MOBILE STUDENT STUDY PLANNER

BY

CHAI JIA YUAN

A REPORT

SUBMITTED TO

Universiti Tunku Abdul Rahman

in partial fulfillment of the requirements

for the degree of

BACHELOR OF COMPUTER SCIENCE (HONS)

Faculty of Information and Communication Technology
(Kampar Campus)

MAY 2020

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Dr Ku Chin Soon
Supervisor's name

Date: 2/9/2020

Date: 08/09/2020

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DECLARATION OF ORIGINALITY

I declare that this report entitled "**MOBILE STUDENT STUDY PLANNER**" is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

Signature : ________________________

Name : CHAI JIA YUAN

Date : 2/9/2020

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First and foremost, I would like to take this opportunity to express my deepest gratitude and appreciation to my supervisor, Dr. Ku Chin Soon who has assisted me throughout the Final Year Project 2. I would like to thank him for his invaluable guidance, patience and idea sharing. His guidance helped me a lot in accomplishing this Final Year Project 2. I am honoured to be working under his supervision.

My sincere thanks also goes to my family for their unconditional love and support, for always being a pillar of strength during my hard times. Finally, I thank my friends for the unbounded supports, encouragements and acquaintances throughout the project.

ABSTRACT

Students nowadays are of heavy workloads. Sometimes, they are not able to keep up with their studies due to time constraints or wide range of syllabuses coverage. Inefficient time management will cause them to have low productivity in studies. Therefore, this project entitled “Mobile Student Study Planner” is to implement a study planner as a mobile application with some added features as compared to the existing applications in the marketplace. One of the added features lacking in existing applications is to help students to arrange their tasks based on the priority order. In order to implement this feature, an scheduling algorithm is applied to calculate the priority value and an automatic time scheduler is implemented to schedule time to all the created tasks. Another added feature is sending a second notification. This added feature is proposed to minimise the possibility of inaccurate time allocation during the automated time scheduling. Hence, this project is aimed to implement these features into a study planner to make it more feature-rich. This project will be developed in Android platform.

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CHAPTER 1: INTRODUCTION

1.1 Project Inspiration

At the present times, there are quite a few workloads to a student. Besides studying and preparing for examinations, students often need to complete their assignments at the same time. In addition, every subject has at least one assignment. Some students might find it a struggle as there are many tasks to be completed, yet there is only a little time to do it. Furthermore, soft skills are highly emphasised in both education system and workplace nowadays. Thus, students are encouraged to involve themselves more in extra-curricular activities. For instance, it is very difficult for them to find a balance between studies, extra-curricular activities, homework and social life (Greenfield, 2018). This situation happens frequently among the university students. As the core structures go semester by semester, it is very important for the students to plan their schedules well. Else, they might end up sacrificing their sleeps to burn the midnight oils, failing to score the subjects and always do their tasks at the last minute.

Students often find it difficult to balance all the tasks on hand. As they have a packed schedule with examinations, assignments and other activities at one time, hence sometimes when there is a new task or event coming up, for example, a sudden event meeting or an assignment group discussion, students may tend to put their initial plan aside. Furthermore, sometimes students are not able to decide which task should be done first. Also, they may seem to lose track of their progresses when they are busy with a lot of the assigned tasks. Putting the wrong focus and losing track of the progress may result in postponement or delays of the tasks. As resulted, students will be in a lack of time to do revision or complete the assignment on time. It is rather ineffective for them as well because it will be resulted in an imbalance working style.

A study planner managing student’s study time comes to help to overcome the above issues. It allows students to mark down their present and upcoming tasks so that they are always aware of the progress of their revision time and assignment submission. Also, it is useful for them to plan their schedules ahead so that they can catch up with their works. Although there are similar mobile applications existing in the market, but there are still some weaknesses encountered in the current existing study planner applications and can be further improved in the proposed application.

1.2 Problem Statement

i. To help students to arrange their tasks in priority order.

The motivation of including this feature is due to students might encounter problem when deciding which task should be done first. In the perspective of revision, the syllabuses of the courses cover a wide range, students are often unable to keep up with their studies in terms of syllabus coverages due to time constraints. Moreover, assignments sometimes can be time-consuming as it might require more time to complete it. Hence, this feature helps students to sort out their tasks by priority order so that they can put their focuses on the important ones first. With this, it minimises the issue occurs along which is losing track or missing out the progress, causing them to have delays on their tasks.

ii. Absence of a time scheduler to accommodate the arrangement of tasks in priority order.

