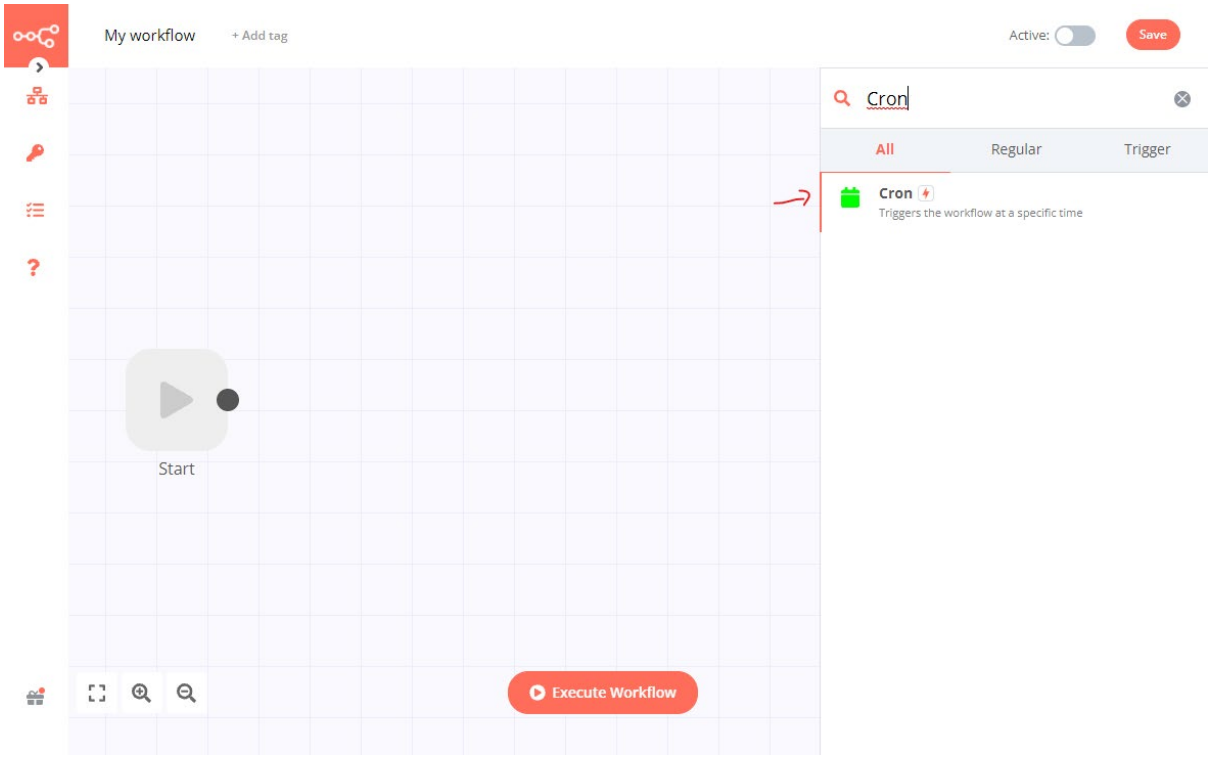
- Cron - Specify when the workflow should start (be triggered)
- OpenWeatherMap - Get weather details for a particular city
- IF - Conditional logic to decide the flow of the workflow
- Function – Add JavaScript function to data
- Send Email – to send email to the correct parties.
- NoOp - Do nothing (optional)

Step of developing:

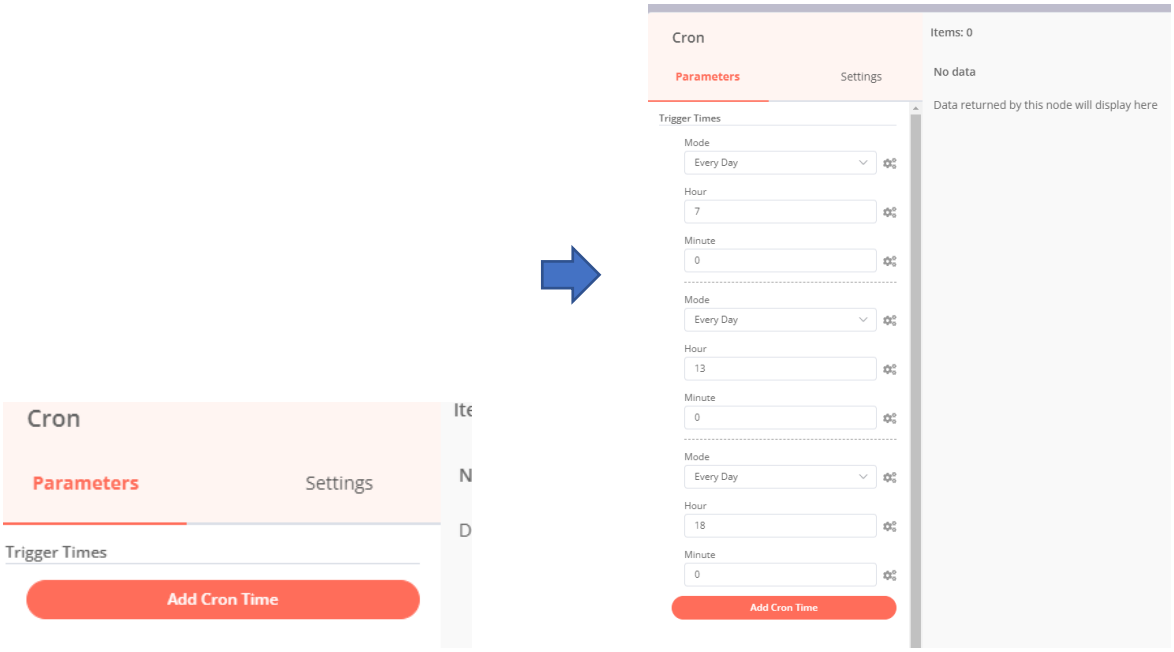
1. First of all, start your n8n services. Then, go to your “Start” node, click on pause button to stop the first node operation.



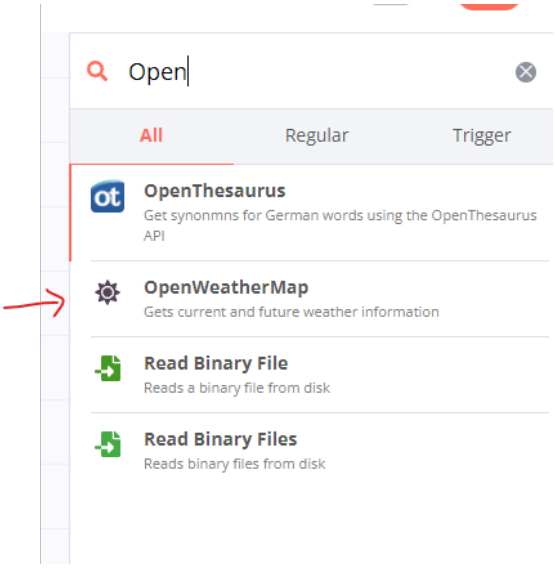
2. Then, click on the "+" button on the right side of your workflow editor and add "Cron" node to your editor and the configuration window of this node will prompt out. In this case, we will be using the "Cron" trigger node to trigger the start of our workflow. The purpose of "Cron" trigger node is to allow the workflow to trigger the workflow to start for every certain period of time.



3. In the next click on the "Add Cron Time" button under the "Trigger Times" sections. In next, it will prompt few columns for inserting time when we want to trigger and trigger frequency in Mode section. In this case we set to trigger the workflow at 7am, 1pm, 6pm every day, thus we set the Mode to Every Day and put the time base on hour and minutes and created three Cron time for different time that need to trigger. Then, click on the"X" at upper right to close the configuration.

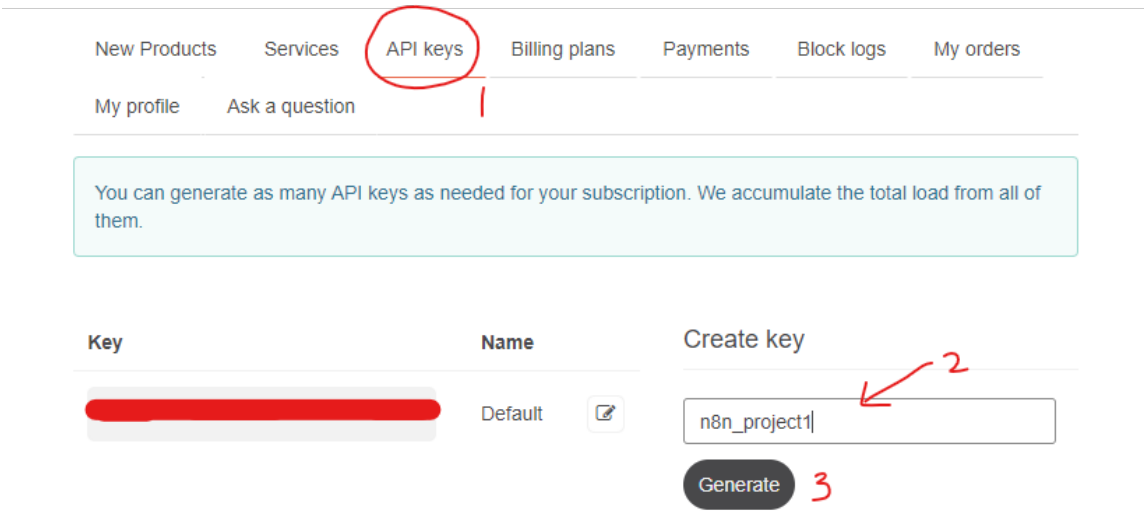


4. Now, we going to move on to next node where we will be going to search for the next node which is OpenWeatherMap node by clicking on the + button and selecting the OpenWeatherMap node.

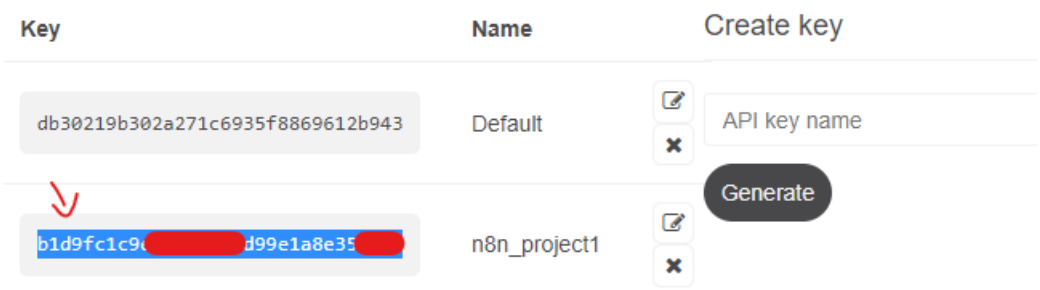


5. Then the configuration box for the OpenWeatherMap node will be prompt out and since it is a new node, we need to select an credential for the OpenWeatherMap API, which mean in easy word is we need to authenticate the API. Now, click on the drop-down menu under the Credential for OpenWeatherMap API, and click on “Create New”. Now since it need the “Access Token”, we need to go to the OpenWeatherMap account page (https://home.openweathermap.org/api_keys). Then, you will see the API Keys section as

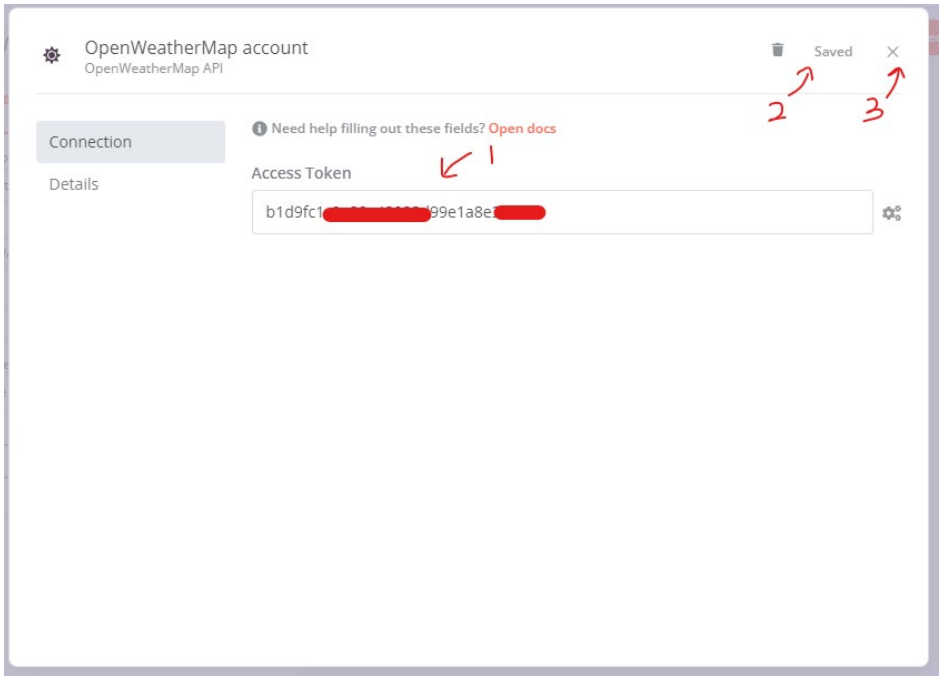
weel as a key shown in the webpages. You will need to insert the API Key name and click on “Generate” button to create an API token.



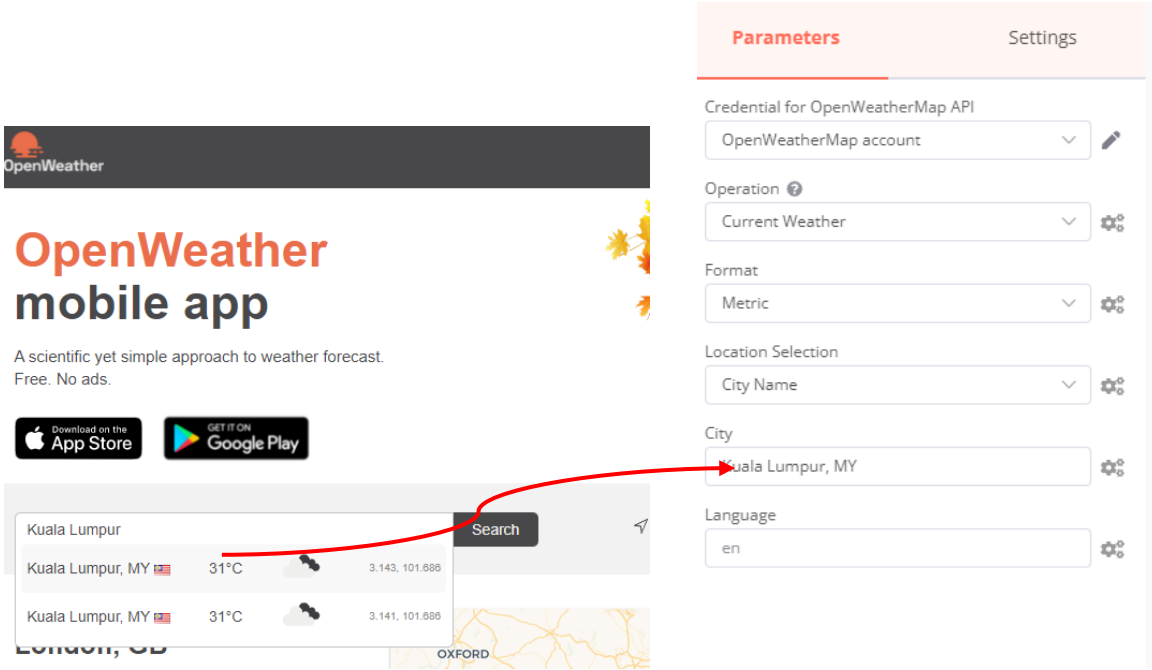
6. After clicking generate, a new API Key will be generated and you need to copy (Ctrl+c) the API Key that you just generated and use it as your API node credentials in n8n.



7. Using the copied API Key, paste (Ctrl+V) it in the Access Token field in your n8n credential configuration and click “Save” and close the window by clicking the “X”.

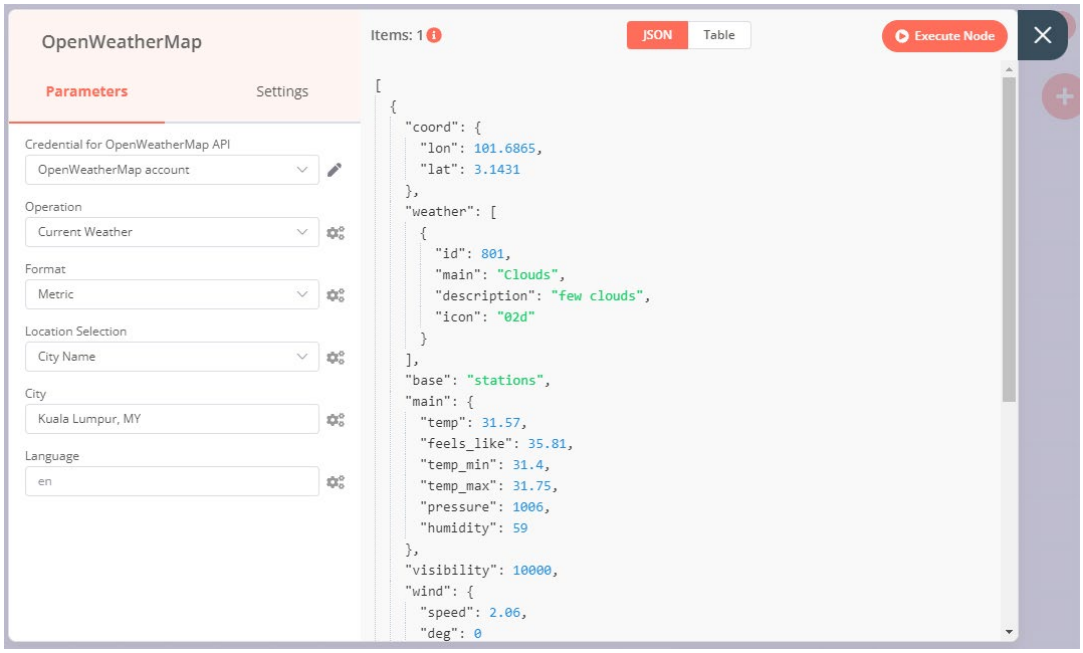


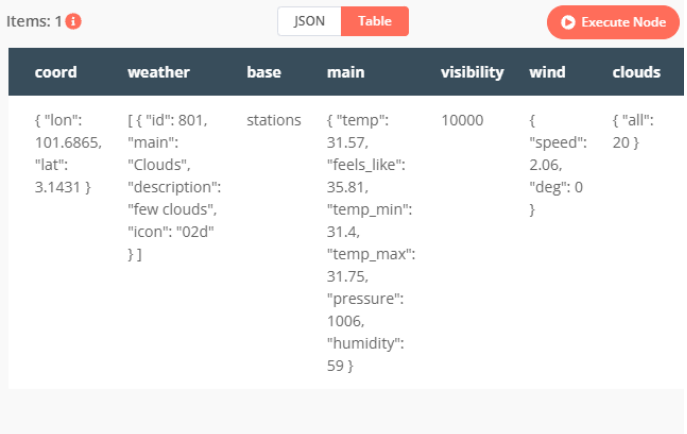
8. Now, you have finish setting up your API authentication. After that, fill in all the parameter where Operation = Current Weather, Format = Metric to show temperature in degree Celsius, Location Selection = City Name. Lastly, is inserting Location Selection based on the location you want to request. (*Note: location name must be search before in the OpenWeather website to ensure the name inserted is base on name in OpenWeather official websites*.).



9. After finishing setup, try the workflow of this node are working by clicking the "Execute Note" in the box to try the trigger the node. (*Note: If you receive a 401 error when*

executing your node, your API key may not have been activated yet. API keys are activated automatically between 10 minutes and 2 hours after successful registration on OpenWeatherMap. Please try executing later). If successfully activated, you will see the data from APU in JSON or Table format (you can toggle between JSON or Table). Then, you can close the configuration if it was successfully executed.

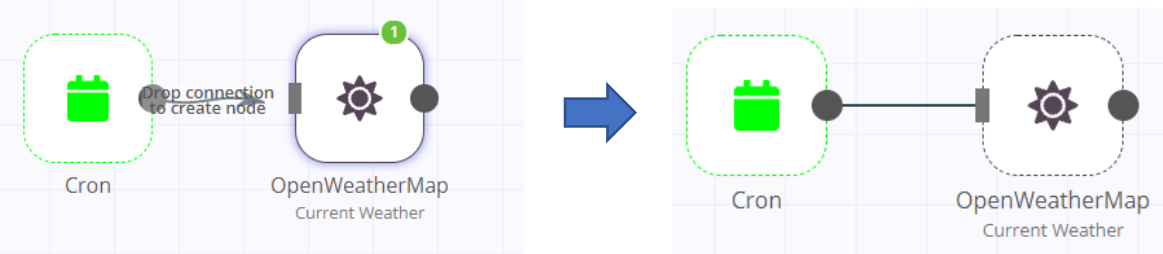




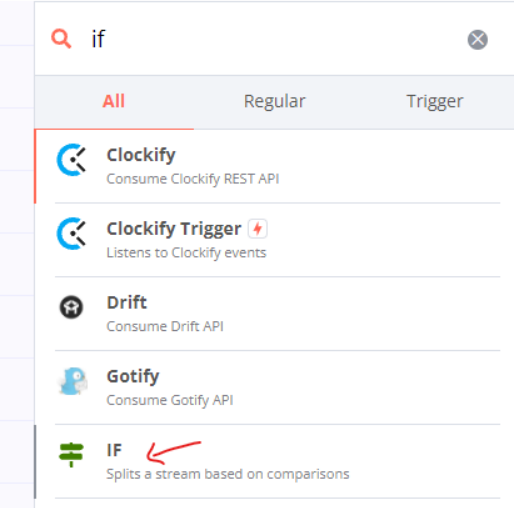
Note:

If you found want to clear the execution data that run after we testing for the node, you can click on the Dustbin button below the editor to clear all data fetch.

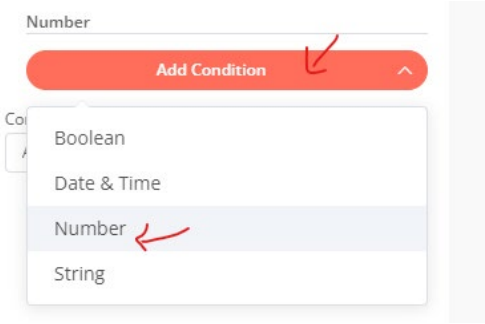
10. After that, link the Cron node with the OpenWeatherMap node by clicking the node and link it to the node.



11. Then, we need to add "IF" node into our workflow to filter out different temperature with different message to alert the user. Same like previous node, go to the" +" button to add "If" Node to the editor and configuration box will be prompt out.

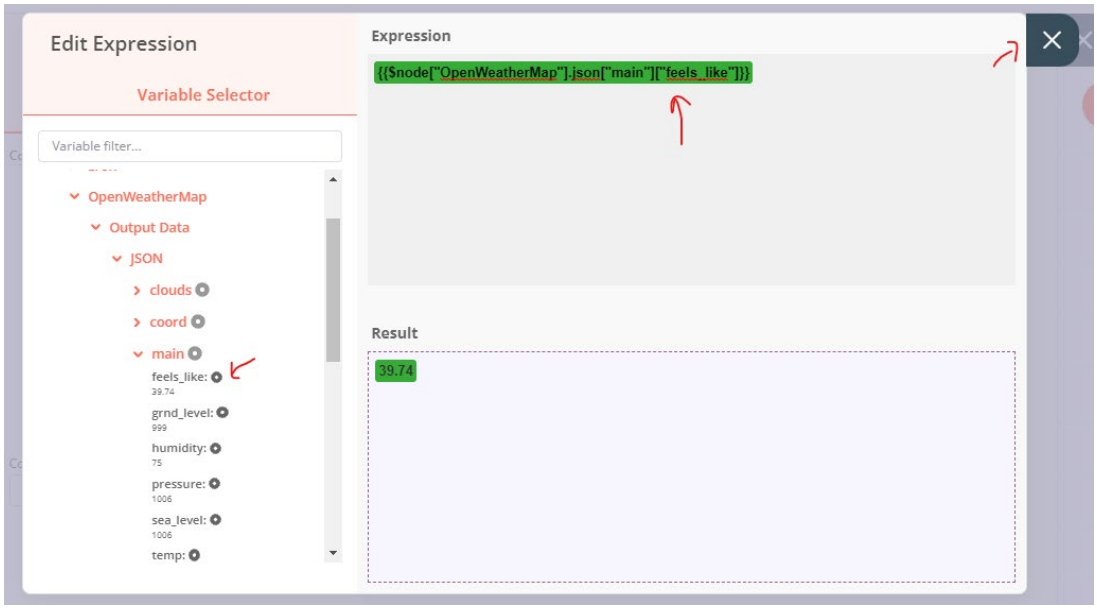


12. Under the Parameter column, click on the "Add Condition" button and select "Number" from the menu.

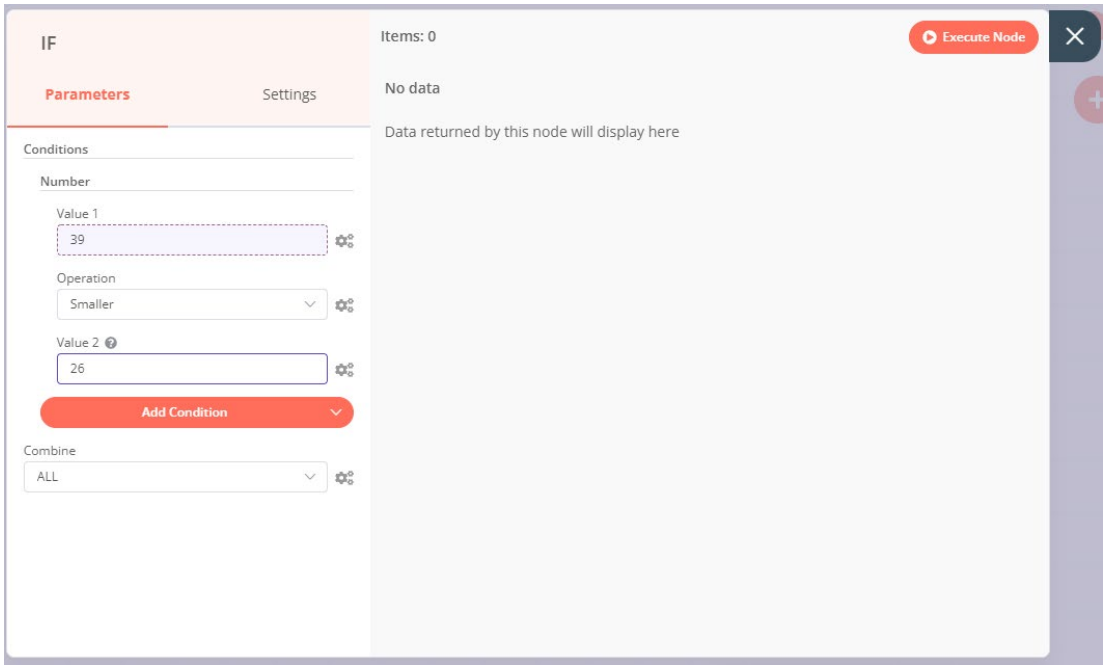


13. In value 1 we want to insert some dynamic information (attribute value taken from previous node); therefore, we need to click on the gear icon ( ) and selecting the "Add Expression". Later, "Variable Selector" configuration box will be prompt out. In the "Expression" editor, delete the previous value, which is 0, then under the left side of the box, go to Nodes > OpeWeatherMap > Output Data > JSON> main. Then click on

"feel_like" to dynamic data into the expression which mean the value of "feel_like" attribute will be taken when the workflow is executed. (*Note: If you do not find current path, it probably is caused by your previous node are not connect to this node, you need to exit all the configuration to link the connection first, then come back to the configuration by double click this node and follow previous step to come to this configuration to continue your setting*). After setup the expression, click on "X" to go back to previous configuration and it will automatically save the expression.

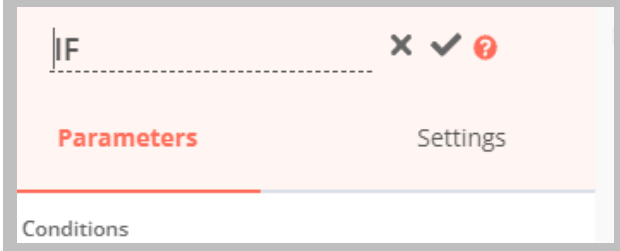


14. In the IF node configuration, set the Operation field as Smaller. Then, enter 26 into the Value 2 column and Combine column is set to all as we want to strictly ensure the condition fully fullfied only goes to true branch. Then close the node by clicking "X" on the configuration.

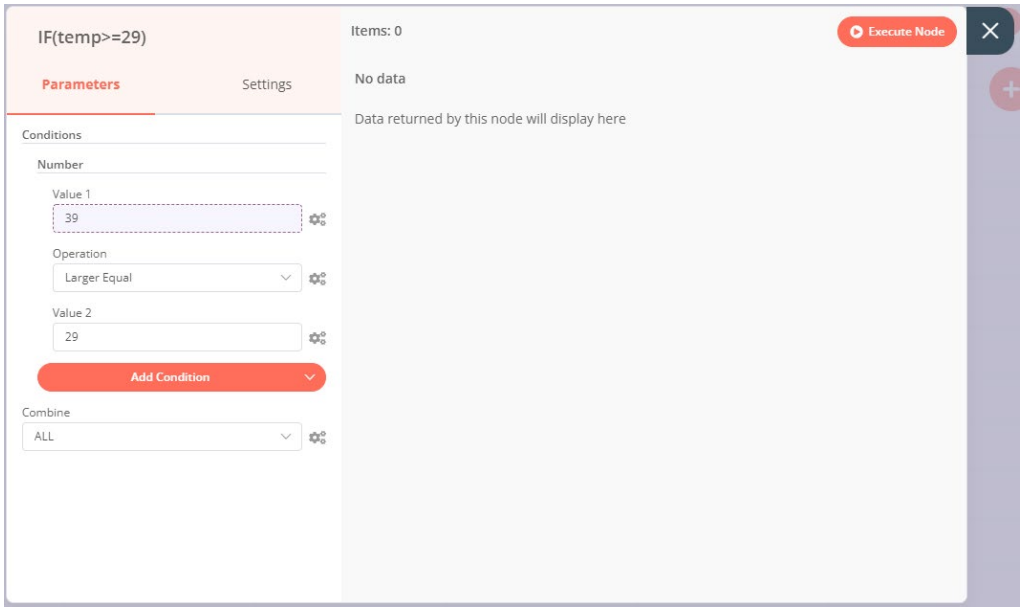


Note:

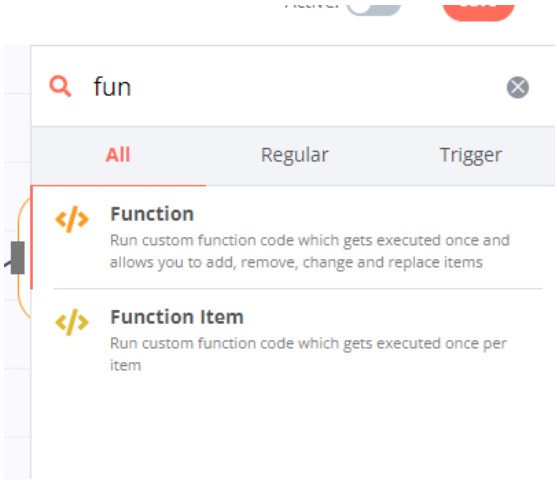
If you want to change the name of node you can double, click the node name above the Parameters in the configuration of node to change name and click tick button to save it.



15. Then repeat the step from step 11 to 14 to create another IF node that check if feel_like temperature are greater than 29 (Value1 = feel_like expression; Operation = Larger Equal; Value 2 =29; Combine = All).



16. Now, we need to create a Function for handling/generate message to send to user by using java script function. So, in the "+" button add Function to the editor and configuration box will be prompt.



17. In the function, click on the gear button beside the JavaScript code editor section and add the java script as shown below into the JavaScript editor. Then, link this to the if node that set to temp<26.

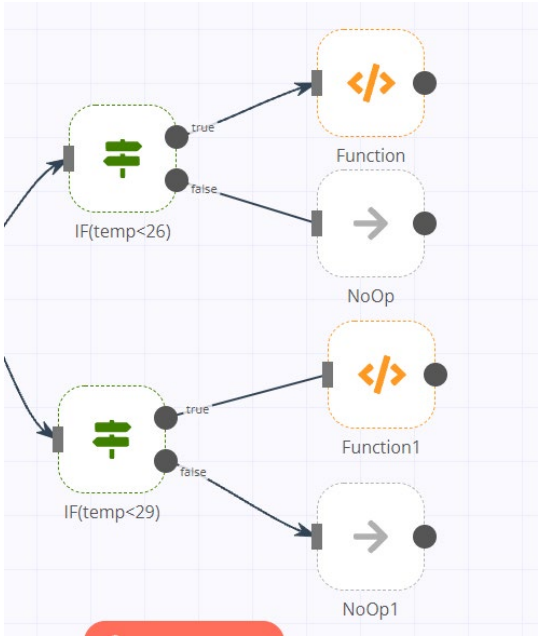
```
// Loop over inputs and add a new field called 'message' to the JSON of each one
for (item of items) {
  item.json.message = {
  email: "haoyihyap@1utar.my",
  title: "n8n Weather Notification: Oh No! It's going to rain.",
```

```
  header: "Remember to brings along your raincoat or umbrella, it might be going to rain later. We will be going to at your side along the way. Enjoy your day!"
};
}
return items;
```

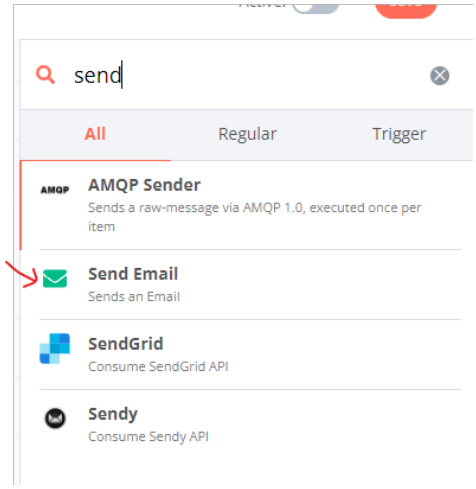
18. Click on the previous Function node created, copy (Ctrl+C) and paste (Ctrl+V) it to create another similar function. Then in the next function paste the JavaScript shown below and link it to the If node that for temp>29.

```
// Loop over inputs and add a new field called 'message' to the JSON of each one
for (item of items) {
  item.json.message = {
  email: "haoyihyap@1utar.my",
  title: "n8n Weather Notification: Is Hot Sunny Day!",
  header: "Remember to protect yourself by applying sunscreen. A more higher SPF indicator are more better in protecting your screen. We will be going to at your side along the way. Enjoy your day!"
};
}
return items;
```

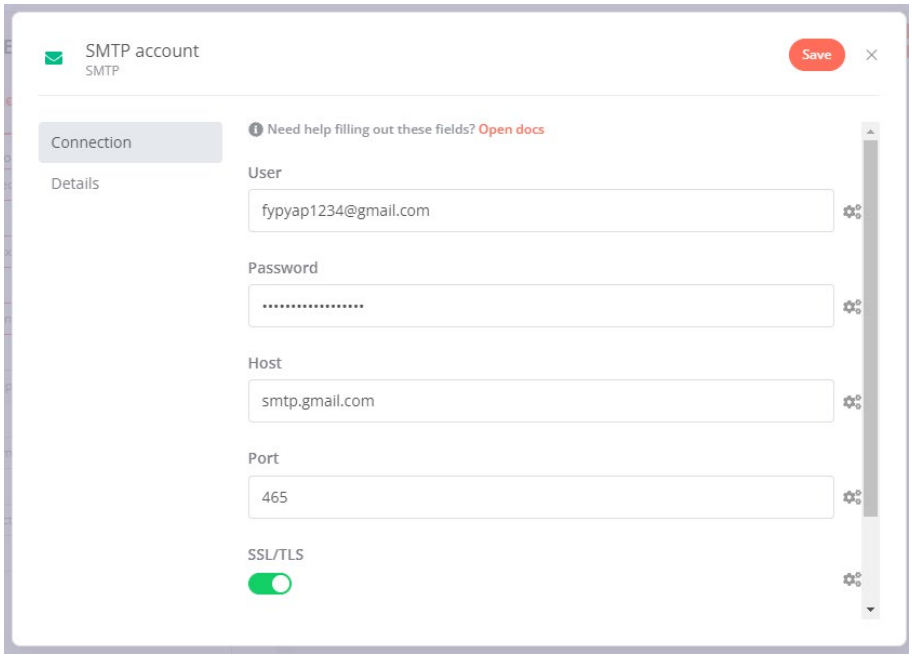
19. To handle the false statement, we will connect it with “No-Operation” node to do nothing on it, if they are not fulfilling the condition.



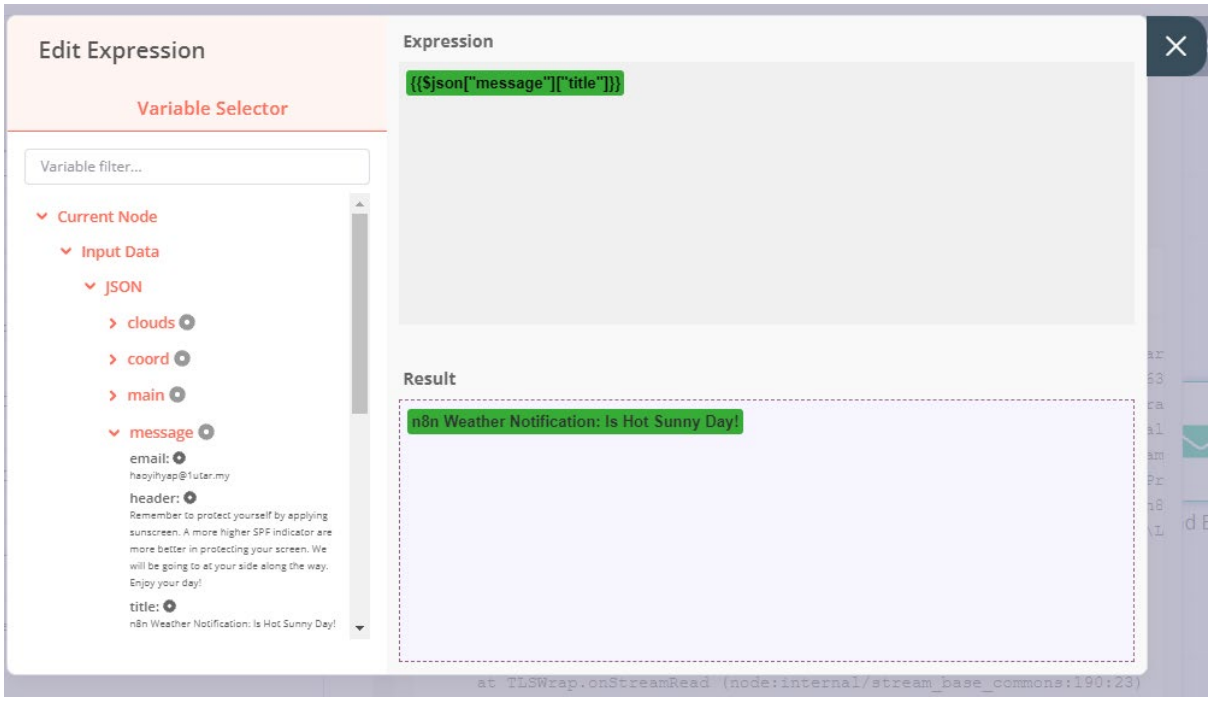
20. Next, we need Send Email node to send email to the email about current weather status to them via Email. Follow as previous node, click on the “+” button to add Send Email node into our editor workspace and it’s configuration box will be prompt out.



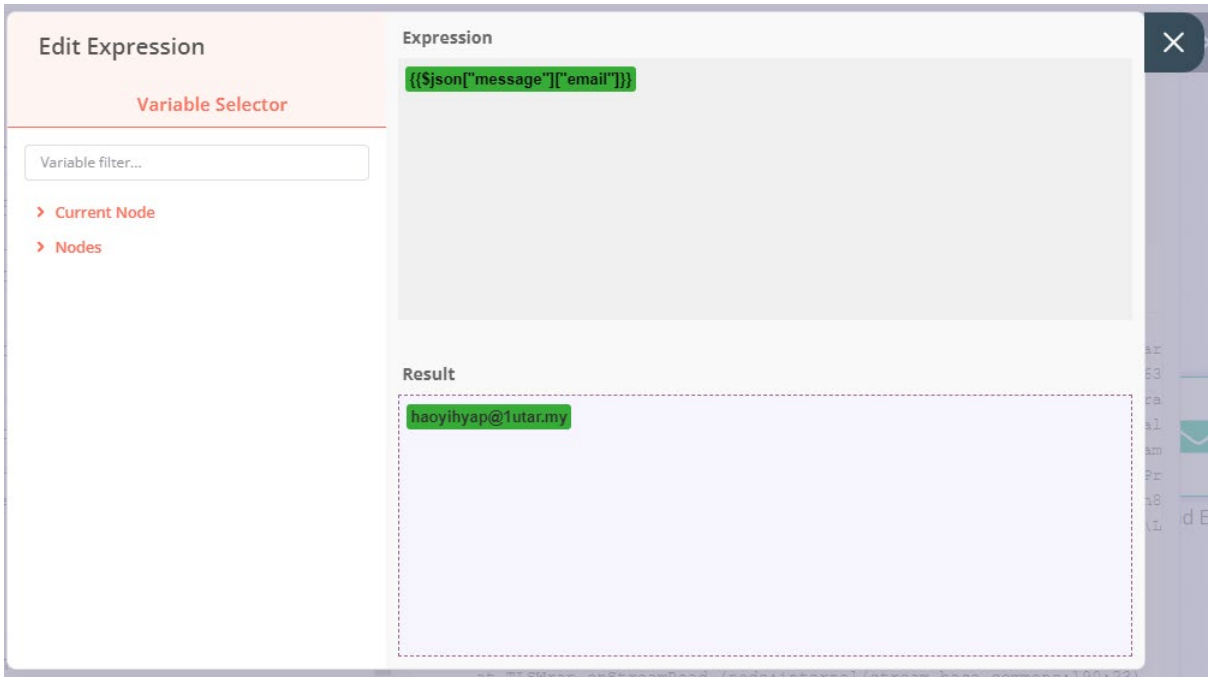
21. Under the Credential for SMTP, click on Create New to create our API authentication for the email we want used to send the email. Insert your email and its password in User column and Password column. Then you need to search for your email provider SMTP host and port from Google to insert into the Port column and Host column. Then, click on Save button to save your information.



22. In the configuration, you need to set your mail are send from where to where and create your own subject as well as your content in text or html. Other than that, you can also insert some attachment into it. In this case, I will return the message of weather based on the weather. In this case, click on the gear button beside the subject to add the value pass by previous node to the subject. Inside the Expression editor, delete the previous value and go to Current Node > Input Data > JSON > message > title. Then close it.

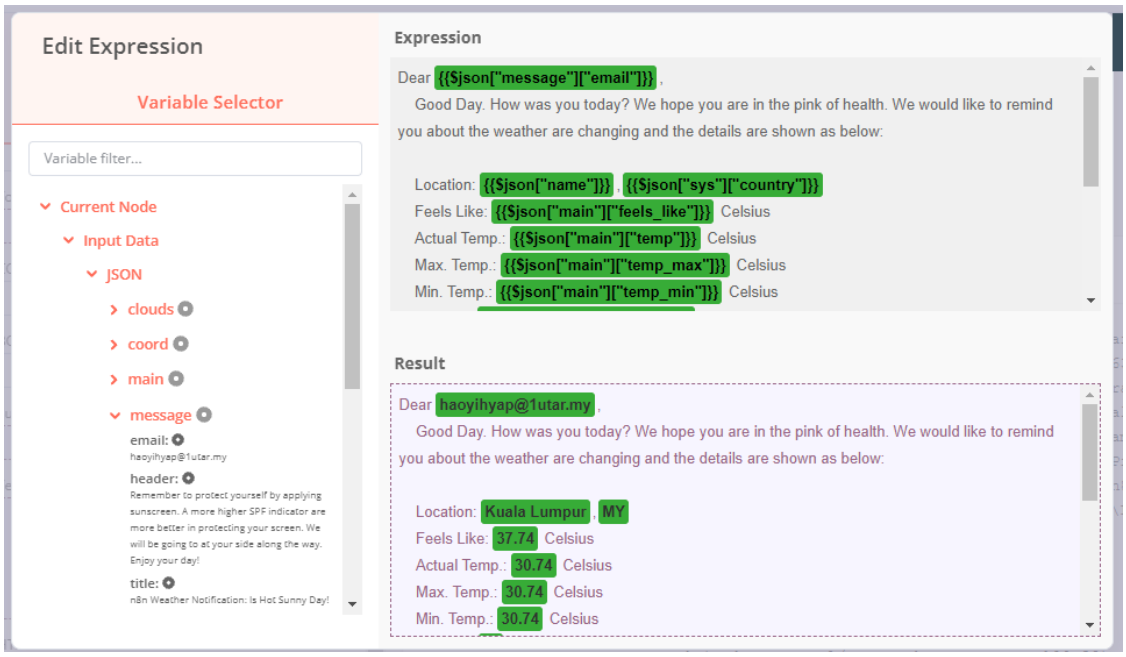


23. For the To Email column, click on the gear button beside. Then go to Current Node > Input Data > JSON > message and click on email to insert the variable to expression, then close it.

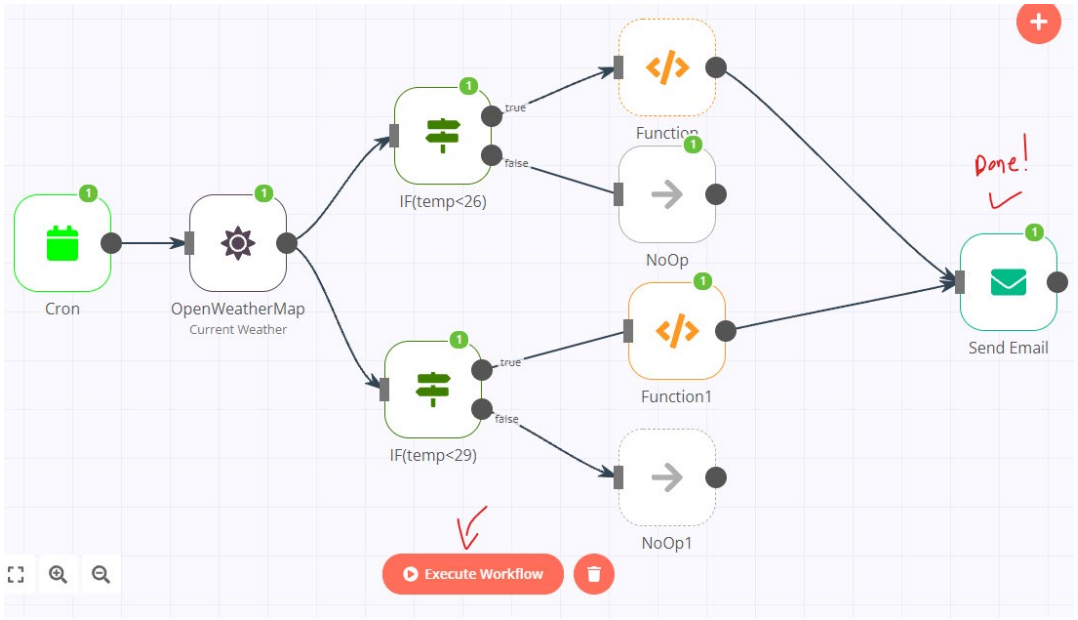


24. In the text, click on the gear button and Add Expression to edit the expression. Go to the Current Node > Input Data > JSON, then insert some message based on the value show below.

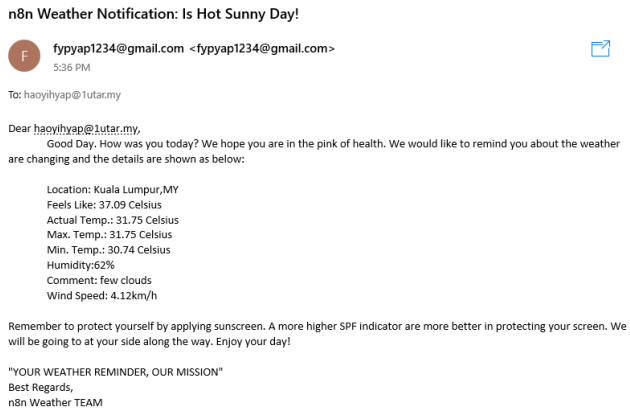
```
Dear {{$json["message"]["email"]}},
Good Day. How was you today? We hope you are in the pink of health. We would like to remind you about the weather are changing and the details are shown as below:

Location: {{$json["name"]}},{{$json["sys"]["country"]}}
Feels Like: {{$json["main"]["feels_like"]}} Celsius
Actual Temp.: {{$json["main"]["temp"]}} Celsius
Max. Temp.: {{$json["main"]["temp_max"]}} Celsius
Min. Temp.: {{$json["main"]["temp_min"]}} Celsius
Humidity:{{$json["main"]["humidity"]}}%
Comment: {{$json["weather"][0]["description"]}}
Wind Speed: {{$json["wind"]["speed"]}}km/h

{{$json["message"]["header"]}}

"YOUR WEATHER REMINDER, OUR MISSION"
Best Regards,
n8n Weather Team
```



25. Now, we can start to execute our workflow by clicking the Execute Workflow button below. Congratulation, you have successfully set up your workflow!



26. Email received!



n8n Weather Notification: Is Hot Sunny Day!

fypyap1234@gmail.com <fypyap1234@gmail.com>
5:36 PM

To: haoyihyap@1utar.my

Dear haoyihyap@1utar.my,
Good Day. How was you today? We hope you are in the pink of health. We would like to remind you about the weather are changing and the details are shown as below:

Location: Kuala Lumpur,MY
Feels Like: 37.09 Celsius
Actual Temp.: 31.75 Celsius
Max. Temp.: 31.75 Celsius
Min. Temp.: 30.74 Celsius
Humidity:62%
Comment: few clouds
Wind Speed: 4.12km/h

Remember to protect yourself by applying sunscreen. A more higher SPF indicator are more better in protecting your screen. We will be going to at your side along the way. Enjoy your day!

"YOUR WEATHER REMINDER, OUR MISSION"
Best Regards,
n8n Weather TEAM

27. After finishing your workflow, you may download your workflow template to your desktop by clicking the Workflow button ( ) at the upper left side of your workflow editor, then click Download to download it to your desktop and the code are shown as below. You can send the code below to your friends to use this template. If they want to execute this workflow, they can copy the code below from the file and paste it inside their n8n Editor to execute the workflow.

```
{
 "name": "Fyp_Project1",
 "nodes": [
  {
   "parameters": {},
   "name": "Start",
   "type": "n8n-nodes-base.start",
   "typeVersion": 1,
   "position": [
    100,
    -120
   ],
   "disabled": true
  },
  {
   "parameters": {
    "triggerTimes": {
     "item": [
      {
       "hour": 7
      },
      {
       "hour": 13
      },
      {
       "hour": 18
      }
```

```
      ]
     }
    },
    "name": "Cron",
    "type": "n8n-nodes-base.cron",
    "typeVersion": 1,
    "position": [
     90,
     280
    ]
   },
   {
    "parameters": {
     "cityName": "Kuala Lumpur, MY"
    },
    "name": "OpenWeatherMap",
    "type": "n8n-nodes-base.openWeatherMap",
    "typeVersion": 1,
    "position": [
     270,
     280
    ],
    "credentials": {
     "openWeatherMapApi": {
      "id": "5",
      "name": "OpenWeatherMap account"
     }
    }
   },
   {
    "parameters": {
     "conditions": {
      "number": [
       {
        "value1": "={{$node[\"OpenWeatherMap\"].json[\"main\"][\"feels_like\"]}}",
        "value2": 26
       }
      ]
     }
    },
    "name": "IF(temp<26)",
    "type": "n8n-nodes-base.if",
    "typeVersion": 1,
    "position": [
     480,
     170
    ]
   },
   {
    "parameters": {
     "fromEmail": "fypyap1234@gmail.com",
```

```
      "toEmail": "={{$json[\"message\"][\"email\"]}}",
      "subject": "={{$json[\"message\"][\"title\"]}}",
      "text": "=Dear {{$json[\"message\"][\"email\"]}},\n\tGood Day. How was you today? We hope you are in the pink of health. We would like to remind you about the weather are changing and the details are shown as below:\n\n\tLocation: {{$json[\"name\"]}},{{$json[\"sys\"][\"country\"]}}\n\tFeels Like: {{$json[\"main\"][\"feels_like\"]}} Celsius\n\tActual Temp.: {{$json[\"main\"][\"temp\"]}} Celsius\n\tMax. Temp.: {{$json[\"main\"][\"temp_max\"]}} Celsius\n\tMin. Temp.: {{$json[\"main\"][\"temp_min\"]}} Celsius\n\tHumidity:{{$json[\"main\"][\"humidity\"]}}%\n\tComment: {{$json[\"weather\"][0][\"description\"]}}\t\n\tWind Speed: {{$json[\"wind\"][\"speed\"]}}km/h\t\t\t\n\n{{$json[\"message\"][\"header\"]}}\n\t\n\"YOUR WEATHER REMINDER, OUR MISSION\"\nBest Regards,\nn8n Weather TEAM",
      "options": {}
    },
    "name": "Send Email",
    "type": "n8n-nodes-base.emailSend",
    "typeVersion": 1,
    "position": [
     1060,
     320
    ],
    "credentials": {
     "smtp": {
      "id": "6",
      "name": "SMTP account"
     }
    }
   },
   {
    "parameters": {
     "functionCode": "// Loop over inputs and add a new field called 'message' to the JSON of each one\nfor (item of items) {\n  item.json.message = {\n  email: \"haoyihyap@1utar.my\",\n  title: \"n8n Weather Notification: Oh No! It's going to rain.\",\n  header: \"Remember to brings along your raincoat or umbrella, it might be going to rain later. We will be going to at your side along the way. Enjoy your day!\"\n};\n}\n\nreturn items;\n"
    },
    "name": "Function",
    "type": "n8n-nodes-base.function",
    "typeVersion": 1,
    "position": [
     710,
     100
    ]
   },
   {
    "parameters": {
     "functionCode": "// Loop over inputs and add a new field called 'message' to the JSON of each one\nfor (item of items) {\n  item.json.message = {\n  email: \"haoyihyap@1utar.my\",\n  title: \"n8n Weather Notification: Is Hot Sunny
```

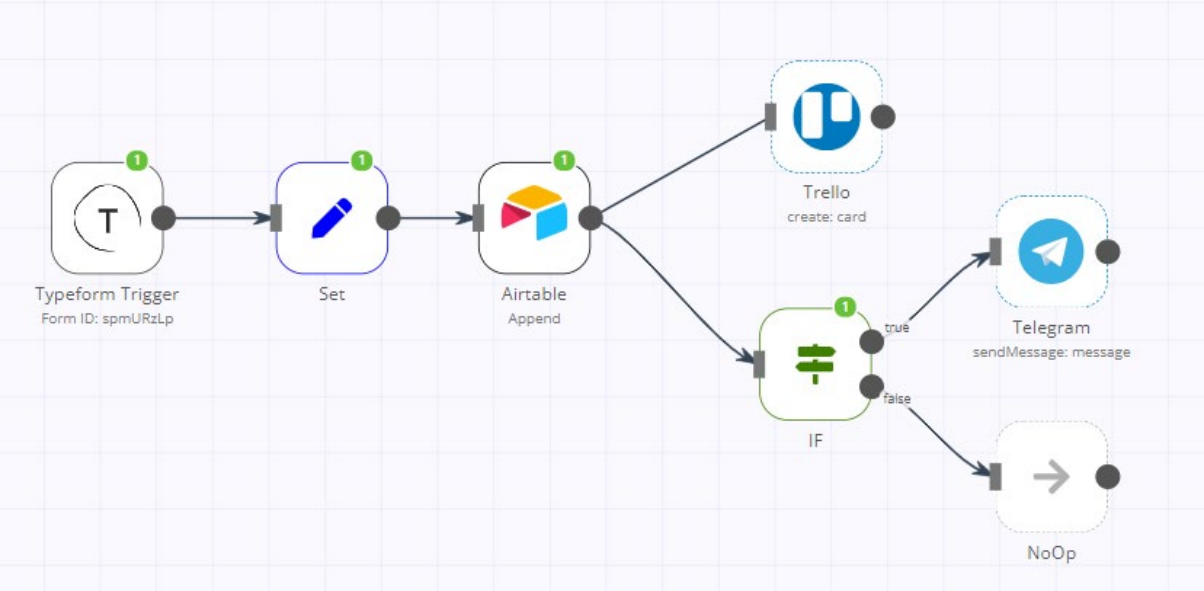
```
Day!\",\n  header: \"Remember to protect yourself by applying sunscreen. A more higher SPF indicator are more better in protecting your screen. We will be going to at your side along the way. Enjoy your day!\"\n};\n}\n\nreturn items;\n"
    },
    "name": "Function1",
    "type": "n8n-nodes-base.function",
    "typeVersion": 1,
    "position": [
     720,
     370
    ]
   },
   {
    "parameters": {
     "conditions": {
      "number": [
       {
        "value1": "={{$node[\"OpenWeatherMap\"].json[\"main\"][\"feels_like\"]}}",
        "operation": "largerEqual",
        "value2": 29
       }
      ]
     }
    },
    "name": "IF(temp<29)",
    "type": "n8n-nodes-base.if",
    "typeVersion": 1,
    "position": [
     470,
     430
    ]
   },
   {
    "parameters": {},
    "name": "NoOp",
    "type": "n8n-nodes-base.noOp",
    "typeVersion": 1,
    "position": [
     710,
     230
    ]
   },
   {
    "parameters": {},
    "name": "NoOp1",
    "type": "n8n-nodes-base.noOp",
    "typeVersion": 1,
    "position": [
     710,
     520
    ]
```

```
  }
 ],
 "connections": {
  "Cron": {
   "main": [
    [
     {
      "node": "OpenWeatherMap",
      "type": "main",
      "index": 0
     }
    ]
   ]
  },
  "OpenWeatherMap": {
   "main": [
    [
     {
      "node": "IF(temp<26)",
      "type": "main",
      "index": 0
     },
     {
      "node": "IF(temp<29)",
      "type": "main",
      "index": 0
     }
    ]
   ]
  },
  "IF(temp<26)": {
   "main": [
    [
     {
      "node": "Function",
      "type": "main",
      "index": 0
     }
    ],
    [
     {
      "node": "NoOp",
      "type": "main",
      "index": 0
     }
    ]
   ]
  },
  "IF(temp<29)": {
   "main": [
    [
```

```
        {
          "node": "Function1",
          "type": "main",
          "index": 0
        }
      ],
      [
        {
          "node": "NoOp1",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Function": {
    "main": [
      [
        {
          "node": "Send Email",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Function1": {
    "main": [
      [
        {
          "node": "Send Email",
          "type": "main",
          "index": 0
        }
      ]
    ]
  }
 },
 "active": false,
 "settings": {},
 "id": 6
}
```

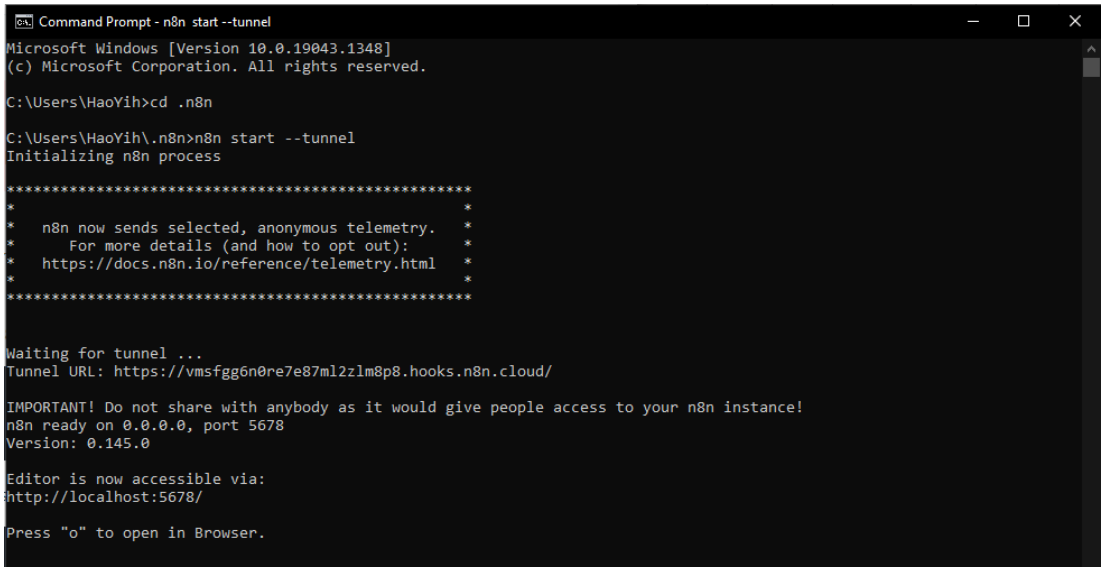

Automate Complaint or Feedback with Typeform, Airtable, Trello (Display in Kanban)

Concept Design



Prerequisites

- Make sure you n8n are running with tunnel mode. (CLI command: n8n start --tunnel)



Error might occur when starting npm service: "EPERM: operation not permitted on Windows"

CLI Command: npm cache clean --force

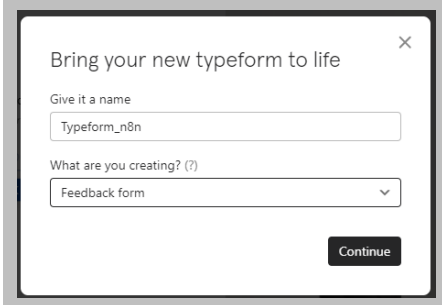
CLI Command: npm install -g npm@latest --force

- You will need to register an Typeform account (https://www.typeform.com/) in order to create an form that collecting your feedback or complaint. Prepare with the question as below:
  1. What is your name?

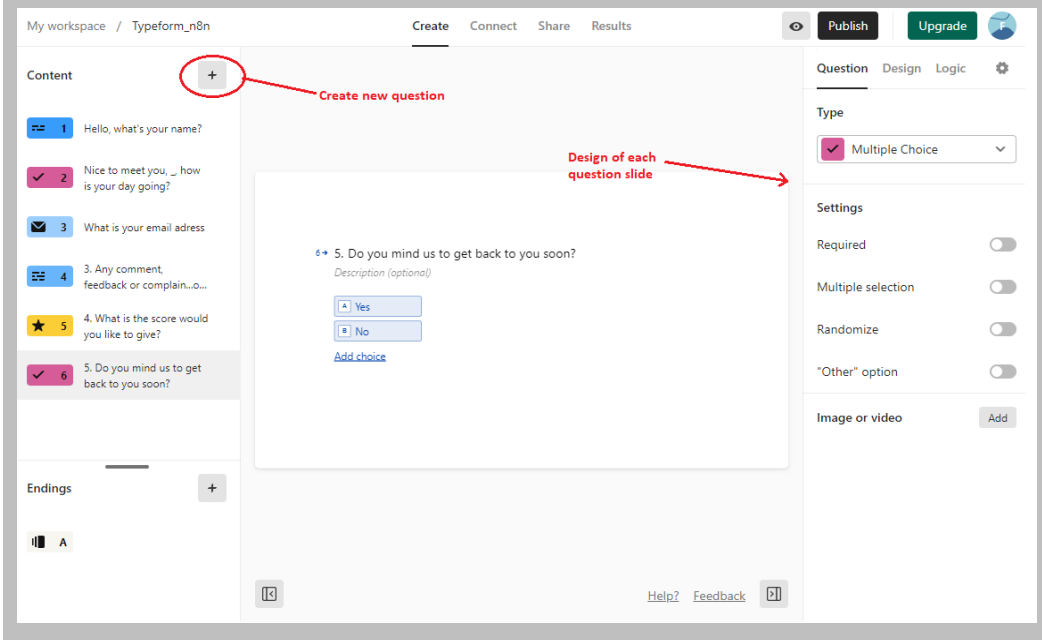
2. What is your email address?
3. Any comment, feedback or complaint would like to tell us?
4. What is the score would you like to give?
5. Do you mind us to get back to you?

Step of creating feedback response form:

1. After you have registered your Typeform Account, go to your workspaces (https://admin.typeform.com/)
2. Click on “Create typeform” button under the My workspace section.
3. You can choose for any template you want or click on “Start from scratch” to create your form from scratch. In this case, we will choose to start from scratch.
4. After box prompt out, insert a name for your typeform and specifying what you are creating. After finish, click on “Continue” button to proceed.

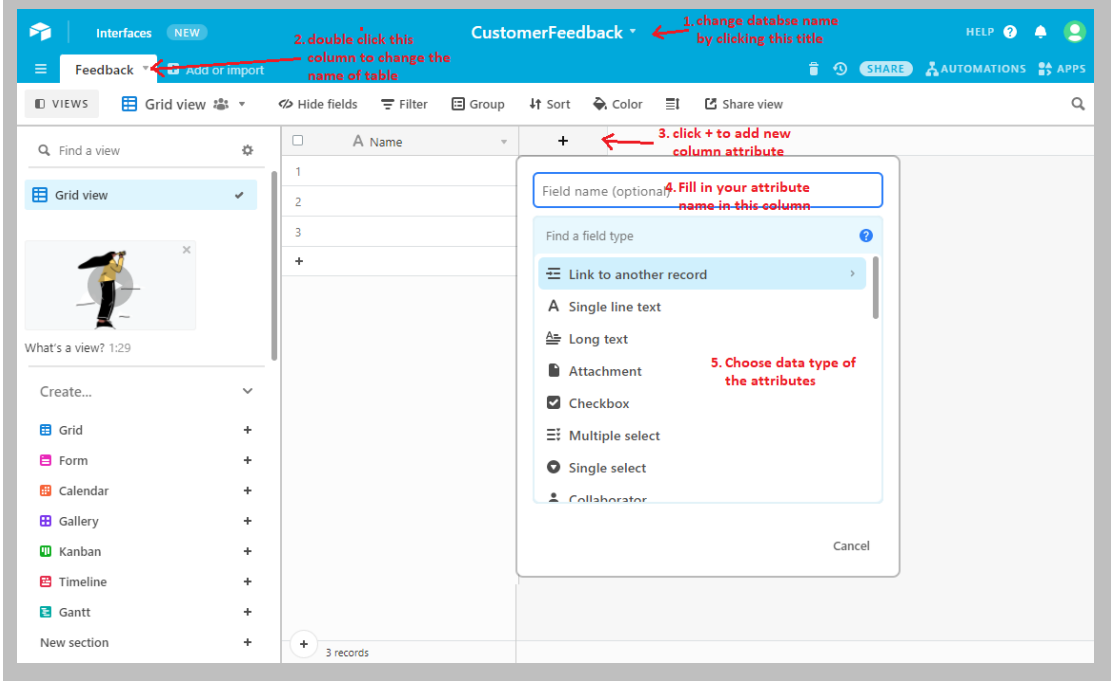


5. Then start with our design content. Here’s the template I created.



- You will need an Airtable account (https://www.airtable.com/) registered in order to store your feedback in your database. In the table, you should name it as “Feedback” and added with few attribute fields required:
  1. Name (single line text)
  2. Email (email)
  3. Feels (single line text)
  4. Description (long text)
  5. Rating (number)
  6. GetBack (multiple select: Yes/No)

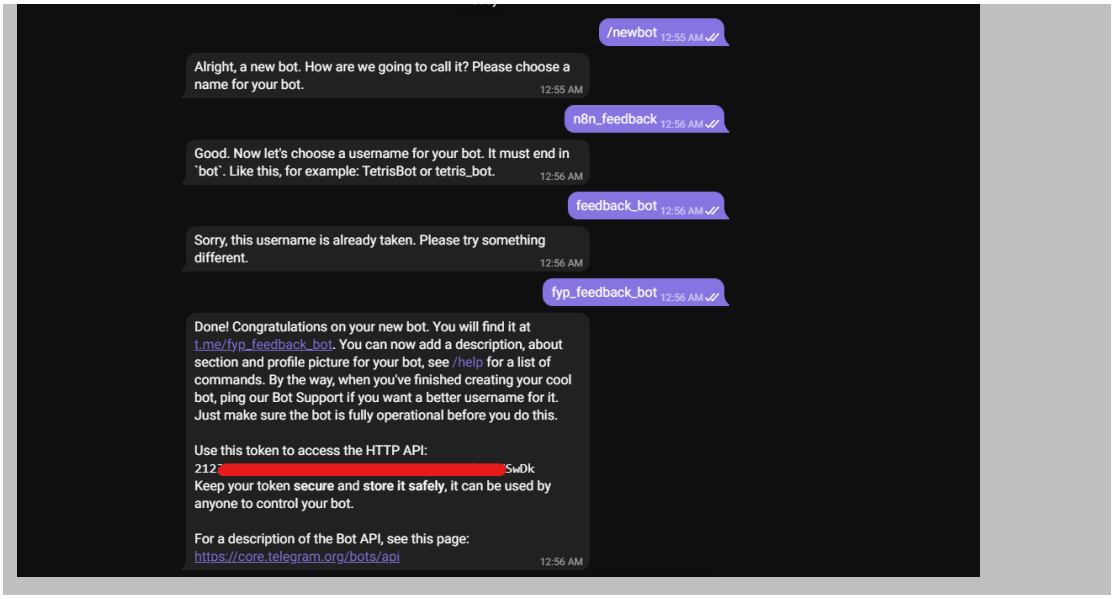
Steps of setup your feedback table:



- You also need to have a Trello account () registered, so that you able to show all your complaint/feedback in KanBan.
- You need a Telegram Account with BOT generated.

Way to generate BOT in Telegram:

1. Start a chat with the Botfather (https://telegram.me/BotFather).
2. Insert /newbot and press enter to submit.
3. Then, reply a name for your BOT and username for it.
4. When successfully activated, you will be received and API token for future use.



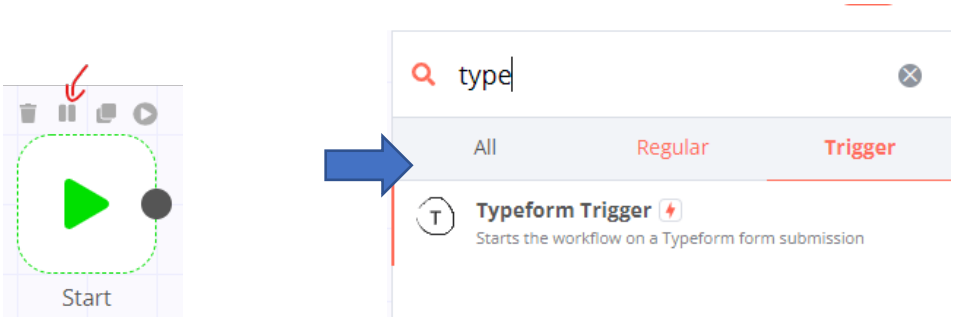
Working on Building the Workflow

Node needed by workflow:

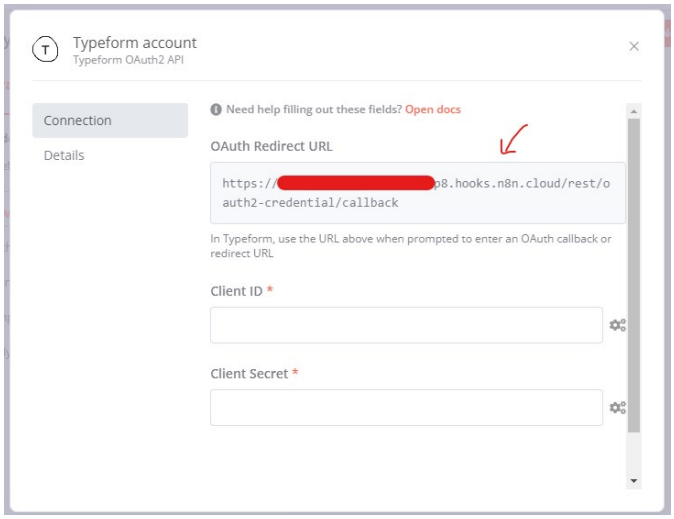
- Typeform Trigger – It will start the workflow when the typeform received a response.
- Set – To ensure the workflow data that set in this node gets passed on next node in workflow.
- Airtable -Store data into database
- IF - Conditional logic to decide the flow of the workflow
- Trello – Creating KanBan card
- NoOp – do nothing on flow
- Telegram – To send bad feedback to the person in charged as an alert.

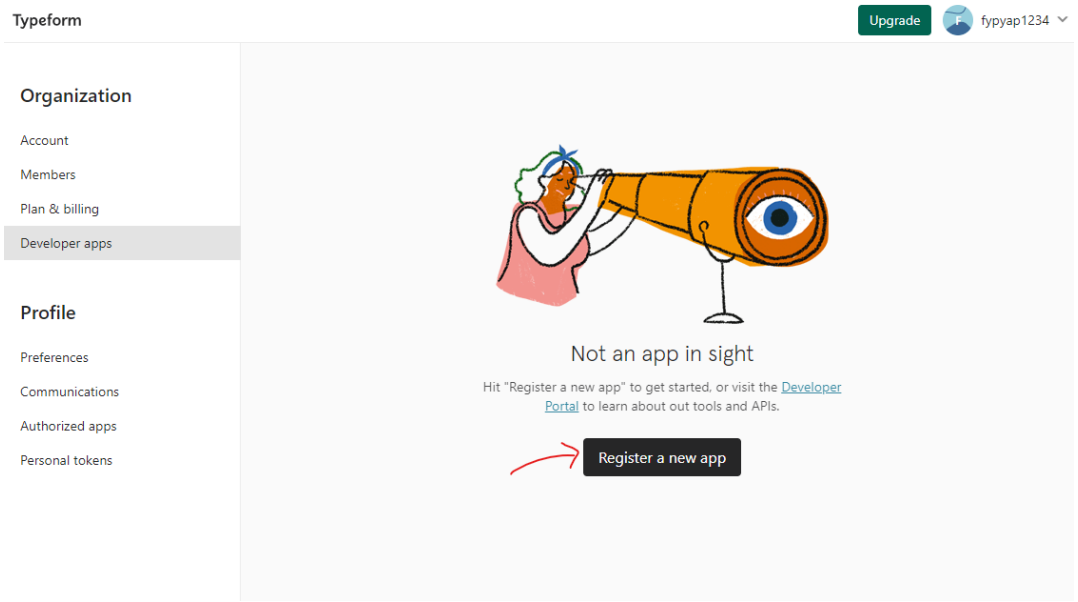
Step of developing:

1. In the first step, deactivate the start node by clicking the ⏸ button and add the Typeform Trigger into our editor by clicking the "+" button at upper top of the editor to search for the trigger node. Then, the configuration window of the node will be prompt out.

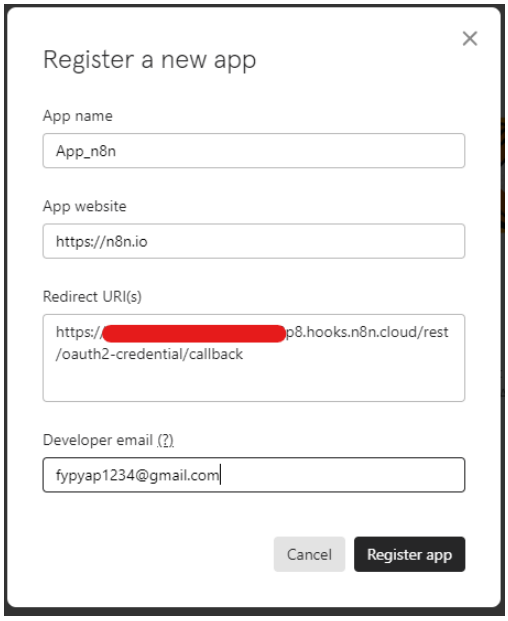


2. Now, in the Authentication column, change the option to OAuth2 and authenticate the API credentials of Typeform by clicking the column of Credentials and select for Create New. Now, you will see the OAuth Redirect URL and you need to copy (Ctrl+C) it for later used. In your Typeform dashboard, go to your profile that located at top right of your dashboard, click on the "Setting" then go to Developer section. After that, click on the "Register a new app" button to register for API.

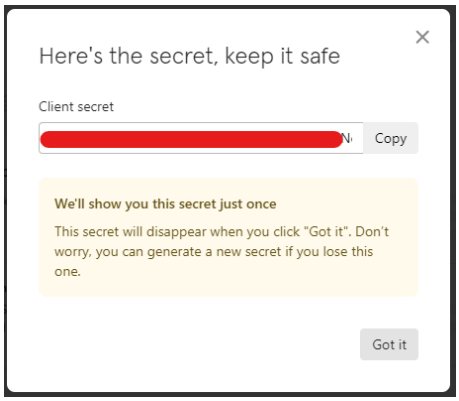




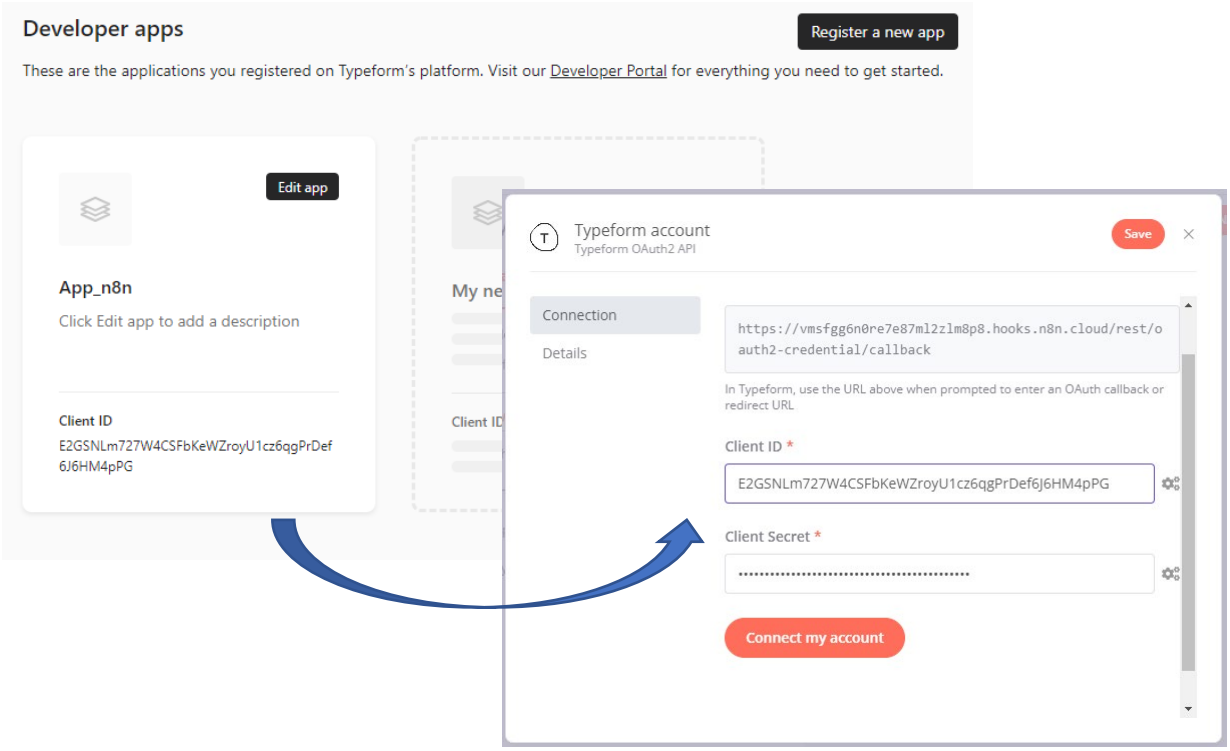
3. When the Register a new app box prompt out, insert your App name as well as your email into Developer email column, then insert https://n8n.io into the App website column. Now, paste the OAuth Redirect URL that copied just now into the Redirect URI and click "Register" button to proceed.



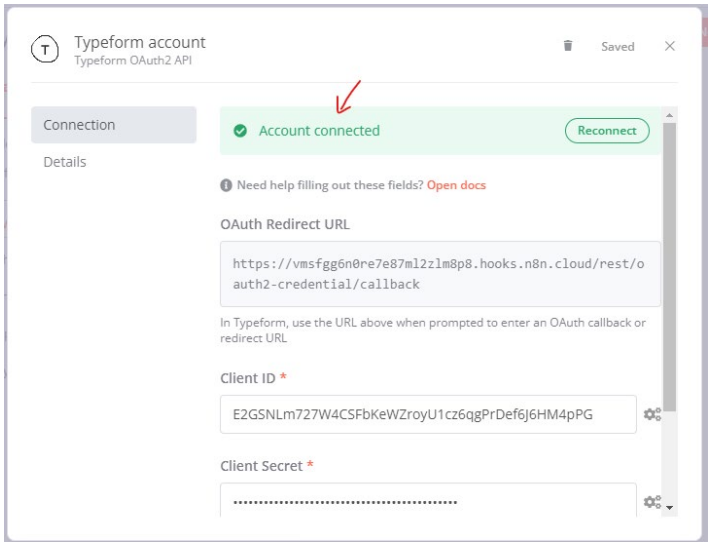
4. Client secret is now generated and you need to copy it for authentication later.



5. Back to the authentication configuration in n8n editor, paste the Client secret into the column, then copy the client ID from the Typeform setting dashboard to paste into the Client ID column in n8n authentication configuration tab as well. After inserting all required info in the n8n authentication configuration tab, click on "Connect my account" button to link the API authentication link.

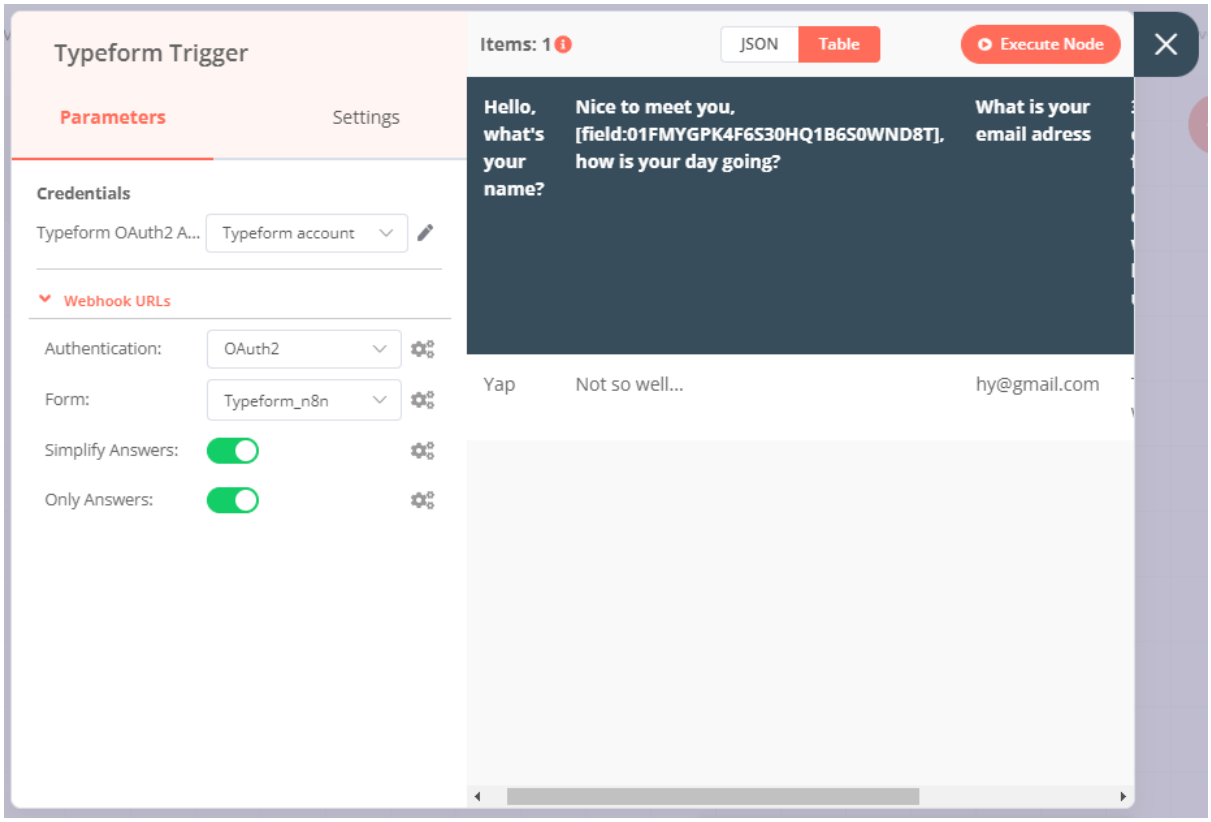


6. A box will be prompt out for you to login your Typeform account. Then accept all the terms and condition stated. After that, you will see that the "Account connected" word shown above your authentication configuration tab and now you can close the tab to continue your configuration.

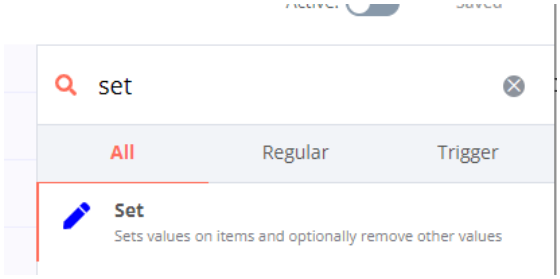


7. In the Typeform configuration tab, choose the correct form name in the "Form" column then close it. Now, to test the execution, click on the Execute Node button to start the trigger, then in the form created in Typeform, publish it and copy the link of your form to fill in and submit. After that, the node will receive all the value submitted by form and

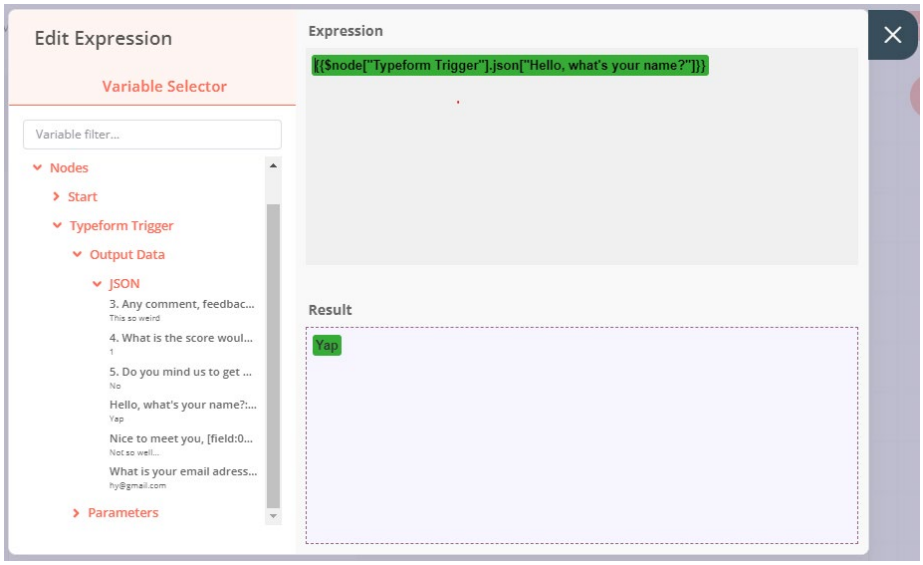
display in Table or JSON format based on your selection. (Form link created: https://da2ihz3swfo.typeform.com/to/spmURzLp)



8. Next, add the Set node by clicking on the "+" button and the configuration tab for the particular node will be prompt out.



9. Click on "Add Value" and select String from the dropdown list. Enter Name in the "Name" field. Since the Value (name) would be a dynamic piece of information, click on the gear's icon next to the field, and select Add Expression. It will prompt out the Variable Selector. From the left panel, select the following variable to insert into the expression: Nodes > Typeform Trigger > Output Data > JSON > What is your name?. Then, close the Edit Expression window.

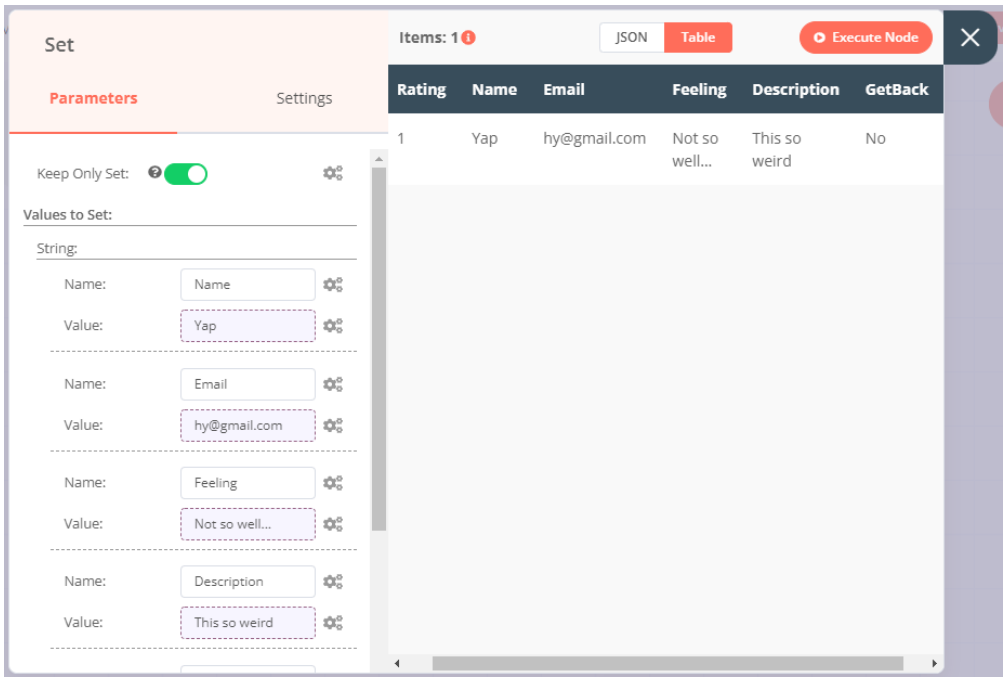


10. Repeat the step above accordingly to add new value based on the form data that would like to collected. All the variable name needed as well as the path of dynamic information of its value is listed as below.

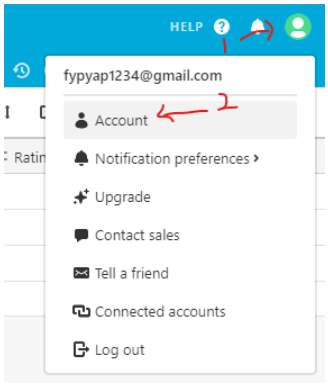
Value Name	**Data Type (Option choose when click on Add Value button)**	**Value Pathway (Pathway in left panel of Variable Selector to insert into the Expression editor)**
Email	String	Nodes > Typeform Trigger > Output Data > JSON > What is your email address?
Feeling	String	Nodes > Typeform Trigger > Output Data > JSON > Nice to meet you, [field:01FMYGPK4F6S30HQ1B6S0WND8T], how is your day going?
Description	String	Nodes > Typeform Trigger > Output Data > JSON > 3. Any comment, feedback or complaint would like to tell us?
Rating	Number	Nodes > Typeform Trigger > Output Data > JSON > 4. What is the score would you like to give?
GetBack	String	Nodes > Typeform Trigger > Output Data > JSON > 5. Do you mind us to get back to you soon?

**Note that, value name created must be same name with what created in Airtable attributes

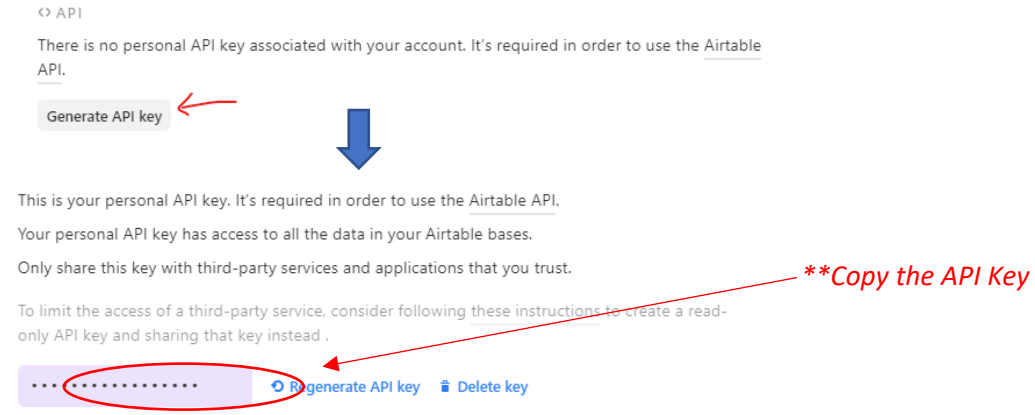
11. Then set the Keep Only Set toggle to true and click on the “Execution Node” button to test the node functionalities whether it works.

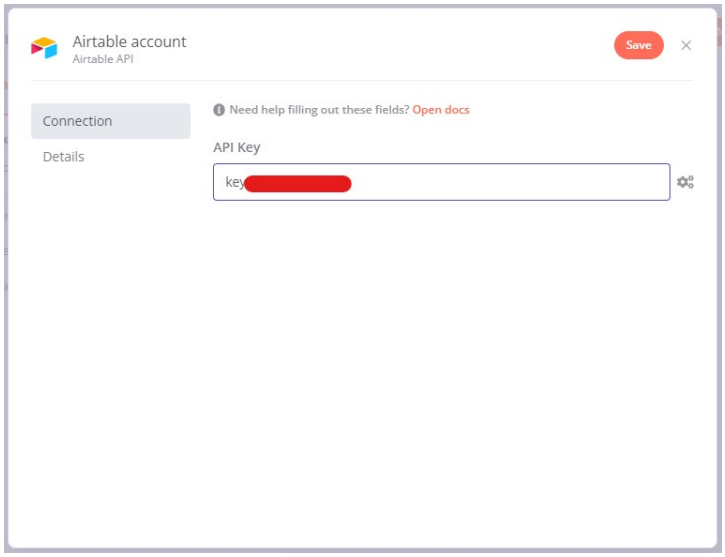


12. In addition, add the Airtable node by clicking on the + button and the node configuration tab will be prompt out. Before any configuration editing, create credentials for the Airtable API by selecting the Credential drop down list and select “Create New” to establish the API connection. To set up the connection, go to Airtable dashboard and click on the user icon allocated on the upper right and select “Account” from the dropdown to go to the account setting (https://airtable.com/account)

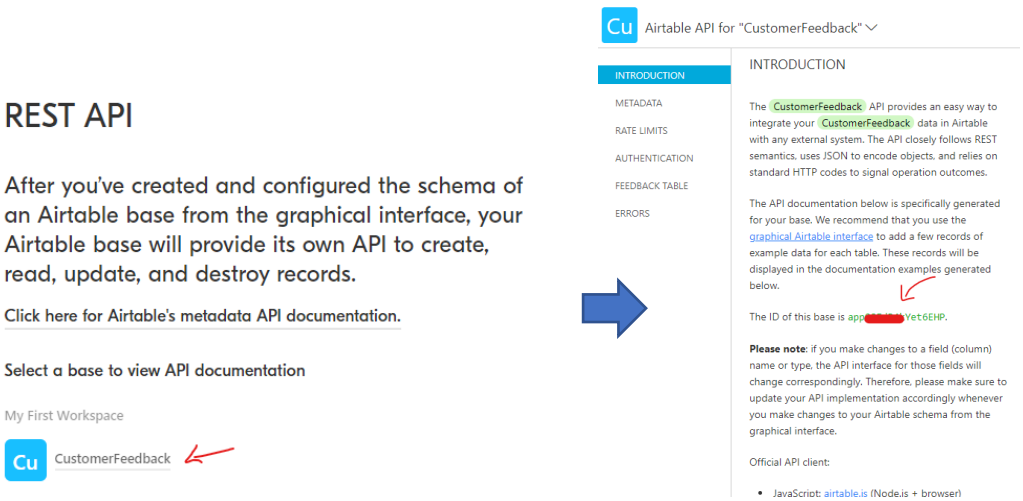


13. Under the API section, click on the Generate API key button and copy (Ctrl+C) the displayed API key. Then, paste (Ctrl+V) in the API key in the API Key field in the 'Airtable API' credentials in n8n. After that click on “Save” button and close the tab.

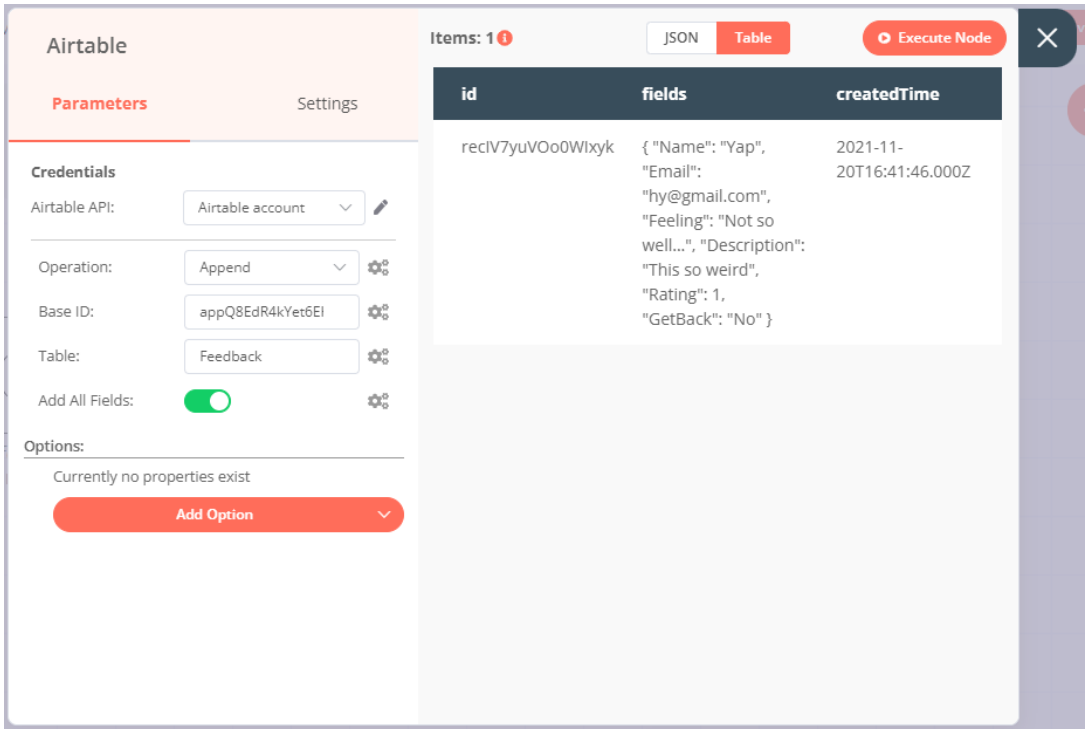




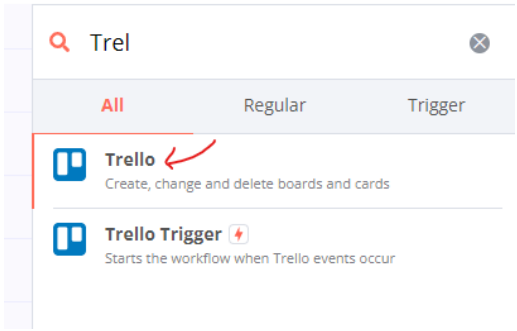
14. In the Airtable node configuration tab, select "Append" for the "Operation field. Then, to get the Base ID, go to https://airtable.com/api and select the base (database name you created). After that, you will redirected to a page that stated the documentation of API and from the Introduction section, you will found your Base ID. Copy and paste the ID in the Base ID field in n8n. Later on, enter the table name in the Table field (Table Name: Feedback)



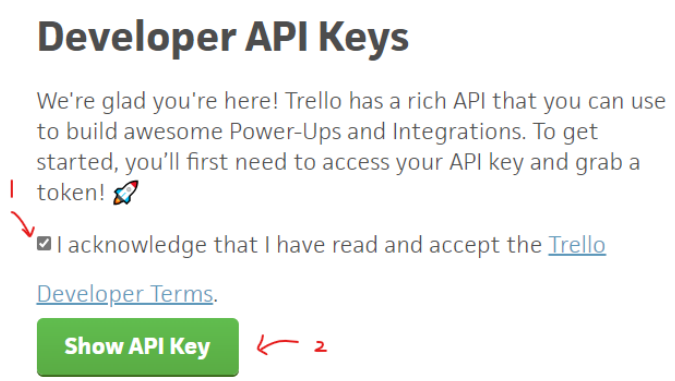
15. After that, to ensure the node are function, click on the “Execution Node” button to test the node. If the node are worked, the value will be shown in Table or JSON format and you can close the tab when successful.



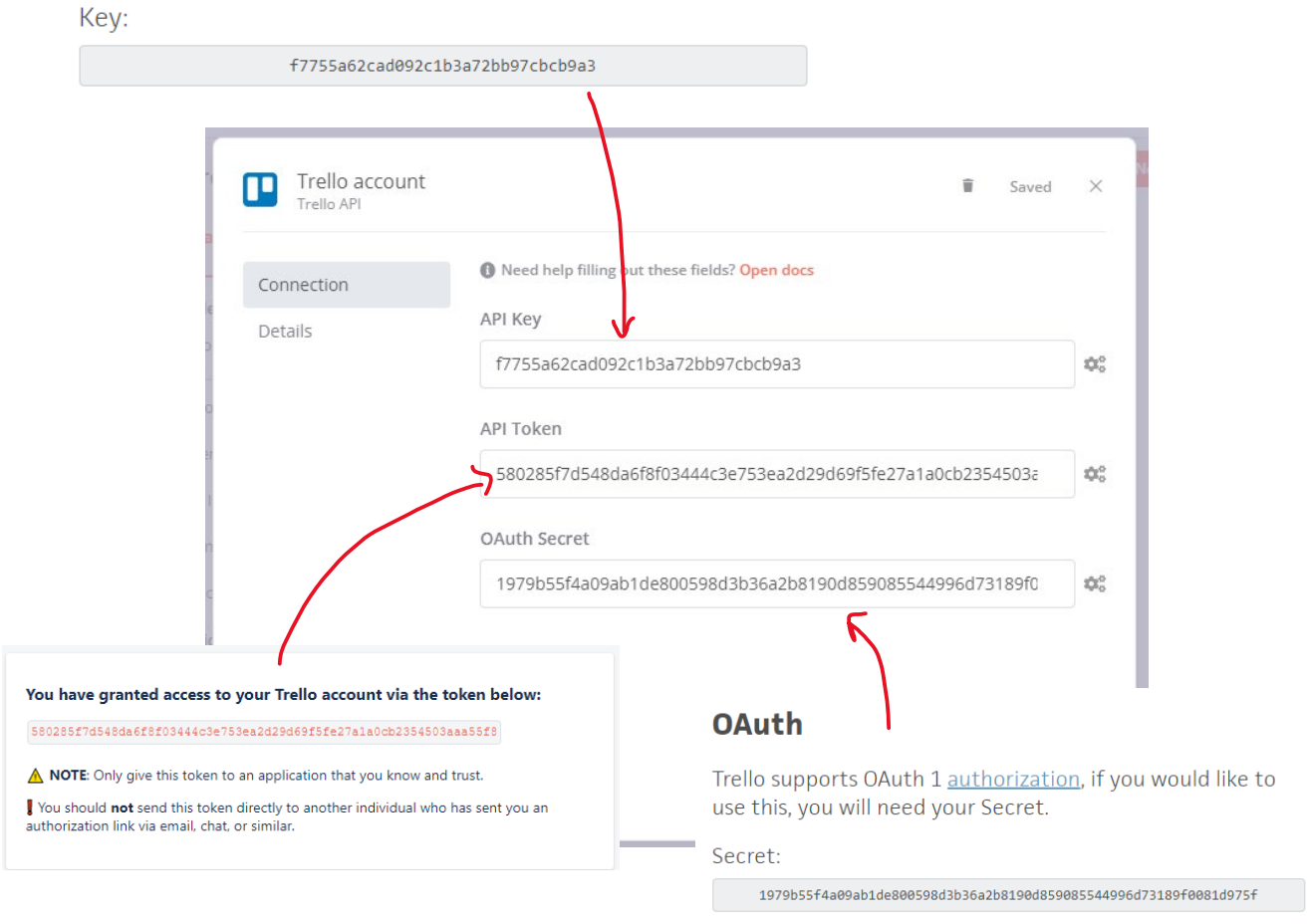
16. Next, add the Trello node by clicking on the + button and selecting the Trello node and its configuration box will be shown.



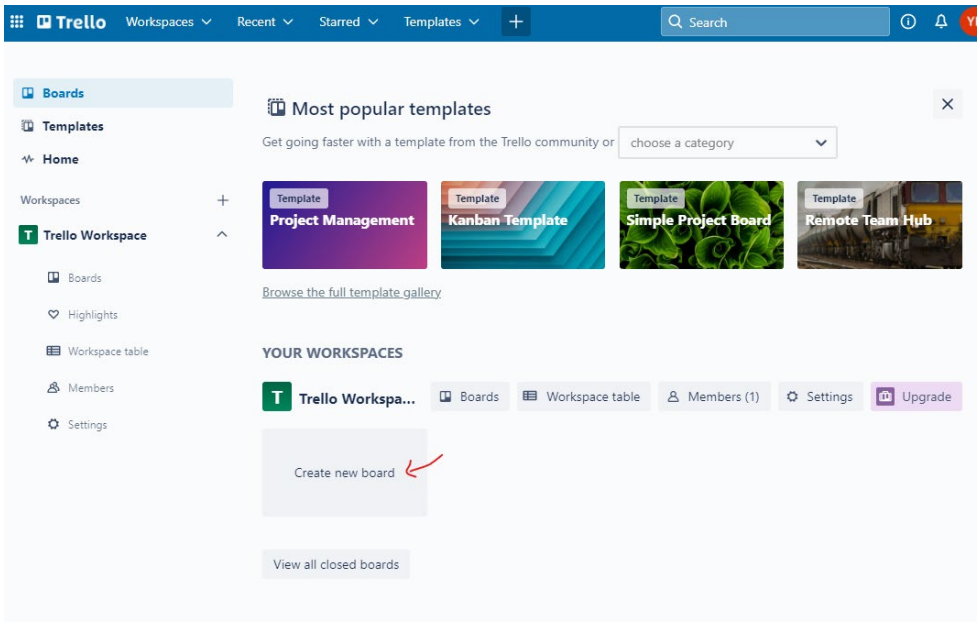
17. Click on the Select Credentials dropdown list and selecting Create New to open your Trello API configuration tab. Then go to Trello API Key portal (https://trello.com/app-key).It will redirect you to a page and you will need to tick the box to agree with their agreement and click on “Show API Key box”

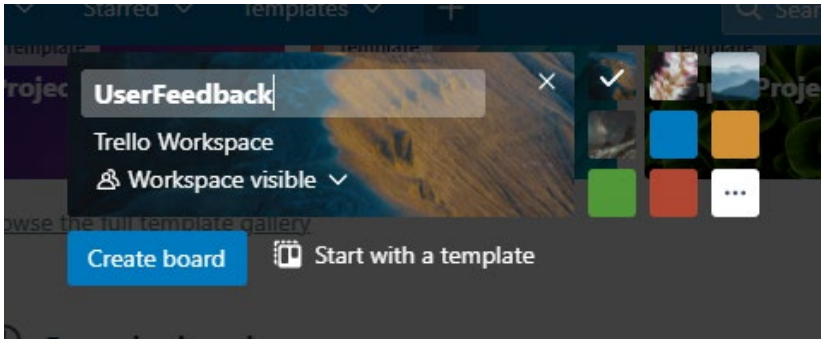


18. When it come to the Developer API Key page, click on the generate a Token hyperlink to generate a token. Then follow the step to allow the authorization access and a token for your Trello account will be generated. You will need to copy it and paste to your n8n Trello node token column. Then, go back to previous Developer API Key page, copy for the Key to paste in API Key section in n8n Trello node authentication tab and scroll down to find OAuth Secret Key in Developer API Key page and paste it to OAuth Secret column in n8n Trello API configuration tab. Then, click on save and close the tab.

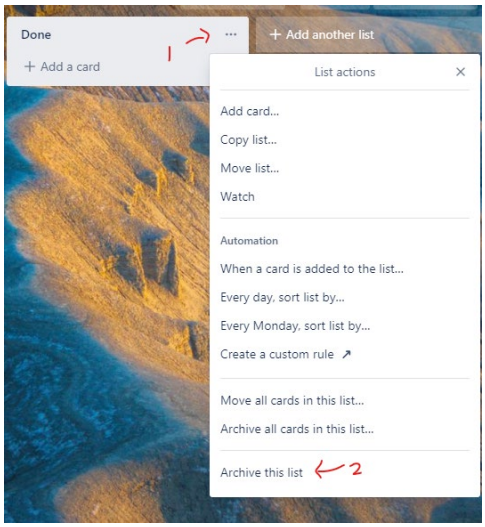


19. In order to fill the List ID section, we first need to have a new board and list created in Trello. Inside the Trello workspace dashboard, click on the "Create new board" and give the board a title called "UserFeedback", then click on "Create board".

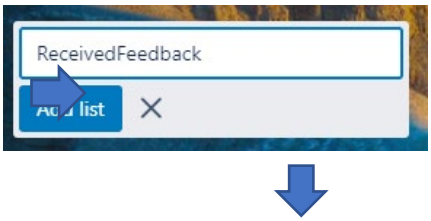


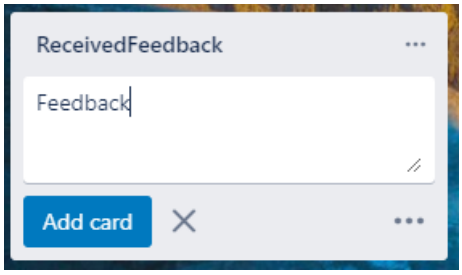


20. In this step, remove all the list in the board by click on the 3 dotted buttons at upper side of the list and click on "Archive this list".

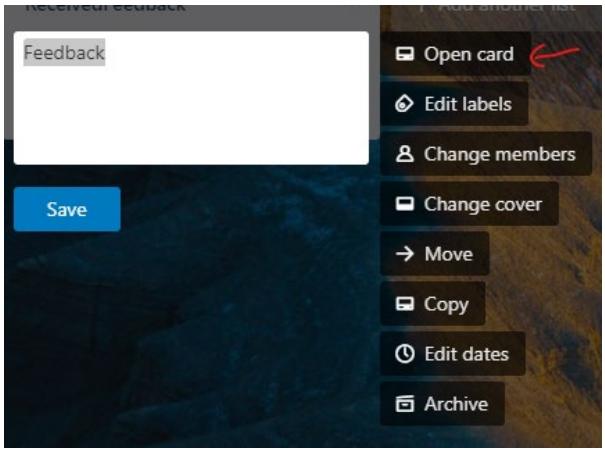


21. Simply click on the "+ Add a list" to create new list for our feedback. Then, insert name for the list created (Name: ReceivedFeedback) and click on "Add list" button to proceed. In next, insert a title for the card named "Feedback"and click on "Add card" button.

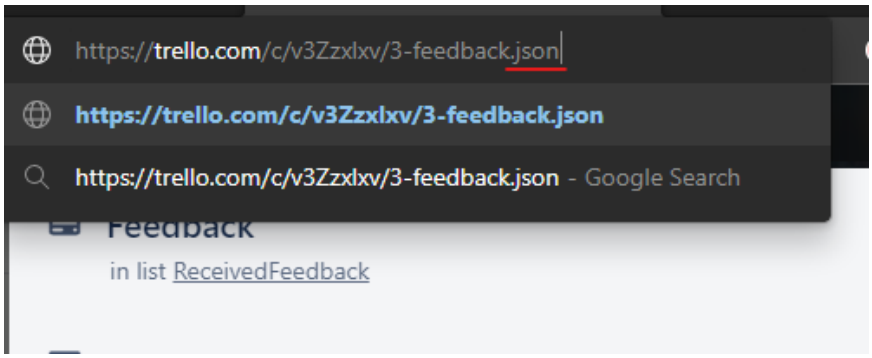




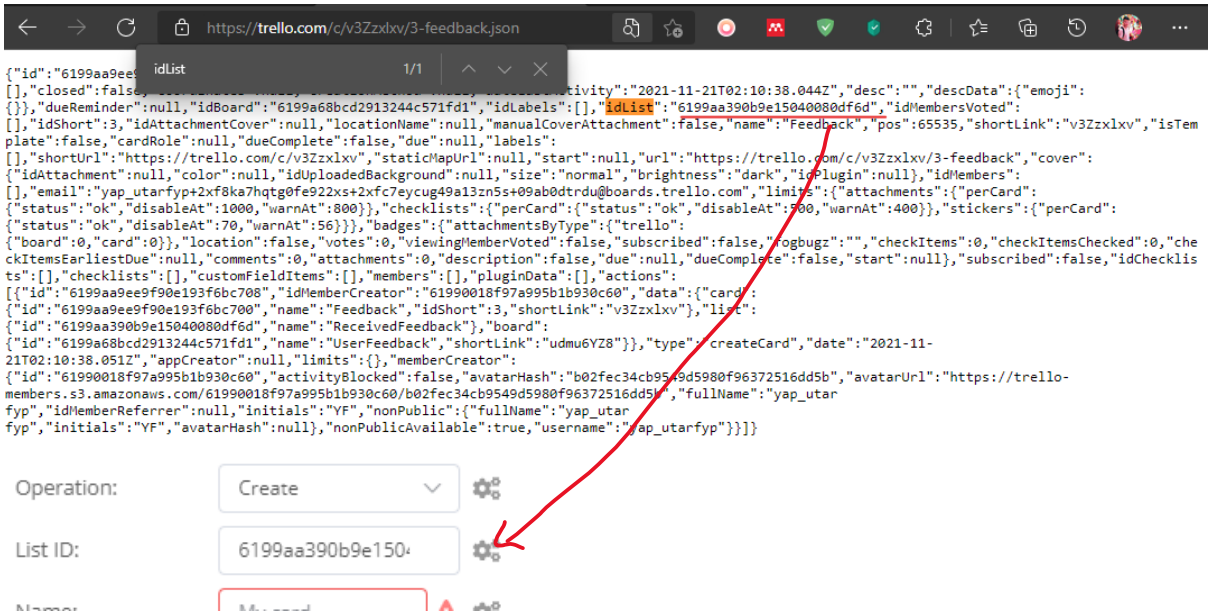
22. Click on the pen icon ( ) at the side of card created, then click on "Open card" to redirect it to the card directories for editing.