As there is a feature to help students to arrange the tasks in priority order, therefore a time scheduler is needed in assigning a time slot to the tasks.

iii. The necessity to implement a second reminder notification upon assigned duration finishing.

The motivation of having a second reminder feature is due to students might tend to forget to update the progress after they have or have not completed the tasks. As the application requires update of the task progress in order to perform correct scheduling or rescheduling, therefore failure to update the progress might result in inaccurate time allocation. With this feature, it minimises the possibility of the problem occurring.

1.3 Project Objectives

The objectives of this project are as follows:

i. To develop a mobile student study planner which helps students to arrange their tasks in priority order. This feature is aimed to assist students in deciding which tasks to be prioritised.

ii. To develop a mobile student study planner which schedules a time to the tasks created by the students. It is aimed to fit for the purpose of the arrangement of tasks in priority order.

iii. To develop a mobile student study planner which provides students a second reminder notification when the assigned duration has ended. It is aimed to minimise inaccurate time allocation when scheduling or rescheduling tasks.

1.4 Project Scope

The proposed project is to develop a study planner for mobile application which arranges the tasks in priority order and assign them to a time slot accordingly. Besides, it provides students with a second reminder notification when the assigned duration finishes. It is aimed to improve students' academic productivity and time management in a more effective way. As the demand of convenience is increasing gradually nowadays, therefore mobile application is selected to develop this project. The project is mainly targeting on students and is supported on android platform.

Flutter software development kit using Dart programming language is used in the project to develop the proposed application. Android Studio is used to support Flutter for its Android platform dependencies. Firebase Cloud Firestore stores and syncs data for client-and-server-side development. Mobile device is used to run the application. The functionalities of the application are categorised into several modules:

User Authentication Module

In this module, new users are required to create a new account with their e-mail addresses. Existing users can log in through the registered e-mail addresses. If they forget their password, they can renew their password by accessing a link sent to their mailbox. They can choose to log out or stay signed in before exiting the application.

Slot Management Module

Users are required to provide a list of free time slots before adding any task. In this module, user can create or delete a specific slot. Upon creating, there is a validation to check if the time is clashed with other time slots. By adding or deleting a slot will trigger the application to perform rescheduling. As for deleting, there is a validation to check if any of the created tasks will be affected upon rescheduling. If validation occurs, the application will move the affected task to another date.

Task Management Module

In this module, users can create, edit or delete task. Upon creating, users need to provide date and duration for the task. The application will check if there is any available slot on that day to fit in. If it is available, the task will be created. If not, there will be 4 options for users to choose from: shorten duration/change date, add extra slot, save to other available dates or move lower priority task to another date. Shorten duration or change date allows user to input a new duration or date. Adding extra slot allows user to provide an additional new slot so that the task can be fitted into it. Save to next available date reschedules the timetable and suggests an available date for users to create the task, without the needs to perform extra steps. Move lower priority task to another date removes the lower priority task on the input date so that the current task can be saved to the input date, while the lower priority task will be saved to another assigned date. Editing task shares the same as creating task. An additional function in editing task is users can straightaway update the task progress as 'Completed'. Upon every successful creation, edition and deletion of tasks, rescheduling will be performed.

Automated Task Arrangement Module

In this module, upon successfully creating or editing a task, a scheduling algorithm will be used to calculate a priority value and assigned to the task. The method of calculation will be further discussed in Chapter 3.

Time Scheduler Module

In this module, the application will work with Automated Task Arrangement Module to schedule a time and assign it to a creating or editing task. This module also allows the application to perform rescheduling when there are changes made by user on the slots or tasks. The scheduled time is retrieved from the time slots provided by users in time slot module.

Task Notification Module

In this module, once a time is assigned to the task, a notification will be triggered on the scheduled date and time to remind the users to carry out the tasks. There will be a second notification to remind users to update the progress whether they have or have not completed the tasks. If they have completed, they can update the progress as completed. If they have not, they may choose to postpone the task to another date, this will bring them back to editing a task.