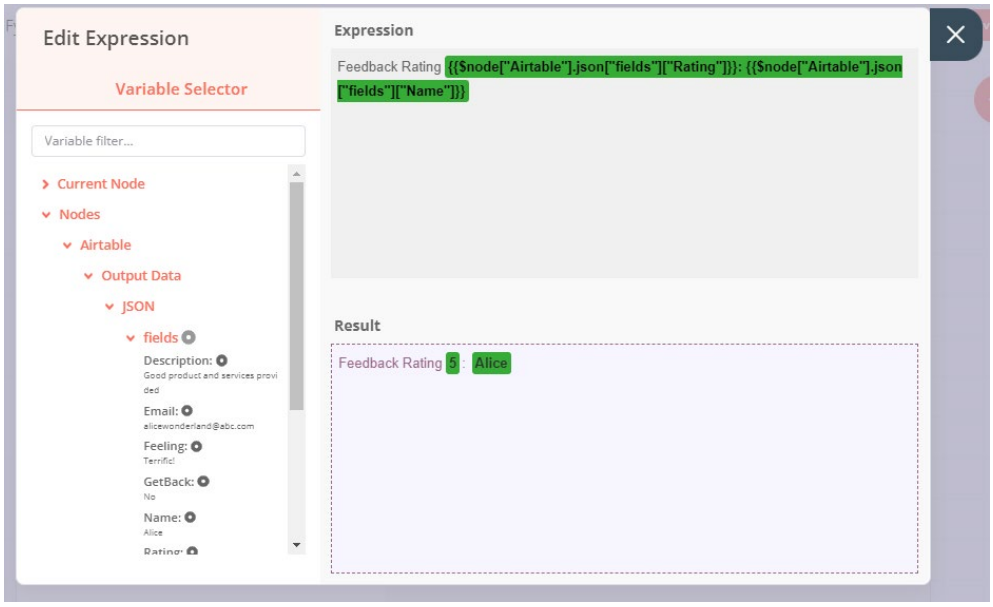
23. In the URL above, insert ".json" at the back of the URL of the card and press Enter, then a page of JSON value will be shown.



24. By clicking Ctrl+F from your keyboard, insert “idList” to find the ID of the list from the JSON file and copy it (Ctrl+C) and paste it back to the List ID field in your n8n Trello node configuration tab.



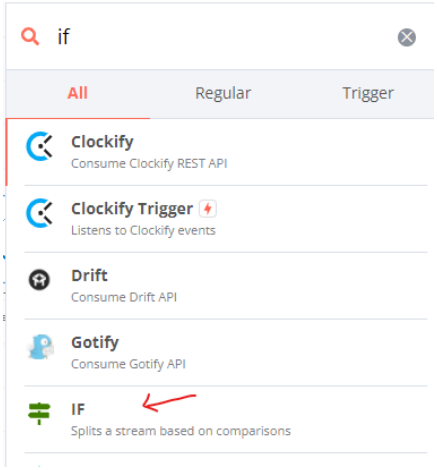
25. Inside the name field in n8n Trello node configuration tab, create the preferable name of your card. Since this field are planning to insert dynamic information pass by previous node, click on the gear button beside the field and click on Add Expression. Inside the expression configuration editor, insert the following command by finding the dynamic data from Nodes > Airtable > Output Data > JSON > fields: Feedback Rating of {{$node["Airtable"].json["fields"]["Rating"]}}:{{$node["Airtable"].json["fields"]["Name"]}}. Then, close the tab.



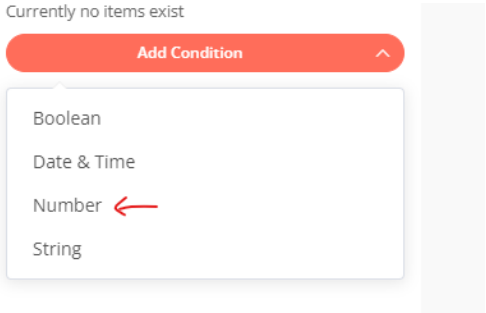
26. In next field (Description field), as same insert your preferable content to show in card by clicking the gear button beside the field and click on Add Expression. Under the Nodes Airtable > Output Data > JSON > fields at the side bar, insert all the required information as below. After that, close the tab.

```
Name: {{$node["Airtable"].json["fields"]["Name"]}}
Email: {{$node["Airtable"].json["fields"]["Email"]}}
Customer Feeling: {{$node["Airtable"].json["fields"]["Feeling"]}}
Description: {{$node["Airtable"].json["fields"]["Description"]}}
Need Feedback?: {{$node["Airtable"].json["fields"]["GetBack"]}}
```

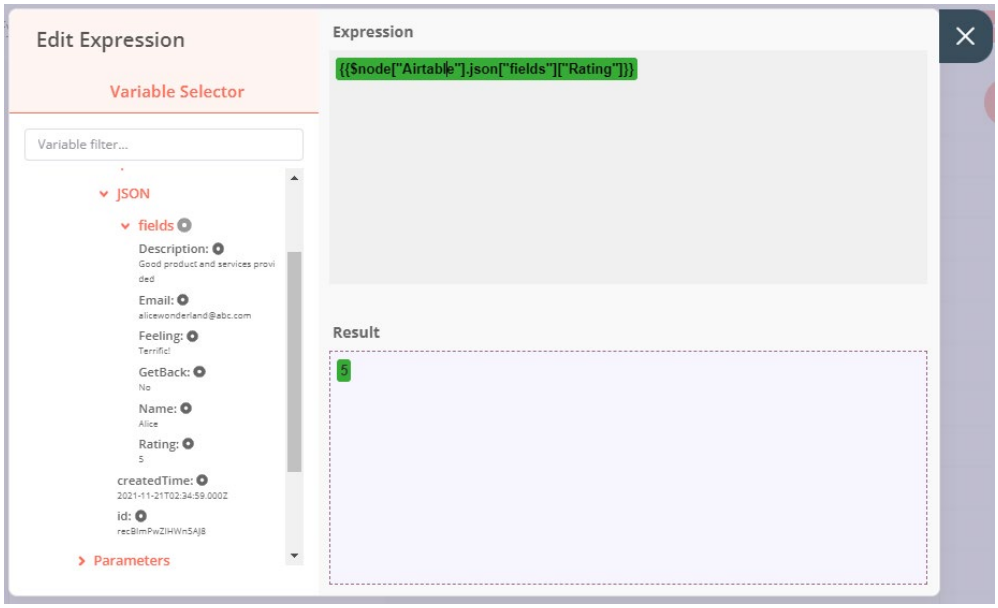
27. In next, create IF node by clicking on the + button for checking bad rating (rating < 2) will notify to relevant department via Telegram. Then, the configuration box of the IF node will prompt out.



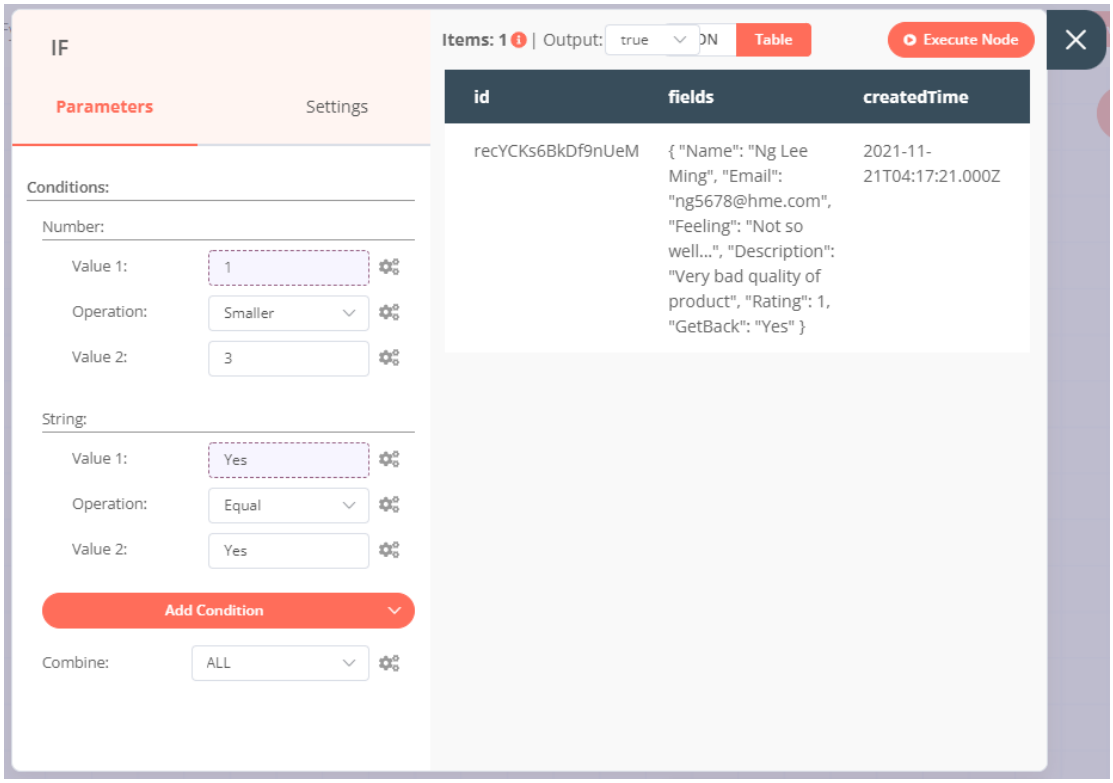
28. Once configuration box prompt, click on the “Add Condition” button and select Number from the dropdown menu.



29. In the value 1 column, click on the gear button beside it and select the New Expression to prompt for expression editor. Then, delete the value 0 in expression and go to Nodes > Airtable > Output Data > JSON > fields at the side bar and click on “Rating”. After clicking the expression as shown in below, close the tab.

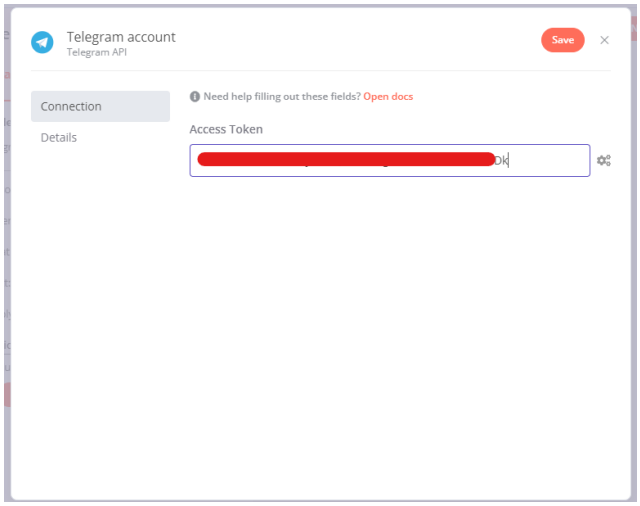


30. Back to the configuration tab, choose “Smaller for the Operation field and insert 3 to Value 2 field. Make sure the Combine field are choosing “ALL”. Next, click on “Add Condition” and choose String to check whether customer need reply by following the same step as previous step 29 but now choosing the “GetBack” in Expression and make sure Operation is choosing Equal while Value 2 is inserting Yes. Then, test the node by clicking “Execute Node” button. When successfully executed, close the tab.

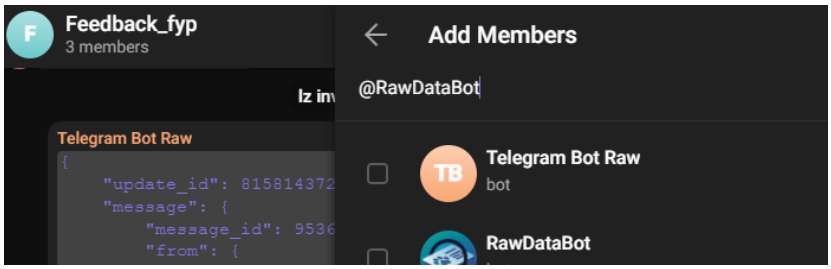


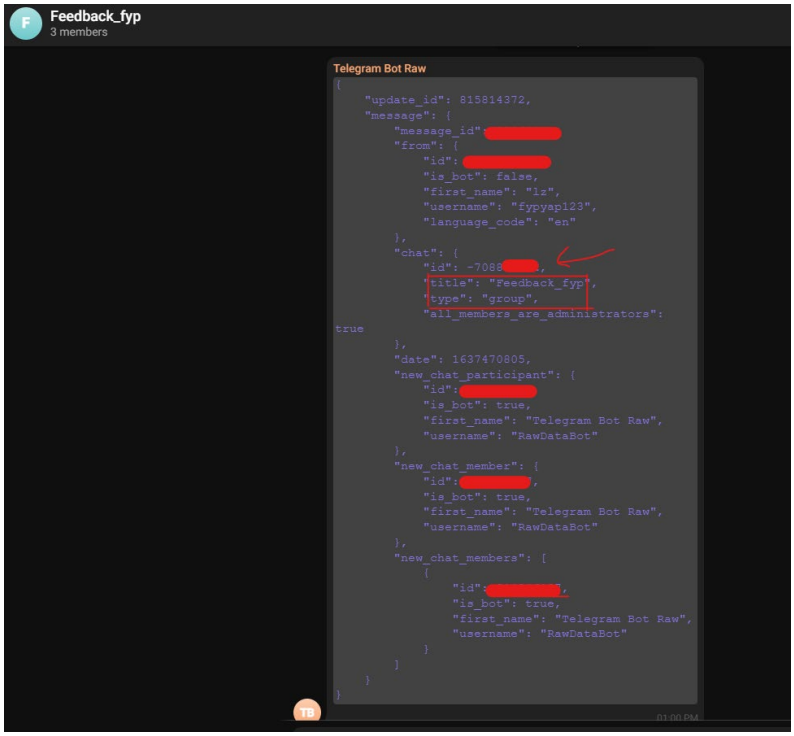
31. Then, create Telegram node by clicking on the + button. Then, we will need to create new credentials by clicking “Create New” from dropdown menu of Credential field. Then,

paste the token created previously by BotFather into the Access Token field. Then click "Save" and close it.

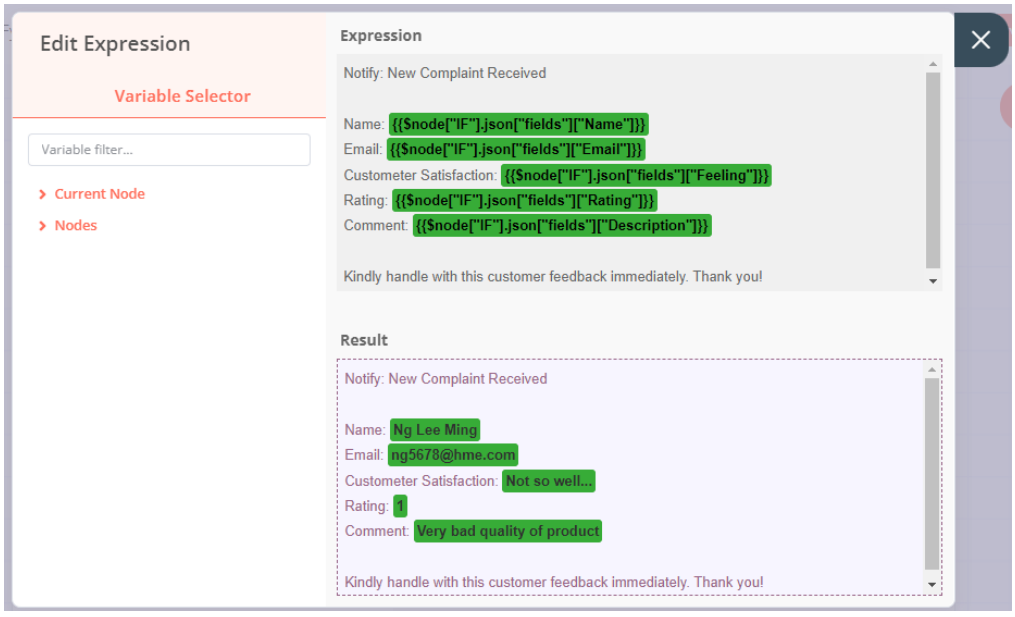


32. Then to figure out the Telegram Chat ID, go to your Telegram, find @RawDataBot. Then click on Start and it will show you chat ID of your account. In this case, we have created a group in Telegram to receive the feedback. In the chat box of the group, we need to add @RawDataBot as member and it will return us our group chat ID in JSON format. Then copy your group chat ID and paste in the Chat ID field in n8n. (*Note: you must set up your Telegram userID first before chatting to this BOT and added the BOT you created into the group you want to display message)*

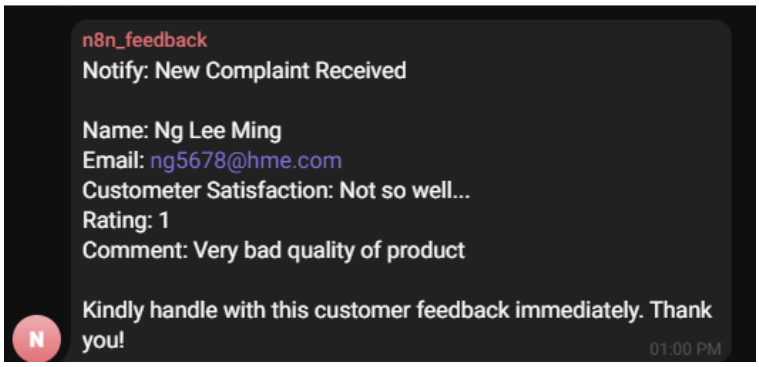




33. Now, you can start to define message to send to your receiver by stating in Text field. In this case, click on the gear button beside the Text field and select “Add Expression”. Inside the Expression tab, go to Nodes > IF > Output Data > JSON > fields at the side bar and insert the data as shown below. After finish inserting, close the tab.



34. After setup, you can test the functionality of node by clicking the “Execution Node” button and here’s shows that we received the message from the group chat.



35. Lastly, we need to add the "NoOp" node to the false statement to finish up out workflow. Do remember to save your workflow and download your workflow template. The workflow template code are shown as below.


```
{
  "name": "FypProject2",
  "nodes": [
    {
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      "type": "n8n-nodes-base.start",
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        740
      ],
      "disabled": true
    },
    {
      "parameters": {
        "authentication": "oAuth2",
        "formId": "spmURzLp"
      },
      "name": "Typeform Trigger",
      "type": "n8n-nodes-base.typeformTrigger",
      "typeVersion": 1,
      "position": [
        -190,
        300
      ],
      "webhookId": "58afeb55-3652-410b-89c5-64bf0c68e1d0",
      "credentials": {
        "typeformOAuth2Api": {
          "id": "7",
          "name": "Typeform account"
        }
      }
    },
    {
```

```
      "parameters": {
        "keepOnlySet": true,
        "values": {
          "string": [
            {
              "name": "Name",
              "value": "={{$node[\"Typeform
Trigger\"].json[\"Hello, what's your name?\"]}}"
            },
            {
              "name": "Email",
              "value": "={{$node[\"Typeform
Trigger\"].json[\"What is your email adress\"]}}"
            },
            {
              "name": "Feeling",
              "value": "={{$node[\"Typeform
Trigger\"].json[\"Nice to meet you,
[field:01FMYGPK4F6S30HQ1B6S0WND8T], how is your day going?\"]}}"
            },
            {
              "name": "Description",
              "value": "={{$node[\"Typeform
Trigger\"].json[\"3.\tAny comment, feedback or complaint would
like to tell us?\"]}}"
            },
            {
              "name": "GetBack",
              "value": "={{$node[\"Typeform
Trigger\"].json[\"5.\tDo you mind us to get back to you
soon?\"]}}"
            }
          ],
          "boolean": [],
          "number": [
            {
              "name": "Rating",
              "value": "={{$node[\"Typeform
Trigger\"].json[\"4.\tWhat is the score would you like to
give?\"]}}"
            }
          ]
        },
        "options": {}
      },
      "name": "Set",
      "type": "n8n-nodes-base.set",
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      "position": [
```

```
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    },
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        "operation": "append",
        "application": "appQ8EdR4kYet6EHP",
        "table": "Feedback",
        "options": {}
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        "airtableApi": {
          "id": "8",
          "name": "Airtable account"
        }
      }
    },
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      "parameters": {
        "listId": "6199aa390b9e15040080df6d",
        "name": "=Feedback Rating of
{{$node[\"Airtable\"].json[\"fields\"][\"Rating\"]}}:
{{$node[\"Airtable\"].json[\"fields\"][\"Name\"]}}",
        "description": "=Name:
{{$node[\"Airtable\"].json[\"fields\"][\"Name\"]}}\t\nEmail:
{{$node[\"Airtable\"].json[\"fields\"][\"Email\"]}}\nCustomer
Feeling:
{{$node[\"Airtable\"].json[\"fields\"][\"Feeling\"]}}\t\nDescrip
tion:
{{$node[\"Airtable\"].json[\"fields\"][\"Description\"]}}\nNeed
Feedback?:
{{$node[\"Airtable\"].json[\"fields\"][\"GetBack\"]}}",
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      "type": "n8n-nodes-base.trello",
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```

```
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          "name": "Trello account"
        }
      }
    },
    {
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        "conditions": {
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            {
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              "value2": 3
            }
          ],
          "string": [
            {
              "value1":
"={{$node[\"Airtable\"].json[\"fields\"][\"GetBack\"]}}",
              "value2": "Yes"
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          ]
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      },
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      ]
    },
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        "chatId": "-708830182",
        "text": "=Notify: New Complaint Received\n\nName:
{{$node[\"IF\"].json[\"fields\"][\"Name\"]}}\t\nEmail:
{{$node[\"IF\"].json[\"fields\"][\"Email\"]}}\t\nCustometer
Satisfaction:
{{$node[\"IF\"].json[\"fields\"][\"Feeling\"]}}\nRating:
{{$node[\"IF\"].json[\"fields\"][\"Rating\"]}}\nComment:
{{$node[\"IF\"].json[\"fields\"][\"Description\"]}}\t\t\t\t\n\nK
indly handle with this customer feedback immediately. Thank
you!",
        "additionalFields": {}
      },
      "name": "Telegram",
```

```
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      "typeVersion": 1,
      "position": [
        650,
        330
      ],
      "credentials": {
        "telegramApi": {
          "id": "10",
          "name": "Telegram account"
        }
      }
    },
    {
      "parameters": {},
      "name": "NoOp",
      "type": "n8n-nodes-base.noOp",
      "typeVersion": 1,
      "position": [
        650,
        530
      ]
    }
  ],
  "connections": {
    "Typeform Trigger": {
      "main": [
        [
          {
            "node": "Set",
            "type": "main",
            "index": 0
          }
        ]
      ]
    },
    "Set": {
      "main": [
        [
          {
            "node": "Airtable",
            "type": "main",
            "index": 0
          }
        ]
      ]
    },
    "Airtable": {
      "main": [
```
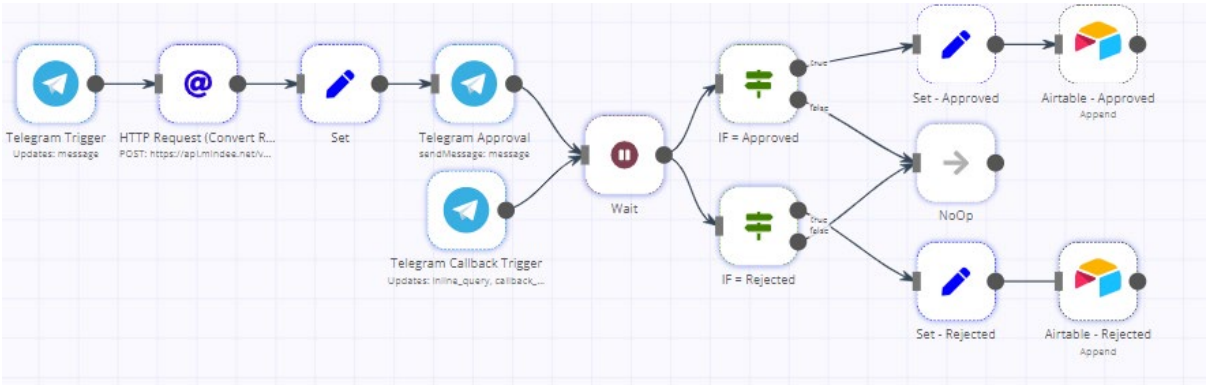

```
        [
          {
            "node": "Trello",
            "type": "main",
            "index": 0
          },
          {
            "node": "IF",
            "type": "main",
            "index": 0
          }
        ]
      ]
    },
    "IF": {
      "main": [
        [
          {
            "node": "Telegram",
            "type": "main",
            "index": 0
          }
        ],
        [
          {
            "node": "NoOp",
            "type": "main",
            "index": 0
          }
        ]
      ]
    }
  },
  "active": false,
  "settings": {},
  "id": 8
}
```


Receipt submit via Telegram or Email & Acquire Approval to store Expenses (not always working due to unstable of n8n)

Concept Design

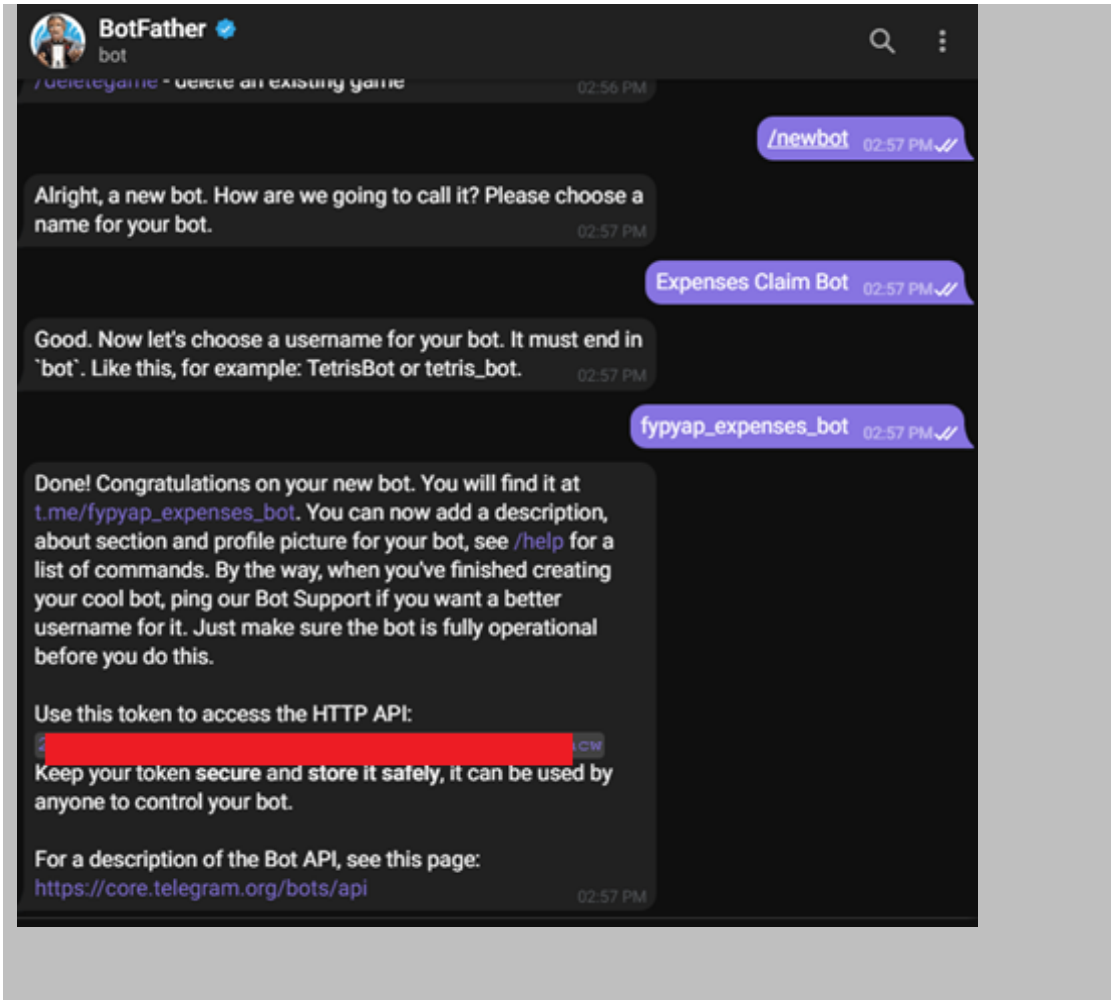


Prerequisite

- Registered Telegram account with Expenses_Bot & your account as Finance Dept Head

Way to generate BOT in Telegram:

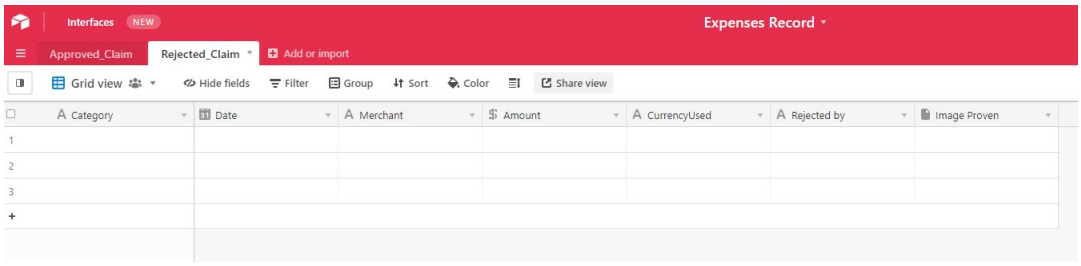
1. Start a chat with the Botfather (https://telegram.me/BotFather).
2. Insert /newbot and press enter to submit.
3. Then, reply a name for your BOT and username for it (Name: Expenses Claim Bot; Username: fypyap_expenses_bot).
4. When successfully activated, you will be received and API token for future use.

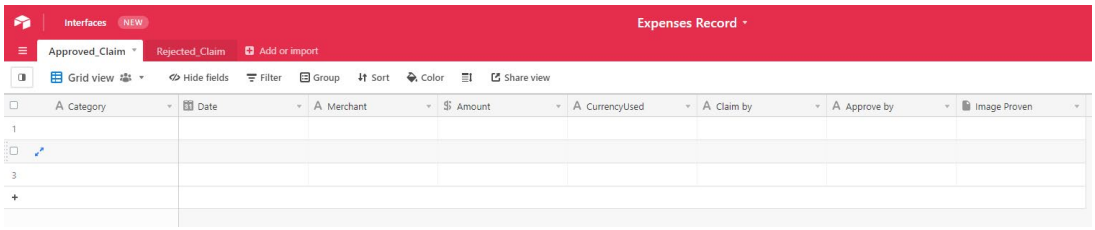


- You will need an Airtable account (https://www.airtable.com/) registered in order to store your feedback in your database (Base name: Expenses Record). Create 3 table with name of "Approved_Claim" and "Rejected_Claim". Those table need to equip with attributes as stated in below.

Table Name	Attribute Needed	Data Type
Approved_Claim	Category	Single Line Text
	Date	Date
	Merchant	Single Line Text
	Amount	Currency
	CurrencyUsed	Single Line Text
	Claim by	Single Line Text
	Approve by	Single Line Text
	Image Proven	Attachment
Rejected_Claim	Category	Single Line Text
	Date	Date
	Merchant	Single Line Text
	Amount	Currency

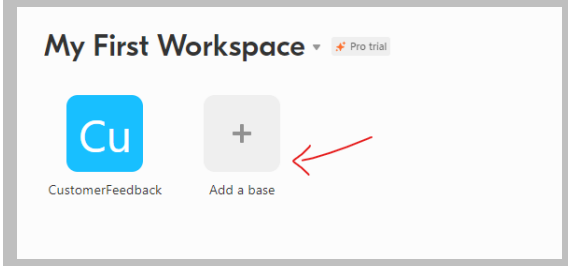
	CurrencyUsed	Single Line Text
	Claim by	Single Line Text
	Rejected By	Single Line Text
	Image Proven	Attachment

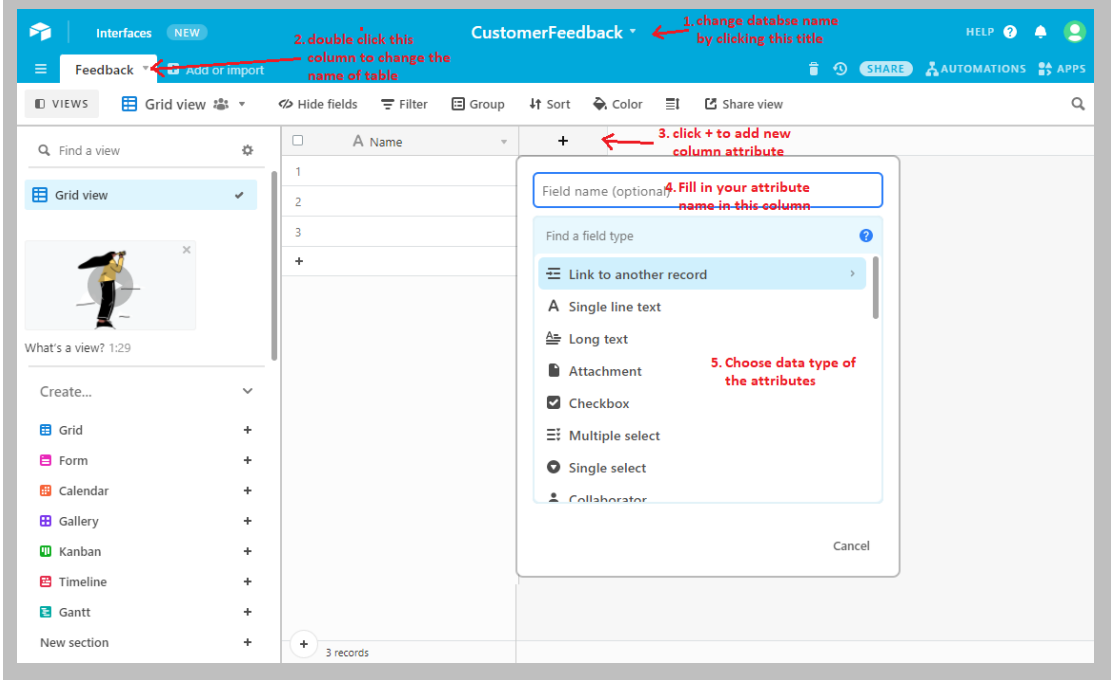




Steps of setup your base and table:

Create base (database) by clicking the "Add a base"

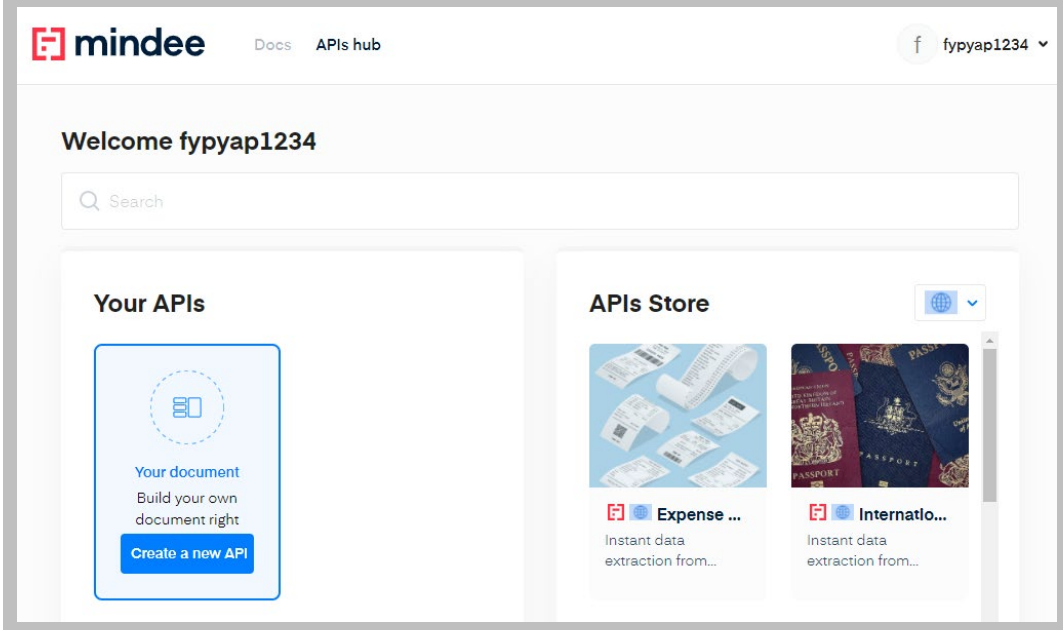




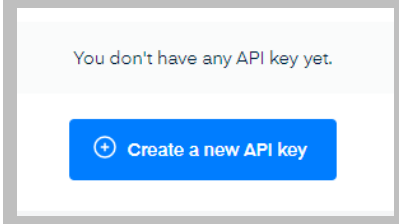
- Register an Mindee account (https://mindee.com/) and generate API key.

Way of generating API Key:

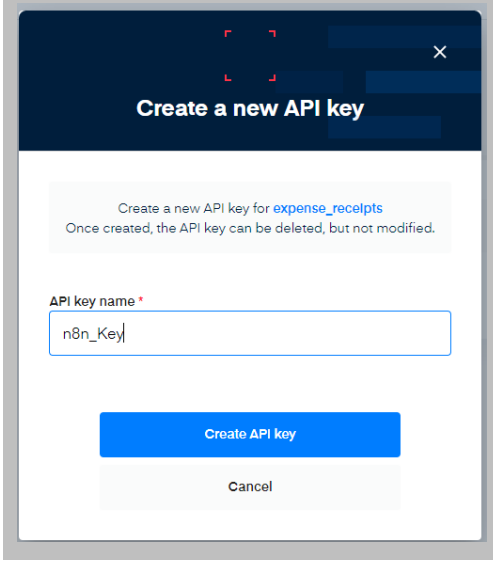
1. In your Mindee, click on the “Expense Receipts” under the APIs Store.



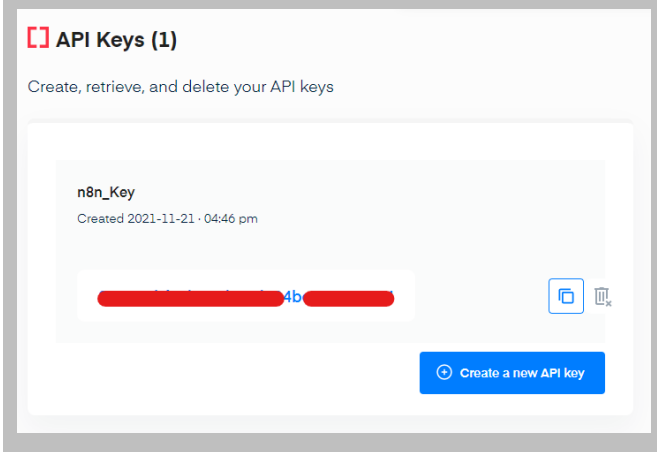
2. Go to API Keys section and click on “Create a new API key” button to create your API connection token.



3. Insert Name for your API Key and click Create API Key to proceed.



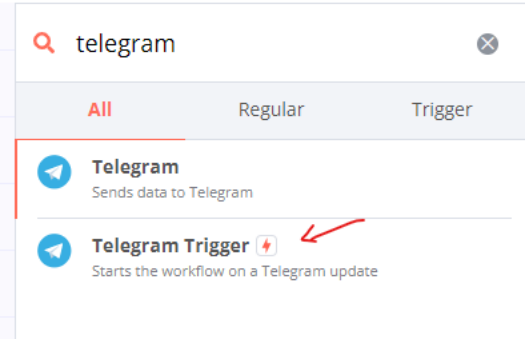
4. An API Key will be generated for the future verification used.



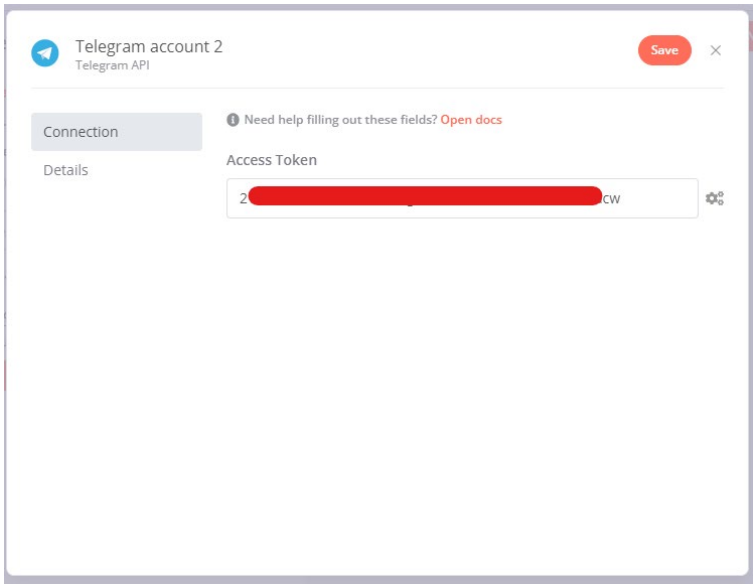
Working on Building the Workflow

Step of developing:

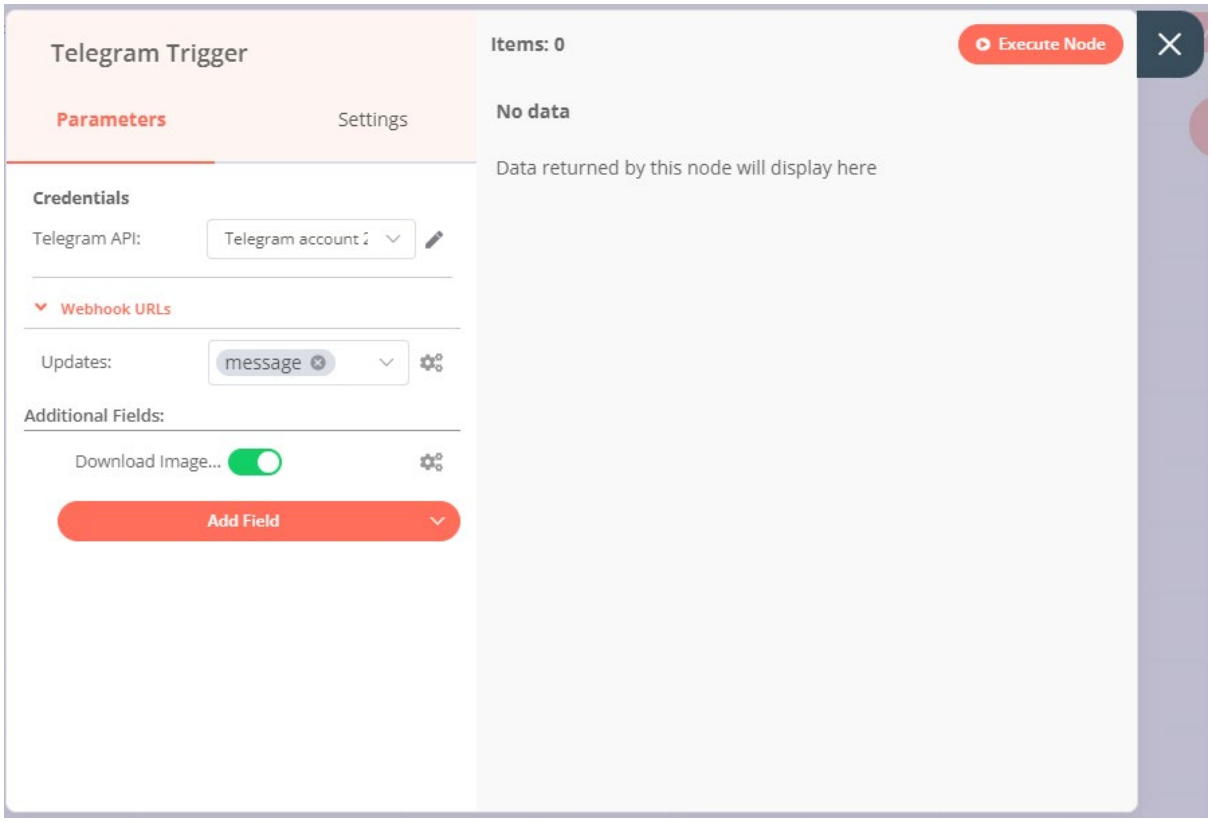
1. First of all, let us start we disable the service of the start node by clicking the ⏸ button and add the Telegram Trigger into our editor by clicking the "+" button at upper top of the editor and its configuration box will be prompt out. (Make sure your n8n is connected in tunnel mode)



2. Then, we need to create authentication of API for the Trigger. In the credentials of the node, click on "Create New" from the dropdown list. Then, copy and paste the API token created when generating Bot to the Access Token column. After pasting it, click Save button and it will test for the token availability, then close the credentials tab.

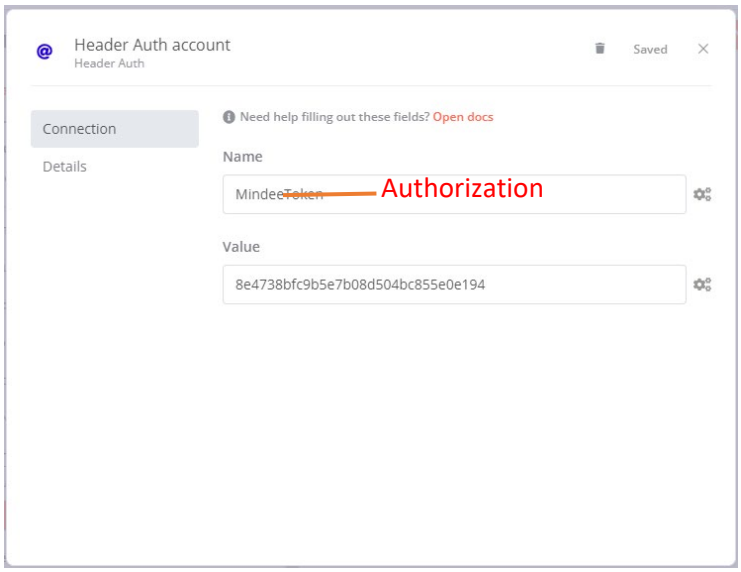


3. In the Updates field, choose “message” so that any message received by BOT will be trigger the services. Then, click on “Add Field” and select “Download Images/Files”. Make sure the toggle of “Download Images/Files” are activated and then close it.

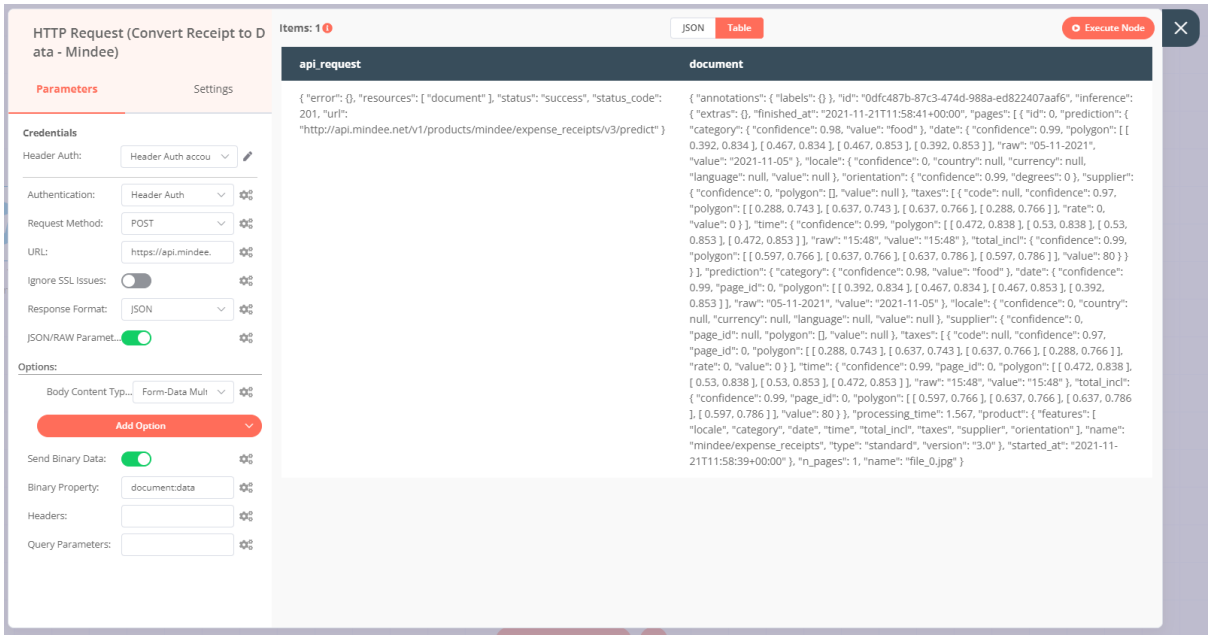


4. Now, create a HTTP Request Node by clicking the “+” button on top of editor, then link it to the Mindee API. Make sure the node is linked to the Telegram Trigger node. In the configuration tab, start with selecting “Header Auth” from the drop-down menu of Authentication field and a credential field that stated Header Auth will be shown. In the Header Auth field select “-Create New-”. In the “Header Auth” window, enter header

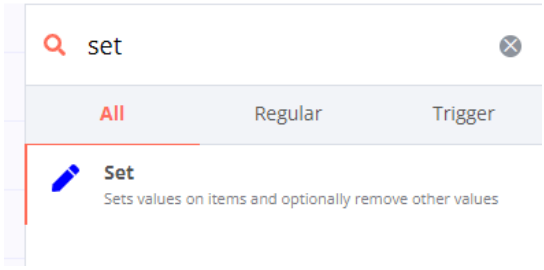
name for your Mindee credentials in the Credentials Name field (Name: Authorization) and paste your Mindee API key that you gained previously into the Value field. Then, click on “Save” button on top and close the window.



5. Going back to the configuration tab of HTTP Request node, select “POST” for the Request method field and paste this URL: https://api.mindee.net/v1/products/mindee/expense_receipts/v3/predic to the URL field. Remain the setting of “Ignore SSL Issues” field as close and Response Format as JSON. Then toggle the JSON/RAW Parameter field as activate. Under the “Options” section, click on “Add Option” button and select Body Content Type. In the “Body Content Type” field, select “Form-Data-Multipart” selection for the “Body Content Type” field. Then, toggle the “Send Binary Data” field as activate and set “document:data” for the “Binary Property” field, then remain the remaining part as default. After inserted all values, click on “Execute Node” to try the validity of node whether working. If successful, then you may close the configuration tab.



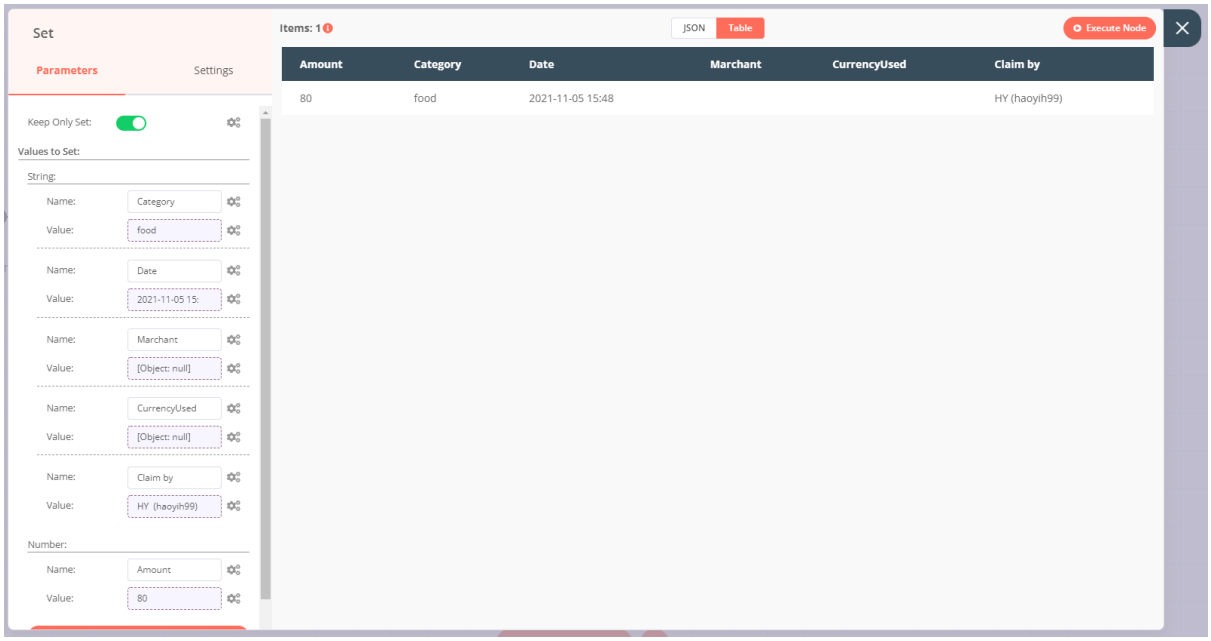
6. Then, in order make sure the data pass to next node are according to the relevant info name and value, click on the "+" button to add the "Set" node into the workflow and make sure the node is connected to the previous node. The configuration tab of the node will be prompt out.



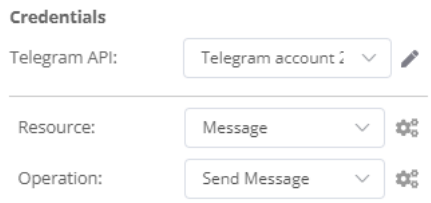
7. In the Set node configuration tab, toggle the "Keep Only Set" as active to ensure the data that we set only will be taken and other previous data will be cleaned. Then, click on "Add Value" to create attribute in "Name" field and follow by data that want to take as "Value" according to the table below that will be showing location of dynamic data to taken in JSON as well as attribute name to created. Then, try to execute the node to test whether node are function.

Name of attribute	**Data Type**	**Directories/Location of Value in previous node JSON file/ side bar in expression (Dynamic Value)**
Category	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > category > value
Date	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > date > value

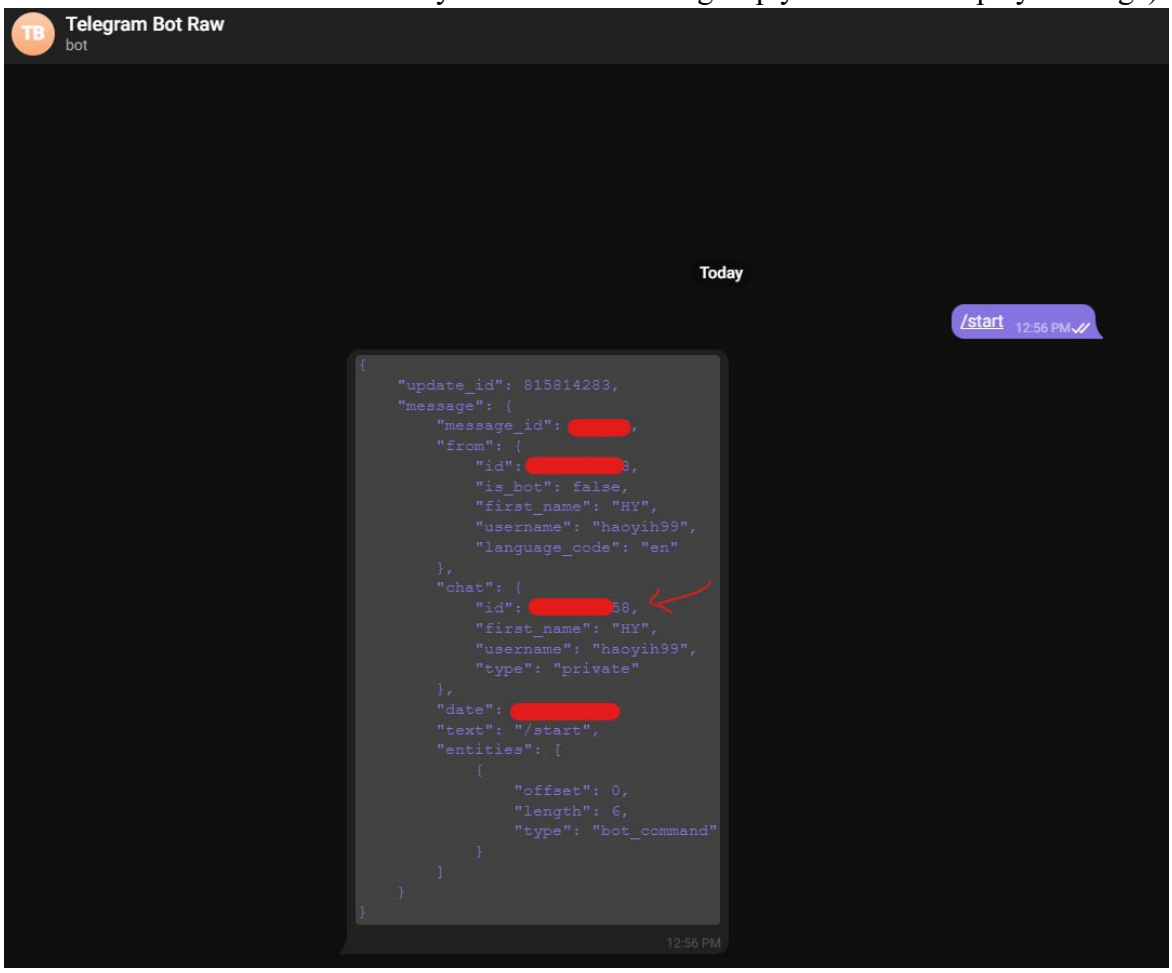
		Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > time > value
Merchant	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > supplier > value
Amount	Number	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > total_incl > value
Currency Used	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > locale > currency > value
Claim by	String	Node > Telegram Trigger > Output Data > JSON > message > from > first_name Node > Telegram Trigger > Output Data > JSON > message > from > last_name Node > Telegram Trigger > Output Data > JSON > message > from > username



8. In next step, we want to send the info to the correct user for approval, thus create a Telegram node by clicking the "+" button and ensure the node are connected with the previously node. Then, in the "Credential" field, select the credential created previously (Bot of expenses claim) and select "Message" for the "Resource" field. In the next field, "Operation" field select "Send Message" from the dropdown list.



9. To figure out the chat ID of individual we want to send, we need to go to the Telegram account that we want to send to, find @RawDataBot. Then click on Start and it will show you chat ID of your account in JSON format. Then copy your chat ID and paste in the Chat ID field in n8n. (Note: you must set up your Telegram userID first before chatting to this BOT and added the BOT you created into the group you want to display message)

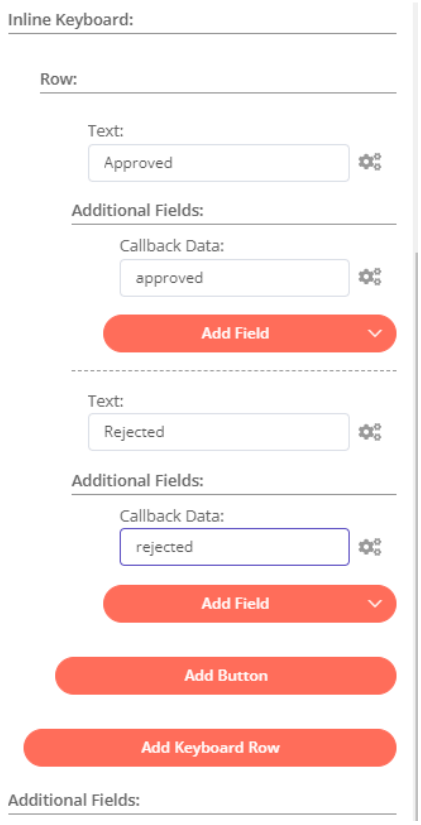


10. In the "Text" field, input all the dynamic information into the field by selecting the "Add Expression" in the gear button beside the field. The info that will inserted are shown as below and close the expression config tab after finish editing.

```
New Notification: Expenses Claim For Approval
Dear Mr./Mrs.
      Good Day. Here's the new incoming expense claim information shown as below.

Category: {{$node["Set"].json["Category"]}}
Merchant: {{$node["Set"].json["Marchant"]}}
Amount: {{$node["Set"].json["CurrencyUsed"]}}{{$node["Set"].json["Amount"]}}
```

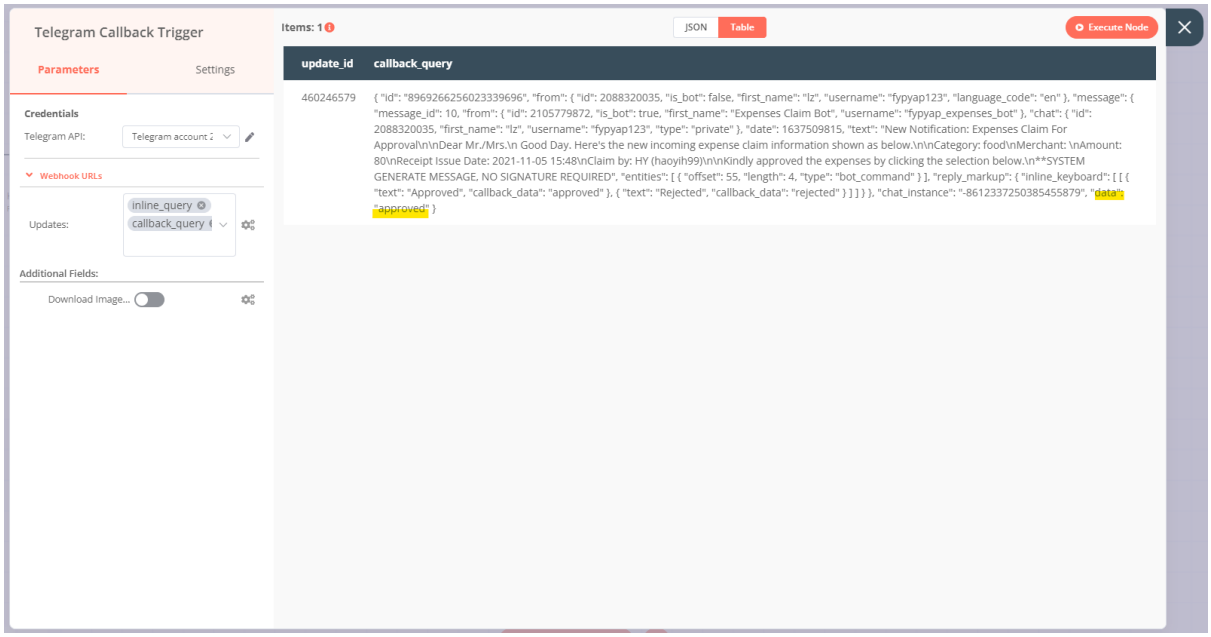
```
Receipt Issue Date: {{$node["Set"].json["Date"]}}
Claim by: {{$node["Set"].json["Claim by"]}}

Kindly approved the expenses by clicking the selection below within 24 hours of
receiving this message, else it will be ignored automatically.
**SYSTEM GENERATE MESSAGE, NO SIGNATURE REQUIRED
```

11. In the “Reply Markup” field, select “Incline Keyboard” option from the menu. In the Incline Keyboard section,click on “Add Keyboard Row” to create an incline keyboard/ button choose for user that are right next to the message. Then, select “Add button” to create first selection by inserting “Approved” in the “Text” field, then click on “Add Field” and select “Callback Data” as selection to allow the chat callback the selection user selected. Next, inside the box, insert “approved” to state the value to “Callback Data” field when user click on the button. In next, create again the button follows by same steps but now it inserts with “Rejected” for “Text” field and “rejected” for “Callback Data” field.



12. In this step, create a Telegram Trigger node that aimed to get the incline query or callback query that inserted by the admin whether he approved the claim or not. So, click on the “+” button to add new “Telegram’ Trigger node to the workflow editor. Then, select the previous credentials set up as the API connection. In the “update” field, select

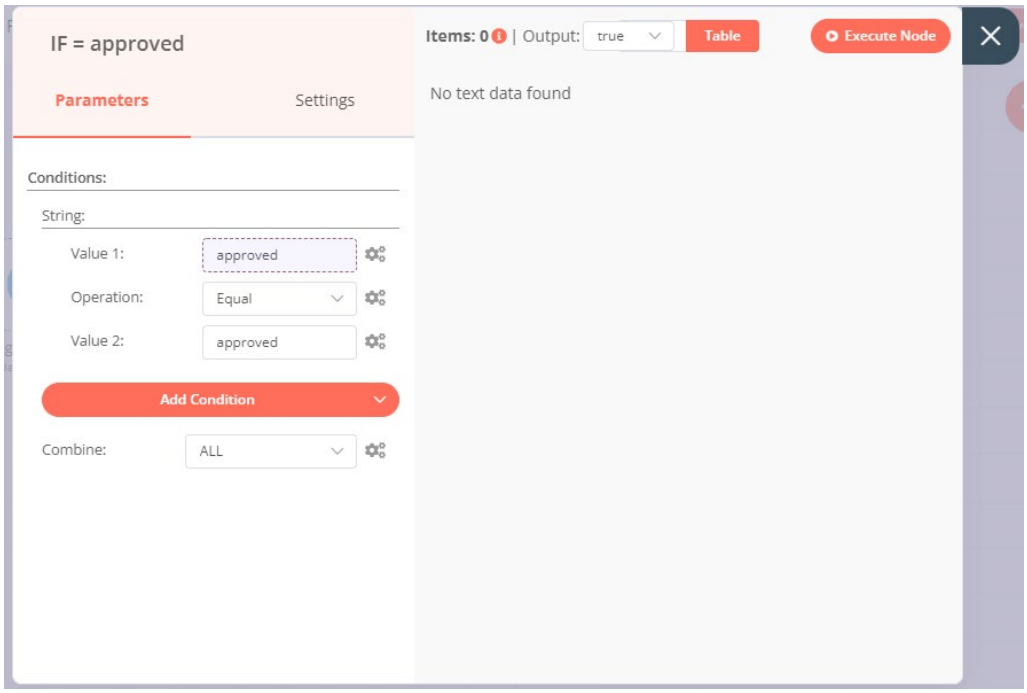
"incline_query" and "callback_query" from the list. Then try to execute whether the node is function by clicking the "Execute Node" button. Once finish set up, close the window.



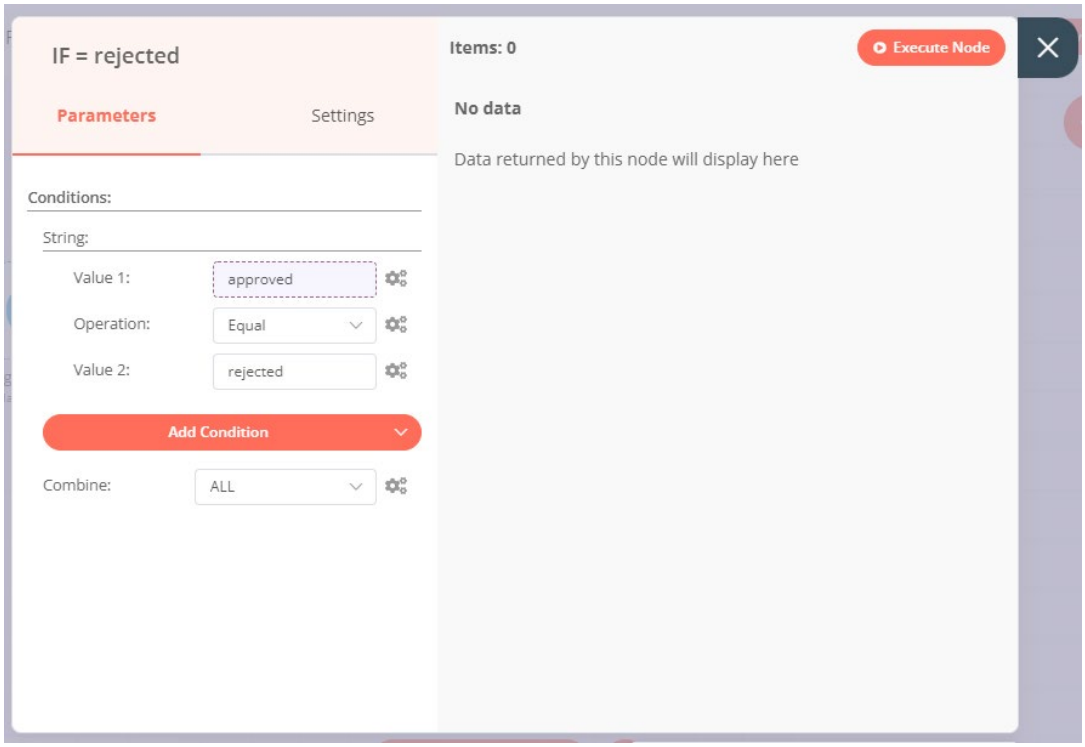
13. Then, add the "Wait" node to wait for the approval from admin only it continue executed. Make sure this node is connected to the Telegram Approve node and the Telegram Callback Trigger set previously. In the configuration, set "On webhook call" at the "Resume" field and set "Last node finished" and "All Entries" for the "respond When" and "Response Data" field and remain other configuration default.

14. Then, click on "+" button to add the IF node to help us checking whether the admin is approving the expenses claim or not. In the IF node configuration window, click on "Add Condition" and select "String" from the selection. Next, in Value 1 field, go to the gear

button beside it and select “Add Expression” to get value for checking by following the directories as shown (Node > Telegram Callback trigger > Output Data > JSON > callback_query > data) in the side bar of Expression tab. In the “Operation” field select “Equal” from the selection and insert “approved” in “Value 2” field. Make sure “All” selection is chosen for the “combine” field. Change the name of top from “IF” to “IF = approved”



15. Copy the previous created node by clicking the above the previous node and change the node name to “IF = rejected”. Make sure it connected to previous “wait” node.Remain all the setting set previously but changes the “Value 2” column data to “rejected.

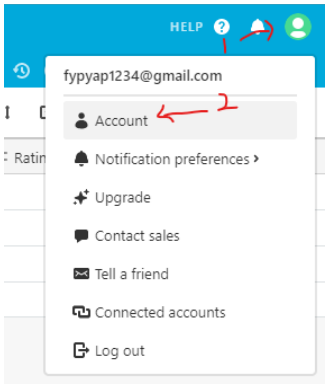


16. In this step, click on the "+" button to add "Set" node into the workflow to set the data we want to send to Airtable with specific name. Make sure that your "Set" node is connected to the true output of the if node (for approved) is connected to the "Airtable" node and change the name of this node to "Set – Approved". Toggle the "Keep Only Set" to active and add value based on the variable name, data type and directories of value taken from previous node as below by clicking the "Add Value" button.

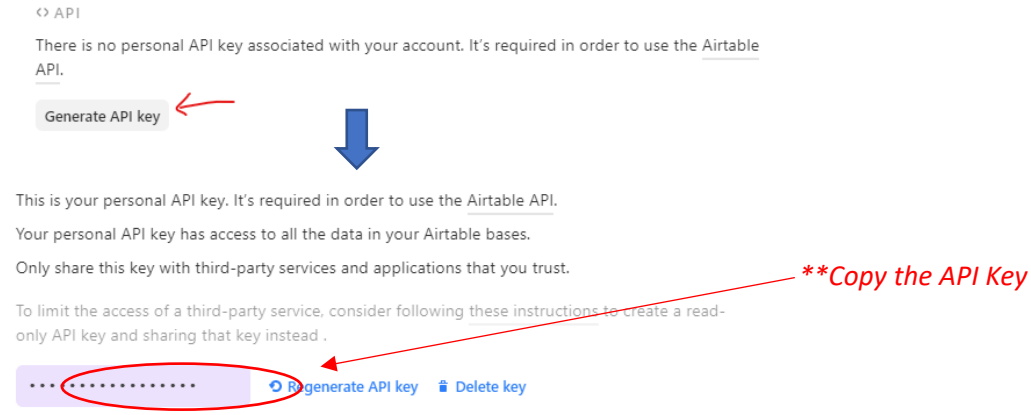
Name of attribute	**Data Type**	**Directories/Location of Value in previous node JSON file/ side bar in expression (Dynamic Value)**
Category	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > category > value
Date	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > date > value Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > time > value
Merchant	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > supplier > value
Amount	Number	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > total_incl > value

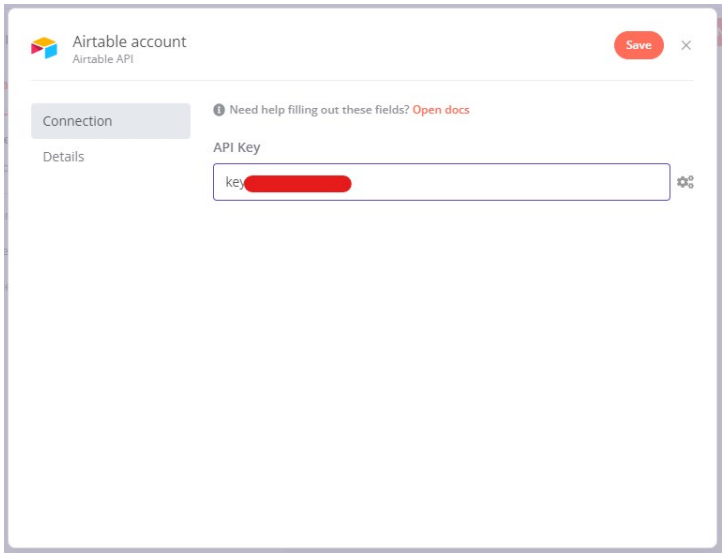
CurrencyUsed	String	Node > HTTP Request (Convert Receipt to Data - Mindee) > Output Data > JSON > document > inference > prediction > locale > currency > value
Claim by	String	Node > Telegram Trigger > Output Data > JSON > message > from > first_name Node > Telegram Trigger > Output Data > JSON > message > from > last_name Node > Telegram Trigger > Output Data > JSON > message > from > username
Approved by	String	Nodes > IF= approved > Output Data > JSON > callback_query > from > first_name Nodes > IF= approved > Output Data > JSON > callback_query > from > last_name Nodes > IF= approved > Output Data > JSON > callback_query > from > username

17. Copy previous “Set” node created by clicking the above the previous node and change the node name to “Set – Rejected”. Make sure this node is connected to the true output of the if node (for rejected). Remain all the setting set previously but changes the “Approved by” column name to “Rejected by”.
18. In this node, create a “Airtable” node by clucking the “+” button. Make sure it connect to the “Set” node of approved. Before any configuration editing, create credentials for the Airtable API by selecting the Credential drop down list and select “Create New” to establish the API connection. To set up the connection, go to Airtable dashboard and click on the user icon allocated on the upper right and select “Account” from the dropdown to go to the account setting (https://airtable.com/account)

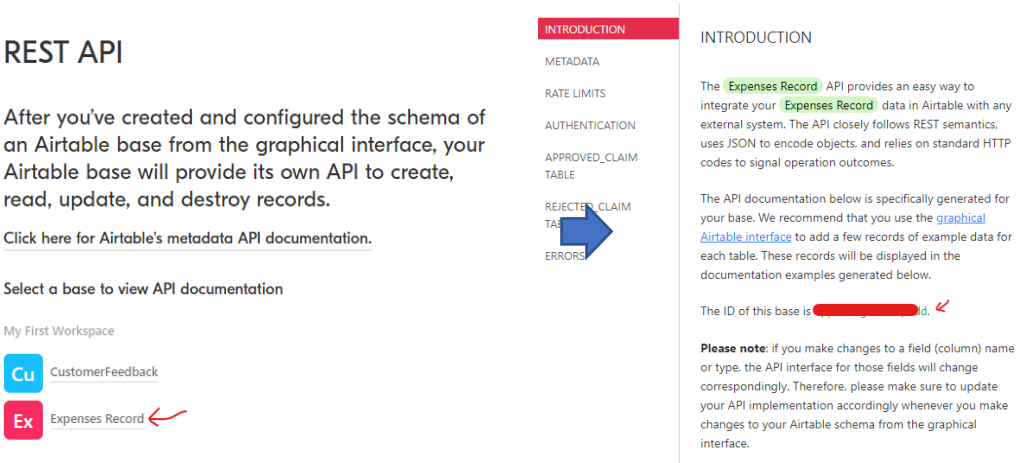


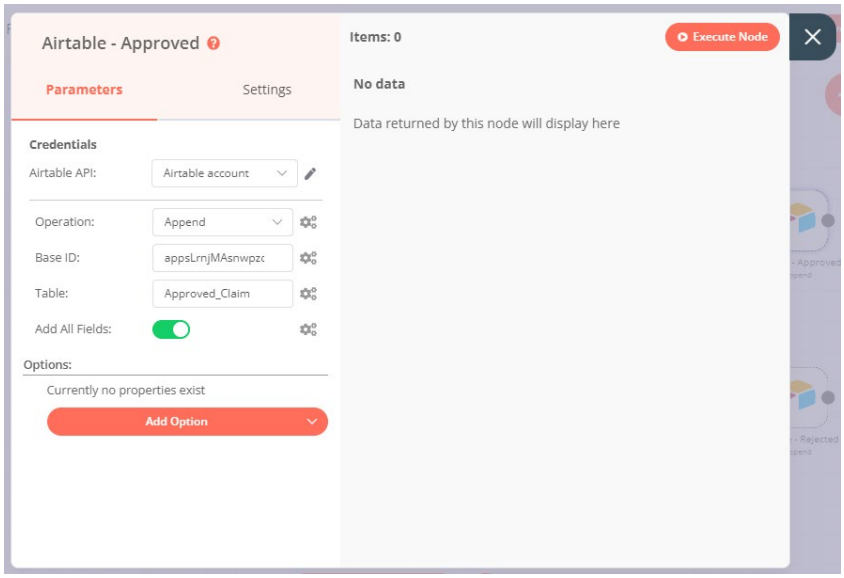
19. Under the API section, click on the Generate API key button and copy (Ctrl+C) the displayed API key. Then, paste (Ctrl+V) in the API key in the API Key field in the 'Airtable API' credentials in n8n. After that click on “Save” button and close the tab.



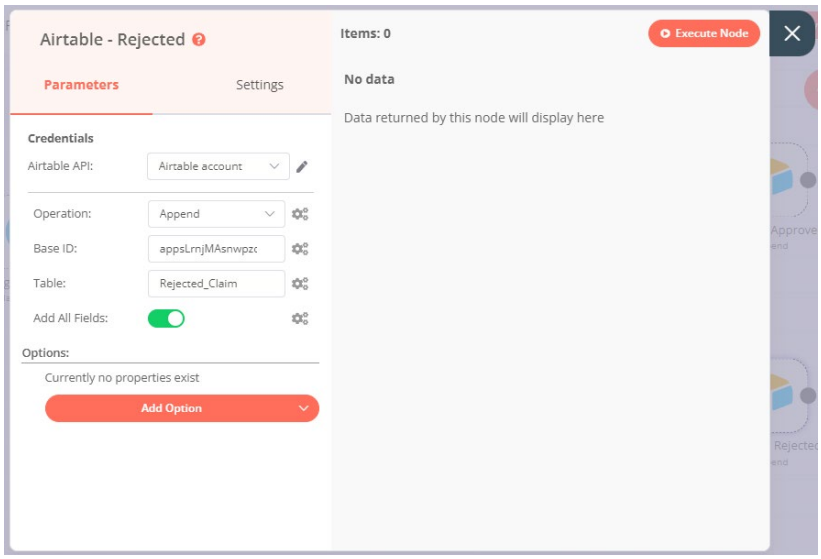


20. In the Airtable node configuration tab, select "Append" for the "Operation field. Then, to get the Base ID, go to https://airtable.com/api and select the base (database name you created). After that, you will be redirected to a page that stated the documentation of API and from the Introduction section, you will find your Base ID. Copy and paste the ID in the Base ID field in n8n. Later on, enter the table name in the Table field (Table Name: Approved_Claim). Change the Name of Node above to "Airtable – Aprroved".





21. Copy the previous “Airtable” node created by clicking the above the previous node and change the node name to “Airtable – Rejected”. Make sure this node is connected to the “Set” node of rejected. Remain all the setting set previously but changes the “Table” column data to “Rejected_Claim”.



22. In this step, create a “NoOP” node to handle all the false output of all if statement by clicking the “+” button and connected it to the false output of 2 if statement.
23. Lastly, you can extract the template code of this workflow by clicking the “Save” button and the code are shown as below.

```
{
  "name": "FypProject3",
  "nodes": [
    {
      "parameters": {},
      "name": "Start",
```

```
      "type": "n8n-nodes-base.start",
      "typeVersion": 1,
      "position": [
        60,
        640
      ],
      "disabled": true
    },
    {
      "parameters": {
        "updates": [
          "message"
        ],
        "additionalFields": {
          "download": true
        }
      },
      "name": "Telegram Trigger",
      "type": "n8n-nodes-base.telegramTrigger",
      "typeVersion": 1,
      "position": [
        -700,
        -1540
      ],
      "webhookId": "3a2114db-e2aa-471b-ad3c-e02bd69751b4",
      "credentials": {
        "telegramApi": {
          "id": "11",
          "name": "Telegram account 2 (Claim BOT)"
        }
      }
    },
    {
      "parameters": {
        "authentication": "headerAuth",
        "requestMethod": "POST",
        "url":
"https://api.mindee.net/v1/products/mindee/expense_receipts/v3/predict",
        "jsonParameters": true,
        "options": {
          "bodyContentType": "multipart-form-data"
        },
        "sendBinaryData": true,
        "binaryPropertyName": "document:data"
      },
      "name": "HTTP Request (Convert Receipt to Data - Mindee)",
      "type": "n8n-nodes-base.httpRequest",
      "typeVersion": 1,
```

```
      "position": [
        -520,
        -1540
      ],
      "credentials": {
        "httpHeaderAuth": {
          "id": "12",
          "name": "Header Auth account (Mindee)"
        }
      }
    },
    {
      "parameters": {
        "keepOnlySet": true,
        "values": {
          "string": [
            {
              "name": "Category",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"pages\"][0][\"prediction\"
][\"category\"][\"value\"]}}"
            },
            {
              "name": "Date",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"date\"][\"
value\"]}} {{$node[\"HTTP Request (Convert Receipt to Data -
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"time\"][\"
value\"]}}"
            },
            {
              "name": "Marchant",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"supplier\"
][\"value\"]}}"
            },
            {
              "name": "CurrencyUsed",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"locale\"][
\"currency\"]}}"
            },
            {
              "name": "Claim by",
```

```
              "value": "={{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"first_name\"]}}
{{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"last_name\"]}}
({{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"username\"]}})"
            }
          ],
          "number": [
            {
              "name": "Amount",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"total_incl
\"][\"value\"]}}"
            }
          ]
        },
        "options": {}
      },
      "name": "Set",
      "type": "n8n-nodes-base.set",
      "typeVersion": 1,
      "position": [
        -340,
        -1540
      ]
    },
    {
      "parameters": {
        "chatId": "2088320035",
        "text": "=New Notification: Expenses Claim For Approval\n\nDear
Mr./Mrs.\n\tGood Day. Here's the new incoming expense claim information
shown as below.\n\nCategory:
{{$node[\"Set\"].json[\"Category\"]}}\nMerchant:
{{$node[\"Set\"].json[\"Marchant\"]}}\nAmount:
{{$node[\"Set\"].json[\"CurrencyUsed\"]}}{{$node[\"Set\"].json[\"Amount\"
]}}\nReceipt Issue Date: {{$node[\"Set\"].json[\"Date\"]}}\nClaim by:
{{$node[\"Set\"].json[\"Claim by\"]}}\n\nKindly approved the expenses by
clicking the selection below within 24 hours of receiving this message,
else it will be ignored automatically.\n**SYSTEM GENERATE MESSAGE, NO
SIGNATURE REQUIRED",
        "replyMarkup": "inlineKeyboard",
        "inlineKeyboard": {
          "rows": [
            {
              "row": {
                "buttons": [
```

```
                {
                  "text": "Approved",
                  "additionalFields": {
                    "callback_data": "approved"
                  }
                },
                {
                  "text": "Rejected",
                  "additionalFields": {
                    "callback_data": "rejected"
                  }
                }
              ]
            }
          }
        ]
      },
      "additionalFields": {}
    },
    "name": "Telegram Approval",
    "type": "n8n-nodes-base.telegram",
    "typeVersion": 1,
    "position": [
      -170,
      -1540
    ],
    "credentials": {
      "telegramApi": {
        "id": "11",
        "name": "Telegram account 2 (Claim BOT)"
      }
    }
  },
  {
    "parameters": {
      "updates": [
        "inline_query",
        "callback_query"
      ],
      "additionalFields": {
        "download": false
      }
    },
    "name": "Telegram Callback Trigger",
    "type": "n8n-nodes-base.telegramTrigger",
    "typeVersion": 1,
    "position": [
      -180,
```

```
        -1380
      ],
      "webhookId": "ab993bd3-8e6f-4de5-9d99-e721390455cb",
      "credentials": {
        "telegramApi": {
          "id": "11",
          "name": "Telegram account 2 (Claim BOT)"
        }
      }
    },
    {
      "parameters": {
        "conditions": {
          "string": [
            {
              "value1": "={{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"data\"]}}",
              "value2": "approved"
            }
          ]
        }
      },
      "name": "IF = Approved",
      "type": "n8n-nodes-base.if",
      "typeVersion": 1,
      "position": [
        190,
        -1540
      ]
    },
    {
      "parameters": {
        "conditions": {
          "string": [
            {
              "value1": "={{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"data\"]}}",
              "value2": "rejected"
            }
          ]
        }
      },
      "name": "IF = Rejected",
      "type": "n8n-nodes-base.if",
      "typeVersion": 1,
      "position": [
        190,
        -1360
```

```
      ]
    },
    {
      "parameters": {
        "keepOnlySet": true,
        "values": {
          "string": [
            {
              "name": "Category",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"pages\"][0][\"prediction\"
][\"category\"][\"value\"]}}"
            },
            {
              "name": "Date",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"date\"][\"
value\"]}} {{$node[\"HTTP Request (Convert Receipt to Data -
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"time\"][\"
value\"]}}"
            },
            {
              "name": "Marchant",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"supplier\"
][\"value\"]}}"
            },
            {
              "name": "CurrencyUsed",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"locale\"][
\"currency\"]}}"
            },
            {
              "name": "Claim by",
              "value": "={{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"first_name\"]}}
{{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"last_name\"]}}
({{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"username\"]}})"
            },
            {
              "name": "Approved by",
```

```
              "value": "= {{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"from\"][\"first_name\"]}}
{{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"from\"][\"last_name\"]}}
({{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"from\"][\"username\"]}})"
            }
          ],
          "number": [
            {
              "name": "Amount",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"total_incl
\"][\"value\"]}}"
            }
          ]
        },
        "options": {}
      },
      "name": "Set - Approved",
      "type": "n8n-nodes-base.set",
      "typeVersion": 1,
      "position": [
        440,
        -1590
      ]
    },
    {
      "parameters": {
        "keepOnlySet": true,
        "values": {
          "string": [
            {
              "name": "Category",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"pages\"][0][\"prediction\"
][\"category\"][\"value\"]}}"
            },
            {
              "name": "Date",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"date\"][\"
value\"]}} {{$node[\"HTTP Request (Convert Receipt to Data -
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"time\"][\"
value\"]}}"
```

```
            },
            {
              "name": "Marchant",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"supplier\"
][\"value\"]}}"
            },
            {
              "name": "CurrencyUsed",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"locale\"][
\"currency\"]}}"
            },
            {
              "name": "Claim by",
              "value": "={{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"first_name\"]}}
{{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"last_name\"]}}
({{$node[\"Telegram Approval
Trigger\"].json[\"message\"][\"from\"][\"username\"]}})"
            },
            {
              "name": "Rejected by",
              "value": "= {{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"from\"][\"first_name\"]}}
{{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"from\"][\"last_name\"]}}
({{$node[\"Telegram Callback
Trigger\"].json[\"callback_query\"][\"from\"][\"username\"]}})"
            }
          ],
          "number": [
            {
              "name": "Amount",
              "value": "={{$node[\"HTTP Request (Convert Receipt to Data
-
Mindee)\"].json[\"document\"][\"inference\"][\"prediction\"][\"total_incl
\"][\"value\"]}}"
            }
          ]
        },
        "options": {}
      },
      "name": "Set - Rejected",
      "type": "n8n-nodes-base.set",
```

```
      "typeVersion": 1,
      "position": [
        440,
        -1290
      ]
    },
    {
      "parameters": {
        "operation": "append",
        "application": "appsLrnjMAsnwpzdd",
        "table": "Approved_Claim",
        "options": {}
      },
      "name": "Airtable - Approved",
      "type": "n8n-nodes-base.airtable",
      "typeVersion": 1,
      "position": [
        620,
        -1590
      ],
      "credentials": {
        "airtableApi": {
          "id": "8",
          "name": "Airtable account"
        }
      }
    },
    {
      "parameters": {
        "operation": "append",
        "application": "appsLrnjMAsnwpzdd",
        "table": "Rejected_Claim",
        "options": {}
      },
      "name": "Airtable - Rejected",
      "type": "n8n-nodes-base.airtable",
      "typeVersion": 1,
      "position": [
        620,
        -1290
      ],
      "credentials": {
        "airtableApi": {
          "id": "8",
          "name": "Airtable account"
        }
      }
    },
```

```
    {
      "parameters": {},
      "name": "NoOp",
      "type": "n8n-nodes-base.noOp",
      "typeVersion": 1,
      "position": [
        440,
        -1440
      ]
    },
    {
      "parameters": {
        "resume": "webhook",
        "responseMode": "lastNode",
        "responseData": "allEntries",
        "options": {}
      },
      "name": "Wait",
      "type": "n8n-nodes-base.wait",
      "typeVersion": 1,
      "position": [
        20,
        -1450
      ],
      "webhookId": "d286ed6c-d820-48dd-85d5-1b061849ab3b"
    }
  ],
  "connections": {
    "Telegram Trigger": {
      "main": [
        [
          {
            "node": "HTTP Request (Convert Receipt to Data - Mindee)",
            "type": "main",
            "index": 0
          }
        ]
      ]
    },
    "HTTP Request (Convert Receipt to Data - Mindee)": {
      "main": [
        [
          {
            "node": "Set",
            "type": "main",
            "index": 0
          }
        ]
```

```
    ]
  },
  "Set": {
    "main": [
      [
        {
          "node": "Telegram Approval",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "IF = Approved": {
    "main": [
      [
        {
          "node": "Set - Approved",
          "type": "main",
          "index": 0
        }
      ],
      [
        {
          "node": "NoOp",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Telegram Callback Trigger": {
    "main": [
      [
        {
          "node": "Wait",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Telegram Approval": {
    "main": [
      [
        {
          "node": "Wait",
          "type": "main",
```

```
          "index": 0
        }
      ]
    ]
  },
  "IF = Rejected": {
    "main": [
      [
        {
          "node": "Set - Rejected",
          "type": "main",
          "index": 0
        }
      ],
      [
        {
          "node": "NoOp",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Set - Approved": {
    "main": [
      [
        {
          "node": "Airtable - Approved",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Set - Rejected": {
    "main": [
      [
        {
          "node": "Airtable - Rejected",
          "type": "main",
          "index": 0
        }
      ]
    ]
  },
  "Wait": {
    "main": [
      [
```

```
          {
            "node": "IF = Approved",
            "type": "main",
            "index": 0
          },
          {
            "node": "IF = Rejected",
            "type": "main",
            "index": 0
          }
        ]
      ]
    }
  },
  "active": false,
  "settings": {
    "timezone": "Asia/Kuala_Lumpur",
    "saveExecutionProgress": "DEFAULT"
  },
  "id": 9
}
```

Zapier Workflow Tools Installation Guide

Using Zapier, developers or businesspeople can progress automated workflow using their software, which has been coupled with hundreds of APIs for various apps. Zapier is a simple to use automation workflow platform that allows them to quickly establish automation workflows. This workflow system is mainly responsible for assisting us in communicating across applications using the API that they have supplied. In Zapier, it includes two way of building new integration of the app which is:

1. Zapier UI (Online visual Builder to build integration of app)
2. Zapier CLI (Run on Desktop Window & Using CLI command to run) – quite complicated

Way 1: Zapier UI

For users who are not familiar with coding, Zapier UI is the quickest and most straightforward method of constructing an app integration. In addition to having all of the functionality of a Zapier CLI, the Zapier UI also has the ability to be customised to suit the needs of different types of users. It is necessary to register an account on the Zapier official website in order to access the Zapier UI service.

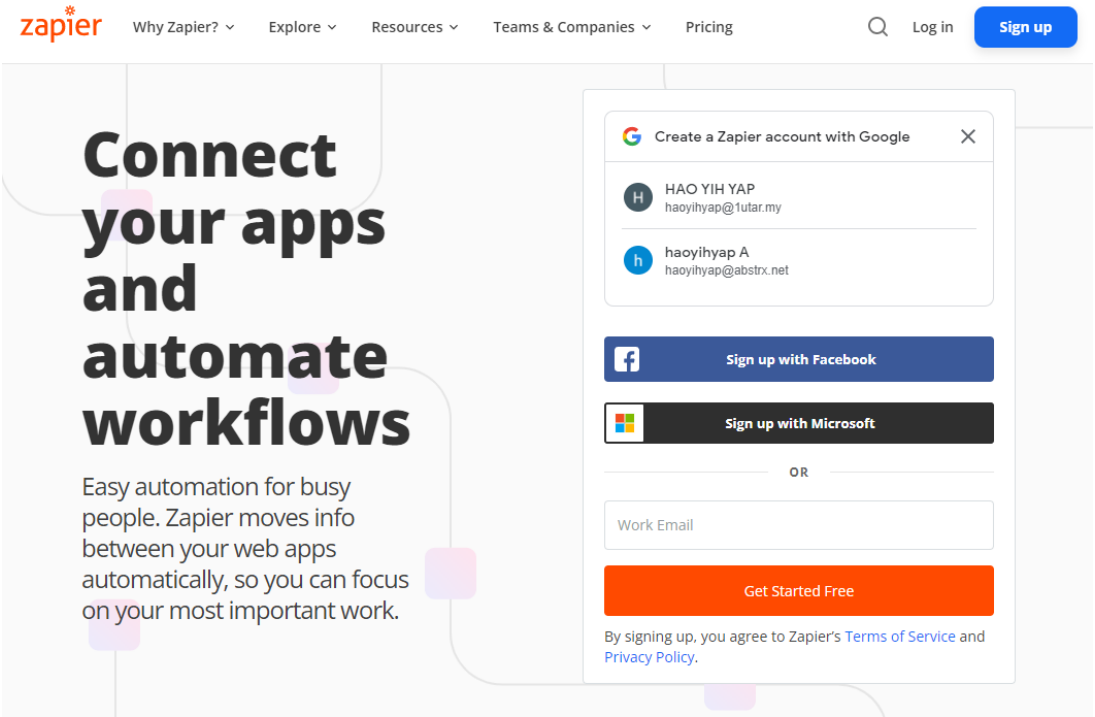


Figure 2.2.2 shows Login page of Zapier

Here's you can start to create your workflow automation after you have register for the account.

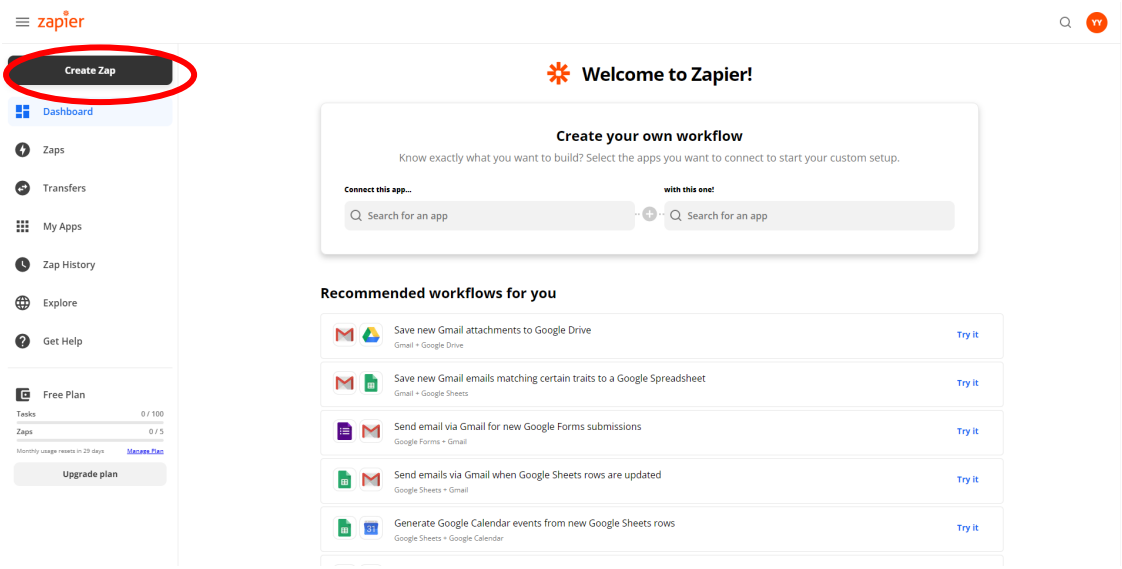


Figure 2.2.3 shows interface of Zapier after login

Way 2: Zapier CLI

Zapier CLI is the most advanced way to build integrations in your local development environment. Zapier CLI is a terminal-based app that helps you scaffold new integrations then code them in JavaScript using your local development environment and code editor. Here's the step of installation for Zapier in your Window Desktop :

1. In order to use the npm services to host the Zapier services on your machine, you need to download Node.js from the Official Websites. (https://nodejs.org/en/). Download the LTS version to ensure the stability of the program.

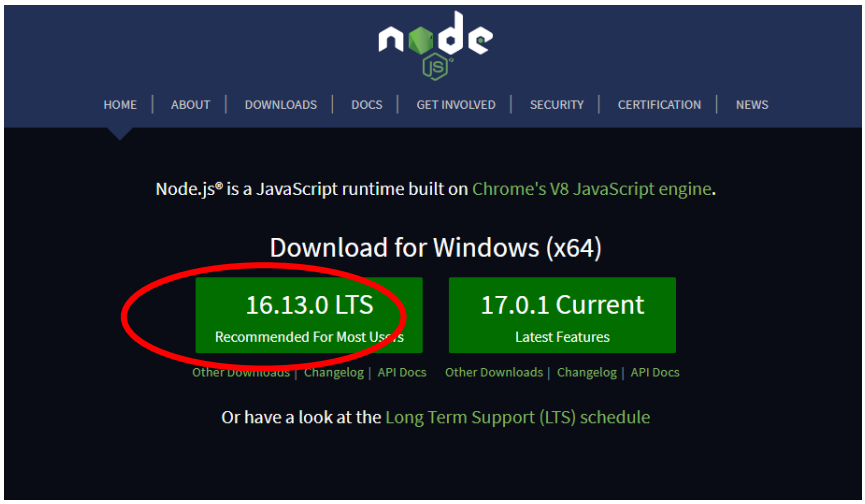


Figure 2.2.4 shows the download page in NodeJS

2. After the installation of Node.js into your machines, open your command prompt terminal and run the code as below to install the CLI of Zapier globally into your machines.