Overview Module

In this module, users can search for their past and ongoing tasks in the view of a calendar. All the tasks can be displayed in daily, weekly and monthly view.

1.5 Project Impact and Contribution

The impacts and contributions of this project include facilitating the students to manage their studying time and activities. The application with adding events and notification features enables them to jot down their daily tasks and get notified, so that they are aware of it and will not affect the initial plan or come out with a better plan when there is a new task to be done. Furthermore, the proposed application helps students to distribute their tasks more evenly and efficiently with the task assignment with priority order feature. This application also enables second reminder to remind the students to update progress. At the same time, it also alerts students of the progress so that they will be keeping in mind on which task they have not completed. With the implementation of the proposed application, it will be resulted in a better learning outcome.

1.6 Chapter Summary

Chapter 1 Introduction is documenting the background information, problem statement and motivation of developing this project. Then, project scope and objectives are further identified to give an overview and details of the project. Impact, significance and contribution is done to explain how the proposed project is going to benefit the targeted users.

Chapter 2 Literature Review is documenting the literature review of the existing applications which are already made available in the market. Their strengths and weaknesses are to be identified and recommendations are to be given to improve the existing applications. Then, there will be a discussion on the comparison between existing applications and proposed solutions to emphasise how the existing applications can get improved.

Chapter 3 System Methodology is documenting the selected methodology of the project, project verification plans to measure objectives and the system functionalities. System functionalities will be presented in the form of diagrams to explain how specific functions is designed. Hardware and software requirements are identified.

Chapter 4 System Design is documenting system architecture, interface design with procedure elaboration and data storage design.

Chapter 5 System Testing is documenting the result of testing (based on the test plans).

Chapter 6 Discussion is documenting whether all the objectives have been achieved, system limitation and future enhancement or improvement.

Chapter 7 Conclusion is documenting the summary of the project.

CHAPTER 2: LITERATURE REVIEW

2.1 Review on Todait - Smart Study Planner

2.1.1 Brief

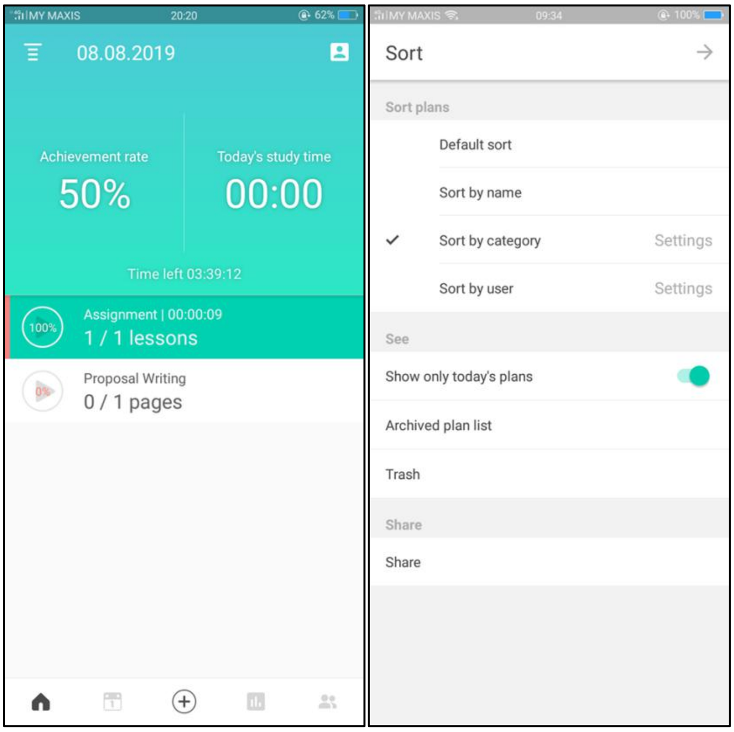


Figure 2-1-1: Todait Mobile Application.

Todait - Smart Study Planner is a mobile application designed for students to help manage their schedules in order to prepare for exam, effective productivity and will manage all of the time (Shyami, 2019). It is supported in both Android and iOS platforms. To use the application, user is required to sign up or log in via email or Facebook. It features Home, Calendar, Add Plan, Statistics and Group.