```
npm install -g zapier-platform-cli
```

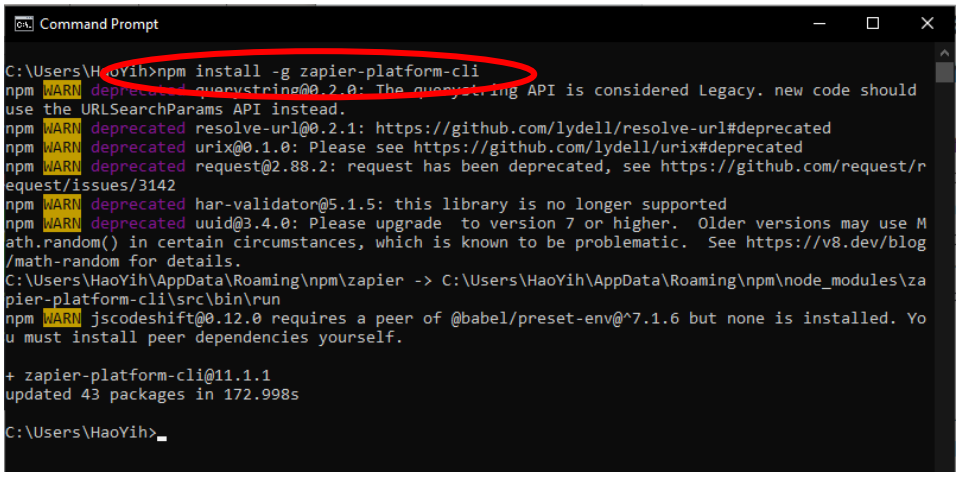


Figure 2.2.5 shows the installation process of Zapier CLI in Command Prompt Terminal

** Note: Please note that you must wait until the installation process finish.

3. From now onward you may start your integration of app using CLI command.

Special Function in Zapier – Custom Apps Integration that store in your GitHub

Way 1: Zapier UI

Step of building a custom app integration (which mean building a special software that is specific for your certain usage) on Zapier:

1. Login your Zapier account, go to https://zapier.com/platform and click on "My Integration" on the upper right-hand side of your browser.

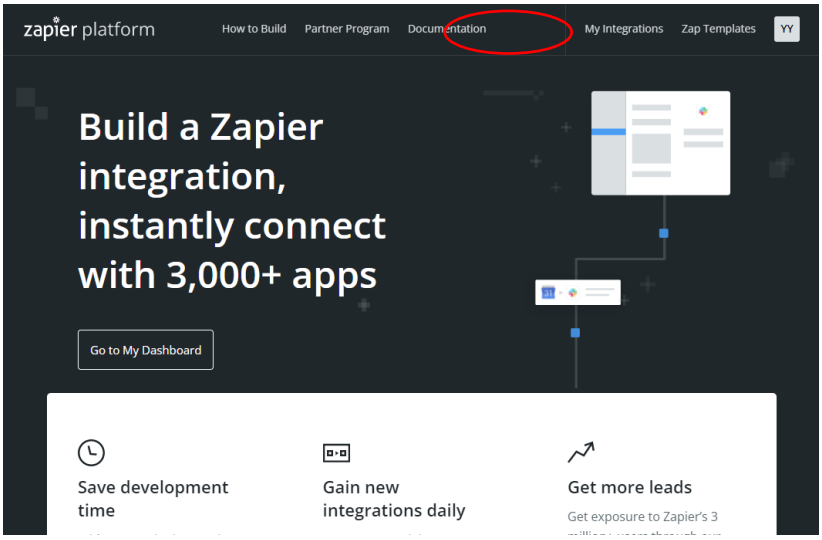


Figure 2.2.6 shows Custom Apps Integration Pages of Zapier

2. Then click on the "Start a Zapier Integration" to begin your integration setup.

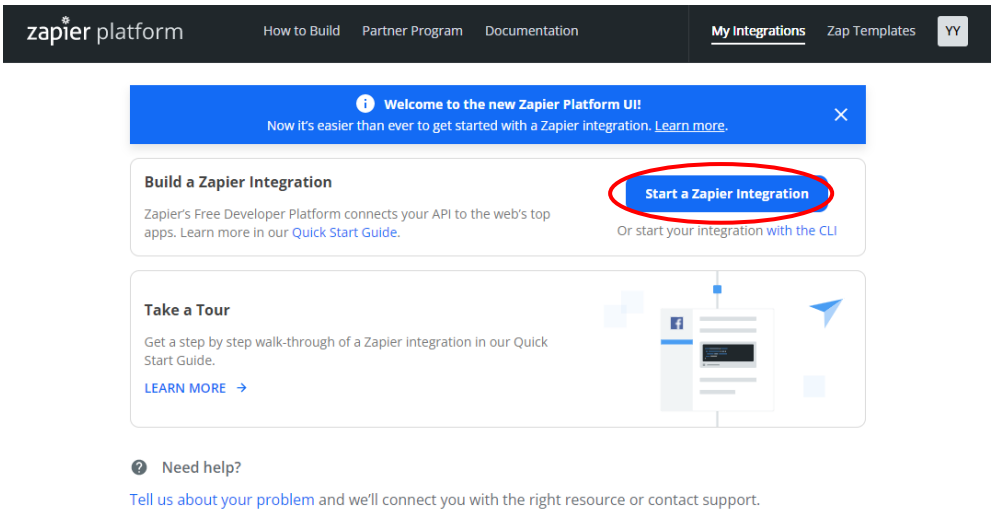


Figure 2.2.7 shows Zapier Custom Integration Platform Start Page

3. Then, insert all the information of your app that you want to do with the integration including your app name, description, intended audience, your role, category of app etc. After that, click on create button when you finish filling all the information.

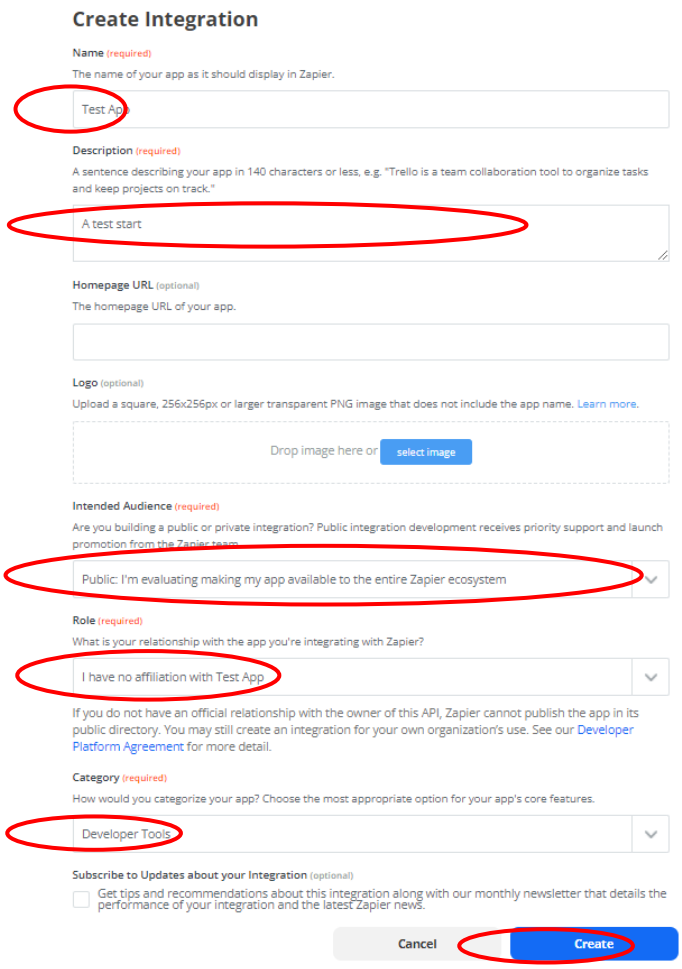


Figure 2.2.8 shows Create Custom Integration Configuration Page

4. Now, under the Integration Home, click on "Set Up Authentication" under the Authentication field to authenticate users with your API.

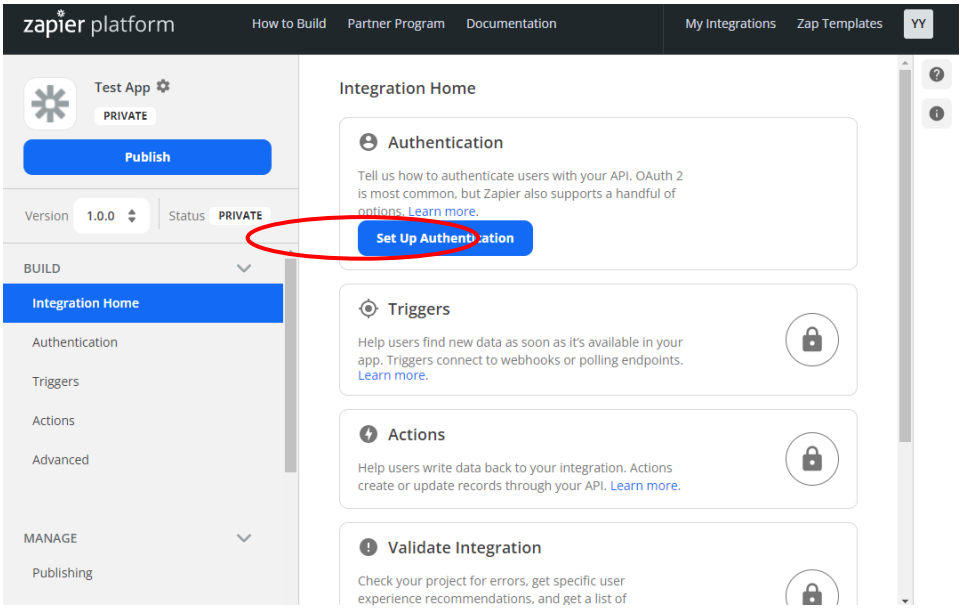


Figure 2.2.9 shows Custom Integration Homepage

5. Then, choose for the "Basic Auth" selection for your authentication method as it is quick and simple to set-up and click save.

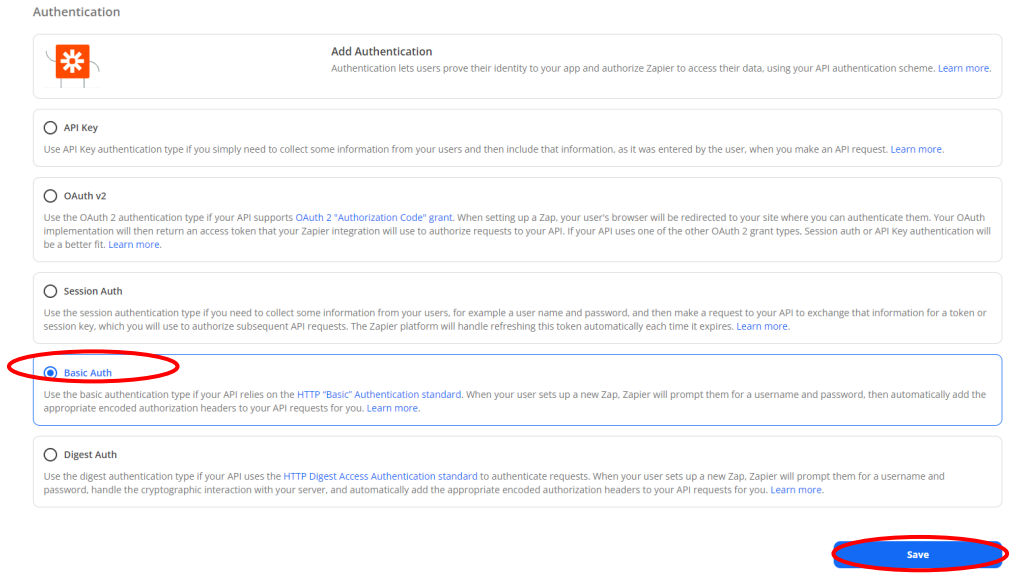


Figure 2.2.10 shows Authentication configuration Page of Custom Integration

6. To connect to your GitHub, insert https://api.github.com/user into the API endpoint URL column of your app. Then, click Save & continue after you finish inserted.

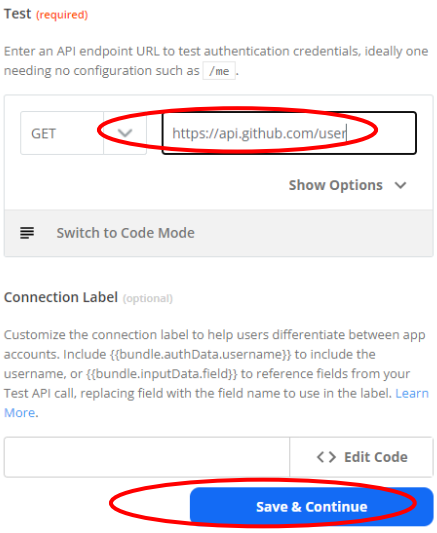


Figure 2.2.11 shows the setup of API Authentication in Custom Integration

7. After that, you need to connect your Zap with your GitHub repository. However, before that you need to go to your GitHub (https://github.com/settings/tokens) to set up your personal access tokens if you have activated Two-Factor Authentications on your GitHub account. This action is recommended due to the security purpose (You don't

want your account password to let other parties know which may harm your GitHub account because it will need you to authenticate by inserting your account password when want to connect Zap with GitHub). Click on "Generate new token" to create your authentication token for your Zap account.

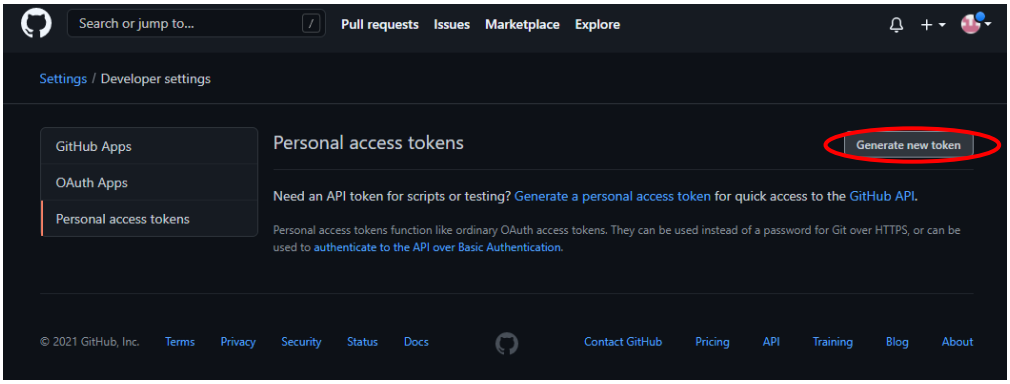


Figure 2.2.12 shows Access Token Create Page in GitHub

8. Next, insert your note, expiration date and the privilege of the token then click "Generate token".

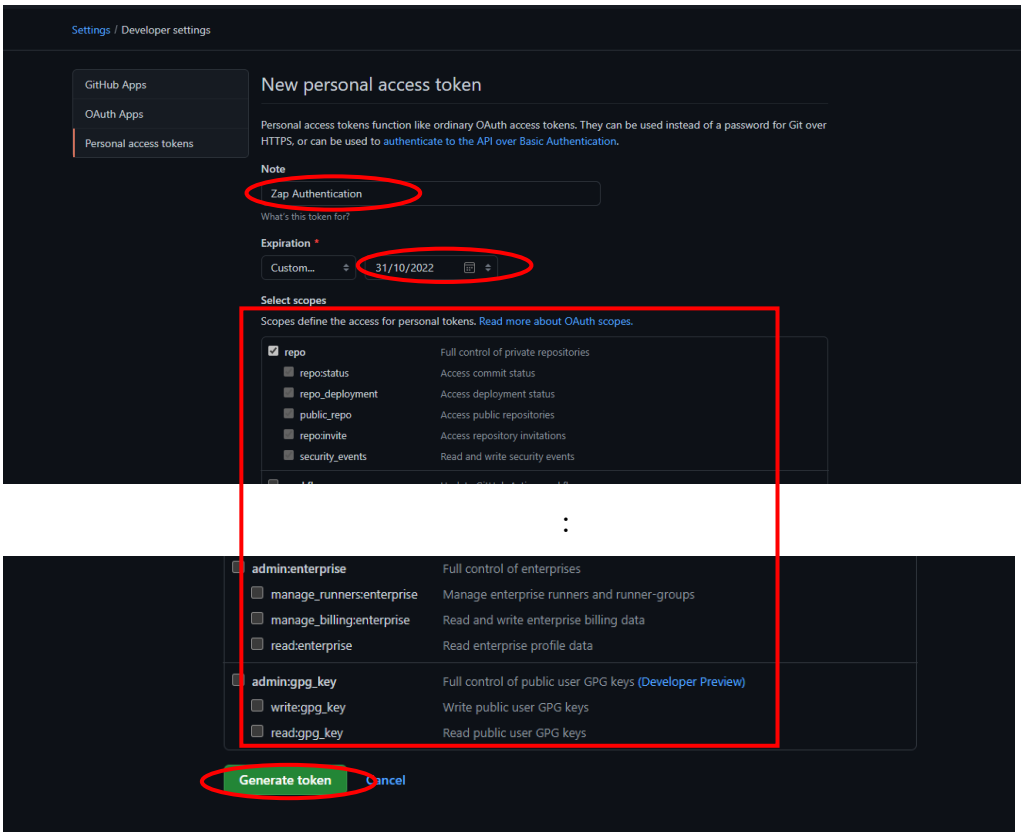


Figure 2.2.13 shows Configuration Interface for Generating GitHub API Token

9. Later on, go back to your Zapier setup and continue your authentication connection of Zap to your GitHub respiratory by clicking the “Sign in to TestApp(1.0.0)” to login your GitHub account using the token key created and click on “yes, continue” to proceed.

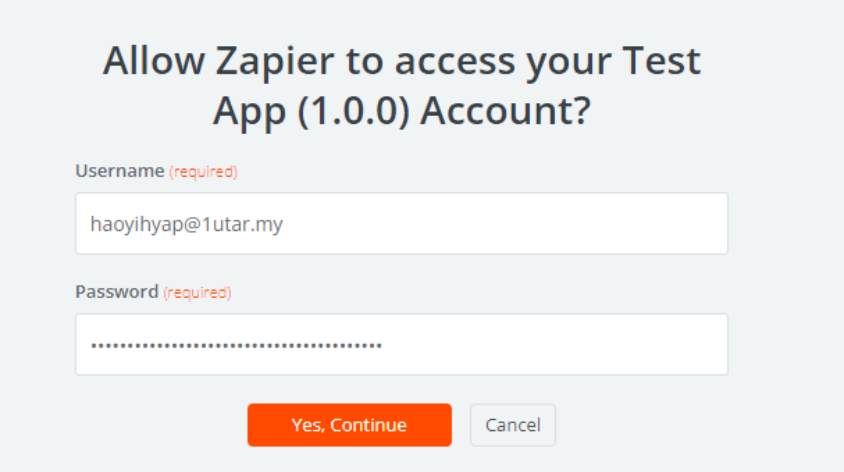


Figure 2.2.14 shows the access API credentials of Zapier to GitHub

10. Now, you will see your account have been sign in and you need to click on “Save and finish” to save it.

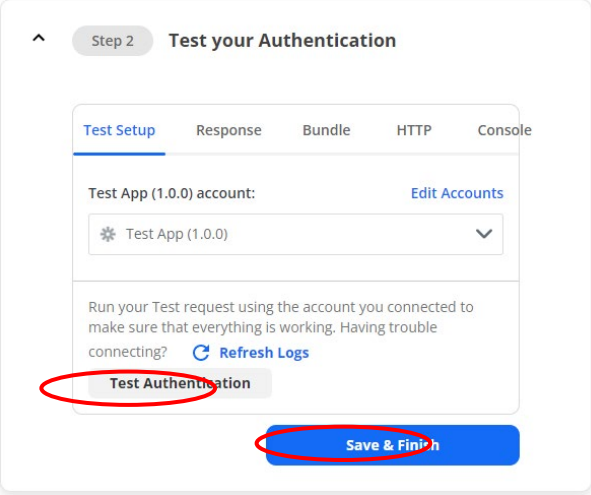


Figure 2.2.15 shows test of API credential in Zapier

11. Go to the “Triggers” section under the Build and fill in all your trigger information needed and click on “Save and continue” to proceed.

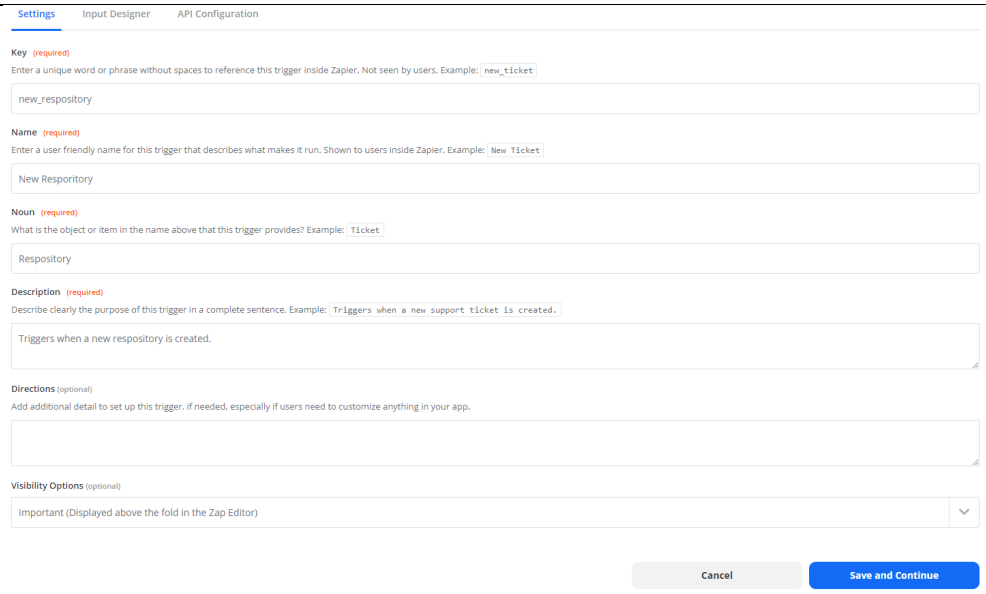


Figure 2.2.16 shows the Trigger section in the Custom Integration Platform of Zapier

12. Then, under the New Respiratory Trigger section, go to the API Configuration tab insert https://api.github.com/user/repos to the API Endpoint column and click "Save API Request & Continue" to proceed.

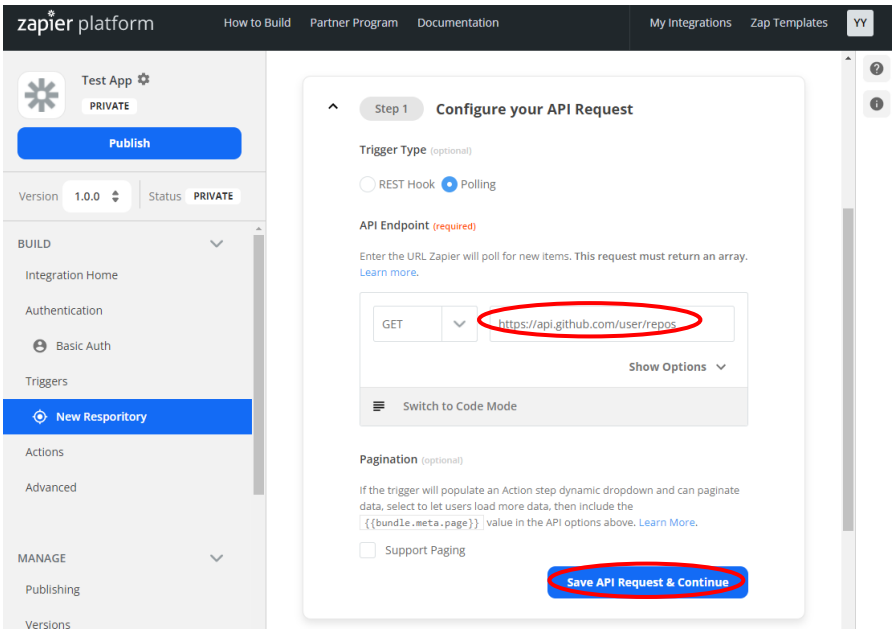


Figure 2.2.17 shows the configuration of API credentials of Zapier to GitHub

13. Then click on the 'Test Your Request" to test for your API request then click on" Finish Testing & Continue" to proceed.

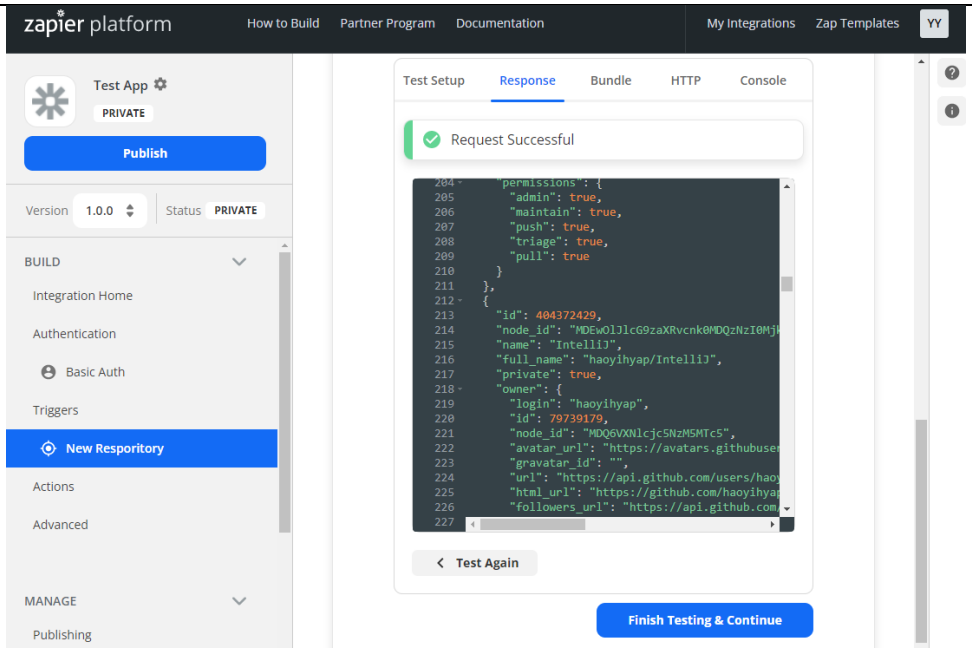


Figure 2.2.18 shows result fetch back from GitHub via API

14. Then click on Use Response from Test Data to used back the response data from your API service as the output of your integration. Now, you may click "Save Output & Finish" to proceed.

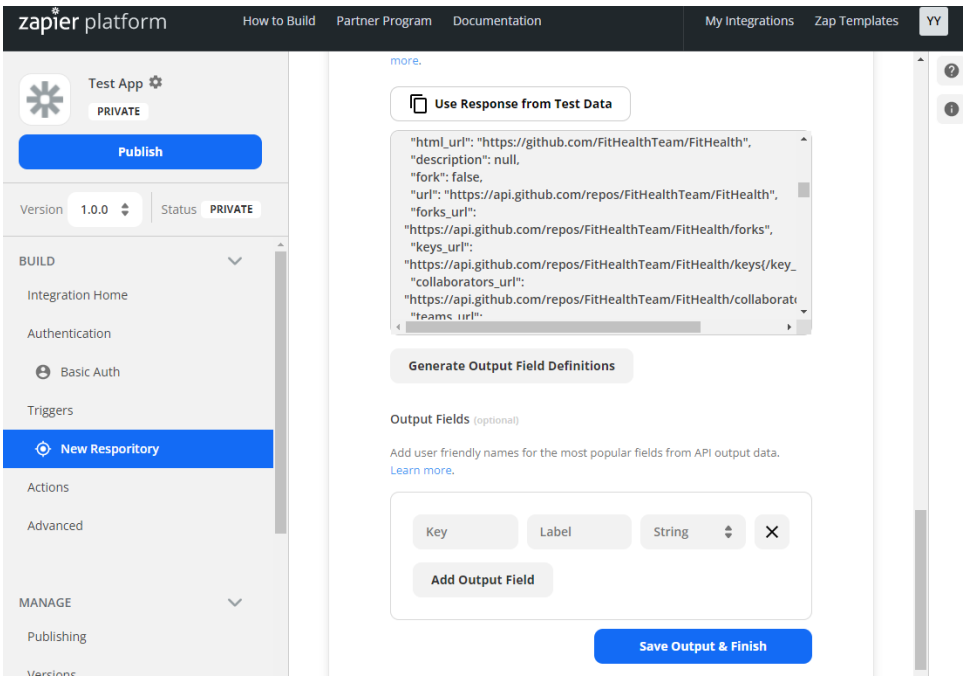


Figure 2.2.19 shows the New Respiratory section config in Zapier

15. Now you may used the custom integration app created to do automation work.

Way 2: Zapier CLI

1. After the installation of Node.js into your machines, open your command prompt terminal and run the code as below to install the CLI of Zapier globally into your machines. Next, you need to setup authentication to Zapier's platform with a deploy key. Before that, you need to register an Zapier Account first in order to able to Zapier to run. Then, run the code below to login to your account for authentication your Zapier with the platform with a deploy key.

```
zapier login
```

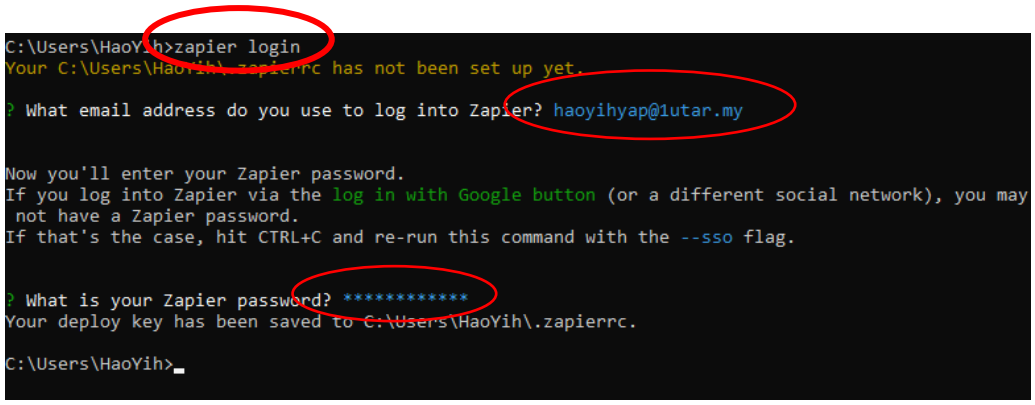


Figure 2.2.20 shows the login config of Zapier in Command Prompt

2. Now, your Zapier CLI should be installed and ready to go at this point and you will need to create a new directory (**any name you want) for your Zapier application by executing the code below. After you have executed the code, it will prompt few selections of template for you to choose and you required to choose for the "Minimal" selection by moving your keyboard up-down button.

```
zapier init file-name
```

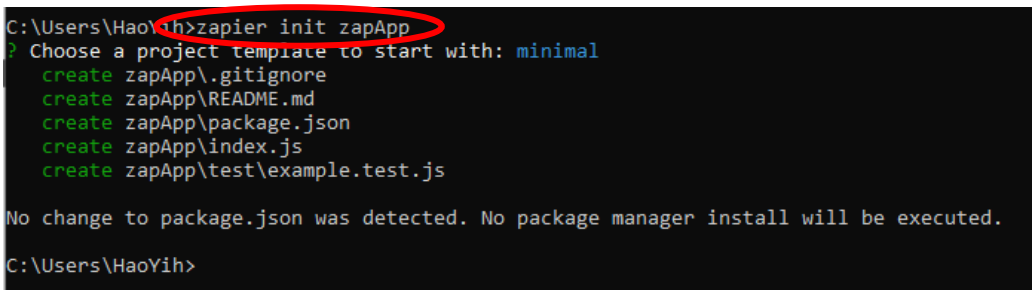


Figure 2.2.21 shows the access initialize App name for Custom Integration using CLI in Command prompt

3. After that, move to the new directories created and install all the libraries needed for the Zapier application by executing the code below.

```
cd file-name
npm install
```

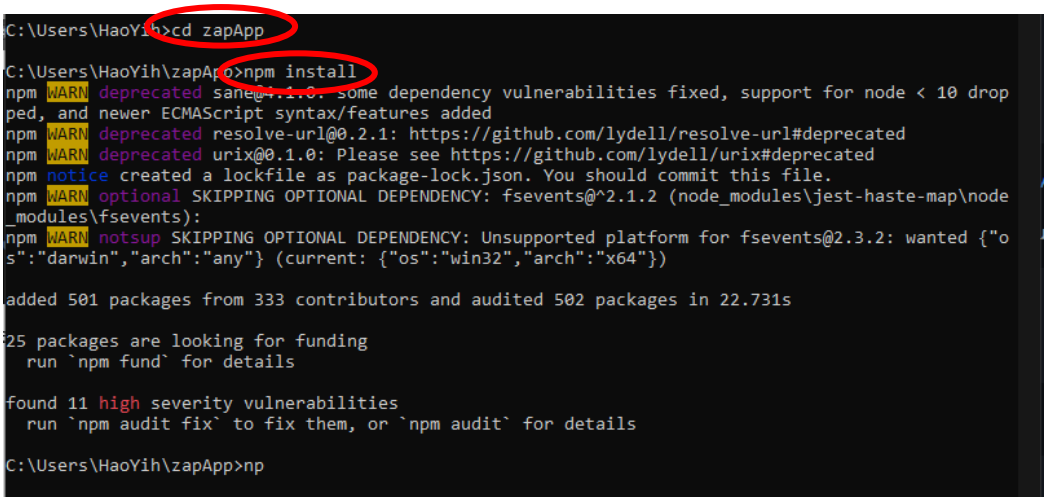


Figure 2.2.22 shows the install required library for App name of Custom Integration using CLI in Command prompt

**If you are having the error of "high severity vulnerabilities" as shown above, run:

```
npm audit fix
```

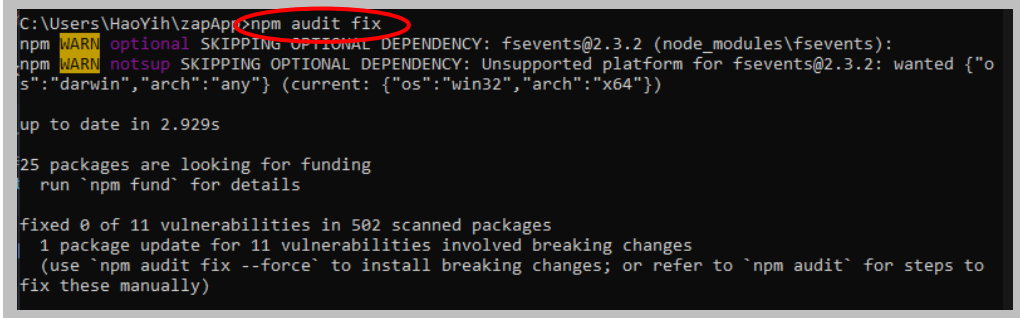


Figure 2.2.23 shows the CLI command on fixing npm error

4. After the installation, you should be able to work on your local app now. To test the local app, you need to execute the command below.

```
zapier test
```

```
C:\Users\HaoYih\zapApp>zapier test
Validating project locally
No structural errors found during validation routine.
This project is structurally sound!

√ Running integration checks ... 24 checks passed

Integration checks passed, no issues found.

Adding C:\Users\HaoYih\.zapierrc to environment as ZAPIER_DEPLOY_KEY...
Running test suite with the following command:

  npm run --silent test --

 PASS  test/example.test.js
  addition
    √ should work (3 ms)

Test Suites: 1 passed, 1 total
Tests:       1 passed, 1 total
Snapshots:   0 total
Time:        1.979 s
Ran all test suites.

C:\Users\HaoYih\zapApp>npm run
Lifecycle scripts included in zapApp:
  test
    jest --testTimeout 10000
```

Figure 2.2.24 shows the testing of new Custom Integration using CLI in Command prompt

5. Next, registering your app with Zapier is a important step which only enables basic administrative functions. To register your app, run the command and set an app title for your app.

```
zapier register "app-title"
```

```
C:\Users\HaoYih\zapApp>zapier register
? What is the title of your integration? test1
√ Registering your new integration "test1"
√ Linking app to current directory with `.zapierapprc`

Finished! Now that your integration is registered with Zapier, you can `zapier push`!

√ Copying project to temp directory
√ Installing project dependencies
√ Applying entry point file
√ Building app definition.json
√ Validating project style
√ Zipping project and dependencies
√ Testing build
√ Cleaning up temp directory
√ Uploading version 1.0.0
√ Loading versions

| Version | Platform | Users | Deployment | Deprecation Date | Timestamp |
| --- | --- | --- | --- | --- | --- |
| 1.0.0 | 11.1.1 | null | non-production | null | 2021-11-05T15:09:34+00:00 |

»   Warning: Some user counts are still being calculated - run this command again in ~10
»   seconds (or longer if your integration has lots of users).
```

Figure 2.2.25 shows the app register of Zapier using CLI

6. Then, you can also list all your app register using the command below:

```
zapier integration
```

**Note: There are some other actions that you can do with your app.

`zapier link` - *lists and links a selected app in Zapier to your current folder*

`zapier history` - *print the history of your app*

`zapier team:add user@example.com admin` - *add an admin to help maintain/develop your app*

`zapier users:add user@example.com 1.0.0` - *invite a user to try your app version 1.0.0*

Zapier Existing Workflow Template User Guide

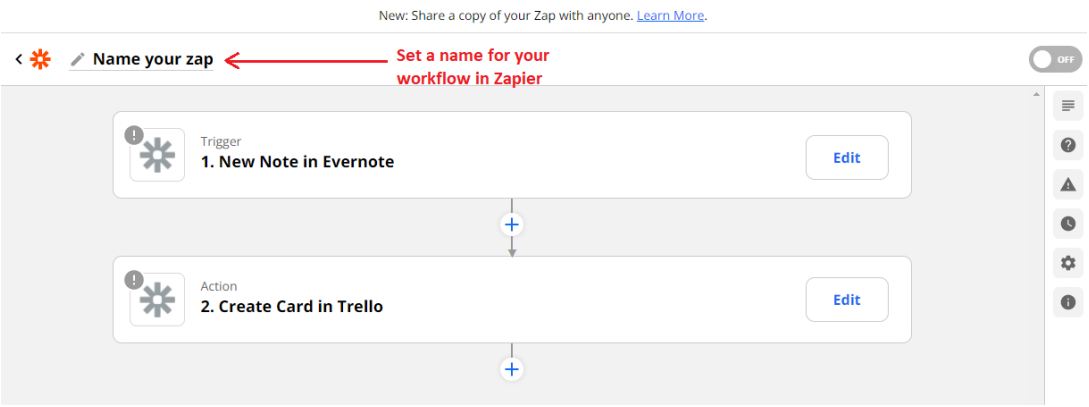
Keep Your Notes with Your Tasks

Prerequisite

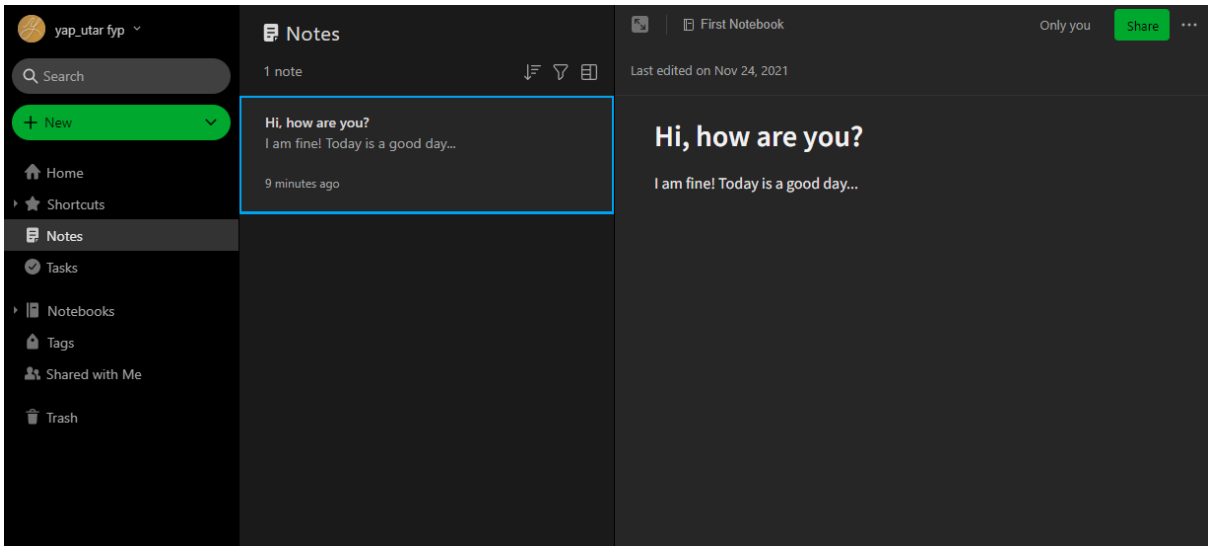
- Create an Evernote Account
- Create an Trello Account

Way to use the zap template:

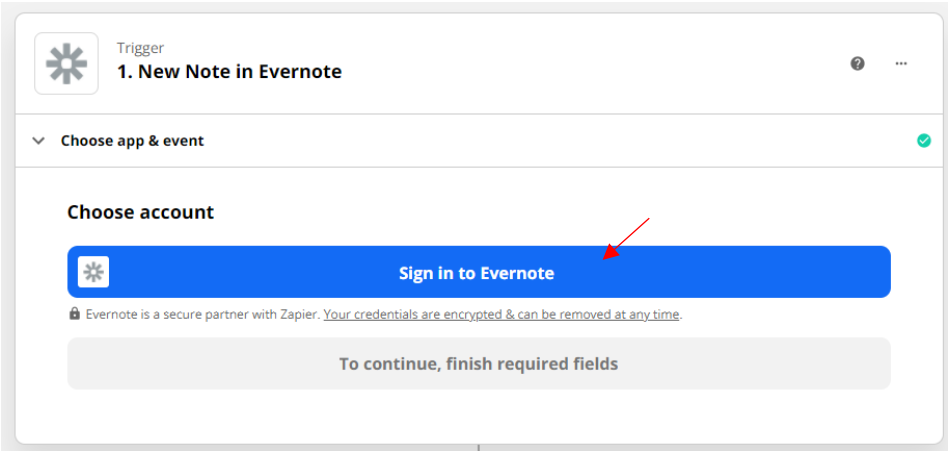
1. First of all, you should have an Zapier first in order to used the functionalities by registering your account at https://zapier.com
2. Then, go to https://zapier.com/webintent/create-zap?template=56&entry-point-location=partner_embed&provider=None&embedded=true&utm_source=widget&utm_medium=embed&utm_campaign=Widget&selected_apis=EvernoteAPI%2CTrelloAPI&referrer=https%3A%2F%2Fzapier.com%2Flearn%2Fautomate-apps-examples%2Fpopular-app-automations%2F
3. It will redirect you to the configuration pages of the Zapier. From there, you can set a name for your zap (workflow in Zapier) and start the action of creating new Trello KanBan card based on the note in Evernote.



4. Before we continue, let us create some note in the Evernote.

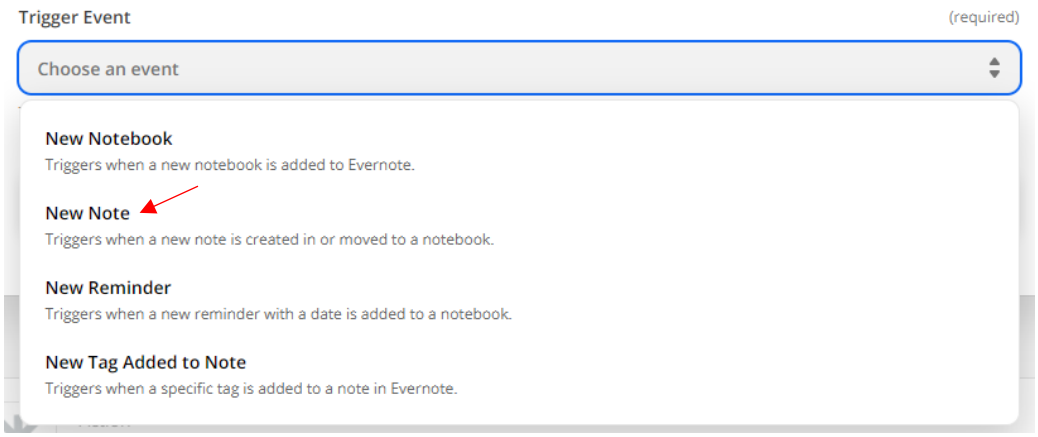


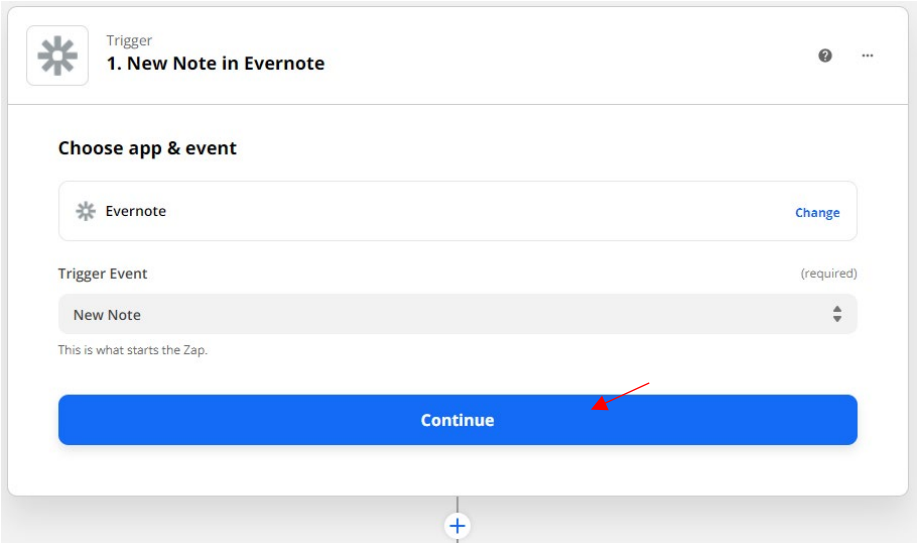
5. Click on the "Edit" button of the "New Note in Evernote" column and select "Sign into Evernote" button to login our Evernote account.



6. Then click on the "Choose app & event" column to decide when to trigger the event. In the "Trigger Event" column, select "New Note" to set the workflow to trigger when new

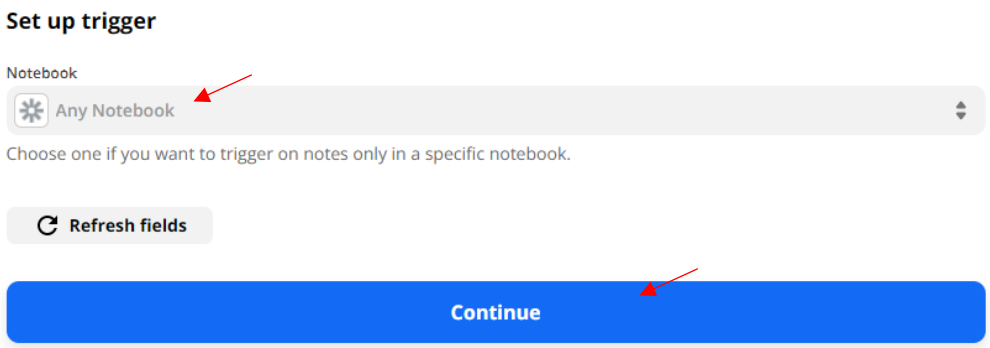
Note is created in Evernote. After that, click on the "Continue" button, it will let u to choose account to deal in this flow. Simply click "Continue" again to proceed.



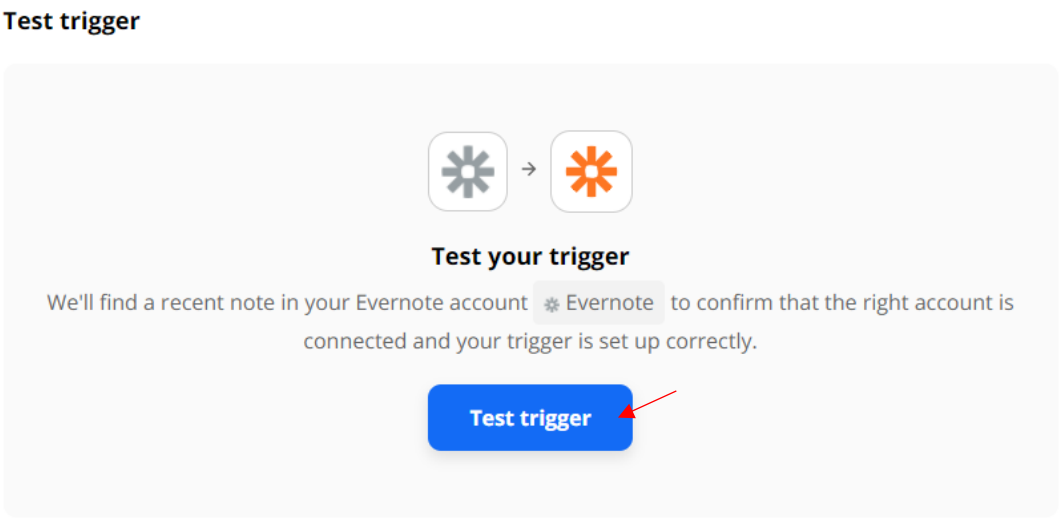


***Under the "Continue" button, there is a "+" button that for us to add more workflow node to the workflow process.*

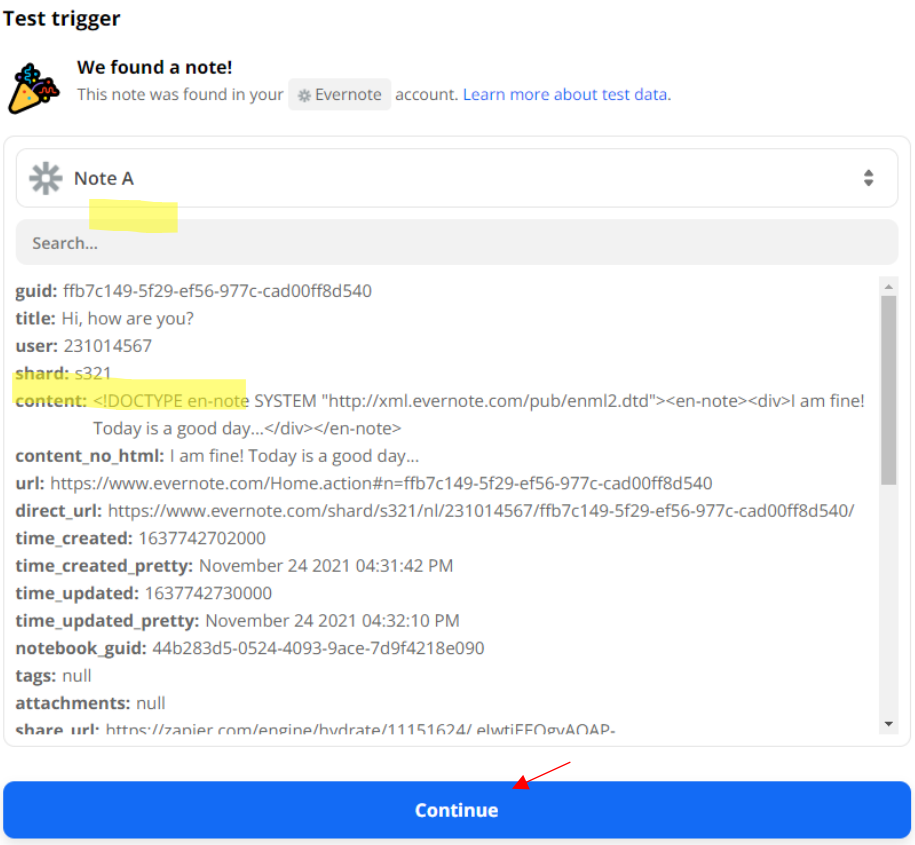
7. In the next flow, it will let you to choose any specific workbook of your Evernote that you want to choose to only trigger when new note is added or move in the Evernote workbook that you choose. In this case, we will be left it and any workbook have new note will be trigger the workflow. Then, click on "Continue" to move to next node.

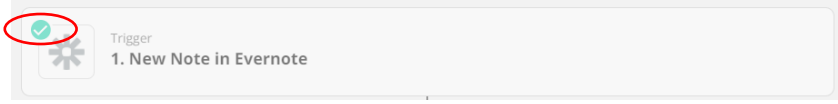


8. Now, it comes to the last step of first node, which is testing the functionalities of your node whether running correctly by clicking the “Test Trigger” button.

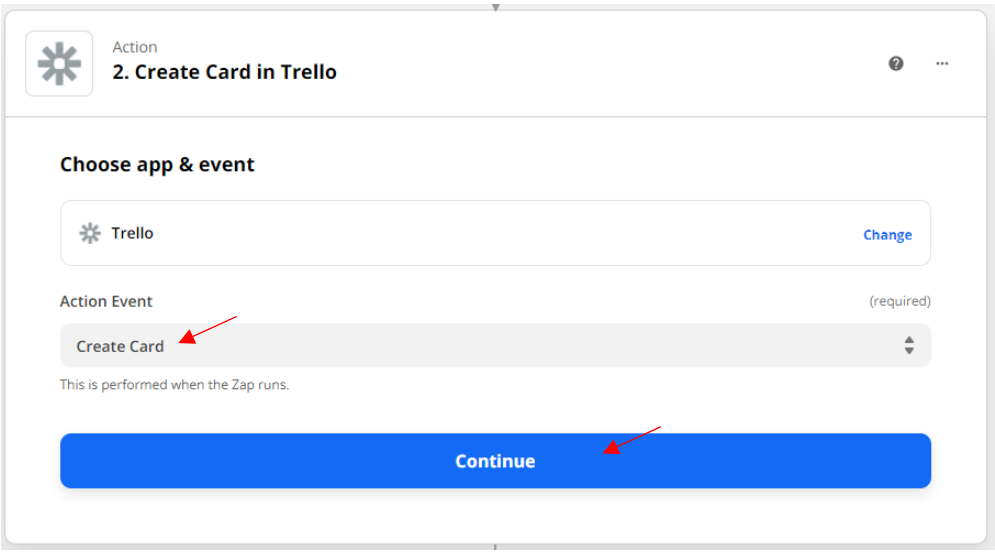


9. Since, we have previously created a note in Evernote, thus now it shows that it found a note and the result is as below. This indicates that our first node are successfully executed. In next, click on “Continue” to proceed. Then you will see a green tick on top of the Evernote node icon.

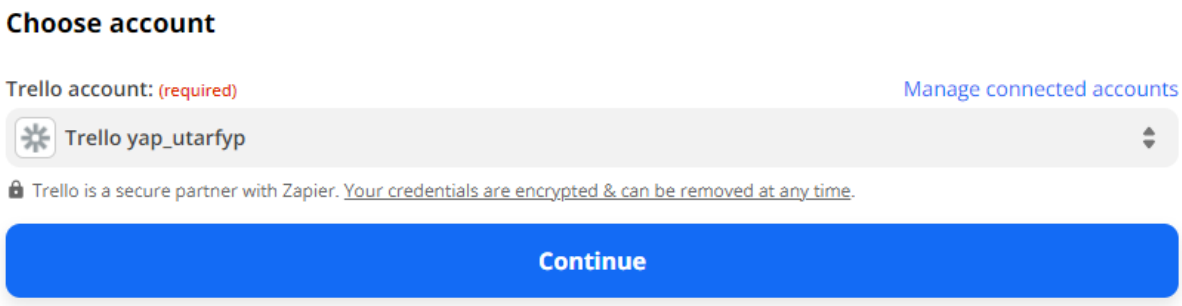




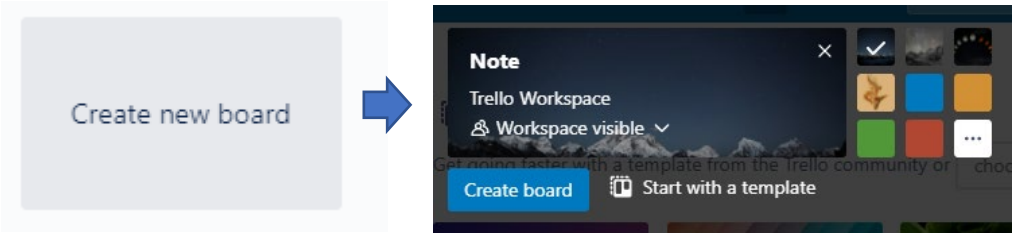
10. In the Trello node, it will have a column called “Action Event”, it has multiple selection, but in this case, we will be choosing “Create Card” as our event trigger. It indicates that the event will create a card when the workflow is trigger. Click on “Continue” to proceed.



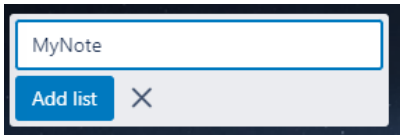
11. The following screen will appear, which is the "Choose account" section, and you will be needed to sign in to your "Trello" account to carry on with the workflow. After that, click on the “Continue” button to proceed.

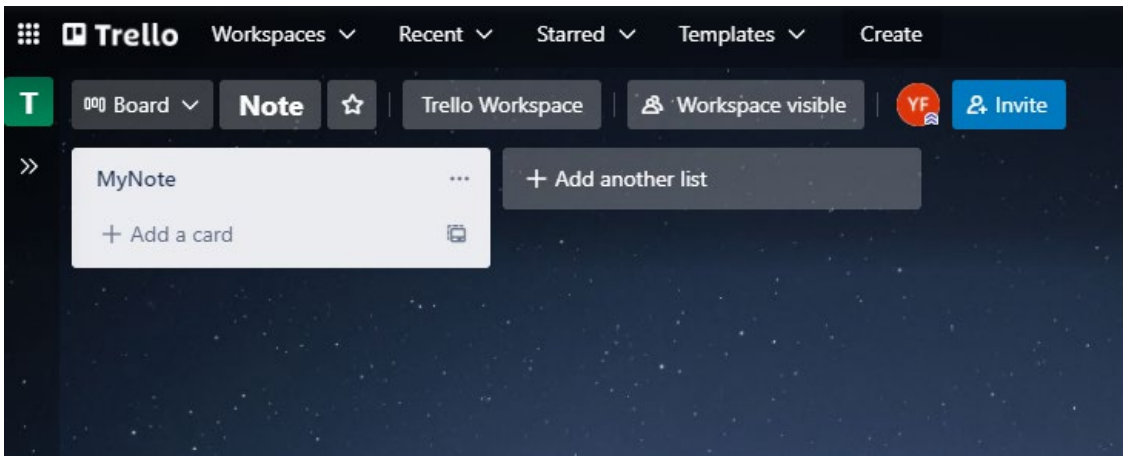


12. Before we proceed to next configuration, let us go to the Trello account dashboard to do some configuration by setting the “Board” and “List” for our card to placing. In the Trello dashboard, click on “Create new board” to create aboard for our project. Then, give a name for it. In this case, we set it’s name as “Note” and click “Create board” after that.

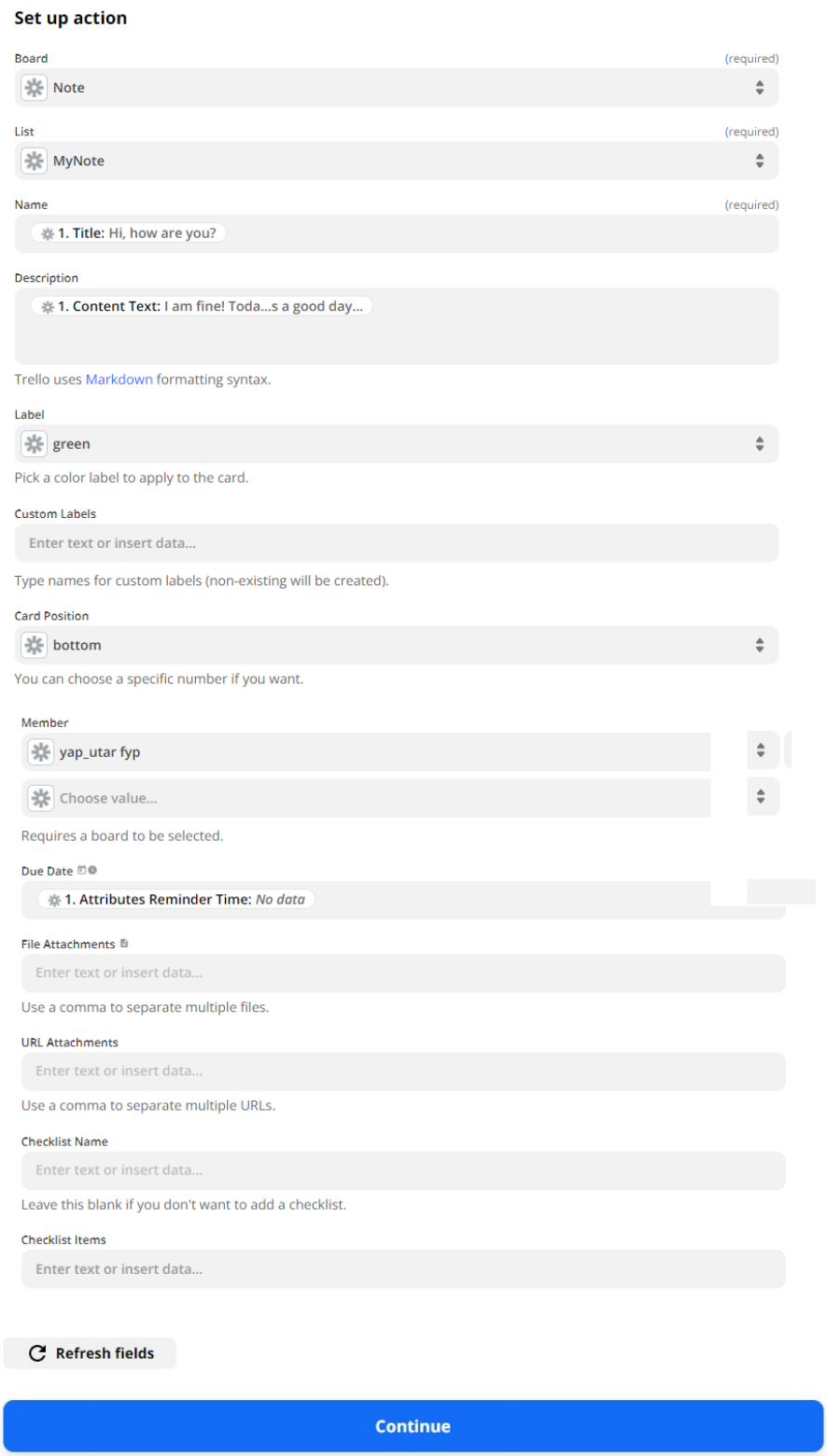


13. Then, in your board select in "+ Add a list" to create a new list and insert a name for that (List name: MyNote) and the view of the board are shown as below after set up

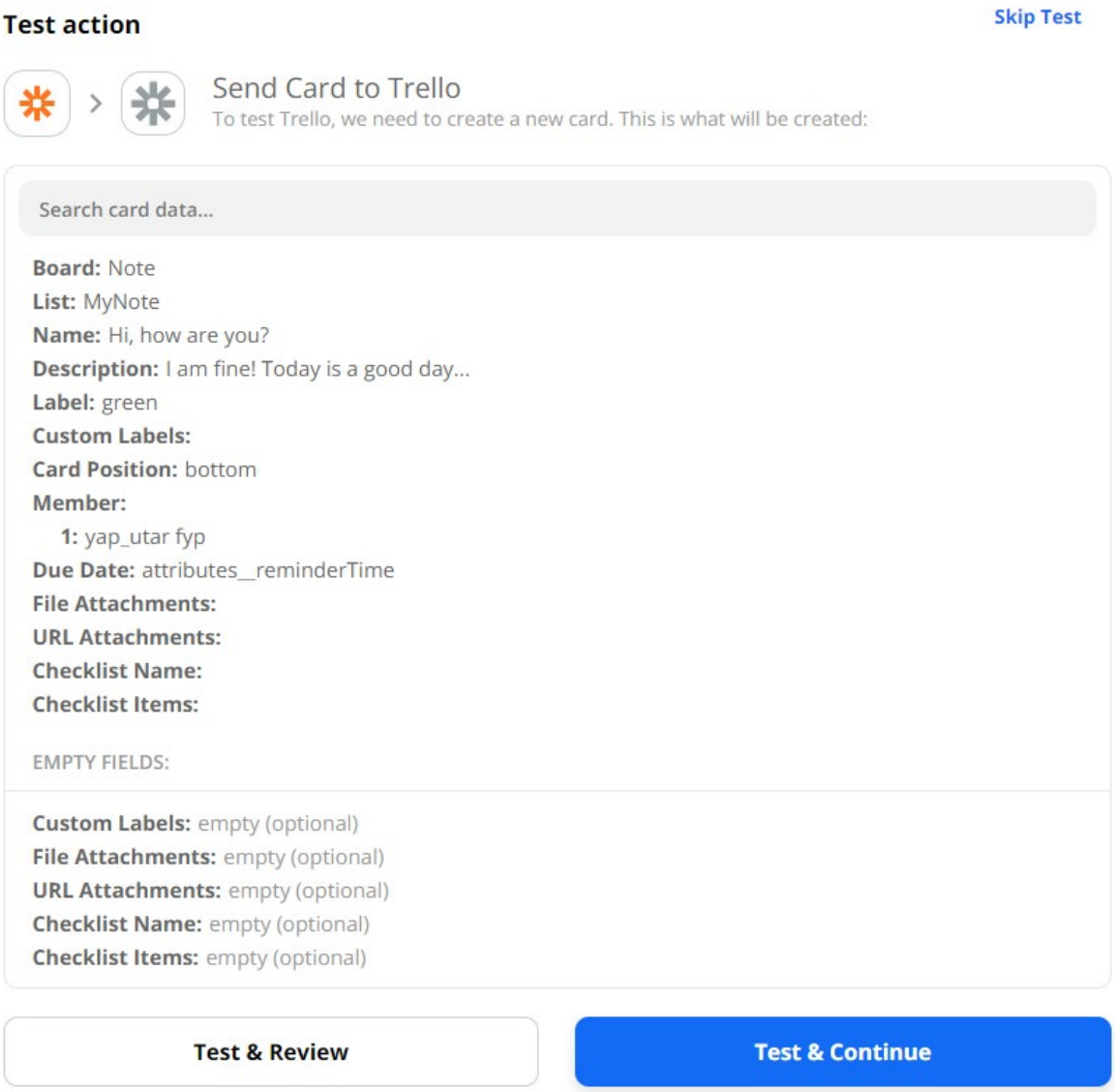




14. Then, go back to the Zapier configuration to continue set up. From that, "Board" field will show all the Board that exist in Trello. In this case, we are choosing "Note" as our board. Under the "List" section, select MyNote that previously created as our List. Then, selecting the appropriate "Name" and "Description" that shown in the dropdown list. You can also set the colour for the Label. Other than that you may also inserting other information like Custom Label, Member, Due Date, File Attachments, URL Attachments, Checklists Name, Checklist Item etc. But, in this project we will remain all default value, then click on "Continue" to proceed.

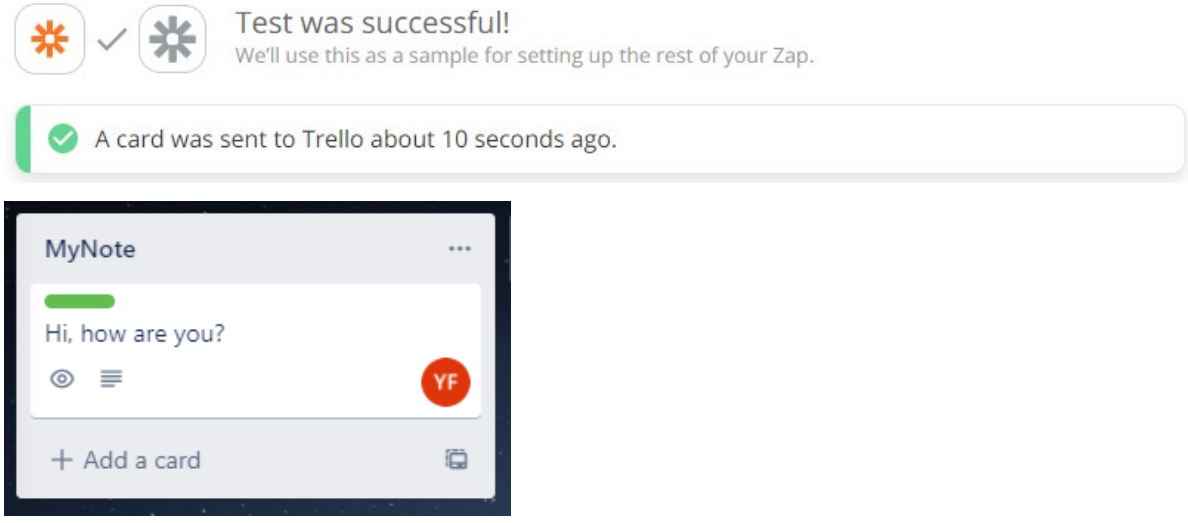


15. After that, you may choose to whether skip the test or Test & Review or Test & Continue. However, to make sure your workflow are successfully executed, click on “Test & Review” to test the node functionalities.

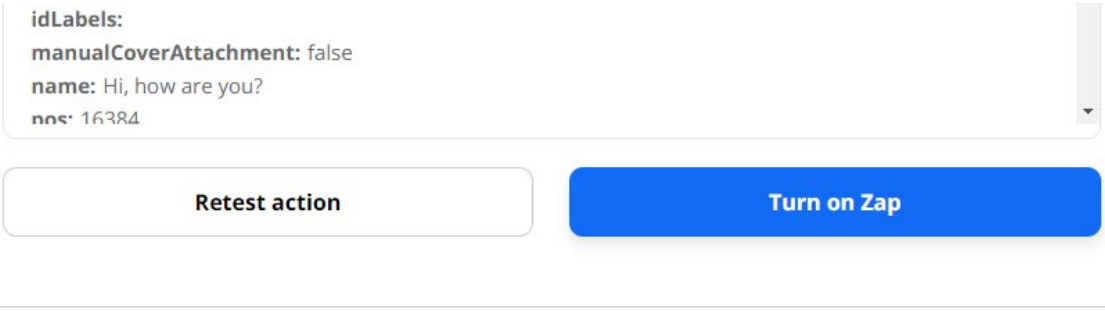


16. A message of successfully executed will be shown once the node successfully executed.

    When we go back to the Trello KanBan, we will see a new card are created.



17. After that, if we want to use the workflow in future, we might need to turn on the Zap workflow, so that the workflow are trigger when the action happen again. To turn that, click on "Turn on Zap" button to turn on the workflow execution.



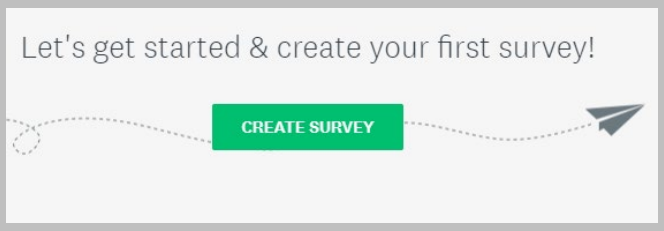
Automatically Survey Received Alert

Prerequisite

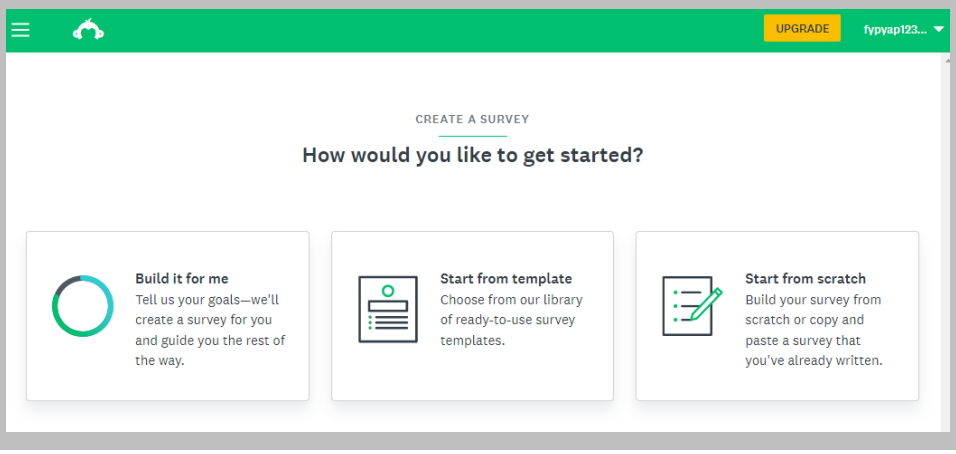
- Register a Survey Monkey account with survey form created

Create new survey:

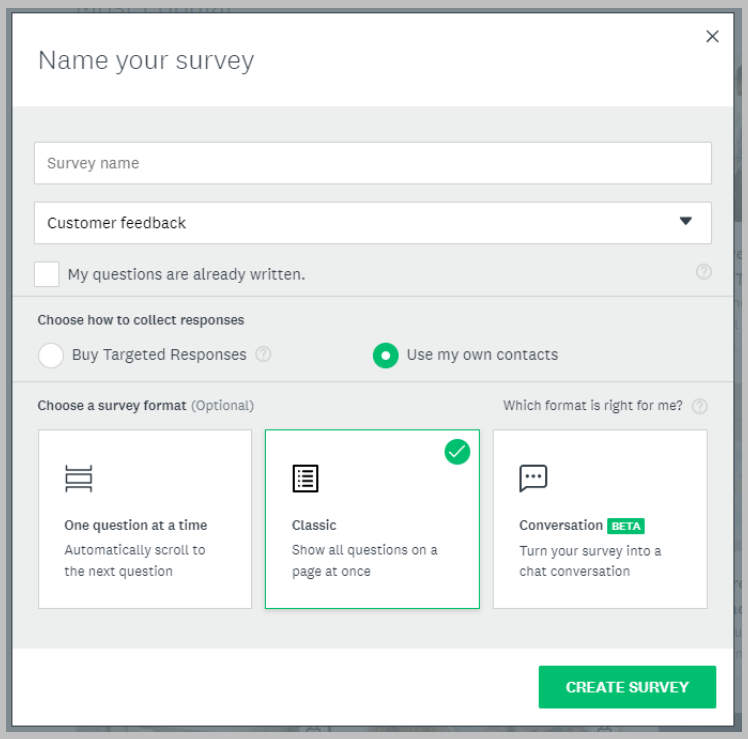
1. After registering your account, it will bring you to the dashboard of your account. Then, click on the "Create Survey" button to create new Survey.



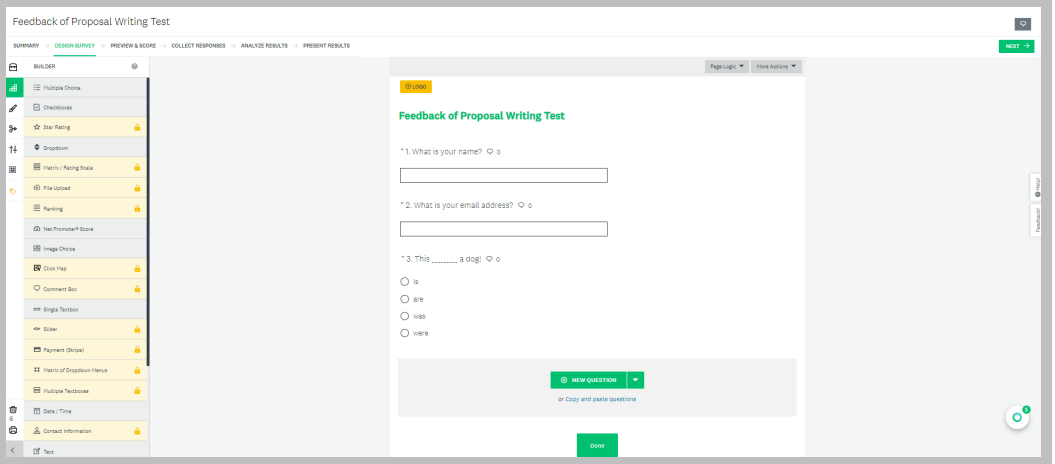
2. In the survey create platform, you can choose to either let Survey Monkey to build it for you or suing a template prepared or build it from scratch. In this case, we will be choosing to build from scratch by clicking the "Start from Scratch" card.



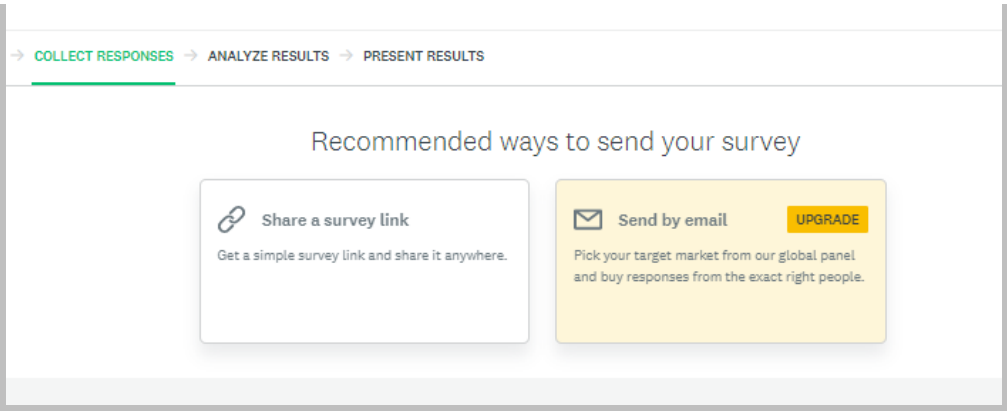
3. After that, insert your Survey Name with “Feedback of Proposal Writing Test” and choose “Quiz” from the dropdown list of “Survey Category”, then choose to use your own contacts on collecting the responses. In survey format column, choose “Classic” to show all the question in one page. After finish filled in the form, click on “Create Survey” to proceed.



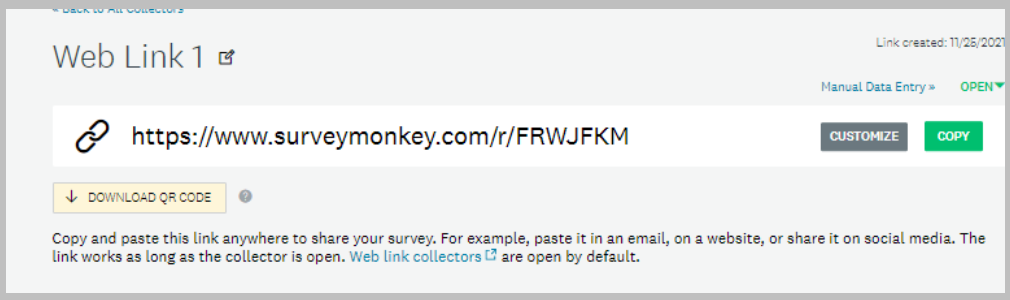
4. Then you may start your survey form design and question to ask. Then, click on “Next” button on the top right of form after finishing the form design.



5. Click on the “Next” button at the “Preview & Score” section again to ignore score setting. In the collect Responses” section, click on “Share a survey link” to get the link of attempting the survey form.



6. A web link and QR code to attempt the survey will be shown. Save it for future us.

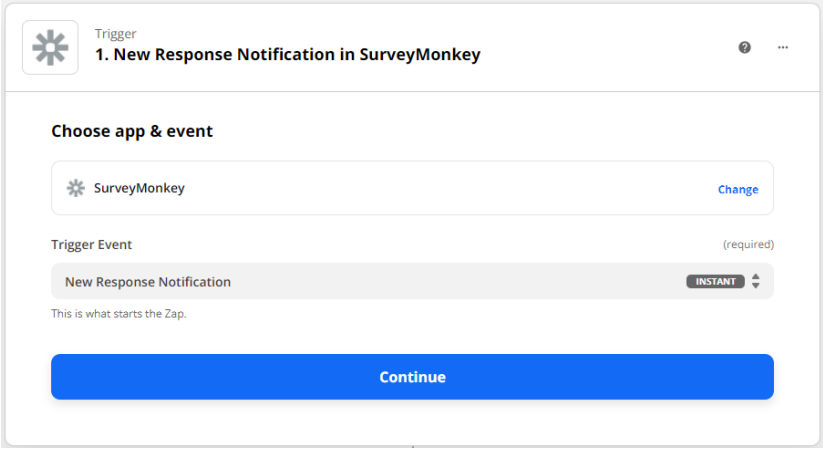


https://www.surveymonkey.com/r/FRWJFKM

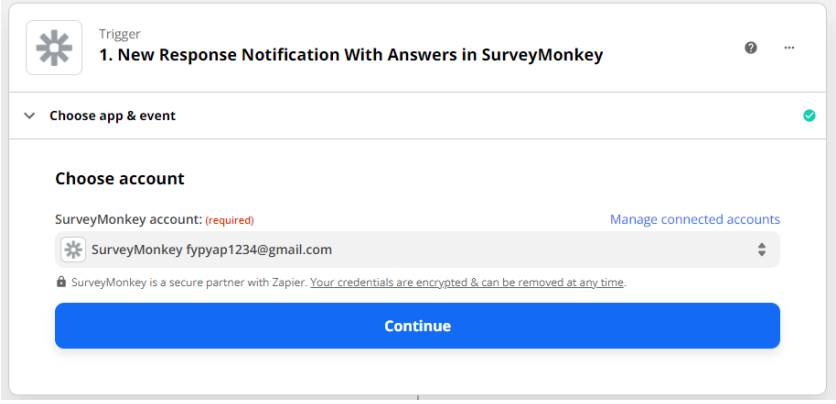
- Register a Gmail account.

Way to use the zap template:

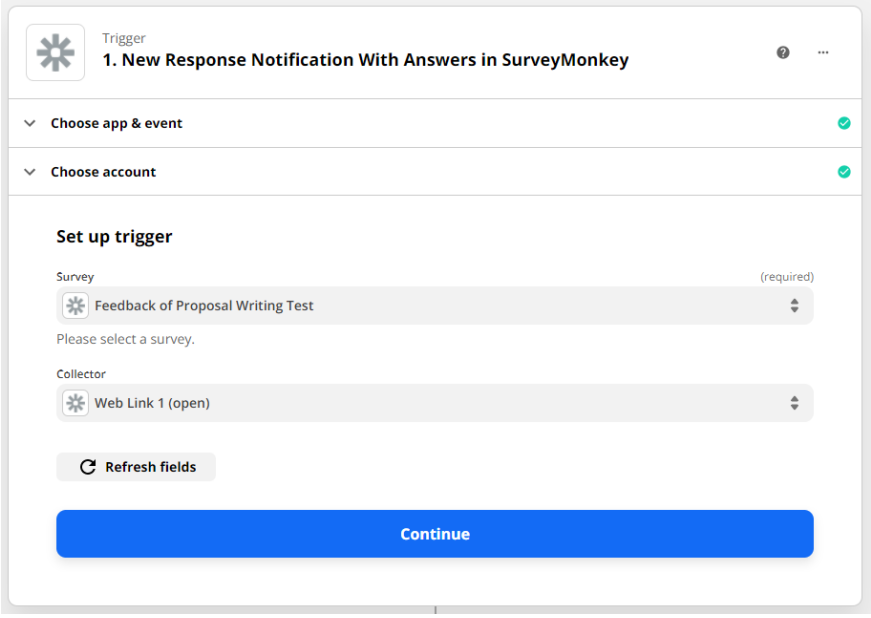
1. First and foremost, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
2. Then, go to https://zapier.com/webintent/create-zap?template=236&entry-point-location=partner_embed&provider=None&embedded=true&utm_source=widget&utm_medium=embed&utm_campaign=Widget&selected_apis=SurveyMonkeyDevAPI%2CGoogleMailV2API&referrer=https%3A%2F%2Fzapier.com%2Flearn%2Fautomate-apps-examples%2Fpopular-app-automations%2F
3. It will take you to the Zapier configuration pages. From there, you can give your zap (workflow in Zapier) a name and begin the automation of respond alert after someone complete the survey. In the first flow, click the "Edit" button. Then, in the "Trigger Event" column, select "New Response Notification With" to trigger the event to collect answers when a new survey is submitted, and then click Continue to proceed.



4. In next section, sign in your Survey Monkey account and click on “Continue” to proceed.

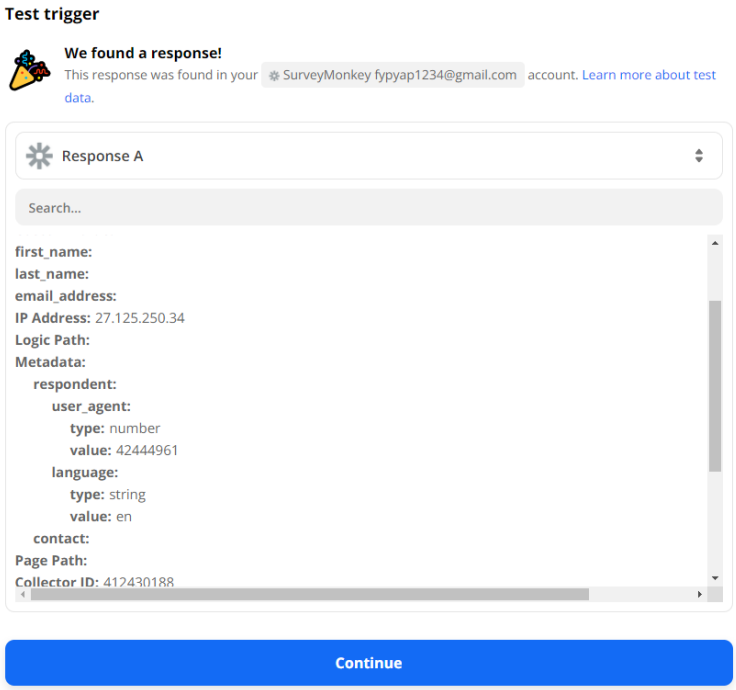


5. Later on, it will need you to set up the trigger configuration. Choose you survey form name under the “Survey” section and click on the link that they use to collect the Survey under the “Collector” section. In next, click on “Continue” button.

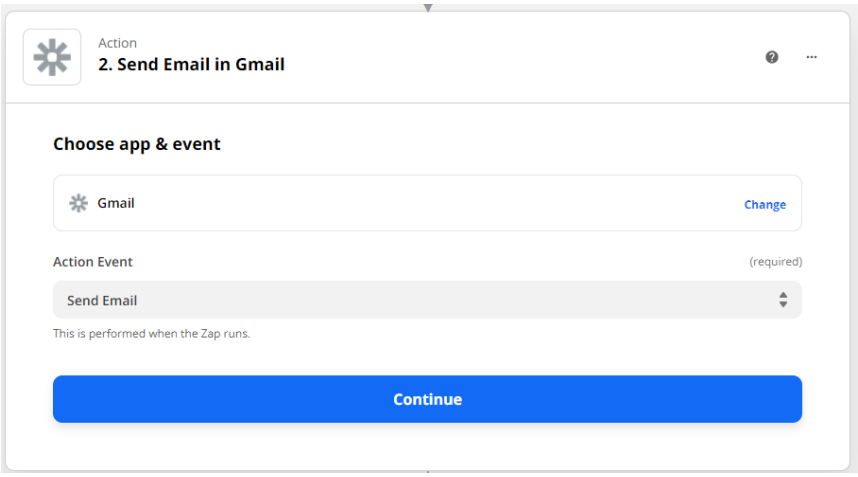


6. In last of the config in this node, you will need to test on your node trigger are functioning by clicking the “Test Trigger” button. Make sure you have at least one recent

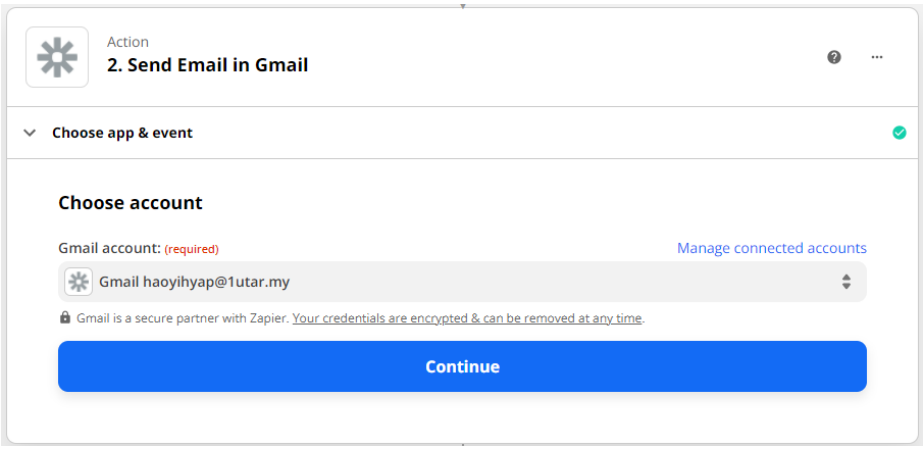
response created. Once the trigger successfully response, click on “Continue” button to proceed.



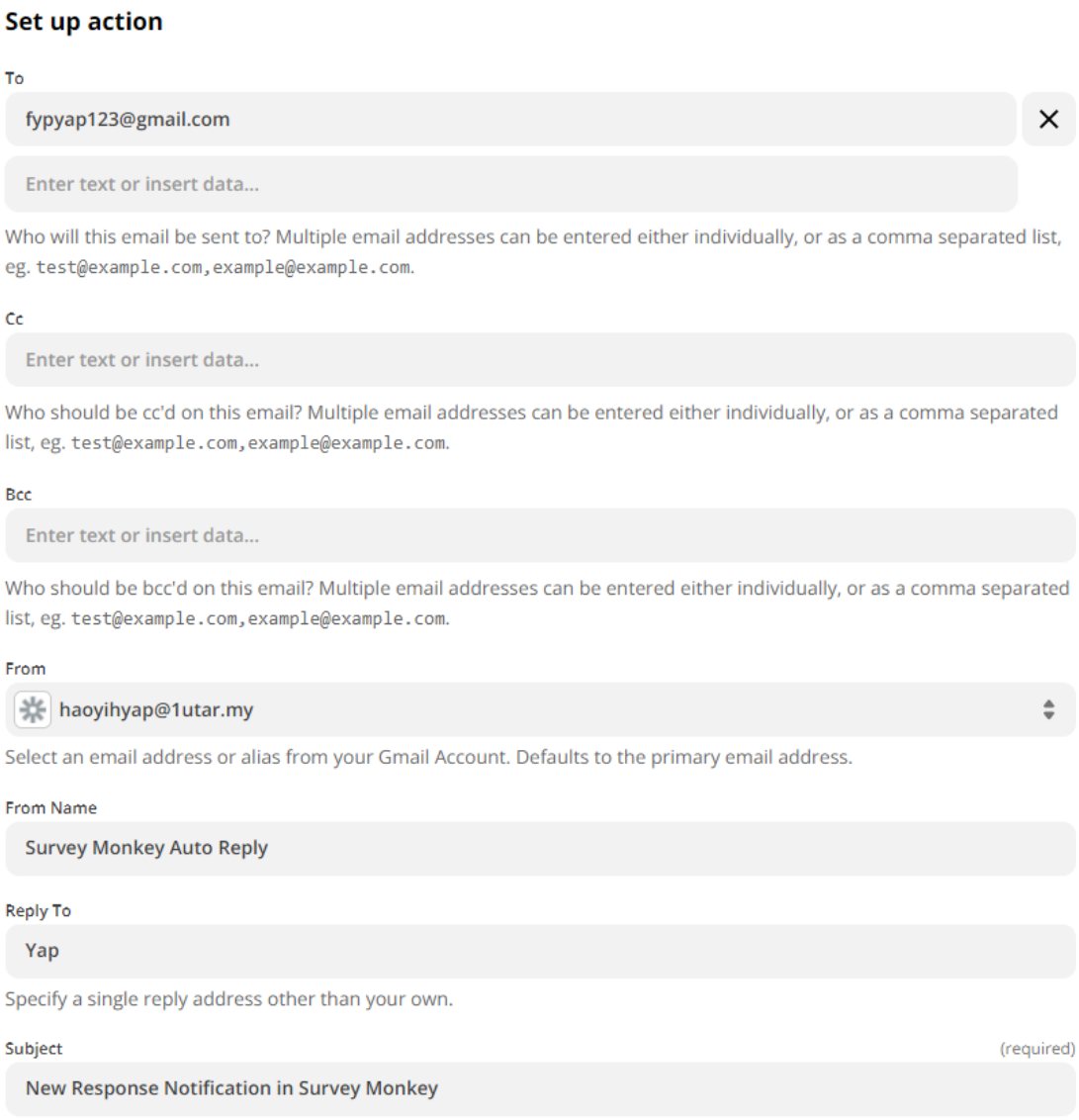
7. In the next node section, choose Gmail as our App and “Send Email” as our “Action Trigger” then click on “Continue” button to proceed.

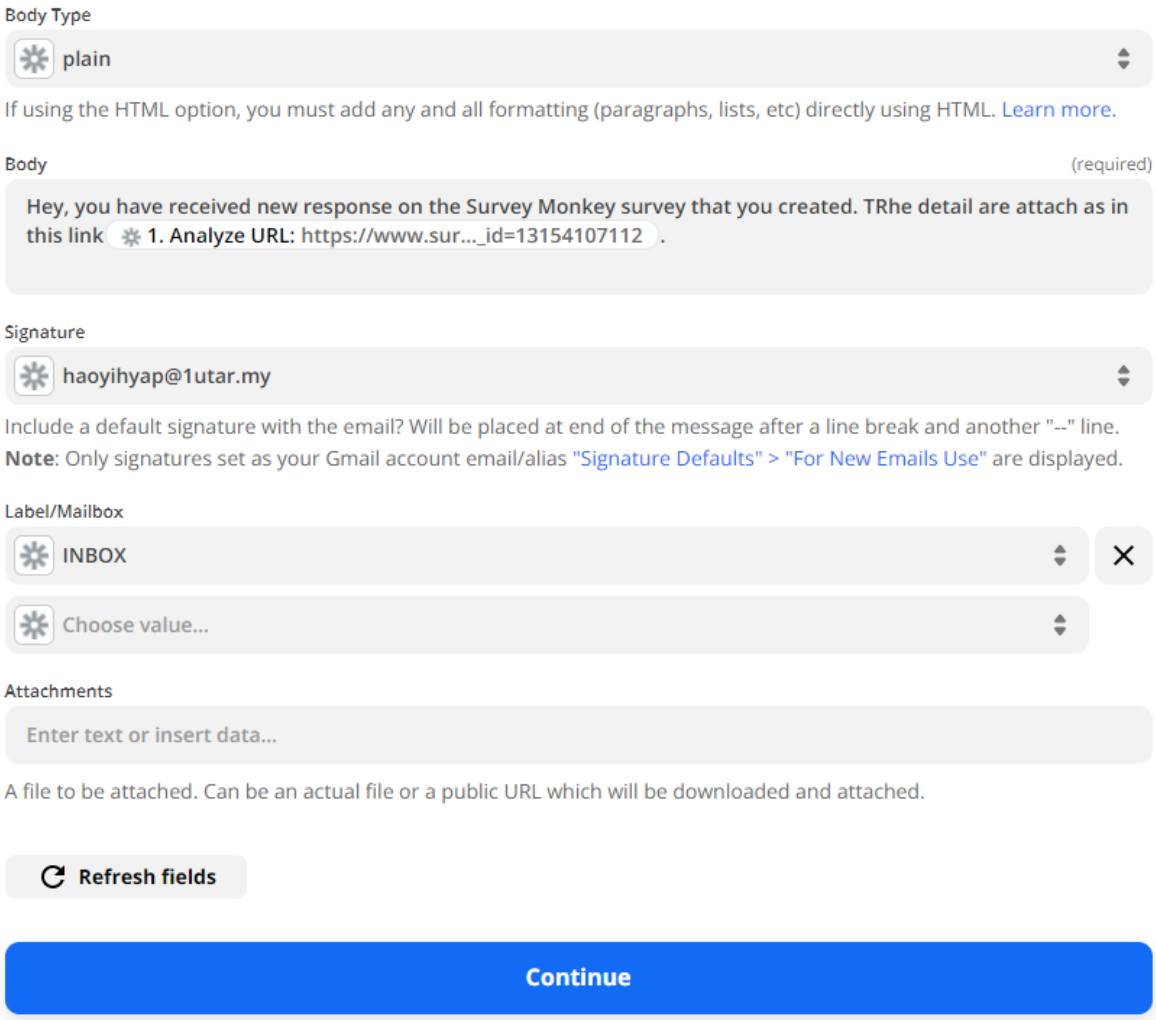


8. In next column choose your appropriate account that you want to send out the mail, if not you will need to sign in your email account and then select on “Continue”

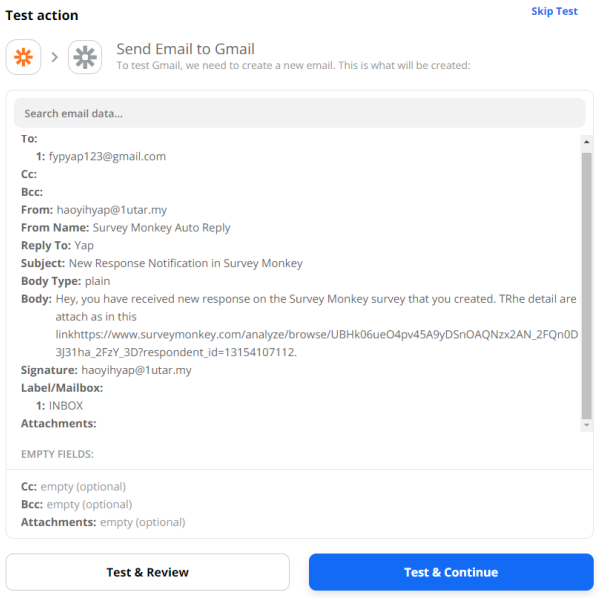


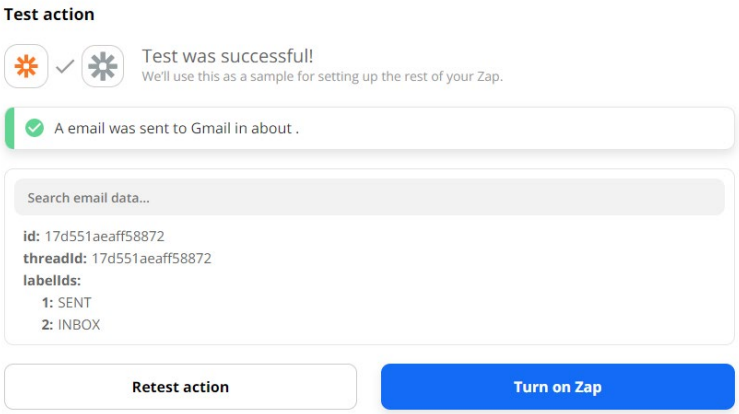
9. In next section, set up the email address you want to send and all the required content, then click on "Continue" to proceed.





10. Then, it will preview your setting of mail to send, and you may click on the “Test & Review” to test your trigger node is functioning or not. If it shows successful executed message which mean you are complete setup the workflow.





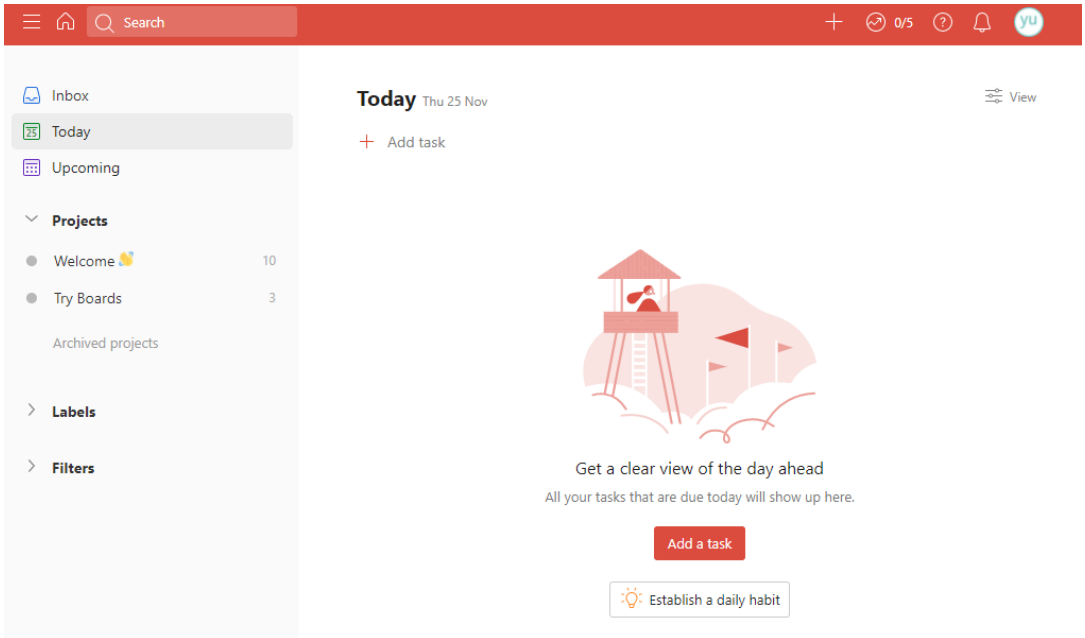
Track Events and Tasks with Your Calendar - Add incomplete Todoist tasks to Google Calendar

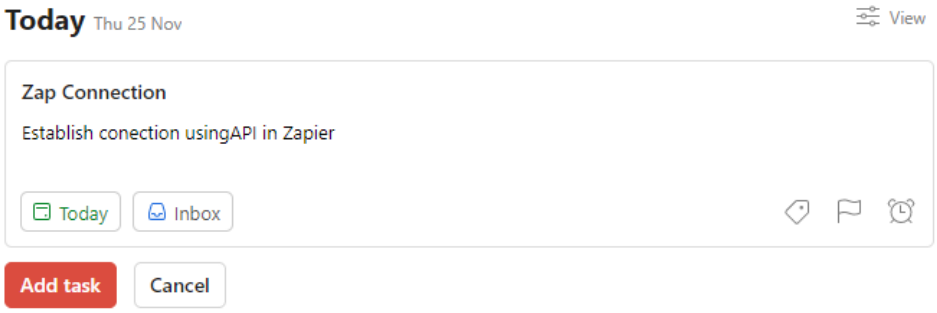
Prerequisite

- Create an Todoist account
- Create an Gmail Account that have Google Calender function

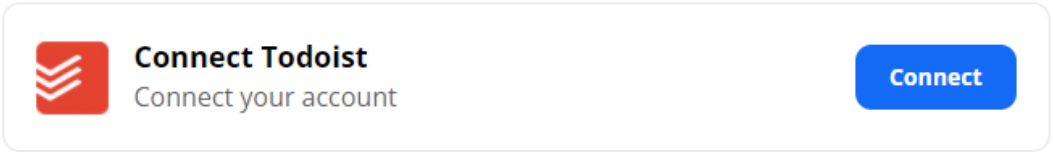
Way to use the zap template:

1. First of all, before we start the Zap workflow setup, let us login to the Todoist account to add a task first. In it's dashboard, click on "Add a task", then insert a name for the task and give some description as well as date for that task. Click on "Add task: to add the task into the Todoist.

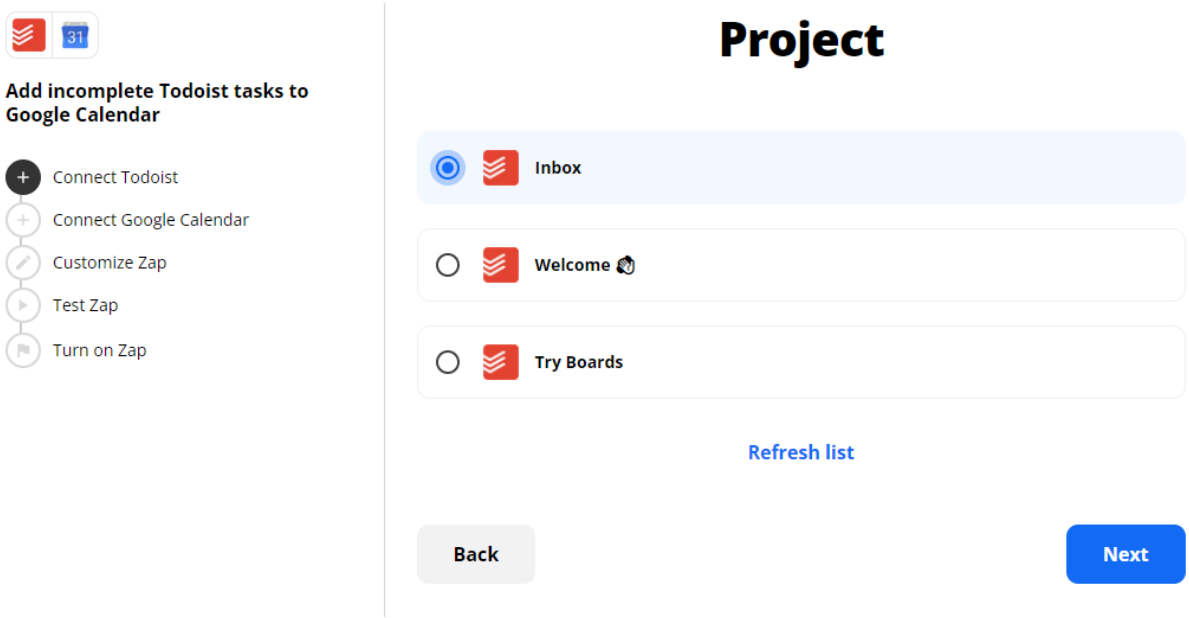




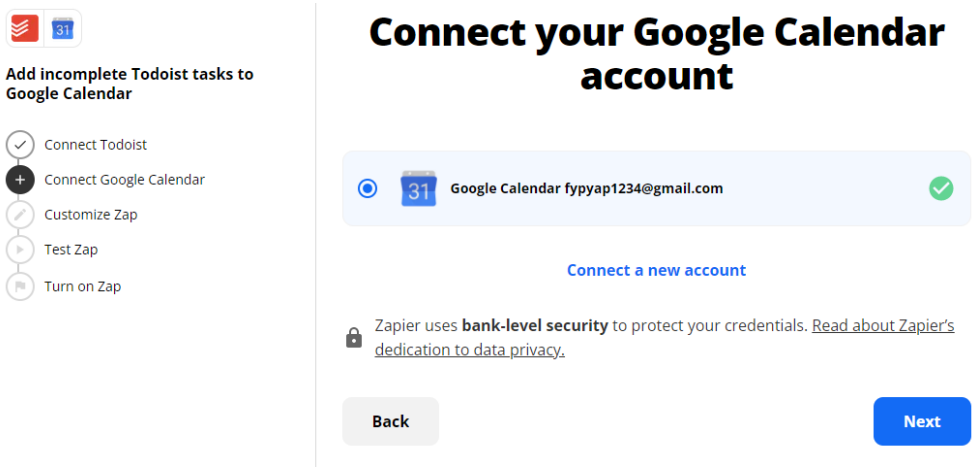
2. Now back to the Zapier, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
3. Then, go to https://zapier.com/webintent/create-zap?template=535&entry-point-location=partner_embed&provider=None&embedded=true&utm_source=widget&utm_medium=embed&utm_campaign=Widget&selected_apis=TodoistV2CLIAPI%401.26.0%2CGoogleCalendarAPI&referrer=https%3A%2F%2Fzapier.com%2Flearn%2Fautomate-apps-examples%2Fpopular-app-automations%2F
4. It will take you to the Zapier configuration pages. From there, it will request you to connect to the Todoist account by clicking “Connect” button. After connected, click on “Next” button to proceed.



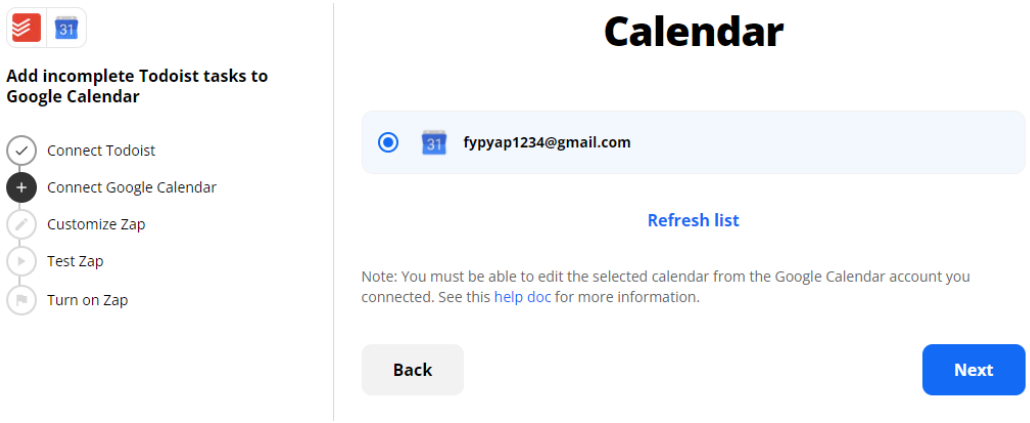
5. Then, select on the list you want to be connected. In this case, click on the “Inbox” to import the task created just now. Then click on “Next”.



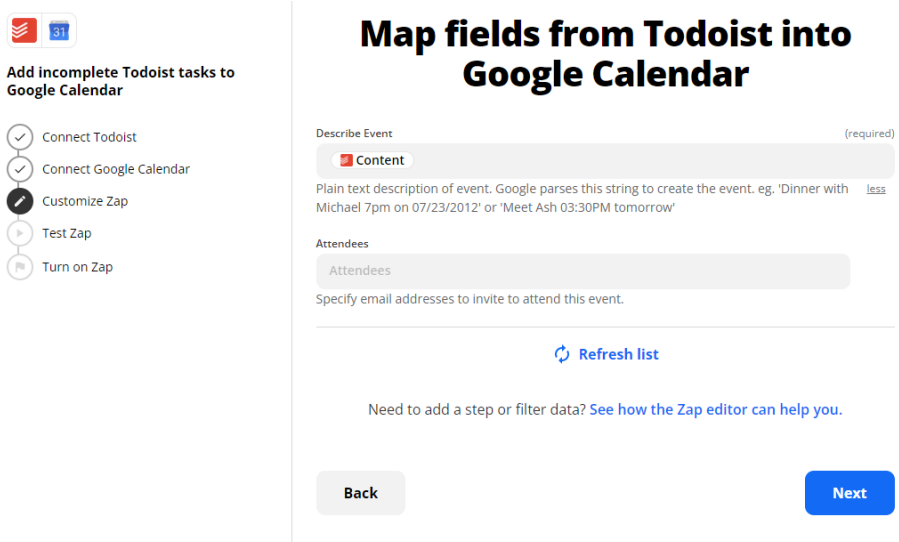
6. In the next flow, you will need to connect to your Google Calendar, so click on the "Connect" button to login to your account then click on "Next" after finishing the login setup.



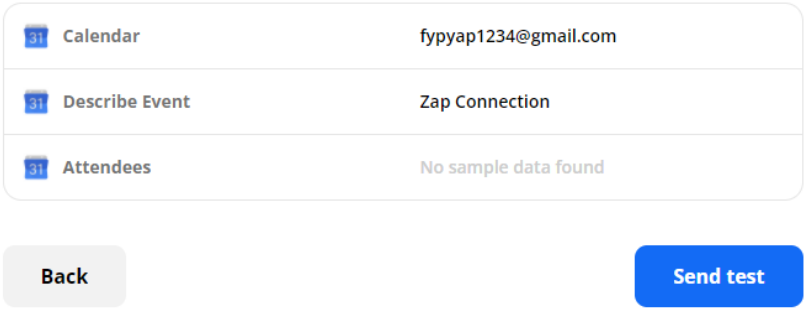
7. Then, select on the list of calendars from your Goggle Calendar account and proceed to "Next".



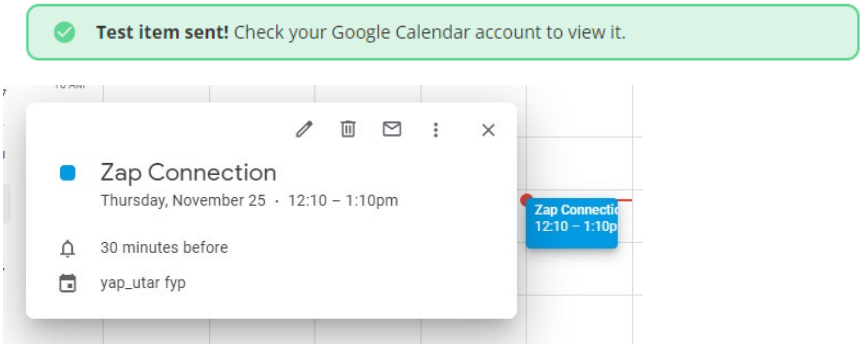
8. In the next, it will show the message content that exist and you may add Attendees to the event but we just leave it blank in this case and click on "Next" to proceed.



9. It will showsthe preview data that you would like to present in your Google Calendar for confirmation. If you confirm the message content is correxct, you may start to test your connection by clicking on “Send test”, else you need to click on :Back” to do modification.



10. In next, you may check on your Google Calendar to verify whether the workflow is worked. If it received, that’s mean the workflow is successfully executed. And you may click on Next to finish the process and turn on zap if you want it to be executed in future.



<u>Create Todoist tasks for starred Gmail messages [Business Gmail Accounts Only]</u>

Prerequisite

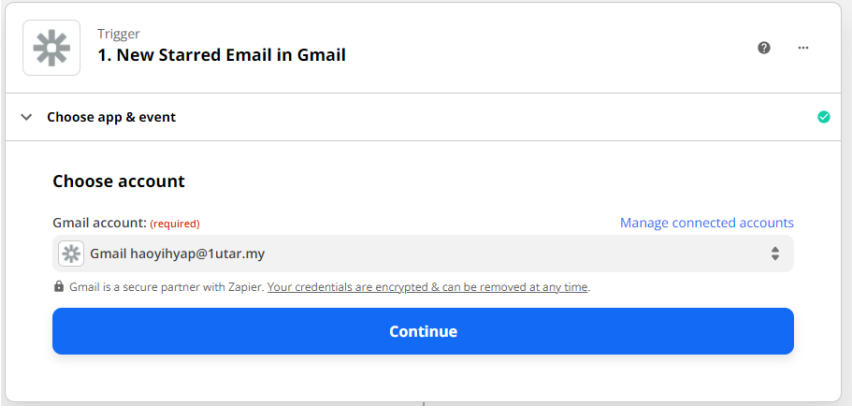
- Create an Todoist account
- Create an Gmail Account [Business Gmail Accounts Only]

Way to use the zap template:

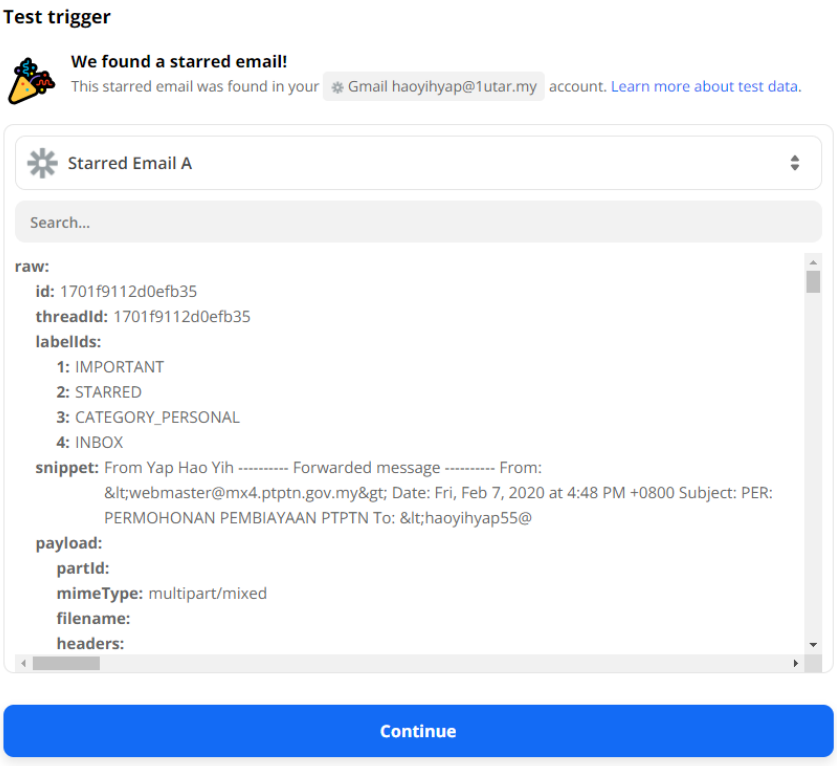
1. First and foremost, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
2. Then, go to https://zapier.com/webintent/create-zap?template=9214&entry-point-location=partner_embed&provider=None&embedded=true&utm_source=widget&utm_medium=embed&utm_campaign=Widget&selected_apis=GoogleMailV2API%2CTodoistV

2CLIAPI%401.26.0&referrer=https%3A%2F%2Fzapier.com%2Flearn%2Fautomate-apps-examples%2Fpopular-app-automations%2F

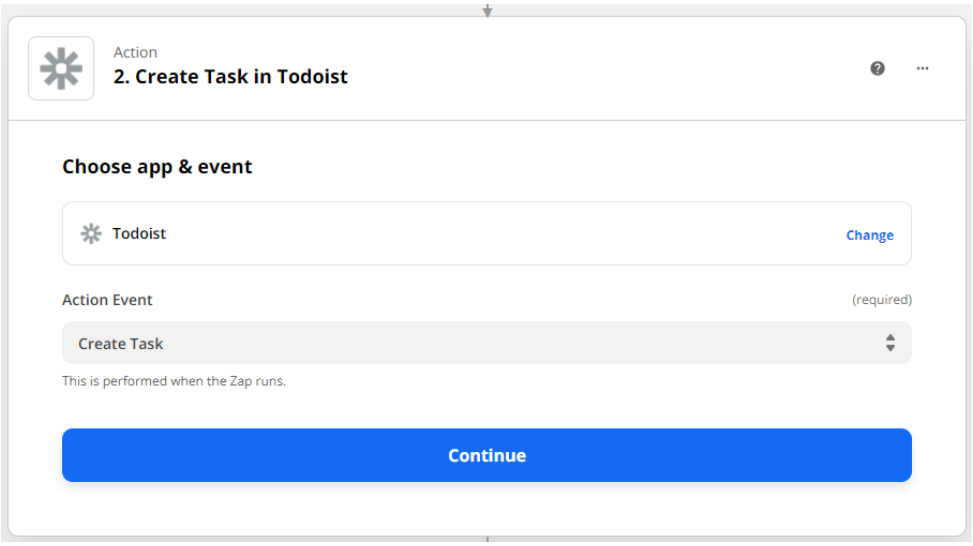
3. It will take you to the Zapier configuration pages. From there, you can give your zap (workflow in Zapier) a name and begin the automation of create to do list based on email in Gmail. In the first flow, click the "Edit" button and sign in your Gmail account that you would like to get its email, then click on “Continue” to continue.



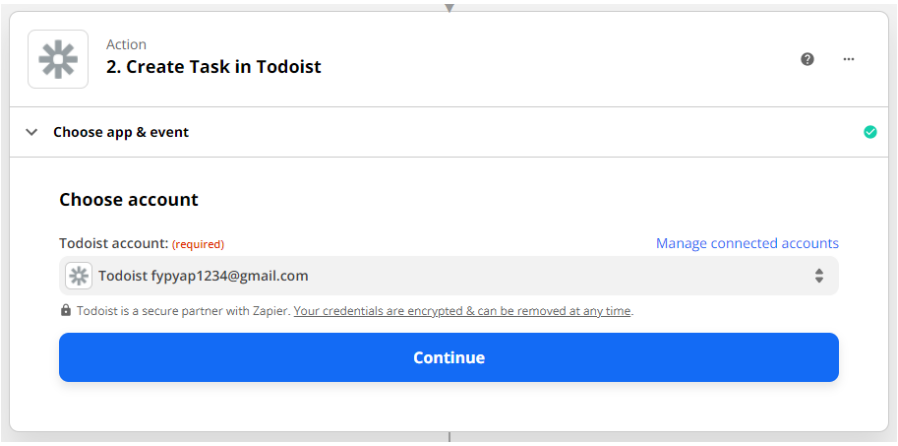
4. Then, in next flow, it will be showing all the fetching raw data in your Gmail. You will need to choose the mail that you want to take and click on “Continue”.



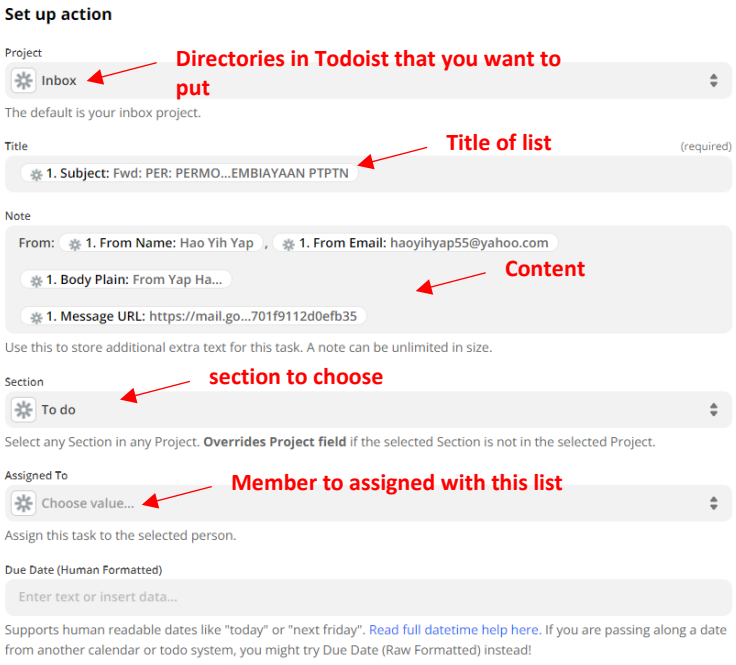
5. Then, in the next node, select “Todoist” as our app to use and “Create Task” as our “Action Event” that will perform when Zap’s run. Click on “Continue” once finish setup.

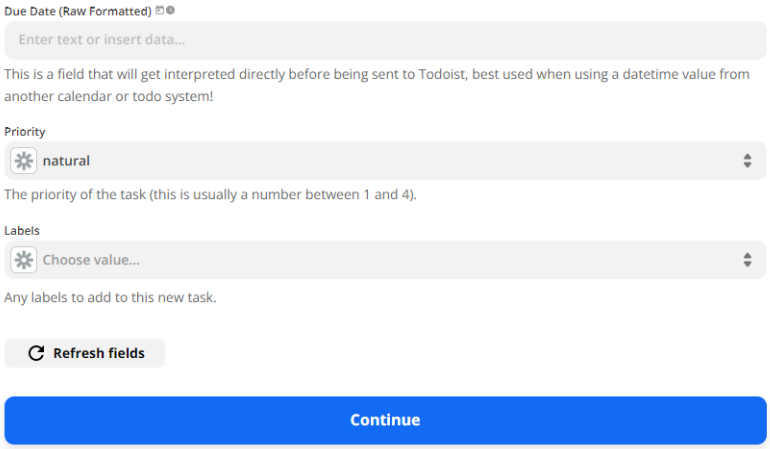


6. Then, login to the Todoist account that you would like to set task list for it, then click on "Continue".

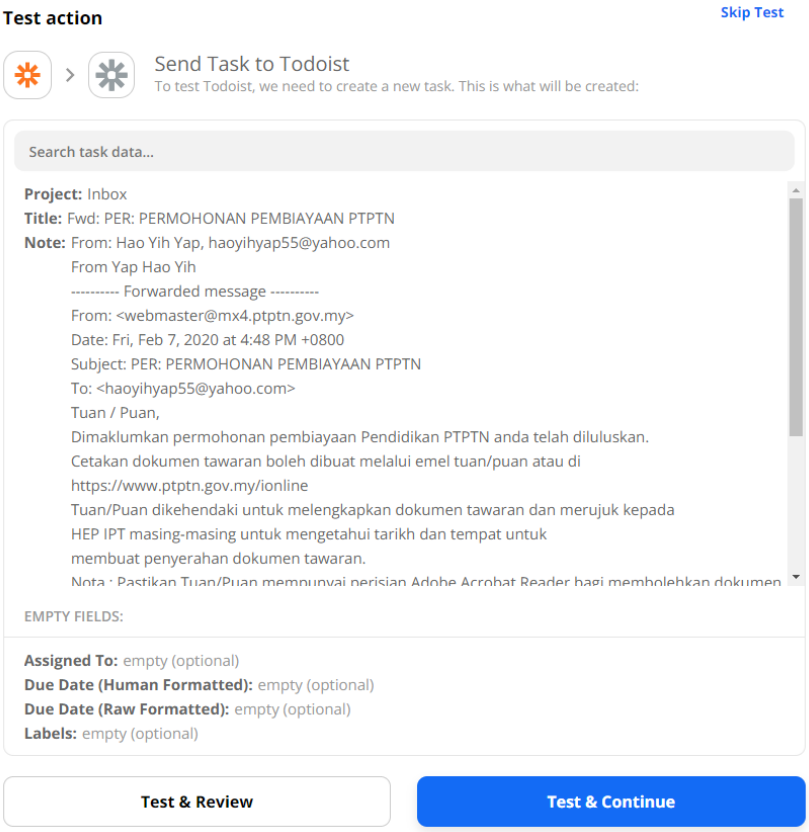


7. Then, in next flow set up the info to show in your to do list and click continue to proceed.

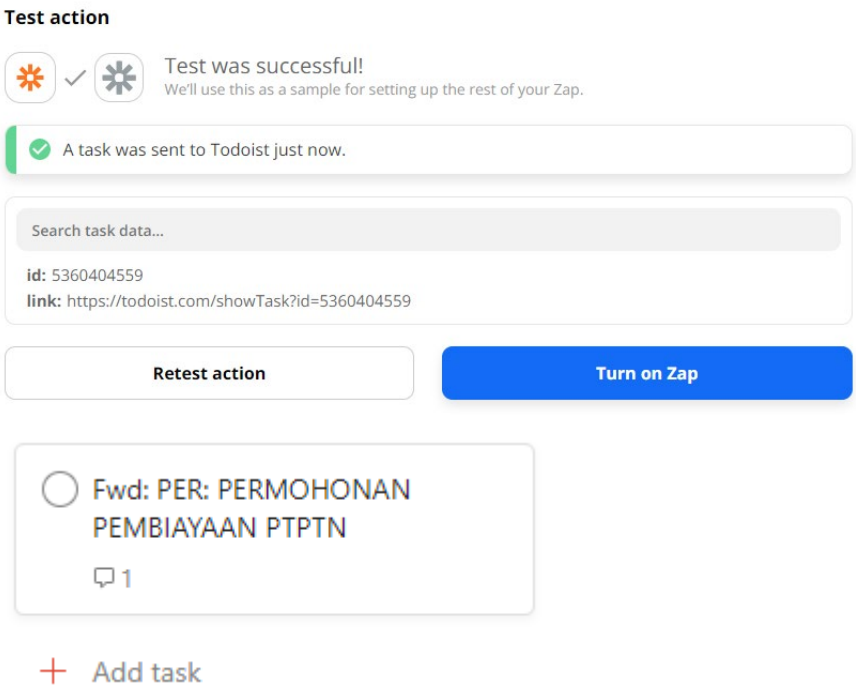




8. Then, it will show you the preview value that send to the Todoist task and you may start to test on your zap flow whether function by clicking the "Test & Review" button.



9. Once the workflow successfully executed, you will received a message in the Zap showing it have been send to your Todoist account. From your Todoist account, under the directories set, you will see new list created. Now, you have successfully set up the workflow.



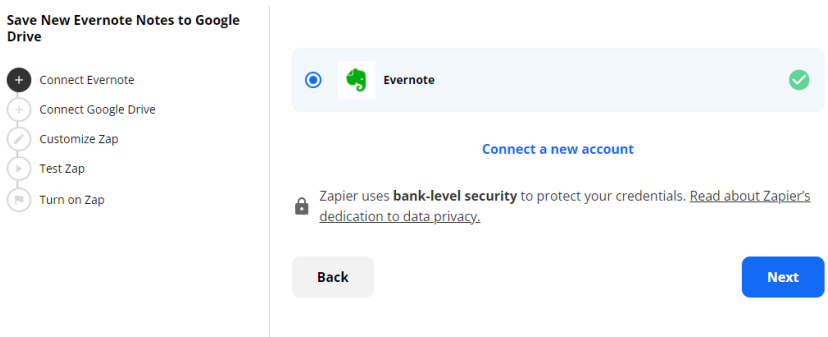
Save New Evernote Notes to Google Drive

Prerequisite

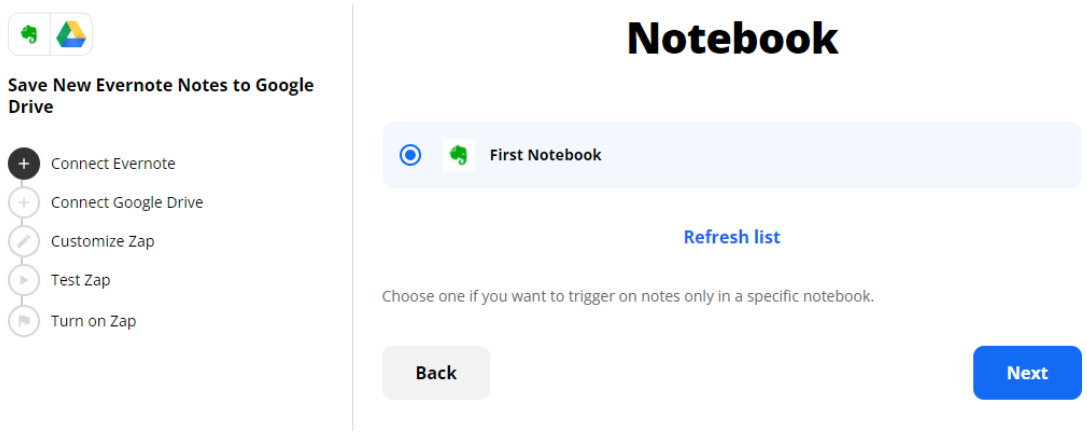
- Create an Evernote account
- Create a Gmail Account with Google Drive

Way to use the zap template:

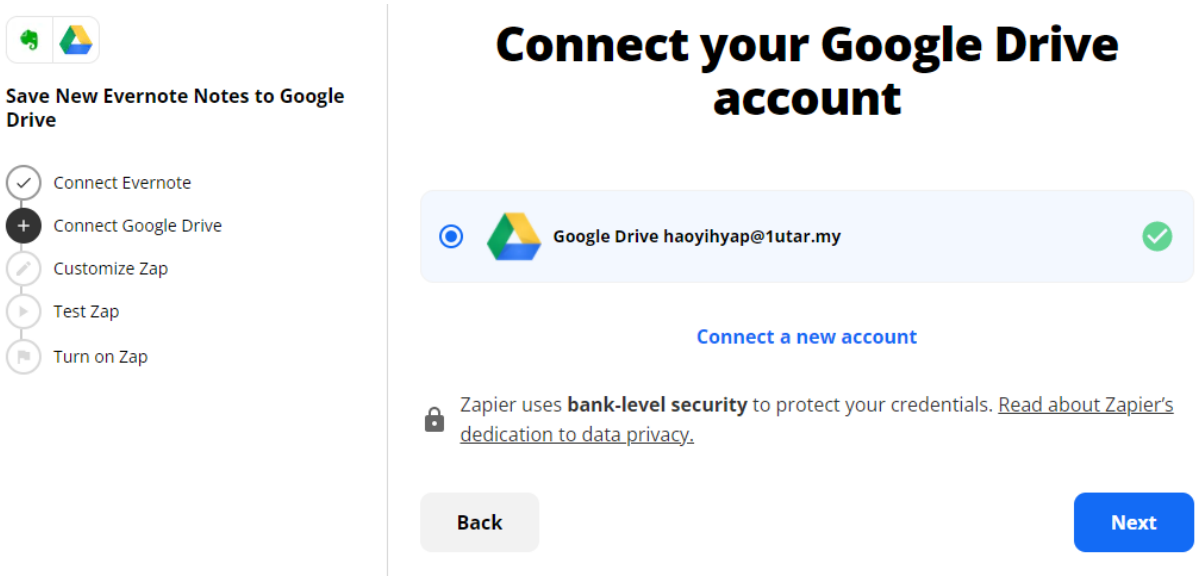
1. First and foremost, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
2. Then, go to https://zapier.com/webintent/create-zap?template=1176
3. It will take you to the Zapier configuration pages. From there, you can give your zap (workflow in Zapier) a name and begin the automation. In the first flow, you will need to login into your Evernote account that you wish to store its note inside. Then, click on "Next" to proceed.



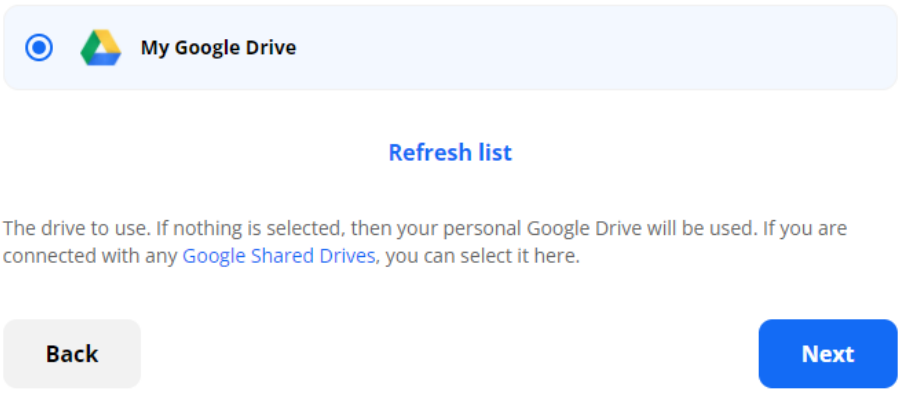
4. Then, select on the Notebook that store the notes in Evernote and click on “Next” to continue.

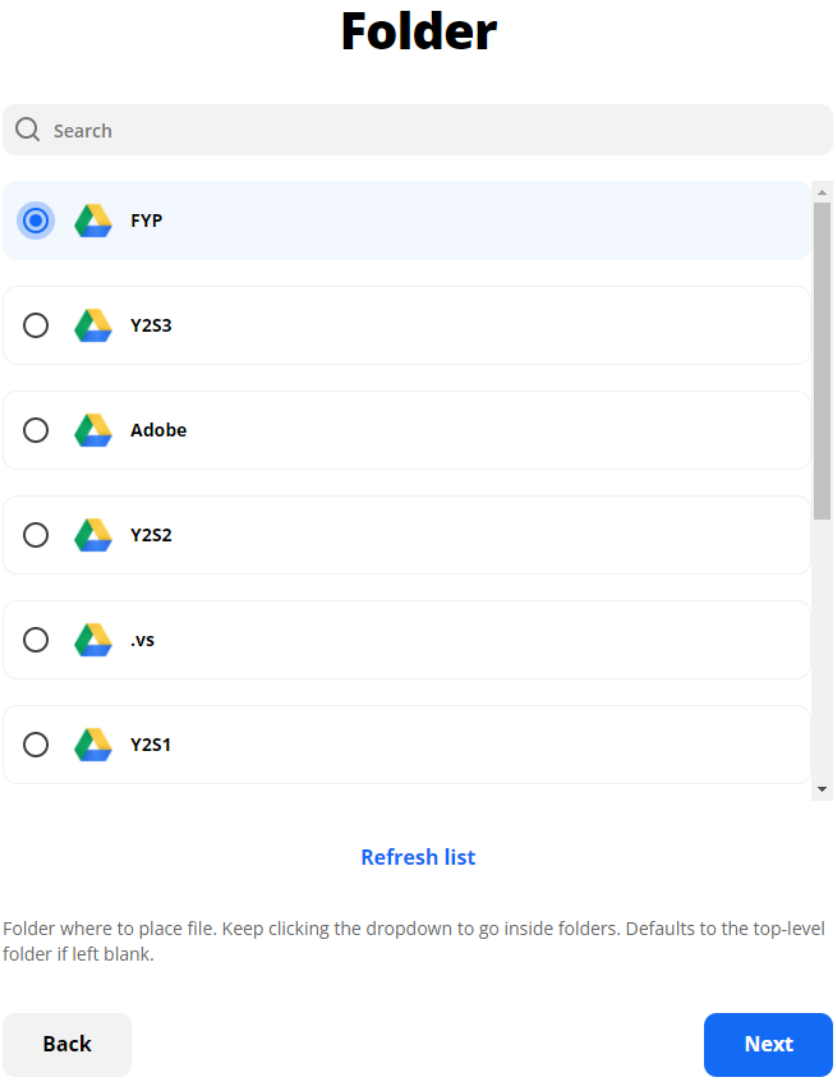


5. Then, sign into your Google Drive account and click on “Next” once successfully login, so that the connection is established between Evernote and Google Drive.

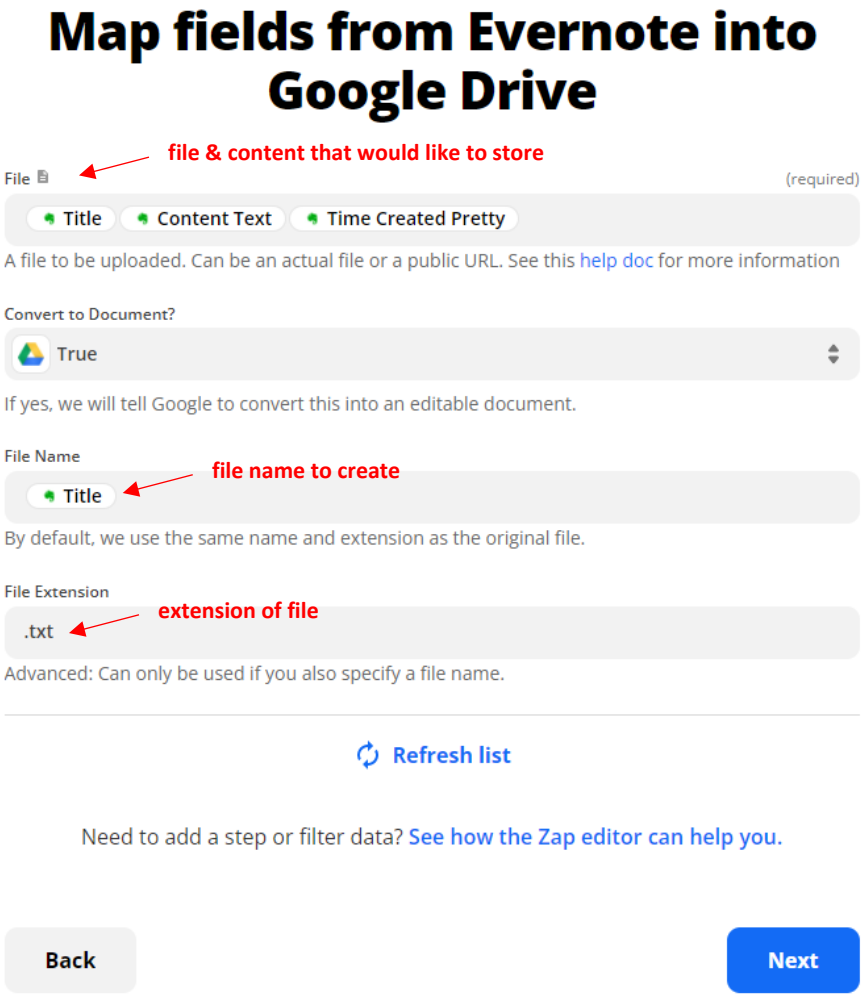


6. Select “My Google Drive” in the next section and click “Next” to proceed. Then, select a list where you want to store in the note, then click on “Next”.

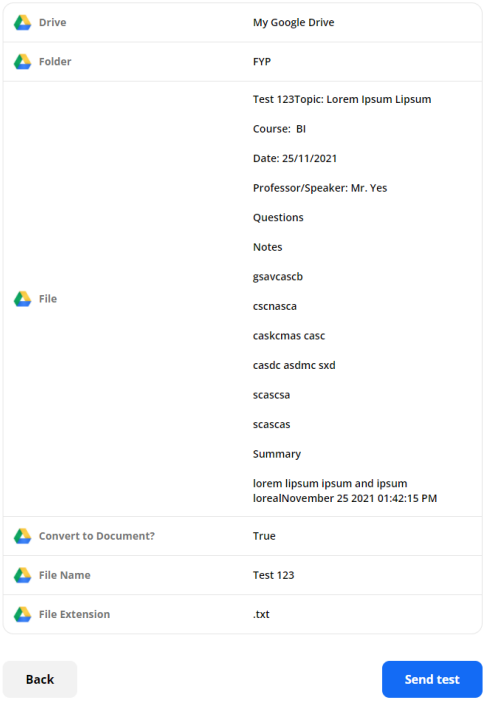




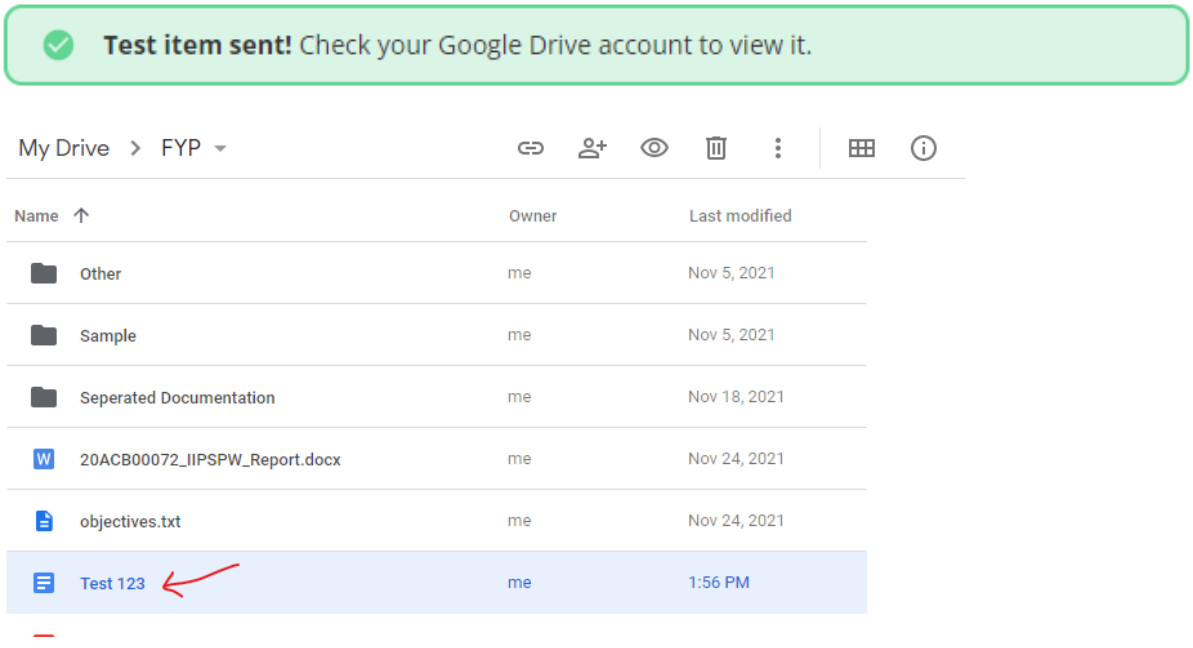
7. Later on, set how you want to store the note in your Google Drive by specifying the file that want to store, as well as the file name and it's extension. Then click on "Next" to submit your process.



8. In the next section, it will illustrate the content preview that you setup to be store in your drive. Hence, you may click on “Send Test” to test the flow.



9. Once received the message of file item sent, which mean you are successfully executed the node and you will see the file are located in your Google Drive Now.



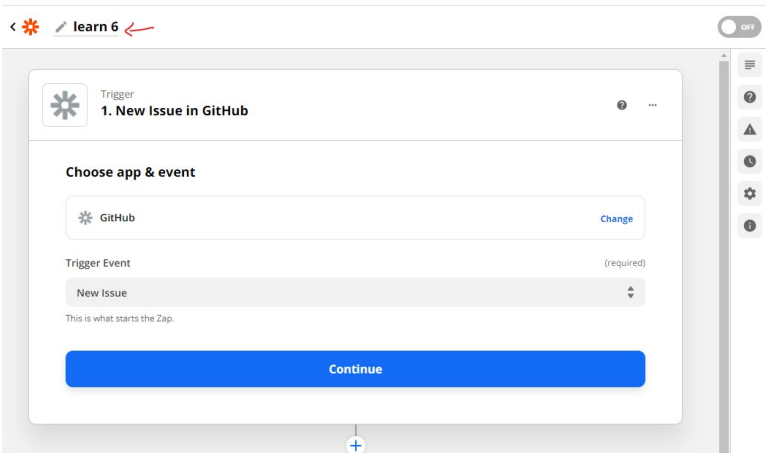
Create Trello cards from new GitHub issues

Prerequisite

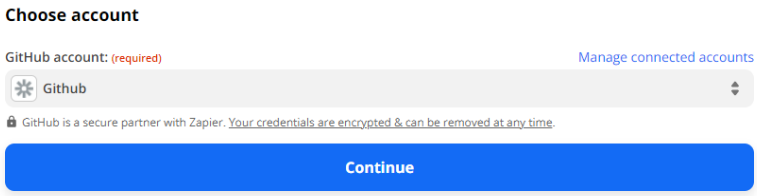
- Create a GitHub account
- Create a Trello account

Way to use the zap template:

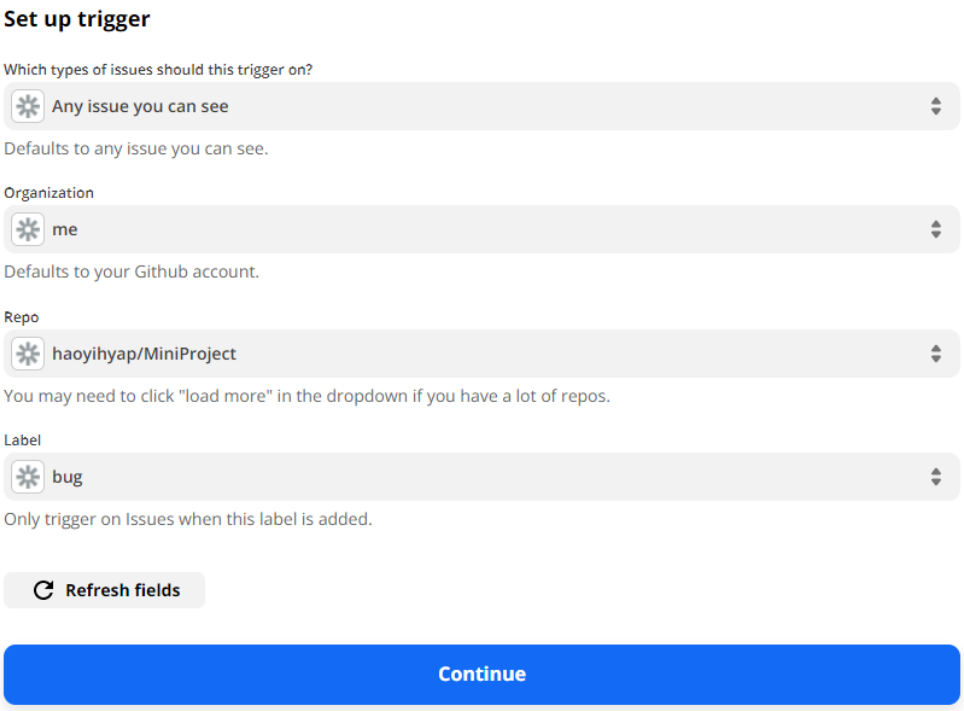
1. First and foremost, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
2. Then, go to https://zapier.com/apps/github/integrations/trello/7/create-trello-cards-from-new-github-issues?utm_source=widget&utm_medium=embed&utm_campaign=Widget
3. It will take you to the Zapier configuration pages. From there, you can give your zap (workflow in Zapier) a name and begin the automation workflow. In the first flow, click the "Edit" button and sign in your GitHub accountas the starting point of API to create automation, then select “New Issue” on the “Trigger Event” column to set the trigger to fired on new issue incoming in GitHub. Once finish, click on “Continue” to continue.



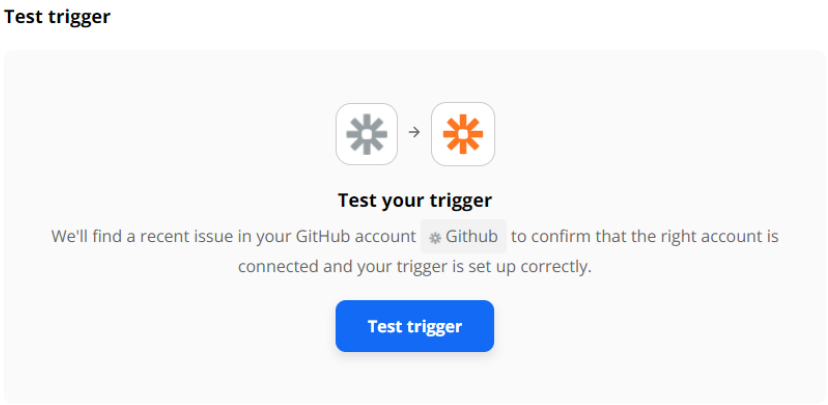
4. Then, remain the account chosen and click on “Continue” to further move on.



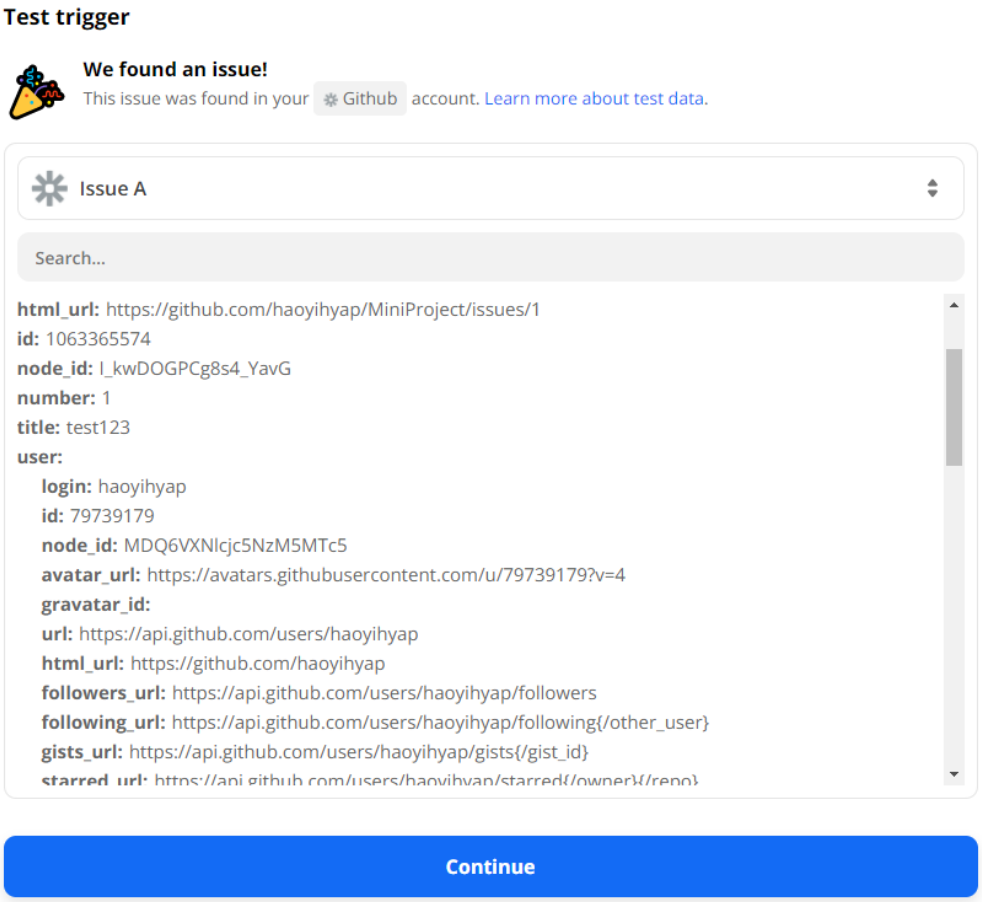
5. In the next flow, it will going to show you a form for you to set up the data that be taken when the event is triggered. Select “Any issue you can see” in the “Which types of issues should this trigger on?” column, so that it will trigger if any issue is occurring. Then, set the organization of the code involved then set the Repo of your code and set what label that will trigger your event. In this case, we choosing “Bug” label as the trigger label and click “Continue” to proceed.



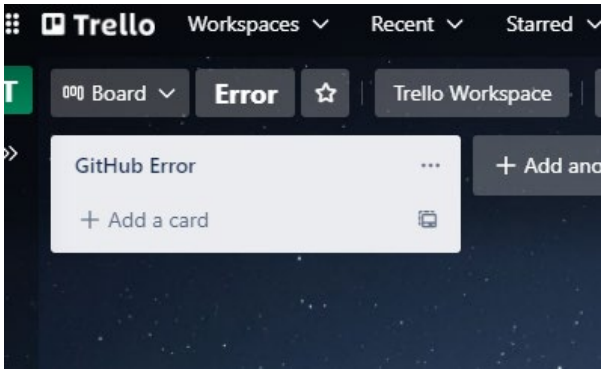
6. Then, test on your trigger by clicking the “Test trigger” button. Make sure that the repo in GitHub have at least 1 bug comment first.



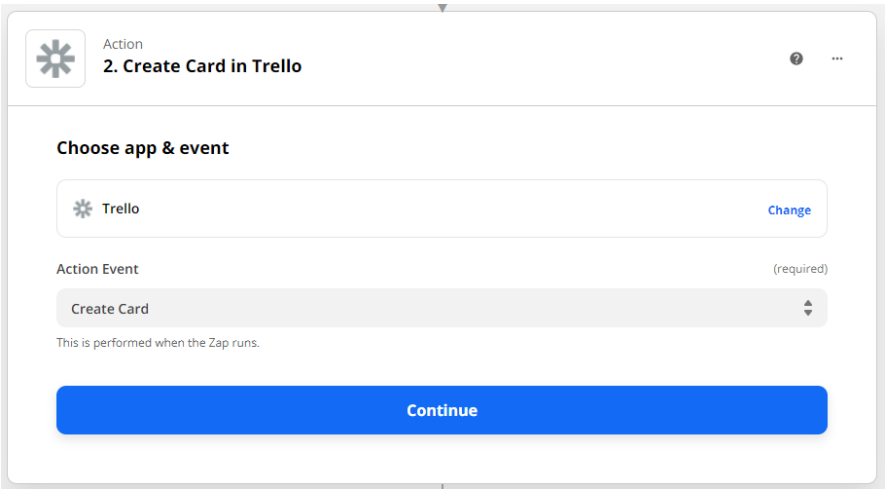
7. After that, it will show the fetch result of bug comment have been created in your repo of GitHub and now your trigger node are meant to be successfully setup. Now, click on “Continue” to proceed.



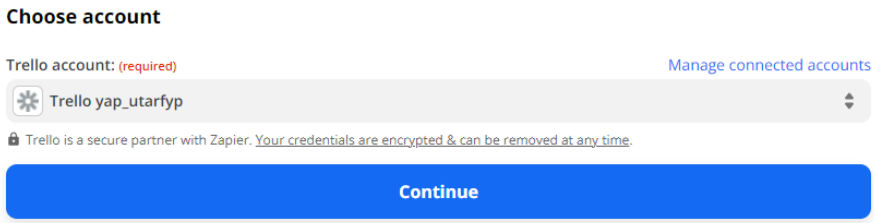
8. Before continuing the workflow, you need create a board and list in the board of Trello in order to display and handle the error send from Zap app.



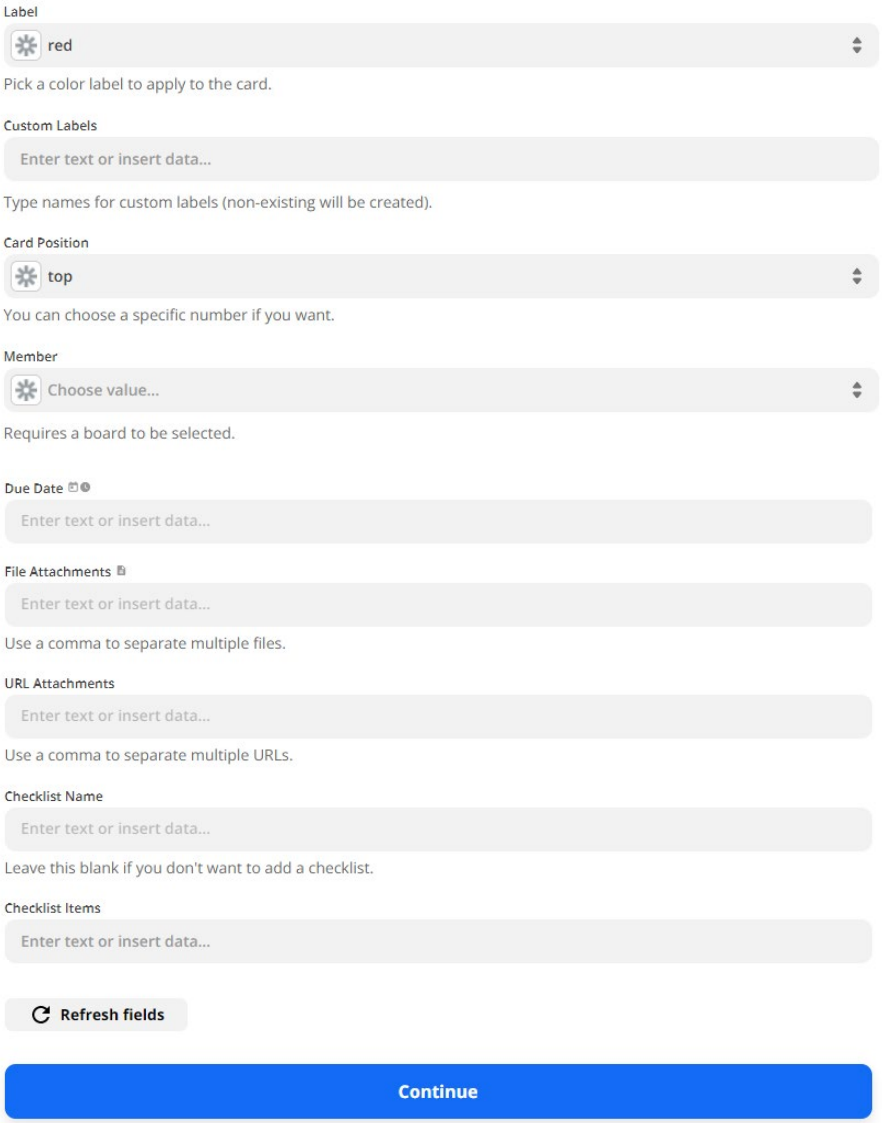
9. Back to the Zap configuration, choose “Trello” as the app trigger and select “Create Card” in the “Action Event” column and then click on “Continue” to continue the workflow.



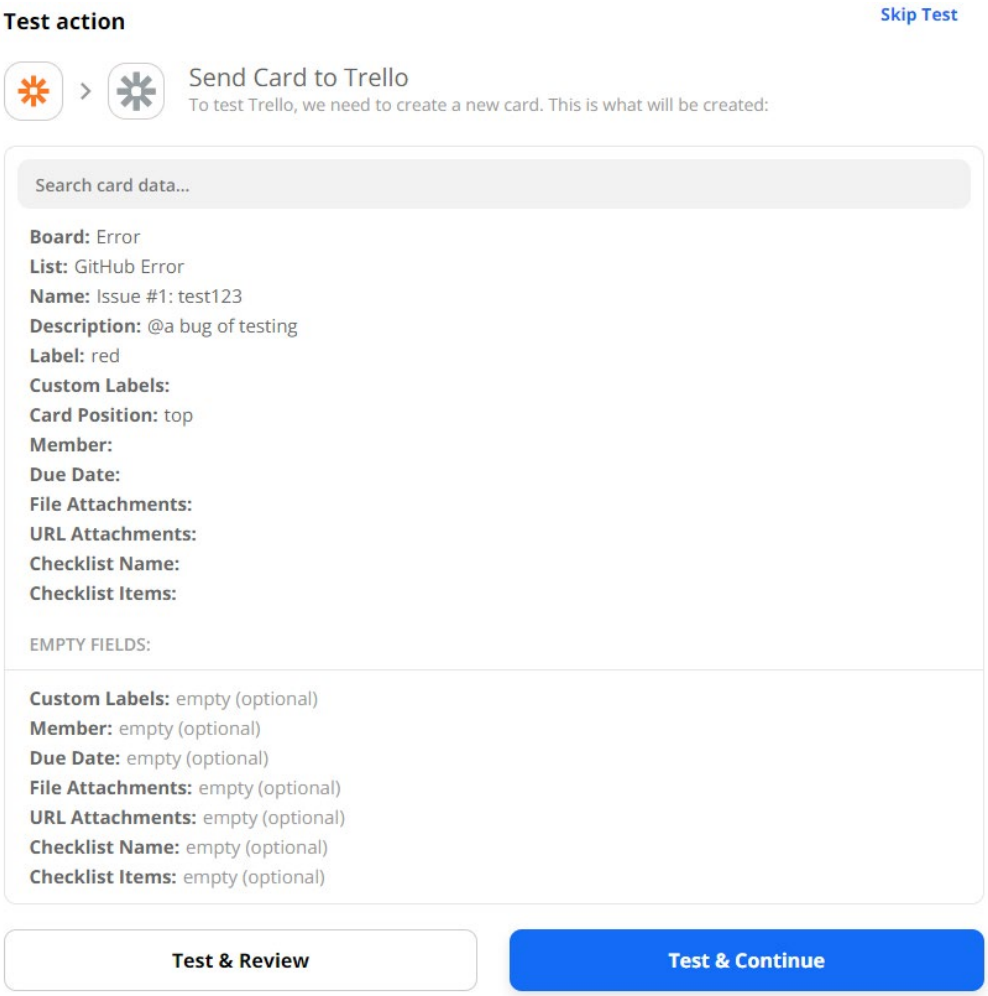
10. Login to your account and click on the “Continue” to proceed.



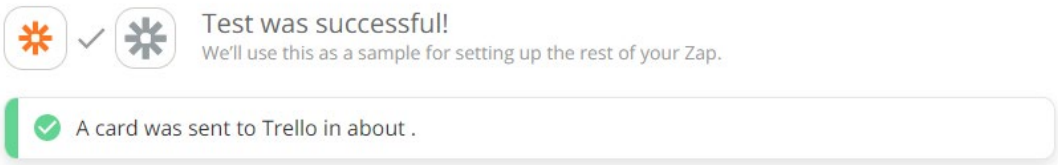
11. Then choose the correct board and list to add the new card as well as the content configuration. After that, click o “continue”.

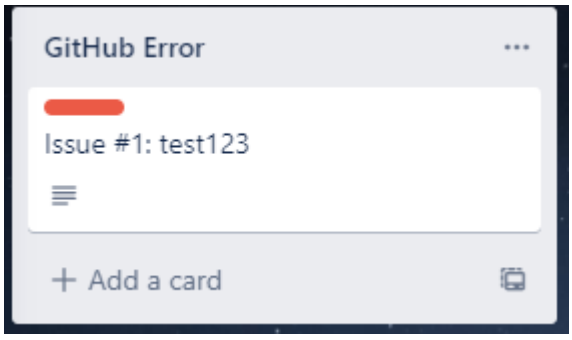

Label
red
Pick a color label to apply to the card.
Custom Labels
Enter text or insert data...
Type names for custom labels (non-existing will be created).
Card Position
top
You can choose a specific number if you want.
Member
Choose value...
Requires a board to be selected.
Due Date
Enter text or insert data...
File Attachments
Enter text or insert data...
Use a comma to separate multiple files.
URL Attachments
Enter text or insert data...
Use a comma to separate multiple URLs.
Checklist Name
Enter text or insert data...
Leave this blank if you don't want to add a checklist.
Checklist Items
Enter text or insert data...
Refresh fields
Continue

12. In the next flow, it will show you the content t output the will send to Trello for display and now you need to test your Zap by clicking the “Test & Review” button.



13. If it returns successful message which mean your flow are work and you will see the new message is present in Trello card.





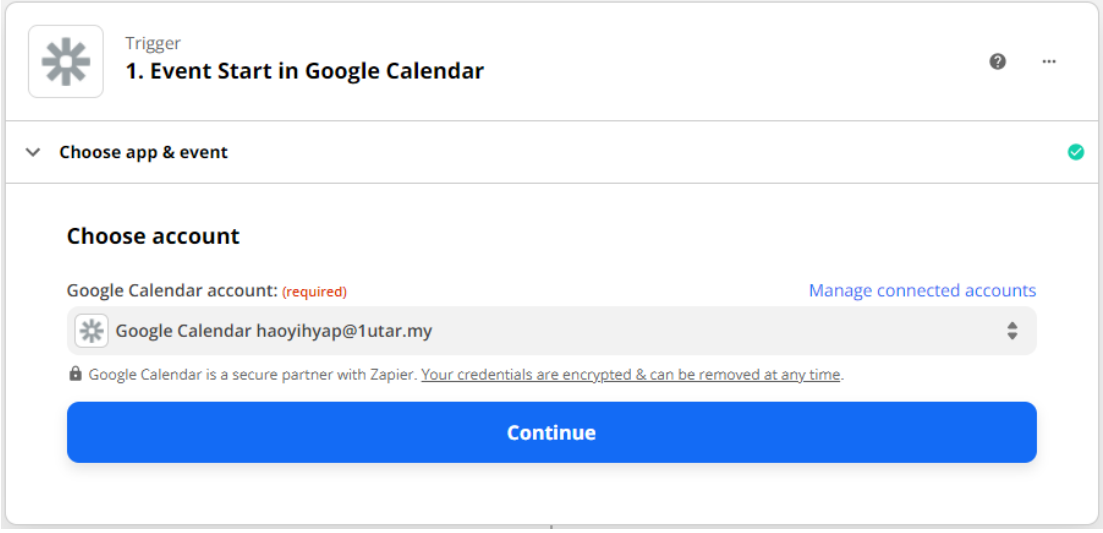
Get a Slack message with coming weeks’ schedule

Prerequisite

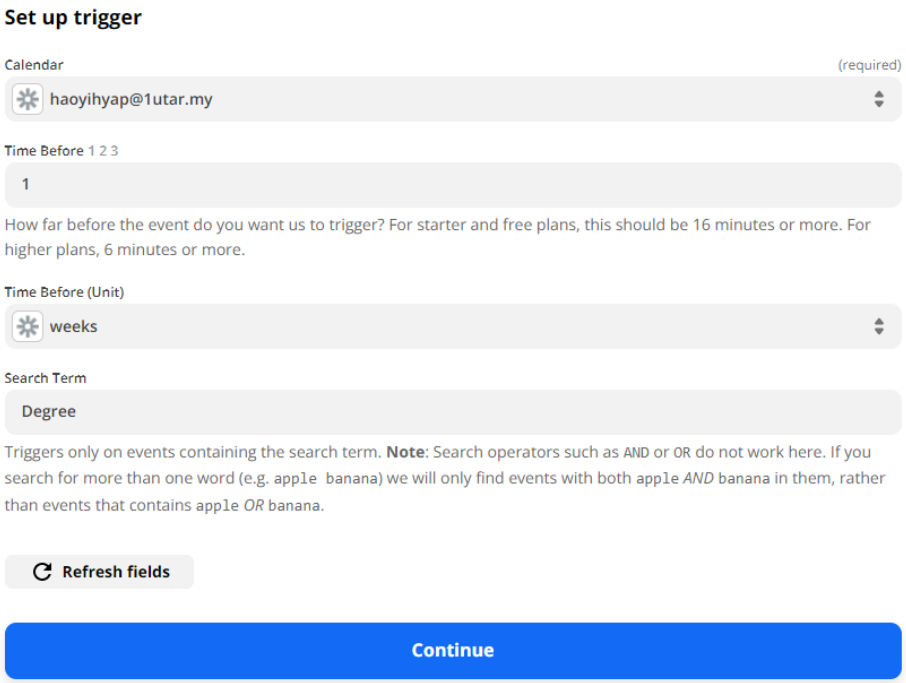
- Create a Google account that have Google Calendar
- Create a Slack account with workspace created.

Way to use the zap template:

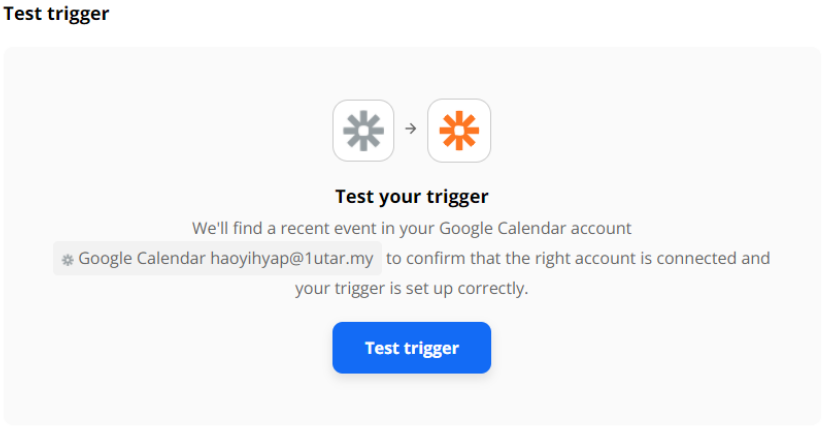
1. First and foremost, you should have an Zapier account first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
2. Then, go to
3. It will take you to the Zapier configuration pages. From there, you can give your zap (workflow in Zapier) a name and begin the automation workflow. In the first flow, login and connect to your Google Calendar account that you want to extract schedule. Once finish, click on "Next" to continue.



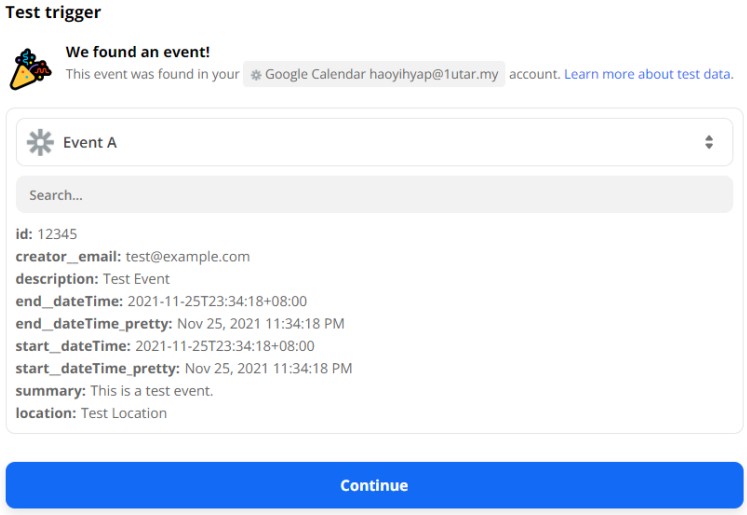
4. Then, set up the trigger info of your account by selecting the Calendar that you want to search and how far the time of event you want to search as well as the keyword of searching. Then, click on the "Continue" button.



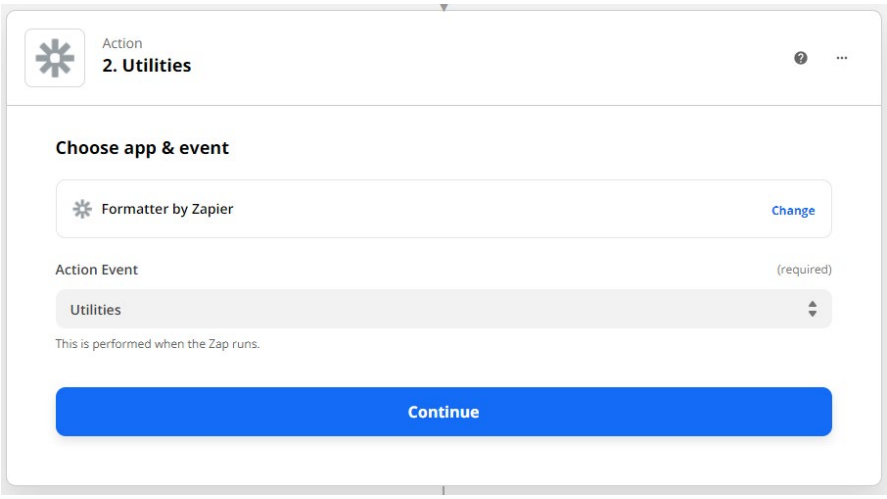
5. In next flow, you need to test your workflow by clicking the "Test trigger" button.



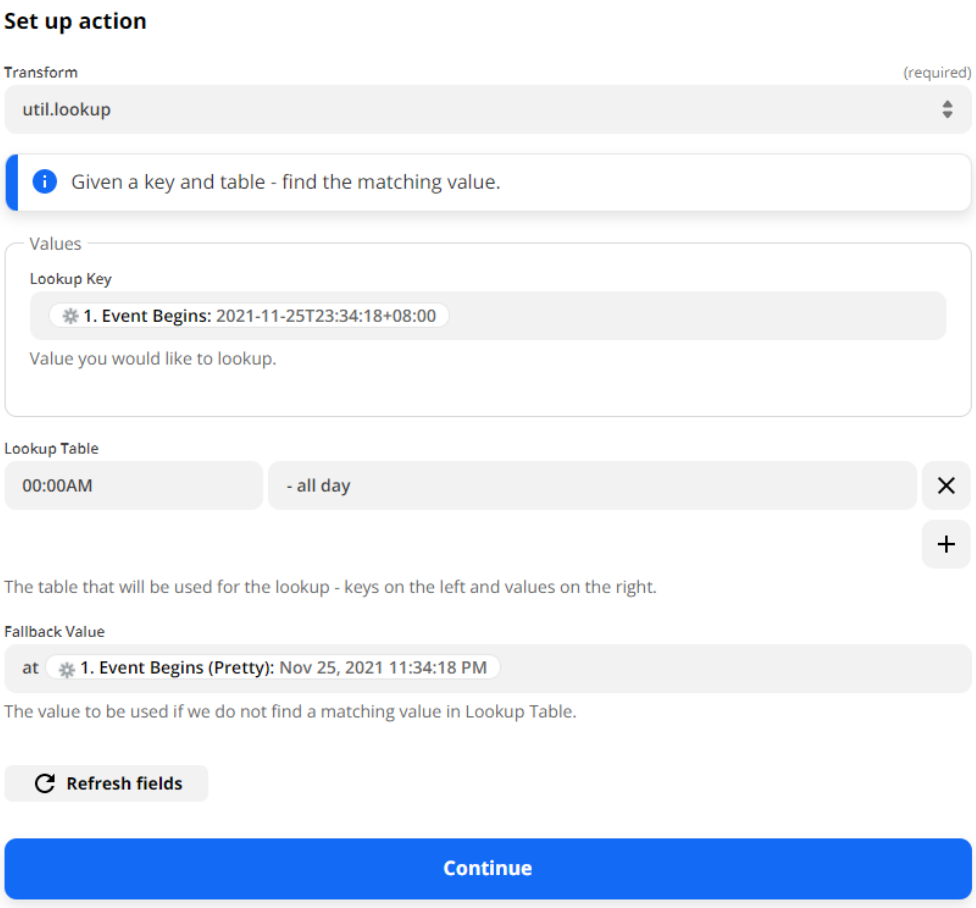
6. A message will be received if the Zap is successfully executed. then, click on "Continue".



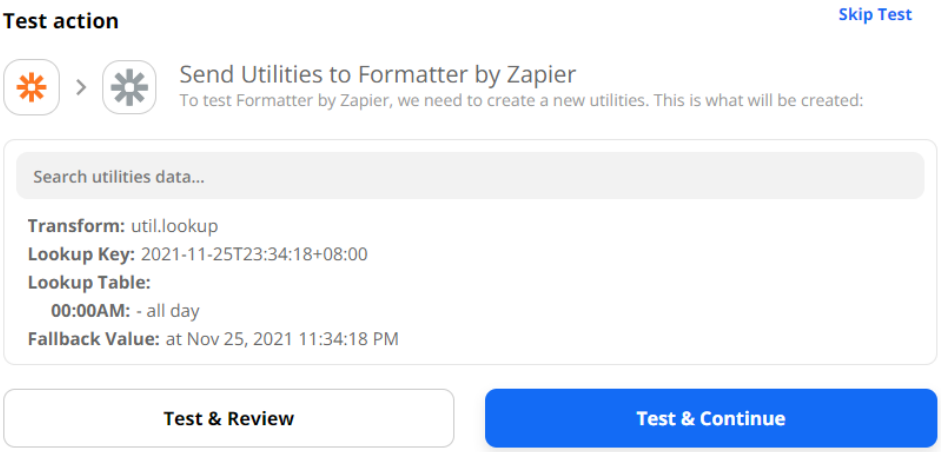
7. Next, remain the setting in the flow and click “Continue”.



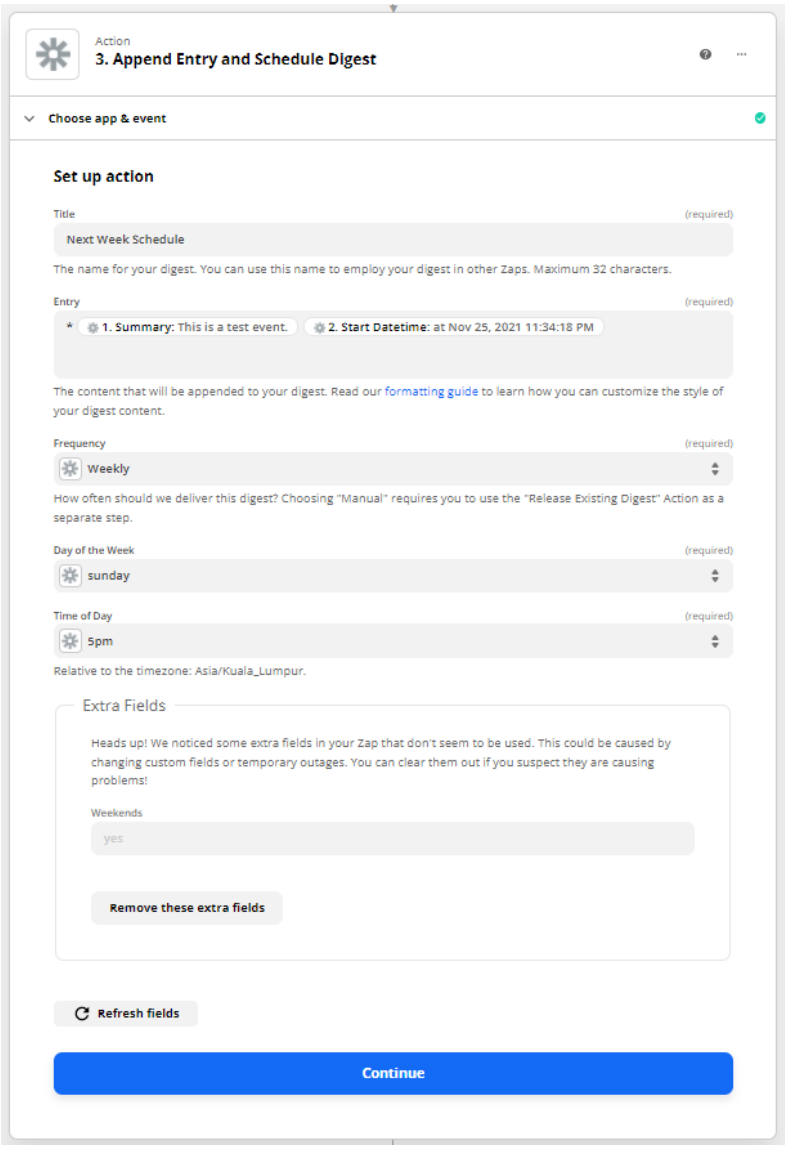
8. Set up value of date to lookup and click “Continue” to proceed.



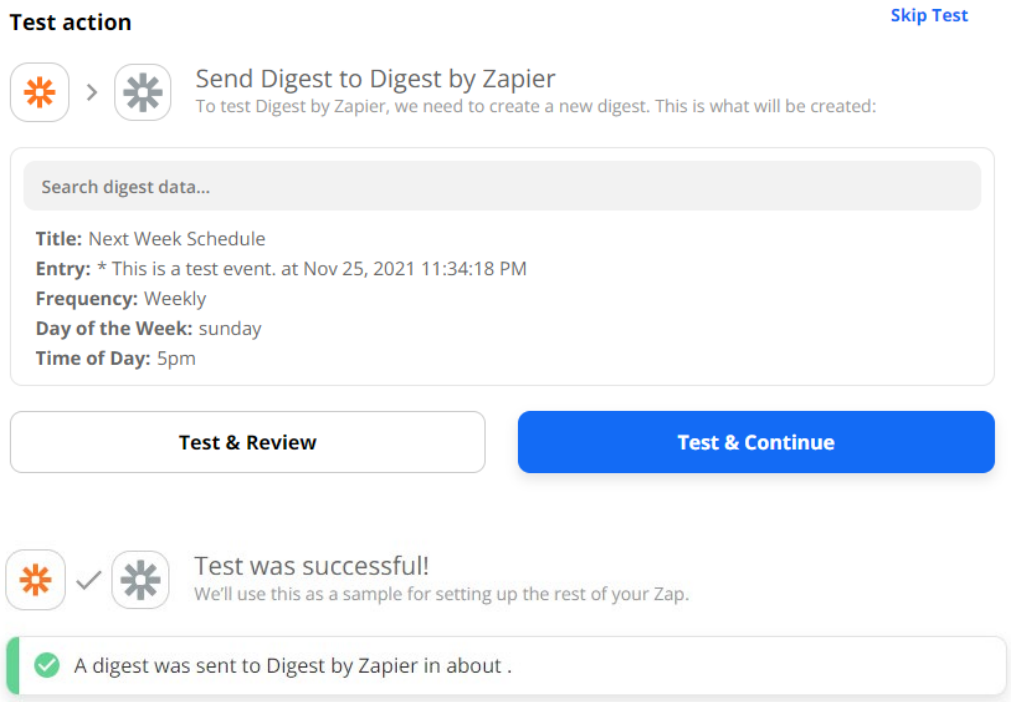
9. Then, in the last of this Zap node, test on the whether node are function by clicking the “Test & Review” button and check whether it works.



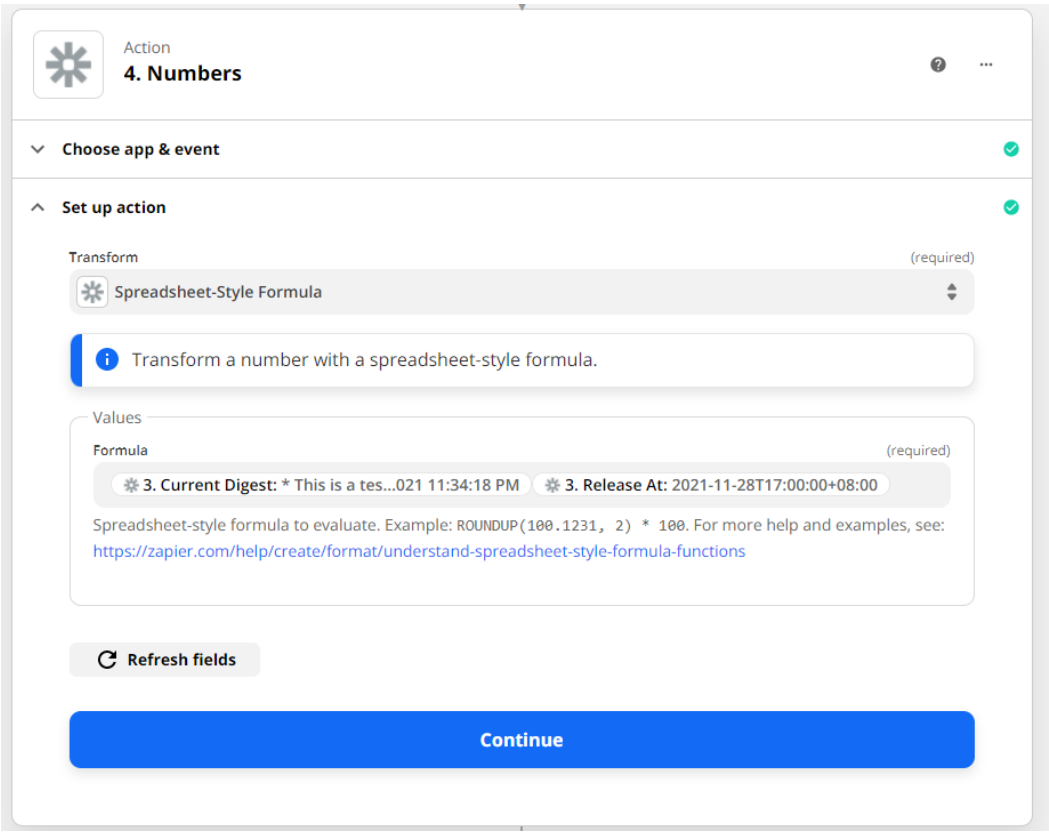
10. A successfully executed message will be received once the action has done and now you can click on close to continue.
11. In the next flow, set on the title of schedule to show and the frequency of deliver the digest. Once finished set up, click on “Continue” to move to next flow.



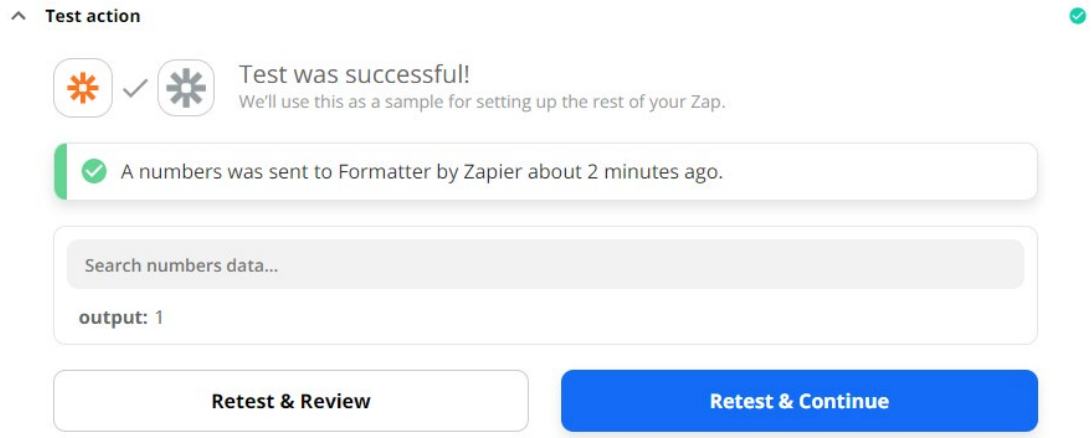
12. Later on, the summarized of preview data will be shown and click on the "Test & Review" button to test the flow whether are working. If it is working a successful message will be shown and now close the node and click on another node.



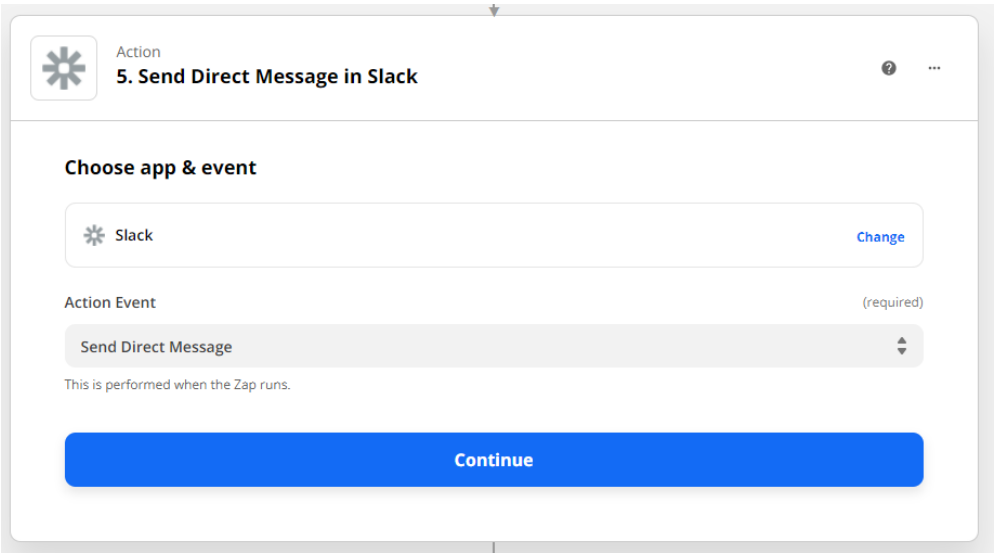
13. In the next flow select the data that would like to format to appropriate format and click Continue.



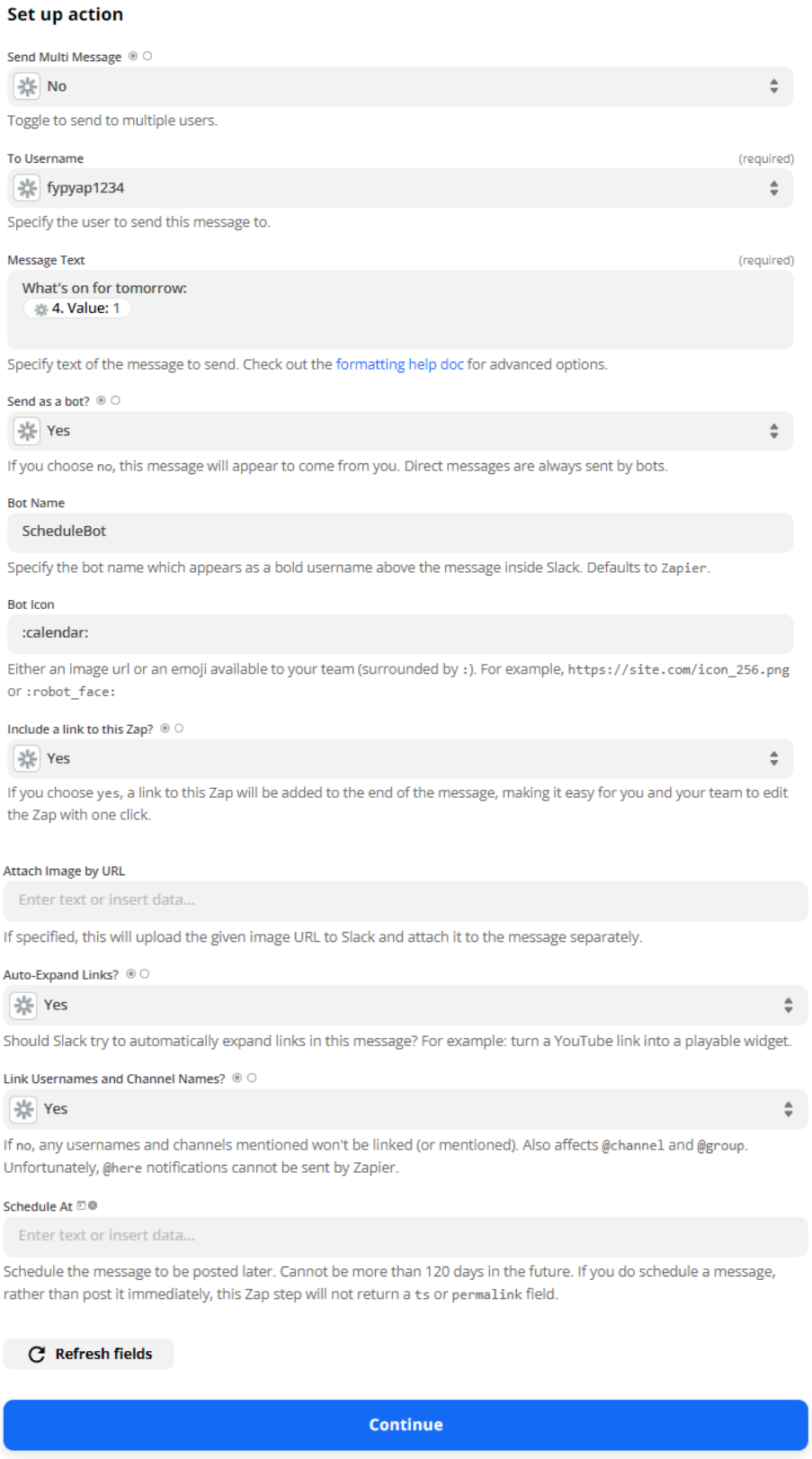
14. Then, test the flow again to see whether the node is working.



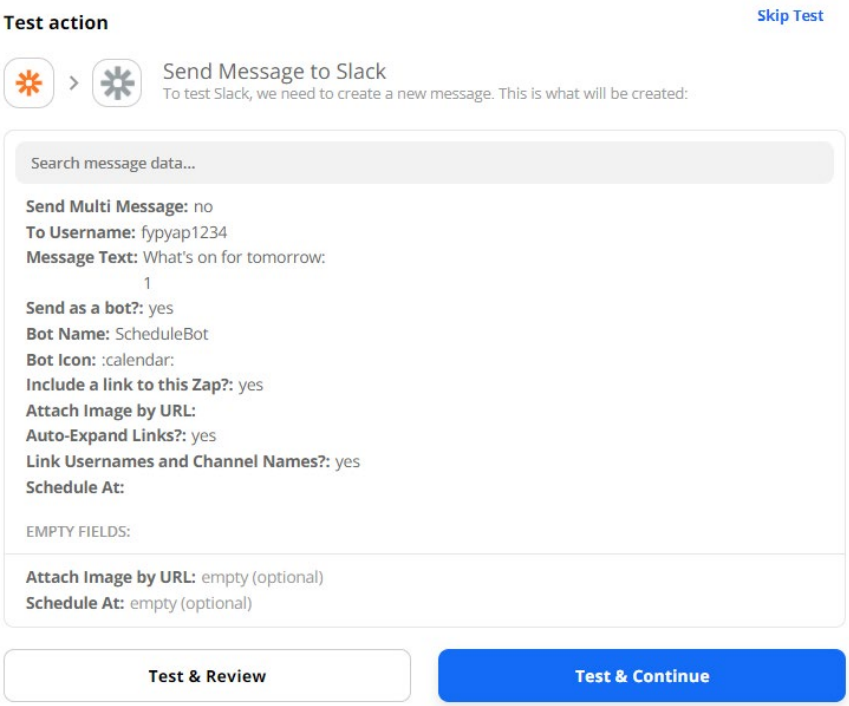
15. In the next flow sign in into your Slack account and select "Send Direct Message" in the "Action Event". Click on the continue to select the account and click "Continue again in next flow to move to next section.



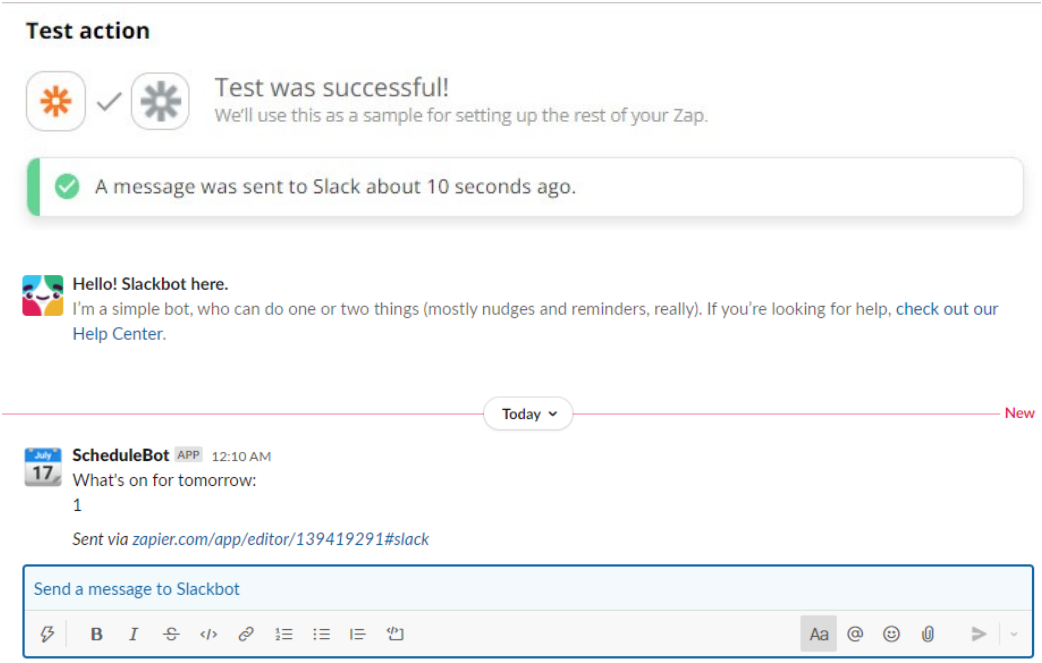
16. Now, set up all your configuration for the slack information to send out and click "Continue" to proceed.



17. Then, it will show all the preview message that will be send to slack and you may click on “Test & Review” to test your workflow.



18. Once the workflow is successfully trigger, a message that showing successfully done will shown and you will see a BOT in your Slack that showing the message you send out.



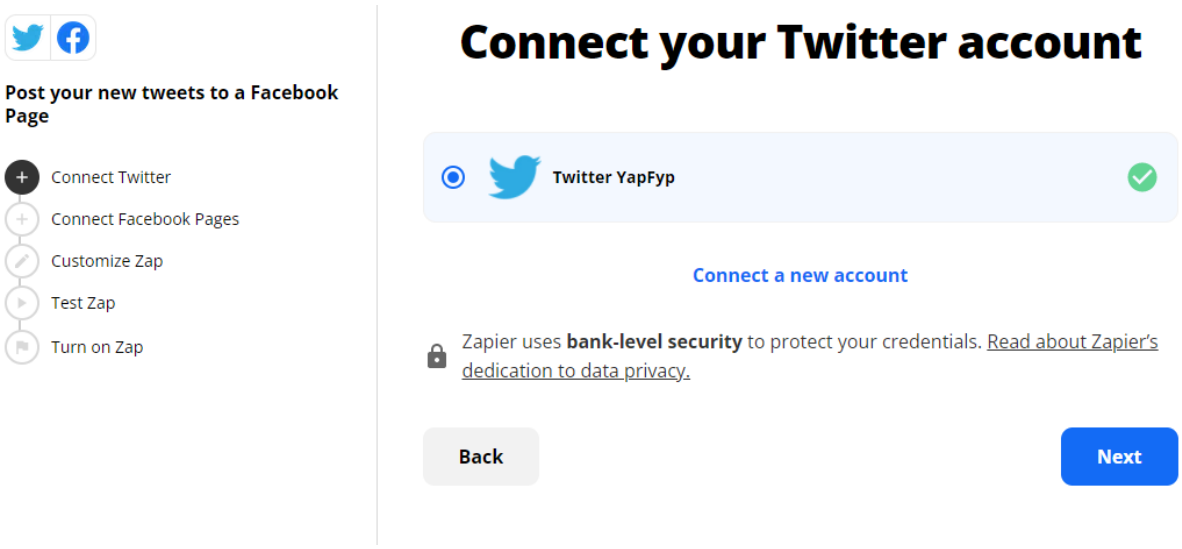
Post your new tweets to a Facebook Page

Prerequisite

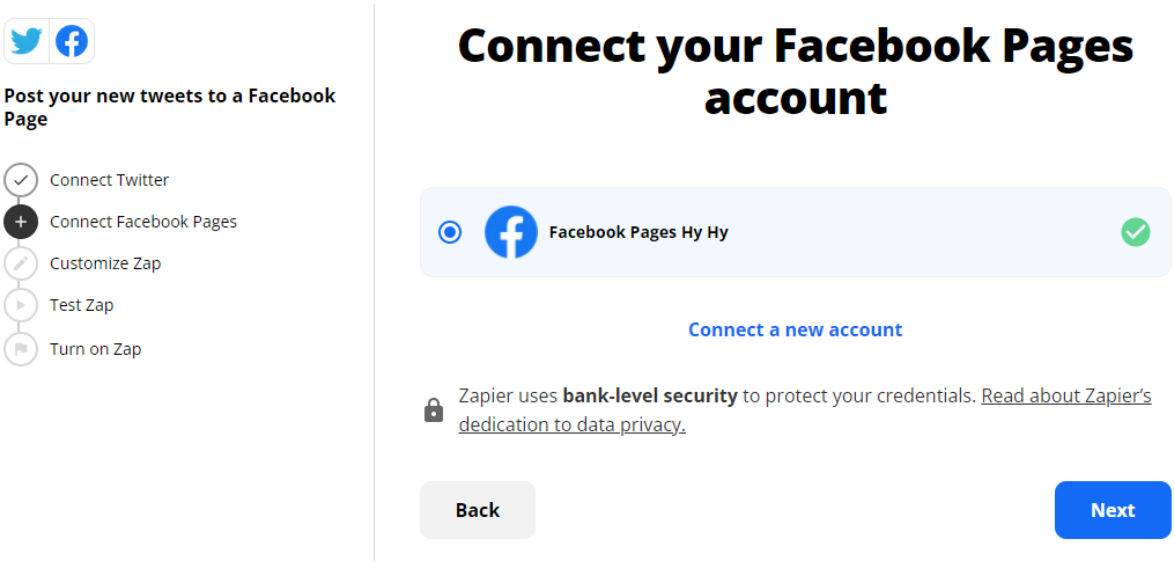
- Create a Twitter account
- Create a Facebook Account

Way to use the zap template:

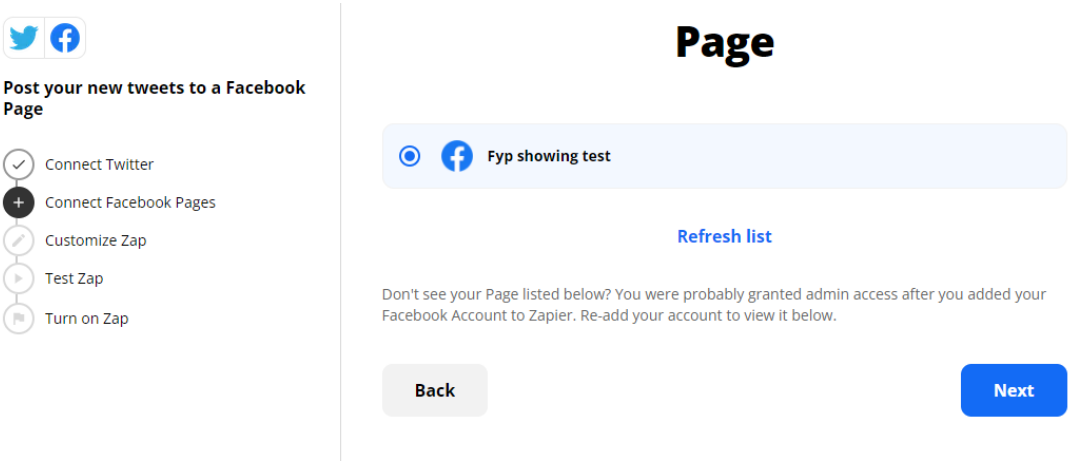
1. First and foremost, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com
2. Then, go to https://zapier.com/webintent/create-zap?template=1302
3. It will take you to the Zapier configuration pages. From there, you can begin the automation of workflow. In the first flow, sign into your Twitter account to set up the trigger of getting information, then click on "Next" to continue. Make sure that your Twitter have at least one post before to let us use in testing.



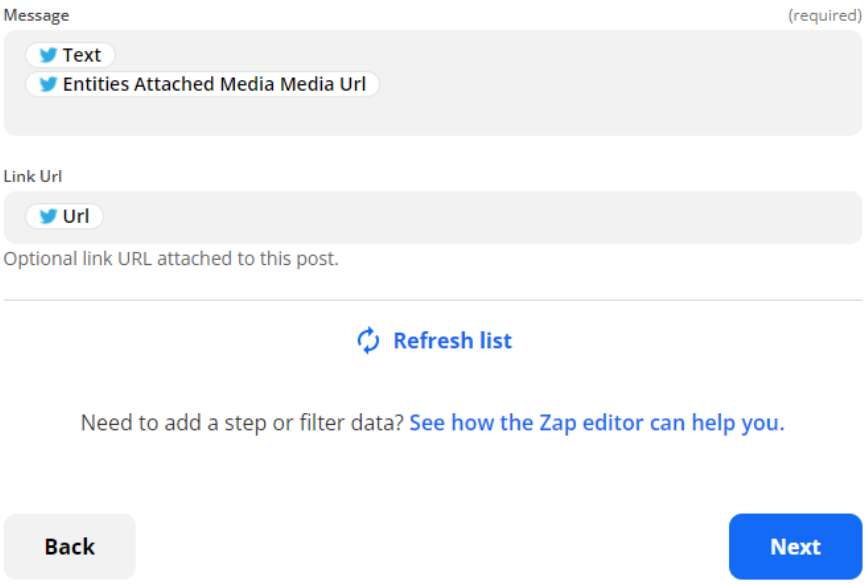
4. Then, connect to your Facebook account by signing in into your account, then click on "Next" to proceed. Before that, you must make sure that a Page is created under the Facebook account for posting. When you sign in to your account, Zapier will ask for whether which Page you required the post to posted.



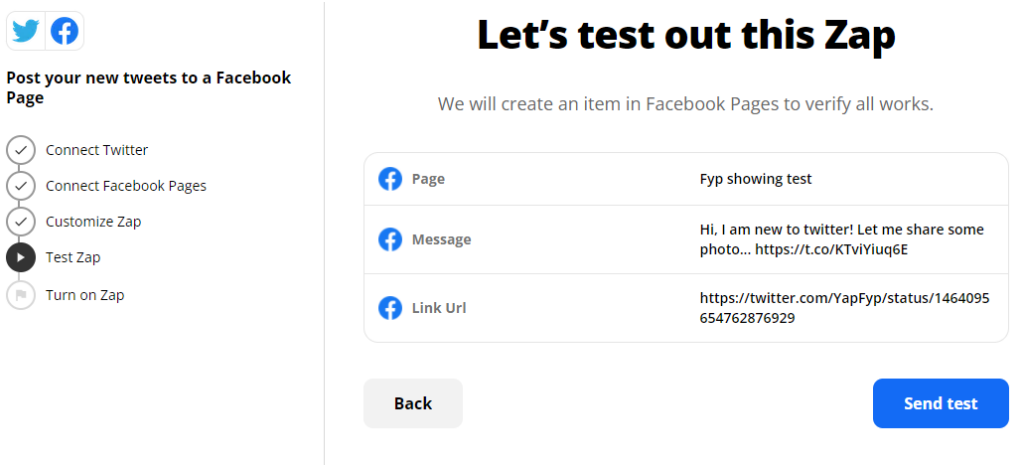
5. Next, choosing the appropriate Page to post and click on "Next"



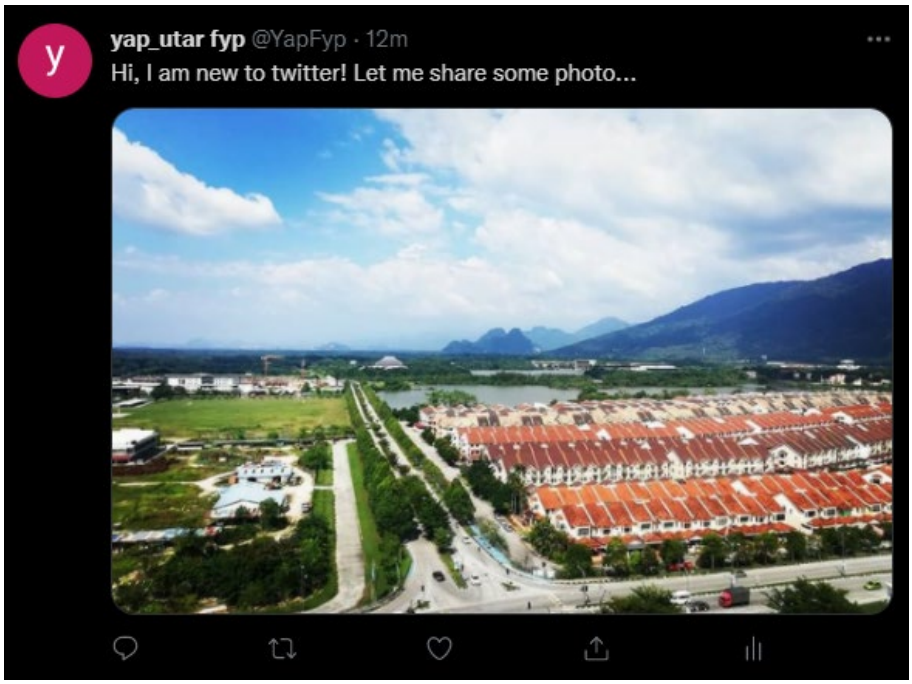
6. In the next flow, decide what message that would like to Map to the Twitter Post and the Link URL to share to Facebook Page and click on "Next" once finished set up.

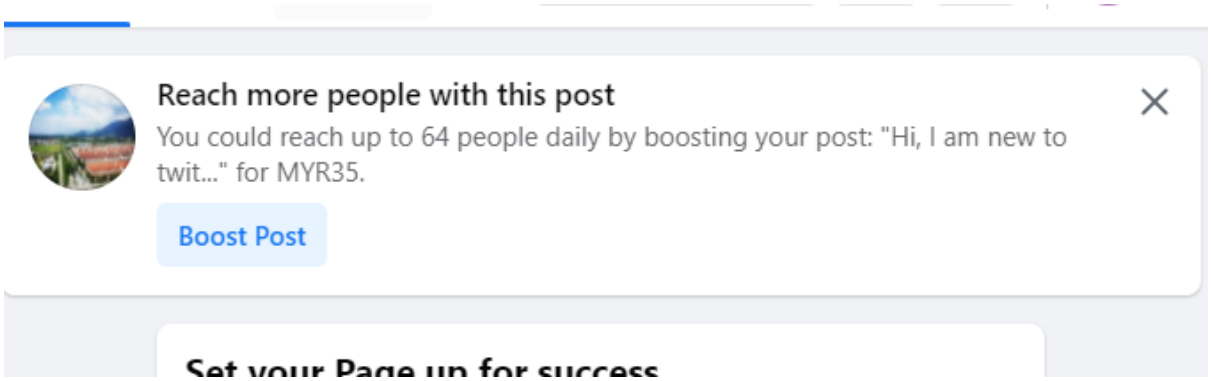


7. It will show the preview of message map that will send to Facebook for showing. If you accept with the result, the test the workflow by clicking the “Send Test” button.



8. Once successfully executed, we will receive a successful message showing and the post from Twitter will be shown in Facebook Page.





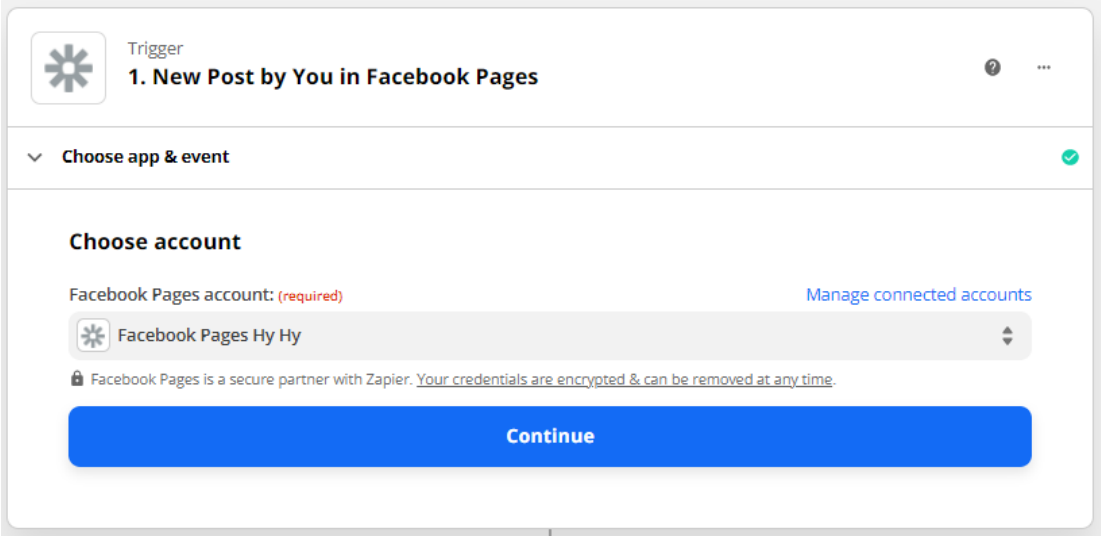
Automatically publish Facebook Pages posts to Instagram for Business

Prerequisite

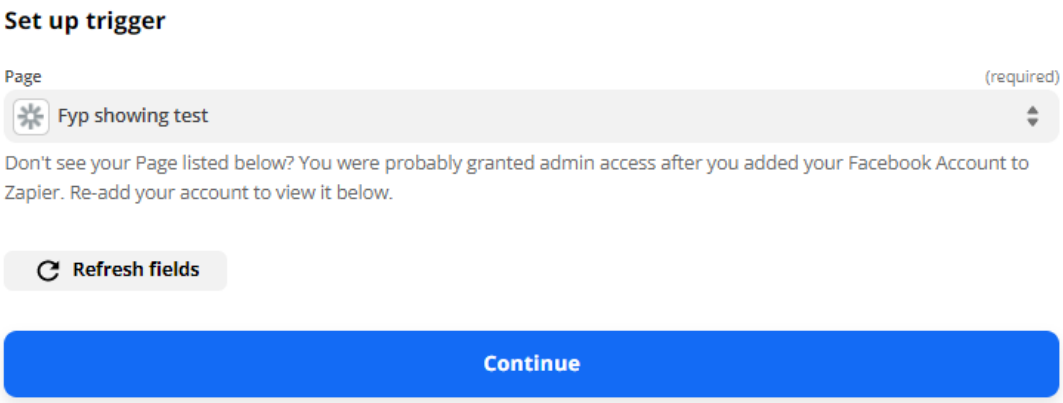
- Create a Instagram account
- Create a Facebook Account

Way to use the zap template:

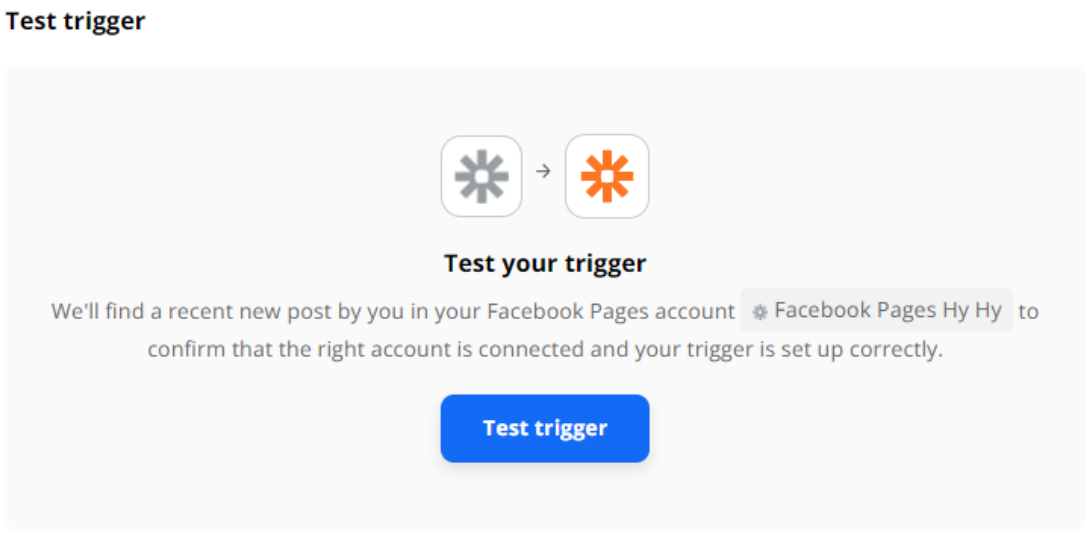
1. First and foremost, you should have an Zapier first in order to use the workflow template or functionalities that provided by registering your account at https://zapier.com/webintent/create-zap?template=231063
2. It will take you to the Zapier configuration pages. From there, you can begin the automation of workflow. In the first flow, click on the "Edit" button to start the flow configuration, then sign in into your Facebook account that containing post of Page that would like to share to Instagram. Click "Continue" to proceed.



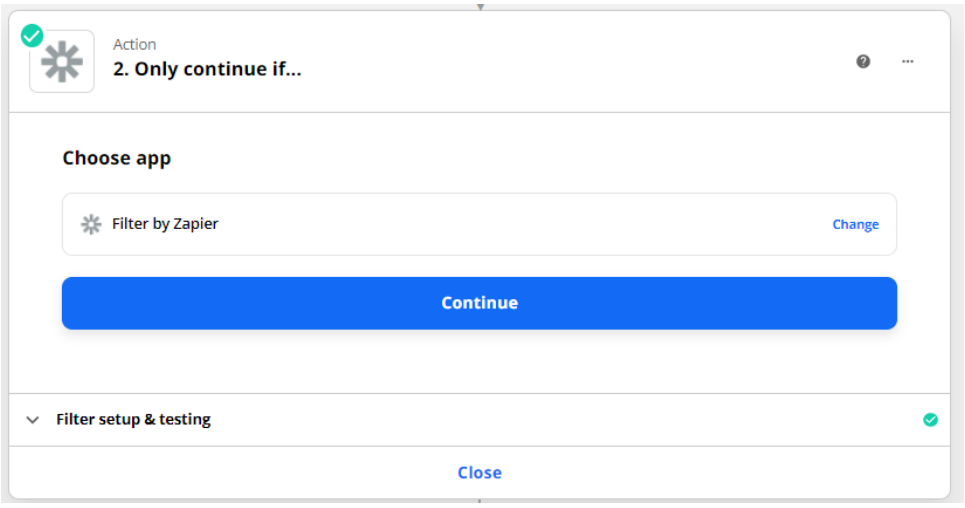
3. In the next flow, select the Page in your Facebook where you want to trigger event to get post from the Page to post to Instagram., after that click "Continue" to proceed.



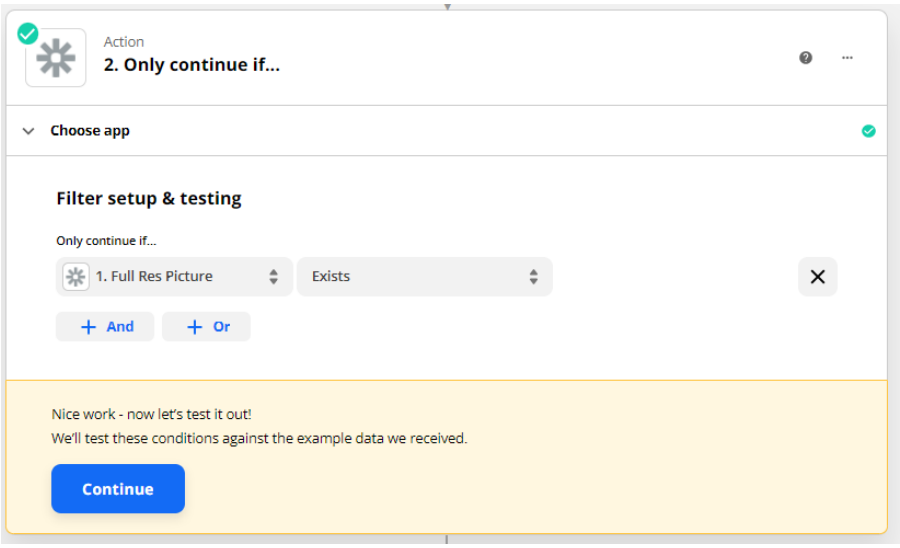
4. In the next flow, test your flow by clicking the "Test trigger" button and check whether it works. If the flow works, it will show the result that pulled, and click on "Continue" to proceed.



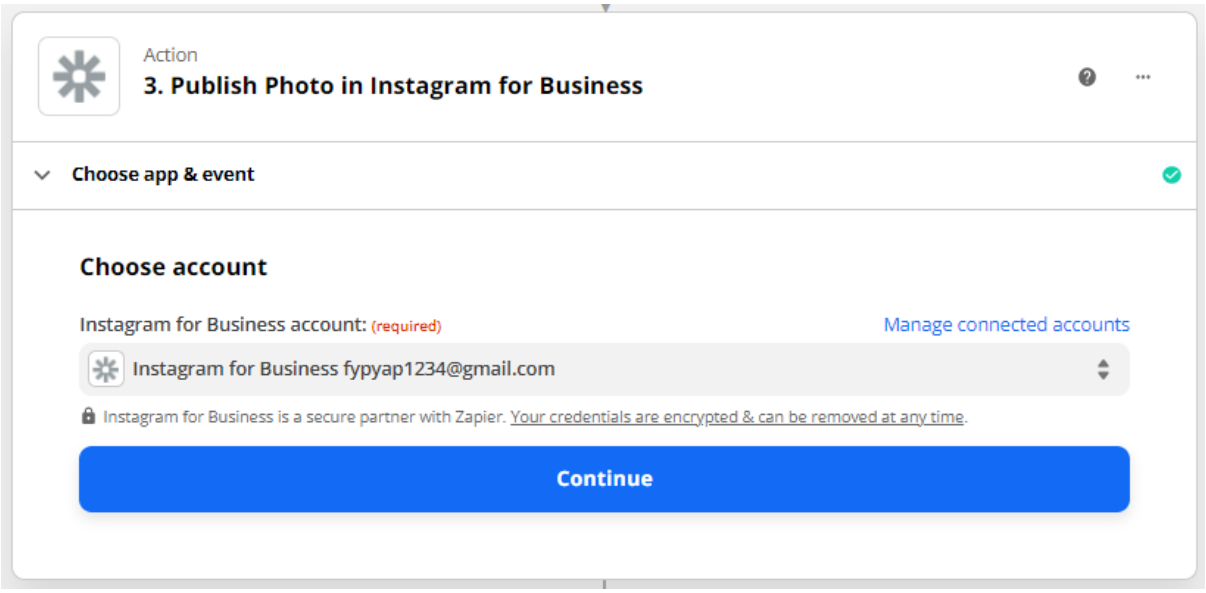
5. In the next flow, it mainly is used for adding the if statement to filter out those post that not containing image and ignore it by not posting to Instagram. In the app section, "Filter by Zapier" is chosen and click "Continue" to proceed.



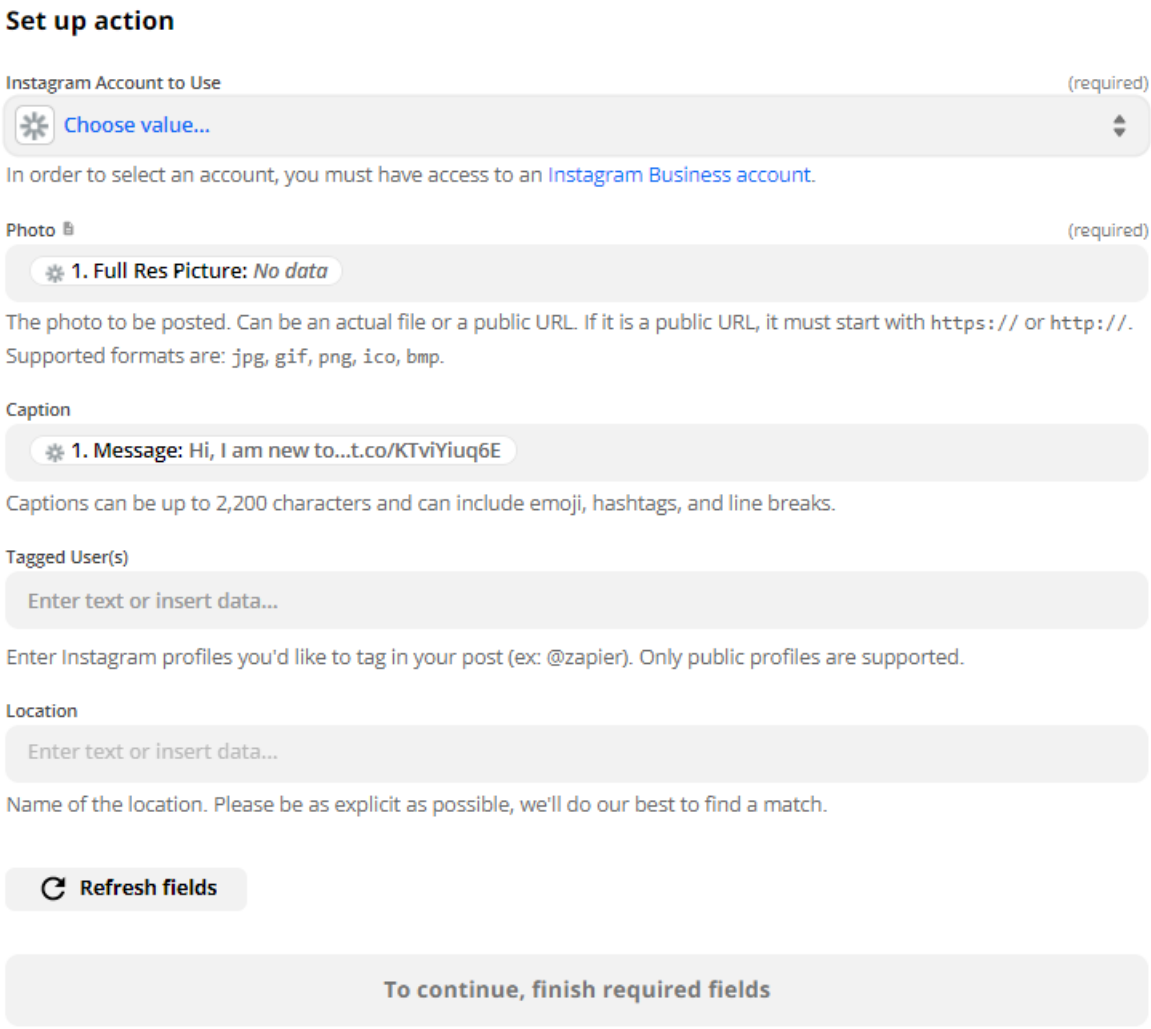
6. In the filter, we set to be checking the “Full Res Picture” whether it exist then click “Continue” to proceed.



7. Then, move into next flow and sign in into your Instagram to post your content and click on “Continue” in next.



8. In next flow, you will need to set the account you want to use to post the content and configuration how content is show, then click on Continue. Once, success the image will be shown in your Instagram account.



Zapier Simple Workflow Developing Guide

<u>Received Supplier Price Bid including Thank you Mail & Store</u>

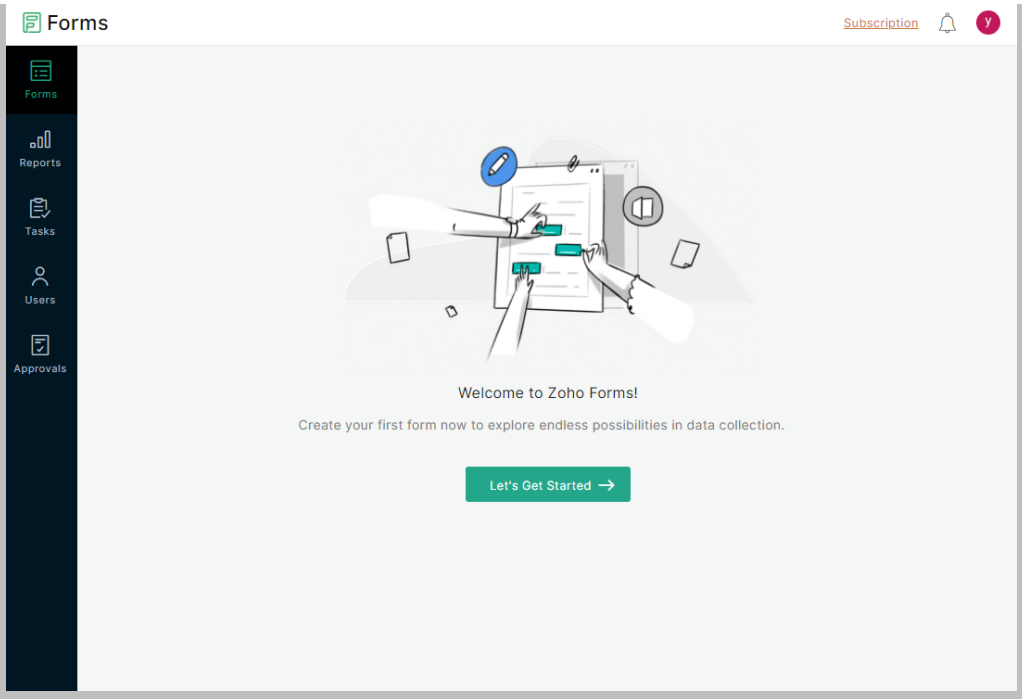
This workflow

Prerequisite

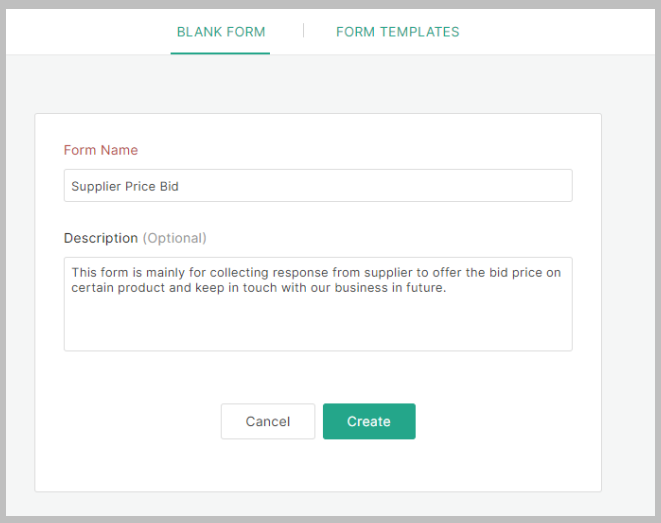
- Zoho Forms account registered with form created

Step of creating form for this workflow:

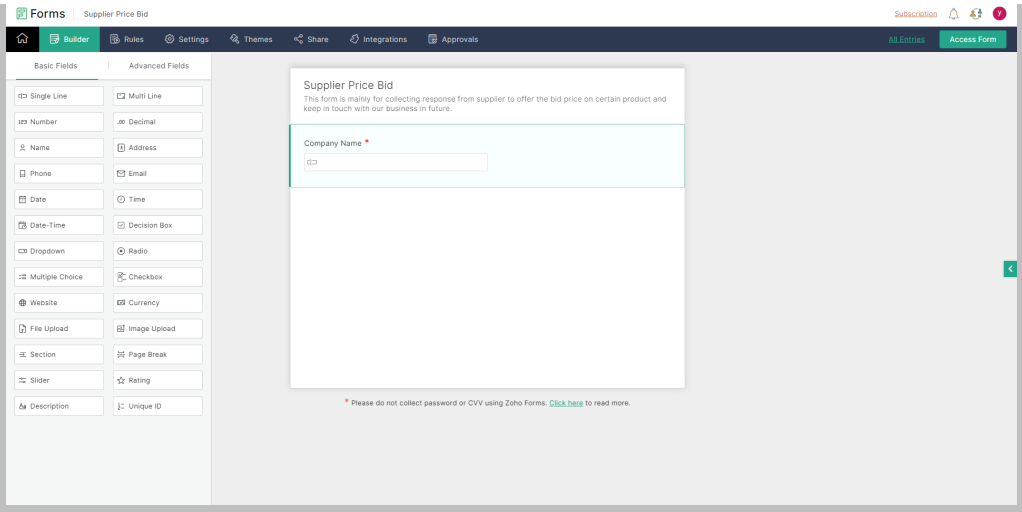
1. Once register account of Zoho Form, go to your account dashboard and click on "Let's Get Started" under the "Form" section to create our new form.



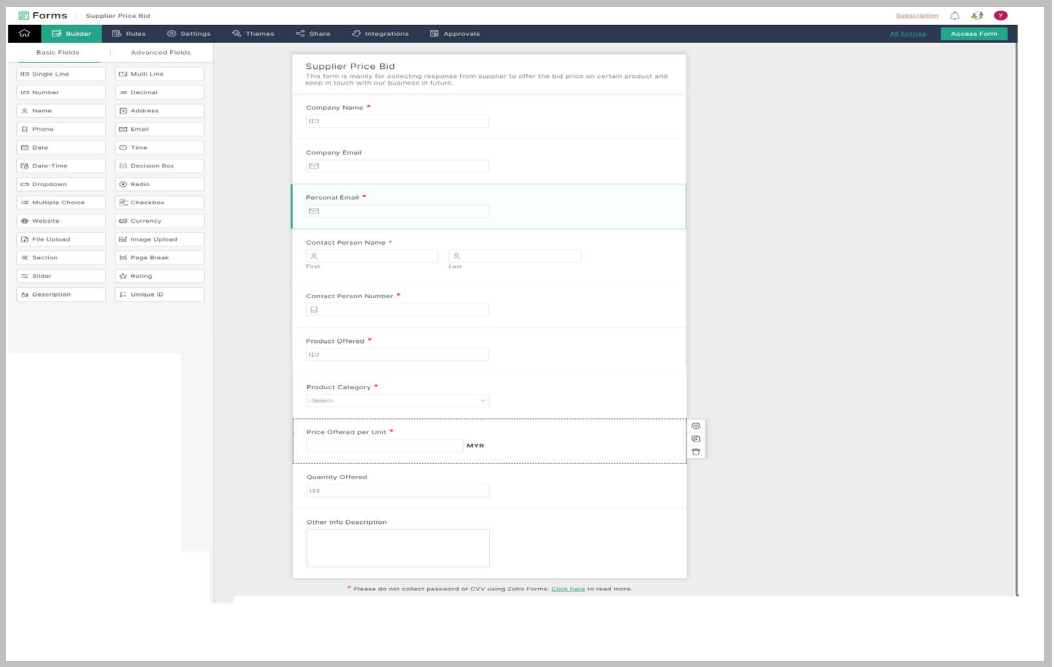
2. Under the Black Form section, give a name and some description for the form created and click on “Create” to proceed. You can also choose template at the “Form Template” section.



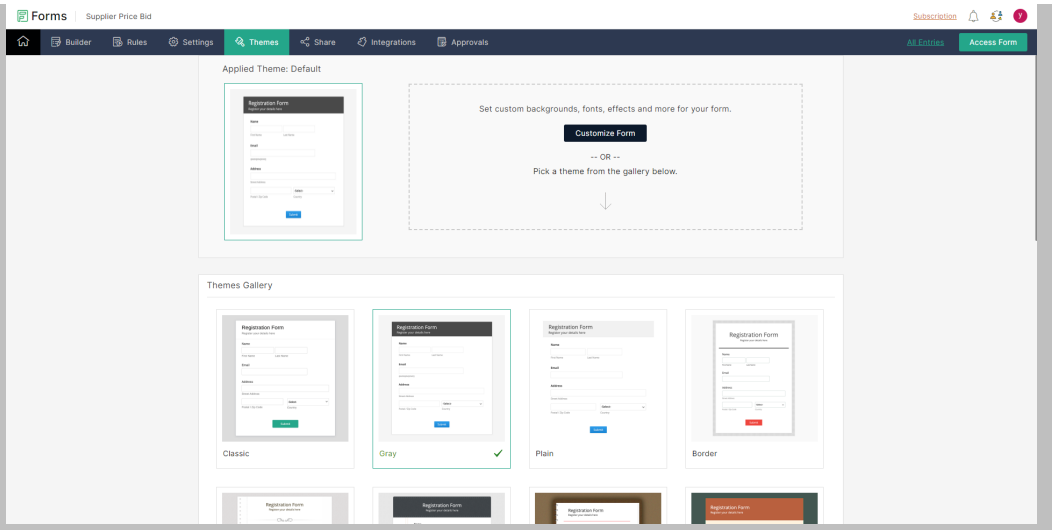
3. From now onward, drag and drop your needed information to design the form.



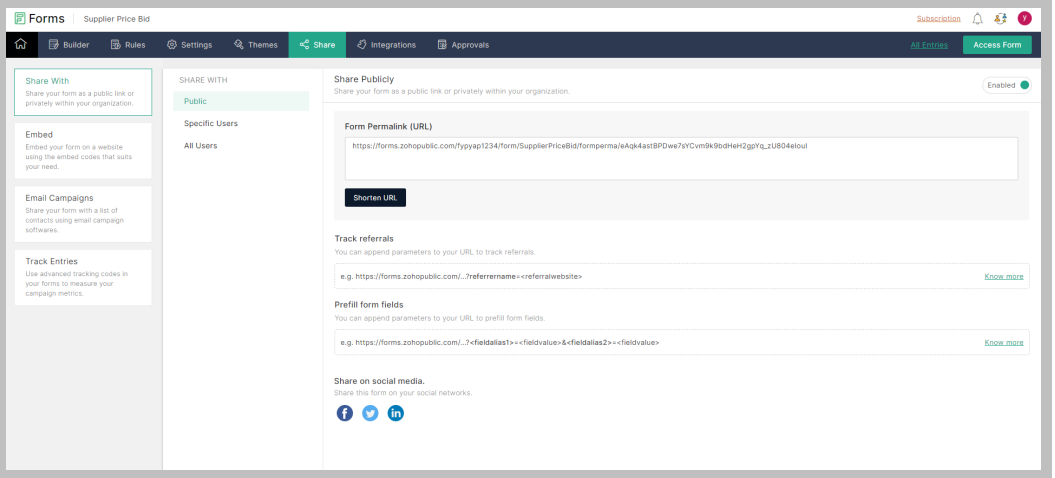
4. In this form there are few things that are needed which including company name, email, contact person email, contact person name, contact person contact number, product offered, product category, price offered per unit, quantity offered, other info description. You can also preview the form by clicking the "Access Form" button on the top right of the webpage to preview on form.



5. You can also select the design template of your form by going to the "Themes" section.



6. Lastly, go to the “Share” to get the link of your form that can be send to your supplier.

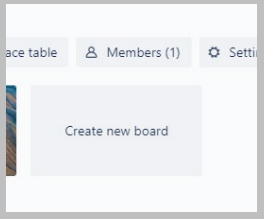


https://forms.zohopublic.com/fypyap1234/form/SupplierPriceBid/formperma/eAqk4astBPDwe7sYCvm9k9bdHeH2gpYq_zU804eIouI

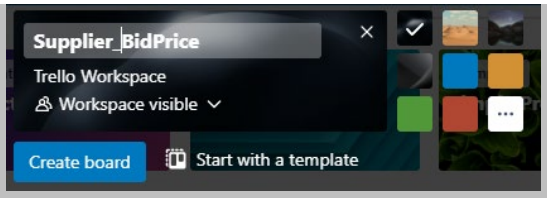
- Trello account registered with the board and list created.

Steps of creating board and list for this workflow:

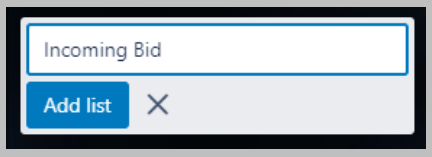
1. In the dashboard of your Trello account, click on the “Create new board” under your workspace to create a new board for storing the bid price of supplier.



2. Then give a name for your board and click on “Create board” to proceed.



3. In the board created, create a new list for storing the card created when new incoming bid.

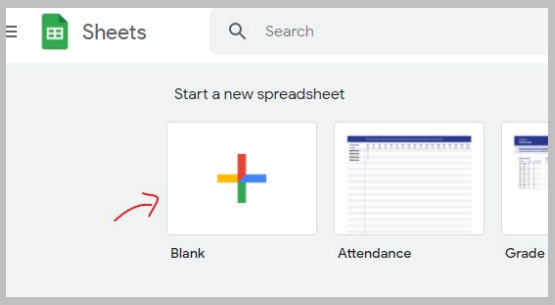


4.

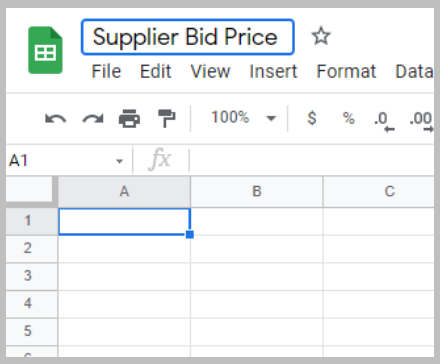
- Google sheets account registered with google sheets created.

Way to create new sheets:

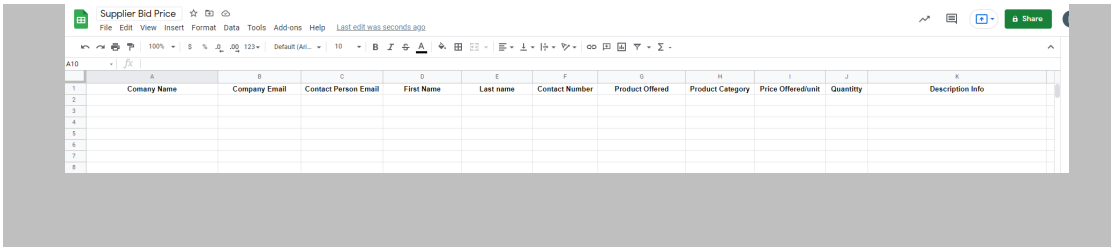
1. In your Google Sheets (https://docs.google.com/spreadsheets/), create a new Spreadsheet by clicking the “Blank”.



2. Then, rename your spreadsheet with your preferred name.



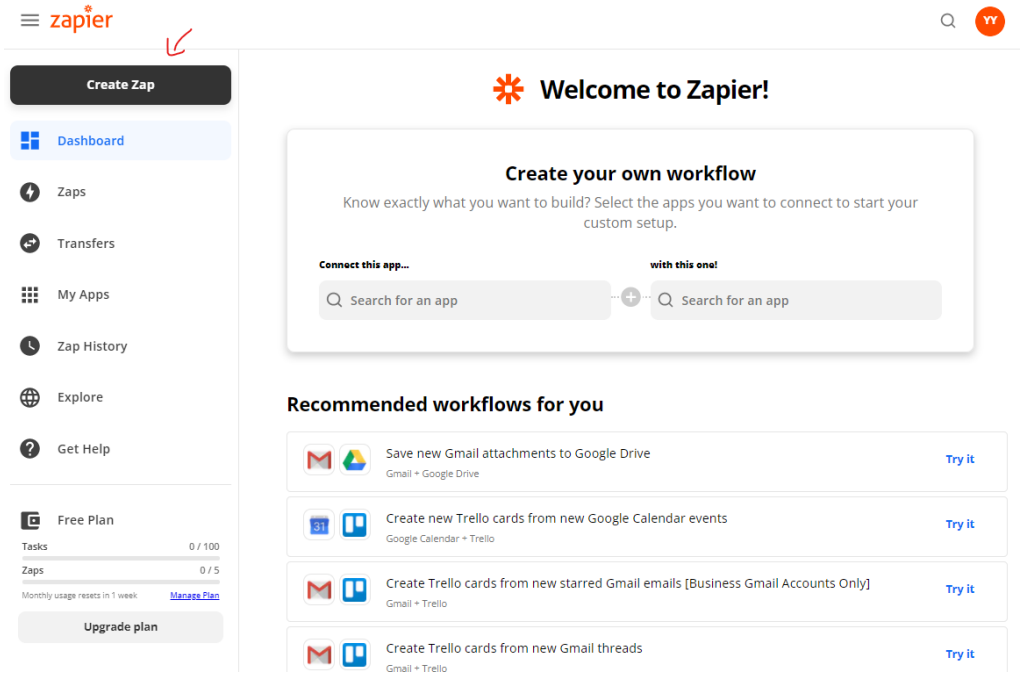
3. Later on, insert the attribute for your Google Sheets which including company name, email, contact person email, contact person name, contact person contact number, product offered, product category, price offered per unit, quantity offered, other info description, submitted date, IP address.



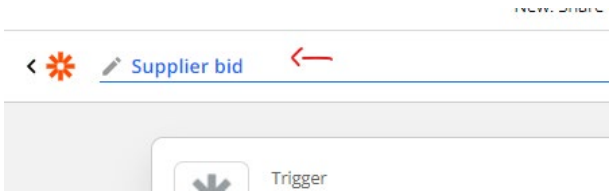
- Mailchimp account

Workflow development step:

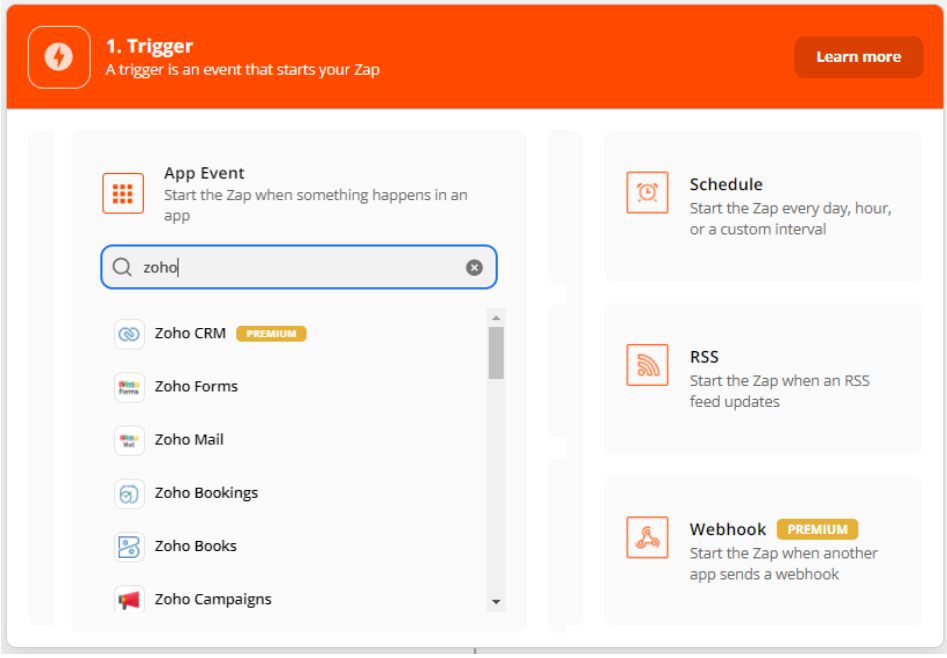
1. First of all, you should have an Zapier first in order to use the functionalities by registering your account at https://zapier.com
2. In the Zapier dashboard of your account, click on "Create Zap" to create a new workflow project for our workflow in Zapier.



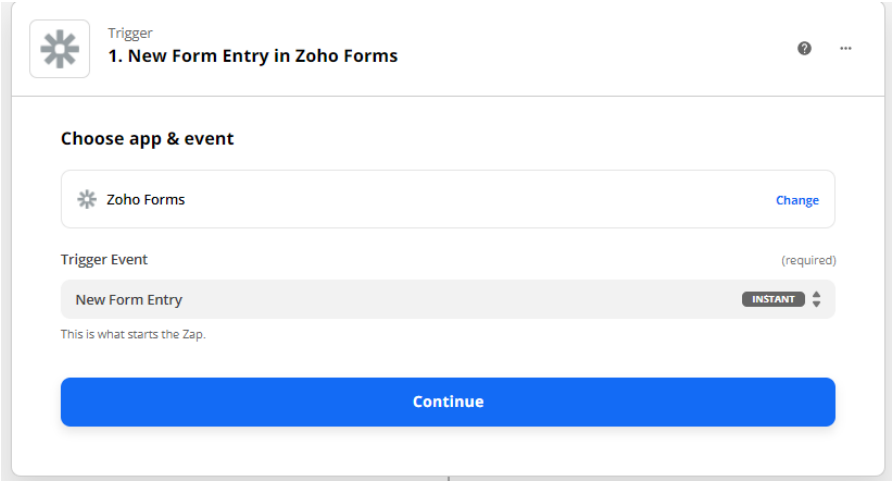
3. Once it redirected you to your workflow project, renaming your workflow (Called Zap here) as "Supplier bid".



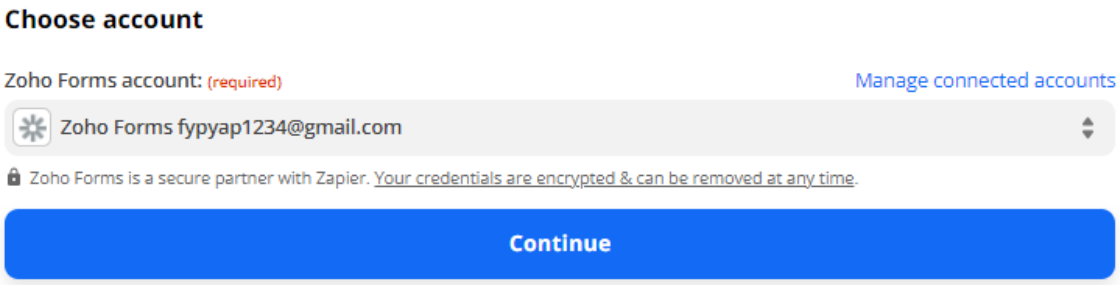
4. Then, search for "Zoho Form" as the trigger of our workflow.



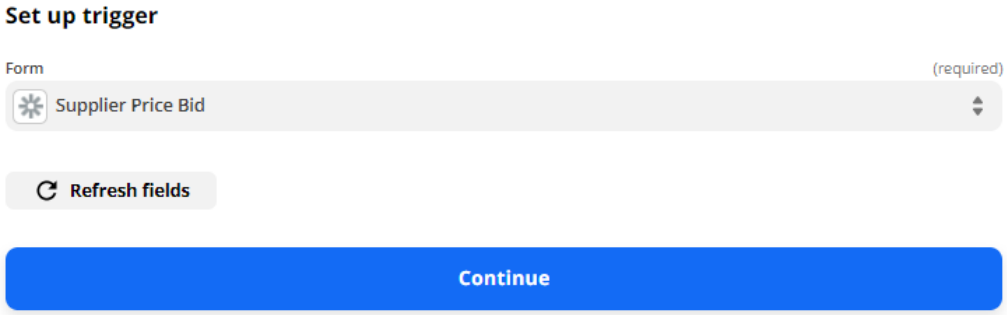
5. Then, select "New Form Entry" for the column of Trigger Event, so that the flow will be trigger once we received a new trigger form input. Click on "Continue" to proceed the setup.



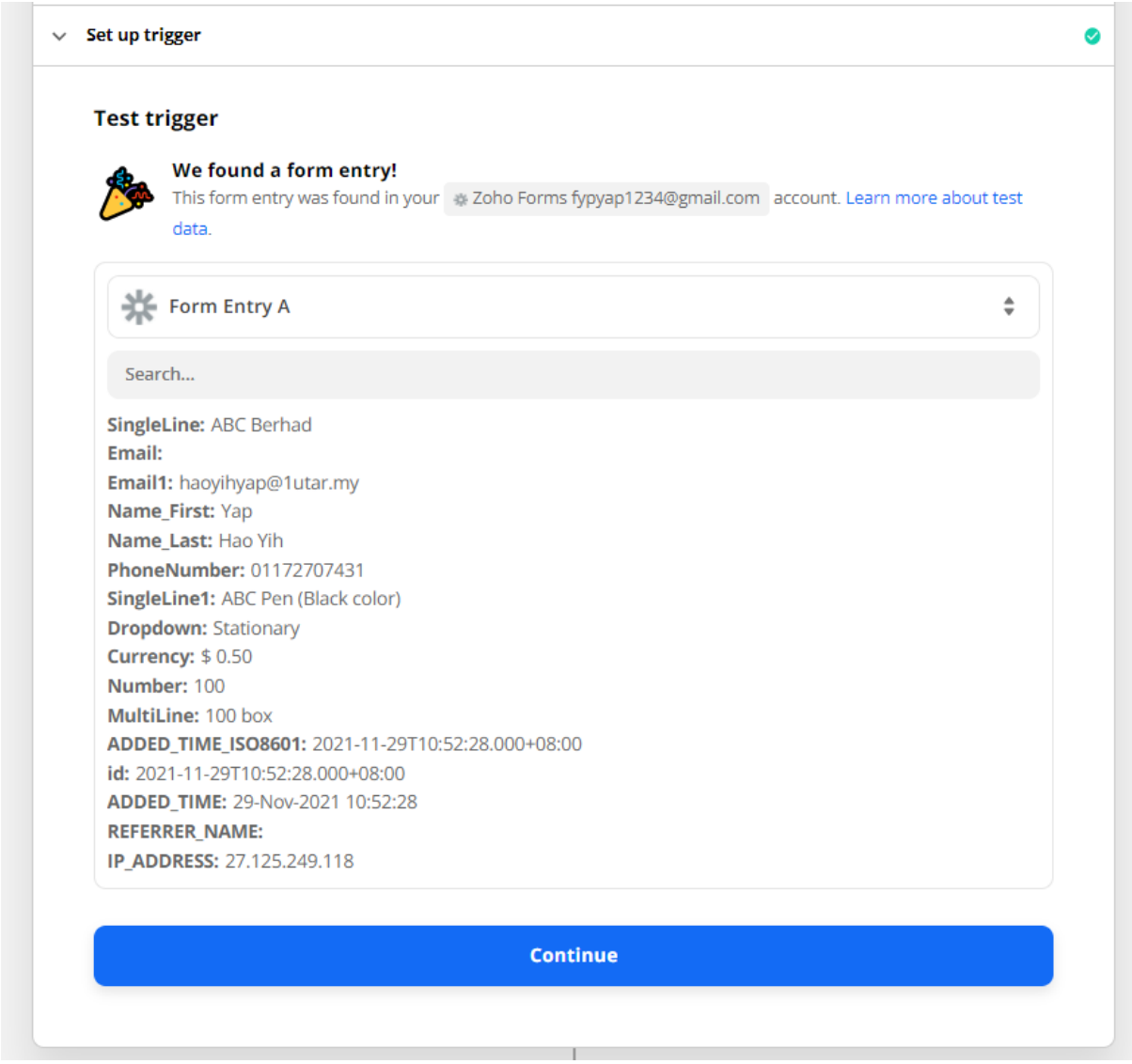
6. Next, sign in into your Zoho Forms account to authenticate the credentials API services of Zoho Forms with our workflow. During the authentication, it will need to accept the terms of authentication and just click "Accept" to proceed. Click on "Continue" to continue the workflow.



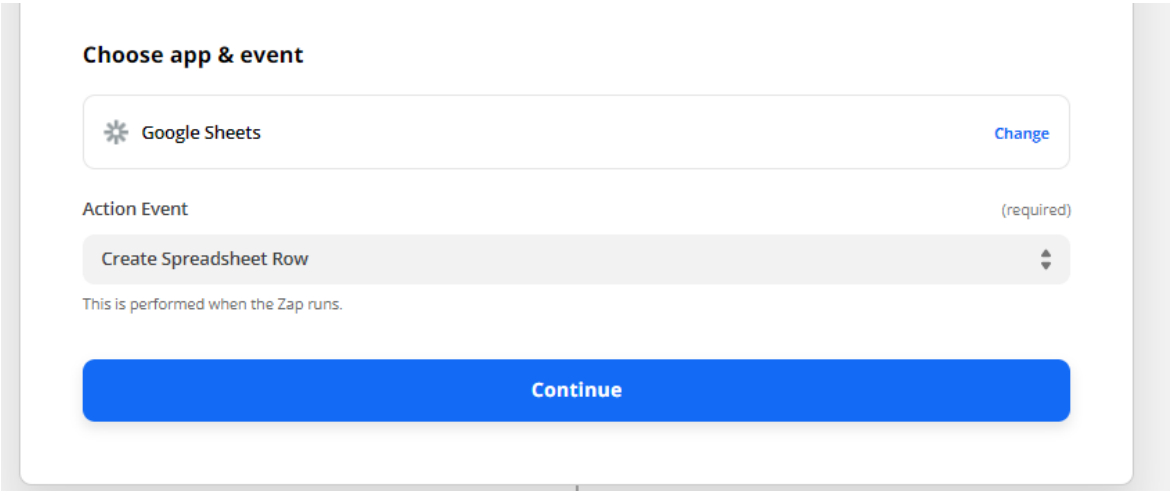
7. After that, select the form that we created previously into the "Form" section, so that Zap will monitor on changes for the particular form and click "Continue".



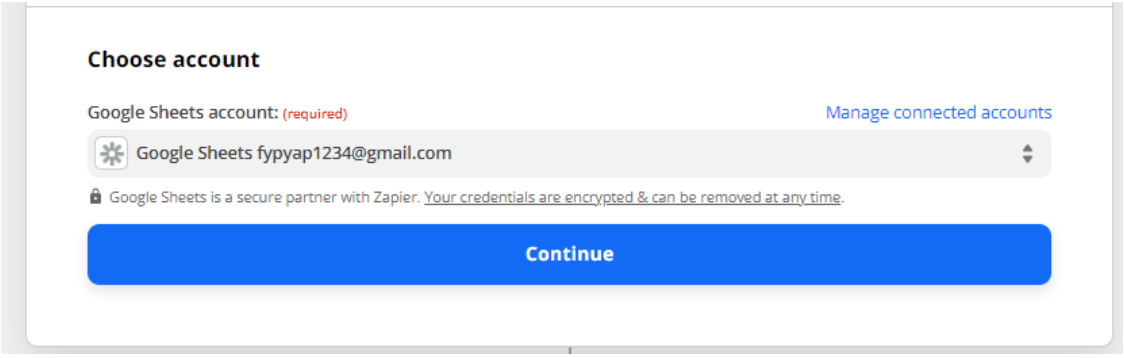
8. In the next flow, we need to submit a fake query to our Zoho Form before we stated to test the flow whether working by clicking "Test Trigger". Value of data will be fetch once the form trigger successfully.



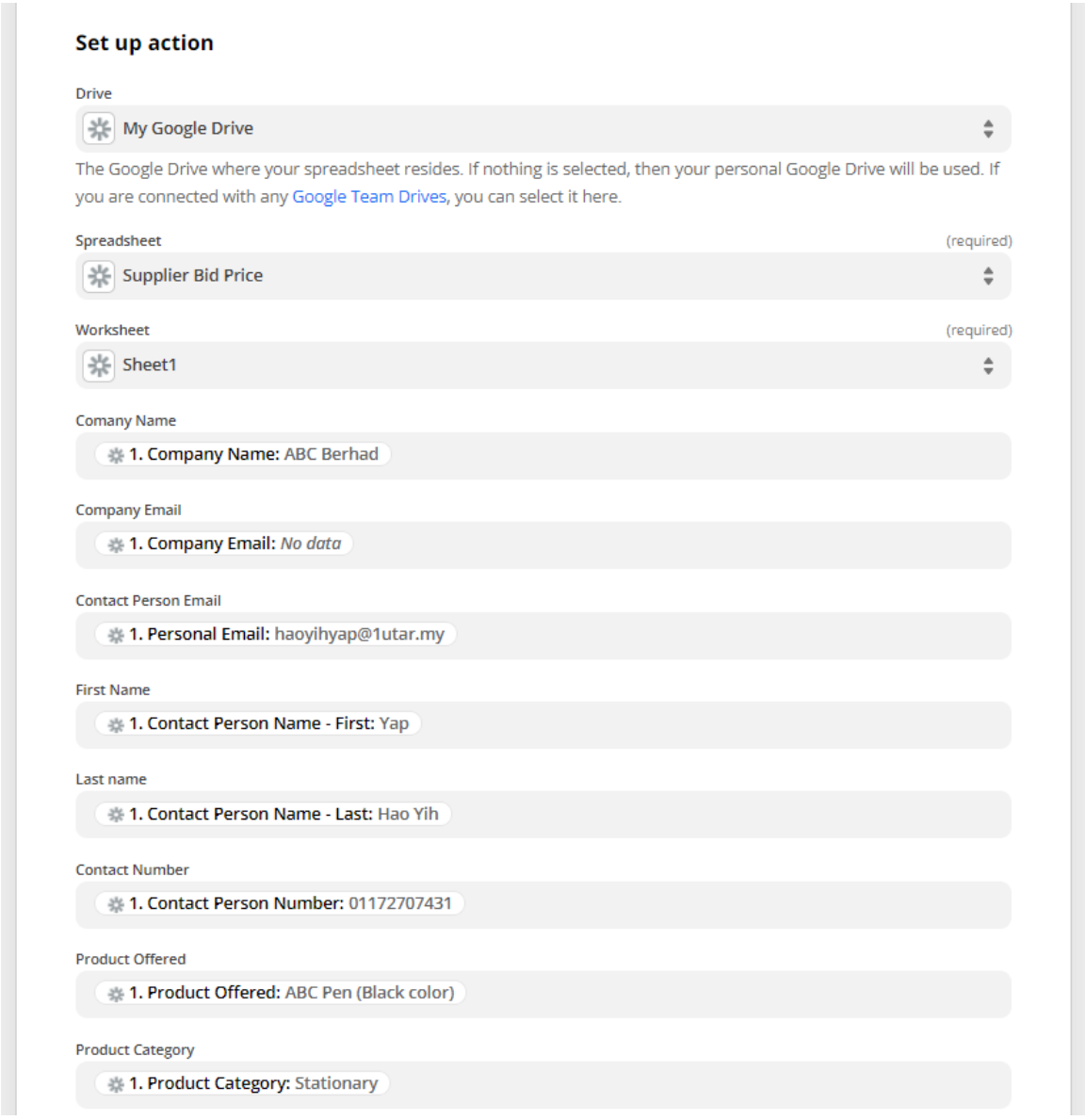
9. In the next action created search for “Google Sheets” as our next flow, then select “Create Spreadsheet Row” for the “Action Event” to trigger the node to create new row for storing the data. Click on “Continue” to proceed.

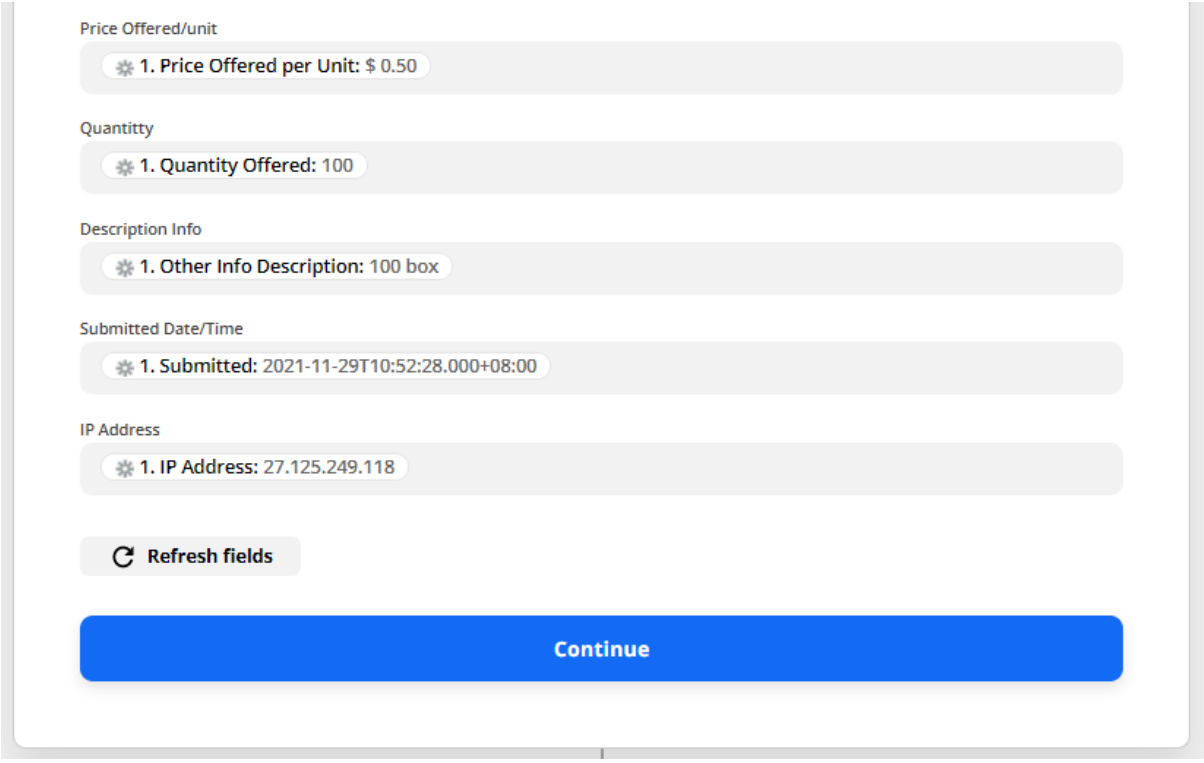


10. In the next section, connect Zap to your Google Sheets account and accept all the term of integration to proceed, then click “Continue” to move to next flow.

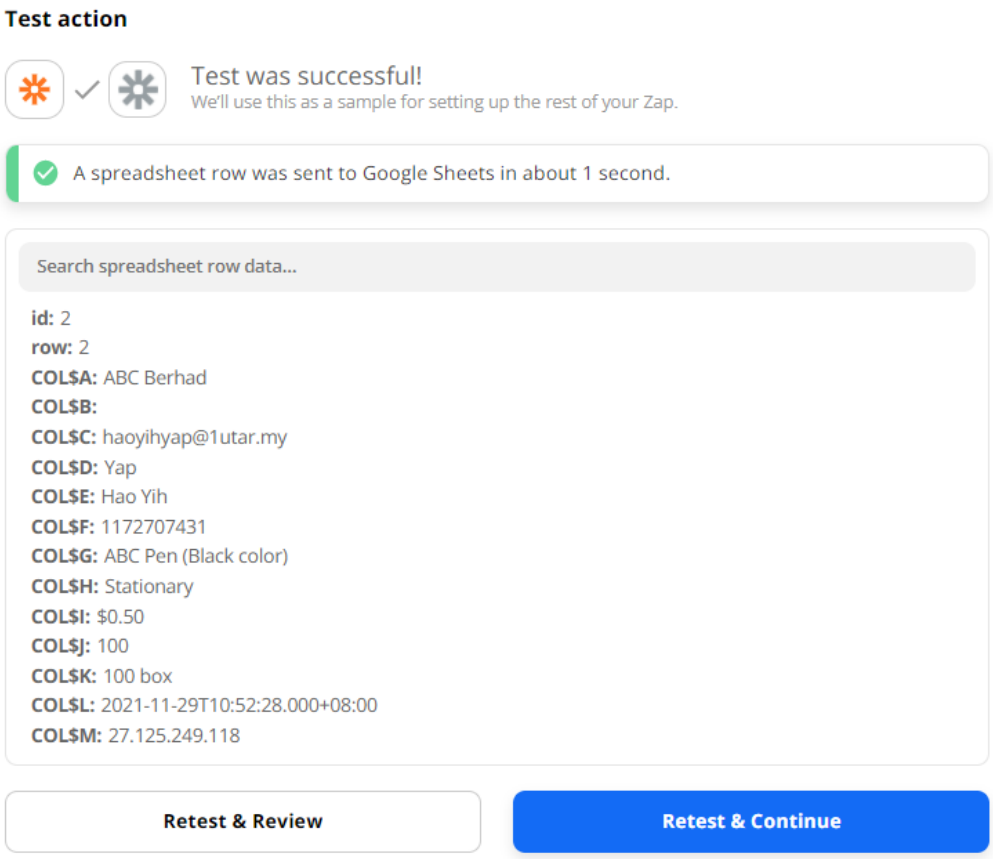


11. In the next flow, choose the appropriate data to be inserted into each field and select the drive that you used as well as the spreadsheet name and worksheet name. After finished the insertion of data collect from form to the spreadsheet, click on “Continue”.

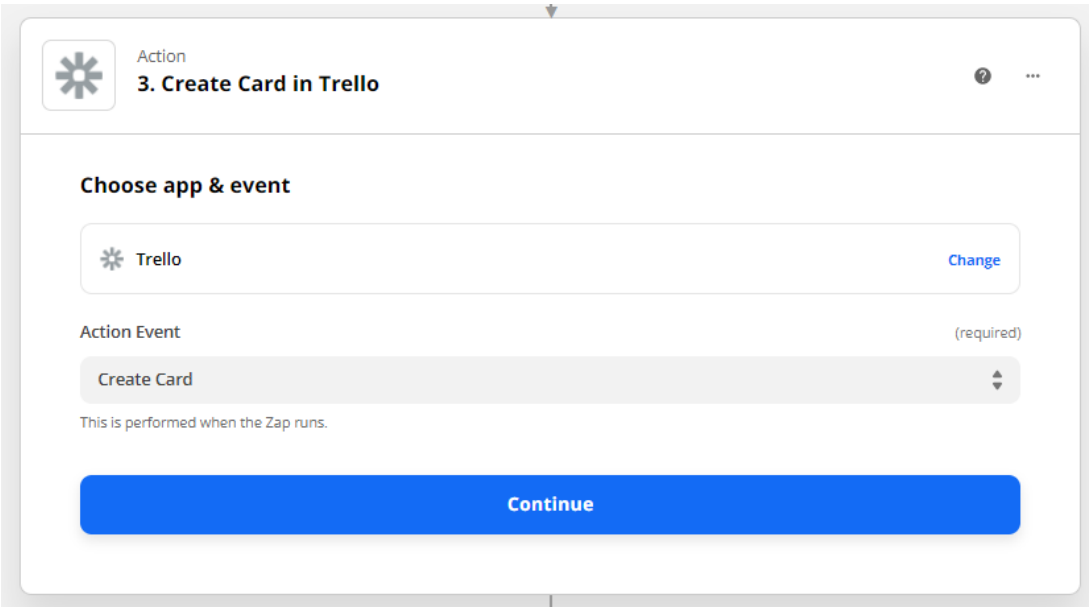




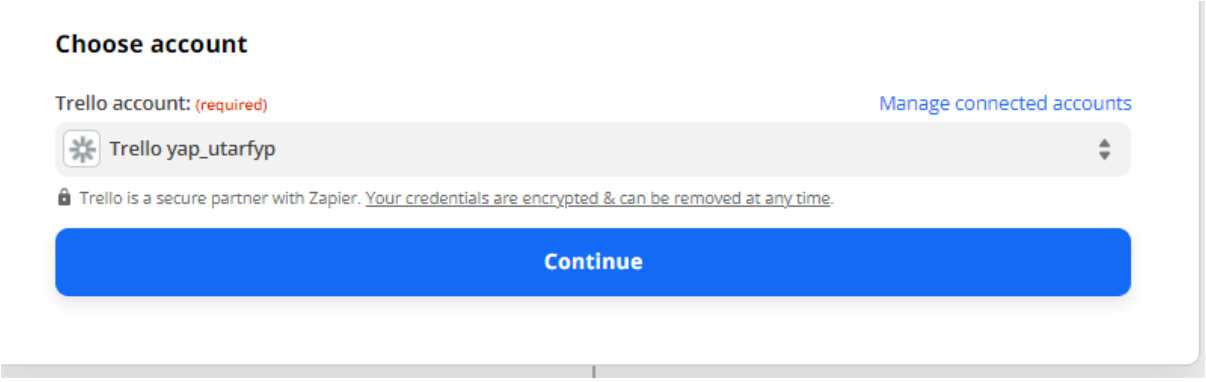
12. Then, Zap will show the preview of data inserted to the spreadsheet and now click on "Test & Review" to test the workflow functionality. Once successfully executed a message will be shown.



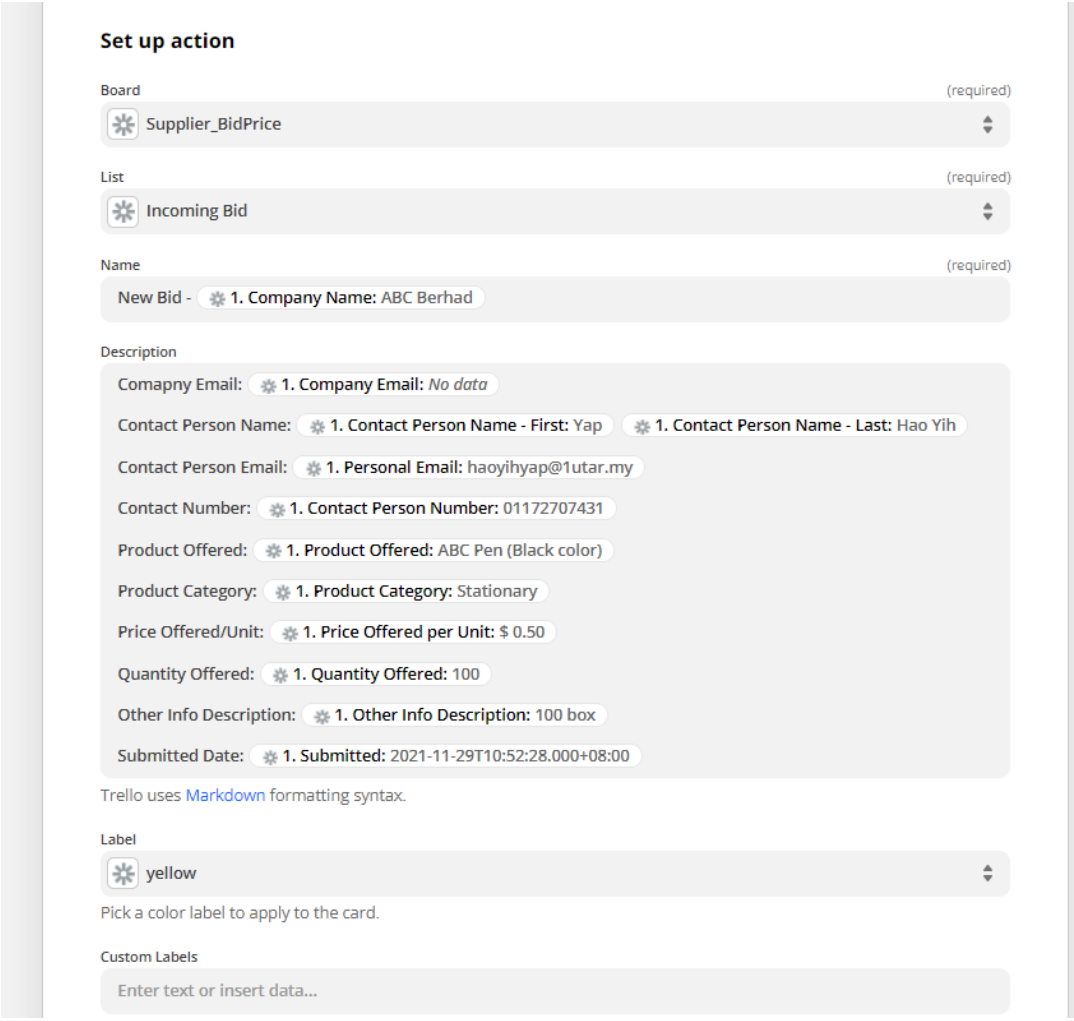
13. The next flow node that needs to created is “Trello” which allowed us to preview all the bid in one pages that are known as “KanBan” and select “Create Card” for our “Action event” section that will trigger when workflow run and then click “Continue”



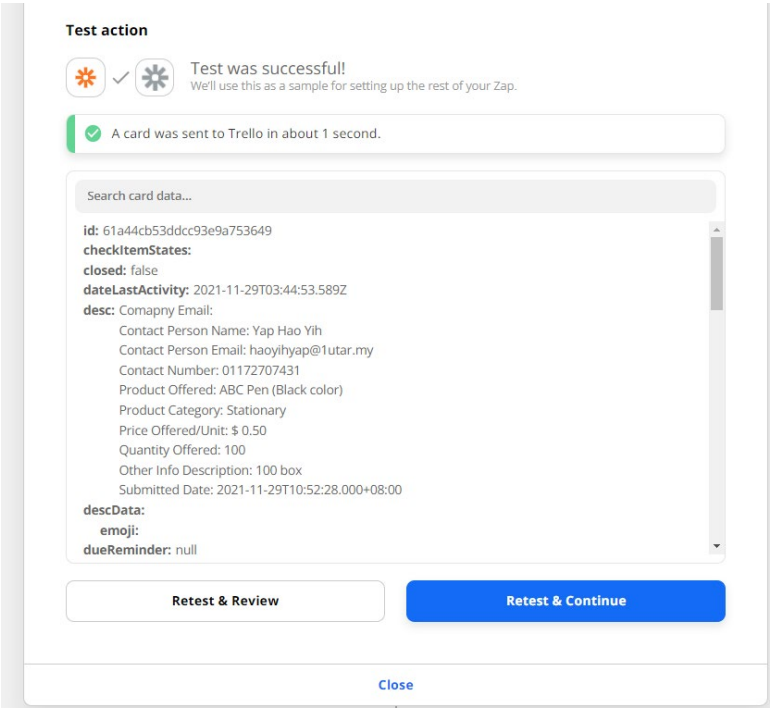
14. Connect the Trello credentials to your account in the next flow and click “Continue” to finish the current flow setup.



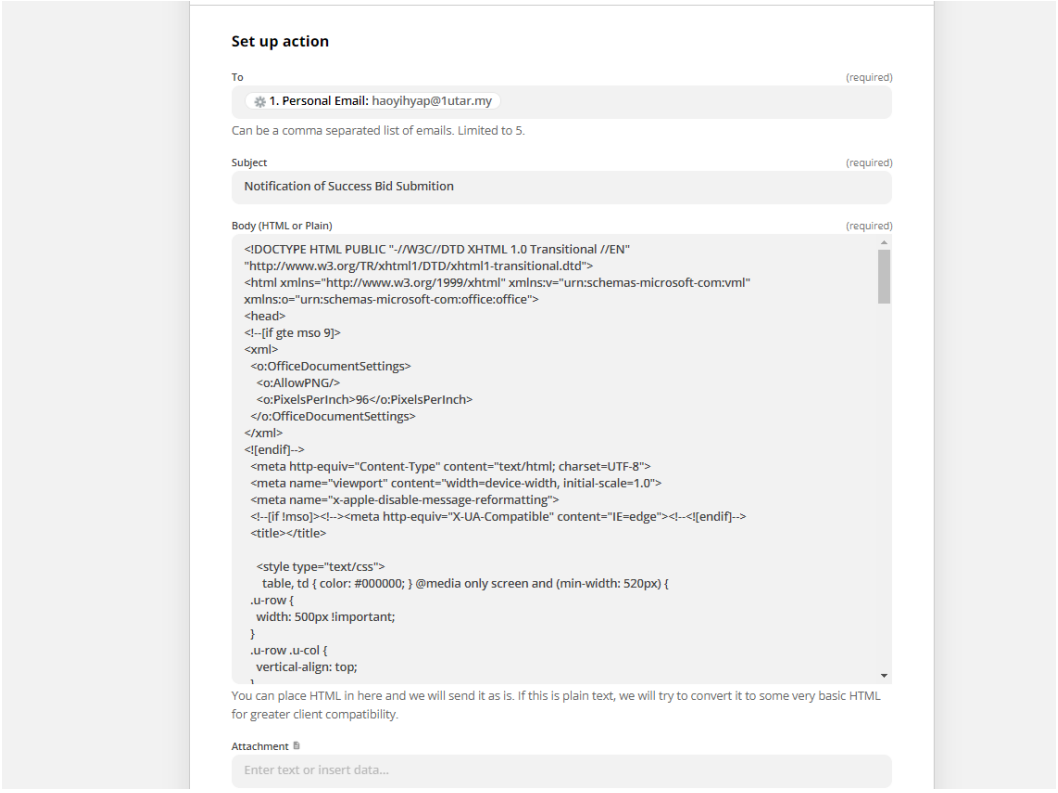
15. Then select the correct board and list to insert the value, then insert the message info you want to be presented in your card. You can also set the label colour and other configuration based on your preferences, else just leave it and click “Continue” to proceed.



16. Next step will be showing the preview info of data to be sent to the "Trello" and you need to test the flow by clicking the "Test & review" button to test the flow.



17. In the last step we would like to send a thanks mail to the person who send in the bid submission. Then insert the person email that you would like to send and content in plain or html to be send to the user for thank you its submission. Then, click “Continue” to proceed.



BODY INSERT:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD XHTML 1.0 Transitional //EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xmlns:v="urn:schemas-
microsoft-com:vml" xmlns:o="urn:schemas-microsoft-com:office:office">
<head>
<!--[if gte mso 9]>
<xml>
  <o:OfficeDocumentSettings>
    <o:AllowPNG/>
    <o:PixelsPerInch>96</o:PixelsPerInch>
  </o:OfficeDocumentSettings>
</xml>
<![endif]-->
  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <meta name="x-apple-disable-message-reformatting">
  <!--[if !mso]><!--><meta http-equiv="X-UA-Compatible"
content="IE=edge"><!--<![endif]-->
  <title></title>

    <style type="text/css">
      table, td { color: #000000; } @media only screen and (min-width:
520px) {
  .u-row {
    width: 500px !important;
  }
  .u-row .u-col {
    vertical-align: top;
  }

  .u-row .u-col-100 {
    width: 500px !important;
  }

}

@media (max-width: 520px) {
  .u-row-container {
    max-width: 100% !important;
    padding-left: 0px !important;
    padding-right: 0px !important;
  }
  .u-row .u-col {
    min-width: 320px !important;
    max-width: 100% !important;
    display: block !important;
  }
  .u-row {
```

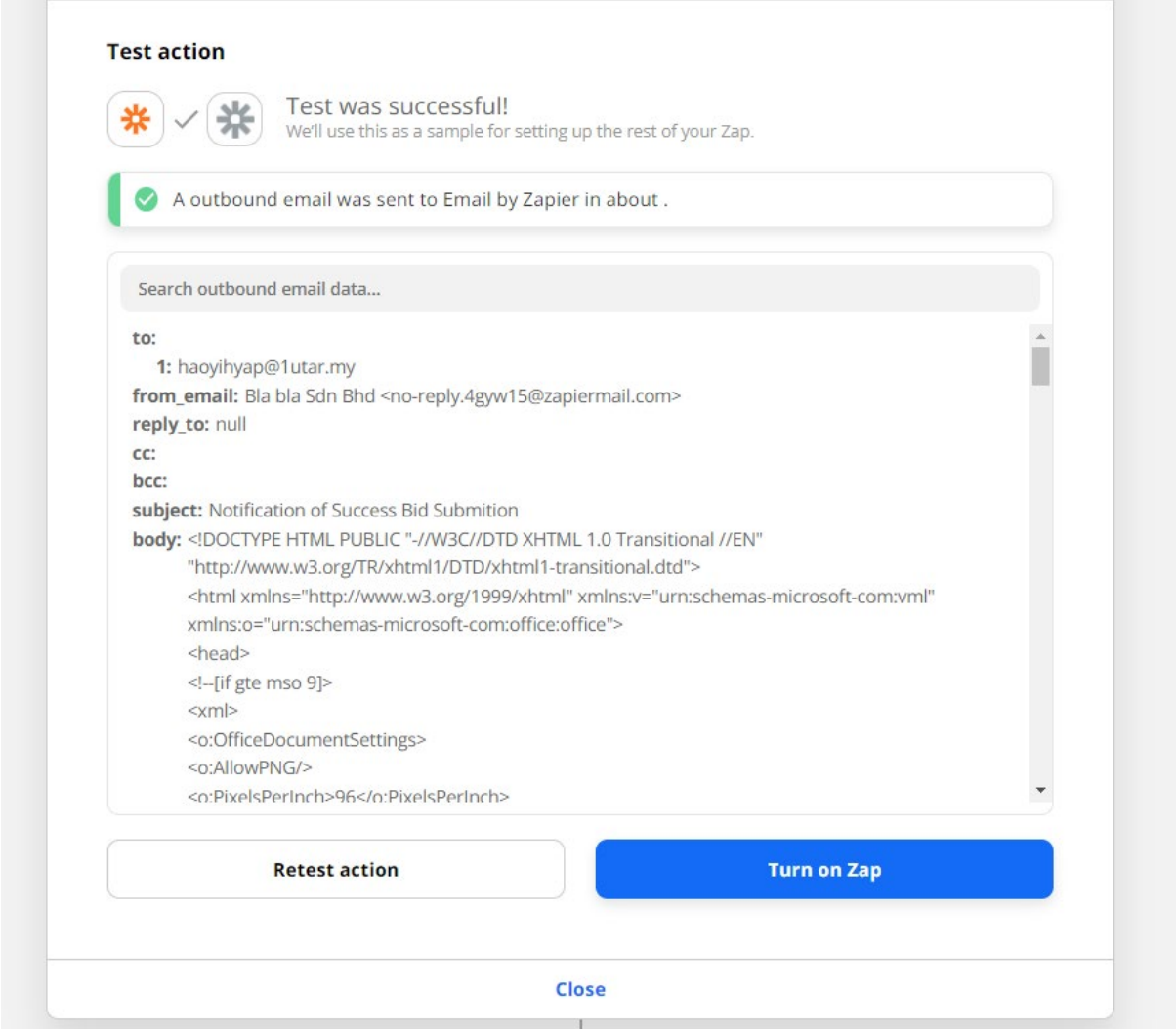
```
    width: calc(100% - 40px) !important;
  }
  .u-col {
    width: 100% !important;
  }
  .u-col > div {
    margin: 0 auto;
  }
}
body {
  margin: 0;
  padding: 0;
}

table,
tr,
td {
  vertical-align: top;
  border-collapse: collapse;
}

p {
  margin: 0;
}

.ie-container table,
.mso-container table {
  table-layout: fixed;
}

* {
  line-height: inherit;
}

a[x-apple-data-detectors='true'] {
  color: inherit !important;
  text-decoration: none !important;
}

</style>



</head>

<body class="clean-body u_body" style="margin: 0;padding: 0;-webkit-text-
size-adjust: 100%;background-color: #e7e7e7;color: #000000">
  <!--[if IE]><div class="ie-container"><![endif]-->
```

```
  <!--[if mso]><div class="mso-container"><![endif]-->
  <table style="border-collapse: collapse;table-layout: fixed;border-
spacing: 0;mso-table-lspace: 0pt;mso-table-rspace: 0pt;vertical-align:
top;min-width: 320px;Margin: 0 auto;background-color: #e7e7e7;width:100%"
cellpadding="0" cellspacing="0">
  <tbody>
  <tr style="vertical-align: top">
    <td style="word-break: break-word;border-collapse:
collapse !important;vertical-align: top">
    <!--[if (mso)|(IE)]><table width="100%" cellpadding="0"
cellspacing="0" border="0"><tr><td align="center" style="background-
color: #e7e7e7;"><![endif]-->


<div class="u-row-container" style="padding: 0px;background-color:
transparent">
  <div class="u-row" style="Margin: 0 auto;min-width: 320px;max-width:
500px;overflow-wrap: break-word;word-wrap: break-word;word-break: break-
word;background-color: transparent;">
    <div style="border-collapse: collapse;display: table;width:
100%;background-color: transparent;">
      <!--[if (mso)|(IE)]><table width="100%" cellpadding="0"
cellspacing="0" border="0"><tr><td style="padding: 0px;background-color:
transparent;" align="center"><table cellpadding="0" cellspacing="0"
border="0" style="width:500px;"><tr style="background-color:
transparent;"><![endif]-->

<!--[if (mso)|(IE)]><td align="center" width="500" style="width:
500px;padding: 0px;border-top: 0px solid transparent;border-left: 0px
solid transparent;border-right: 0px solid transparent;border-bottom: 0px
solid transparent;" valign="top"><![endif]-->
<div class="u-col u-col-100" style="max-width: 320px;min-width:
500px;display: table-cell;vertical-align: top;">
  <div style="width: 100% !important;">
  <!--[if (!mso)&(!IE)]><!--><div style="padding: 0px;border-top: 0px
solid transparent;border-left: 0px solid transparent;border-right: 0px
solid transparent;border-bottom: 0px solid transparent;"><!--<![endif]-->

<table style="font-family:arial,helvetica,sans-serif;"
role="presentation" cellpadding="0" cellspacing="0" width="100%"
border="0">
  <tbody>
    <tr>
      <td style="overflow-wrap:break-word;word-break:break-
word;padding:10px;font-family:arial,helvetica,sans-serif;" align="left">

<table width="100%" cellpadding="0" cellspacing="0" border="0">
  <tr>
```

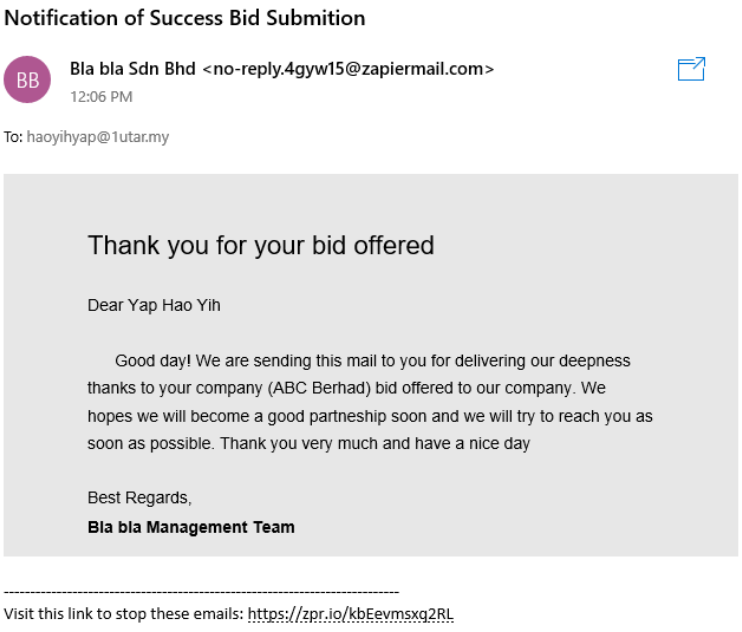
```
    <td style="padding-right: 0px;padding-left: 0px;" align="center">

      <!--img align="center" border="0" src="images/image-1.jpeg" alt=""
title="" style="outline: none;text-decoration: none;-ms-interpolation-
mode: bicubic;clear: both;display: inline-block !important;border:
none;height: auto;float: none;width: 100%;max-width: 480px;"
width="480"/-->

    </td>
  </tr>
</table>

      </td>
    </tr>
  </tbody>
</table>

<table style="font-family:arial,helvetica,sans-serif;"
role="presentation" cellpadding="0" cellspacing="0" width="100%"
border="0">
  <tbody>
    <tr>
      <td style="overflow-wrap:break-word;word-break:break-
word;padding:10px;font-family:arial,helvetica,sans-serif;" align="left">

  <h1 style="margin: 0px; line-height: 140%; text-align: left; word-wrap:
break-word; font-weight: normal; font-family: arial,helvetica,sans-serif;
font-size: 22px;">
    Thank you for your bid offered
  </h1>

      </td>
    </tr>
  </tbody>
</table>

<table style="font-family:arial,helvetica,sans-serif;"
role="presentation" cellpadding="0" cellspacing="0" width="100%"
border="0">
  <tbody>
    <tr>
      <td style="overflow-wrap:break-word;word-break:break-
word;padding:10px;font-family:arial,helvetica,sans-serif;" align="left">

  <div style="line-height: 140%; text-align: left; word-wrap: break-
word;">
    <p style="font-size: 14px; line-height: 140%;">Dear Mr/Mrs,</p>
<p style="font-size: 14px; line-height: 140%;"> </p>
```

```
<p style="font-size: 14px; line-height: 140%;">      Good
day! We are sending this mail to you for delivering our deepness thanks
to your bid offered to our company. We hopes we will become a good
partneship soon and we will try to reach you as soon as possible. Thank
you very much and have a nice day</p>
<p style="font-size: 14px; line-height: 140%;"> </p>
<p style="font-size: 14px; line-height: 140%;">Best Regards,</p>
<p style="font-size: 14px; line-height: 140%;"><strong>Bla bla Management
Team</strong></p>
  </div>

      </td>
    </tr>
  </tbody>
</table>

  <!--[if (!mso)&(!IE)]><!--></div><!--<![endif]-->
  </div>
</div>
<!--[if (mso)|(IE)]></td><![endif]-->
      <!--[if (mso)|(IE)]></tr></table></td></tr></table><![endif]-->
    </div>
  </div>
</div>


    <!--[if (mso)|(IE)]></td></tr></table><![endif]-->
    </td>
  </tr>
  </tbody>
  </table>
  <!--[if mso]></div><![endif]-->
  <!--[if IE]></div><![endif]-->
</body>

</html>
```

18. In the next flow, it will show the preview of data to be send out and you need to test the flow by clicking the “Test & review” to test the flow. Once successfully executed, a message will be send.



19. A message will be received by you later.



MS Power Automate Workflow Tools Installation Guide

Microsoft Power Automate, formerly known as Microsoft Flow, is a cloud-based automation platform. They are providing users with an automation workflow platform that allows them to develop automated workflows that will allow them to handle all of their daily regular workflows more successfully and conveniently. It enables the user to manage those tasks that are repeated and time-consuming in a simple and automated manner. It grants a free licence to use the Power Automate for a period of 90 days. These days, more and more things are changing toward automation, which is intended to make the work of humans easier and to save time on repetitive chores by automating them. Working in the field of workflow automation software, also known as business process management software (BPMS), which is one of the future trends that will provide convenience to human beings, is becoming increasingly popular. In Microsoft Power Automate, it has 2 mode of using it which is

1. Online Microsoft Power Automate
2. Power Automate Desktop

Way 1: Online Microsoft Power Automate

To use the Microsoft Power Automate online, you need to create an account or using your Microsoft account to login into the Microsoft Power Automate platform (https://flow.microsoft.com/en-us/#home-signup). After register or login into the account, you may start to create your workflow automation.

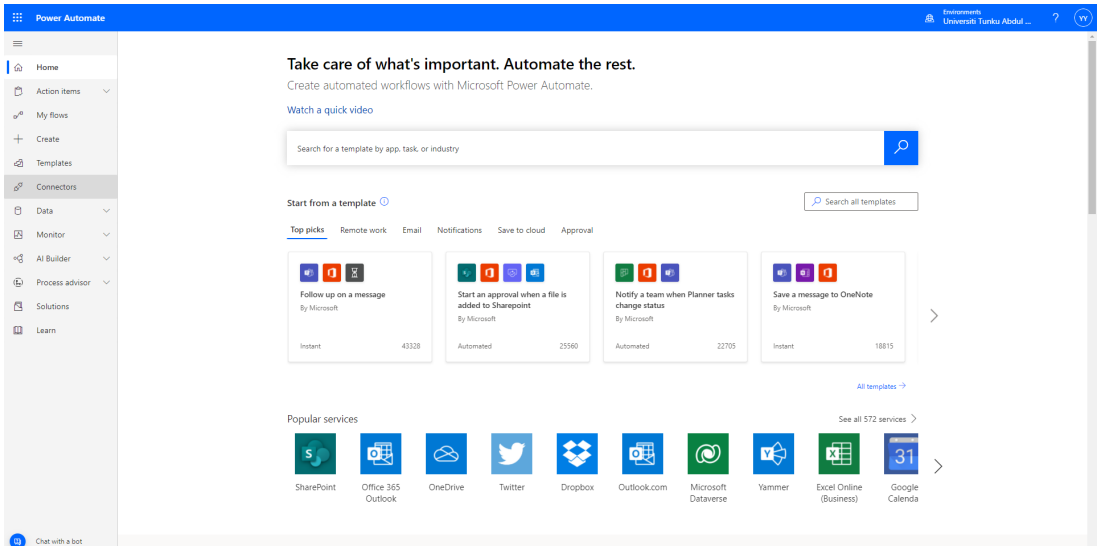


Figure 2.3.2 Interface of Cloud MS Power Automate after Login

Way 2: Power Automate Desktop

Power Automate Desktop allow you to create your automation of workflow offline on your desktop. Here's the step of installing the Power Automate Desktop into your Desktop:

1. First download the Power Automate installer from https://go.microsoft.com/fwlink/?linkid=2102613
2. After finishing downloading the installer, open the Setup.Microsoft.PowerAutomate Desktop.exe file to start your installation.

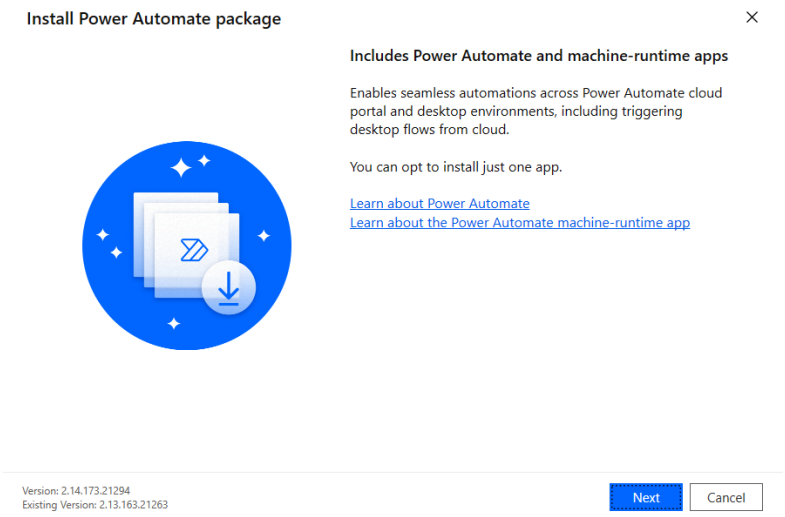


Figure 2.3.3 Interface of Installer for MS Power Automate

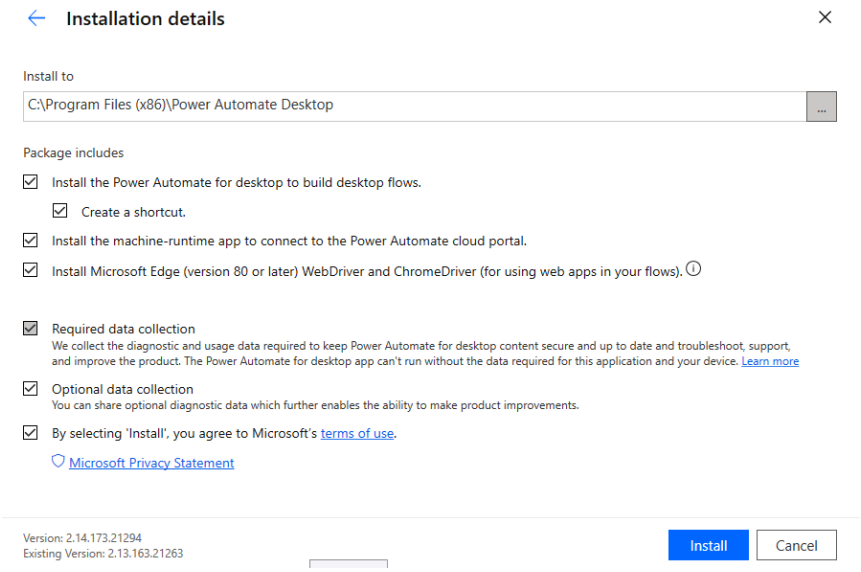


Figure 2.3.4 Interface of Configuration in Installer for MS Power Automate

3. Finish installing Power Automate Desktop to your machines, you required to sign-in into your account step-by-step, then you can start your workflow automation now.

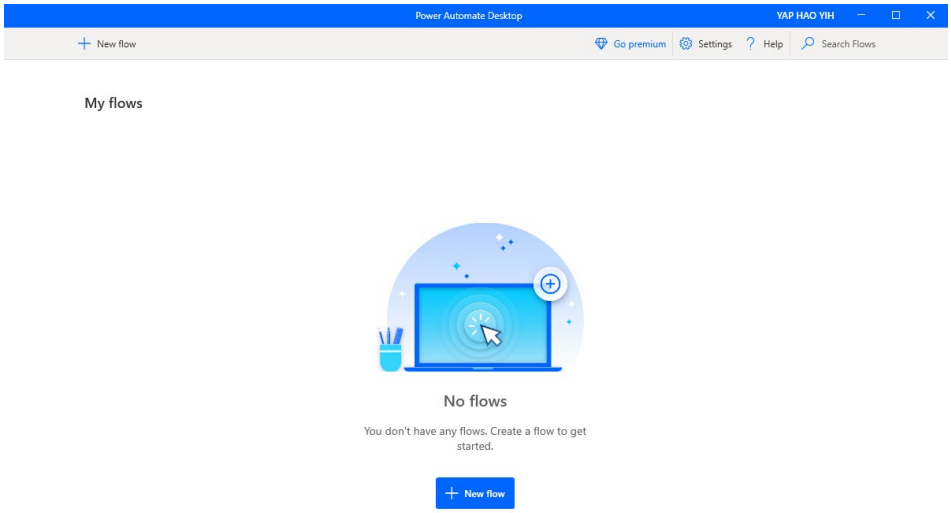


Figure 2.3.5 Interface of Power Automate Desktop Interface

MS Power Automate Existing Workflow Template User Guide

Create a Planner task when a channel post starts with TODO

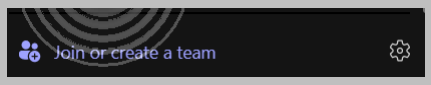
This workflow will automatically create a new task when post in the channel of the Microsoft Team is started with keyword of "TODO"

Prerequisite

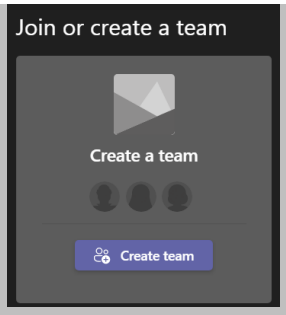
- Microsoft Account with
    - MS Power Automate
    - MS Team that have register a channel that equipped with Tasks by Planner and To Do

Step of set up the required task and channel:

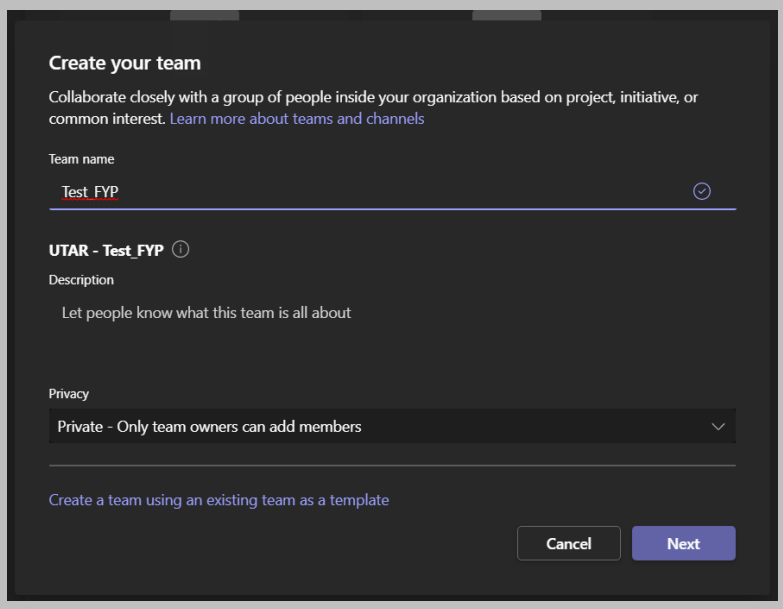
1. Under the MS Team, click on the "Join or create a team": to create a team for this task.



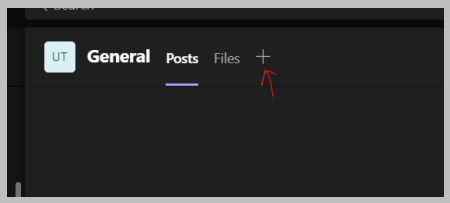
2. Then click on the "Create Team" button to proceed.

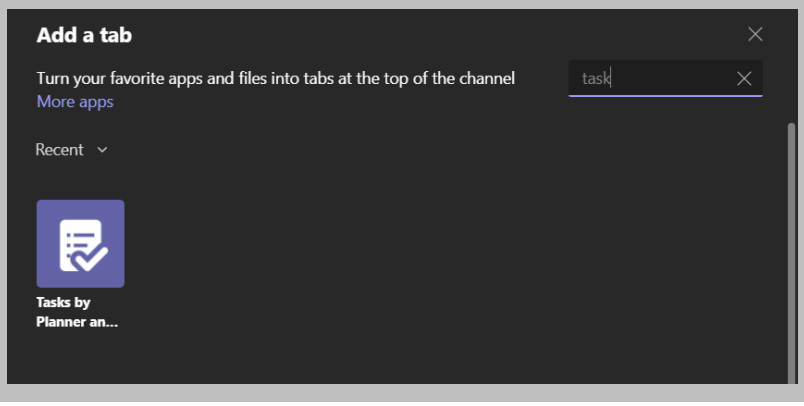


3. Follow the step that guided by inserting all info of channel and click "Next" to create. Once successful, a new team will be created.

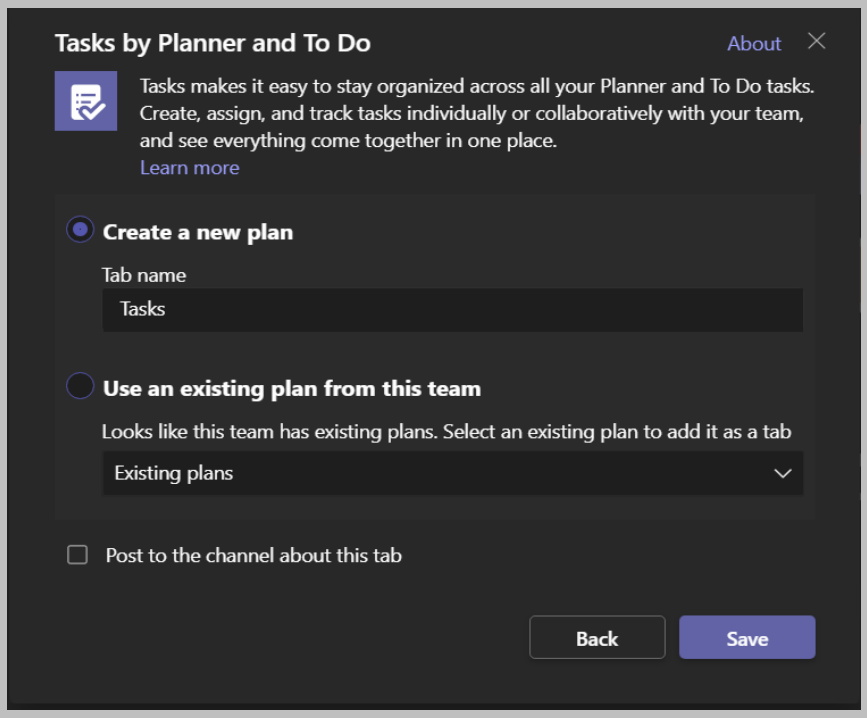


4. In the General channel in the Team created, click on "+" button above the channel to add a new tab and search for "Task by Planner and To Do". Then click on it to proceed.

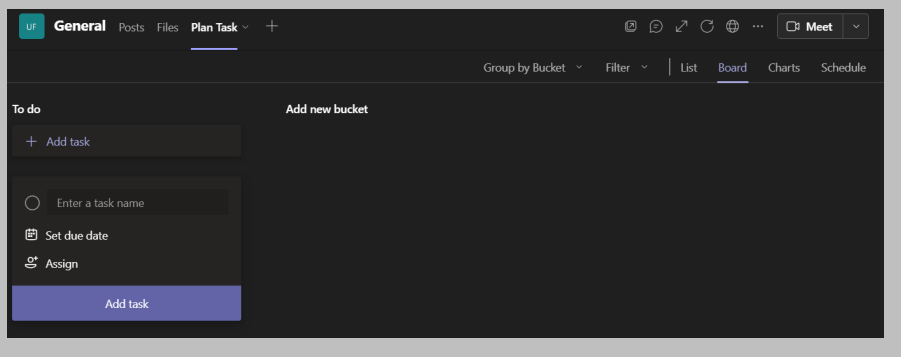




5. Select on “Create a new plan” option and insert “Plan Task” in the Tab Name section then click “Save”.



6. Once the tab is successfully created, you will see a new tab is created and you can list all the task in this tab.

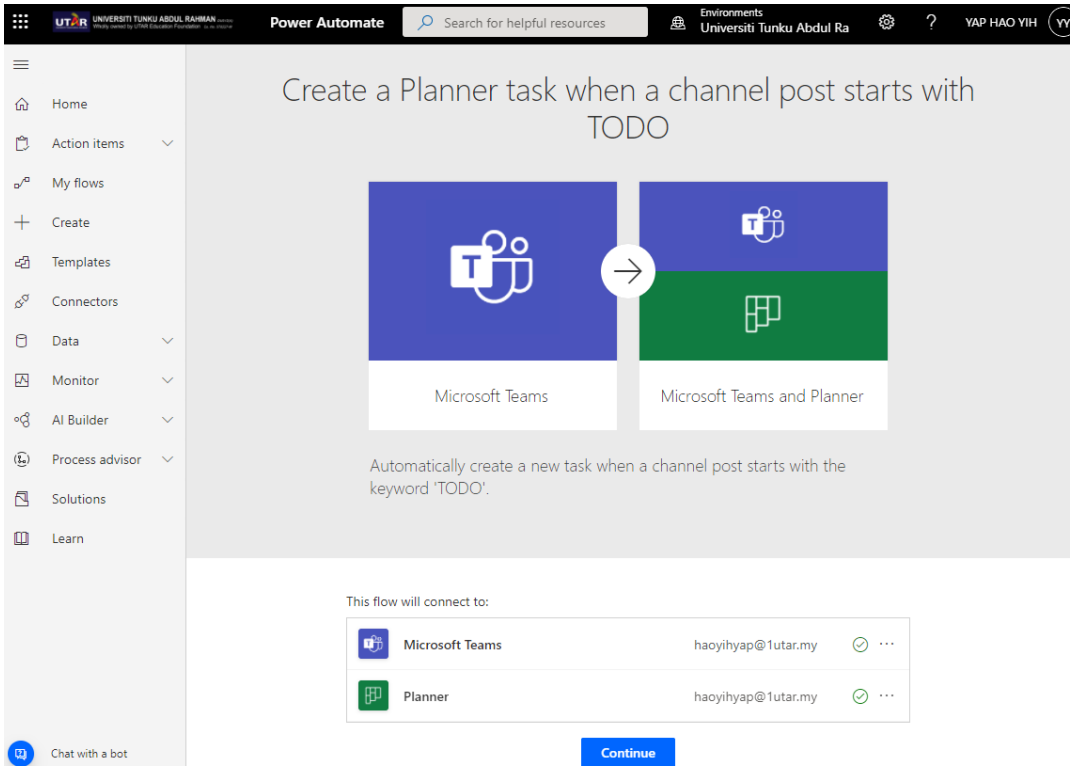


- Ms Planner in Team

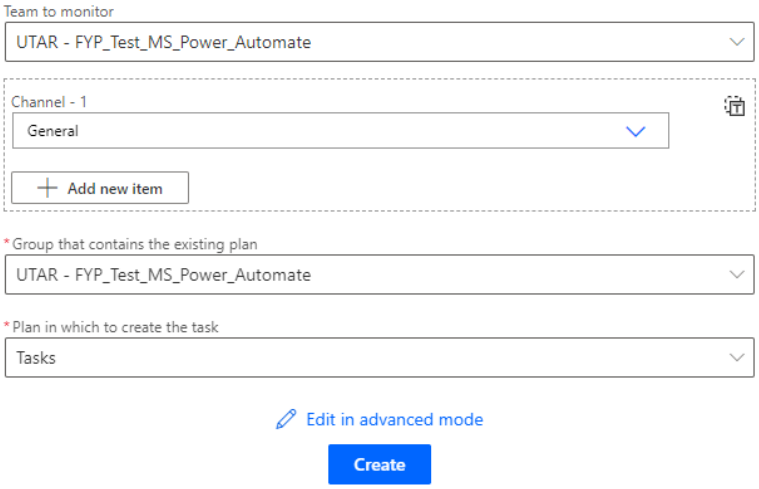
Workflow step:

1. The first things that should be concerned in Power Automate workflow creation is user should have a Power Automate Microsoft Account registered. You can register an Power Automate Account via https://asia.flow.microsoft.com/en-us/
2. Then, in this workflow that learning, we can get its workflow template by this link: https://asia.flow.microsoft.com/en-us/galleries/public/templates/2d30c27107de4d0786be7a2b4574ae70/create-a-planner-

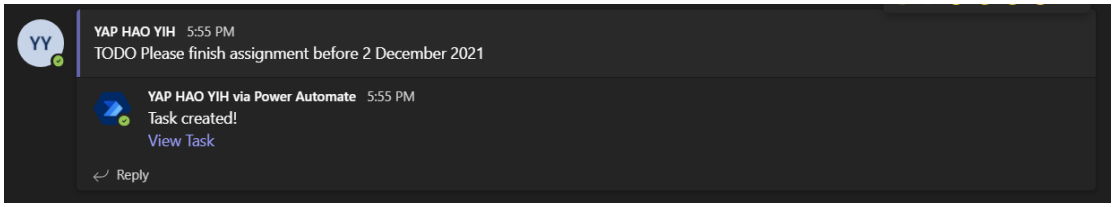
task-when-a-channel-post-starts-with-todo/ . Then, click on the “Continue” to start the workflow automnation.



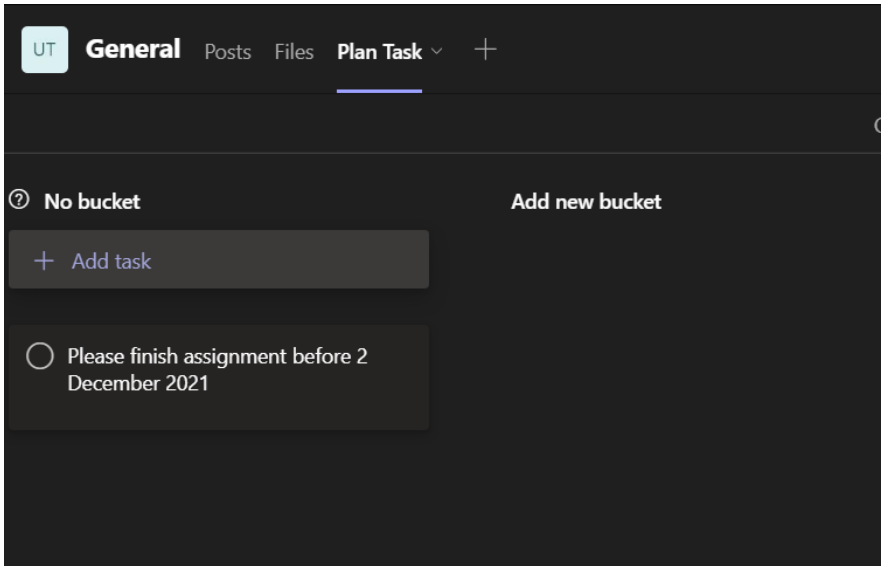
3. In the next flow, select the team and channel in it that you would like to monitor. Then, specifying the group that contains any existing plan/task created and select the plan that to create task in it. After that, click on “Create” to proceed the configuration.



4. After created, it will show error that stating this flow are not run before this. Ignore the error and go to your Team channel to insert some tasks that starting with “TODO” keyword. Once inserted the flow will run.



5. In this "Plan Task" section, you will see the new task is generated and this indicates that your flow is working.



Send a customized email when a new file is added

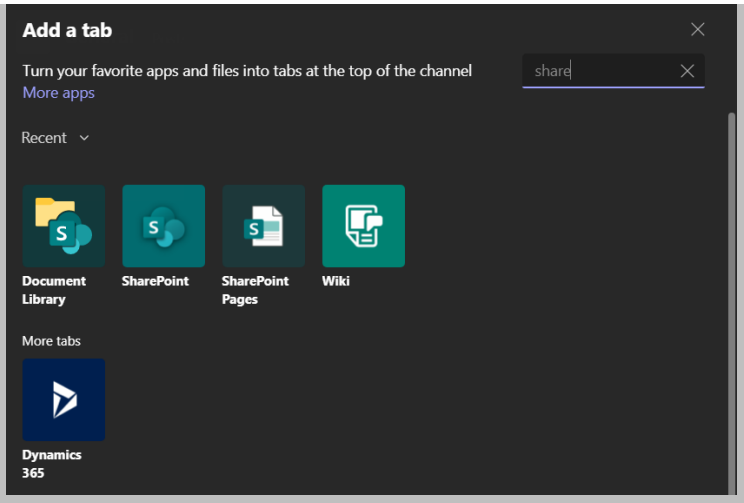
This workflow is aimed to send to people that insert file a customized thanks email when new file are added or created in to SharePoint document library.

Prerequisite:

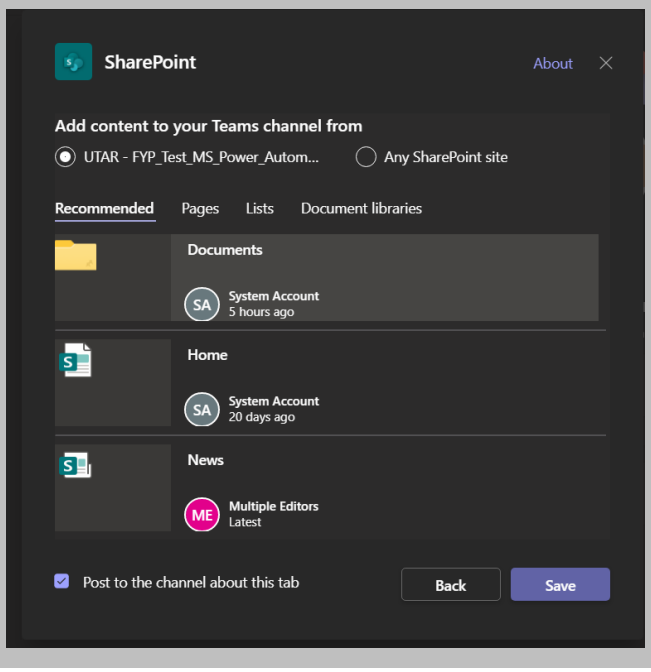
- SharePoint set up in Channel

Way to setup:

1. In your channel created, click on the "+" button above the section tab and look for SharePoint from the selection and click it.



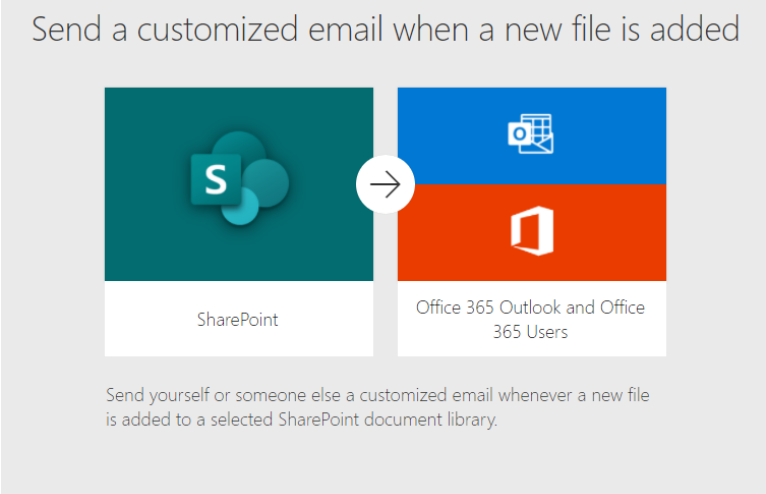
2. Then, select to add the content to your Team via the “Document” folder and click “Save” once finished. Now, the SharePoint of channel are setup.

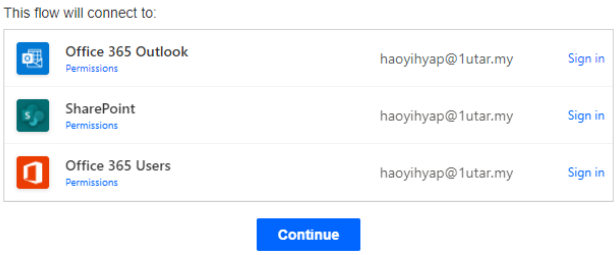


- Outlook Mail

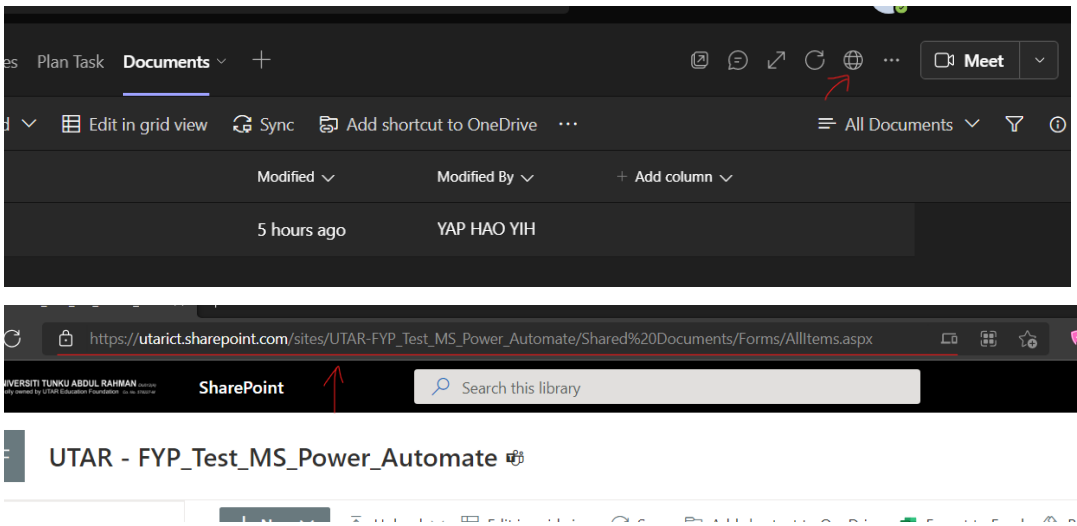
Workflow step:

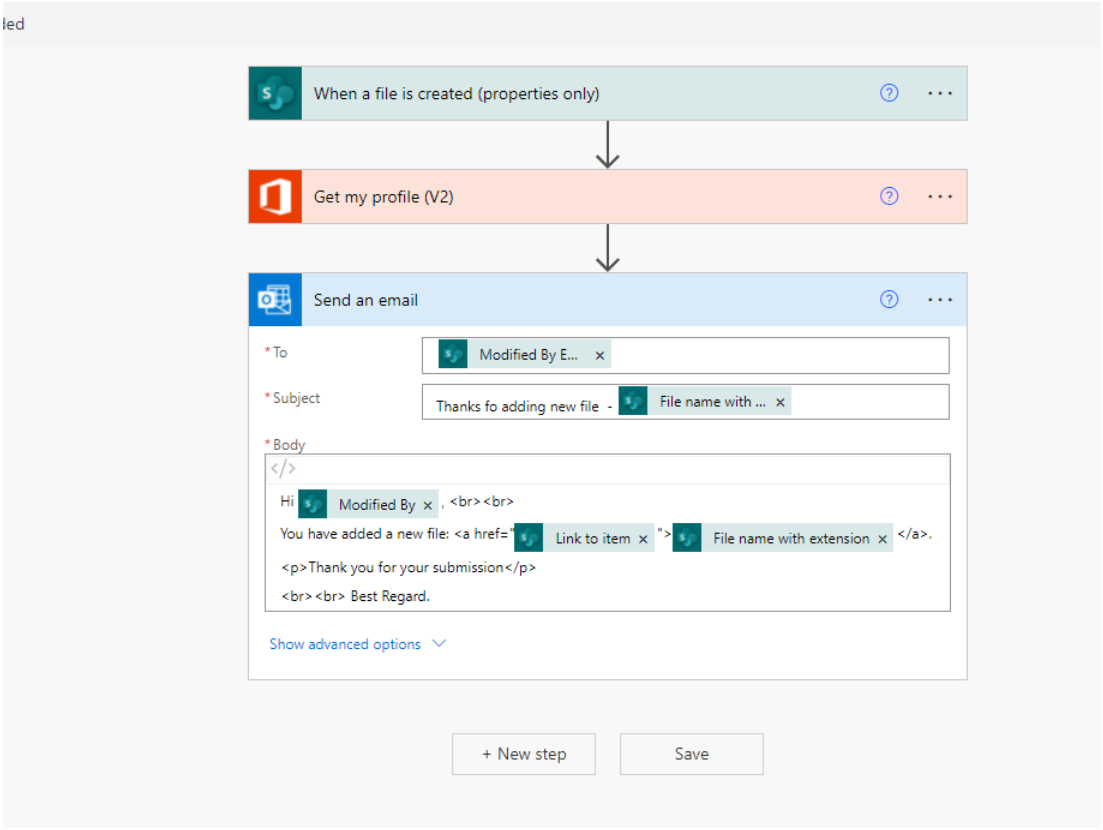
1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/827b37728b634ba89e3e6678ddff334e/send-a-customized-email-when-a-new-file-is-added/ . From there, you will see all the description regarding to the workflow template. Then, click on “Continue” to proceed.





3. In the configuration of workflow, insert your site address of the SharePoint that get it from your team by clicking the "Globe" button to redirect to your SharePoint using browser and copy the link in browser to paste at Site address. Then, choose the library that will trigger workflow when file added. Then, set up the email info to send out and click "Save" to save current configuration.





4. Finally, once you added file to the directories stated, a mail will be send to the person who added. You may check whether the flow successfully executed from the workflow page.

Get a push notification when you receive an email from your boss

This workflow will trigger the notification push in Office 365 when you received mail from your boss.

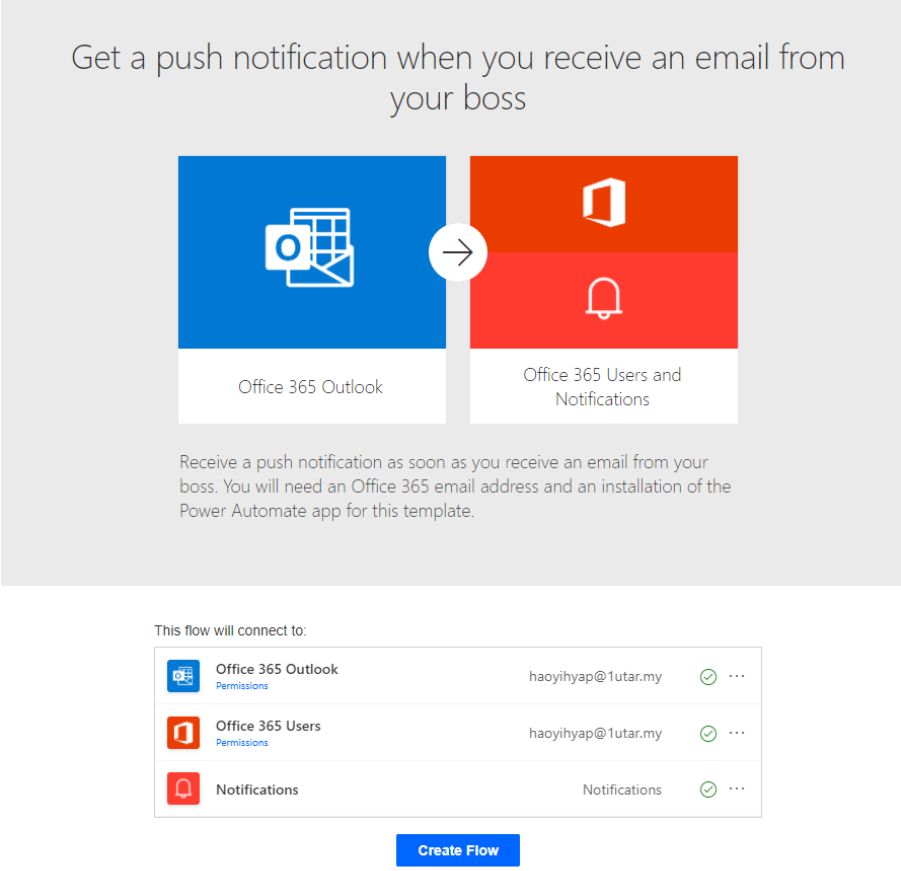
Prerequisite:

- Office 365 email

- Office 365 Users and Notifications

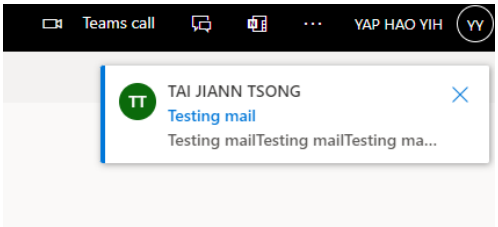
Workflow step:

1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/135019e1cdc6457b8bc6f6051607e778/get-a-push-notification-when-you-receive-an-email-from-your-boss/. From there, you will see all the description regarding to the workflow template. Then, click on "Create Flow" to proceed.

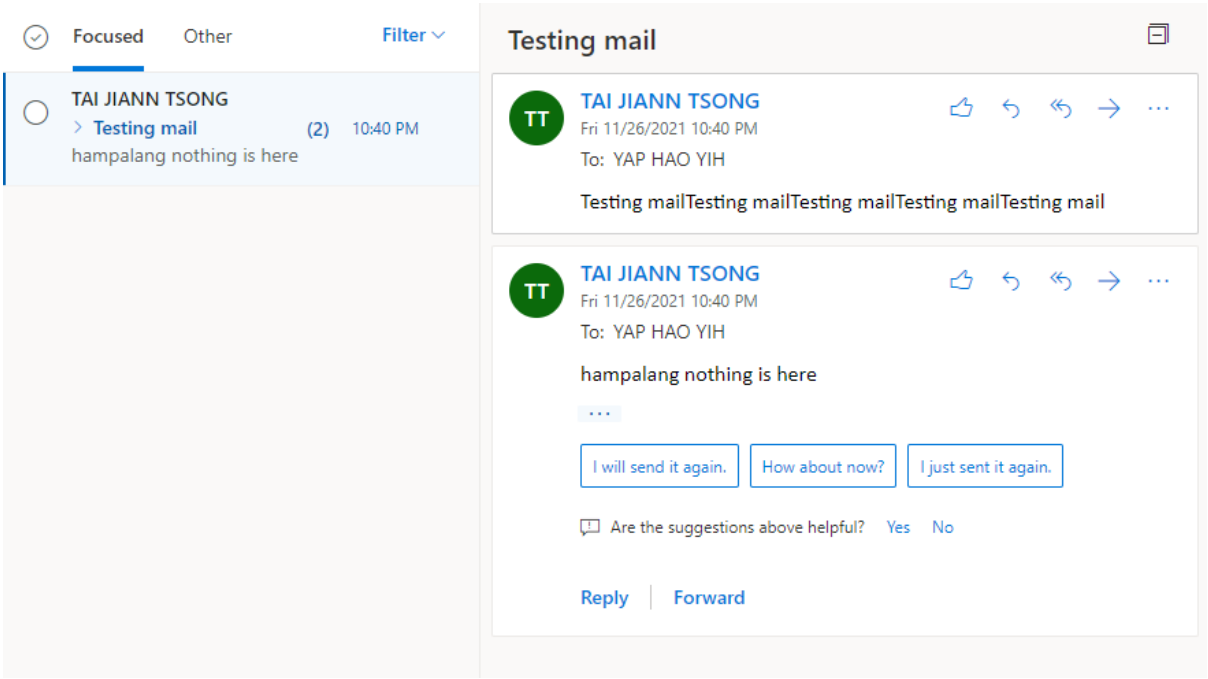


3. Once finishing creating and activated the flow, your function will be trigger once email is received.

   Notification received in office 365:



In the 365-office outlook mail:



Protect a PDF document with a password and send via email

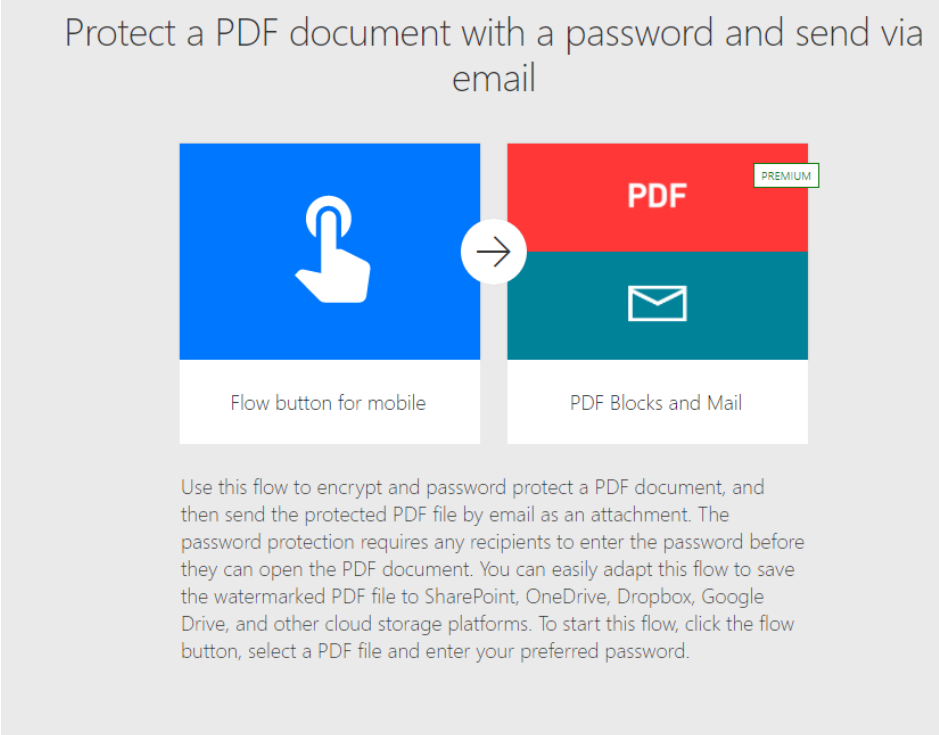
This workflow is mainly use to encrypt and protect your PDF document with password and send the protected file to others via email attachment. Anyone who want to open this file will need password in order to access it.

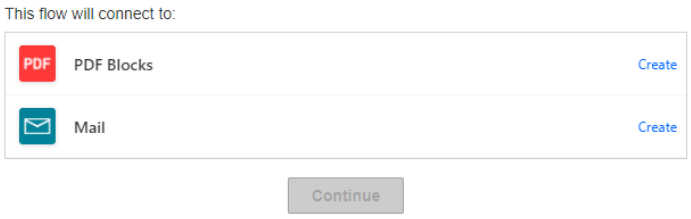
Prerequisite:

- Register a PDF Block account at https://dashboard.pdfblocks.com/users/sign_up
- Office 365 Users and Notifications

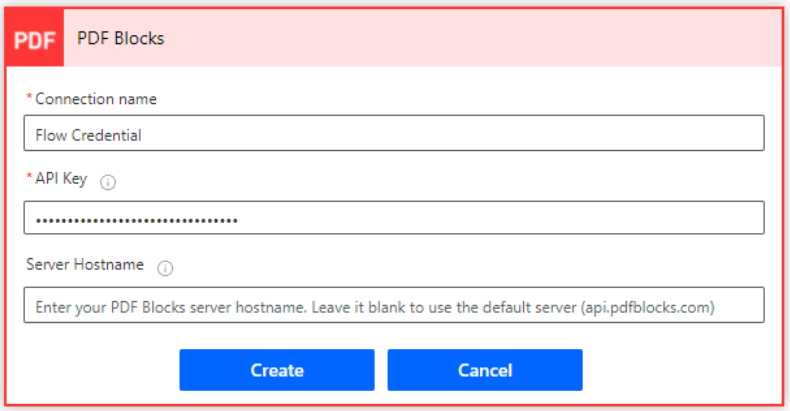
Workflow step:

1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/3804ebac2e3f49d68456c160f6d3cc31/protect-a-pdf-document-with-a-password-and-send-via-email/. From there, you will see all the description regarding to the workflow template.

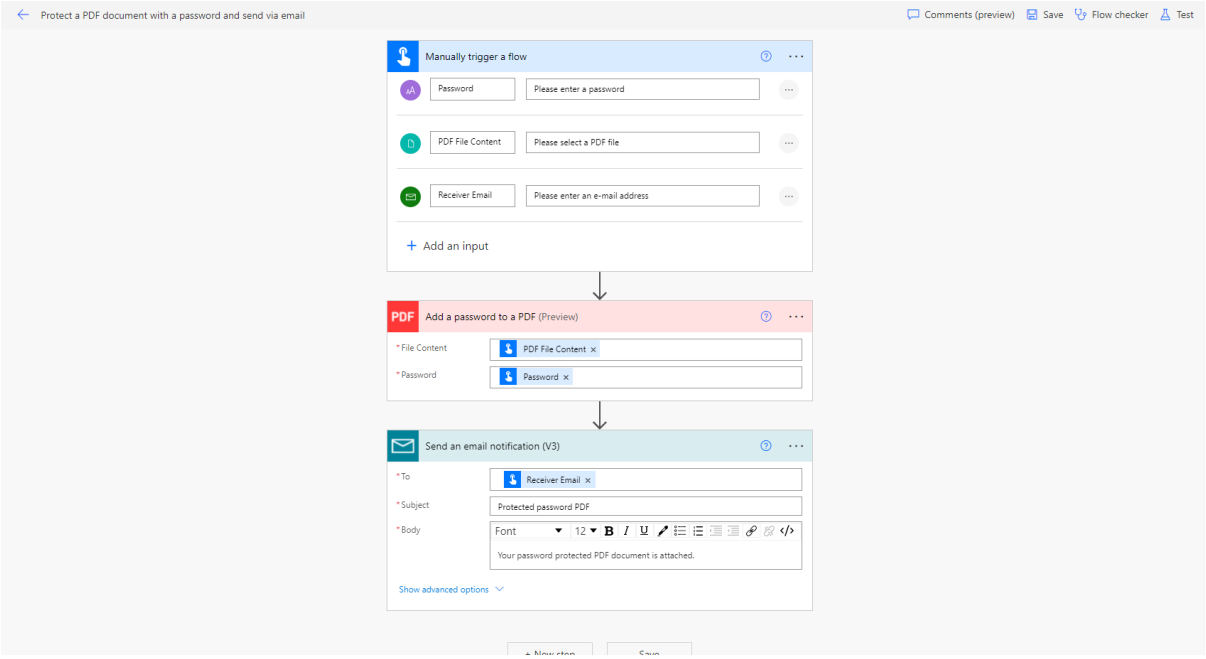




3. Before you start the workflow configuration, you will need to click on the "create" in the flow will connect to provide credential API to the node. For the PDF Blocks, insert a connection name for the connection for future verified, then go to your PDF Block dashboard, copy the API Key that located in "API Key" section and paste it in the API Key field in the MS Power Automate. If you want to hosted your PDF Blocks in particular server, you can insert its server address, else let it blank. Click on "Create" to save the configuration.

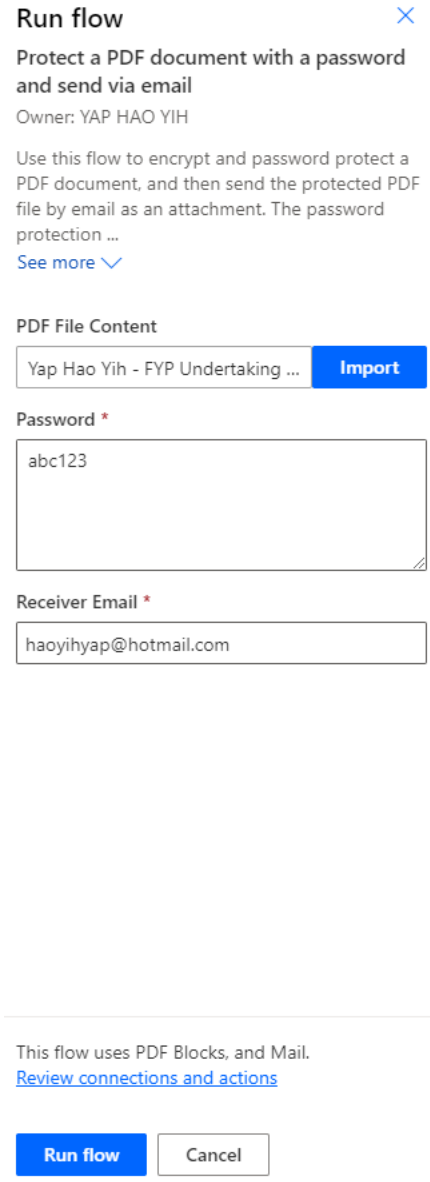


4. Then, go to the Mail node section, click on the “Create” to further set up for this node. In the box “Accept” all the term and condition
5. In the next configuration page, confirm all the information and make changes based your needs. Once successful setup click on “Save” to save the configuration and your workflow are now started.

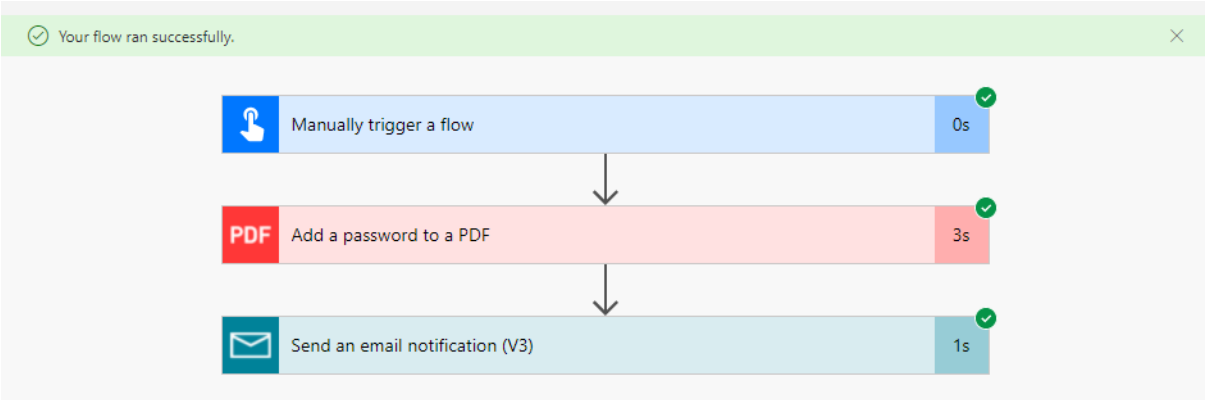


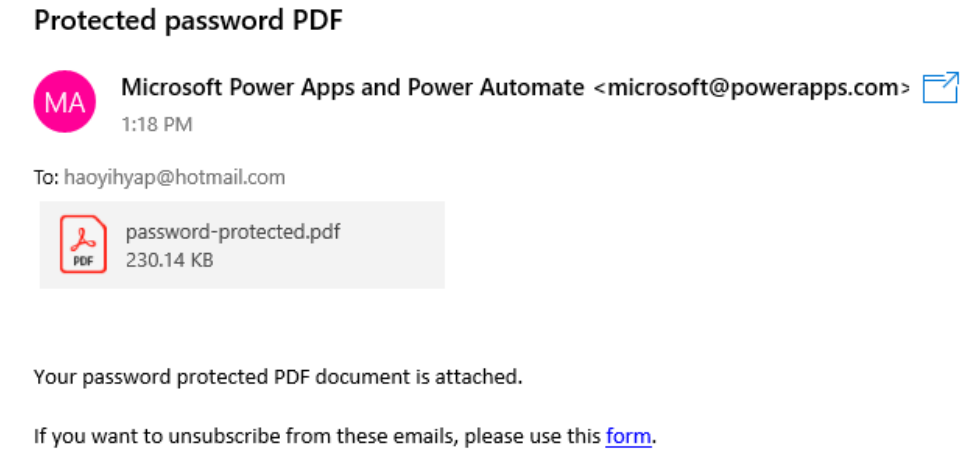
6. To test the workflow, you can click on the “Test” button on the upper right section. Select “Manually” option and click “Test”.

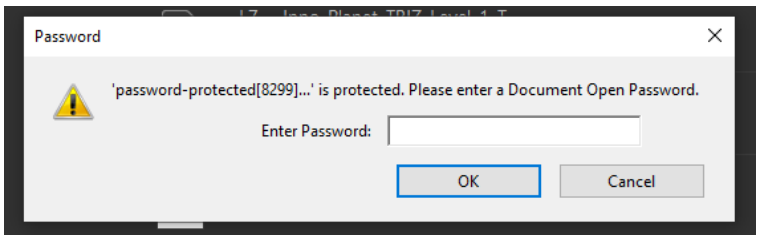
7. Then, insert a PDF file by importing from your Desktop, then, insert password that you want to encrypt the folder. Next click on “Run Flow” to proceed.



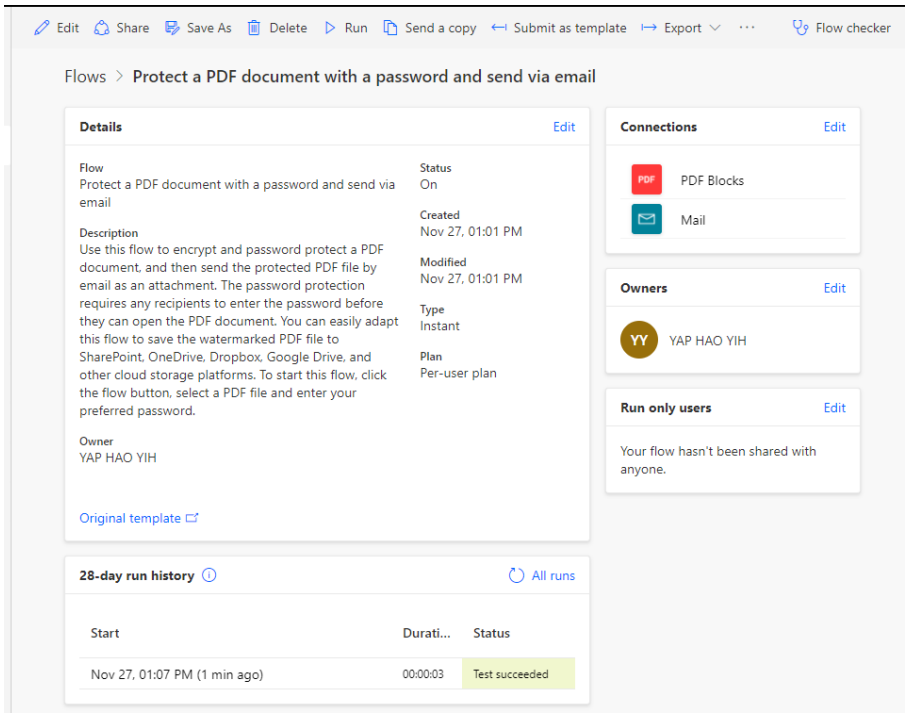
8. Once it executed successfully, a message will appear that showing the flow run successfully and you will received mail that have protected pdf consist.







9. You can execute this flow next time by clicking the "Run" button above the Flow to proceed.



Get notified when OneDrive files are modified

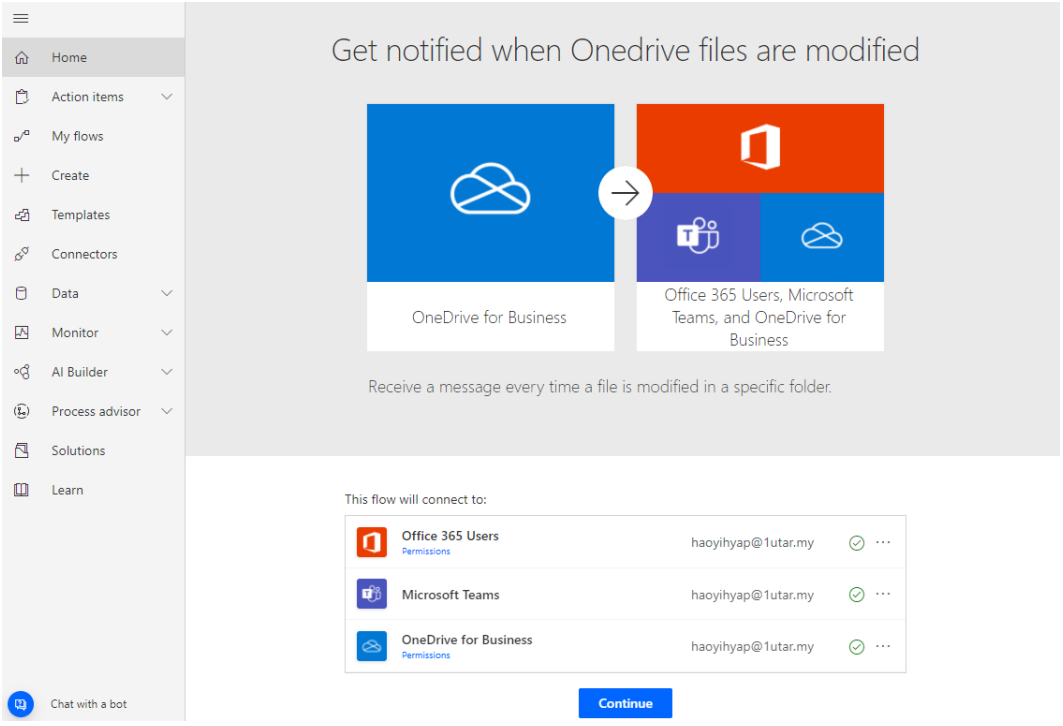
This workflow will trigger the event of notify on user when a file in specific folder is modified.

Prerequisite

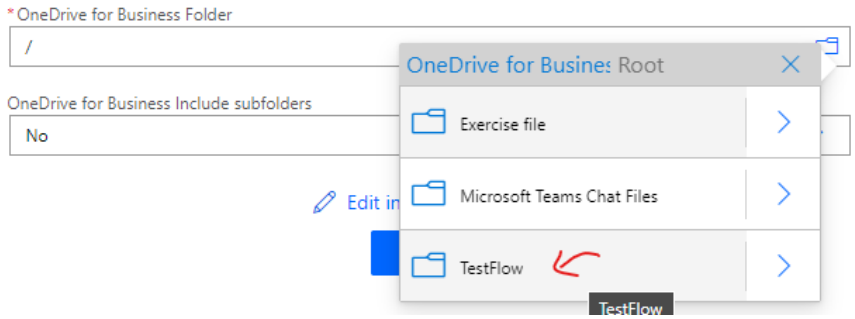
- Registered Microsoft Team account
- Registered OneDrive account

Workflow step:

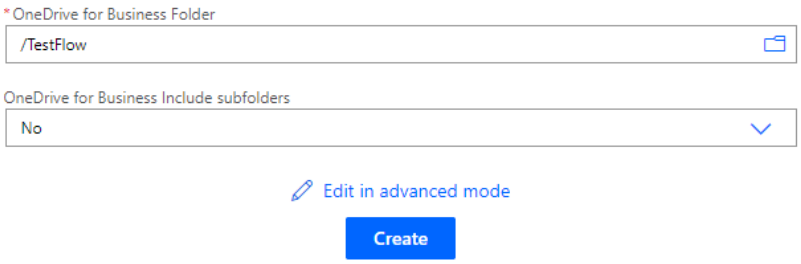
1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/14f835d37d7c43ae84d0d3caf9efa68b/get-notified-when-onedrive-files-are-modified/. From there, you will see all the description regarding to the workflow template. Click on the "Continue" button in order to proceed the configuration of workflow.



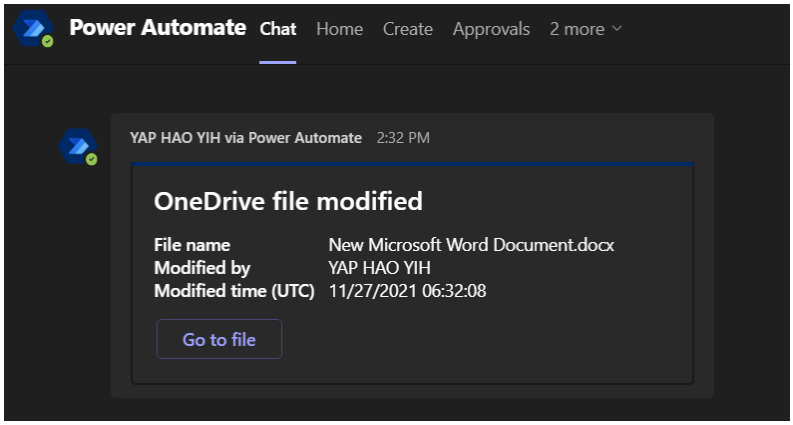
3. On the folder icon beside the "OneDrive for Business Folder", select on the files directories in OneDrive folder that would like to monitor.



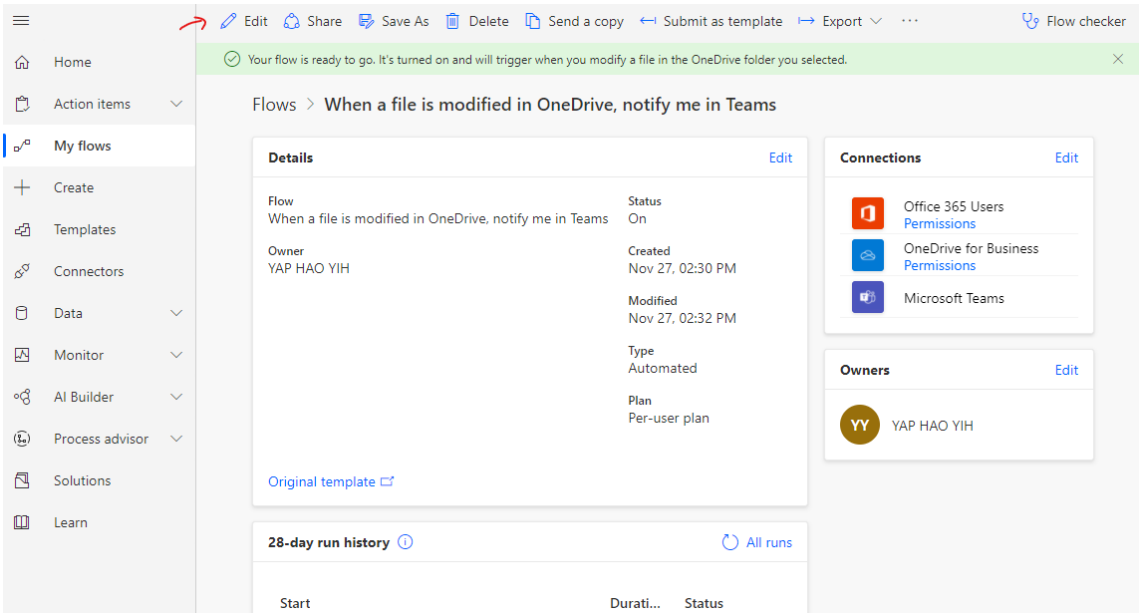
4. In the next field, specifying whether to include monitoring the subfolder inside the folder that specify to monitored. Then, click on “Create” to proceed.



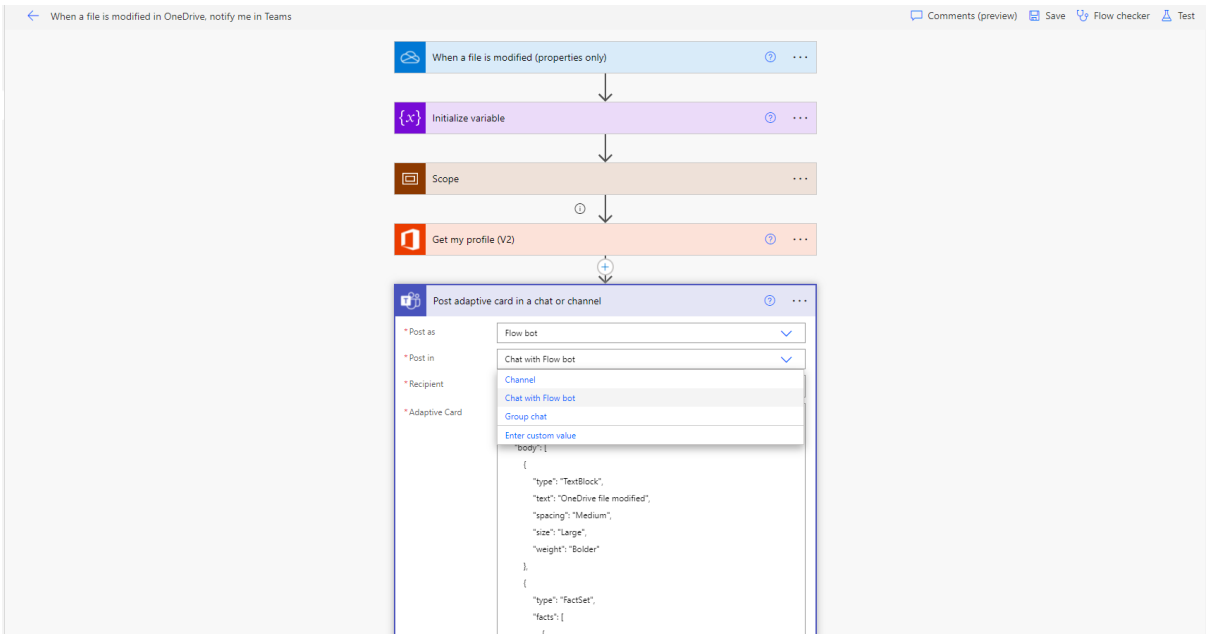
5. Now, the workflow is setting up and we can test the flow by edit something in the folder and it will notify you by using the chat in Team by the BOT.