Home displays daily achievements and tasks, keeping track of daily study time and progress. Calendar displays daily, weekly and monthly overview. Add Plan allows user to add plans with requires a duration. Users may add event in the D-Day section. Every plan is categorised based on courses and reminder time can be set on respective plan. Statistics shows the study time in bar charts, average achievement percentage, total study time, achievement rate and top 5 study times. Group is aimed to achieve certain goals with other users. Users can create a group to invite other users to work hard together and achieve certain goals. Yet, in order to use it, users must purchase the feature first.

2.1.2 Strength

The strength of Todait is its organisation as every plan is categorised and sorted neatly. Users can add plan details based on respective course. They can set reminder time to get notified. Besides, it features overall study statistics so that users can keep track their progress.

2.1.3 Weakness

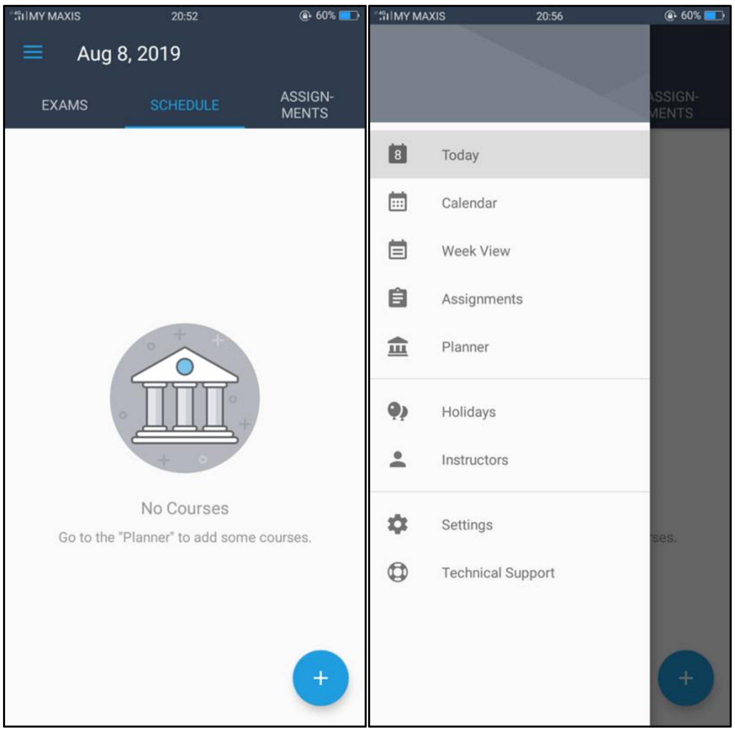
The weakness of Todait is it does not help students to arrange the tasks in priority order. Also, users cannot add a plan in advanced. For example, if user wants to add a plan for revision, he can only set it when he is about to start studying. Moreover, it does not provide an alternative for users to update plan’s progress.

2.1.4 Recommendation

Todait is encouraged to implement a function with scheduling algorithm to help user to arrange the tasks in priority order. A time scheduler is needed in order to implement this function. Also, it is recommended for Todait to implement a feature so that users can add a plan ahead and also a feature to update plan’s progress.

2.2 Review on iStudiez Pro - Legendary Planner

2.2.1 Brief



No Courses

Go to the "Planner" to add some courses.

Figure 2-2-1: iStudiez Pro Mobile Application.

iStudiez Pro - Legendary Planner is a planner designed to track for students' studies, homework, exams and classes (Shyami, 2019). It is supported in Android and iOS platforms. Users does not require to create an account in order to use it unless they wish to sync their data to email. iStudiez Pro allows users to plan their schedules ahead. The application features Today, Calendar, Week View, Assignments, Planner, Holidays and Instructors.

Today section allows users to view their daily tasks. Calendar is a section for users to view their tasks monthly while Week View is on a weekly basis. Assignments section sorts every assignment on hand, making it easier for users to have an overview on assignments. Planner section requires users to create a semester-based timeline. Within it, users can add all the courses taken during the semester. User can add details of a subject such as assignment and examinations. Users can include semester breaks or vacation in the Holidays section. This application provides an Instructors section to store instructors' information, inclusive of name, title, department, affiliation, email, phone number, web page and office hours.

2.2.2 Strength

The strength of iStudiez Pro is systematic and organised. Every task is classified and sorted based on semesters, followed by courses taken. Users can add assignment and exam details based on respective course. A reminder will be set optionally for each task. It is convenient for user to manage their tasks more effectively. Besides, it provides alternative for users to update task's progress.

2.2.3 Weakness

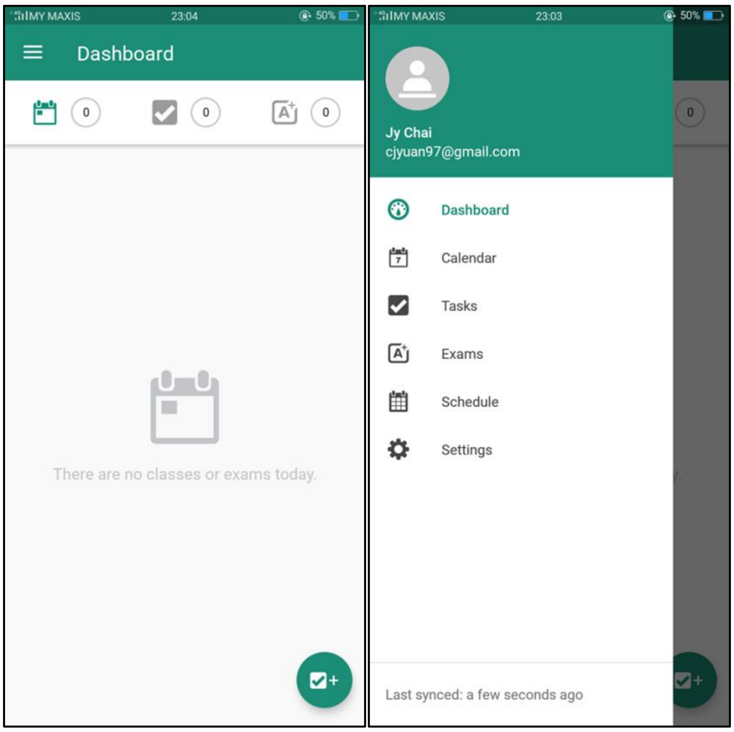
The weakness of iStudiez Pro is it does not help students to arrange the tasks in priority order. The in-app task is distributed into 3 categories - Class, Exam and Assignments. As the application emphasises on study, therefore there should be a category for revision time as well.

2.2.4 Recommendation

The application is encouraged to implement a function with scheduling algorithm to help user to arrange the tasks in priority order. A time scheduler is needed in order to implement this function. A category based on revision can be added for users to allow them to have more precise functionality.

2.3 Review on My Study Life - School Planner

2.3.1 Brief



There are no classes or exams today.

Last synced: a few seconds ago

Figure 2-3-1: My Study Life Mobile Application.

My Study Life - School Planner is a specially designed cross platform planner for students, lecturers and teachers to make study and teaching easy to manage (Shyami, 2019). It is supported in Android and iOS platforms. This application requires users to create an account using Facebook, Google, Email or Office 365. The features consist of Dashboard, Calendar, Tasks, Exams and Schedule.

Dashboard consists of Today's tasks, Tasks Due and Exams. It allows users to add Assignment, Reminder or Revision related tasks. Calendar provides an overview of all the tasks on weekly and monthly basis. Under Tasks, users are able to add new tasks and update progress. Tasks are categorised into Overdue, Due Later and Past Tasks. Exams allows users to create new examination with details. This section is also being categorised into Current Exams and Past Exams. As of Schedule, there are Classes and Holidays. Classes is a platform for users to add their timetable while Holidays is for them to add holidays duration. Users can create New Academic Year/Term, able to edit it and manage all the subjects in this section.

2.3.2 Strength

The strength of My Study Life is it is systematic and organised. Every task is categorised and sorted to ease users' inconvenience upon viewing. Users can add assignment and exam details based on respective courses. My Study Life also provides alternative for users to update task's progress in a slider form.