6. To edit by letting it notify you in a group or a Team channel, click on the “Edit” button above the Workflow page.



7. In the “Post in” section under the “Post Adaptive card in chat or channel”, you have few choices of setting either notify you in Team channel or group. You can edit on that and click “Save” to save the configuration.



Post daily weather updates to a channel

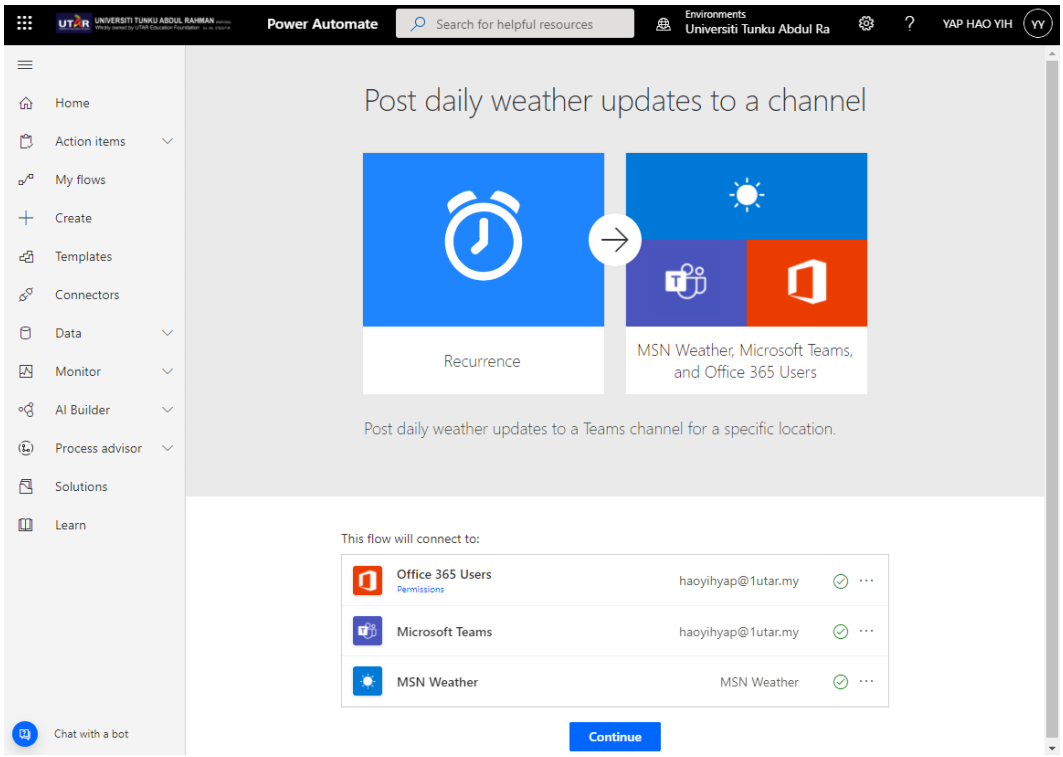
This workflow will update the daily weather updates to certain Team channel of specific location.

Prerequisite

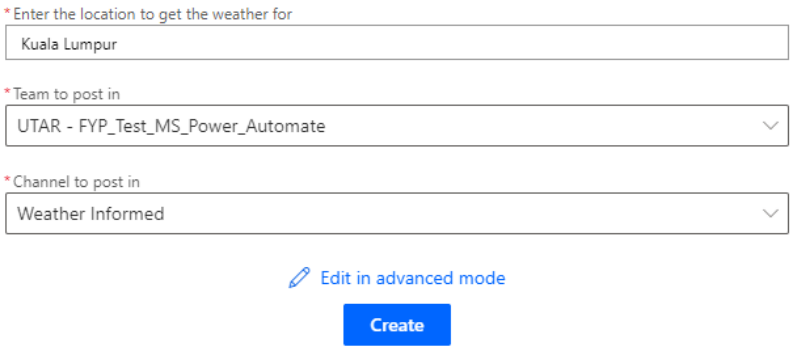
- MS Team account
- Microsoft Account that able to access MSN Weather

Workflow step:

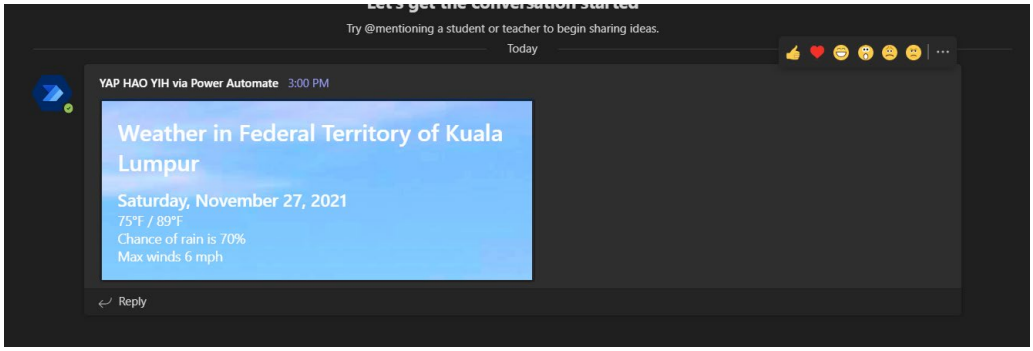
1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/95d24f1652a540d08b7d18785f2e2aa2/post-daily-weather-updates-to-a-channel/. From there, you will see all the description regarding to the workflow template. Click on the "Continue" button in order to proceed the configuration of workflow.



3. In the next page, you will need to specify the location of weather to get for as well as where to post the post (Team and channel). After finishing configuration, click on "Create" to proceed and now your flow are worked.



4. Wait for few minutes, you will see that the weather of particular places are updated and post in the channel by the BOT.



Convert a Word document in SharePoint to PDF and add a text watermark

This workflow is aimed to converting our Word document that located in the SharePoint into PDF and add text watermark on it in order ensure the ownership of the folder. Watermark is a digital word that will appear behind the content of every pages and it usually blur in colour.

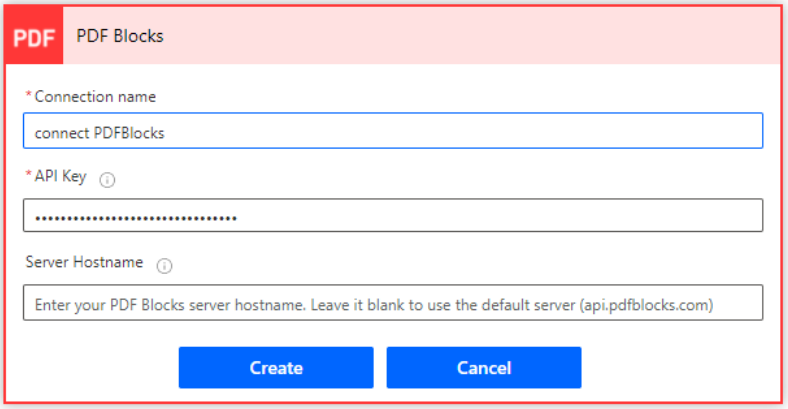
Prerequisite:

- SharePoint
- OneDrive account
- PDF Blocks account. (https://www.pdfblocks.com/power-automate)

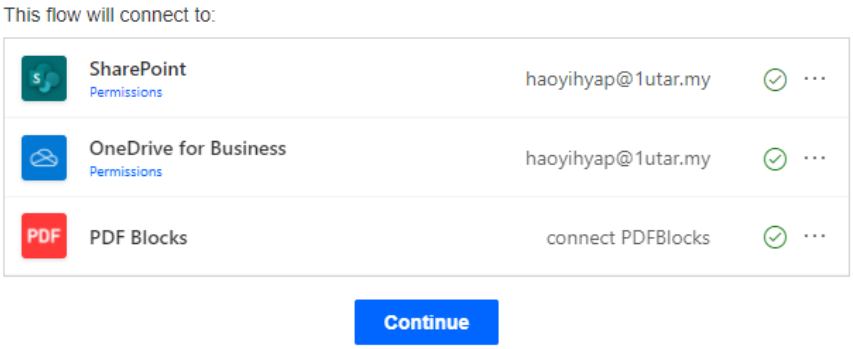
Workflow step:

1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/de3539ce30db4a0f8269a4dbebd1f05e/convert-a-word-document-in-sharepoint-to-pdf-and-add-a-text-watermark/. From there, you will see all the description regarding to the workflow template.

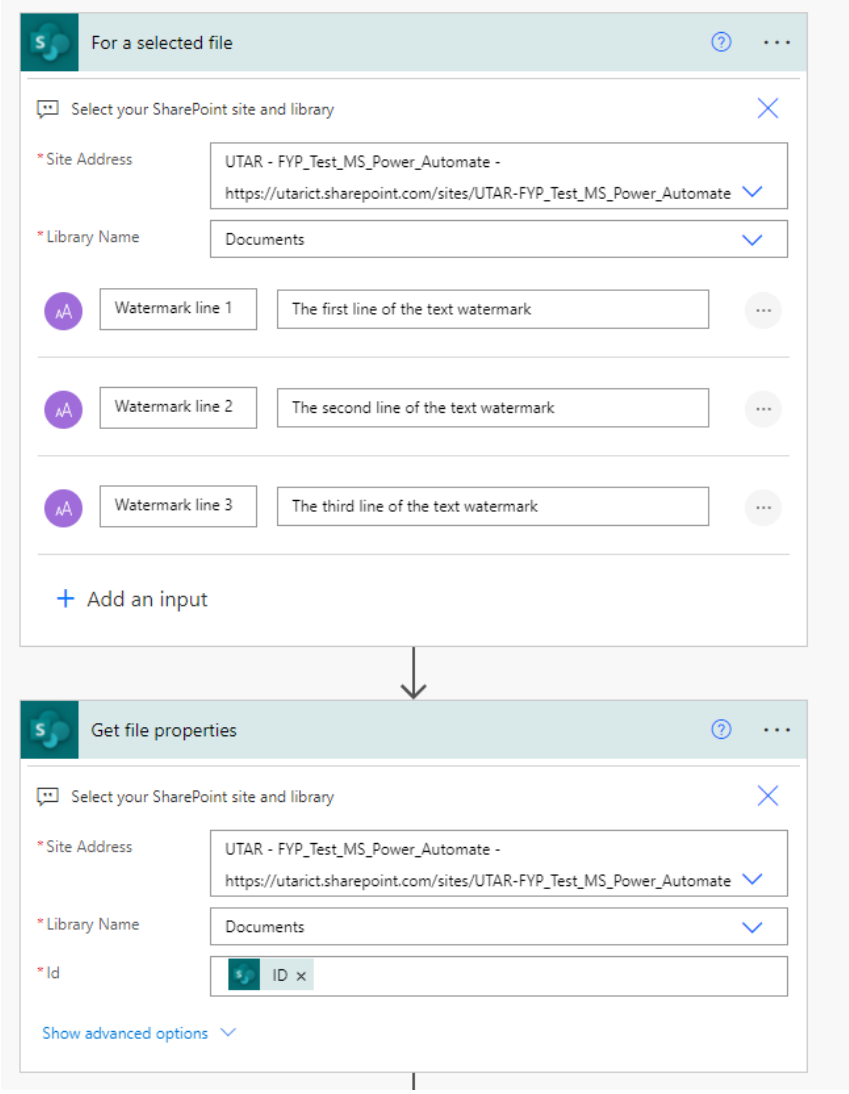
3. Before you start the workflow configuration, you will need to authenticate all the flow node needed below by clicking “connect” to provide credential API to the node. For the PDF Blocks, insert a connection name for the connection for future verified, then go to your PDF Block dashboard, copy the API Key that located in “API Key” section and paste it in the API Key field in the MS Power Automate. If you want to hosted your PDF Blocks in particular server, you can insert its server address, else let it blank. Click on “Create” to save the configuration.



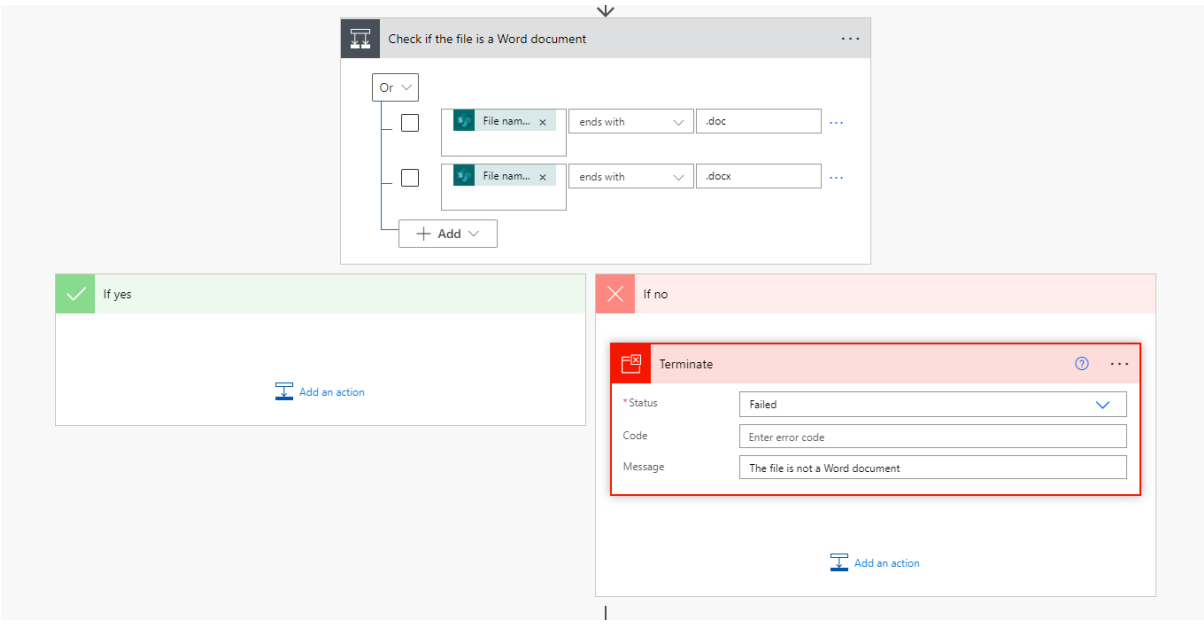
4. Once all the authentication of API are finished, you will see a green tick button at the side of each node. Now, you can click on “Continue” button to proceed.



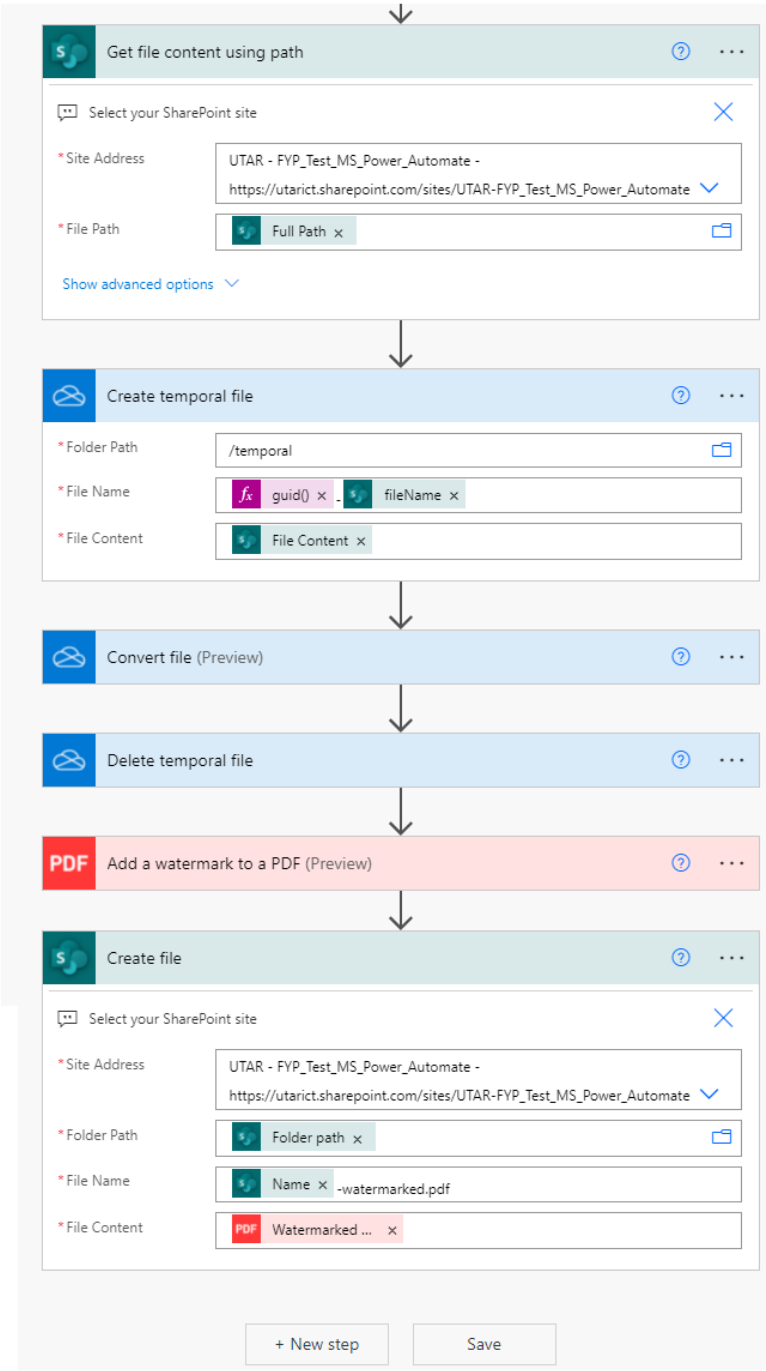
5. In the Site Address column, select on the SharePoint library that you would like to monitor for event trigger, then insert the input variable name that you would like to get from user for watermark setting.



6. In the next flow, it will check whether the file are with doc or docx extension (is Word file or not). If yes then it will proceed, else it will terminate the sessions.



7. In the following field, you must also ensure all the Site Address is send to the correct SharePoint site that want. Once complete, click on “Save” To save all the configuration info and now the workflow are activated.



Click a button to generate dynamic poll using Microsoft Teams Adaptive Card

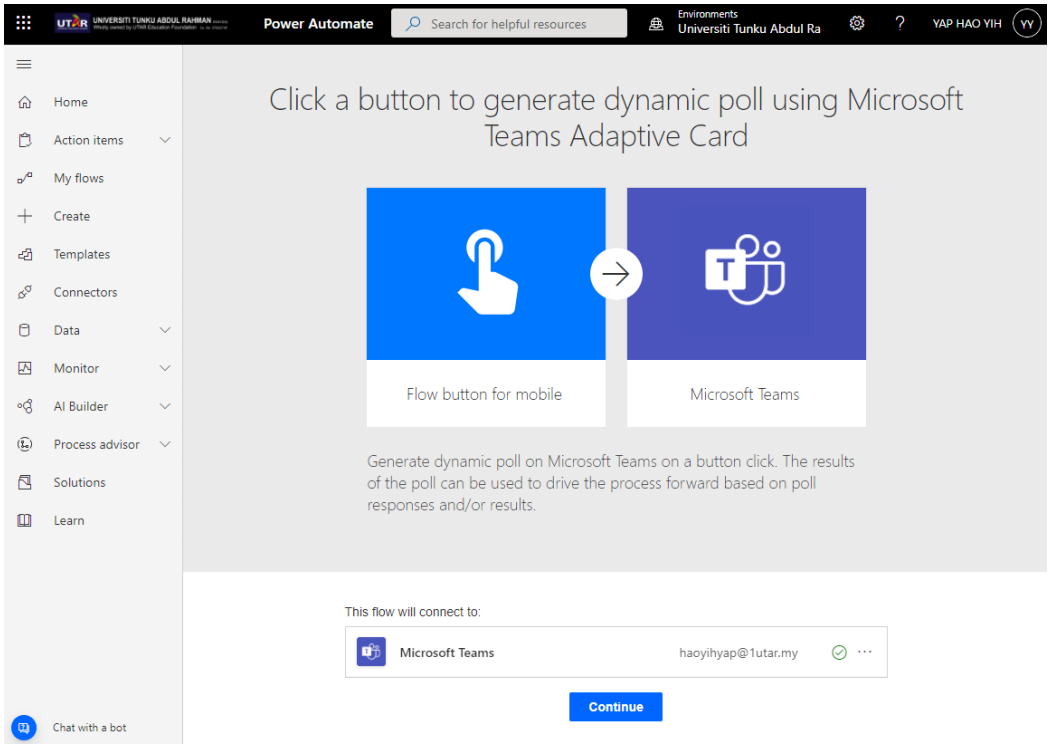
This flow will generate poll on MS Team when we click on the trigger button. It will be based on the result that get from poll and send a message to user for thank you their action on submitting the poll

Prerequisite

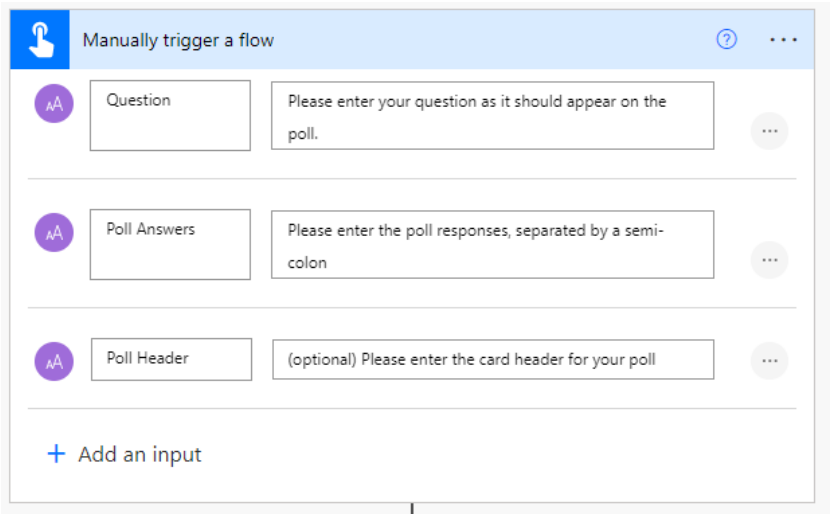
- Microsoft Team account registered.

Workflow step:

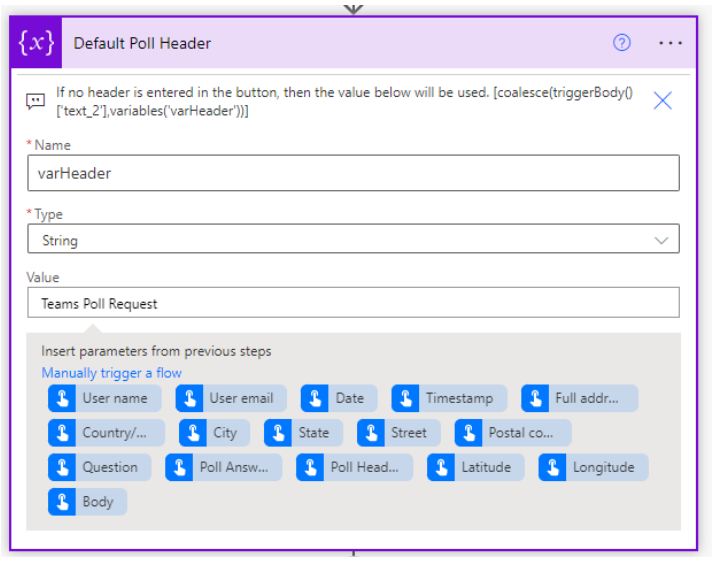
1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/ec390bc8ecd94577b3abcc93f50bb932/click-a-button-to-generate-dynamic-poll-using-microsoft-teams-adaptive-card/. From there, you will see all the description regarding to the workflow template. To proceed, click on the "Continue" button to redirect to the configuration pages of the workflow.



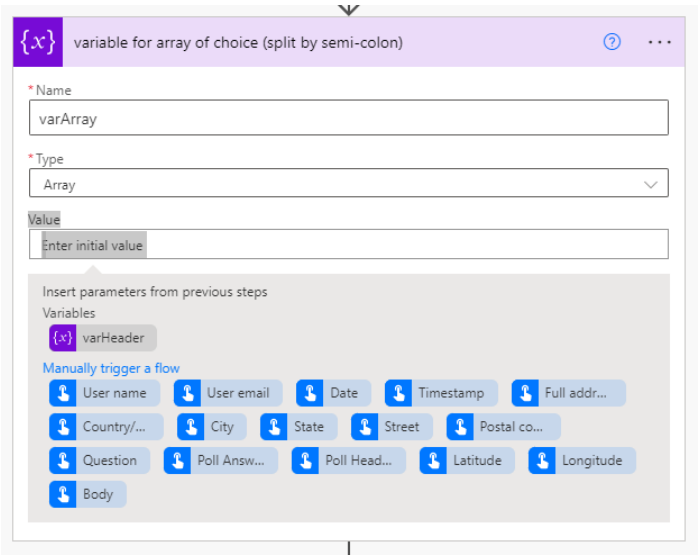
3. Set up how you would like to start your trigger, and in this case, it started with what question you would like the person that trigger the flow. Let the person who like to start the poll to insert their poll question and answer selection



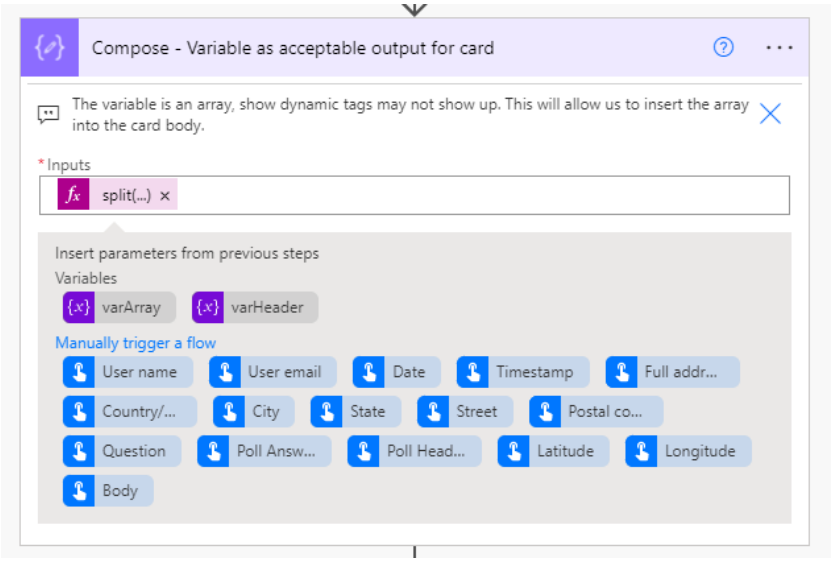
4. In the next flow, it will create a default value of variables that needed to store the header value of the poll.



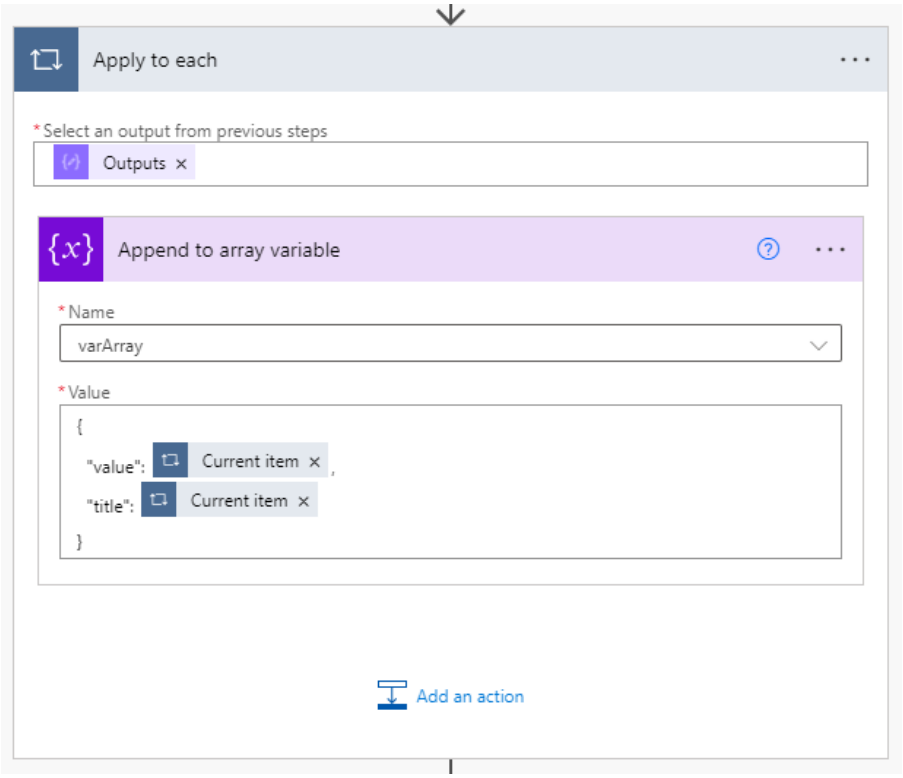
5. In the next node, it aims to create an array for storing the poll answer.



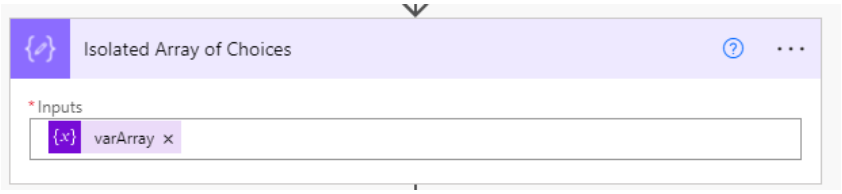
6. Next, this node is to configure on the acceptable output value for the array. It will be going to extract out the option value that split by using semicolon to appropriate format (which is word by word differentiated).



7. In next, it will get the output value that have been formatted previously and append to the array var created previously. This means it will create the name and value for the option for the poll and store in array.

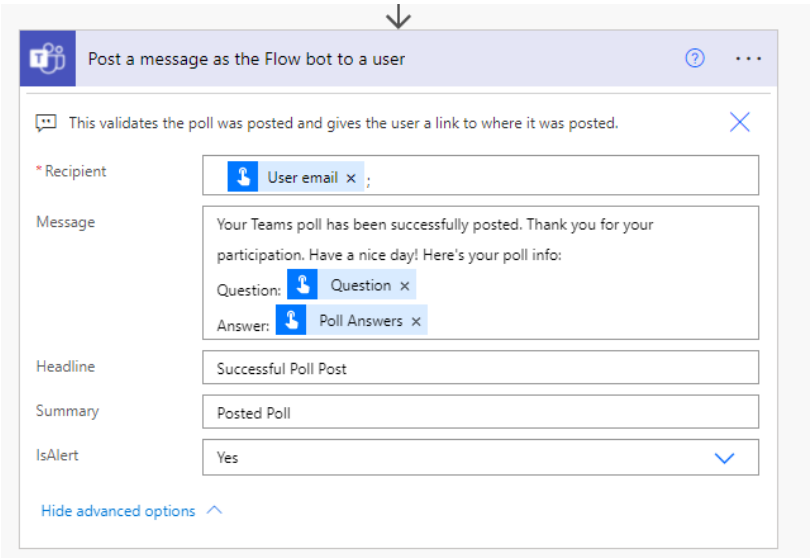


8. In the next flow, it will put the selection choice of array into the array of choice for the poll by input it into the question

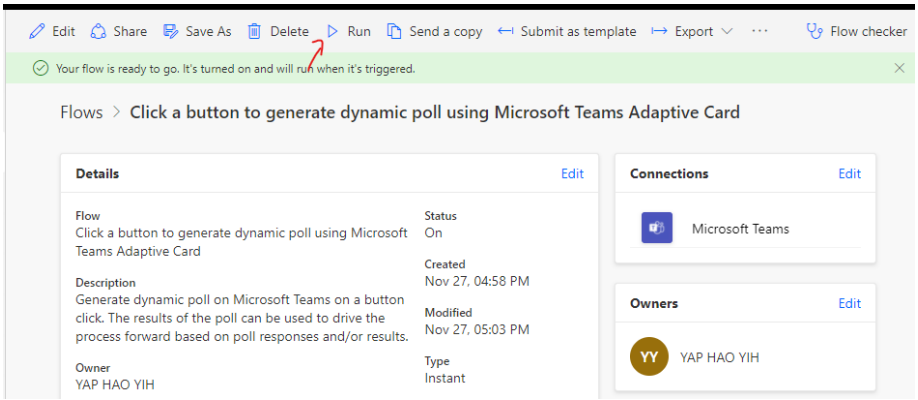


9. Then, it set up where the poll adaptive card to be posted in Team channel for result gained back from user.

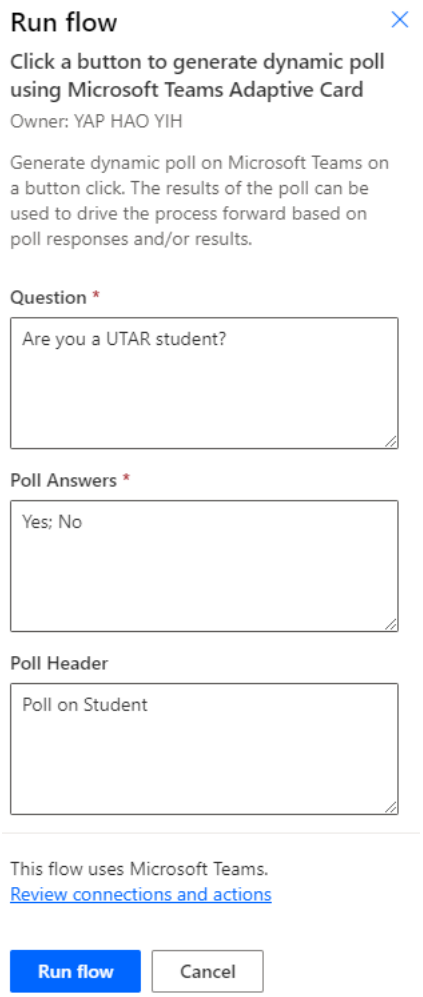
10. Then, the next flow is aimed to wait for the answer feedback by user. Once user submitted the poll, it will automatically send a notify to user via Team Chat on successfully submitted the poll.



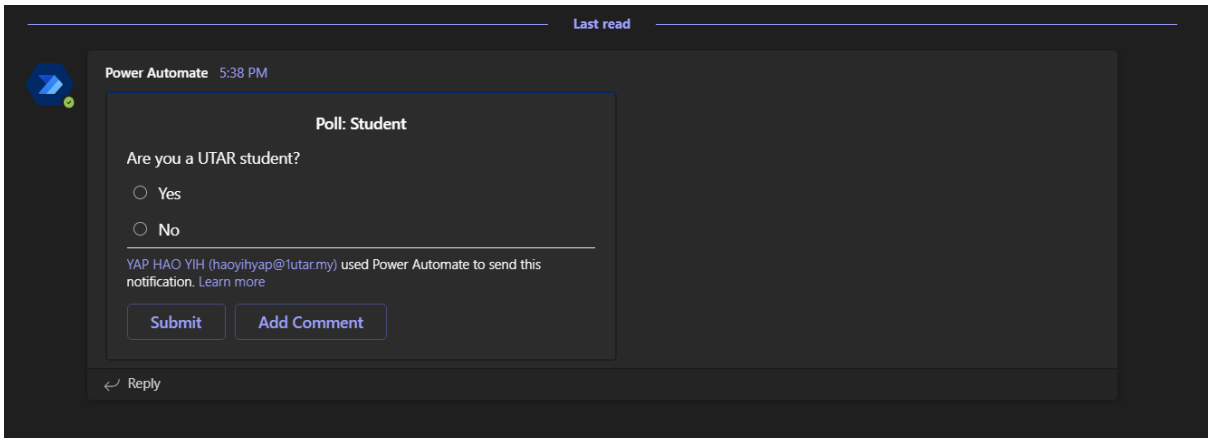
11. Next, let us test on the workflow by clicking the "Run" button above and it will prompt us with a box to set our question for poll.



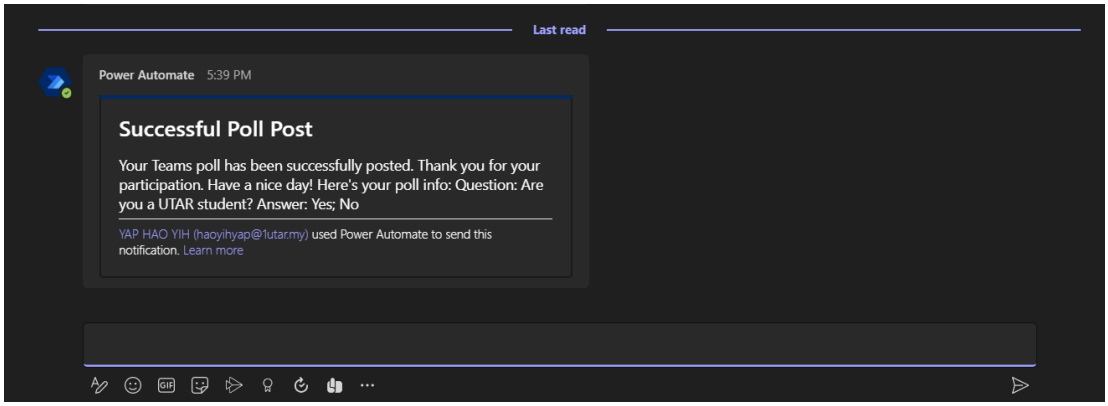
12. In this box, insert the poll question as well as its answer selection in the field. Then, set a title for your poll and click "Run Flow" to proceed and then click "Done" in next.



13. The channel will prompt a poll question and you will need to answer the question and submit it.



14. Then, the person who answer the question will be receiving a card that saying it successfully answer the poll in it chat that generate by BOT. Now, it indicates that your workflow are successfully executed.



Analyse emails sentiment with AI Builder and send results to Teams

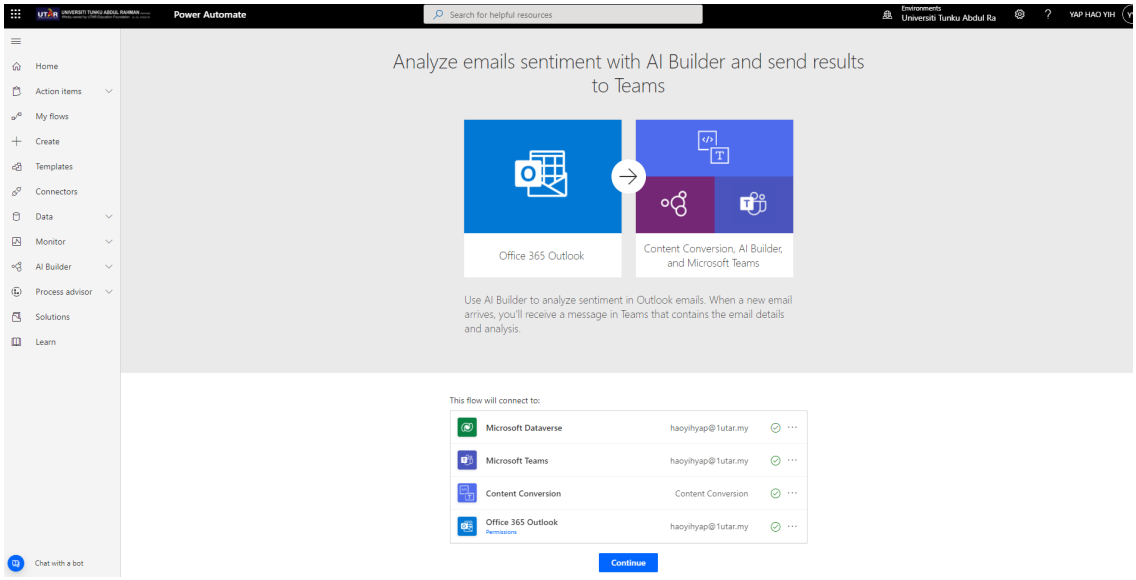
This workflow will be using AI Builder to analyse your Outlook mail received and send to the user via Team chat which also including the email details and analysis gained.

Prerequisite

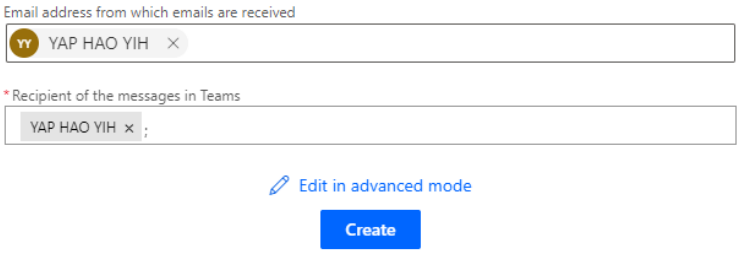
- Register a MS Outlook Mail account
- Register a MS Team account
- Register a MS account with Microsoft Dataverse (It lets you securely store and manage data that's used by business applications that stored within a set of tables.) functionalities.

Workflow step:

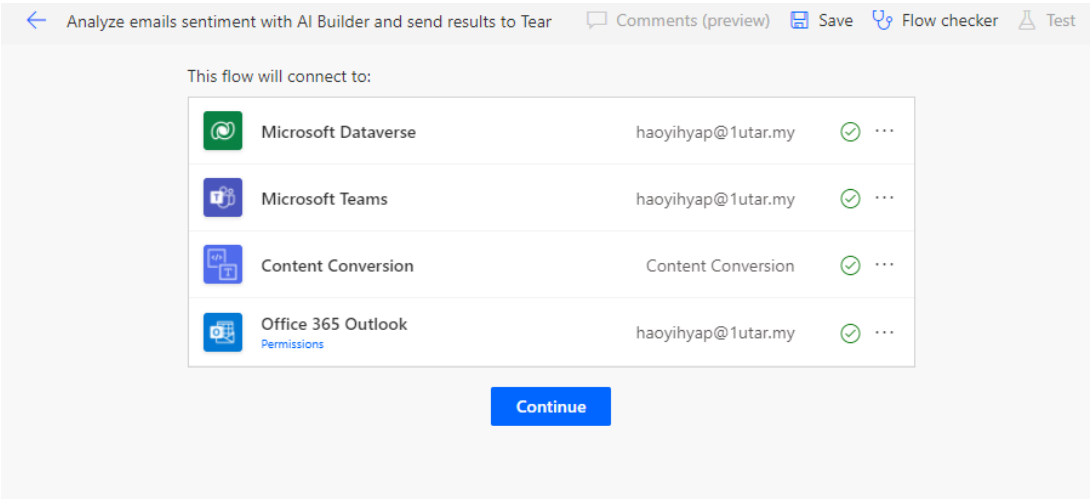
1. First and foremost, you must have Microsoft Power Automate account registered in order to use the workflow template at https://asia.flow.microsoft.com/en-us/
2. Then, go to https://asia.flow.microsoft.com/en-us/galleries/public/templates/198f2a88599f4d839fda16f7fb7580f8/analyze-emails-sentiment-with-ai-builder-and-send-results-to-teams/. From there, you will see all the description regarding to the workflow template. Before that, make sure all the connection of API credentials are connected and you may click on th 3 dotted button beside each node to change account credentials of the node. To proceed, click on the “Continue” button to redirect to the configuration pages of the workflow.



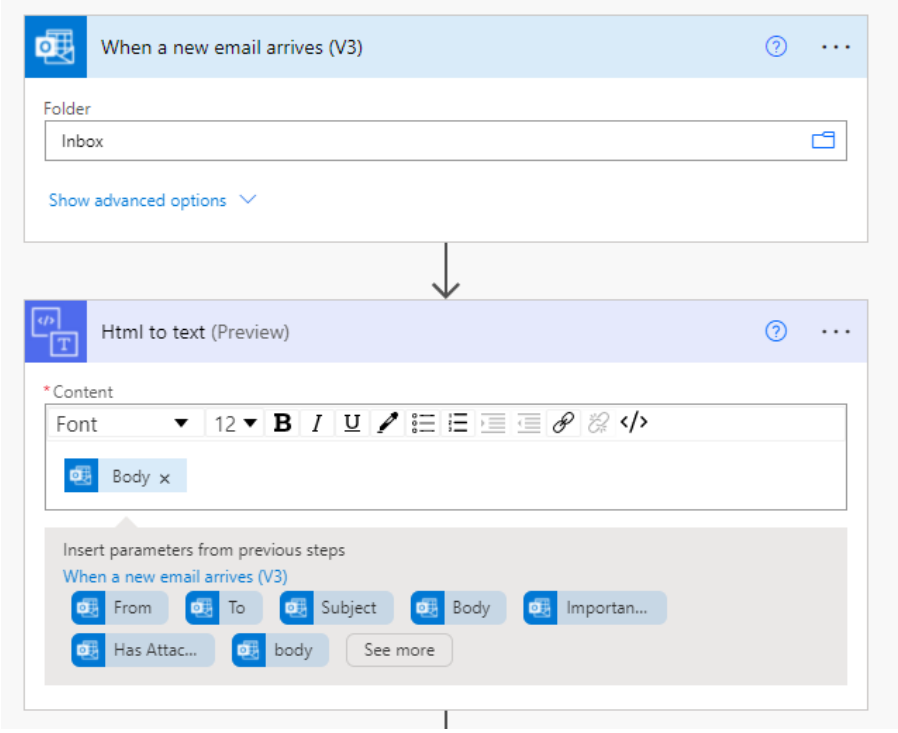
3. Then, in the next flow, select the email that you would like to monitor and trigger event from it mail received and where to send the info of mail in Team. Then, click on "Create " to proceed.



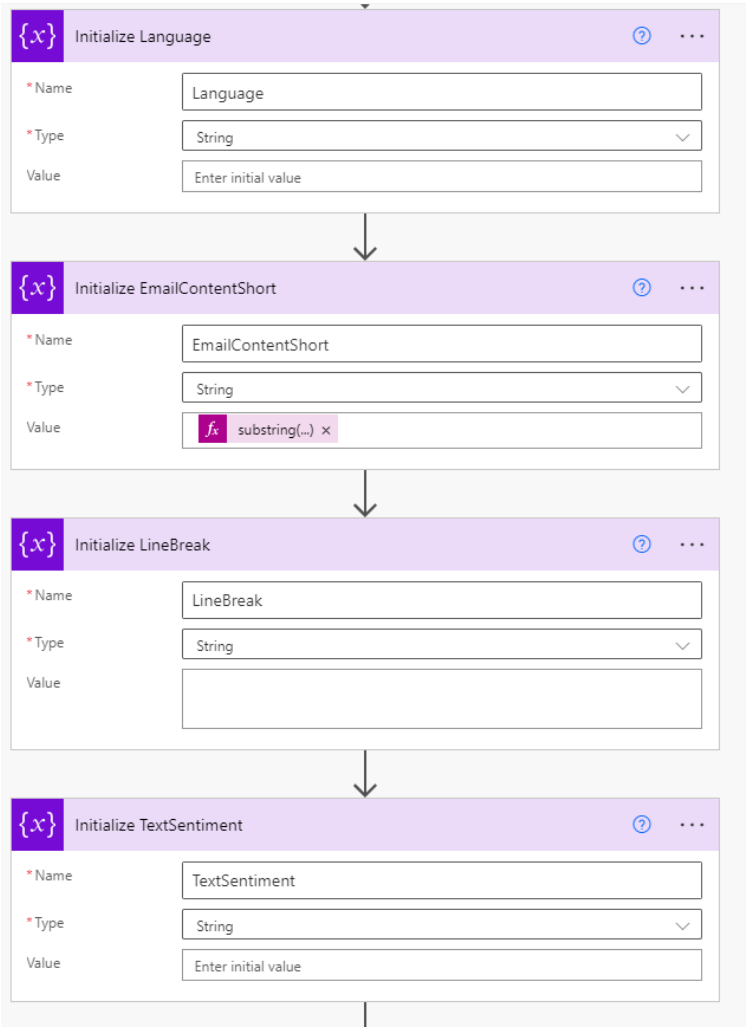
4. In next page, click on "Continue" again to proceed the configuration flow.



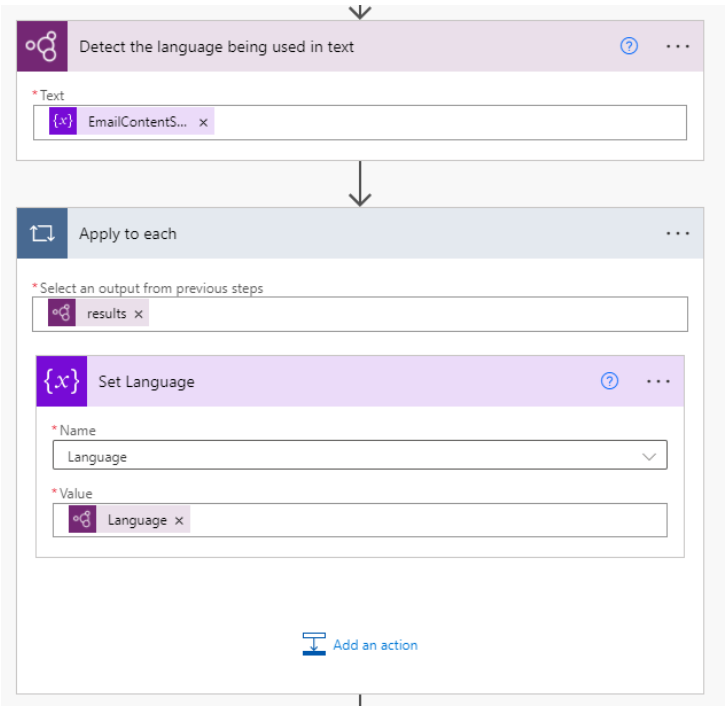
5. In the first node, it is for you to stated which directories in your mailbox that you would like to monitor for trigger the event. The next node is to set up the content to be lookup in mail and convert to text.



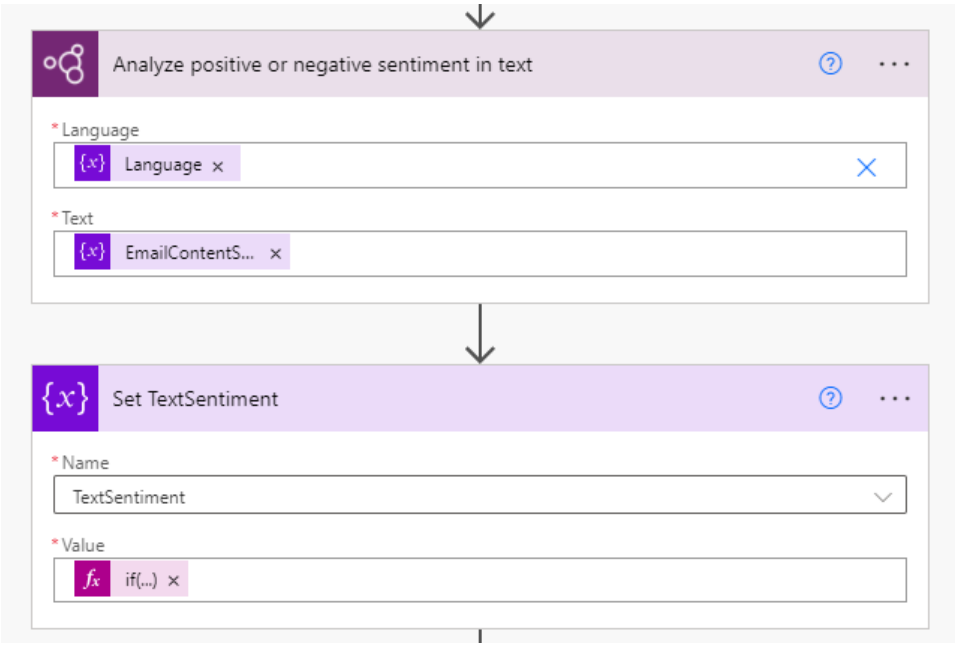
6. Later on, in the next few flow of node are to creating variables for storing the info get and insert value get from the “html to text” node to the respective variables.



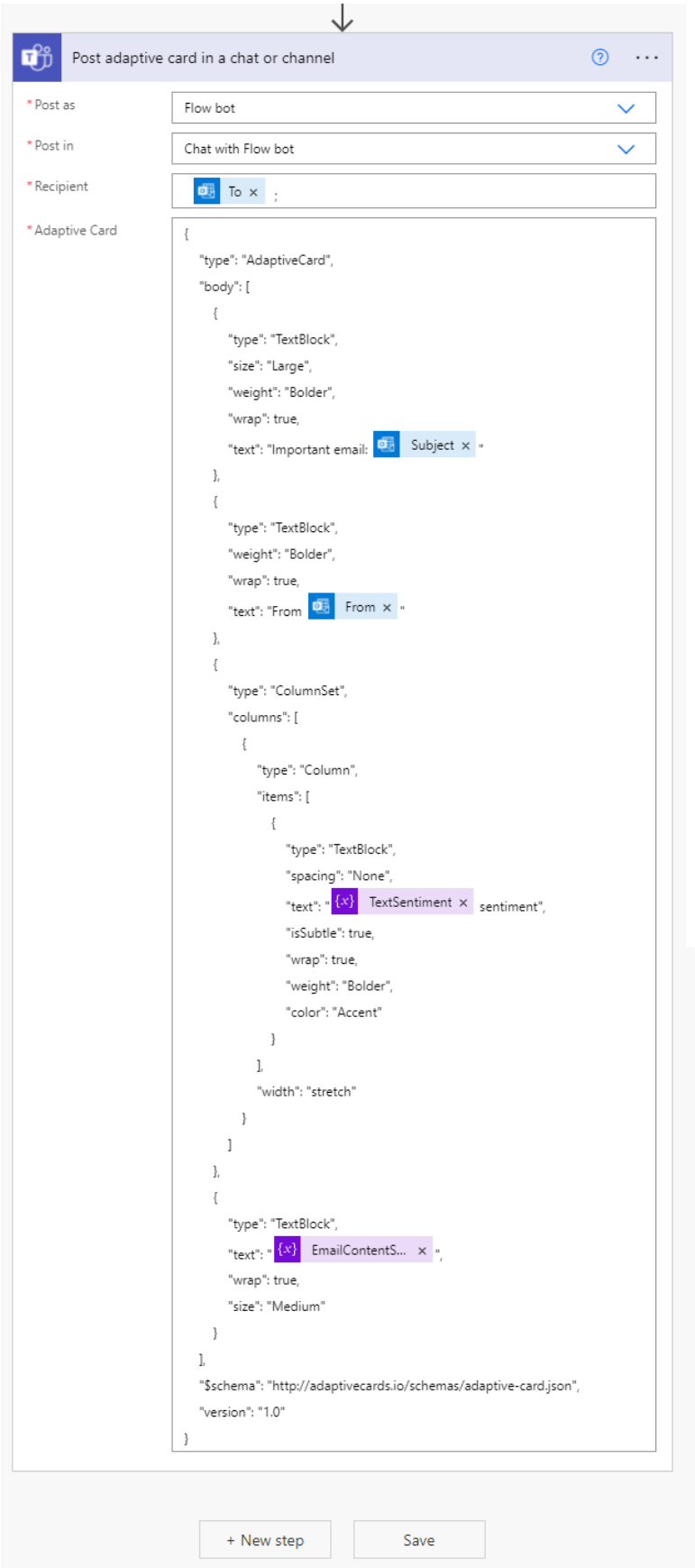
7. The next 2 flow is to using AI to detect what is the languages used in the email and the result get from another node is assigned to the previous variable declare from above.



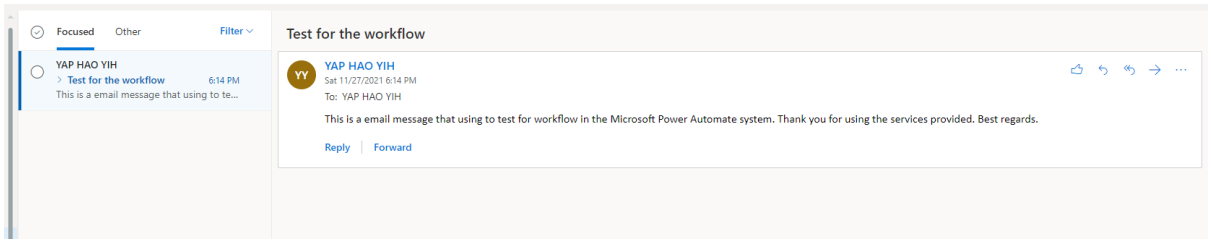
8. Next 2 flow are to understand your text of email using the AI to analyse on positive or negative sentiment in the mail then store the output into variables in the next node.

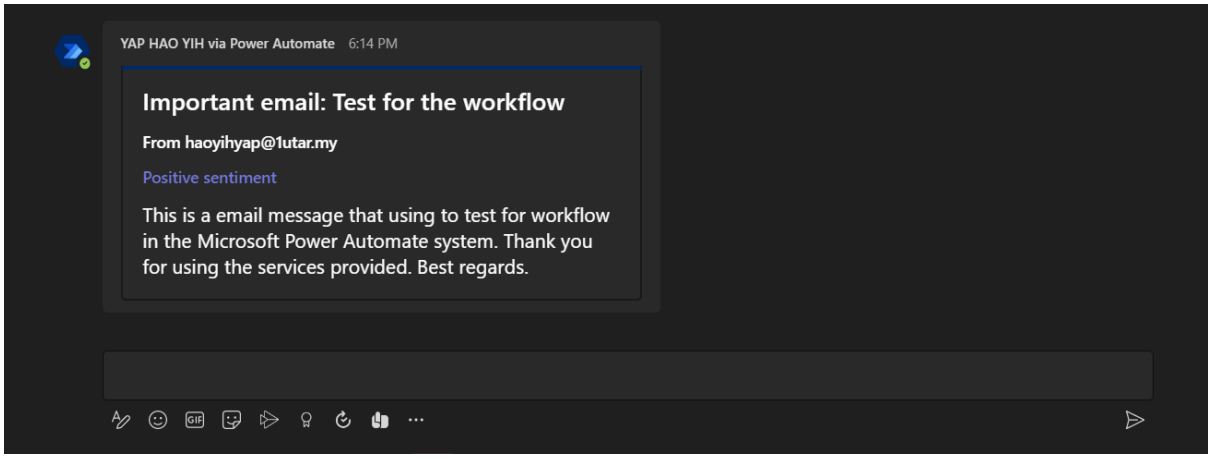


9. The last flow is for us to setting up the adaptive card use to post the result to team and who to send to. If you want to send to a channel or group in Team, you can change the config via the “Post in” sections. Once finished setup the configuration, click on “Save” to submit the configuration setting and activating the workflow.



10. By testing the workflow, once it received the mail from other, a message are sent to Team chat.





MS Power Automate Simple Workflow Developing Guide

Google Calendar Trigger on Meeting in Team

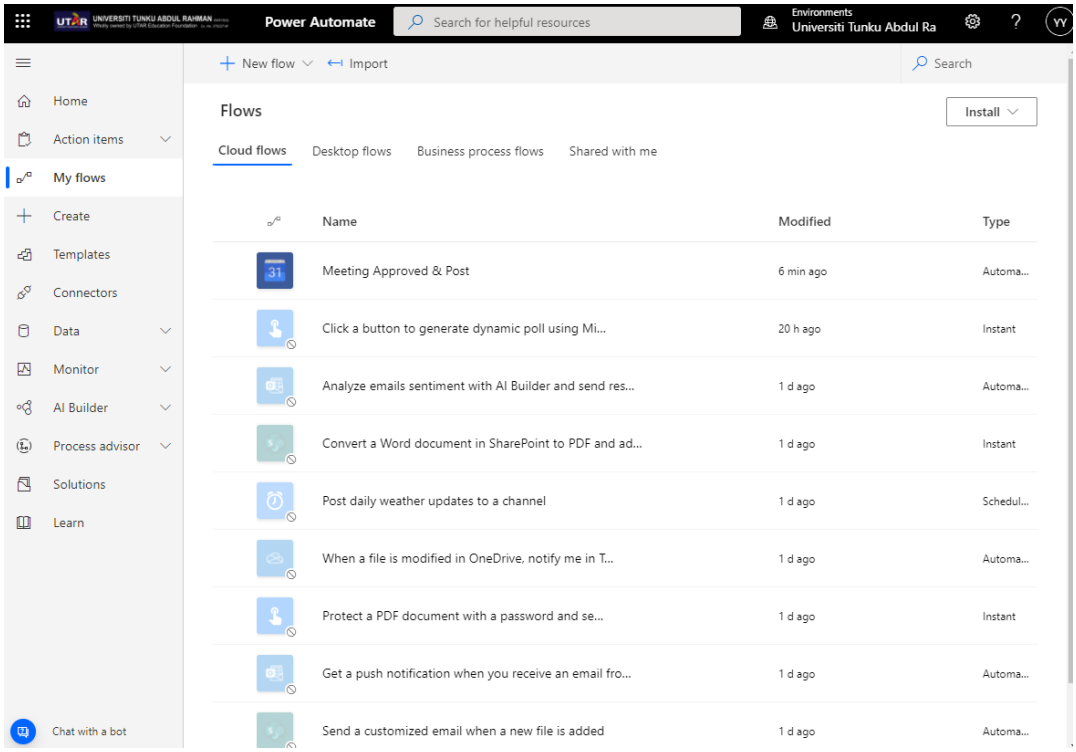
This workflow is mainly for automating the process of requested approval for a meeting for to be held and announce to the people via MS Team.

Prerequisite

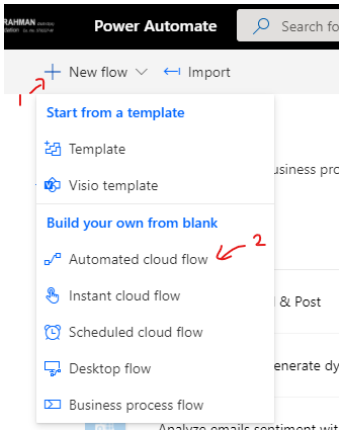
- Google Calendar Account Registered.
- Microsoft Team account registered.

Workflow step:

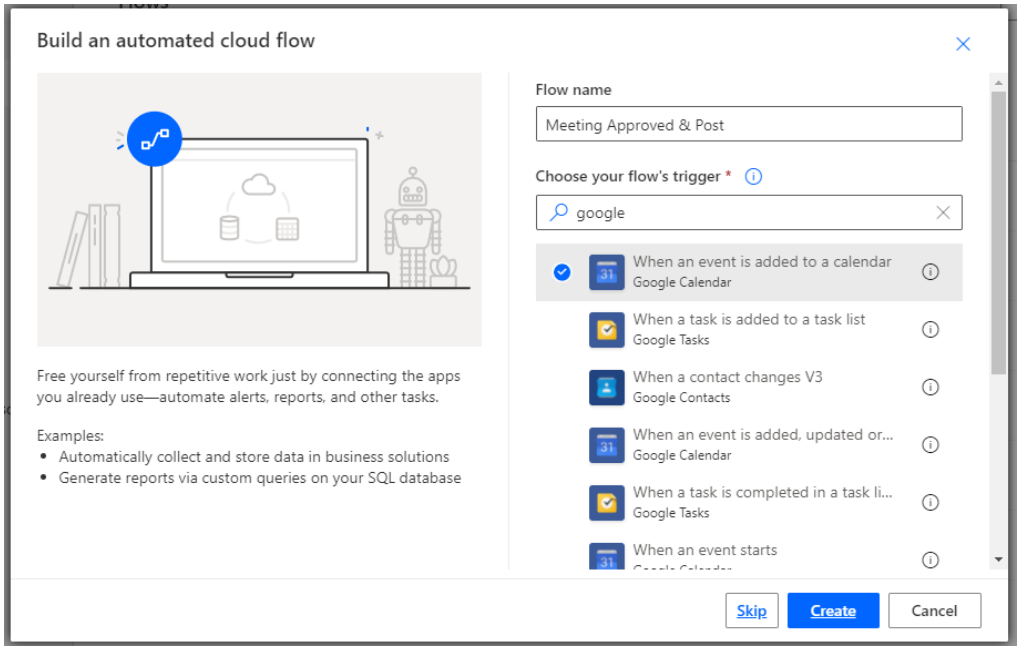
1. The first things that should be concerned in Power Automate workflow creation is user should have a Power Automate Microsoft Account registered. You can register a Power Automate Account via https://asia.flow.microsoft.com/en-us/
2. In your MS Power Automate dashboard, go to the “My Flows” section and it will shows all the flow you have been handle and activated.



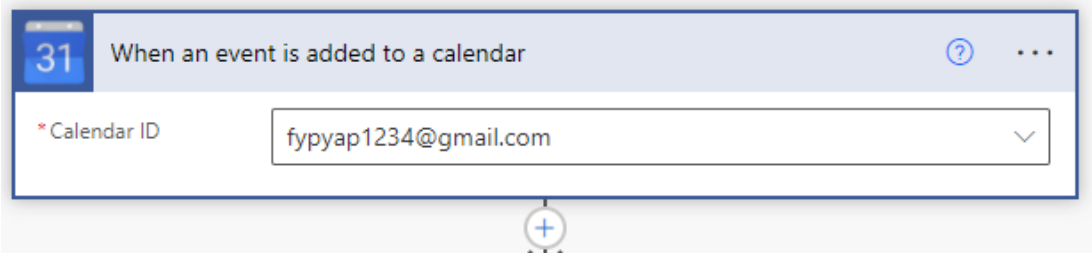
3. To create the workflow in the MS Power, Automate, click on the "+ New flow" column above the page and select "Automated cloud flow", if you want to create a new flow using the Power Automate by yourself from scratch.



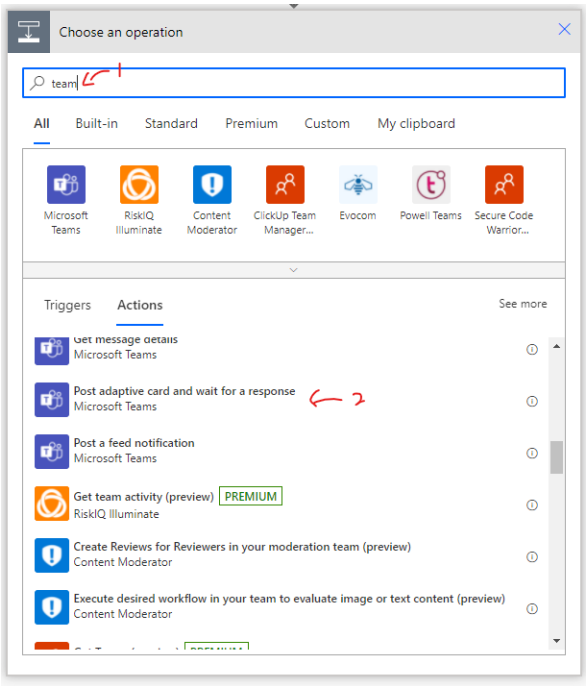
4. Then, give a name for your flow. In this case we will be select "Meeting Approved & Post" as our flow name. Then, select "When an event is added to a calendar" as our flow trigger, then click on "Create" to start your journey of setup an automated workflow.



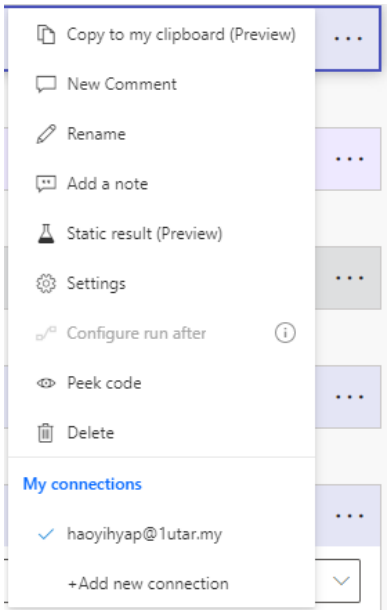
5. Then, in the first flow configuration, you need to login to your Google Calendar account that you want to use it as a trigger. This will help you to create the API credential with your apps automatically. Once completed first node configuration, click on "+" button below the node to move to next node for continuing the flow.



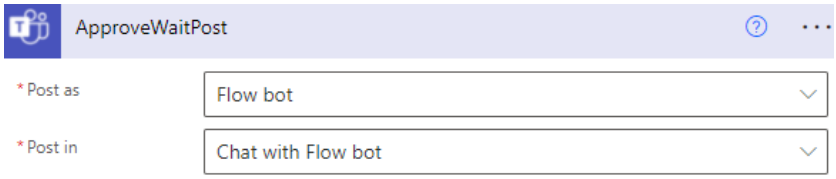
6. Once "+" button clicked, it will need you to choose the flow node that you would like to continue. Search for "Post Adaptive card and wait for a response" as our next node.



7. In the flow created, let us change the name of node by clicking the 3 dotted buttons beside the node and select “Rename” to rename the node with a shorter name, so that it will make us more convenient when using JSON to select for data return. In this case we will be changing the name of this node as “ApproveWaitPost”.



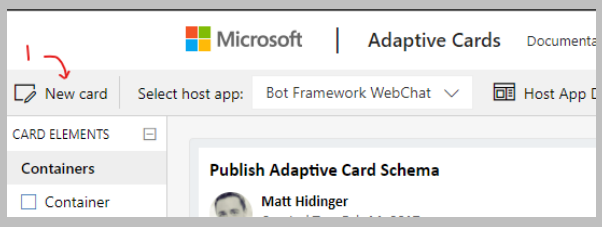
8. Then, let us configure on the node once we are finishing renaming the node. Select “Flow bot” from dropdown menu of the “Post as” column to let us post the message as a bot. Then, since we want to send the request to the people in charge to approved, select “Chat with Flow bot” so that the message can send to the people in-charge by using chat. Of course, you may also set to post the message to Channel or Group chat.

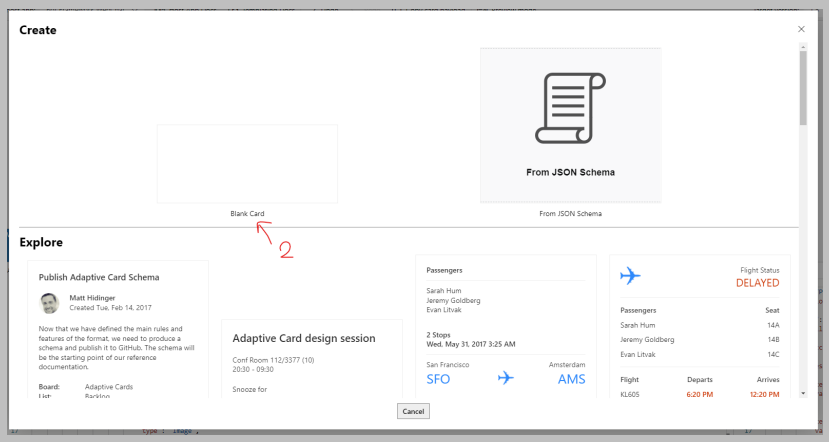


9. Then, in the "Message" column, we will be needed to setup our adaptive card and paste it in this column. To create adaptive card, go to https://adaptivecards.io/designer/ to design your adaptive card interface at the page and copy the code that shown below to paste it to the "Message" column. Once you successfully pasted your adaptive card template in the Message column, you can add the dynamic value get from the trigger to be pasted on the appropriate section based on your design.

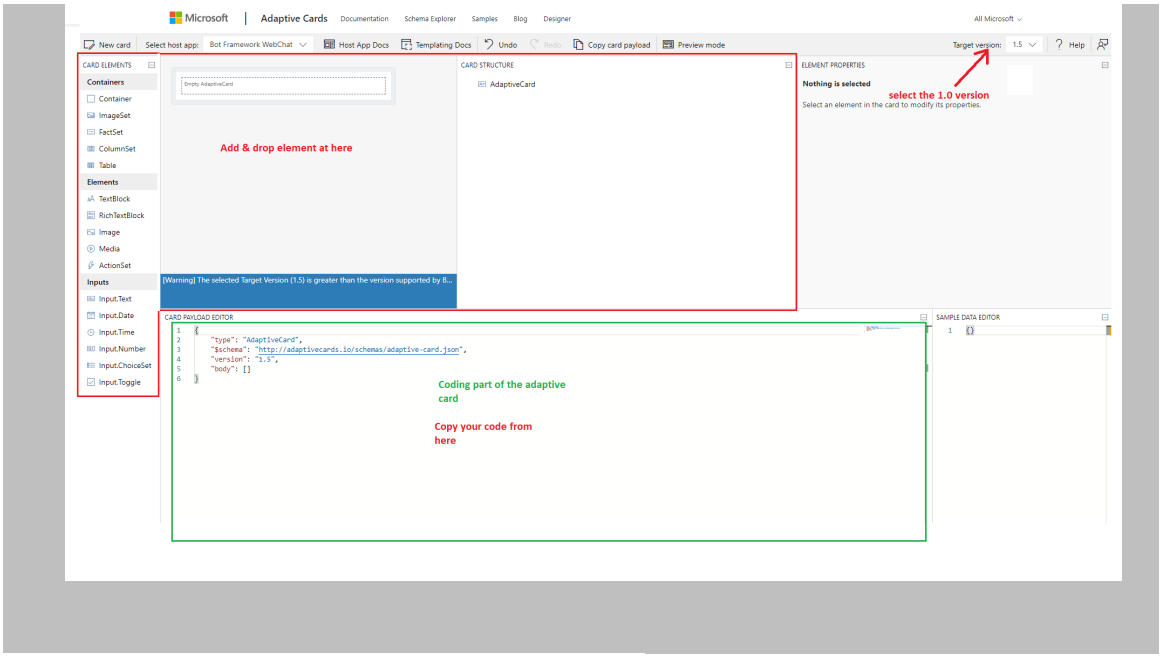
Way to design adaptive card template:

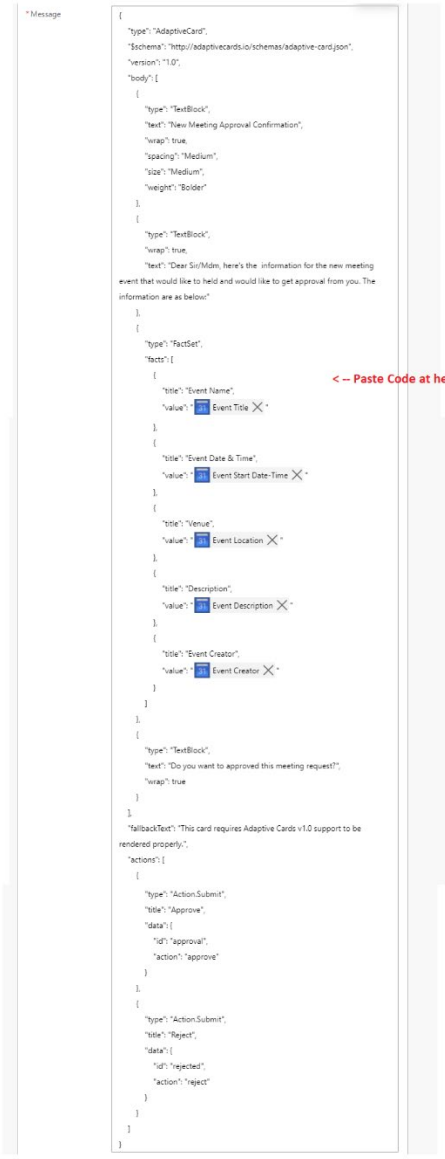
1. Go to https://adaptivecards.io/designer/
2. Then, click on the "New Card" button at the upper left of the webpage and select "blank card" once the "Create" box is prompt out.



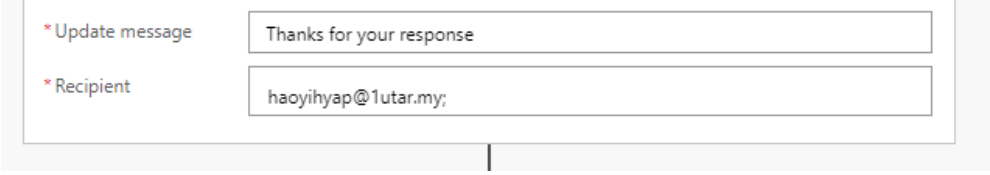


3. Next, on the "Target version" field at the right top of editor, select 1.0 as our selection. This is because MS Team only can displayed the adaptive card that are in version 1.0, other version are not able to displayed in the MS Team. Now, you can start you design of adaptive card by using add and drop at the editor or design using hardcode. Once finished copy the code that consist at below to paste in the Message column of the flow.


Microsoft | Adaptive Cards
Documentation
Schema Explorer
Samples
Blog
Designer
New card
Select host app:
Bot Framework WebChat
Host App Docs
Templating Docs
Undo
Copy card payload
Preview mode
Target version:
1.5
Help
CARD ELEMENTS
Containers
Container
ImageSet
FactSet
ColumnSet
Table
Elements
TextBlock
RichTextBlock
Image
Media
ActionSet
Inputs
Input.Text
Input.Date
Input.Time
Input.Number
Input.ChoiceSet
Input.Toggle
Add & drop element at here
CARD STRUCTURE
AdaptiveCard
ELEMENT PROPERTIES
Nothing is selected
Select an element in the card to modify its properties.
select the 1.0 version
CARD PAYLOAD EDITOR
SAMPLE DATA EDITOR
Coding part of the adaptive card
Copy your code from here

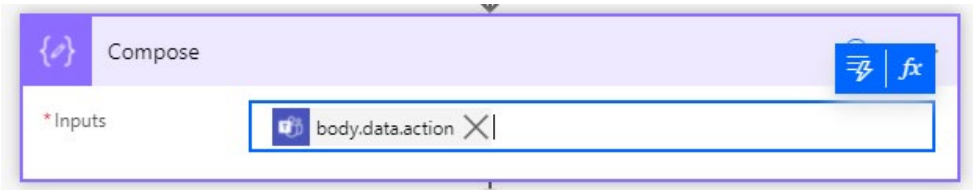

* Message
< -- Paste Code at here

10. Then, insert your message to return to the user when they submit the form backed in the "Update message" column and specifying the receipt that you would like to send to in the "Recipient" column.

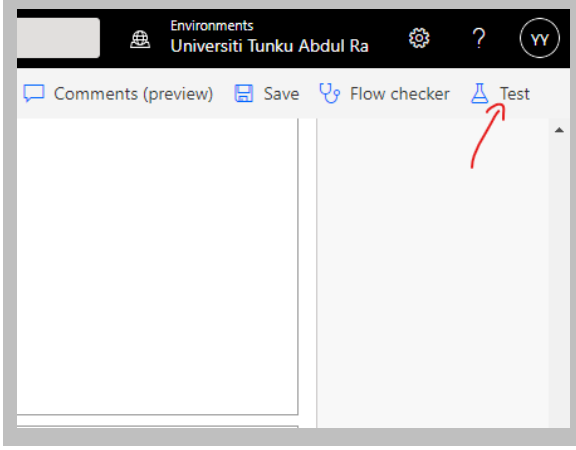


11. Later, add another flow by clicking the "+" button or "+ New step" button below to create new node. Select "Compose" as our next node. This node is for us to input some of the value into the flow, so that it become a "Dynamic value" that for us to use in later. Once the form is submitted back to this workflow, we need to get it from the "Dynamic value" to checked whether the person have approved the meeting. However, MS Power Automate have one serious bug that cannot be solved which is once they get the value backed from the user, it cannot convert to dynamic value. So, we need to get the value by ourself. Click on the "Expression" board beside the column when we hover to the column and insert this expression below to the column and click "OK". This expression are mainly for us to get output from the node name that we stated inside and it was located inside the body > data > action in the JSON. (**Note: You must confirm that he path of JSON stated for looking the data must be correct to avoid error.)

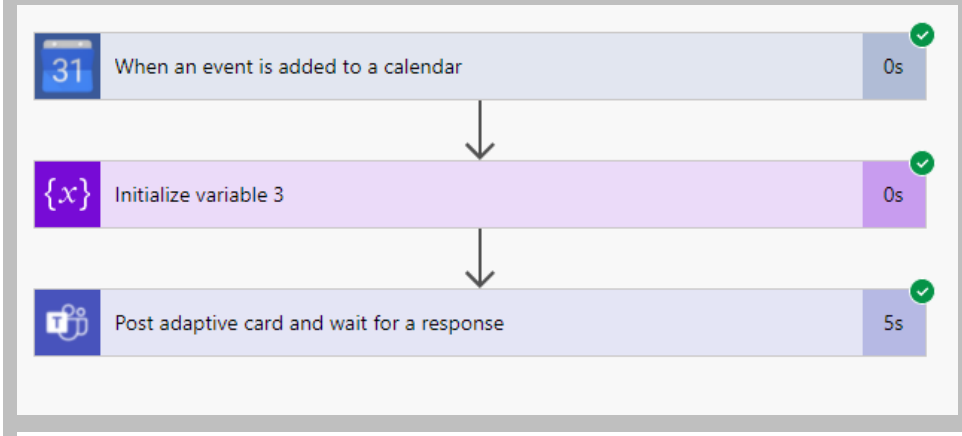
```
outputs('ApproveWaitPost').body.data.action
```

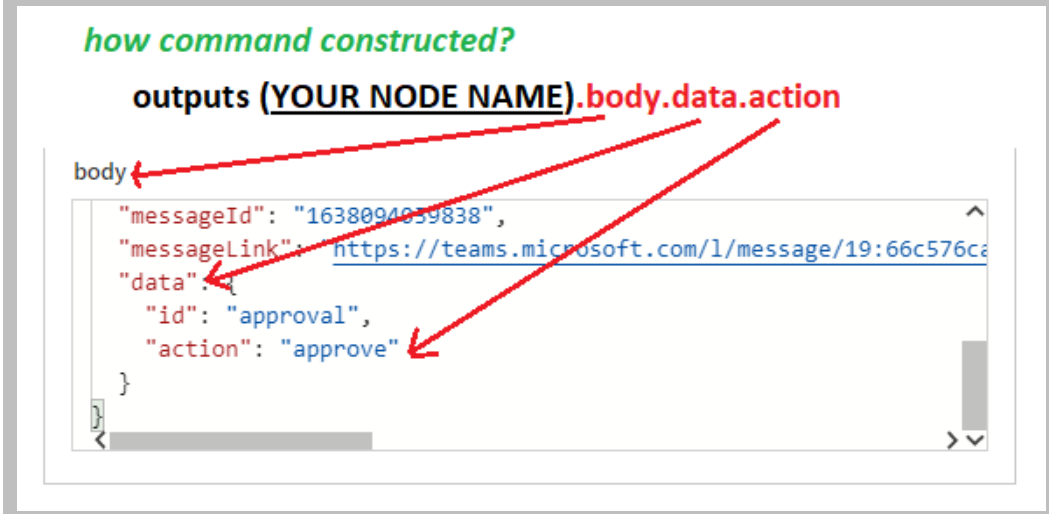


To know where our data reflected are located, we need to try to run our flow by clicking the "Test" button on the upper right

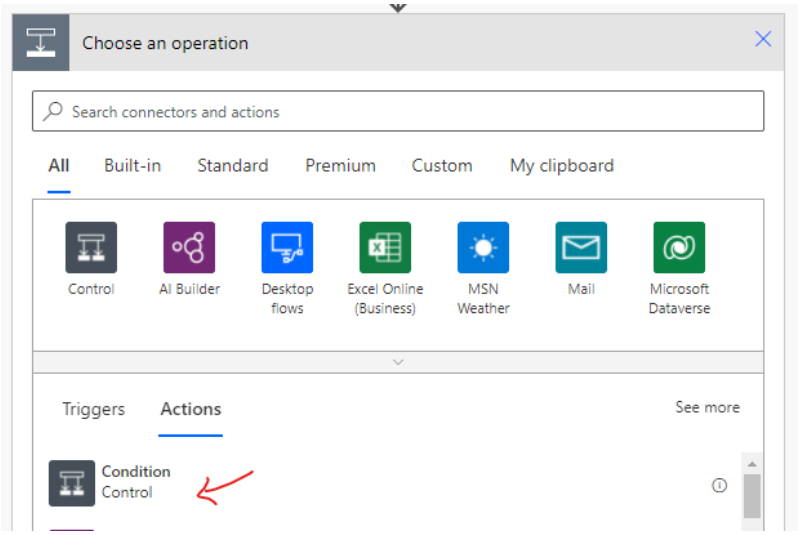


Then, select “Manually” from the selection and click “Test”. Now, you can go to your Google Calendar to create a task simply and accept the request send to your chat. Once it successfully executed, it will show green tick at the side of each node and now click the last node to see the result fetch back. It will return a bunch of value at the “body” column.

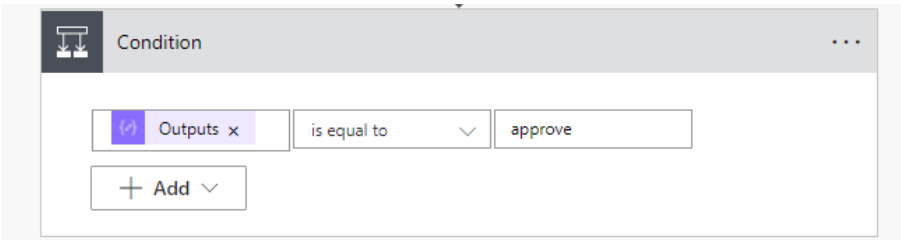




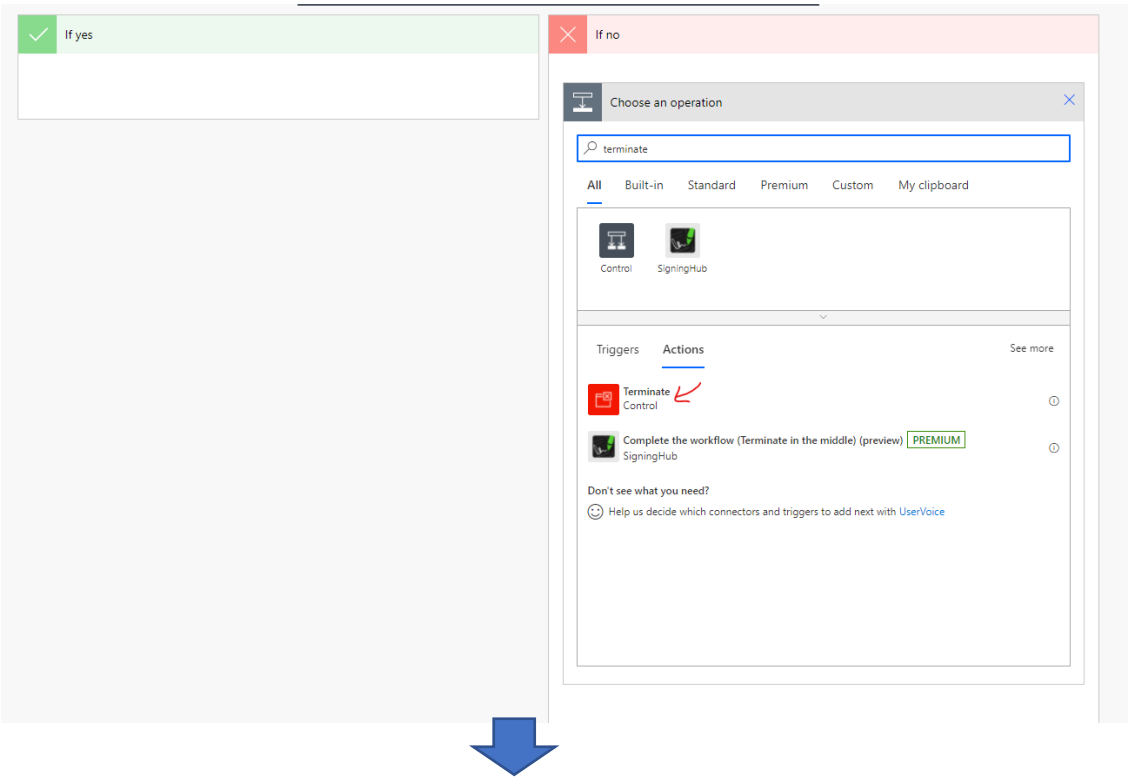
12. In next step, click on “+ New step” to create another node for us to checking the value reflected by user whether reject or approve the meeting. Search for “Condition” and select it as our next node.

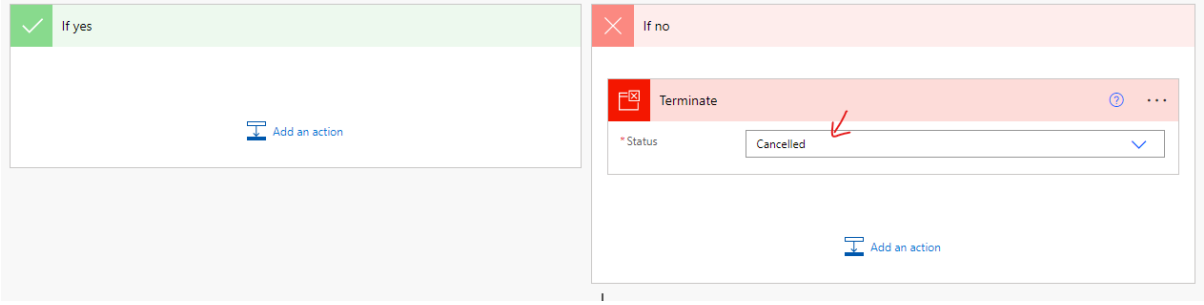


13. Then insert the output compose value to check whether the value is approved.

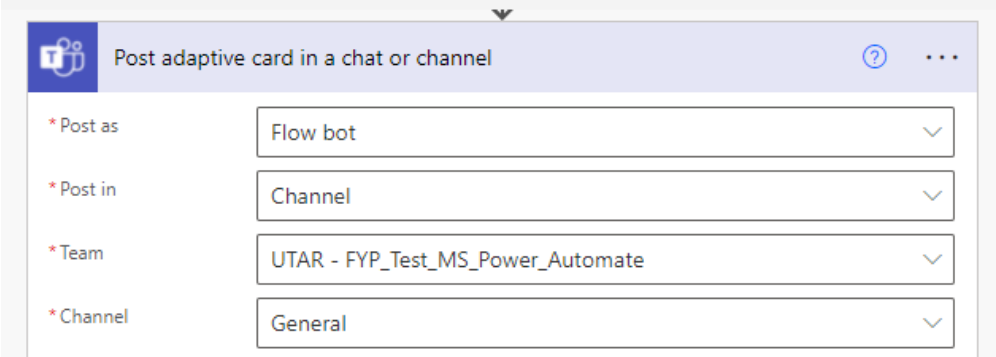


14. In the "If no" side, click on "Add an action" and search for "Terminate" node, so that the flow will stop when the request is rejected. After that, set "Cancelled" for the "Status" field in the terminate node.

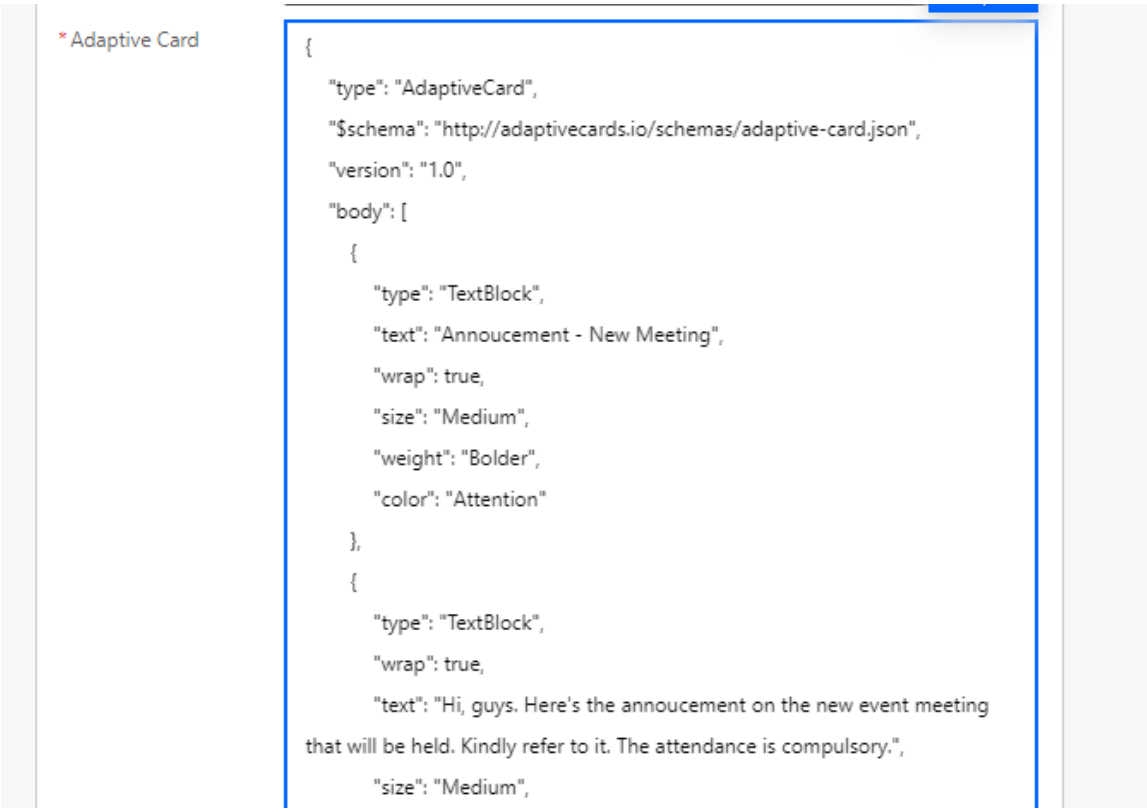


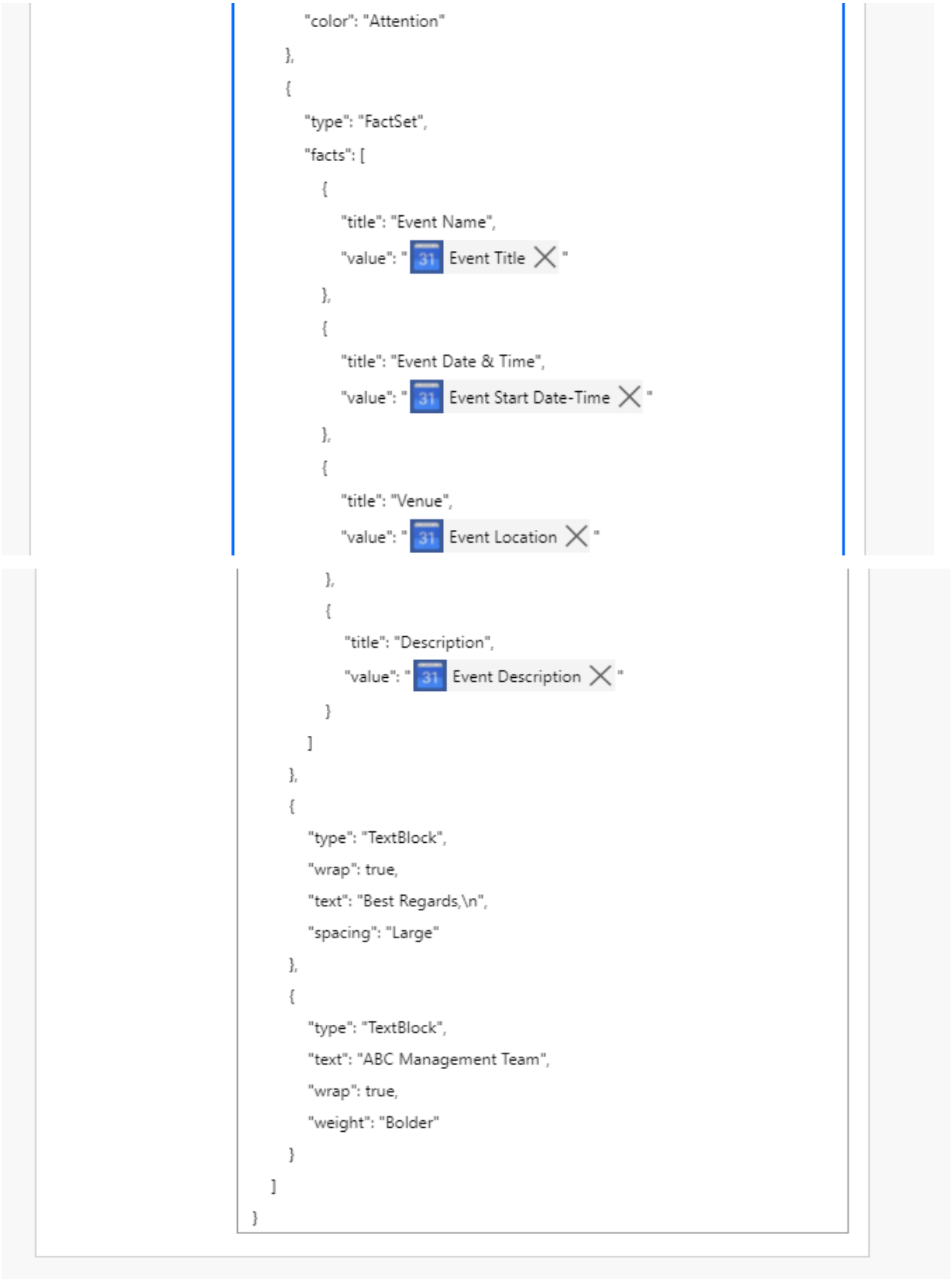


15. In the last node, click on "+ New step" and search for "Post adaptive card in a chat or channel" as our last node to send the value of meeting to announce in the channel. In this case, set the "Flow bot" for "Post as" column and "Channel" for "Post in" then select the Team and Channel that wanted to post the announcement.

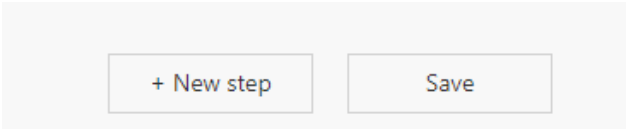


16. As previously, go to https://adaptivecards.io/designer/ to design your adaptive card design and paste it in the "Adaptive card" section along with the dynamic value required.



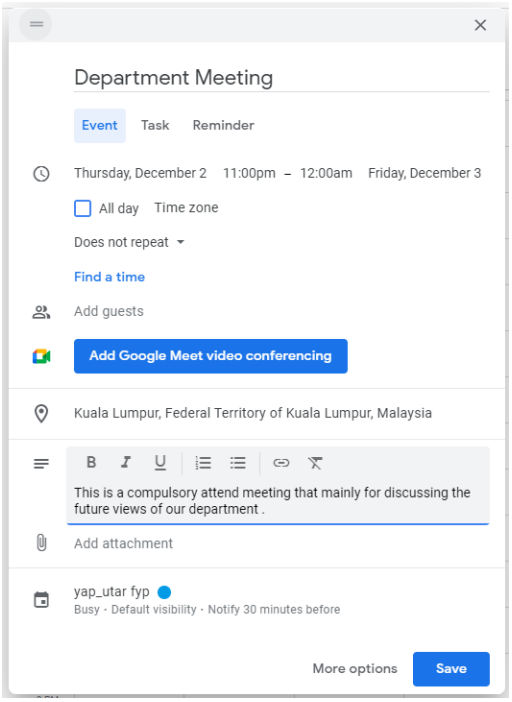


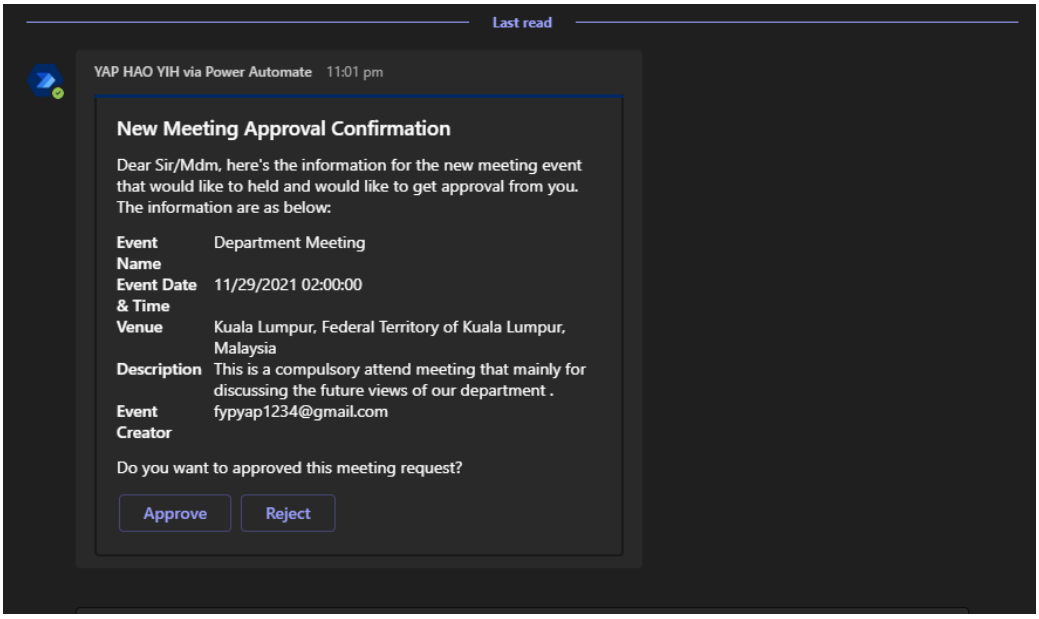
17. Now, the workflow are successfully setup and don't remember to click on the "Save" button below to save the workflow.

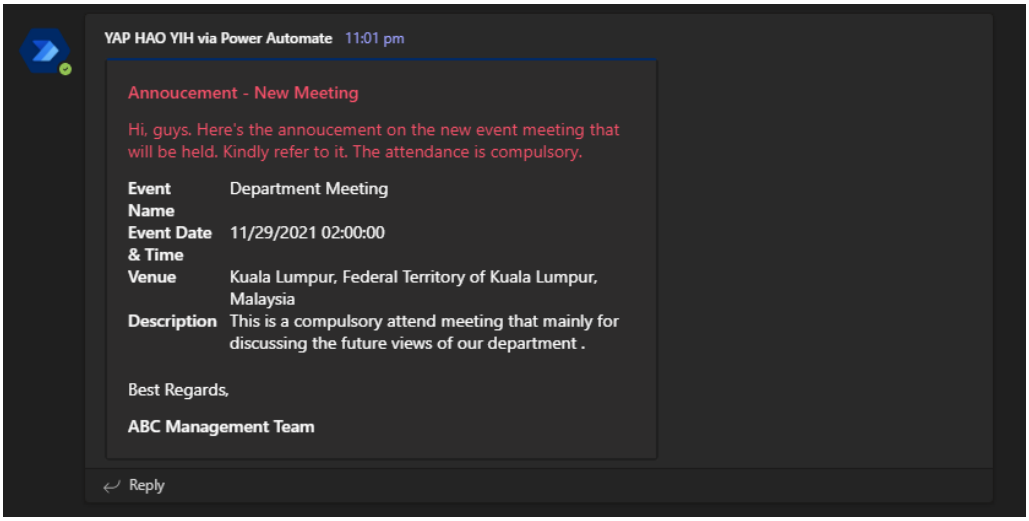


18. In this step onward, we need to test the workflow by clicking the “Test” button on the upper right of the editor and select “Manually” as the selection then click on “Save & Test”.

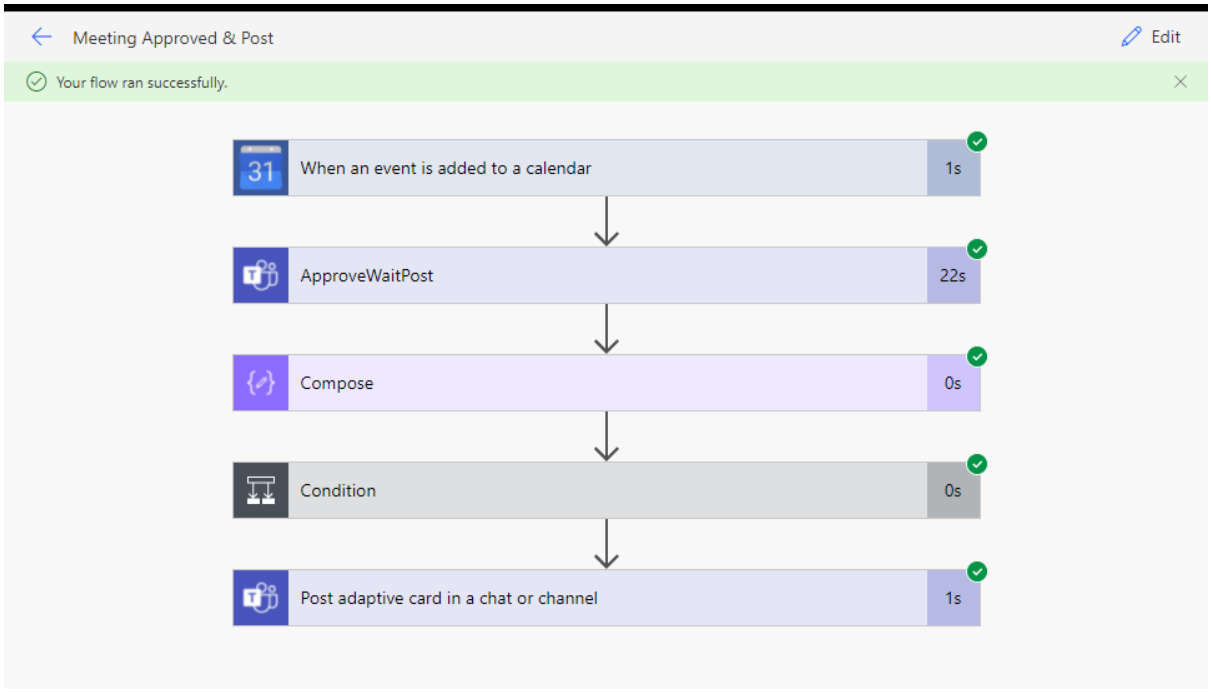
19. Now go to you can go and create a new event in your Google Calendar and approved the request once received the request in your chat and you will see the announcement are shown in channel once it approved.


Department Meeting
Event
Task
Reminder
Thursday, December 2 11:00pm – 12:00am Friday, December 3
All day
Time zone
Does not repeat
Find a time
Add guests
Add Google Meet video conferencing
Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia
This is a compulsory attend meeting that mainly for discussing the future views of our department .
Add attachment
yap_utar fyp
Busy · Default visibility · Notify 30 minutes before
More options
Save


Last read
YAP HAO YIH via Power Automate 11:01 pm
New Meeting Approval Confirmation
Dear Sir/Mdm, here's the information for the new meeting event that would like to held and would like to get approval from you. The information are as below:
Event Name Department Meeting
Event Date & Time 11/29/2021 02:00:00
Venue Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia
Description This is a compulsory attend meeting that mainly for discussing the future views of our department .
Event Creator fypyap1234@gmail.com
Do you want to approved this meeting request?
Approve
Reject


YAP HAO YIH via Power Automate 11:01 pm
Annoucement - New Meeting
Hi, guys. Here's the annoucement on the new event meeting that will be held. Kindly refer to it. The attendance is compulsory.
Event Name Department Meeting
Event Date & Time 11/29/2021 02:00:00
Venue Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia
Description This is a compulsory attend meeting that mainly for discussing the future views of our department .
Best Regards,
ABC Management Team
Reply

20. Now, it shows green tick in all of your node which indicates that your workflow is successfully executed.



Server Monitoring Tools - Zabbix Server Installation Guide

Zabbix Server Installation

Server Setup

1. Get your Linux updated by updating & upgrading your ubuntu app.

   $ sudo apt update

   $ sudo apt -y upgrade

2. Disable the ipv6 config by adding the line in sysctl.conf file

   $ sudo nano /etc/sysctl.conf

   ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

   net.ipv6.conf.all.disable_ipv6 = 1

   Ctrl+X → y → Enter

   ~

3. Update & Install SSH Server** (*If do not have)

   //before install net-tool

   $ sudo nestat -a

   //if not found anything

   $ sudo apt install -y net-tools

   //after that check for ip address

   $ ip a

   //to turn on ssh for remote control

   $ sudo apt install -y openssh-server

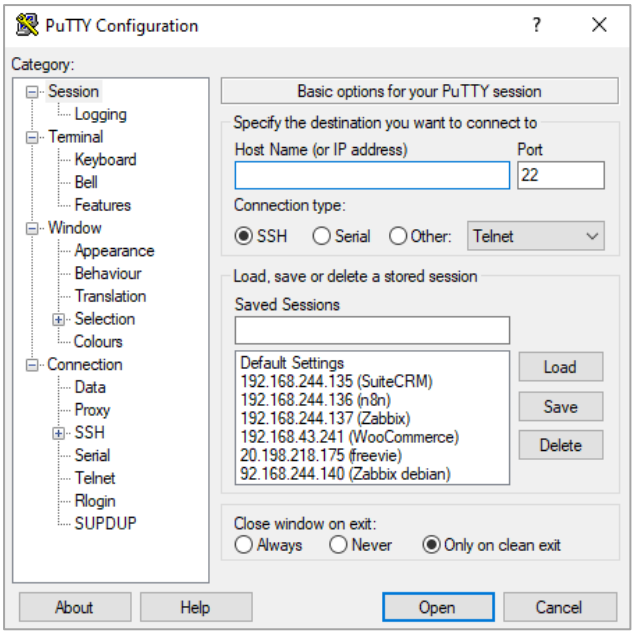
   //to check whether ssh setup

   $ sudo netstat -a | more

   //this will show all interface and details include ip address, mac address

   $ ip addr sh

4. Get your IP address and used putty to access.



5. Set up a intelligently install or remove packages as needed, in order to complete the upgrade. It will attempt to upgrade the most important packages, at the expense of those deemed less important.

   ```
   $ sudo apt upgrade dist -y
   ```

6. Download php & it's plugin if needed

   ```
   $ sudo apt install php7.4 php7.4-
   {common,fpm,curl,zip,mysql,xml,xmlrpc,imagick,gd,imap,mbstring} -y
   ```

   //check php version

   ```
   $ php --version
   ```

7. This installation using Nginx to install, so must be disable the Apache.

   //disable apache 2 if u want to use nginx

   ```
   $ sudo systemctl disable apache2
   ```

   //OR directly uninstall apache2

   ```
   $ sudo apt-get purge apache2
   $ cd /etc
   $ sudo rm -rf apache2
   ```

8. Startup Nginx service & php service

   //test nginx service work or not

   ```
   $ sudo nginx -t
   ```

**if not found

```
$ sudo apt install nginx -y
```

//restart nginx service after any changes made on nginx

```
$ sudo service nginx restart
```

//to enable the nginx service -- run if u already set up all ip service

```
$ sudo systemctl enable nginx
```

//restart fpm service after any changes made

```
$ sudo service php7.4-fpm restart
```

//check status of fpm

```
$ service php7.4-fpm status
```

9. Install database in your server.

```
$ sudo apt install mysql-server mysql-client -y
```

//to enable the sql/mysql service

```
$ sudo systemctl enable mysql
```

10. Setup database root user configuration.

//Create a user admin for database admin

```
$ sudo mysql_secure_installation
```

//insert as below:

```
Enter current password for root (enter for none): Just press the Enter
Set root password? [Y/n]: Y
New password: Enter password
Re-enter new password: Repeat password
Remove anonymous users? [Y/n]: Y
Disallow root login remotely? [Y/n]: Y
Remove test database and access to it? [Y/n]:  Y
Reload privilege tables now? [Y/n]:  Y
```

//create a user for managing the database using command

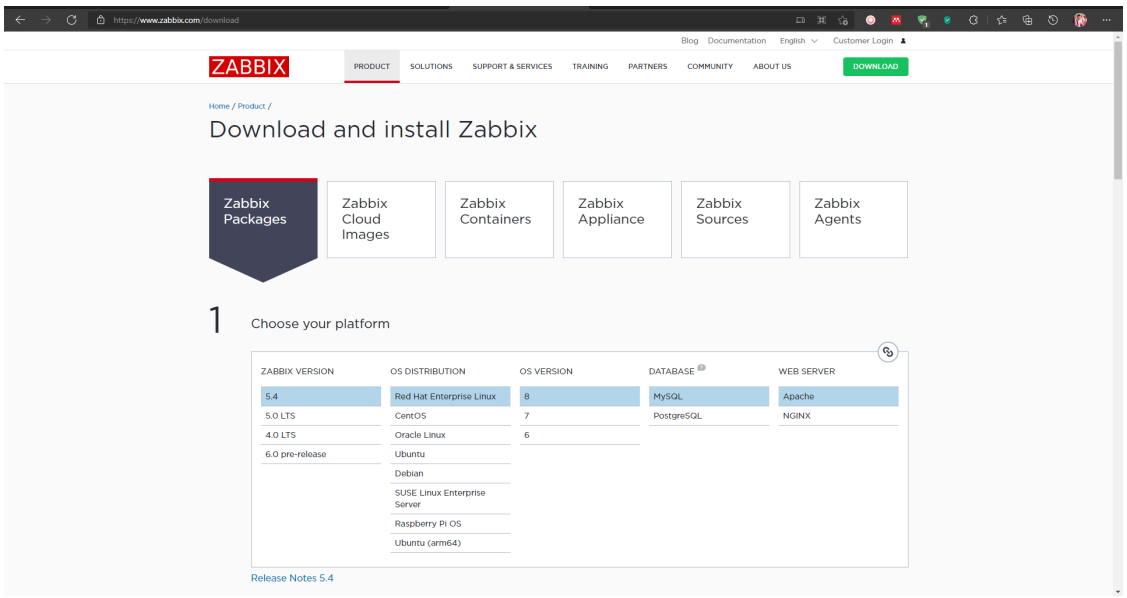
```
$ sudo mysql -u root -p
```

// Mysql command

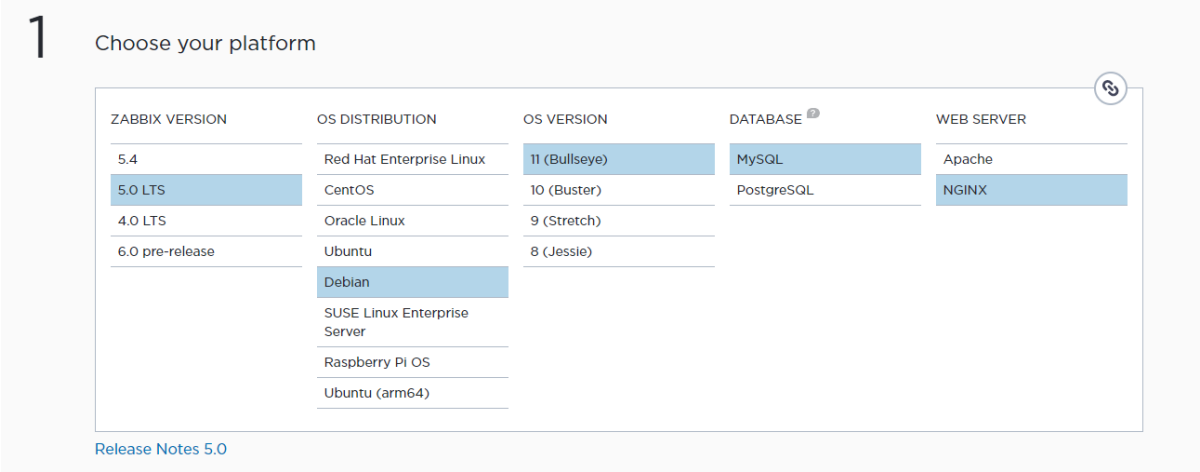
```
MariaDB > CREATE USER 'admin'@'localhost' IDENTIFIED BY 'haoyih0120';
MariaDB > GRANT ALL PRIVILEGES ON *.* TO 'admin'@'localhost' WITH GRANT OPTION;
MariaDB > GRANT PROXY ON ''@'' TO 'admin'@'localhost' WITH GRANT OPTION;
MariaDB > FLUSH PRIVILEGES;
MariaDB > exit
```

Zabbix Server Installation Setup

11. Go to https://www.zabbix.com/download to download your Zabbix packages.



12. Then, select for the version of Zabbix that you would like to install as well as the OS distribution, version, database system and web server of the server that would like to install the Zabbix server.



13. Install Zabbix repository based on the website configuration show in Zabbix website.

    // Downloading the Zabbix server .deb file

    $ wget https://repo.zabbix.com/zabbix/6.0/ubuntu/pool/main/z/zabbix-release/zabbix-release_6.0-3+ubuntu20.04_all.deb

    //Using dpkg to install the Zabbix deb packages

    $ sudo dpkg -i zabbix-release_6.0-3+ubuntu20.04_all.deb

    // Update & upgrade your server packages

    $ sudo apt update

    $ sudo apt upgrade

14. Install the Zabbix server, frontend and it's agent

    $ sudo apt install zabbix-server-mysql zabbix-frontend-php zabbix-nginx-conf zabbix-sql-scripts zabbix-agent

15. Create database and user account specialized for the Zabbix server

    //create a user for managing the database using command

    $ sudo mysql -u root -p

    // MariaDB command

    Mysql > create database zabbix character set utf8mb4 collate utf8mb4_bin;

    Mysql > CREATE USER 'zabbix'@'localhost' IDENTIFIED BY 'password';

    Mysql > GRANT ALL PRIVILEGES ON zabbix.* TO 'zabbix'@'localhost' WITH GRANT OPTION;

    Mysql > FLUSH PRIVILEGES;

    Mysql > exit

16. Import the initial schema and data of Zabbix to database

    $ sudo zcat /usr/share/doc/zabbix-sql-scripts/mysql/server.sql.gz | mysql -uzabbix -p zabbix

17. Configure the database for Zabbix server by inserting your database password into the configuration file.

    $ sudo nano /etc/zabbix/zabbix_server.conf

    ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

    Ctrl+W → Find "DBPassword"

    DBPassword=password

    Ctrl+X → y → Enter

    ~

18. Configuration on php for Zabbix frontend by added few line and you can change the "fastcgi_pass unix" to the correct directories if the directories that initially given is corrupts (*remember to go to nginx.conf to change the include to only accept *.conf only)

    $ sudo nano /etc/nginx/sites-enabled/zabbix.conf

    ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

    //make sure your configuration file is edit as shown at below

```
server {
        listen 80;                          <- uncomment this line
        listen [::]:80;                     <- add this line

        server_name     zabbix.hoxveweb.ml; <- insert your server name or localhost if you config Zabbix in virtual machines
        server_tokens off;
        autoindex on;                       <- add this line
        client_max_body_size 512M;

        root    /usr/share/zabbix;
        index   index.php;

        location = /favicon.ico {
                log_not_found   off;
        }

        location / {
                try_files       $uri $uri/ =404;
        }

        location /assets {
                access_log      off;
```

```
                expires         10d;
        }

        location ~ /\.ht {
                deny            all;
        }

        location ~ /(api\/|conf[^\.]|include|locale|vendor) {
                deny            all;
                return          404;
        }

        location ~ [^/]\.php(/|$) {
                #fastcgi_pass    unix:/var/run/php/zabbix.sock;
                fastcgi_pass unix:/var/run/php/php7.4-fpm.sock;
                fastcgi_split_path_info ^(.+\.php)(/.+)$;
                fastcgi_index   index.php;

                fastcgi_param   DOCUMENT_ROOT   /usr/share/zabbix;
                fastcgi_param   SCRIPT_FILENAME
/usr/share/zabbix$fastcgi_script_name;
                fastcgi_param   PATH_TRANSLATED
/usr/share/zabbix$fastcgi_script_name;

                include fastcgi_params;
                fastcgi_param   QUERY_STRING    $query_string;
                fastcgi_param   REQUEST_METHOD  $request_method;
                fastcgi_param   CONTENT_TYPE    $content_type;
                fastcgi_param   CONTENT_LENGTH  $content_length;

                fastcgi_intercept_errors        on;
                fastcgi_ignore_client_abort     off;
                fastcgi_connect_timeout         60;
                fastcgi_send_timeout            180;
                fastcgi_read_timeout            180;
                fastcgi_buffer_size             128k;
                fastcgi_buffers                 4 256k;
                fastcgi_busy_buffers_size       256k;
                fastcgi_temp_file_write_size    256k;
        }
}
```

comment this line and added the next line to fic the fastcigi unix pass

Ctrl+X → y → Enter

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

19. Edit file /etc/zabbix/php-fpm.conf, uncomment and set the right timezone for you.

```
$ sudo nano /etc/zabbix/php-fpm.conf
```

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

//uncomment the line below by removing ";" and change the timezone

```
php_value[date.timezone] = Asia/Kuala_Lumpur
```

Ctrl+X → y → Enter

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

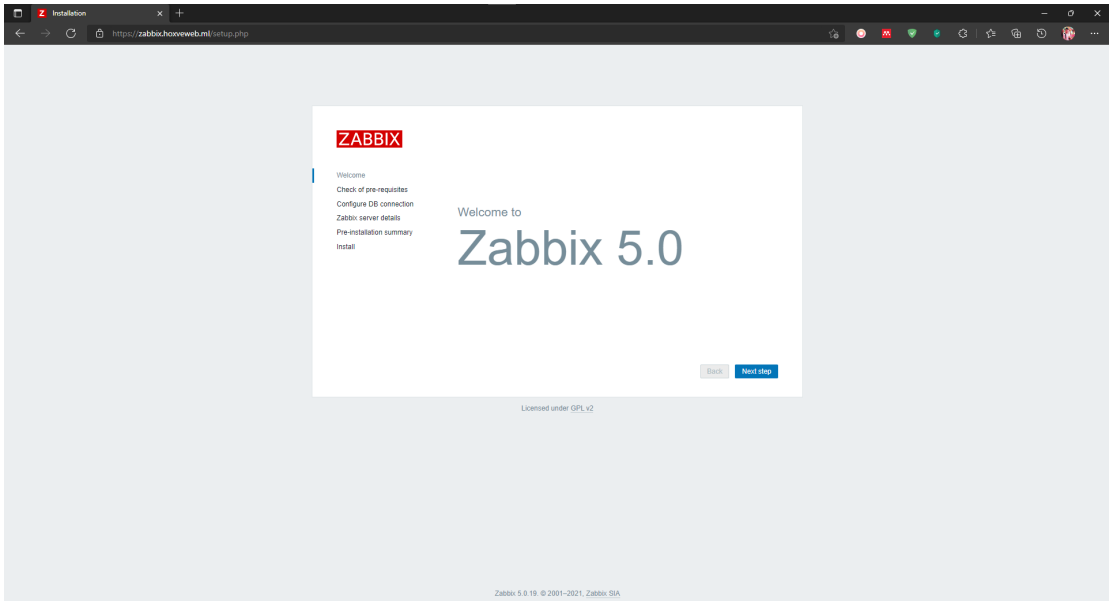
20. Change your Zabbix web file permission

```
$ cd /usr/share
$ sudo chown [username]:[username] zabbix
$ sudo chmod 766 zabbix
```

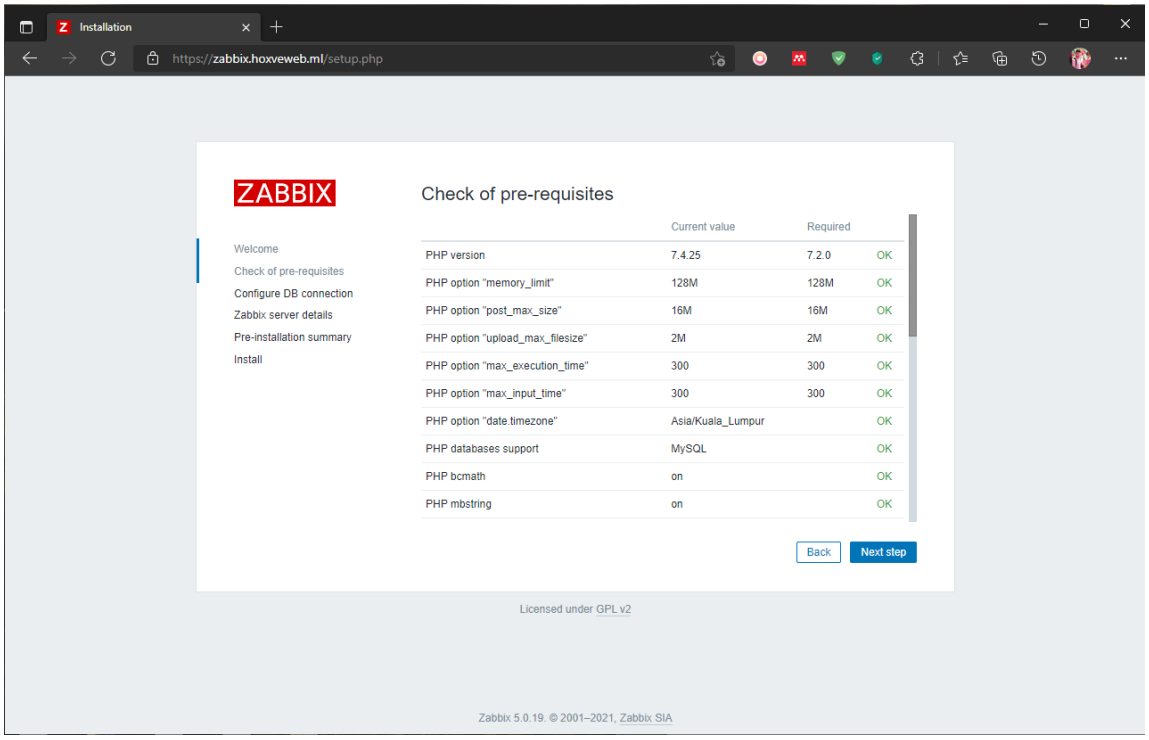
21. Start Zabbix server and agent processes and make it start at system boot.

```
$ sudo systemctl restart zabbix-server zabbix-agent nginx php7.4-fpm
$ sudo systemctl enable zabbix-server zabbix-agent nginx php7.4-fpm
```

22. Assessed your Zabbix in browser via your [ipaddress]/setup.php Then, click on the "Next step" button to further setup.



23. It will check for the prerequisite configuration of php configuration file. If you found any recommended action to be configure, you may go to it's configuration file and make changes on that.



//Way to go to the configuration path on php configuration file

$ sudo nano /etc/php/7.4/fpm/php.ini

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

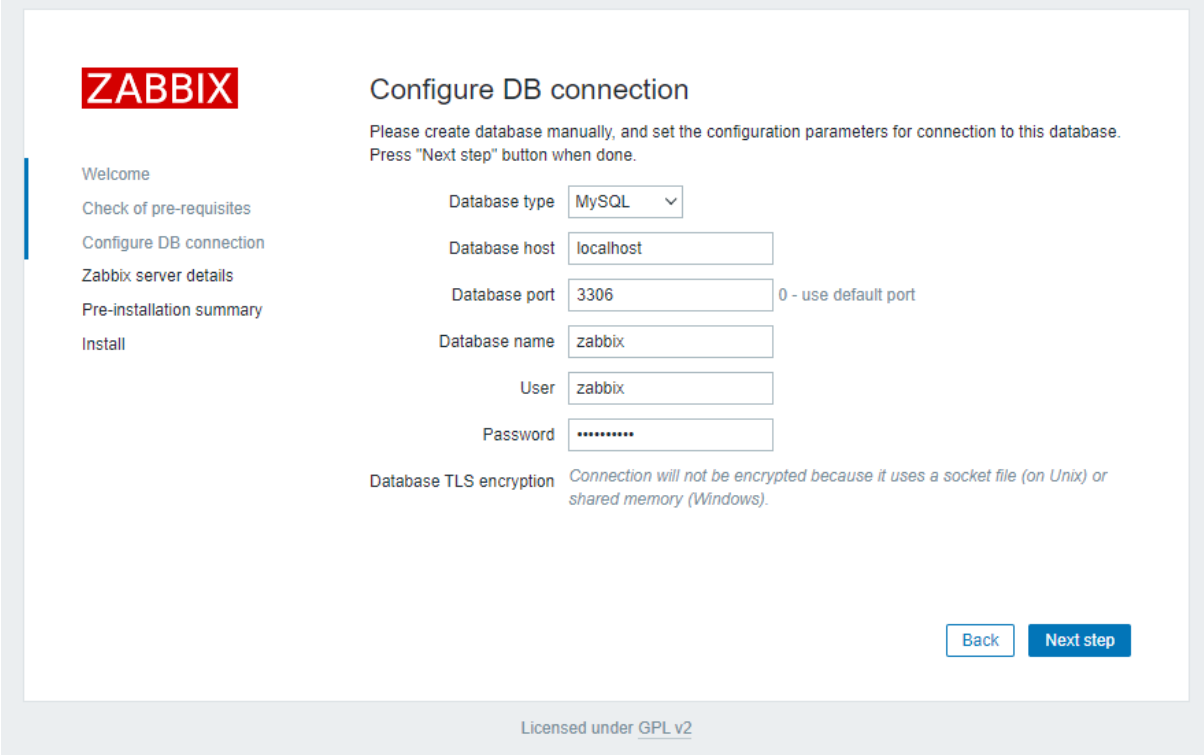
// You can used Ctrl+ W to search for the element suggest to be configure by Zabbix and click Enter.

// Then make changes on that element

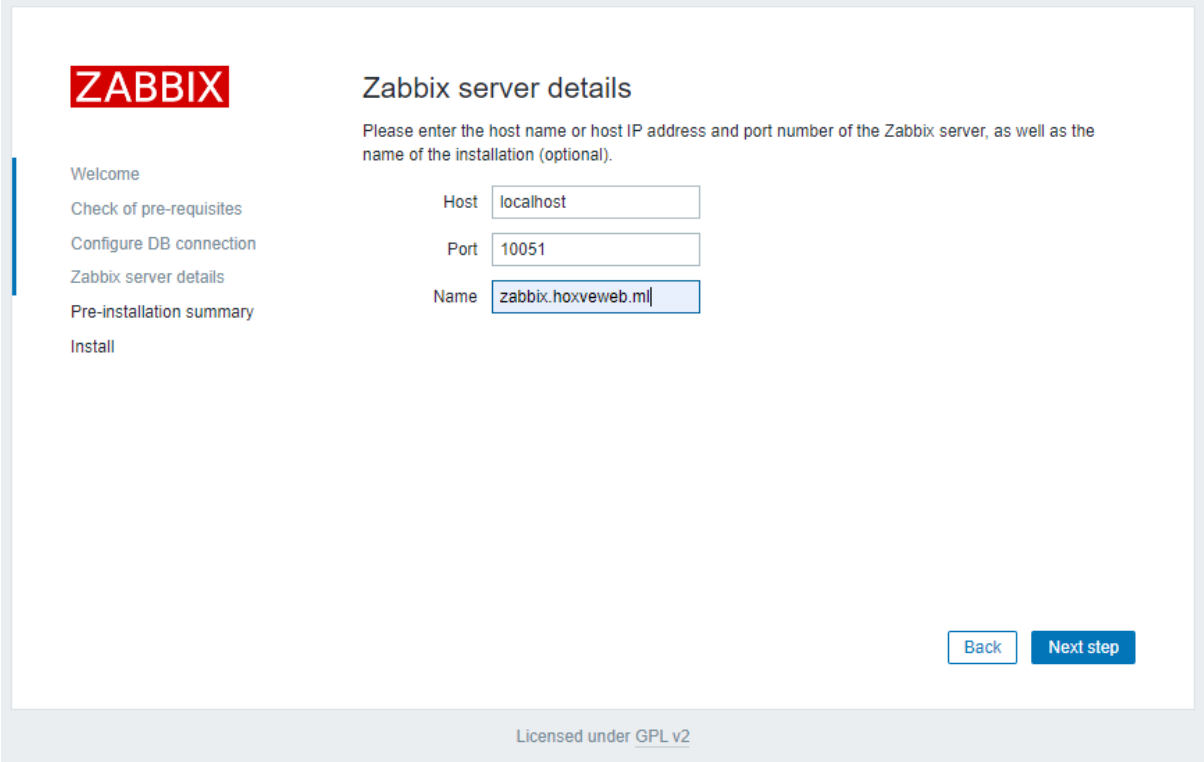
Ctrl+X → y → Enter

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

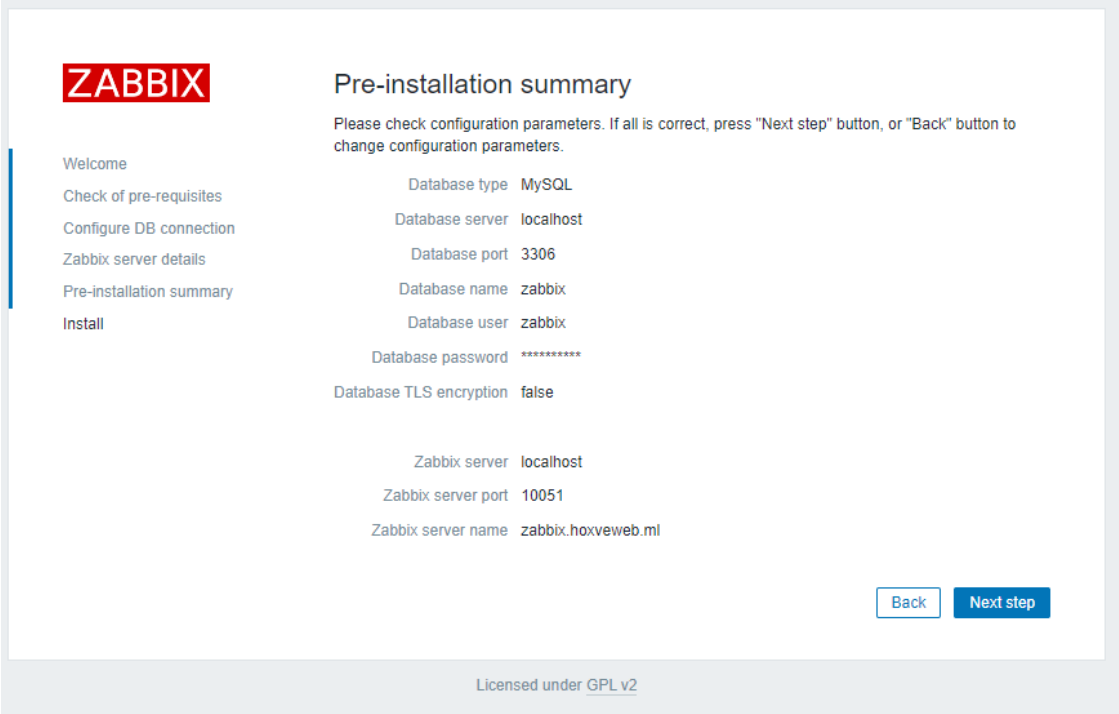
24. In next page, insert the MySQL config info then click “Next step”



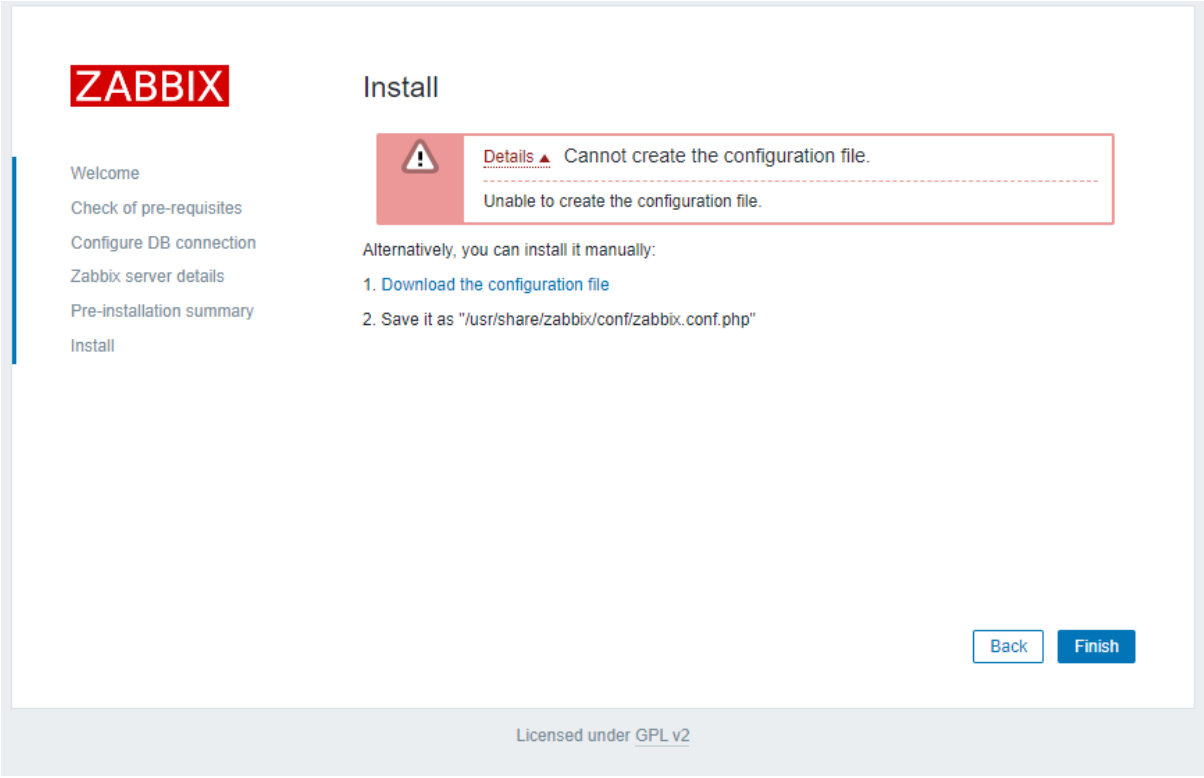
25. Insert Zabbix information or remain all the config and click “Next step”.

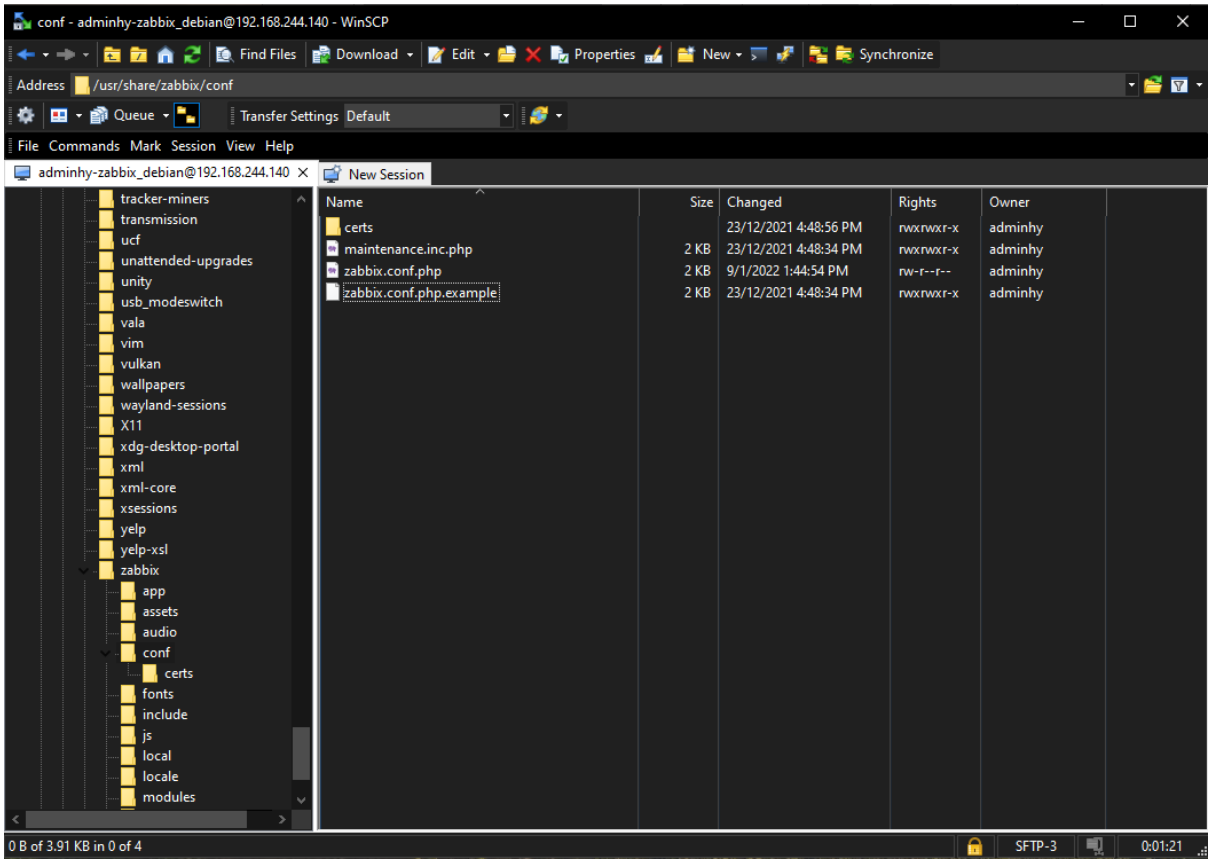


26. Check the configuration info again and click “Next step”.

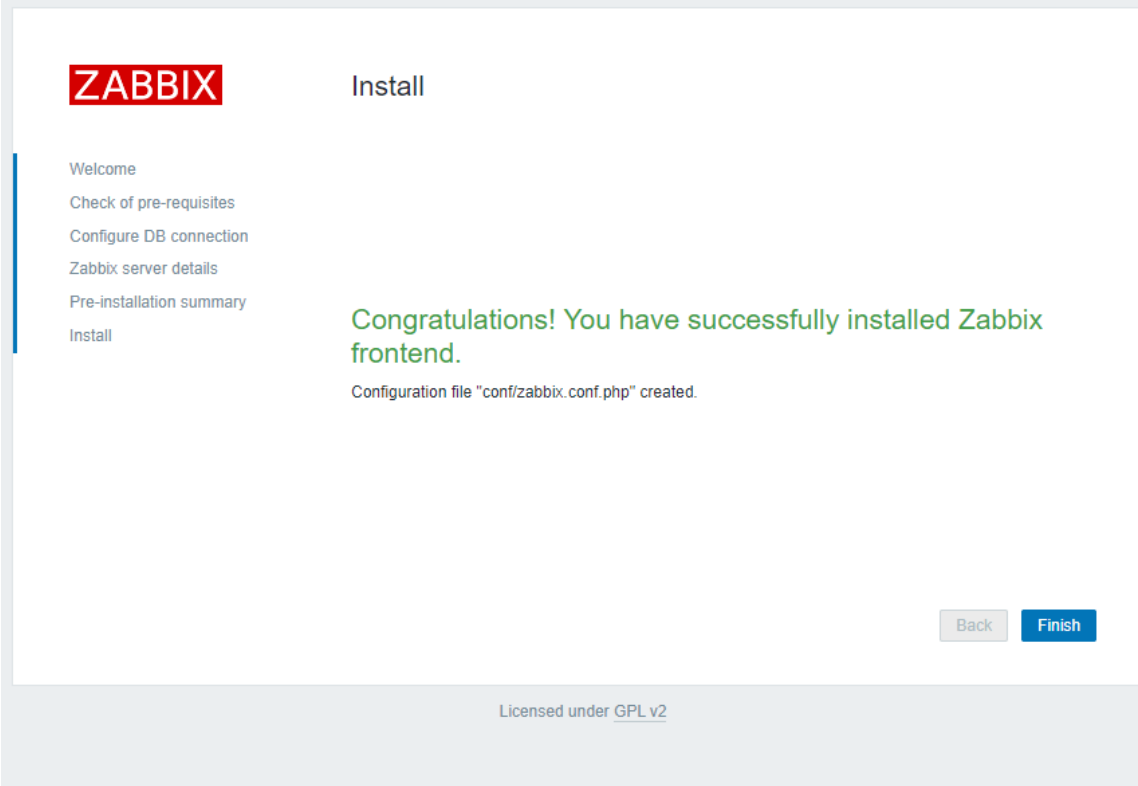


27. If the message error of configuration file is not found, click on the “Download the configuration file” to download the configuration file and place it at the /usr/share/zabbix/conf directories by using WinSCP. Then, click on “Finish” to proceed.

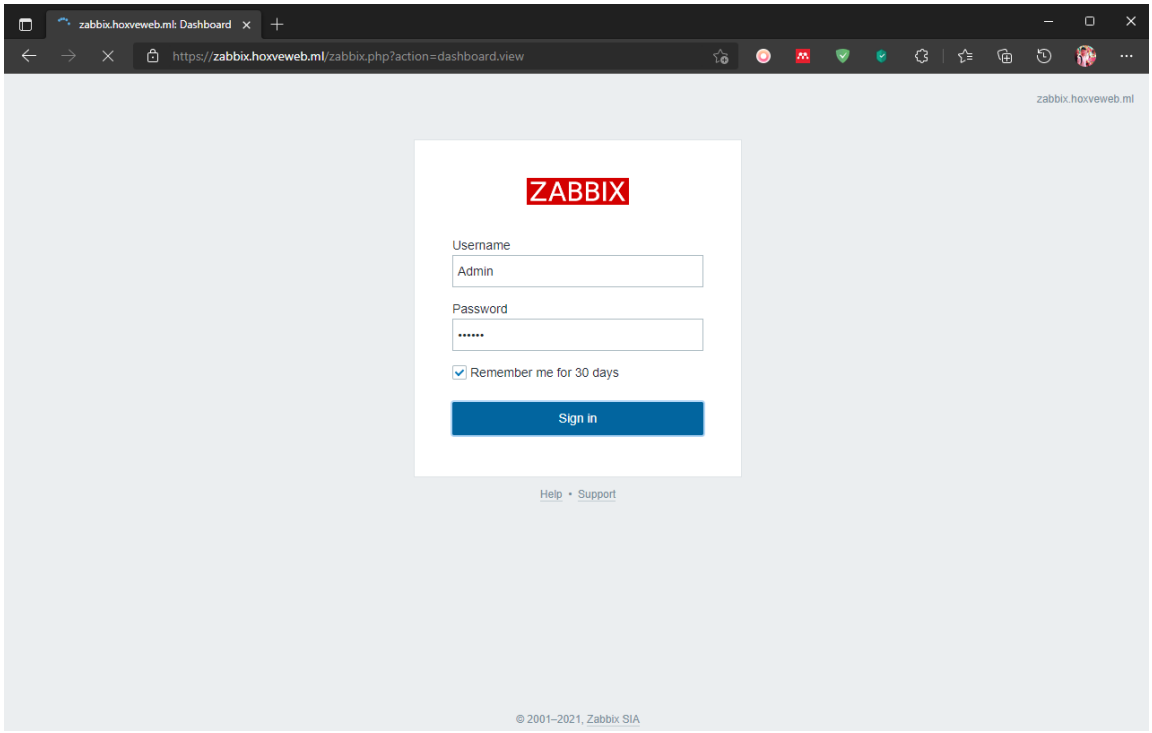




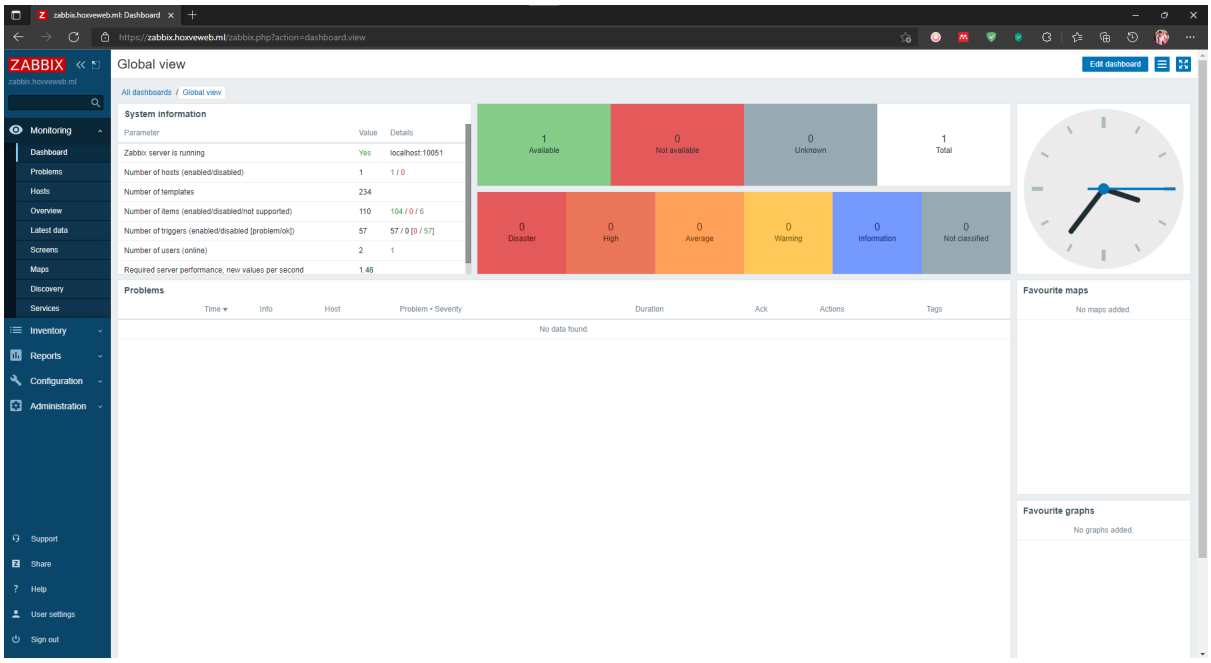
28. Once successfully installed, clicked “Finish” to proceed.



29. Now you may login to your Zabbix by using the default username and password (username: Admin; password: zabbix).



30. Here's shown your Zabbix Dashboard.

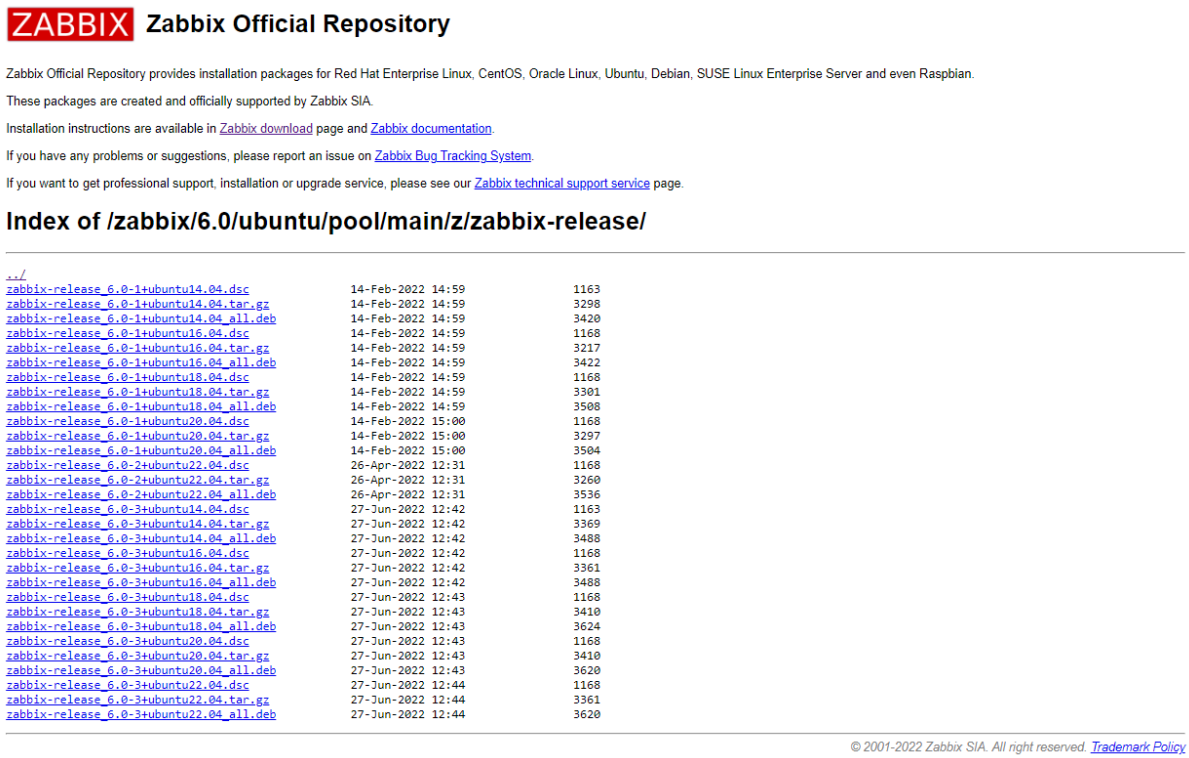


Install Zabbix Agent on Client Site

1. Go to https://repo.zabbix.com/zabbix/, then select for the version of Zabbix agent would like to download (5.0). Then select the OS distribution of server to install (Ubuntu). Then select the directory based on the directory stated: pool > main > z > Zabbix-release/ > then find the focal_all.deb version of released and right click to copy its link. Then, using

wget and the link copied to download the Zabbix agent deb file to your server to monitored.

```
$ wget https://repo.zabbix.com/zabbix/6.0/ubuntu/pool/main/z/zabbix-release/zabbix-release_6.0-3%2Bubuntu20.04_all.deb
```



ZABBIX Zabbix Official Repository

Zabbix Official Repository provides installation packages for Red Hat Enterprise Linux, CentOS, Oracle Linux, Ubuntu, Debian, SUSE Linux Enterprise Server and even Raspbian.

These packages are created and officially supported by Zabbix SIA.

Installation instructions are available in Zabbix download page and Zabbix documentation.

If you have any problems or suggestions, please report an issue on Zabbix Bug Tracking System.

If you want to get professional support, installation or upgrade service, please see our Zabbix technical support service page.

Index of /zabbix/6.0/ubuntu/pool/main/z/zabbix-release/

../		
zabbix-release_6.0-1+ubuntu14.04.dsc	14-Feb-2022 14:59	1163
zabbix-release_6.0-1+ubuntu14.04.tar.gz	14-Feb-2022 14:59	3298
zabbix-release_6.0-1+ubuntu14.04_all.deb	14-Feb-2022 14:59	3420
zabbix-release_6.0-1+ubuntu16.04.dsc	14-Feb-2022 14:59	1168
zabbix-release_6.0-1+ubuntu16.04.tar.gz	14-Feb-2022 14:59	3217
zabbix-release_6.0-1+ubuntu16.04_all.deb	14-Feb-2022 14:59	3422
zabbix-release_6.0-1+ubuntu18.04.dsc	14-Feb-2022 14:59	1168
zabbix-release_6.0-1+ubuntu18.04.tar.gz	14-Feb-2022 14:59	3301
zabbix-release_6.0-1+ubuntu18.04_all.deb	14-Feb-2022 14:59	3508
zabbix-release_6.0-1+ubuntu20.04.dsc	14-Feb-2022 15:00	1168
zabbix-release_6.0-1+ubuntu20.04.tar.gz	14-Feb-2022 15:00	3297
zabbix-release_6.0-1+ubuntu20.04_all.deb	14-Feb-2022 15:00	3504
zabbix-release_6.0-2+ubuntu22.04.dsc	26-Apr-2022 12:31	1168
zabbix-release_6.0-2+ubuntu22.04.tar.gz	26-Apr-2022 12:31	3260
zabbix-release_6.0-2+ubuntu22.04_all.deb	26-Apr-2022 12:31	3536
zabbix-release_6.0-3+ubuntu14.04.dsc	27-Jun-2022 12:42	1163
zabbix-release_6.0-3+ubuntu14.04.tar.gz	27-Jun-2022 12:42	3369
zabbix-release_6.0-3+ubuntu14.04_all.deb	27-Jun-2022 12:42	3488
zabbix-release_6.0-3+ubuntu16.04.dsc	27-Jun-2022 12:42	1168
zabbix-release_6.0-3+ubuntu16.04.tar.gz	27-Jun-2022 12:42	3361
zabbix-release_6.0-3+ubuntu16.04_all.deb	27-Jun-2022 12:42	3488
zabbix-release_6.0-3+ubuntu18.04.dsc	27-Jun-2022 12:43	1168
zabbix-release_6.0-3+ubuntu18.04.tar.gz	27-Jun-2022 12:43	3410
zabbix-release_6.0-3+ubuntu18.04_all.deb	27-Jun-2022 12:43	3624
zabbix-release_6.0-3+ubuntu20.04.dsc	27-Jun-2022 12:43	1168
zabbix-release_6.0-3+ubuntu20.04.tar.gz	27-Jun-2022 12:43	3410
zabbix-release_6.0-3+ubuntu20.04_all.deb	27-Jun-2022 12:43	3620
zabbix-release_6.0-3+ubuntu22.04.dsc	27-Jun-2022 12:44	1168
zabbix-release_6.0-3+ubuntu22.04.tar.gz	27-Jun-2022 12:44	3361
zabbix-release_6.0-3+ubuntu22.04_all.deb	27-Jun-2022 12:44	3620

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2. Then install the .deb extension of Zabbix agent to your server.

```
$ sudo apt install ./ zabbix-release_6.0-3+ubuntu20.04_all.deb
$ sudo apt update
$ sudo apt upgrade
$ sudo apt install zabbix-agent
```

3. Edit the Zabbix agent configuration at /etc/Zabbix/Zabbix_agentd.conf by inserting the server IP address of our Zabbix server.

```
$ sudo nano /etc/zabbix/zabbix_agentd.conf
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
#Specify Zabbix server IP Address
Server= 107.173.89.246

#Specify Zabbix server ( For active checks)
ServerActive= 107.173.89.246
```

```
# Set this server hostname reported by Zabbix agent
Hostname=n8n.hoxveweb.ml
```

Ctrl+X > y > Enter

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

```
$ sudo nano /etc/php/7.4/fpm/php.ini
```

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

Look for “timezone” using Ctrl + W, then uncomment the “date.timezone” by removing the “;” infront of it then added “Asia/Kuala_Lumpur” after the timezone to set the timezone as shown at below:

date.timezone = Asia/Kuala_Lumpur

Ctrl+X > y > Enter

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

//restart Zabbix agent

```
$ sudo systemctl restart zabbix-agent
$ sudo systemctl enable zabbix-agent
```

//check Zabbix agent status

```
$ sudo systemctl status zabbix-agent
```

4. If you have ufw enabled, allow port 10050 on the firewall. This is used by Zabbix agent daemon.

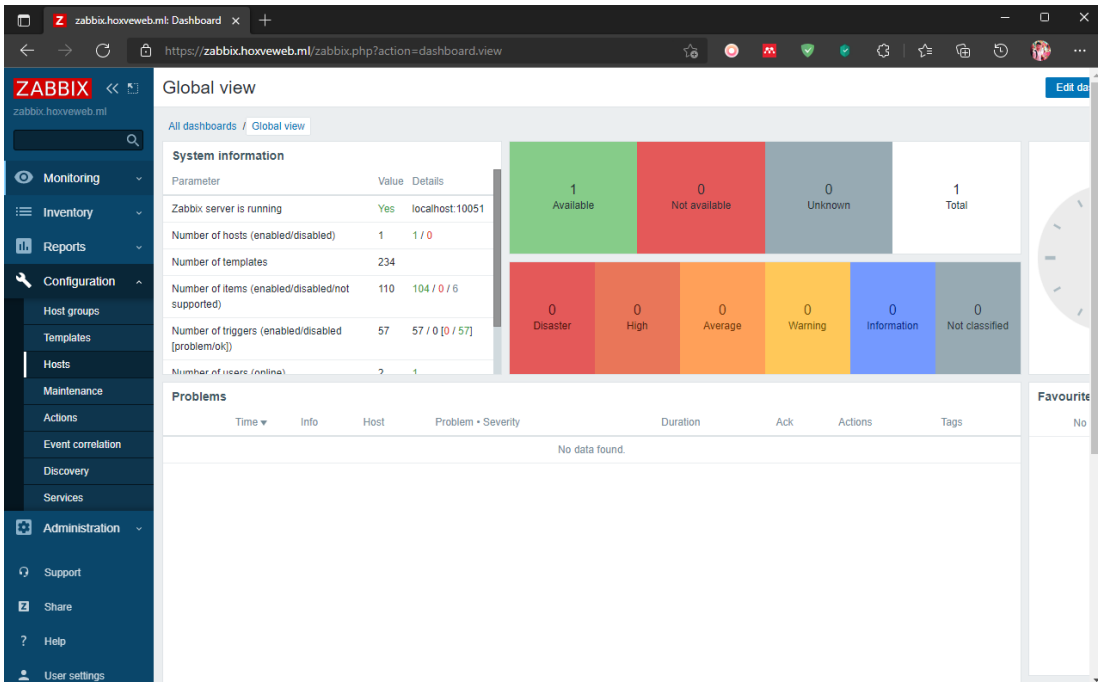
```
$ sudo ufw allow 10050/tcp
```

OR

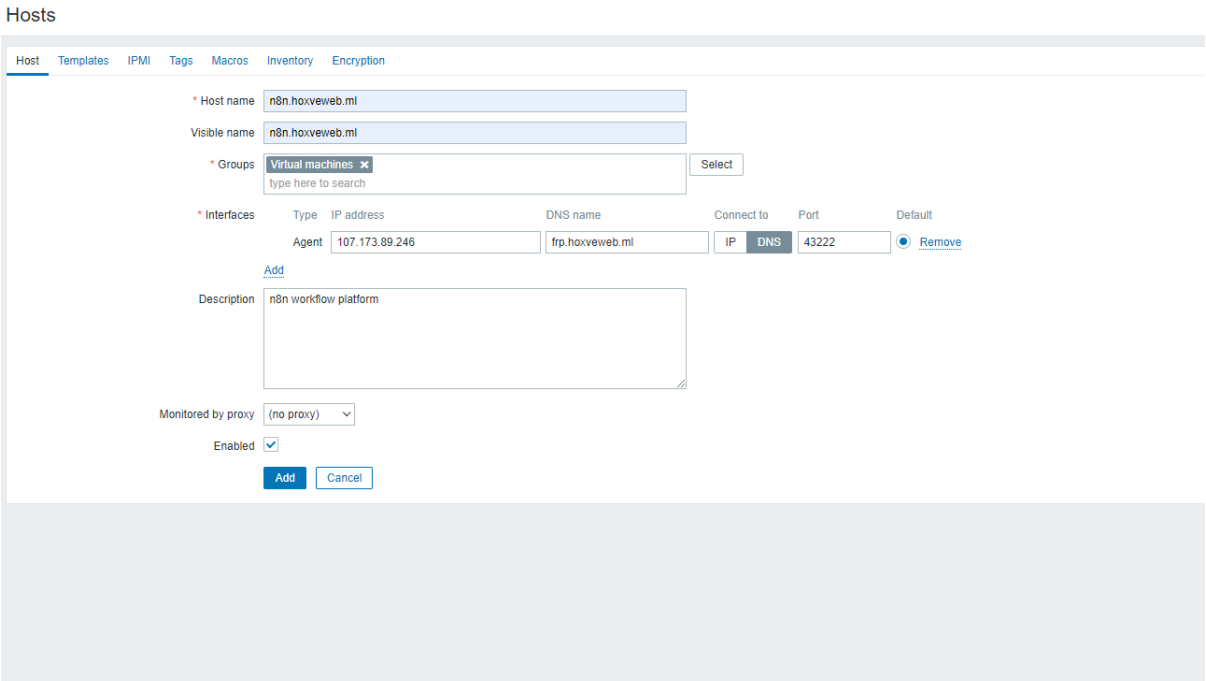
```
$ sudo iptables -I INPUT -p tcp --dport 10050 -j ACCEPT
```

Adding host to Zabbix server

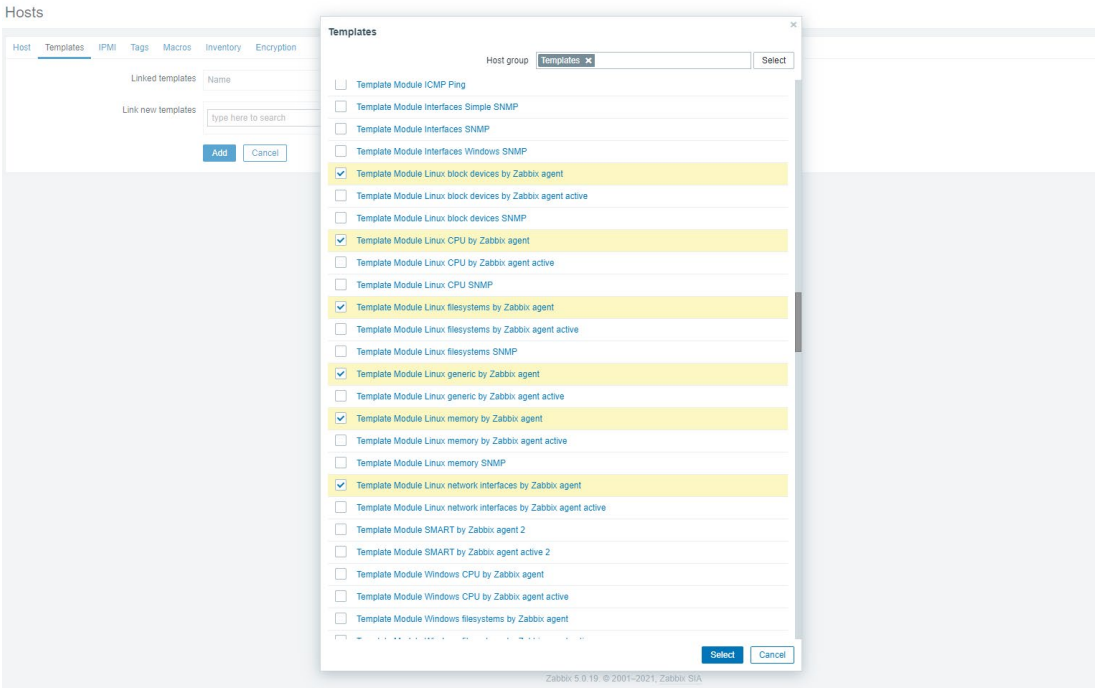
1. In your Zabbix server dashboard, goto Configuration > host at the sidebar and click on the Create host to create the client server host.



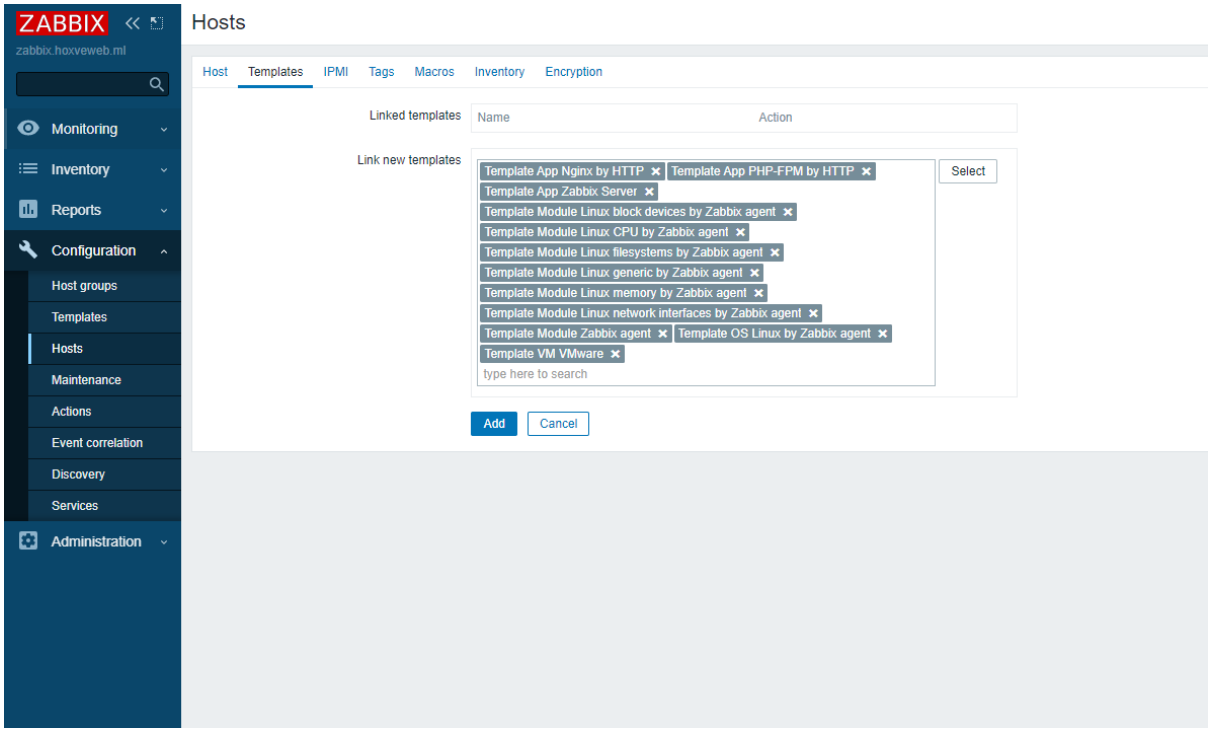
2. Then insert the hostname that configure in your client server and insert the name as well as group of this server that to monitor belongs. Insert your client server IP and the host it's connected and some description on this server. Next click on "Templets" section on the top.



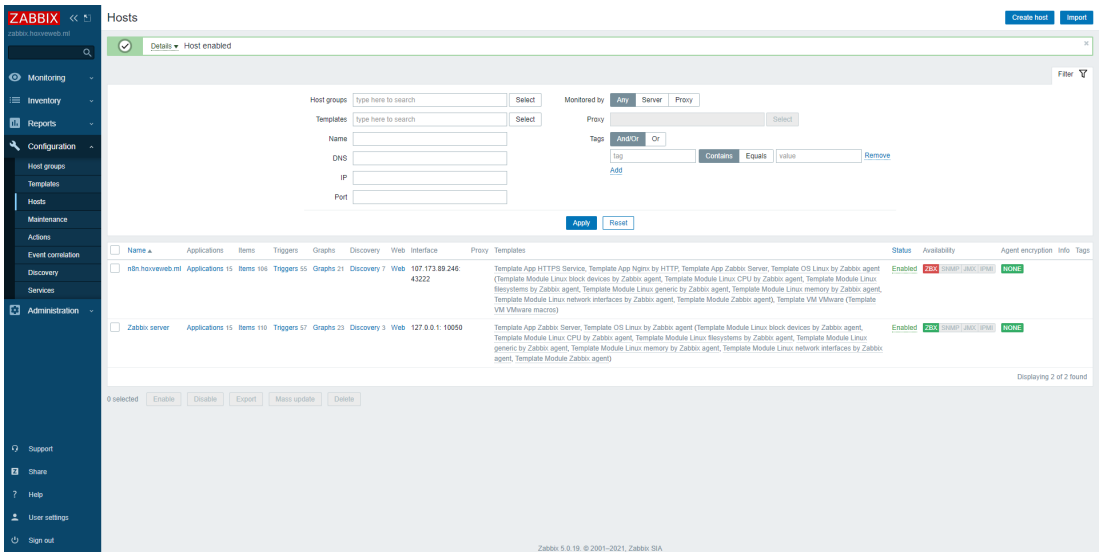
3. In the templets interface click on “Select” on the Link new templates and select again in “Host groups” section after window prompt out. Later, click on “Templates” and the window will show all the possible template you would like to monitor on your client server. You can tick on all the templates you want then click “Select” button to proceed. (*Basic templates: Linux by Zabbix agent (show all Linux resources), Remote Zabbix Server health, Zabbix Proxy Health*)



4. In the next step, click “Add” button to finish the setup.



5. Once successfully added, you will saw a new host is created.



6. Now, you can go to Monitor > Hosts at the sidebar of your dashboard to see the monitoring service of Zabbix agents.

***Please Make sure that your version of Zabbix server and version of Zabbix agent must be same to avoid error happen.*

//Check Zabbix server command

```
$ sudo zabbix_server --version
```

//Check Zabbix agent command

```
$ sudo zabbix_agentd -V
```

//check Zabbix status

```
$ sudo service zabbix-server status
```

//check log file

```
$ cd /var/log/zabbix
```

//for server

```
$ sudo cat zabbix_server.log
```

//for agent

```
$ sudo cat zabbix_agentd.log
```

//check server process running status

```
$ ps ax | grep zabbix_server
```

Continue Configuration for monitoring MySQL server

1. Make sure the MySQL-client is installed in your server.

   ```
   $ sudo  apt install mysql-client
   ```

2. Create a MySQL user for monitoring the mysql-server.

   ```
   $ mysql -u root -p
   MYSQL > CREATE USER 'zbx_monitor'@'%' IDENTIFIED BY '<password>';
   MYSQL > GRANT REPLICATION CLIENT,PROCESS,SHOW DATABASES,SHOW
   VIEW ON *.* TO 'zbx_monitor'@'%';
   MYSQL > exit
   ```

3. Create “template_db_mysql.conf” in /etc/zabbix/zabbix_agentd.d and paste the command below into it.

   ```
   $ sudo nano /etc/zabbix/zabbix_agentd.d/monitor_db_mysql.conf
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
   UserParameter=mysql.ping, mysqladmin --defaults-extra-file='/var/lib/zabbix/.my.cnf'
   ping | grep -c alive
   UserParameter=mysql.get_status_variables, mysql --defaults-extra-
   file='/var/lib/zabbix/.my.cnf' -sNX -e "show global status"
   UserParameter=mysql.version, mysql -V
   UserParameter=mysql.db.discovery, mysql --defaults-extra-file='/var/lib/zabbix/.my.cnf' -
   sN -e "show databases"
   UserParameter=mysql.dbsize[*], mysql --defaults-extra-file='/var/lib/zabbix/.my.cnf' -sN
   -e "SELECT SUM(DATA_LENGTH + INDEX_LENGTH) FROM
   INFORMATION_SCHEMA.TABLES WHERE TABLE_SCHEMA='$1'"
   UserParameter=mysql.replication.discovery[*], mysql --defaults-extra-
   file='/var/lib/zabbix/.my.cnf' -sNX -e "show slave status"
   UserParameter=mysql.slave_status[*], mysql --defaults-extra-
   file='/var/lib/zabbix/.my.cnf' -sN -e "show slave status"

   Ctrl+X → y → Enter
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
   ```

4. Restart your zabbix agent and see its status.

   $ sudo systemctl restart zabbix-agent

   //check Zabbix agent status

   $ sudo systemctl status zabbix-agent

5. Make sure to enable the mysql/mairadb remote service

   //enable mysql server remote connection in ubuntu

   $ sudo nano /etc/mysql/mysql.conf.d/50-server.cnf

   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~

   Look for bind-address and change it's ip address to 0.0.0.0 or *

   #bind-address = 127.0.0.1

   bind-address = 0.0.0.0

   press CTRL+X --> Y --> enter to save

   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~

   //restart the mysql service

   $ sudo systemctl restart mysql

6. Then, paste the following and change your password in the .my.cnf to the password that you set for the mysql user you configure above and add the user and password into the file. (need to create if zabbix folder is not in /var/lib)

   $ cd /var/lib

   $ sudo mkdir zabbix

   $ cd zabbix

   $ sudo nano .my.cnf

   ~~~~~~

   [client]

   user='zbx_monitor'

   password=' clear'
   ~~~~~~

Ctrl+X → y → Enter

~~~~~~

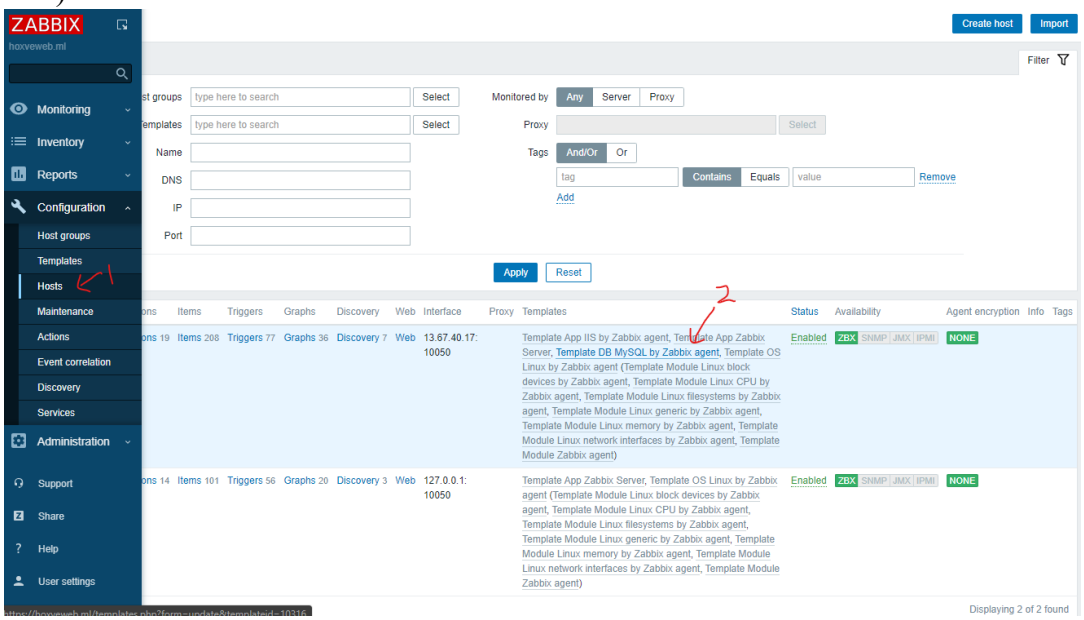
Restart your zabbix agent and see its status.

```
$ sudo systemctl restart zabbix-agent
```

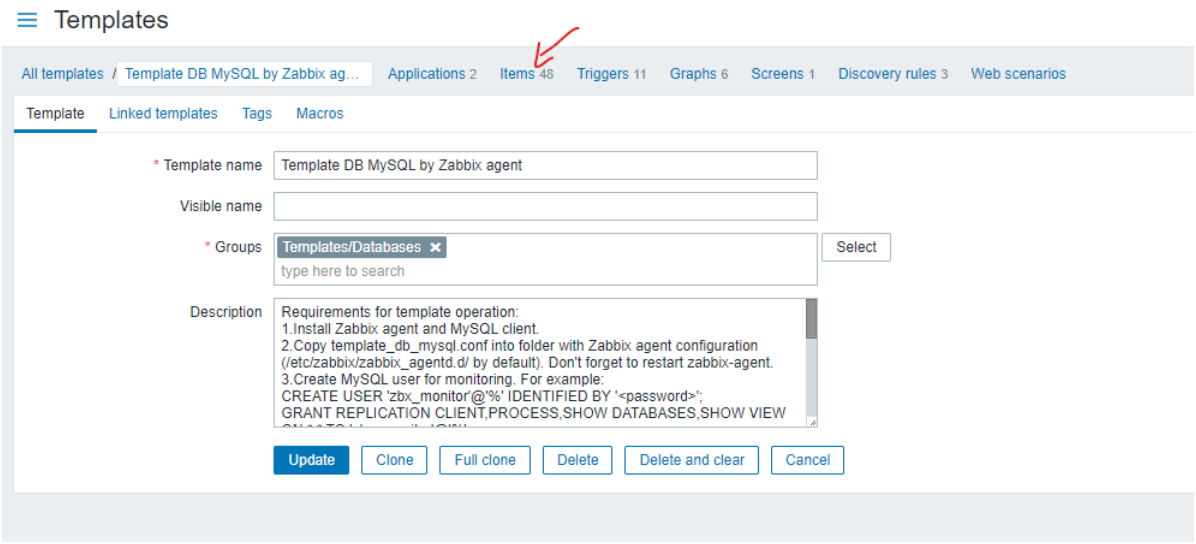
//check Zabbix agent status

```
$ sudo systemctl status zabbix-agent
```

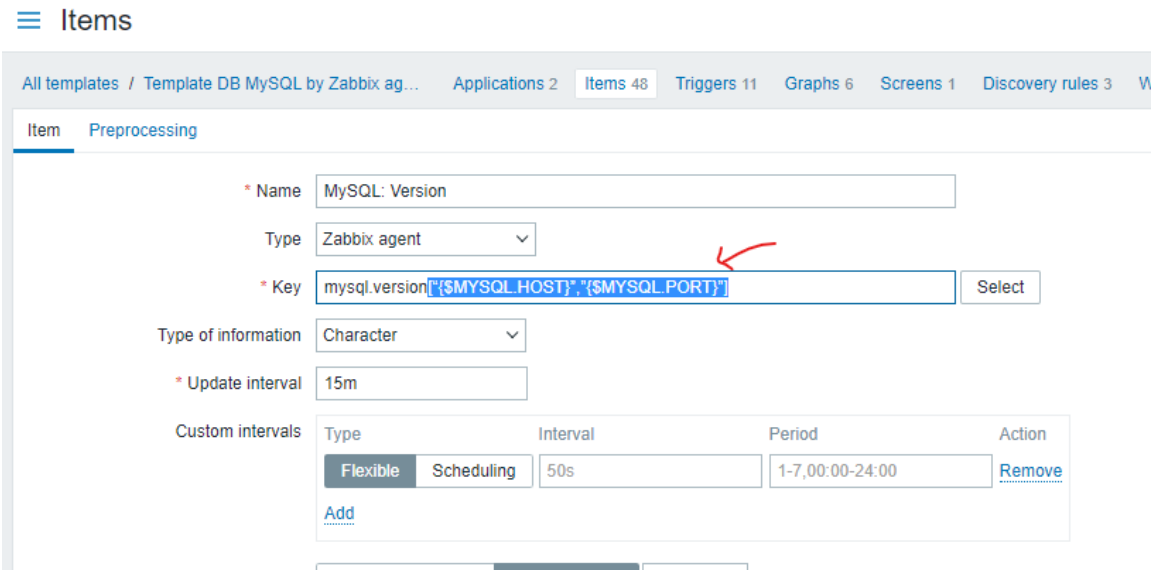
7. Then, in the Zabbix server side, go to “Hosts” under the Configuration section at the side bar. Then, look for the “Template DB MySQL by Zabbix Agent” under the “Templates” column of your remote hosts and click on it. (If not found you need to add the template first).



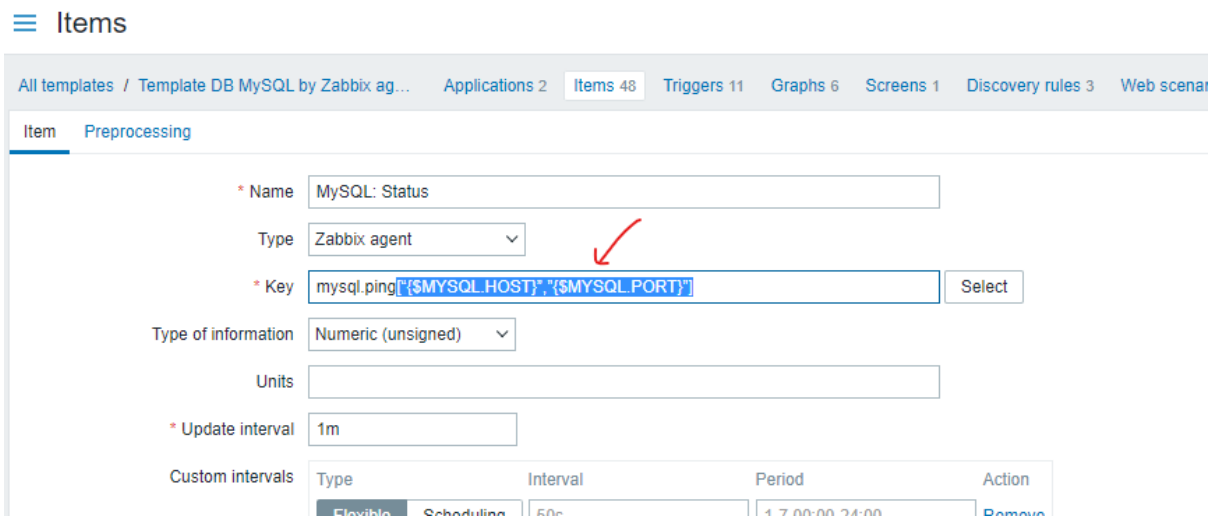
8. Click on the “Items” section to proceed to next step.
~~~~~~



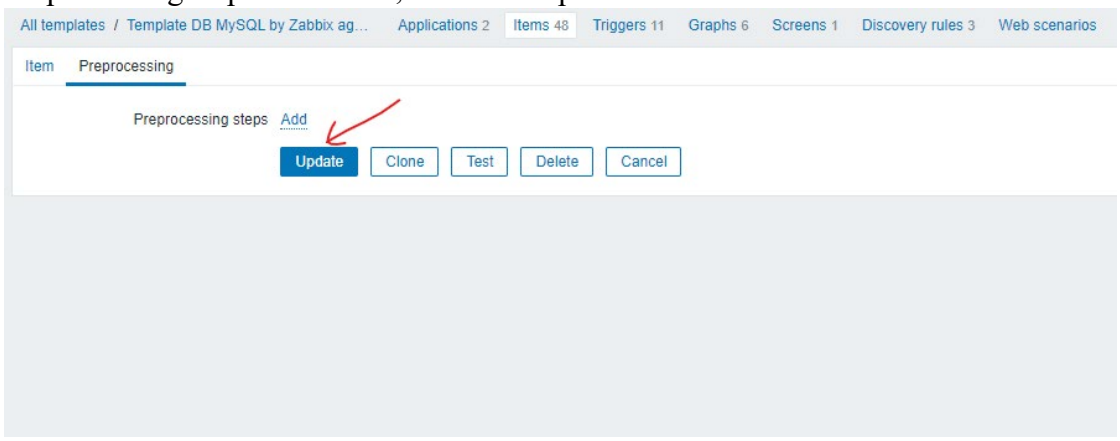
9. Look for the “MySQL: Version” under the “Name” column and click on it, then remove “[“{$MYSQL.HOST}”,”{$MYSQL.PORT}”]” from the “Key”. Then click “Update"



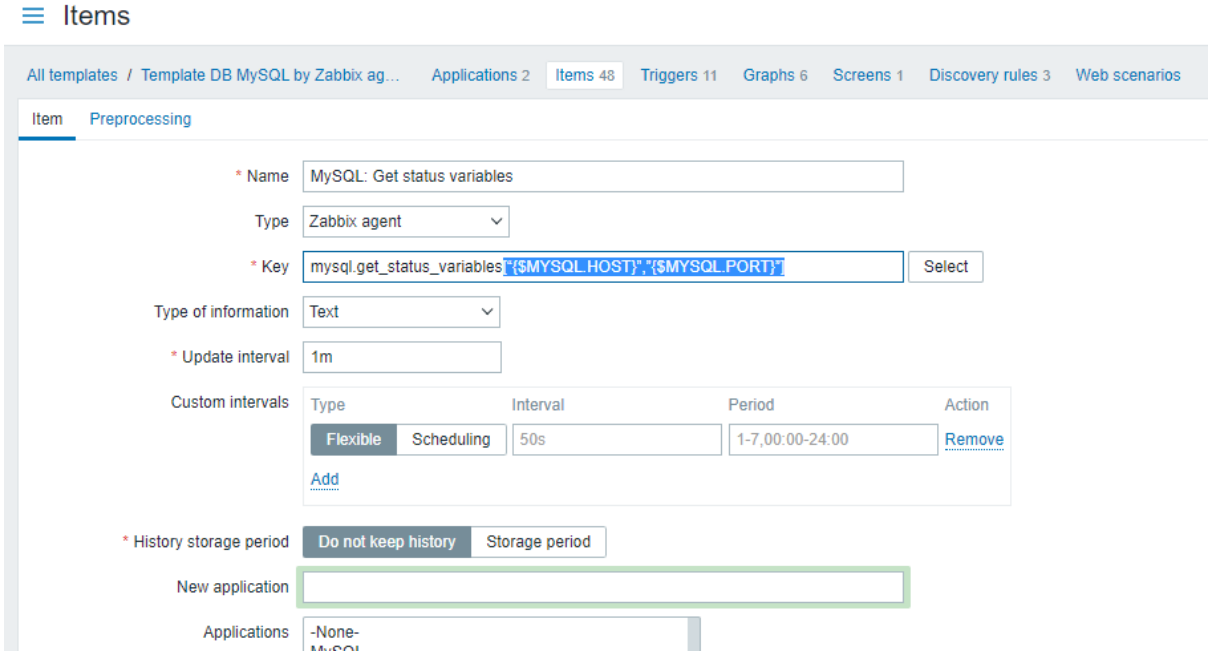
10. Then, just same as above, look for “MySQL: Status” and click on it, then remove “[“{$MYSQL.HOST}”,”{$MYSQL.PORT}”]” from the “Key”.



11. Then, click on the “Preprocessing” beside the “Item” section above, then remove both Preprocessing steps. After that, click on “Update”.

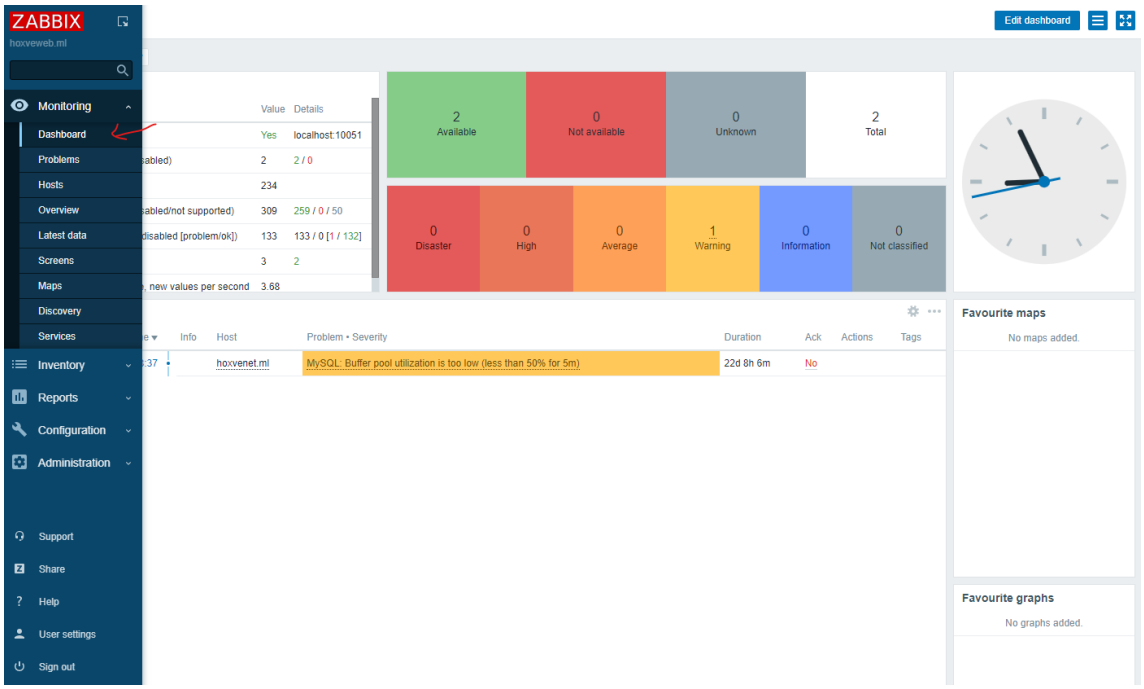


12. Next, click on “MySQL: Get Status Variables”, then remove “[“{$MYSQL.HOST}”,”{$MYSQL.PORT}”]” from the “Key”. Then click “Update".

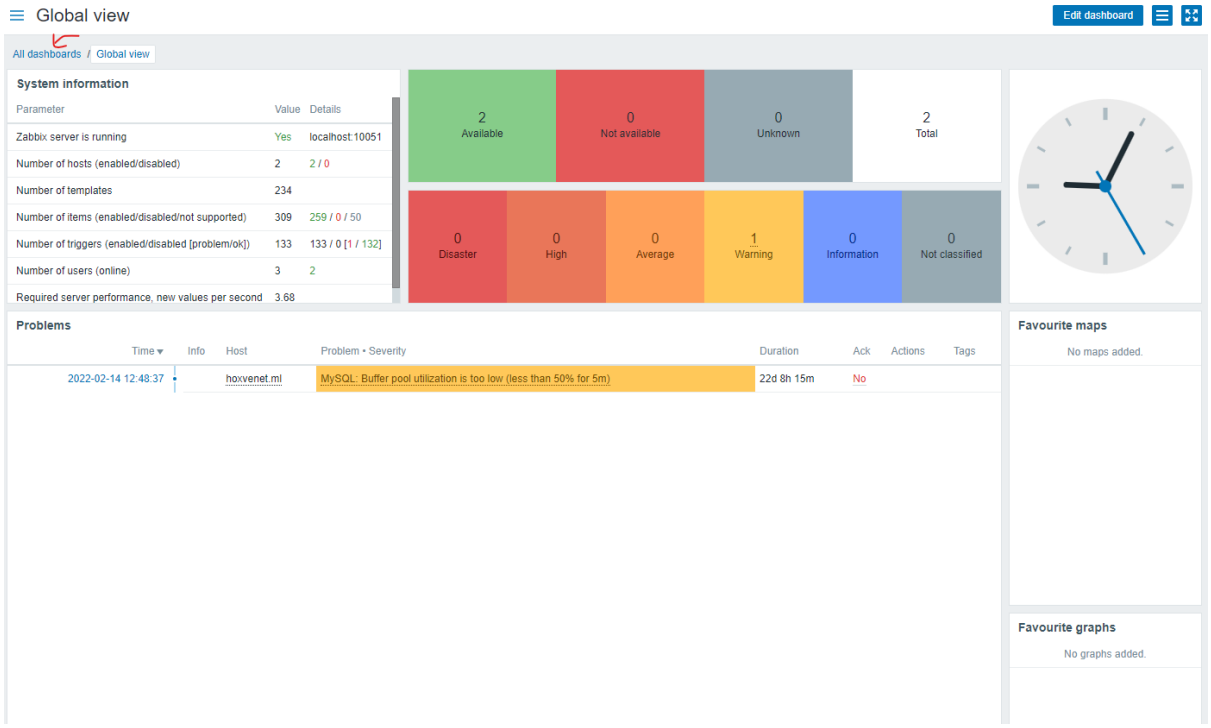


Creation of Monitoring Dashboard

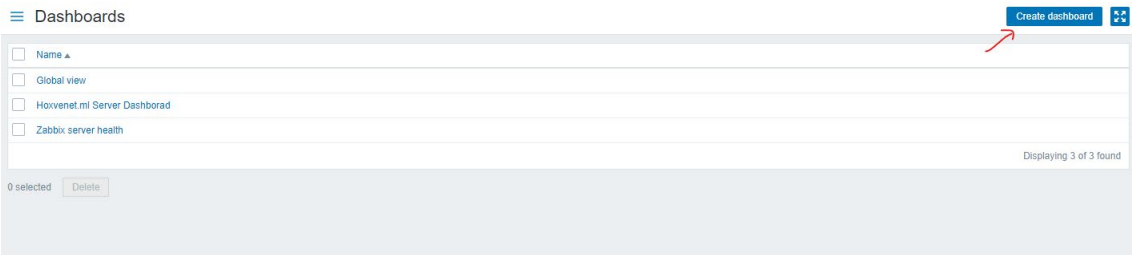
1. To create the dashboard for monitoring, go to the “Dashboard” under “Monitoring” drop down menu at the left-hand side sidebar.



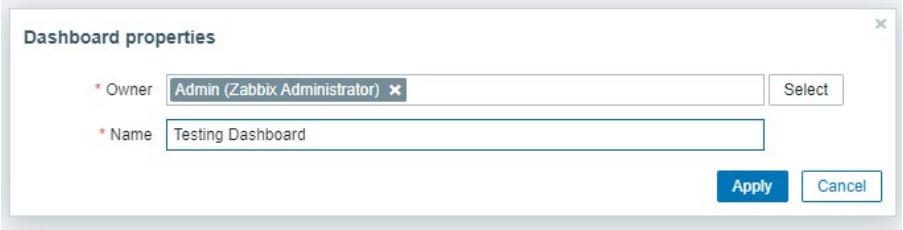
2. Below the “Global View” header, click on the “All dashboard” to navigate to the dashboard configuration page.



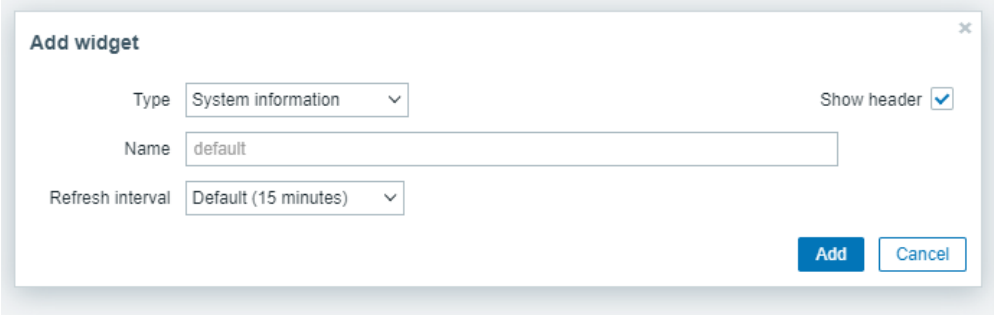
3. After that, click on the “Create dashboard” button to create a new dashboard.



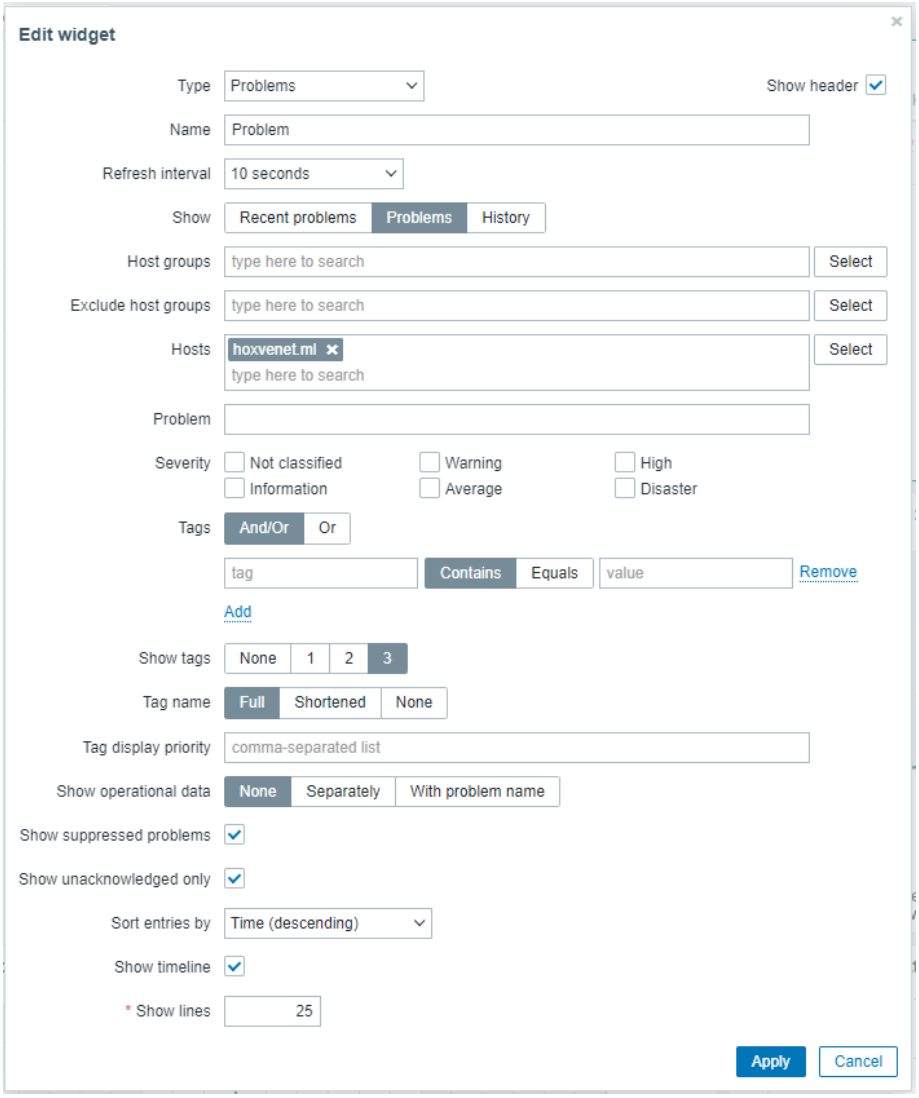
4. At the “Dashboard Properties” box prompt out, insert a new name for your dashboard in the “Name” field. (Dashboard name: Testing Dashboard) Then, click on the “Apply” button to proceed.



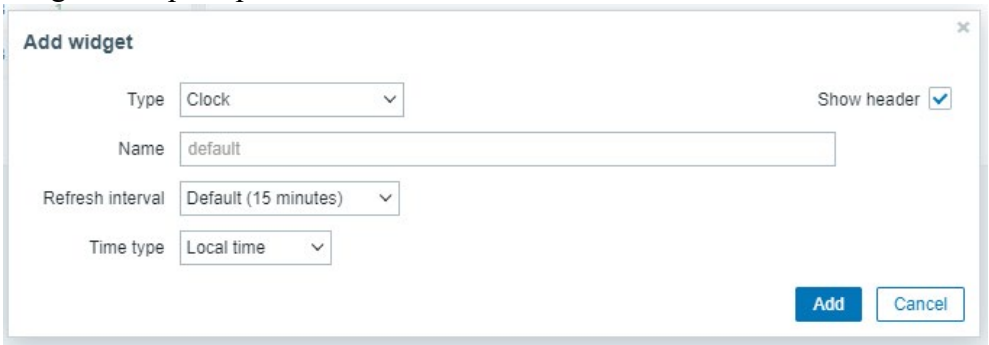
5. On the top left corner of the dashboard panel, simply click your mouse one time to add a new widget. Once “Add widget” box prompt out, select “System Information” from the “Type” field drop down and click “Add” button to add the widget.



6. Now, add another new widget by clicking on the panel besides the first widget created to add a new widget. On the “Add widget” box prompt out, select “Problems” in the “Type” field and 10 seconds for the “Refresh interval” field. Then select “Problems” as the the problem to show in “Show” field. In the “Hosts” section, click on the “Select” button at the side and add the hosts created previously. Select 3 at the “Show tags” field and ticked the “Show suppressed problems” and “Show unacknowledged only” checkbox. Other configurations remain unchanged and click “Apply” button to proceed.

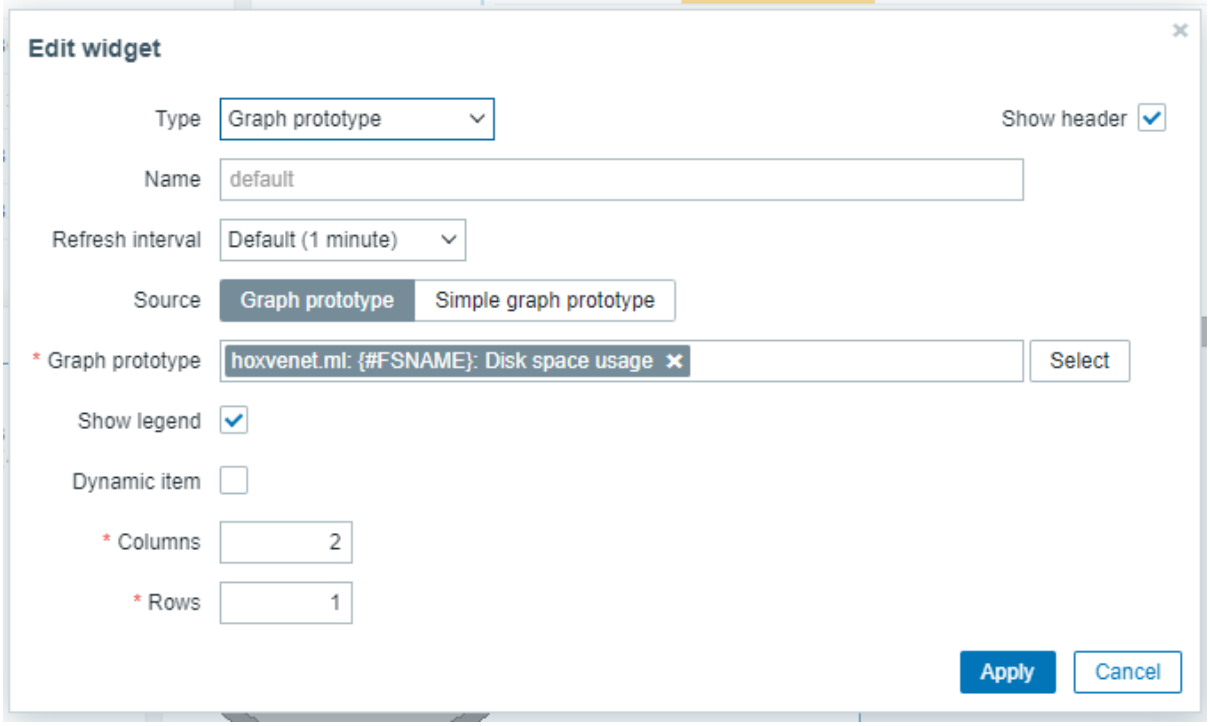


7. After that, click again at the panel of dashboard besides the problem, to create another widget. Select “Clock” in the “Type” field and click “Add” to proceed in the “Add widget” box prompt.

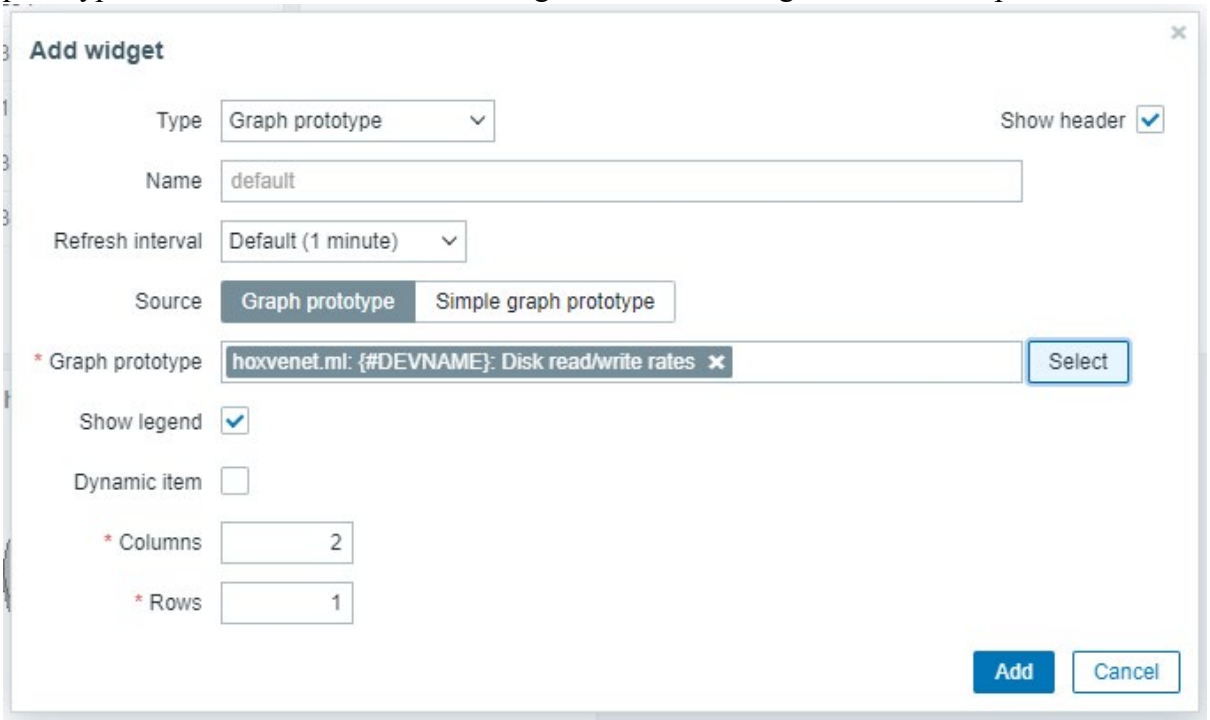


8. Click on the panel below the “System Information” widget and choose “Graph prototype” as the selection of “Type” field. Make sure it selected the “Graph prototype” as the “Source” field selection, then click the “Select” button besides “Graph prototype” section and choose your appropriate host in the “Host” field and select “{#FSNAME}: Disk space usage” as the graph prototype. Click on the “Add” button once finish configuring. (**In graph prototyping, if your Zabbix server is monitoring more than one hosts, you need to select on the appropriate host by clicking the “Select” button beside “Host”

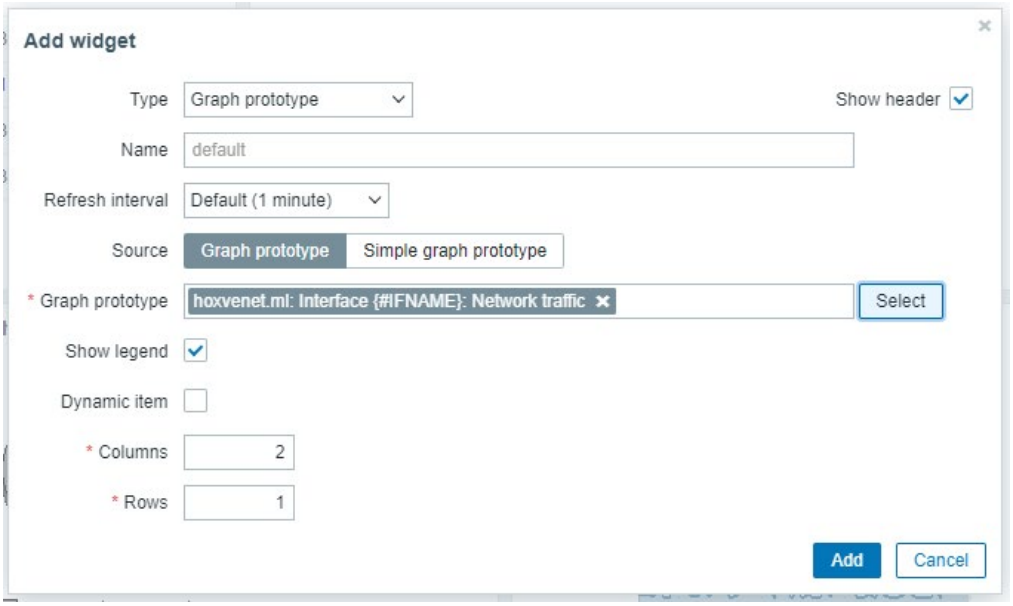
column in window prompt out after you click the "Select" button beside the "Graph Prototype" field. You may click on the "x" on host that you do not want and select again)



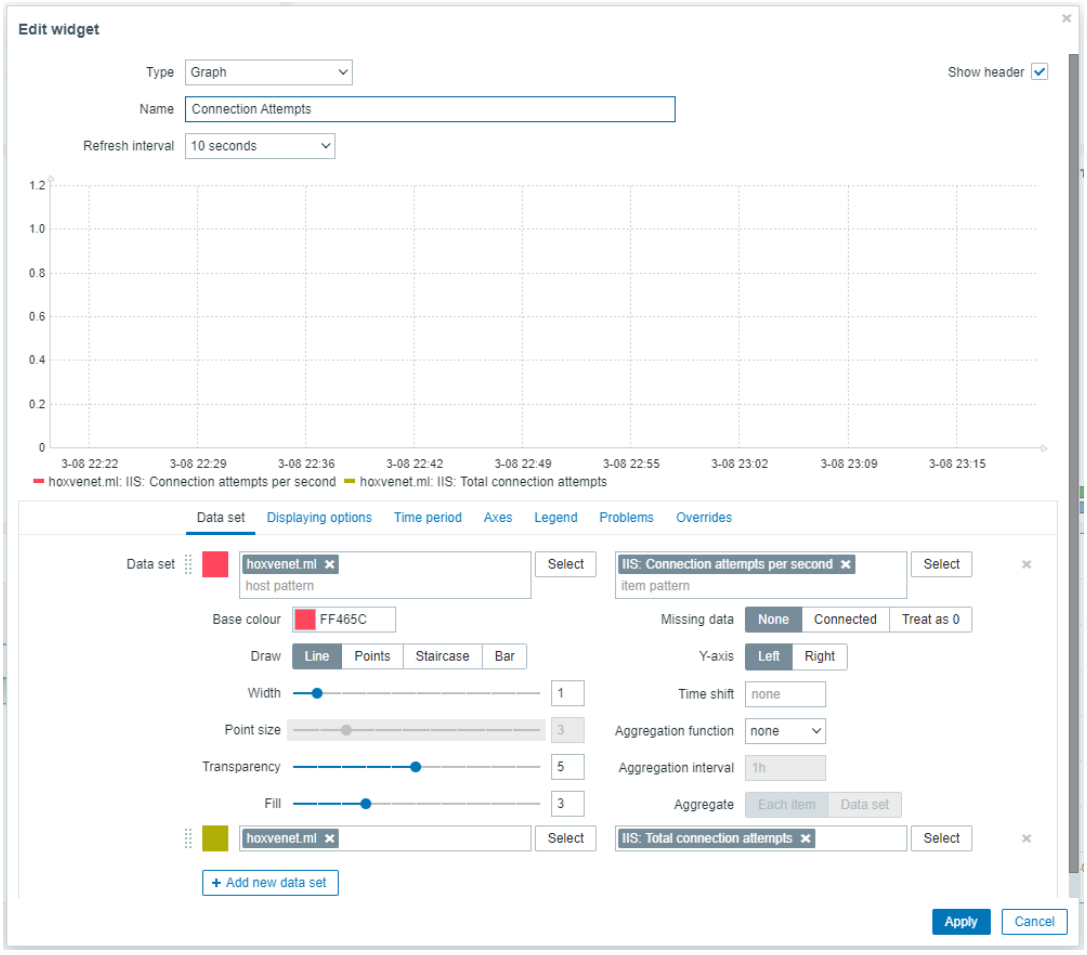
9. Repeat step 8 but select "{#DEVNAME}: Disk read/write rates" as the "Graph prototype" section selection. Add the widget besides the widget created in step 8.



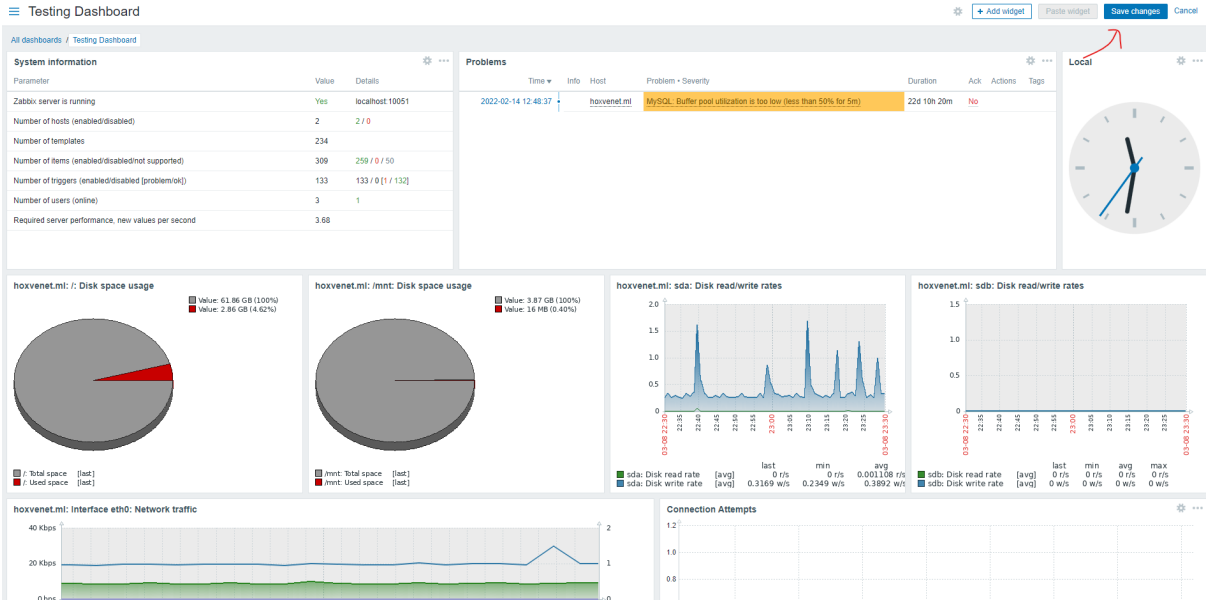
10. Subsequently, below the "Disk space usage" widget, add a new widget by repeating the step 8 but select "Interface {#IFNAME}: Network traffic" as the "Graph prototype" section selection.



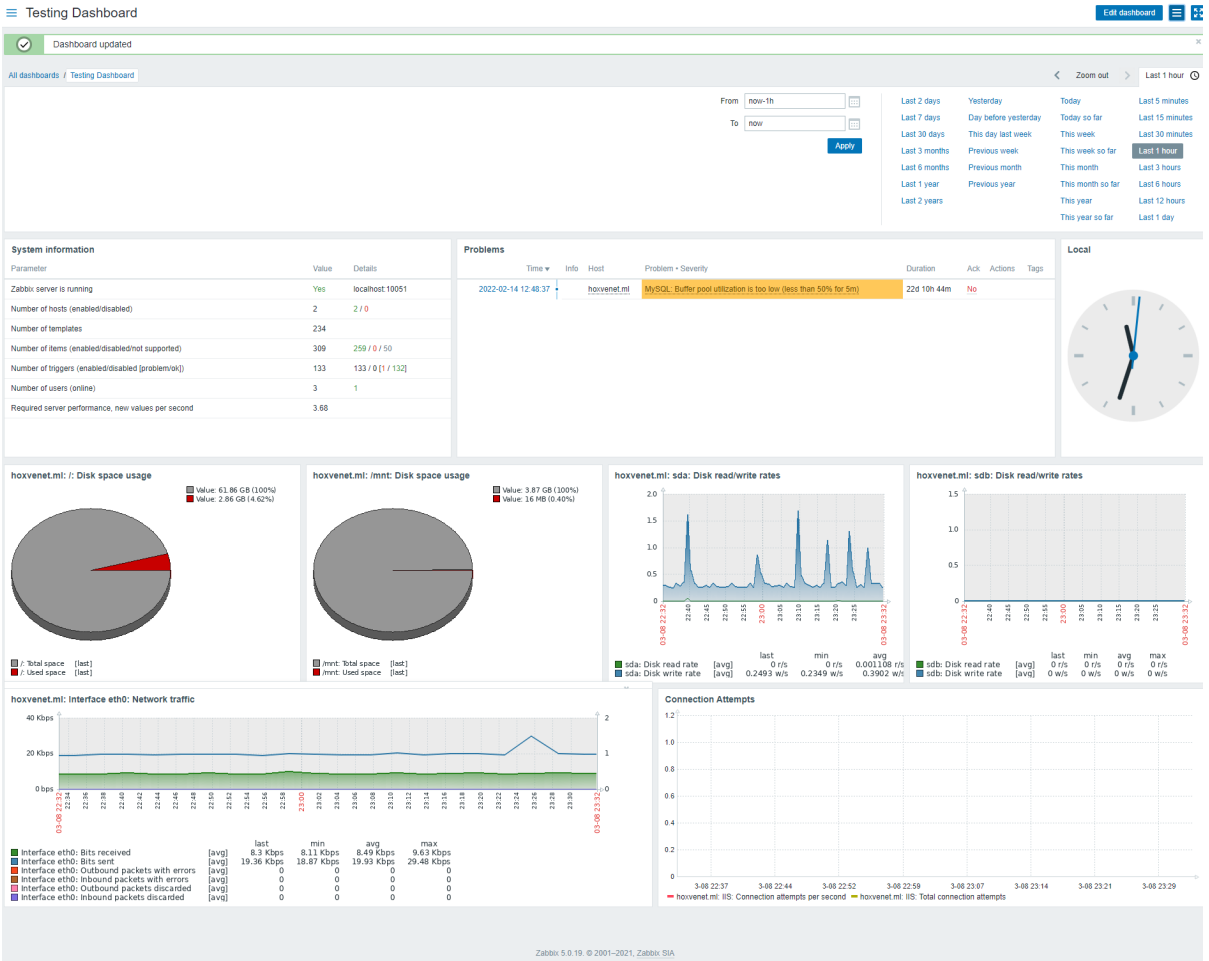
11. Besides the previous widget created, add a new widget and select “Graph” as the “Type” field selection and 10 seconds as the refresh interval. For the “Name” field insert “Connection Attempts” as the name of this widget. Select appropriate hostname in the “host pattern” field and “IIS: Connection attempts per second” as the item pattern, then click on “+ Add new data set” to add another data set. In the new data set created, select appropriate hostname in the “host pattern” field and “IIS: Total connection attempts” as the item pattern. (You may change the color of your dataset based on your preferences)



12. Once finish editing the dashboard, click on the “Save changes” button on the top right of the dashboard to save the dashboard.

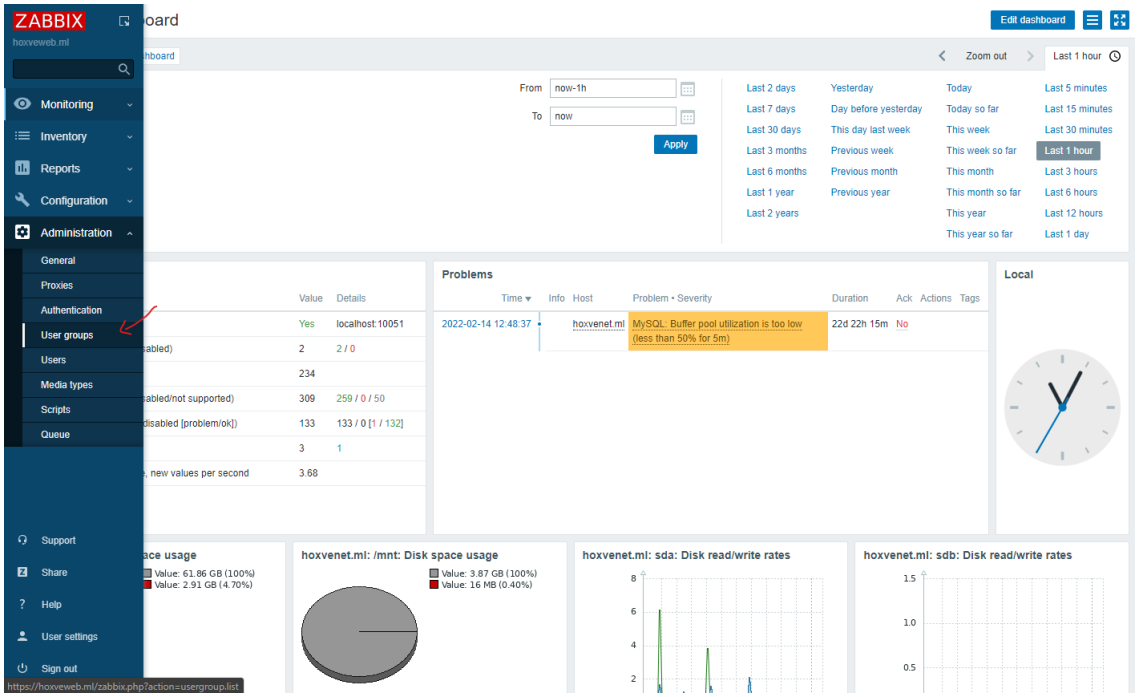


13. Now the dashboard is created and are shown as below.

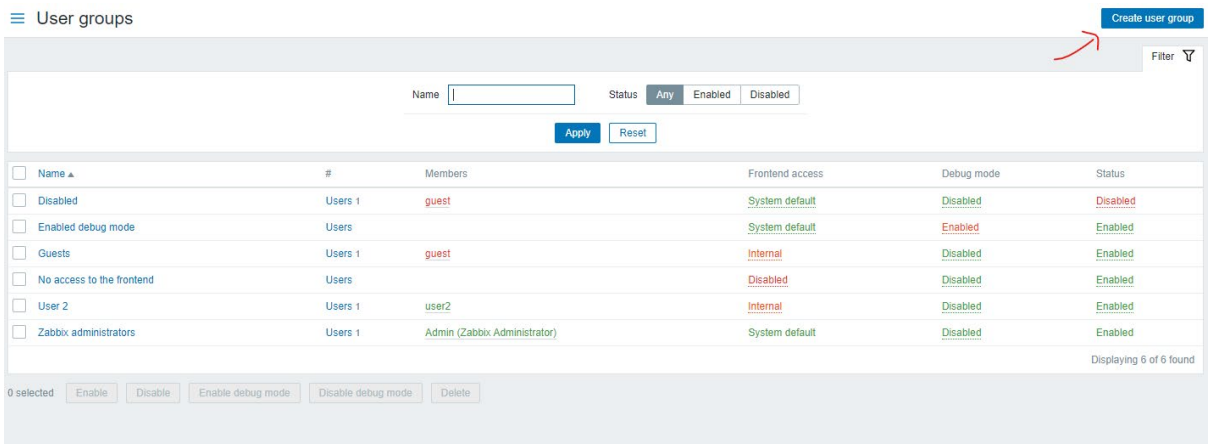


Issue New User, User Group Access & Dashboard Sharing

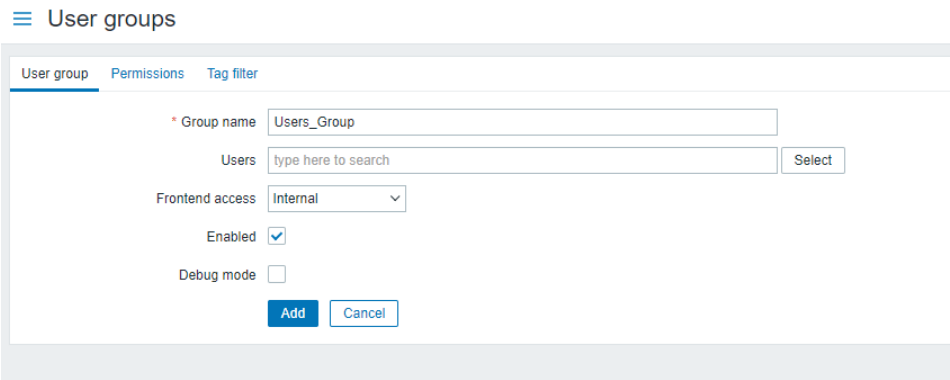
1. Creating new user are usually for us to add another new user account for certain parties such as like stakeholder to have a special account with certain privilege to access their server information. The privilege of user will usually issue via the user group created. Before creating anew user, let us create a new user group with certain functionalities allow them to access (create only once for ordinary user, can reuse). To create user group, click on the "User groups" under the "Administration" drop-down tab at the left-hand side sidebar to navigate to the user group configuration page.



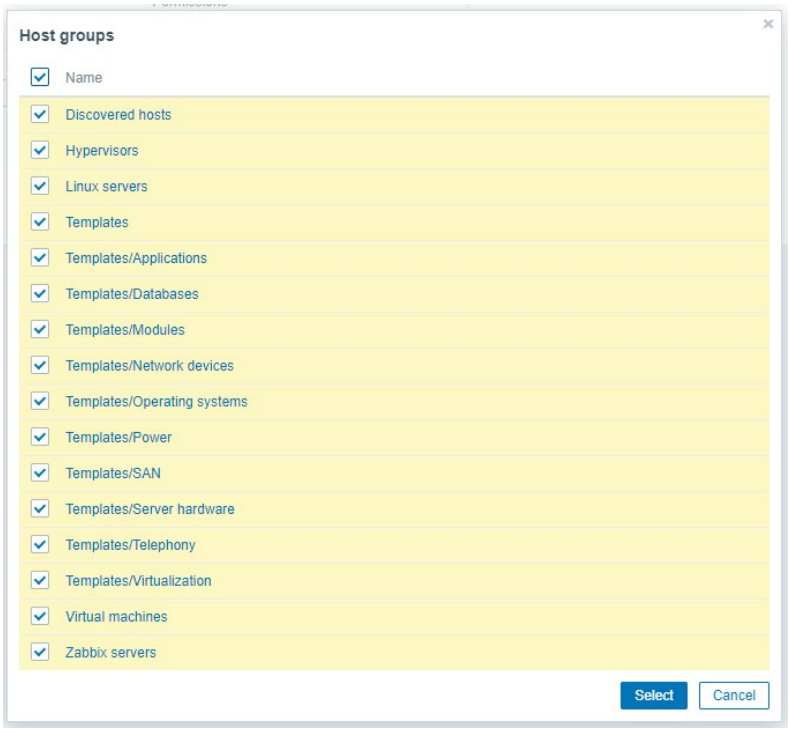
2. Then, click on the "Create user group" button at the top right of page to create a new user group.

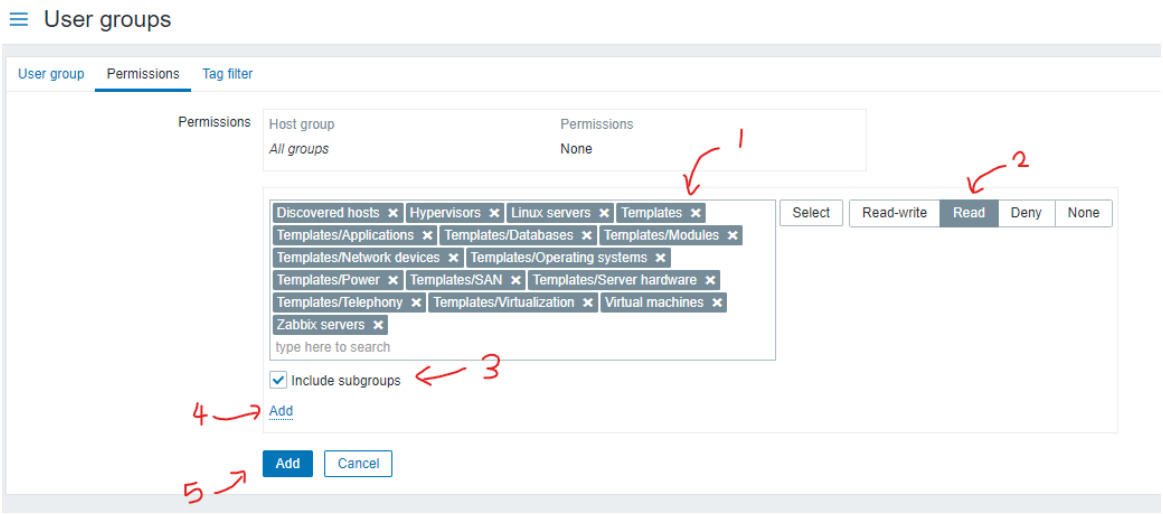


3. In next, insert name for your user group at the "Group name" field (Group name: Users_Group) and change the "Front access" to "Internal".

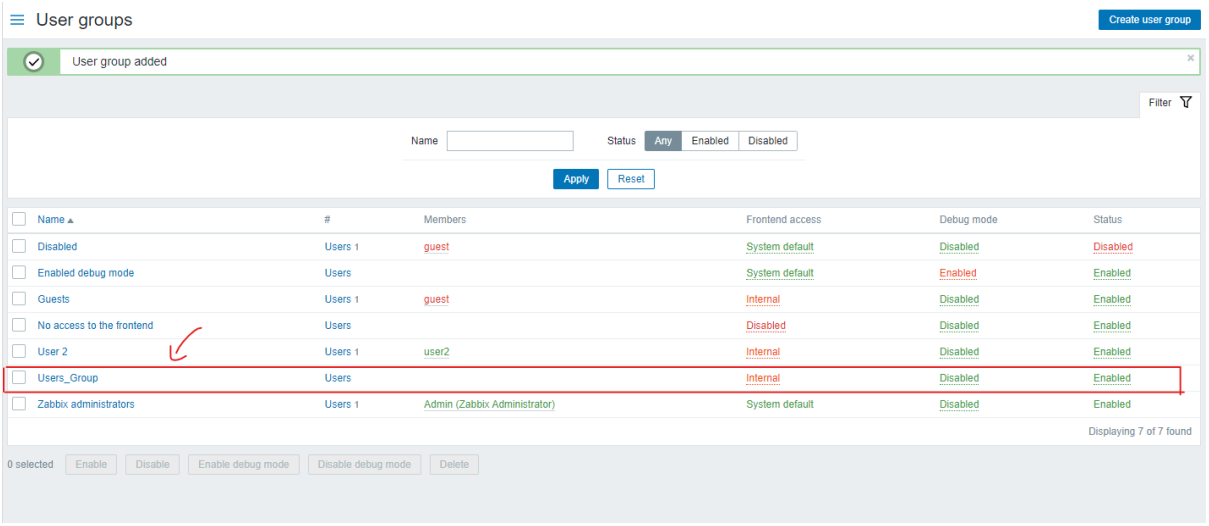


4. Then, go to the “Permission” tab. Click on the “Select” button beside the “type here to search” field and tick all the host groups and click “Select” button to proceed. Give “Read” permission to all the host group selected by selecting “Read” button from the selection beside and tick the “Include subgroups” checkbox. Once done, click on the “Add” word below to add your permission rules (*After you select “Add” word, you will see the permission of “All groups” above will change from “Non” to “Read”. Make sure it change before you proceed). Then, click again the “Add” button to proceed.

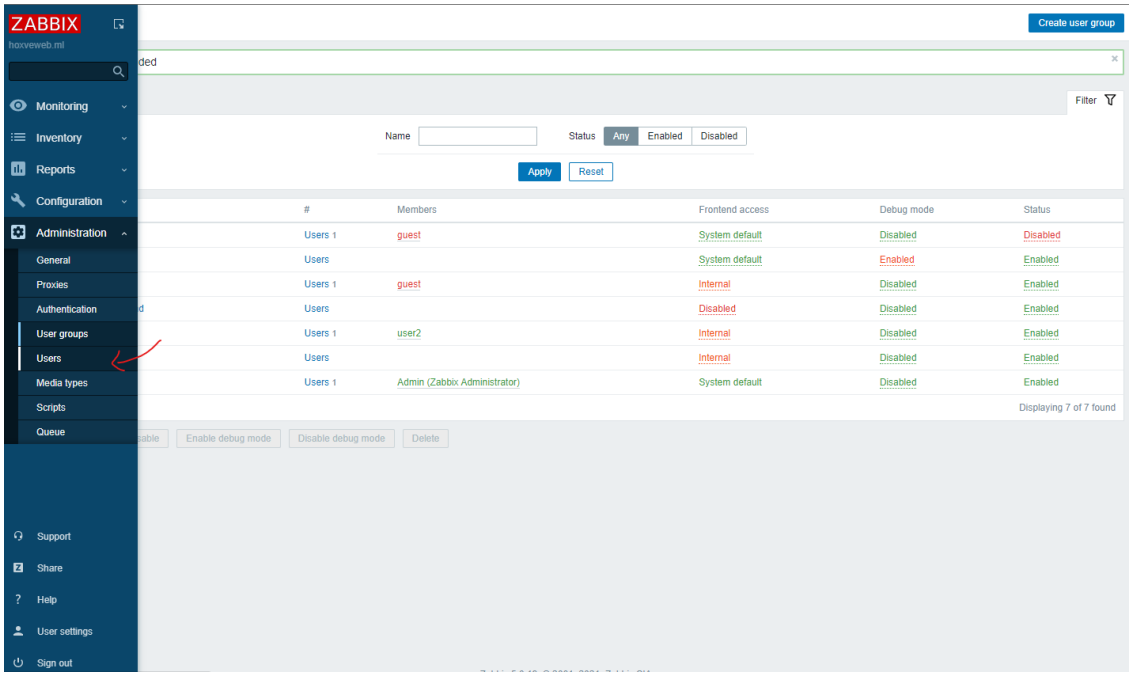




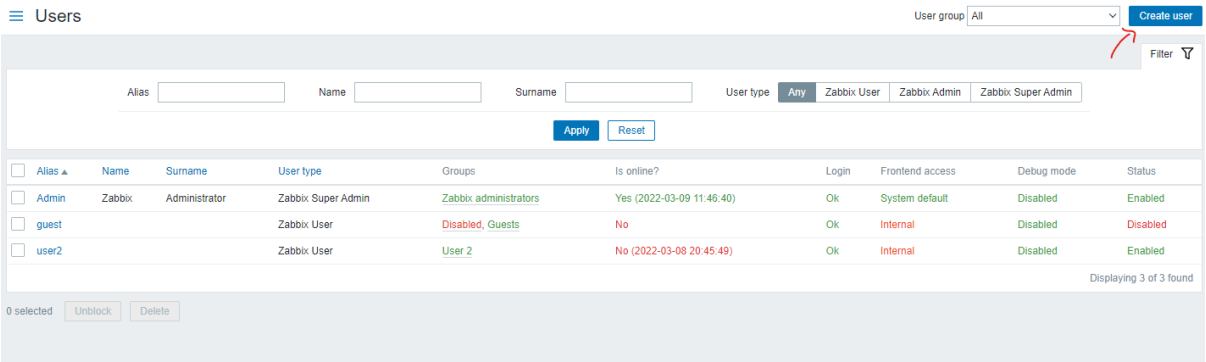
5. Once created, you will see the "Users_Group" rules is created. Click into it, to make sure your permission rule is set.



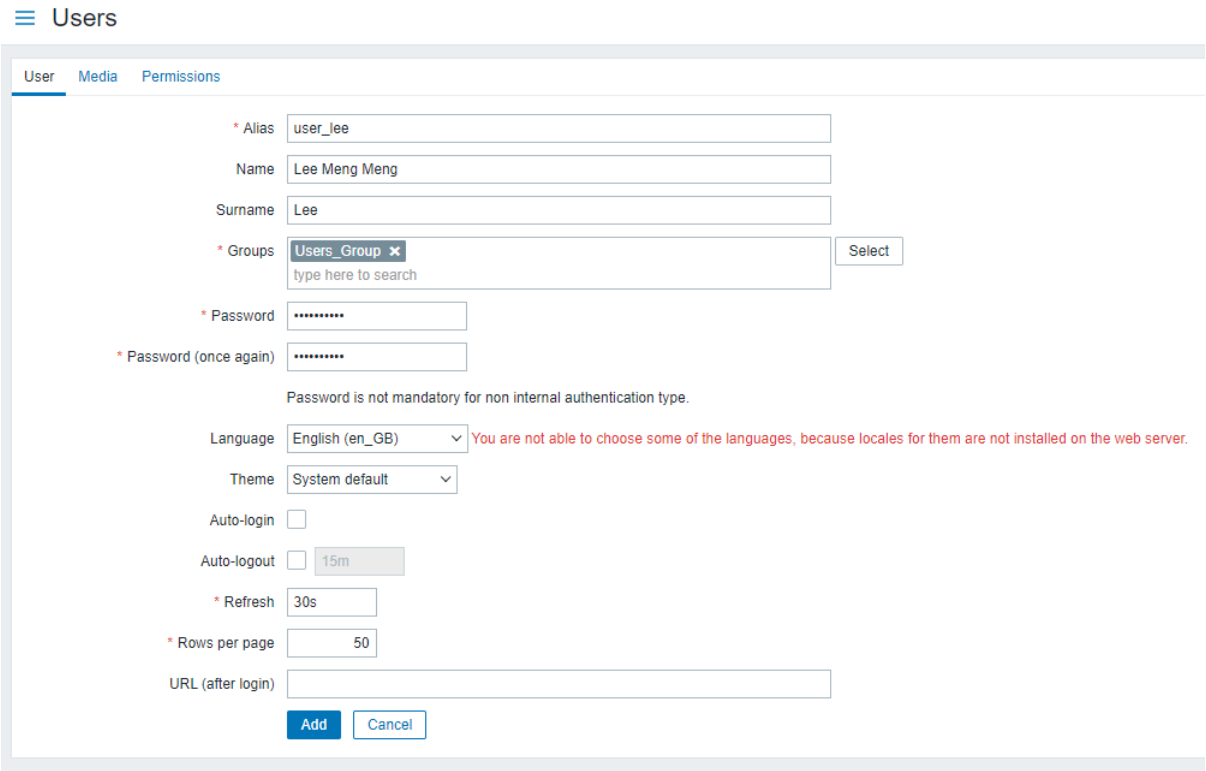
6. Now, go to the user configuration page by selecting the "Users" under the "Administration" drop-down at the sidebar to navigate to that page for creating new users.



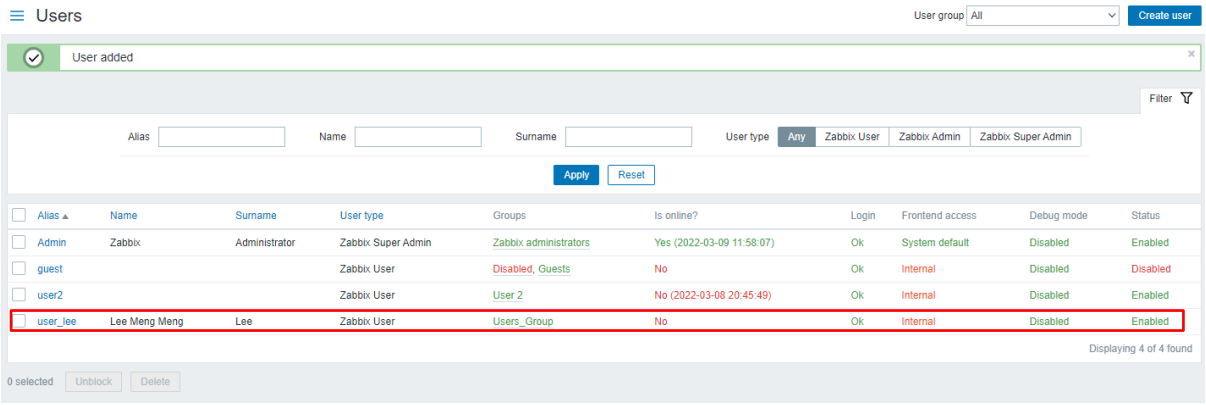
7. To create new user, click on the “Create User” button on the top right of the page to proceed.



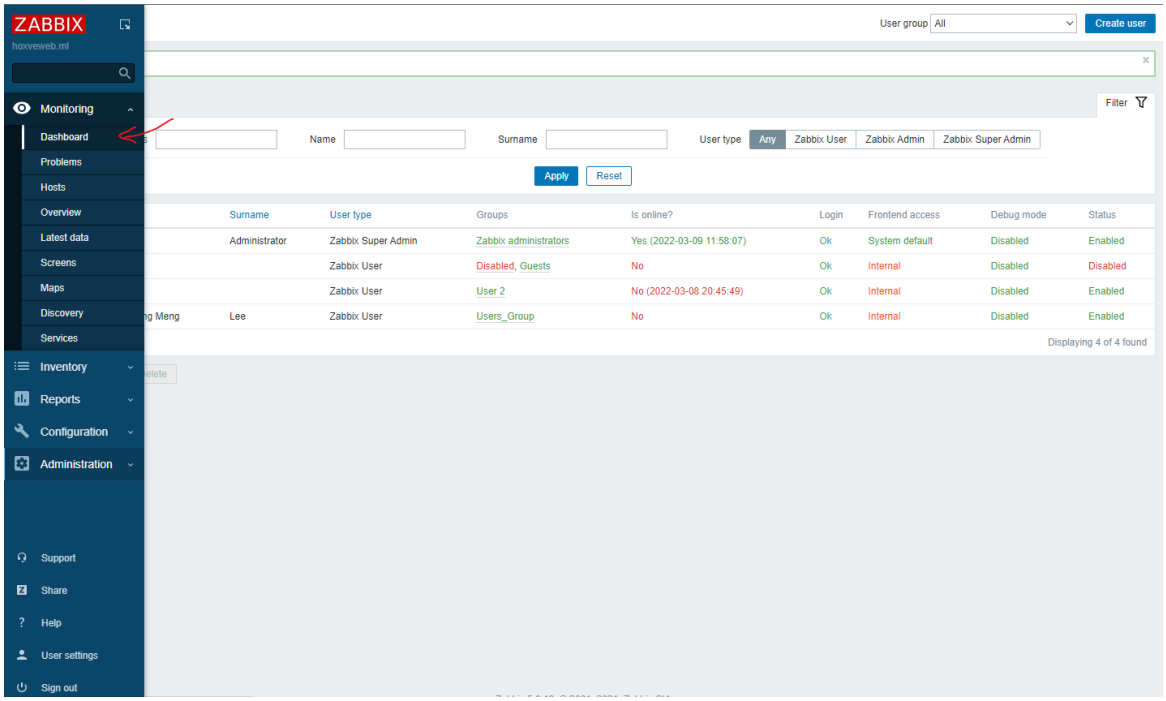
8. Now, insert the username into the “Alias” column, and insert the “Name” and “Surname” of user as a references (Alias: user_lee; Name: Lee Meng Meng; Surname: Lee). Then select “Users_Group” as the selection of “Groups” field by clicking the “Select” button beside. Then, create a password for your user by inserting the “Password” and “Password (once again)” field (Password: userabc234). Then, edit all info based your preferences at other field such as language used, theme of the user etc. Once successfully setup, click on the “Add” button below to proceed.



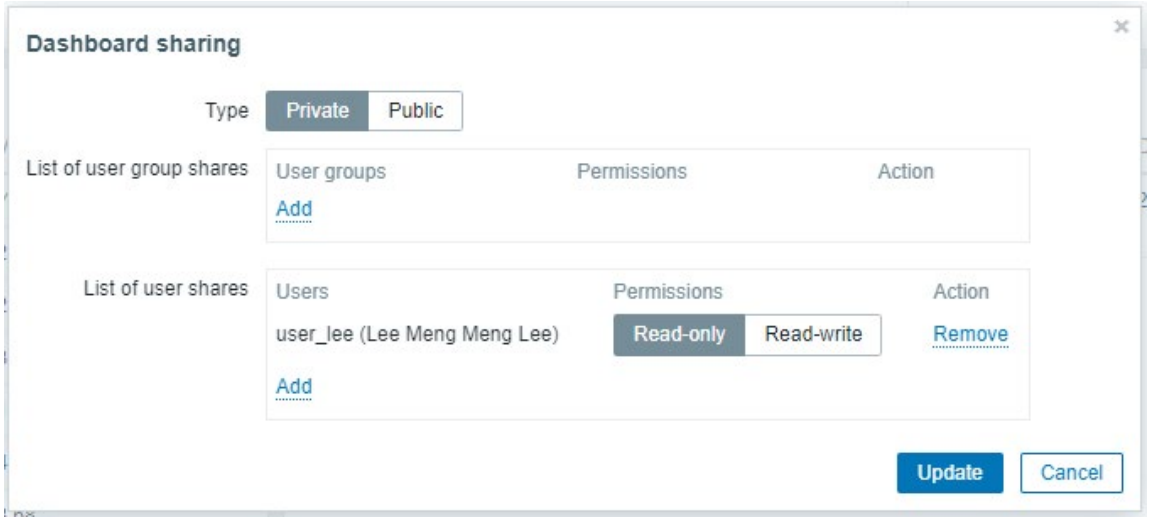
9. Now you will see new user created as shown at below.



10. Now, move on to the sharing dashboard part to setup on the dashboard sharing matter. Click on the “Dashboard” under the “Monitoring” dropdowns at the left hand side sidebar to navigate to the dashboard that would like to sharing for configuration.



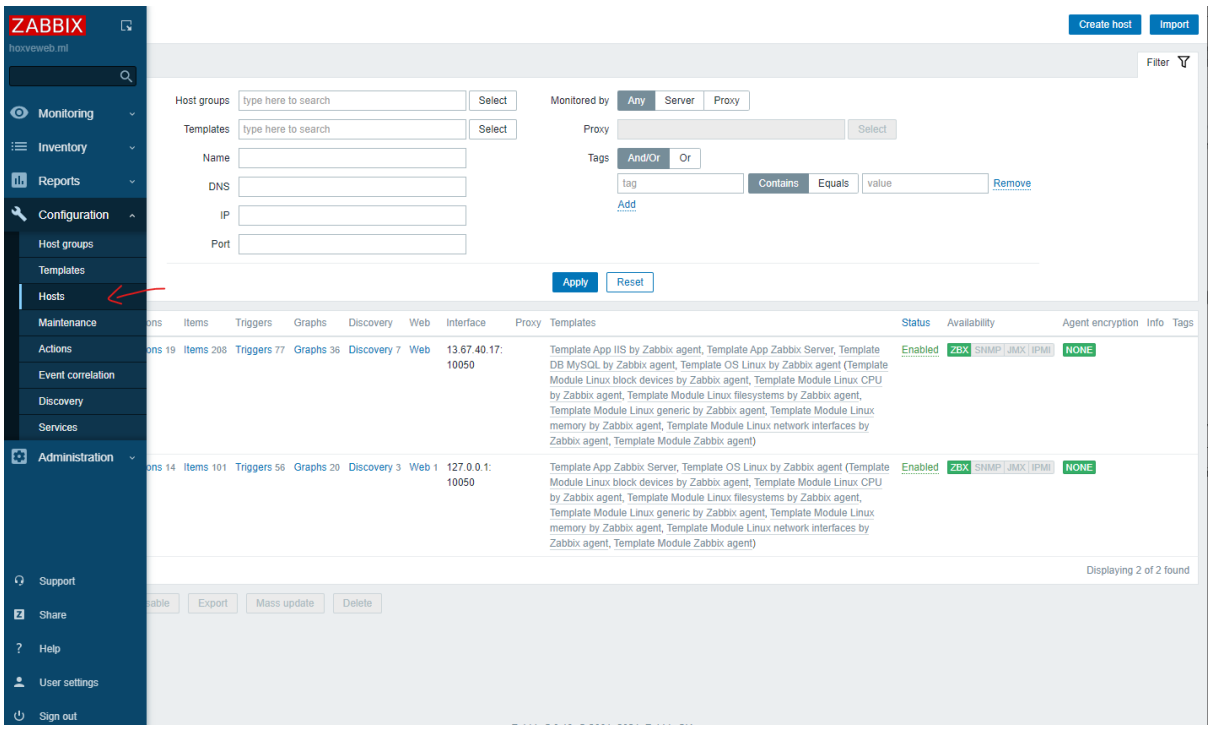
11. Go to the "Testing Dashboard" created previously and select the 3 line button ( ) at the top-right of the dashboard an click for "Sharing" from the drop-box prompt out. In the "Dashboard sharing" box prompt out, click on the "Add" word under the "List of user shares" to add the user you want to share this dashboard, then select "user_lee" that created to share this dashboard with him. Make sure only give him the "Read" permission only. *(** You are also allowed to set for sharing the dashboard to certain user group instead of assigning one by one to each user at the "List of user group shares" section).* Click on the "Update" button to proceed once finished setup.



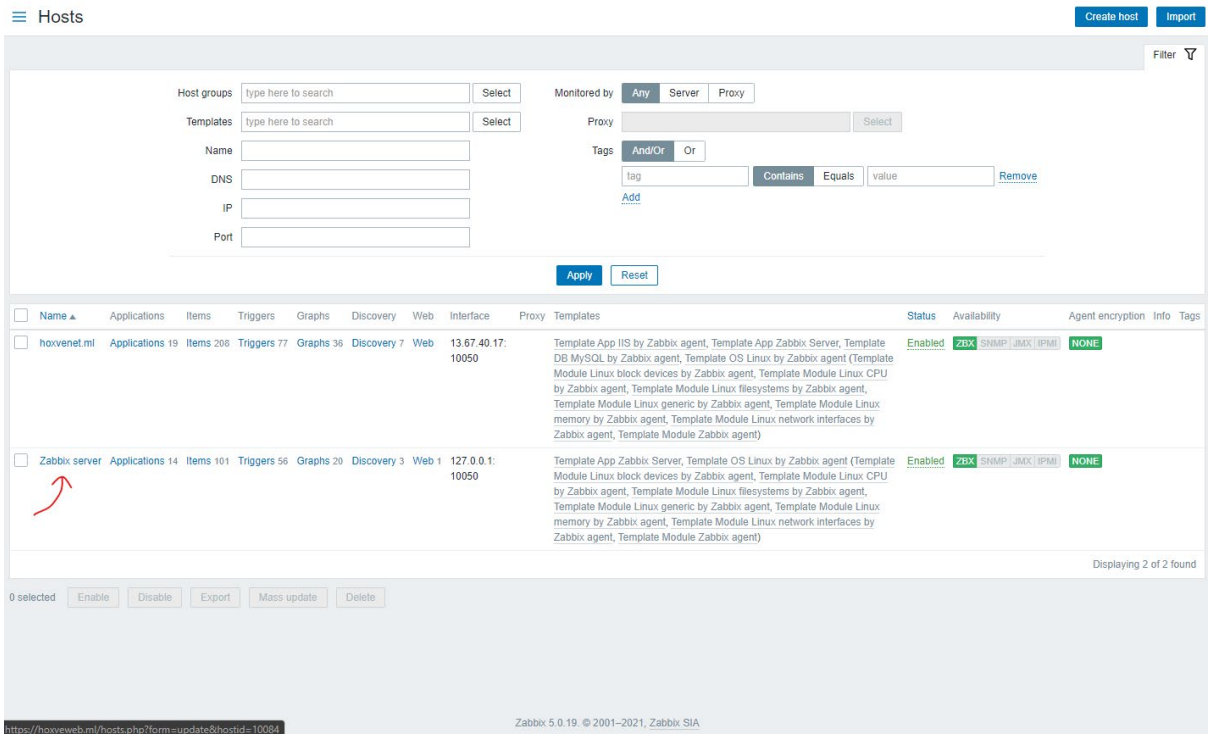
12. Now the new user will be able to see the dashboard created by using it's own account.

Front End Web Scenarios Monitoring

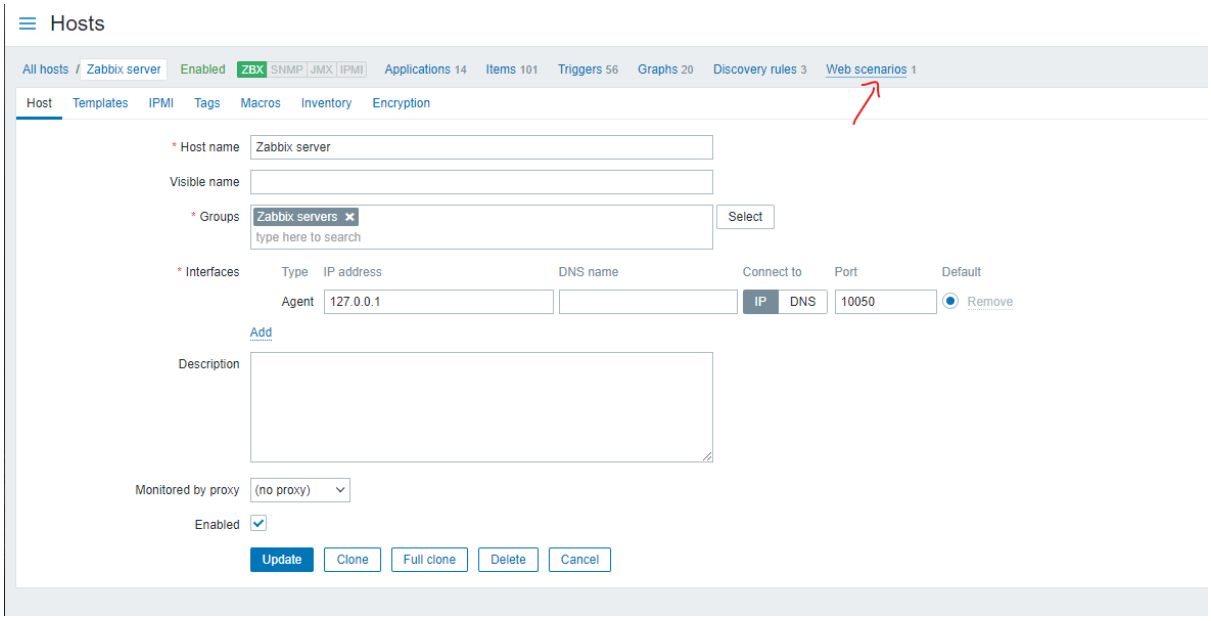
1. To monitoring the front end of server, Zabbix also allow for the configuration. Now, click on the "Hosts" under the "Configuration" drop-down at the sidebar to navigate to the host configuration page for setting up web scenarios monitoring.



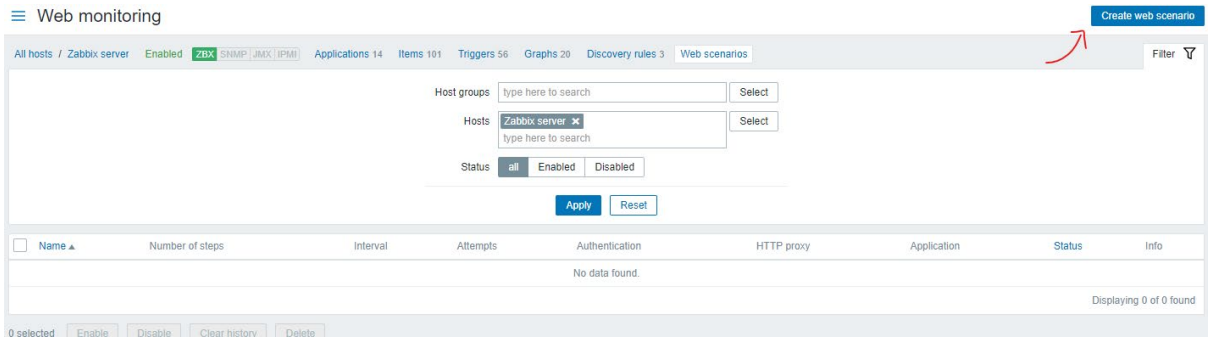
2. In this case let us monitor back our own Zabbix server frontend. Hence, let us click on the "Zabbix server" at the "Name" column to access to our server host.



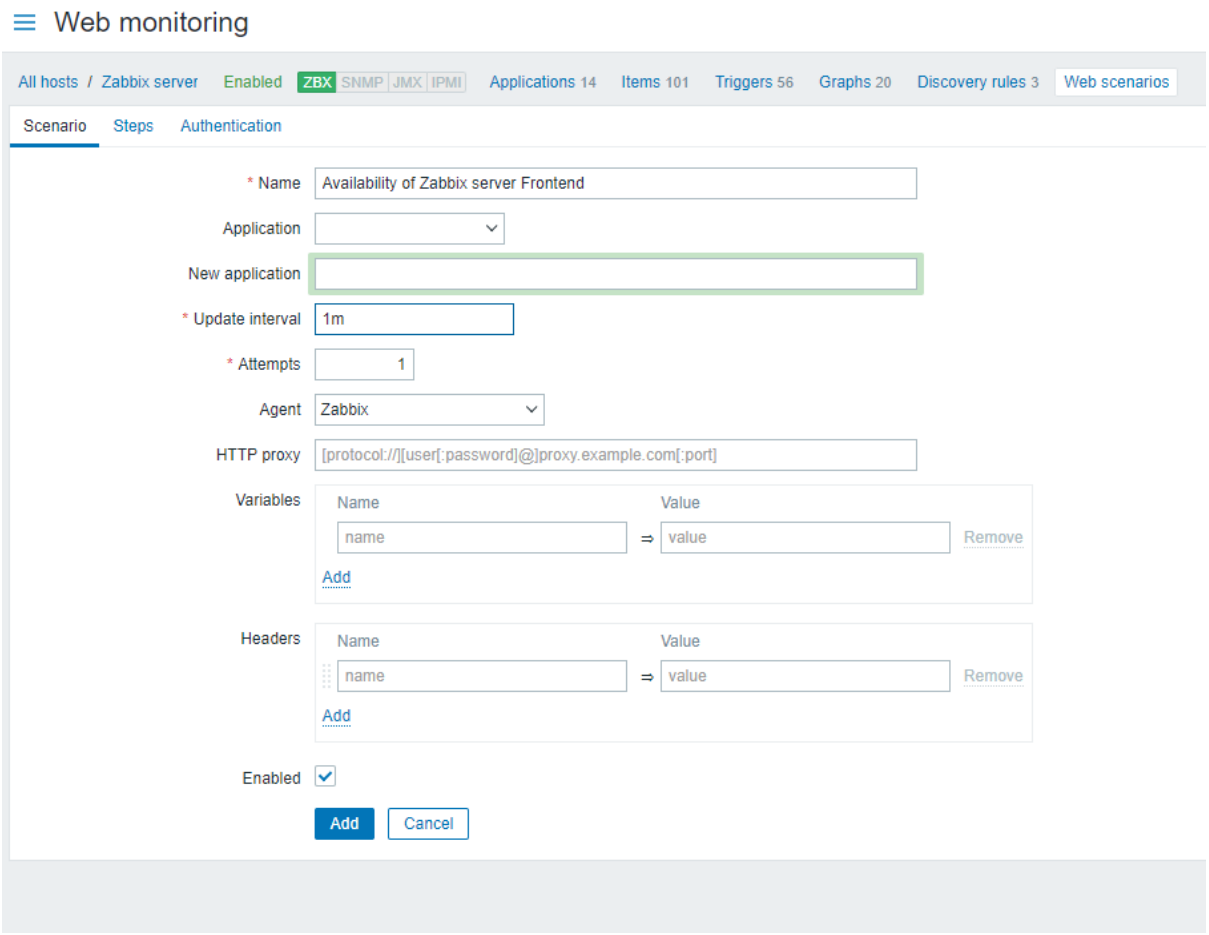
3. Then on the configuration page of host selected, click on the “Web Scenarios” to setup an web scenarios.



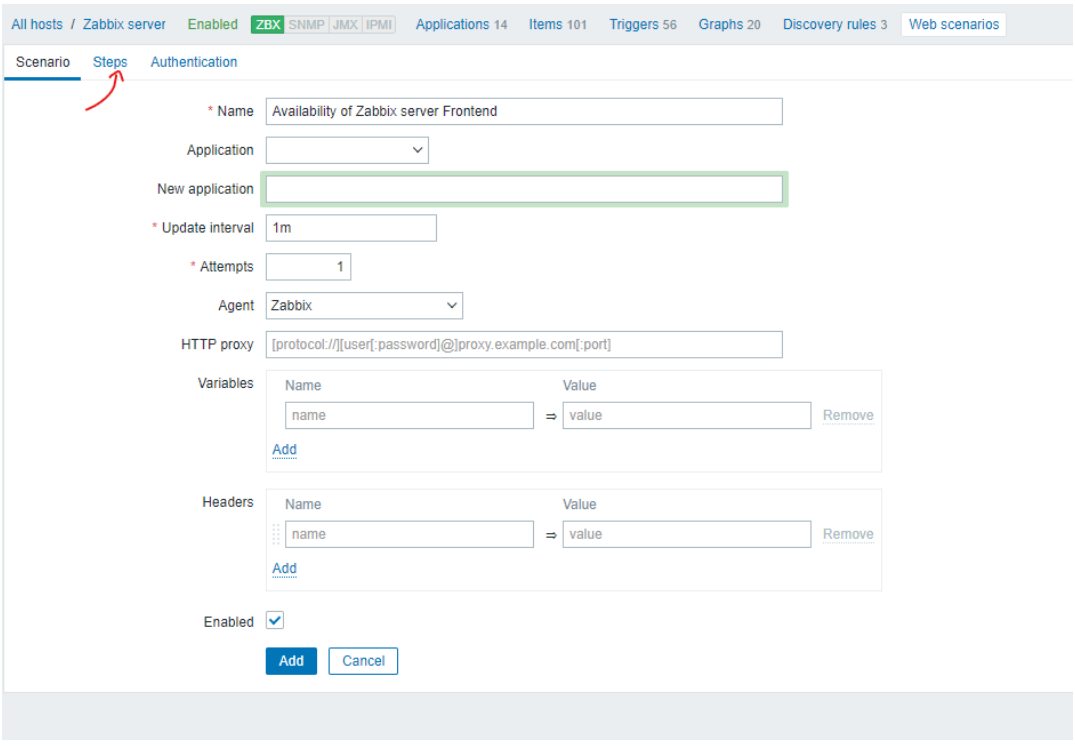
4. After that, click on the “Create web scenario” button on the top-right of pages to create a new web scenarios for monitoring.



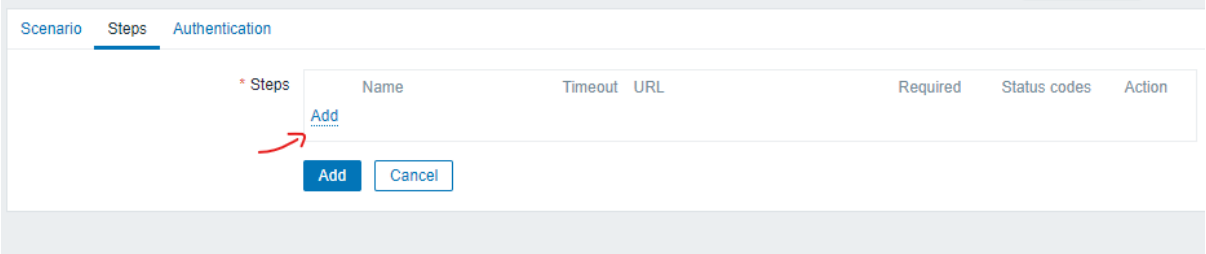
5. On the box prompt out, under the “Scenario” tab, insert the name of your scenario (Scenario Name: Availability of Zabbix server Frontend”). Remain other configuration as shown below.



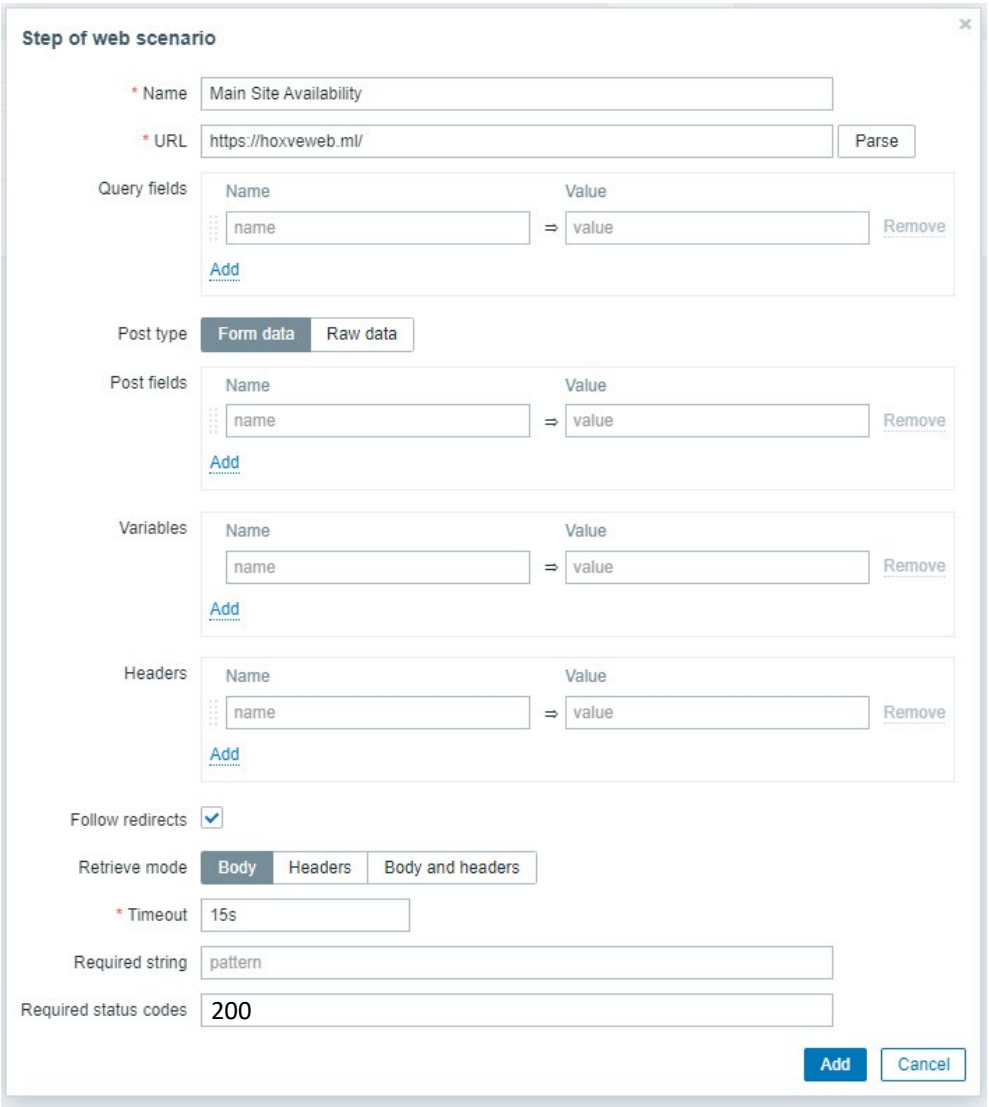
6. Later on, click on the "Steps" tab beside the "Scenario" tab which allocated above the pages.



7. Then, click on the “Add” word below the “Steps” section to add the webpages to monitor. (You can create as many pages as you want to monitor their front end).

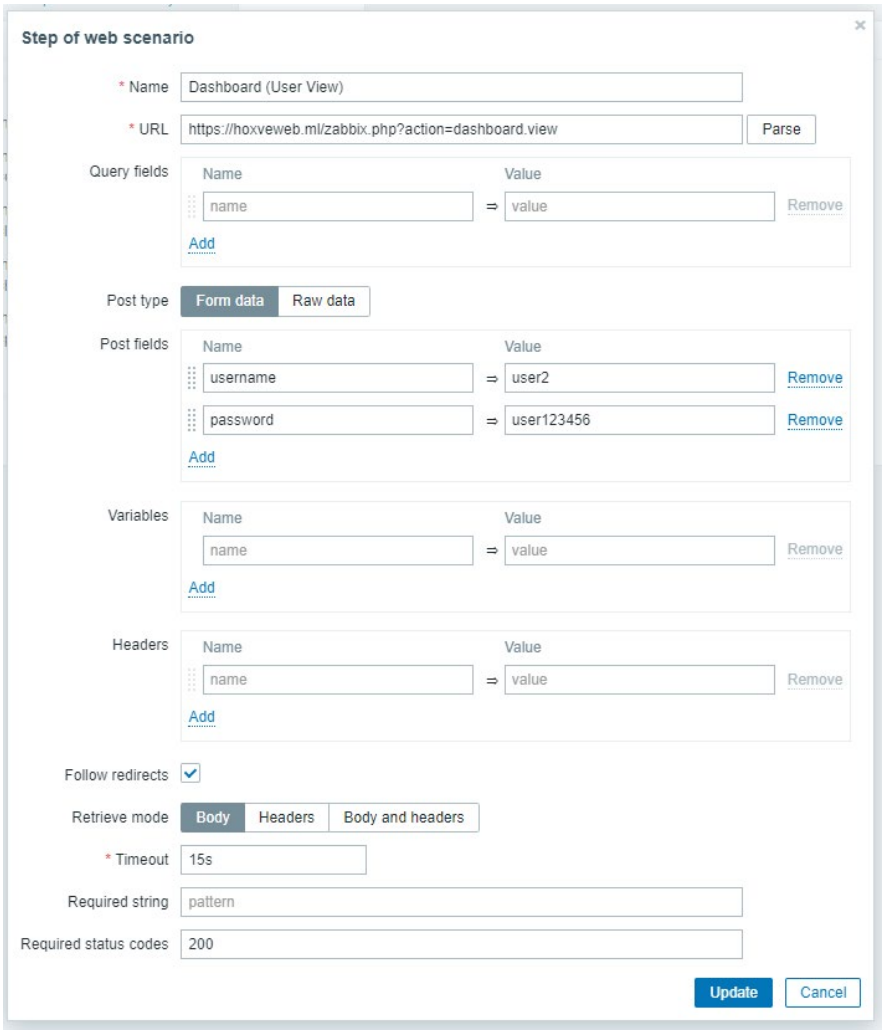


8. Once “Step of web scenario” box prompt out, insert the name of pages that you want to monitor for your own understanding at the “Name” field. Then, insert the URL of our webpage to monitor in the “URL” field (Name: Main Site Availability; URL: your IP). If the page you monitor have other variables or any other data to send in order access you may add in. Make sure “Follow redirects” is ticked, “Required status codes” is 200 and click on “Add” button once done.

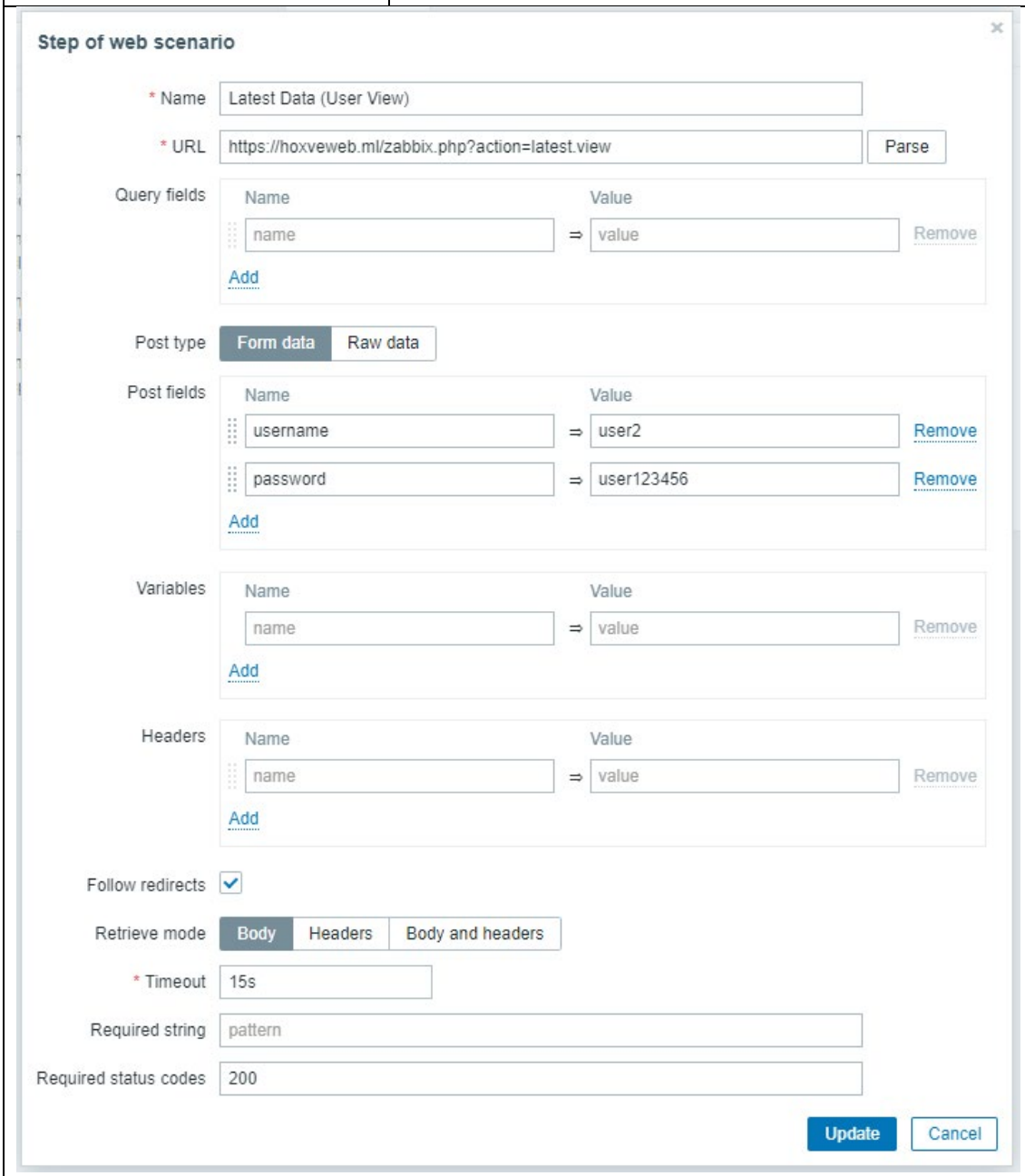


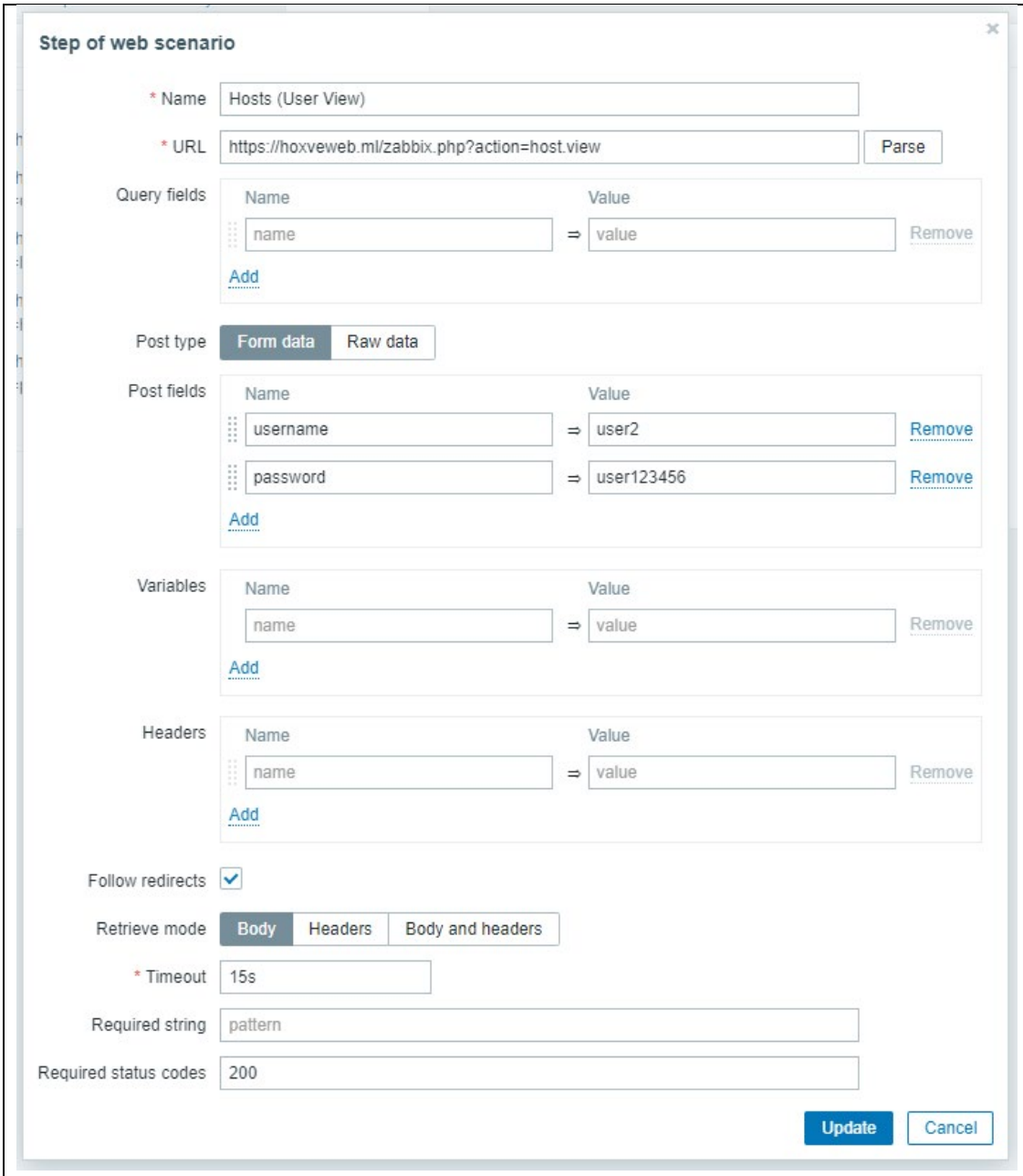
9. Next, add another frontend of page to monitor by clicking the “Add” again to add a new step. Then, in the box, insert “Dashboard (User View)” in the name field and “https://hoxveweb.ml/zabbix.php?action=dashboard.view” in the “URL” field for monitoring the frontend webpage based on the user view by login with the account created just now. Under the “Post fields” add the variables as shown on the table below and make sure “Required status codes” is inserted with 200 and “Follow redirects” is ticked. Once finished, remember to click “Add” button to add the new steps.

Variables Name	Value
username	user_lee
password	userabc234

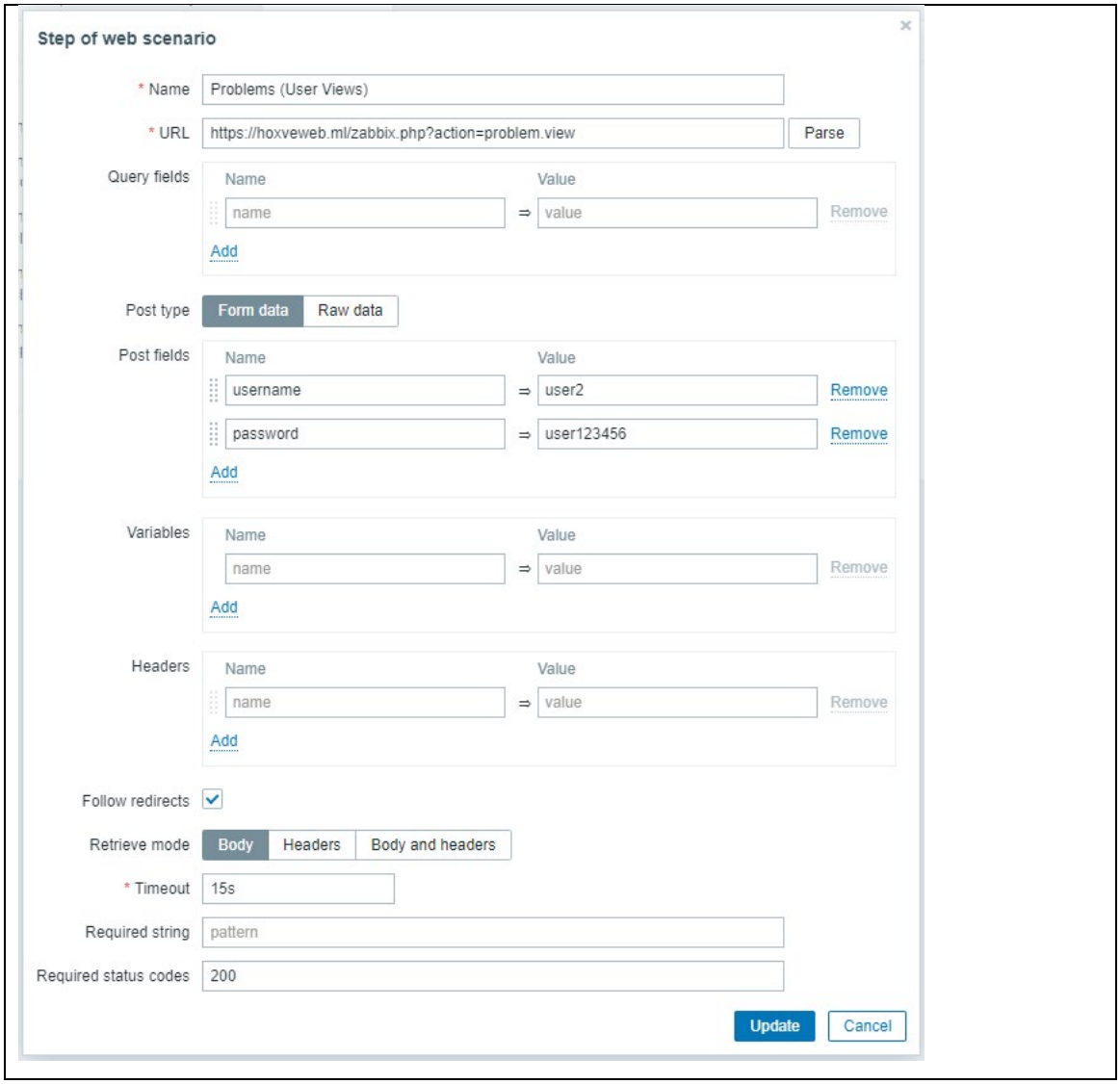


10. Repeat step 9 few times with different Steps Name and URL created as shown at table below.
11.

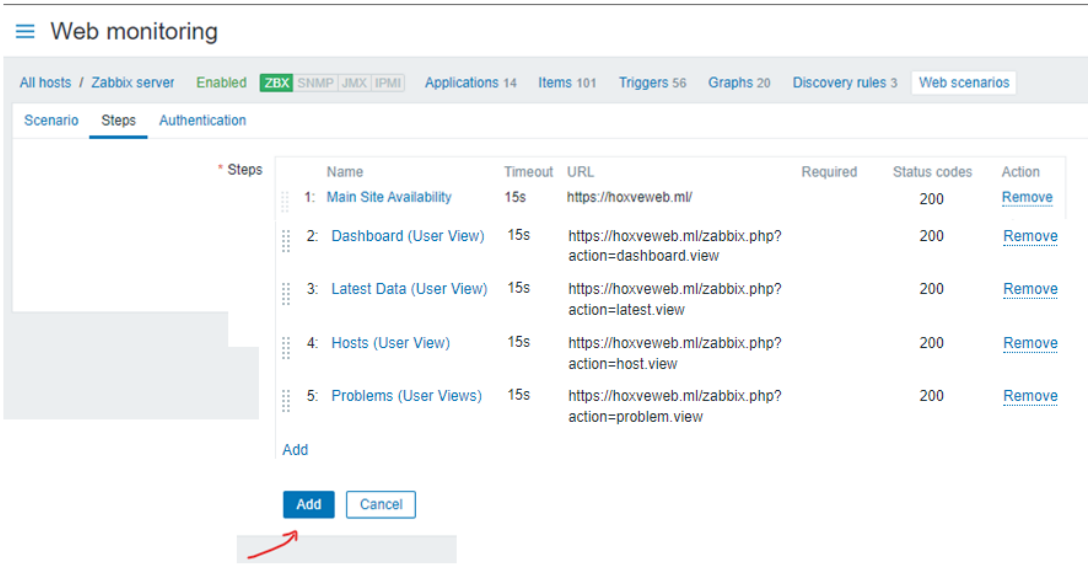
Name of Steps	URL
Latest Data (User View)	https://hoxveweb.ml/zabbix.php?action=latest.view
	
Hosts (User View)	https://hoxveweb.ml/zabbix.php?action=host.view



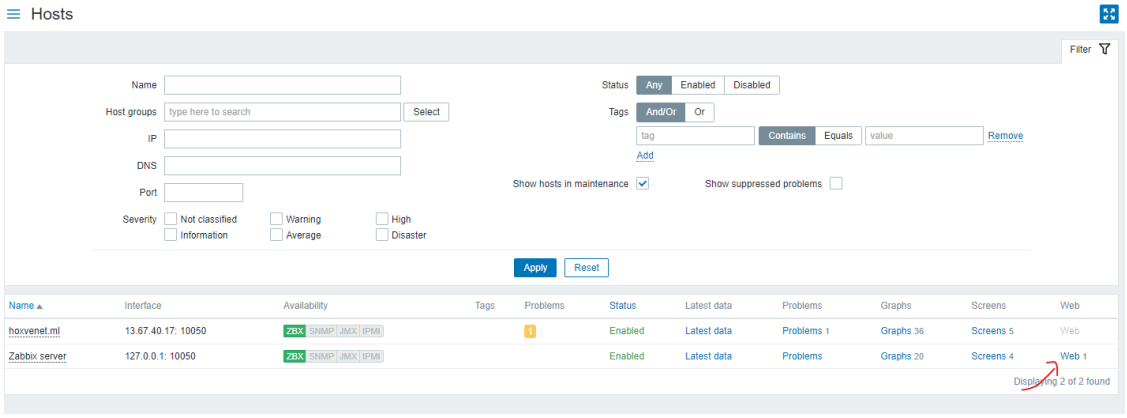
Problems (User Views)	https://hoxveweb.ml/zabbix.php?action=problem.view



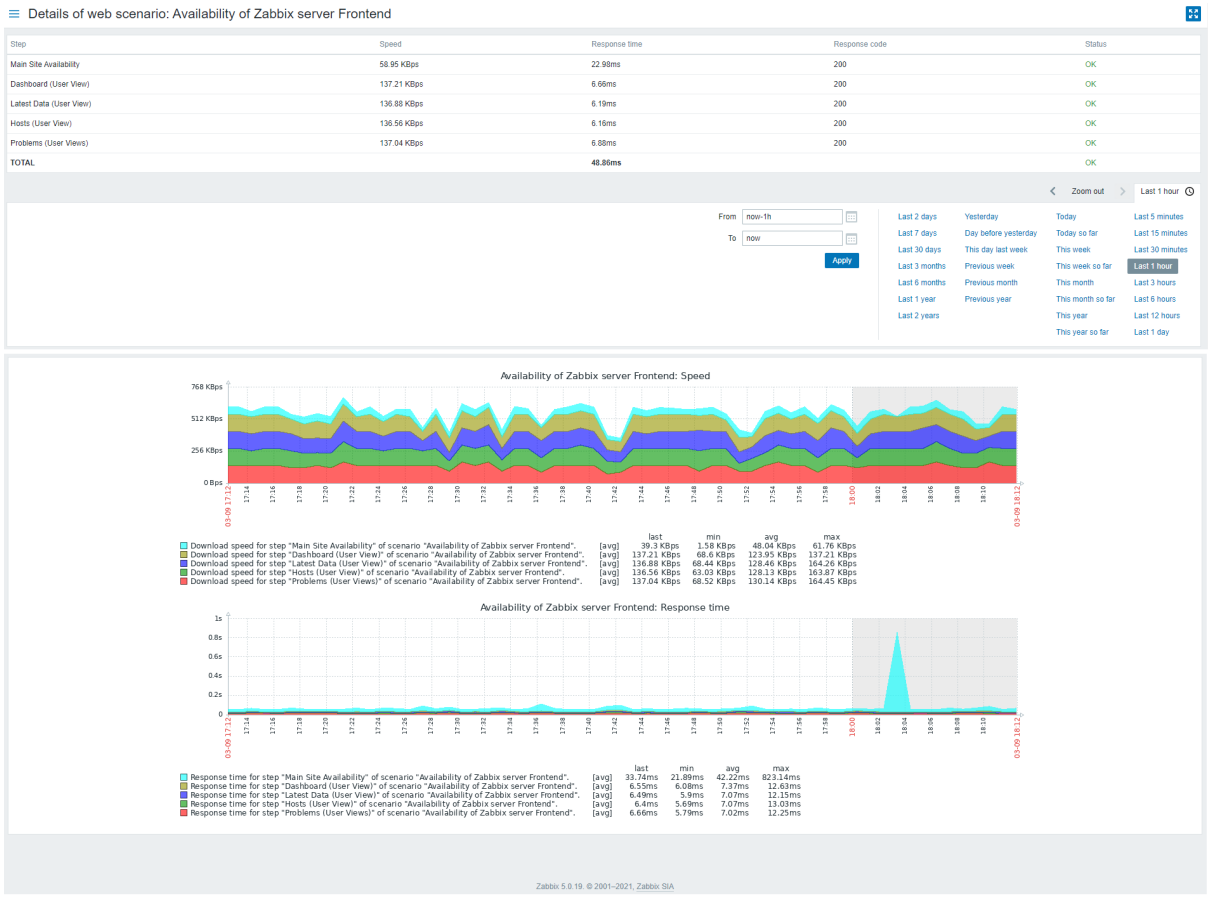
12. Lastly, click on the "Add" button again under the "Steps" tab to submit.



13. Now, access to the “Host” section under the “Monitoring” dropdown at the sidebar and click on “Web” at the “Host” you monitor. You will see the data as shown.

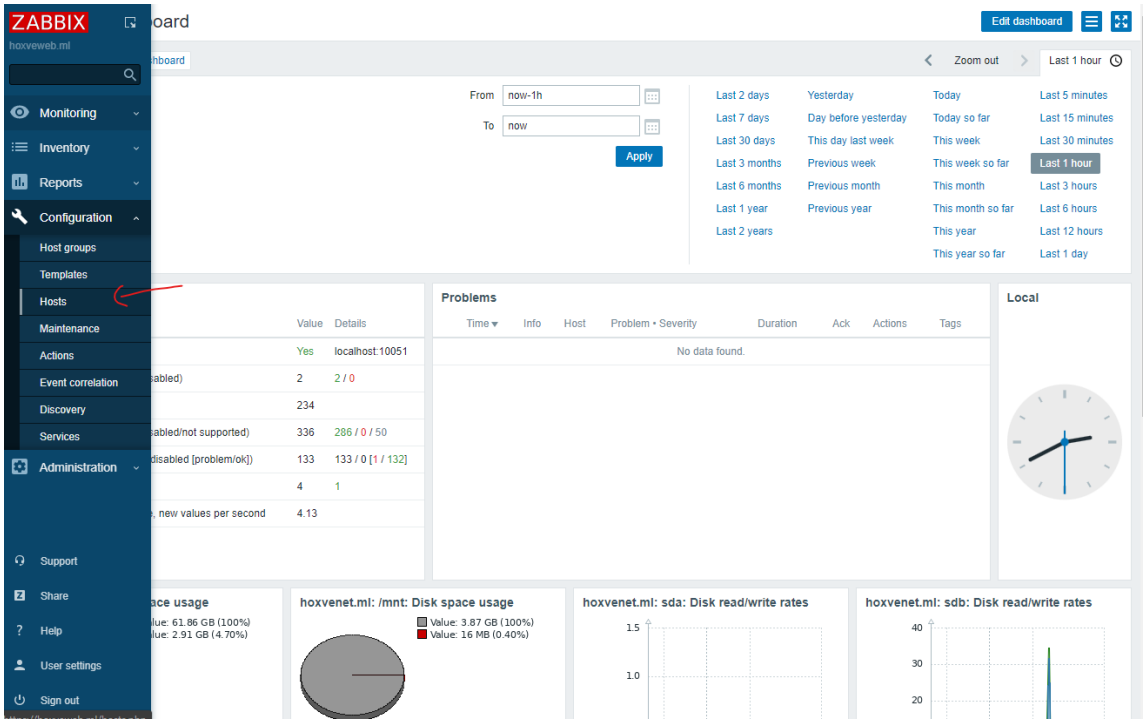


Results:

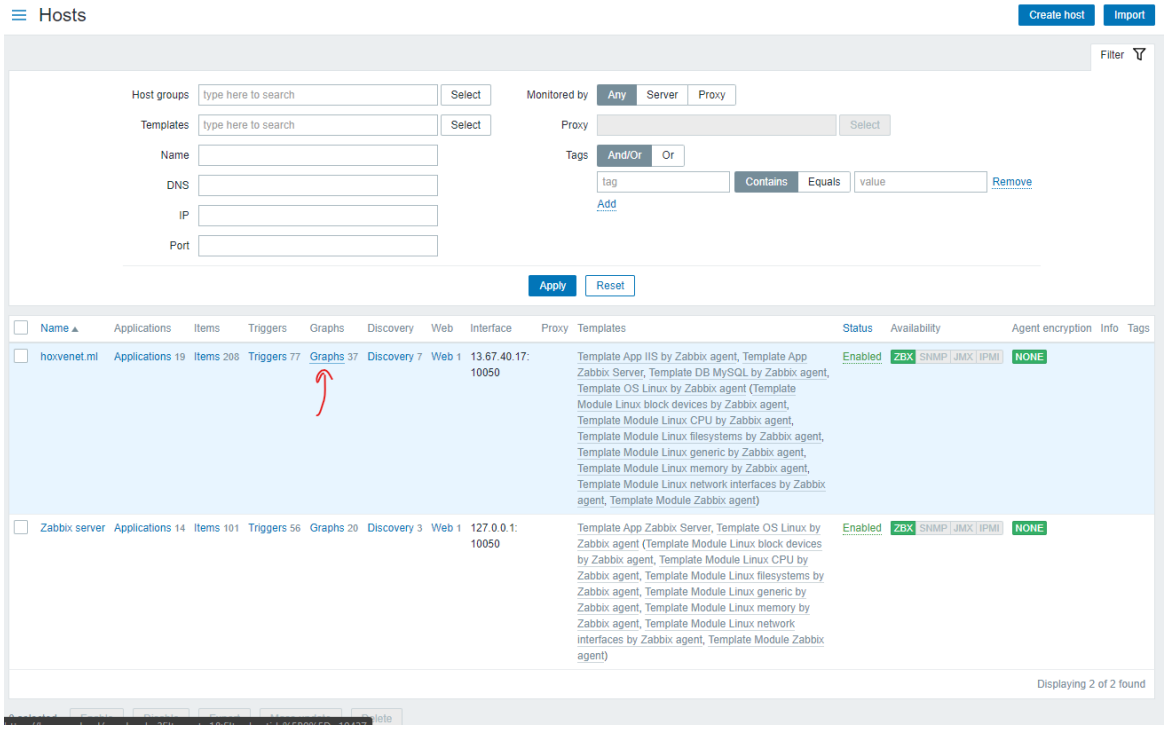


Define Own Graph Widget: Manually added Zabbix Frontend Graph to the Dashboard.

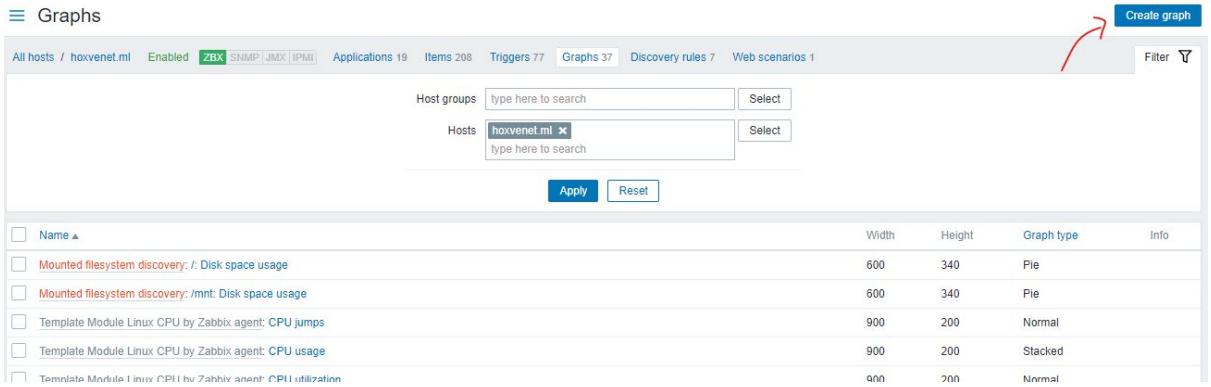
1. First of all, go to the "Hosts" under the "Configuration" drop-down tab at the sidebar.



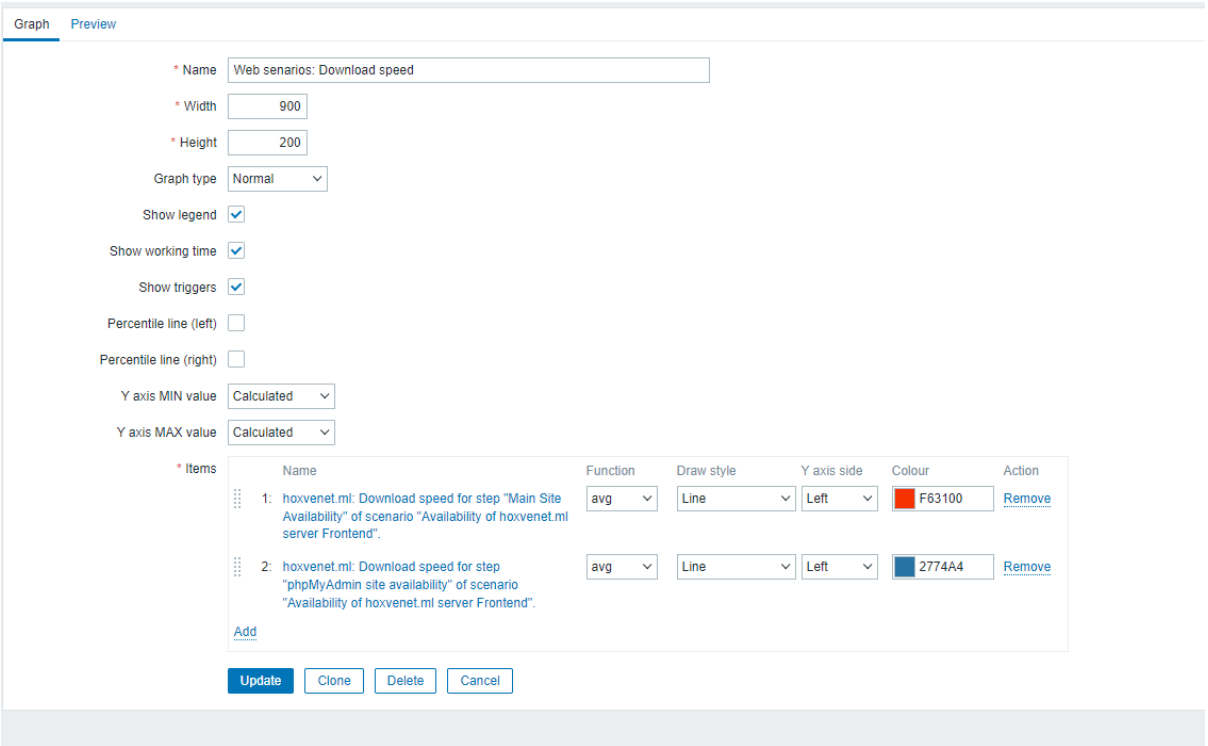
2. Then, click the "Graphs" section of your chosen host created to navigate to the graph collection of your host.



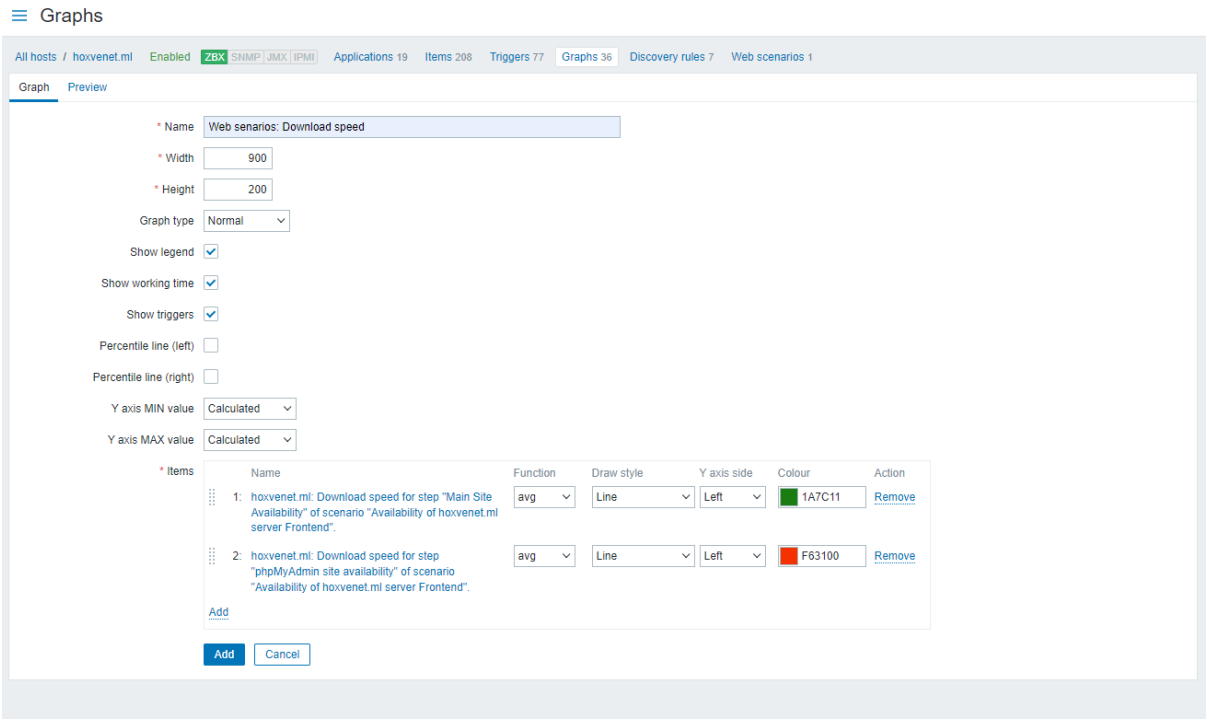
3. Click on the "Create graph" button on the top right of the page to create a new graph for your web scenarios, so that you be able to add in widget. For your information, all the graphs consist of the dashboard for chosen is those predefine graph. You may create your own graph for adding to the widget.



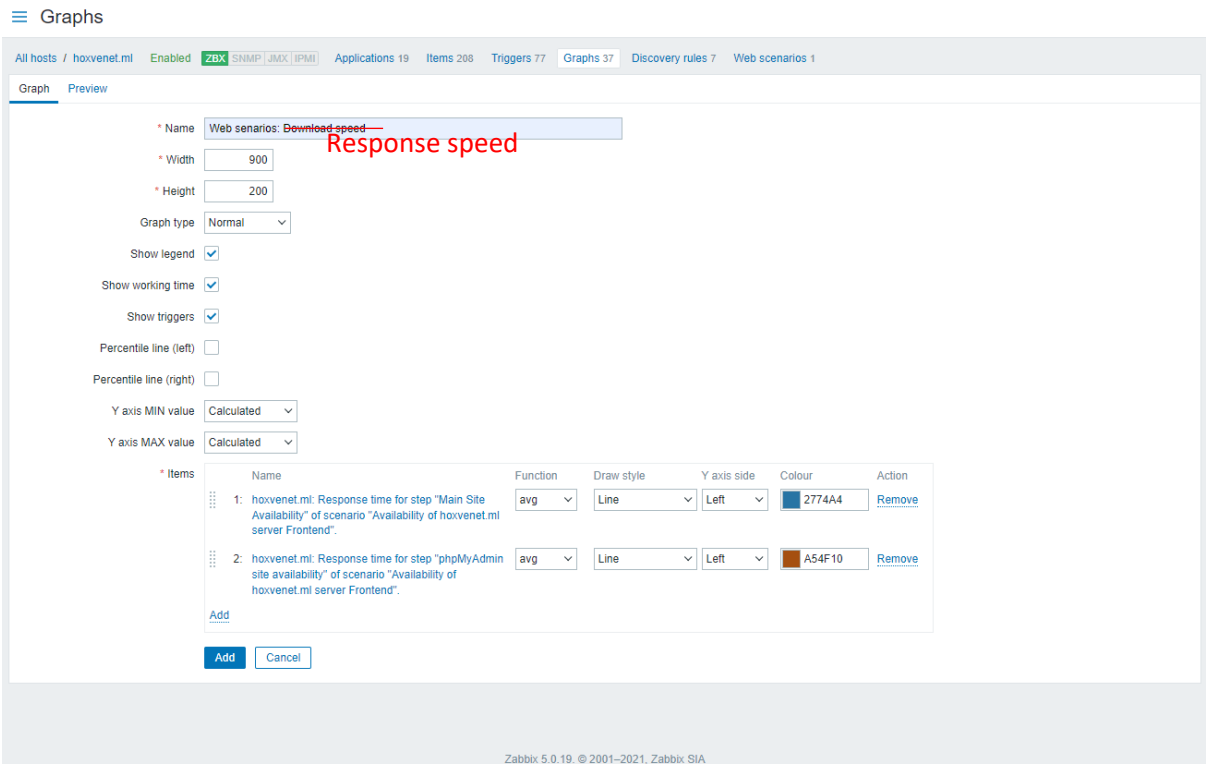
4. Insert the name of your widget and add a new data collected to the "Items" sections. Make sure you choose for the "Download speed…." and remember to add all your pages of web scenarios created.



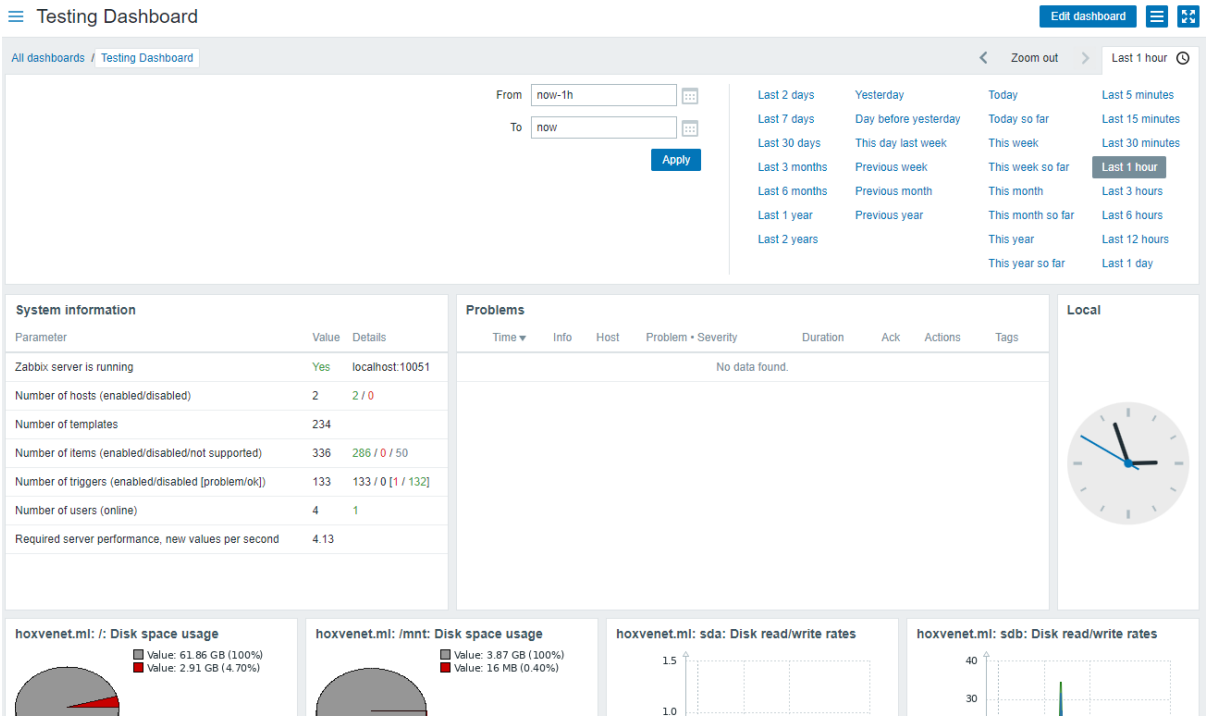
5. Then, click on the blue color "Add" button to add the widget graph created. You may click on the "Previews" for previewing your graph views.



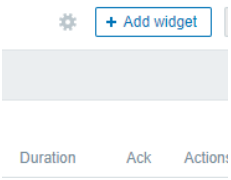
6. Repeat step 3 to 5 to create another graph of "Responds speeds.." widget of your web scenarios.



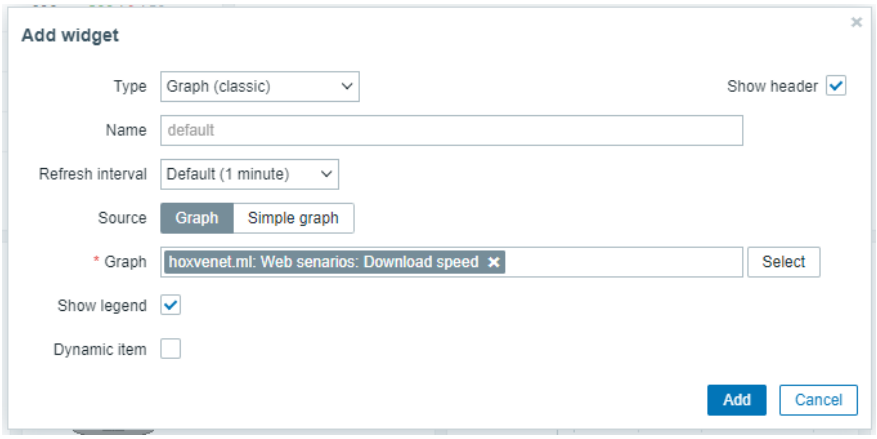
7. Once created all the graph, go back to your dashboard of the webhost you created. Then, click on "Edit dashboard" button on the top right of pages to edit the dashboard.



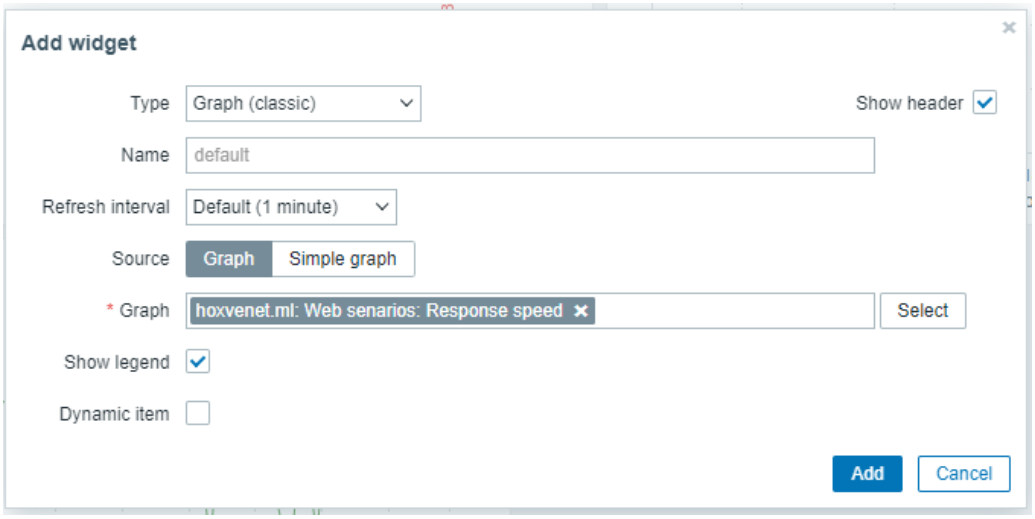
8. Click on the "+ Add Widget" button to add a new widget.



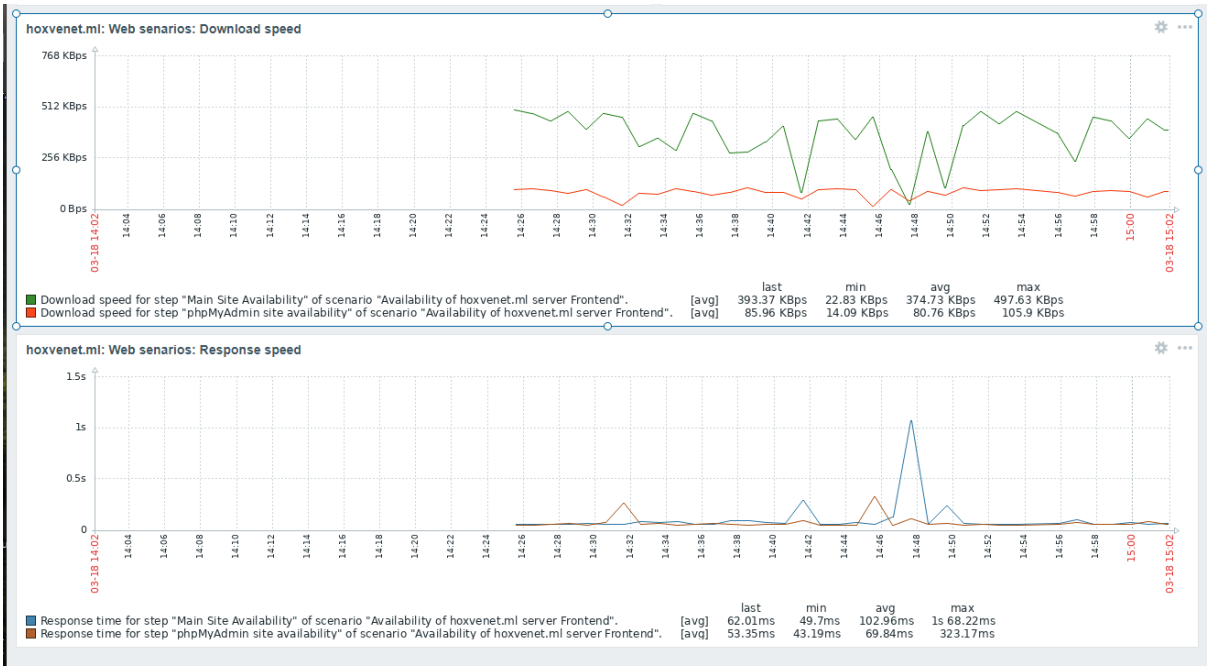
9. Select "Graph (Classic)" on the "type" section and click on the graph that you have just created (Web scenarios: Download speed") and click "Add" to proceed.



10. Repeat step 8 to 9 to add another graph created (Web scenarios: Response speed").



11. You can edit your widget size according to your preferences. and click on the “Save changes” button on top right of pages once you have finished editing to save the configuration.



Funding/Resources Proposal

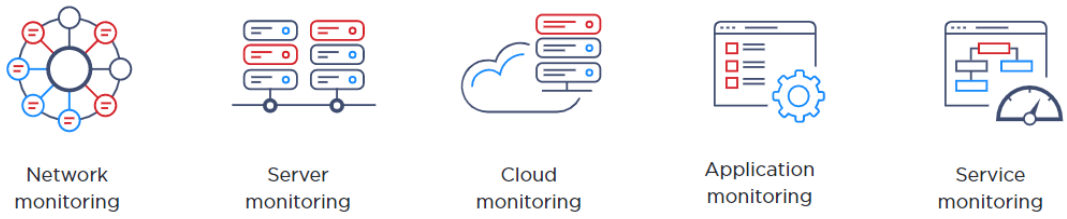
TO: CENTREC TRAINING AND CONSULTANCY

BY YAP HAO YIH

OVERVIEW

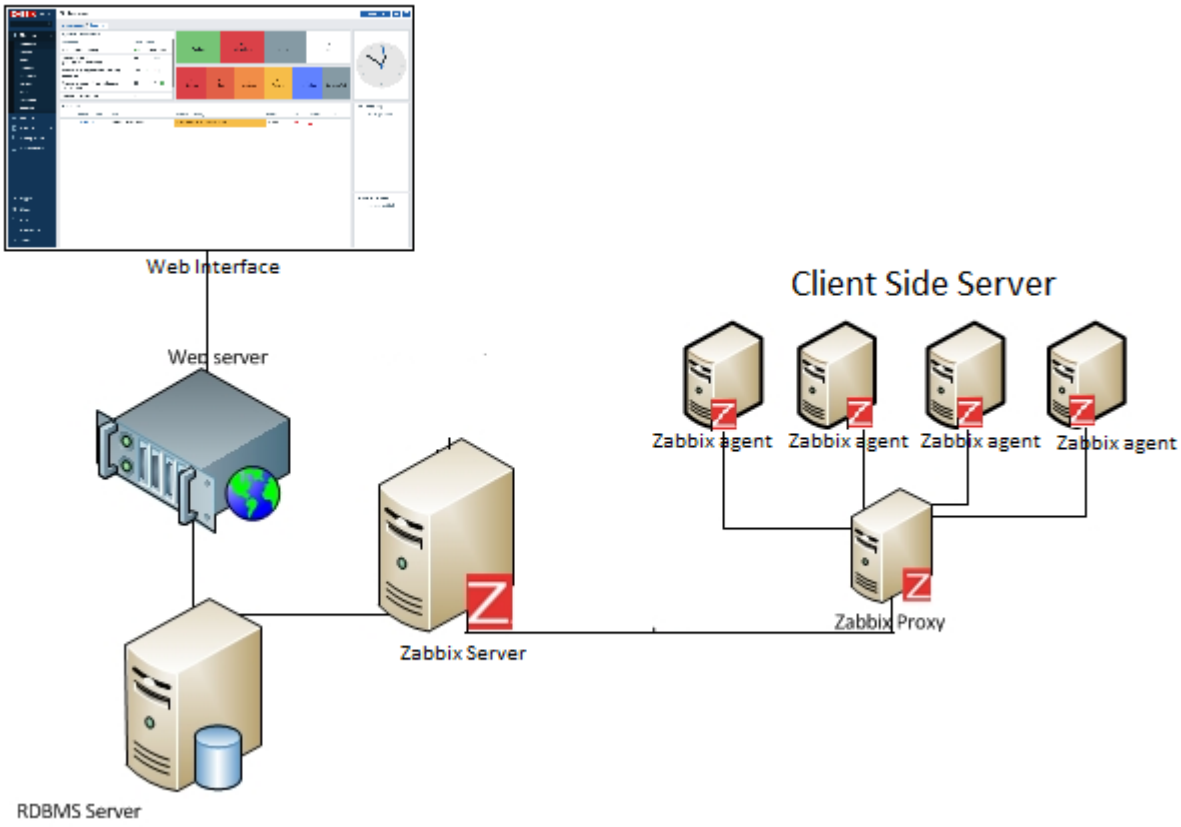
ZABBIX

Zabbix is an enterprise-level and open-source monitoring software tools for real-time monitoring on various kind of IT components and devices. It helps in monitoring various parameters of a network as well as the health and integrity of enterprise IT devices. It capable to monitoring on network utilization, server (CPU load, Disk consumption), application, cloud and services monitoring.



This software will be using the notifications mechanisms in order to allowed user to knowing any problem or sudden event that occurs in their server or devices immediately. So that, the client or developer will be able to detect any problem such as attack or unusual activities happen and hence solves it before it become serious. Zabbix also offering the reporting structure and good data visualization features that will help us well monitors and analyzing our devices which will let us have a better understanding on the current condition of client devices. All in all, Zabbix brings great functionalities that plays important role in monitoring IT infrastructures especially in the enterprise or business industries that using network to promote their business. This not only benefits to small organizations only, but it also benefits to large companies that with a multitude of servers. Moreover, Zabbix also a free platform that available for community used. Zabbix is written and distributed under the GPL General Public License version 2. It means that its source code is freely distributed and available for the general public.

Zabbix Architectures



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Zabbix enables you to collect metrics but isn't limited to:

- ✔ Network devices
- ✔ Cloud services, containers, virtual machines
- ✔ OS level monitoring
- ✔ Log files
- ✔ Databases
- ✔ Applications
- ✔ Services
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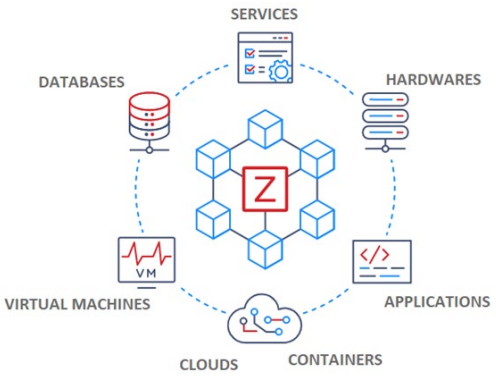
- ✔ Web page monitoring
- ✔ HTTP/HTTPS endpoint monitoring
- ✔ Support for full range of industry standard protocols
- ✔ Collect data from external API end-points



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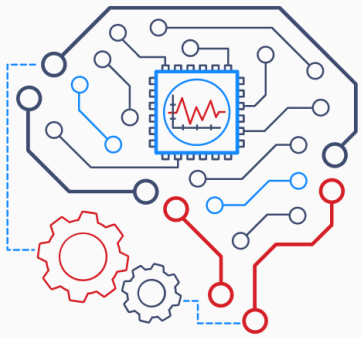
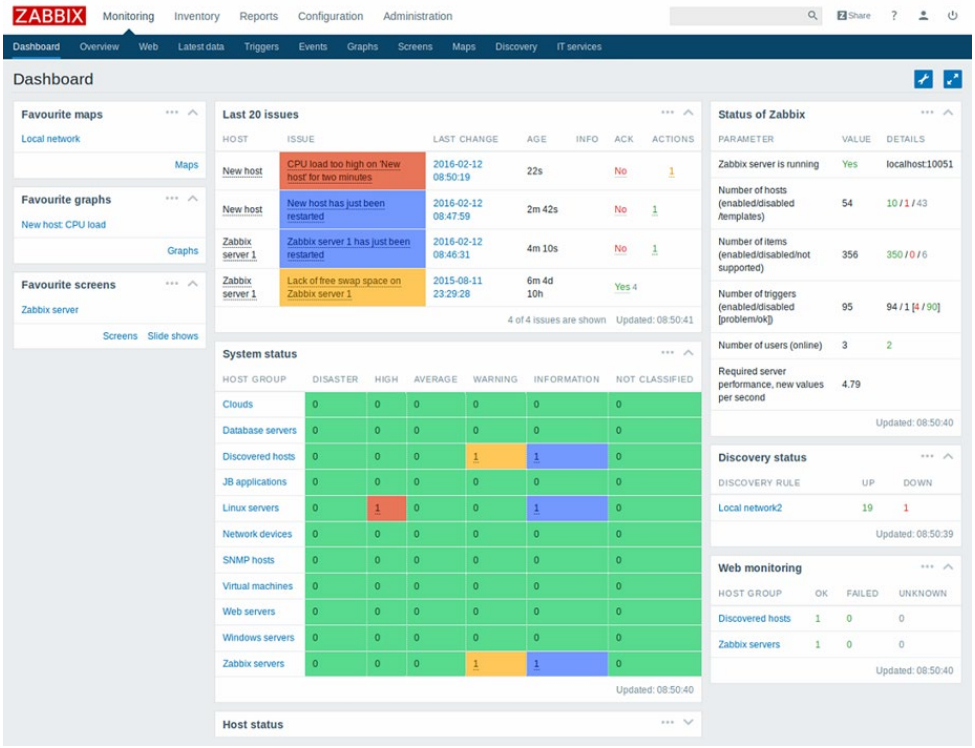


Visualization Presenting on monitored data

The dashboard of Zabbix web interface provides various ways of presenting a visual overview of the IT environment including:

- Widget-based dashboard



- Graph

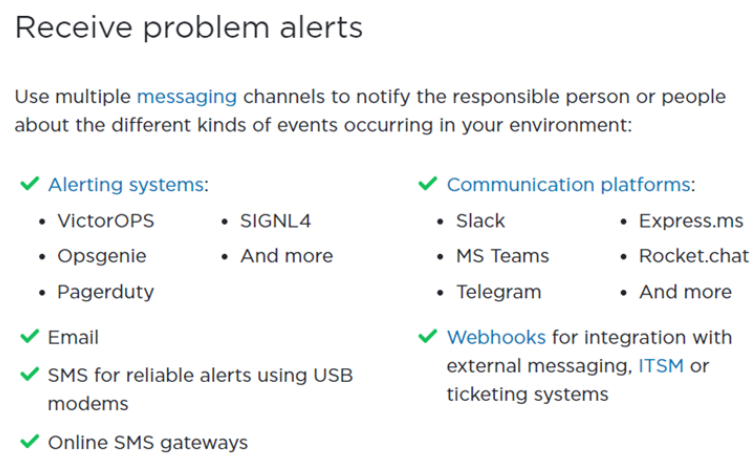
- Network maps

- Slideshows
- Drills Down reports

From the present data we can analyzed and correlate metrics with graph presented

Notification on Critical Issues & Auto Remediation

Zabbix server will be responsible for notifying the responsible person for occurred events via various channels. It also will fix issued automatically. Help us to focusing on root caused problem with Zabbix and escalating problem according to flexible user-defined level. Provides customized message based on recipient's role or issued typed with runtime & inventory information



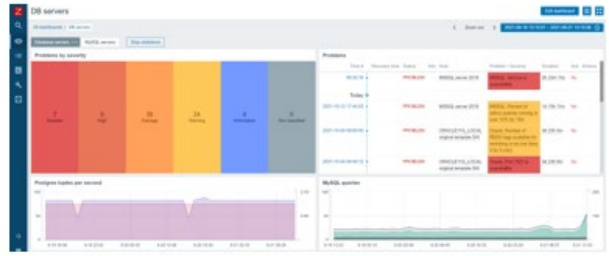
Let Zabbix resolve your issues automatically

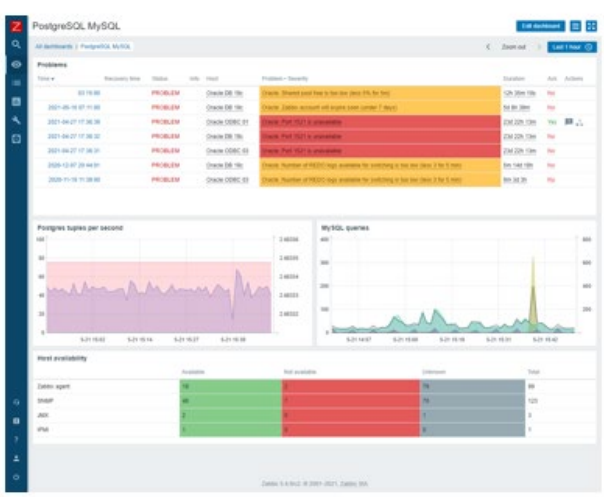
With Zabbix you can not only receive a notification about a problem but also automatically resolve it. A remediation script or command can be executed to attempt and resolve the issue:

Execute a remediation script to:

- ✔ Restart a service
- ✔ Manage your cloud resources
- ✔ Perform automatic resource rescaling
- ✔ Executing any other custom logic

Zabbix Problem Notification View





Other Features

Data protection in all layers

- Strong encryption between all Zabbix components communication

Save time on deploying various templates for monitoring

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- Collecting data from thousands monitored devices
- Monitor behind firewall and DMZ (Demilitarize Zone)

Integrate Zabbix with any part of IT environment via Zabbix API

- Integrating Zabbix with third party software via API

The Objective

- Need #1: To minimize the impact and financial loss by finding the root cause of the problem quicker.

- Need #2: To improve the efficiency and utilization of network traffic, ports, and device resources
- Need #3: To determine of the root cause on the impact and high network traffic load on the client server automatically by Zabbix.

The Opportunity

- Goal #1: Learn and consolidate the usage info of Zabbix server
- Goal #2: Implementing the Zabbix server that able to monitor the activities of server
- Goal #3: Setup monitoring on IT infrastructure to figure out the root cause of problem occurs in server and detect any anonymous network traffic

The Solution

- Recommendation #1: Set up a VPS server and install Zabbix monitoring software on it.
- Recommendation #2: Configure Zabbix client on IT infrastructure to monitor the activities (CPU and memory usage, network traffic etc.)
- Recommendation #3: Testing the ability of Zabbix server in monitoring the IT infrastructures

OUR PROPOSAL

Information technology have been reached a fairly matured development in market. Most of the industrial and businesses are starting to implement IT technology in their business in order to promoting their businesses. However, when they are using the system such as webpages to do their daily business tasks, they might experience some malicious attack by the attacker, but they do not realize their attack. Although they have a good security that protecting their webpages of IT software from being attack but all the protection cannot be fully confirmed that no attacker can be attack to their system. Hence, usually when the time they know they are being attacked are the time that the attacker has been corrupted their systems. This late of realizing on attack causes most of the business or industries experiencing huge number of damages not only on the system configuration but also the most important and valuable data. All of these are a huge amount of money to be needed in order to maintained and repair their system. Moreover, during the repairing and maintenance, they are not able to continue their online business process and this action might also cause the lost income for their business. Hence Zabbix have a good technology to help us on monitoring the CPU resources allocation, memory allocation and network traffic etc. The most important is this Zabbix server can help us to detecting the problem automatically and sometimes we even can perform some preparation to trigger some actions to recover system or managed the attack when they suddenly facing or problem. With the configuration of Zabbix on monitoring our IT infrastructure in business, we able to avoid many possible attacked that bring huge damage and loss of money while it also able to reduce the impact of damaged when we found the problem and fix it immediately.

Execution Strategy

In this proposed project, our execution strategy is based on the methodologies of case study on project along with the development of this project. The outcomes of this project will be benefited both site of parties including our development site as well as client site. The deliverable will be sent to the client and on our development site we will be gaining the experiences and knowledge of setting the Zabbix server. In this project, we will be benchmarking of 6 months as the target timing of finishing project. In order to succeed the project, the progression and execution timelines of task will be divided into 3 phases. The first phases will be aiming to target the objectives and success our project task with deliverables. Once the first phases have been successfully executed, we will be proceeded to the second phase and so on. Following is a description of our project methods, including how the project will be developed, a proposed timeline of events, and reasons for why we suggest developing the project as described.

Resources

The resources that we needed in this project is the Virtual Private Server (VPS) that enable us to host our Zabbix on top of it to monitoring the IT infrastructures activities. The minimum specification of VPS that we needed are listed as shown at below:

2 vCPU core Processor

Memory size of 2GB RAM

Recommended with minimum 20GB SSD Storage

Operating System: Ubuntu 20.04 LTS (AMD-64)

Project Deliverables

Following is a complete list of all project deliverables:

Deliverable	Description
Zabbix Server account	Providing with Zabbix server account that enables client to access the Zabbix server for monitoring their monitored infrastructure activities and insight of reporting about the IT infrastructures.
Auto detecting problem services	As mentioned, Zabbix will be notifying for any anonymous activities in the server which helping us to detecting any attack and solve it as soon as possible.

Timeline for Execution

Key project dates are outlined below. Dates are best guess estimates and are subject to change until a contract is executed.

Description	Start Date	End Date	Duration
Project Duration	20/06/2022	15/10/2022	3 months, 25 days (Total: 117 Days)

Supplied Material

The following materials are to be supplied by your Company for this project. For your company to meet project milestones, this material must be supplied on schedule. The due dates included in the following table represent our best guess based on current proposed project dates:

Materials to be supplied by Client's Company	Due Date*
VPS SERVER - 2 vCPU core Processor, Memory size of 2GB RAM, Recommended with minimum 20GB SSD Storage, Operating System: Ubuntu 20.04 LTS (AMD-64)	15/10/2022

**We cannot be responsible for cost overruns caused by client's failure to deliver materials by agreed-upon due dates.*

EXPECTED RESULTS

We expect our proposed solution to Client's Company's requirements to provide the following results:

Financial Benefits

- Open source (Zabbix is free) and low cost of implementing
- Reducing financial loss (maintenance cost) on server getting attack. (Speed up the process of detecting any attack, hence reducing impacts or monetary lost due to system down)
- Avoiding business operation affected due to system error or attacks

Technical Benefits

- Collecting hardware data - CPU, Memory, Network, and Disk Metrics are collected and reported on.
- Able to monitor connection availability (Network transfers rates, Infrastructure Availabilities – Server Down or Up)
- Able to monitor network assets. (Network traffic, Packet Inbound/Outbound)
- Able to detect any anonymous network traffic and incoming packet
- Able to figure out the root caused to the sudden high load of network traffic even though no people are browsing the platform.
- Able to generate reports on the performance of network assets.
- Able to generate reports on the performance of customer connections.

Other Benefits

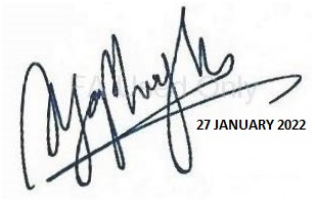
- Flexible design - It is very easy to build out even very large environments via the templating system. You can also start where you are - network monitoring, server monitoring, etc. and then build it out from there as time and resources permit.
- Provides a "plugin architecture" (via XML templates) to allow end users to extend it to monitor all kinds of equipment, software, or other metrics that are not already added into the software already.
- Due to its open framework, you can easily integrate Zabbix to other front-end platforms. It is very flexible data gathering on a wide variety of protocols.

CONCLUSION

We look forward to working with Client's Company and supporting your efforts to improving your infrastructure security and, hence reducing any possible huge financial loss. We are confident that we can meet the challenges ahead and stand ready to partner with you in delivering an effective IT support solution.

If you have questions on this proposal, feel free to contact me at your convenience by email at haoyihyap@1utar.my or by WhatsApp us at 012-217 4594. We will be in touch with you later to arrange a follow-up conversation on the proposal.

Thank you for your consideration,



_____.

Name: _YAP HAO YIH____

Date: 17th June 2022_

PROPOSAL PRESENTATION SLIDE

Overview

What is Zabbix?

- An enterprise-level and open-source monitoring software tools for real-time monitoring on various kind of IT components and devices.
- Capable to Perform:
  - Network Utilization monitoring
  - Server Monitoring (CPU load, Disk consumption)
  - Application Monitoring
  - Cloud Monitoring
  - Services Monitoring

ZABBIX

Zabbix Architectures Components

- **Zabbix server** → The central component that managing all the configuration, statistical and operation data stored and reacting to the agent reports
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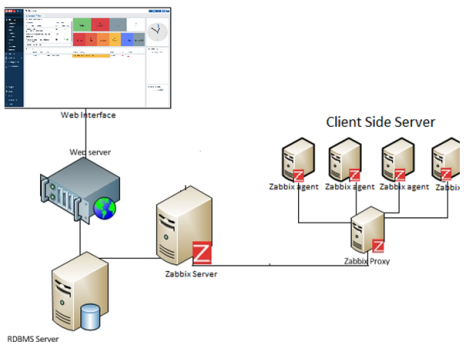

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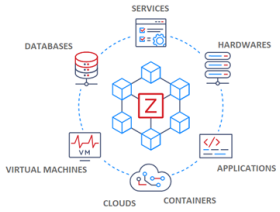

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- *The dashboard of Zabbix web interface provides various ways of presenting a visual overview of the IT environment including:*
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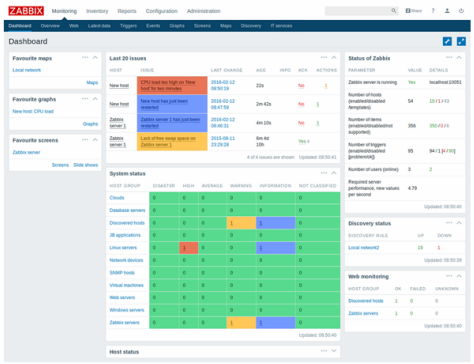

Zabbix Dashboard View

Zabbix Reporting Graph

Zabbix Network Map

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Receive problem alerts

Use multiple messaging channels to notify the responsible person or people about the different kinds of events occurring in your environment:

- ✓ Alerting systems:
  - VictorOPS
  - Opsgenie
  - Pagerduty
  - SIGNL4
  - And more
- ✓ Email
- ✓ SMS for reliable alerts using USB modems
- ✓ Online SMS gateways
- ✓ Communication platforms:
  - Slack
  - MS Teams
  - Telegram
  - Express.ms
  - Rocket.chat
  - And more
- ✓ Webhooks for integration with external messaging, ITSM or ticketing systems

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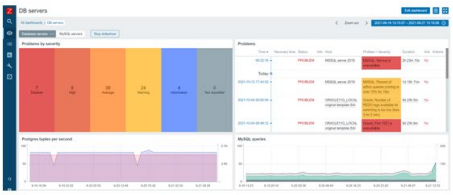

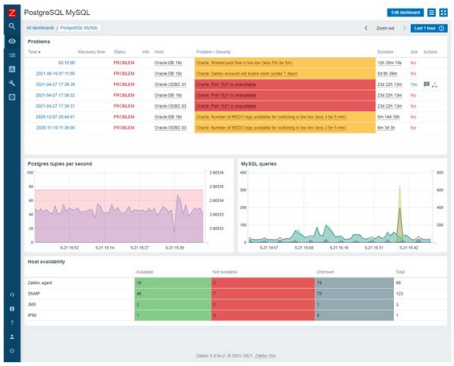

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- Recommendation #2: Configure Zabbix client on IT infrastructure to monitor the activities (CPU and memory usage, network traffic etc.)
- Recommendation #3: Testing the ability of Zabbix server in monitoring the IT infrastructures

Zabbix Deployed Pre-requisite: Virtual Private Server (VPS)

- VPS is needed for the installation of Zabbix server.
- The specification of VPS are as shown:
  - 2 CPU core Processor
  - Memory size of 4GB RAM
  - Recommended with minimum 20GB SSD Storage
  - Operating System: Debian 11.02 (AMD-64)
- The required VPS subscription is for 6 months, with the task progress divided into 3 phases.
- We shall go on to the second phase once the first phase has been completed and the target has been met.

Expected Results

Financial Benefits

- Open source (Zabbix is free) and low cost of implementing
- Reducing financial loss (maintenance cost) on server getting attack. (Speed up the process of detecting any attack, hence reducing impacts or monetary lost due to system down)
- Avoiding business operation affected due to system error or attacks

Technical Benefits

- Collecting hardware data - CPU, Memory, Network, and Disk Metrics are collected and reported on.
- Able to monitor connection availability (Network transfers rates, Infrastructure Availabilities – Server Down or Up)
- Able to monitor network assets. (Network traffic, Packet Inbound/Outbound)
- Able to detect any anonymous network traffic and incoming packet
- Able to figure out the root caused to the sudden high load of network traffic even though no people are browsing the platform.
- Able to generate reports on the performance of network assets.
- Able to generate reports on the performance of customer connections.

Other Benefits

- Flexible design - It is very easy to build out even very large environments via the templating system. You can also start where you are - network monitoring, server monitoring, etc. and then build it out from there as time and resources permit.
- Provides a "plugin architecture" (via XML templates) to allow end users to extend it to monitor all kinds of equipment, software, or other metrics that are not already added into the software already.
- Due to its open framework, you can easily integrate Zabbix to other front-end platforms. It is very flexible data gathering on a wide variety of protocols.

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SYSTEM INTEGRATION WITH MULTIPLE SYSTEM FLOW TOOLS

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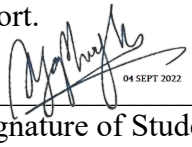

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