2.3.3 Weakness

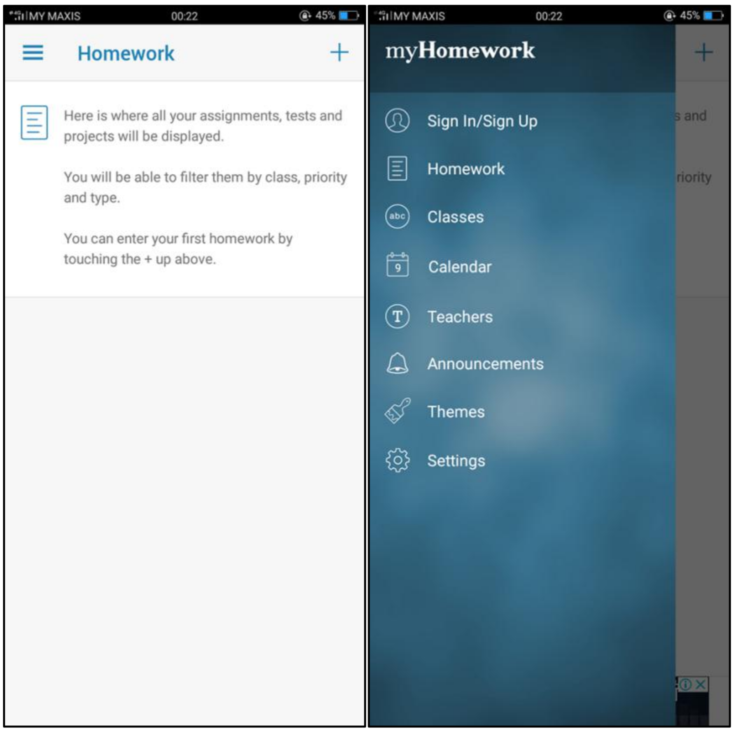
The weakness of My Study Life is it does not help students to arrange the tasks in priority order. Furthermore, user cannot set reminder time to send notification.

2.3.4 Recommendation

A function with scheduling algorithm to help user to arrange the tasks in priority order can be implemented. A time scheduler is needed in order to implement this function. Notification or reminder alarm can be implemented to notify and alert users on the marked dates.

2.4 Review on myHomework - School Planner

2.4.1 Brief


Here is where all your assignments, tests and projects will be displayed.

You will be able to filter them by class, priority and type.

You can enter your first homework by touching the + up above.

Figure 2-4-1: myHomework Mobile Application.

myHomework - School Planner integrates all areas of academy and has simple interfaces which make it easy to be used (Shyami, 2019). It is supported in Android and iOS. This application allows user to use it anonymously or using Facebook, Google or email accounts to store study data in the cloud. It is featured with Homework, Classes, Calendar, Teachers, Announcements.

Homework allows users to add assignments, tests and projects related tasks. It contains in-app purchase if users wish to attach files. Classes is where users will create courses they are currently taking. Calendar provides a monthly overview to users. In Calendar, users can add more tasks such as Event, No School Day, Late Start and Early Release. Late Start and Early Release refer to store a class which is going to start late or releasing early. For each task added, it will be categorised based on the courses created and users can set a reminder time. Teachers and Announcements collaborate with Teachers.io application. Teachers can share due dates or other class information and posting announcements with myHomework users (Instin, 2020). Users will receive assignments and announcements automatically.

2.4.2 Strength

The strength of myHomework is its collaborative platform between teachers and students which is implemented in this application. Yet, it is only one-way communication as teachers are able to upload class information while students are able to view only. All the tasks are categorised based on courses taken. Users are able to set reminder upon due dates or other purposes. Users can add additional details for each task and update the progress in checkbox form.

2.4.3 Weakness

The weakness of myHomework is it does not help students to arrange the tasks in priority order.

2.4.4 Recommendation

The application is encouraged to implement a function with scheduling algorithm to help user to arrange the tasks in priority order. A time scheduler is needed in order to implement this function.

2.5 Comparison between Existing Applications and Proposed Application

Features	Todait	iStudiez Pro	My Study Life	myHomework	Proposed Features
Schedule					
Add schedule	√	√	√	√	√
Send notification	√	√		√	√
Update task progress		√	√	√	√
Schedule overview	√	√	√	√	√
Categorise/sort schedule	√	√	√		√
Scheduling algorithm					√
Time scheduler					√

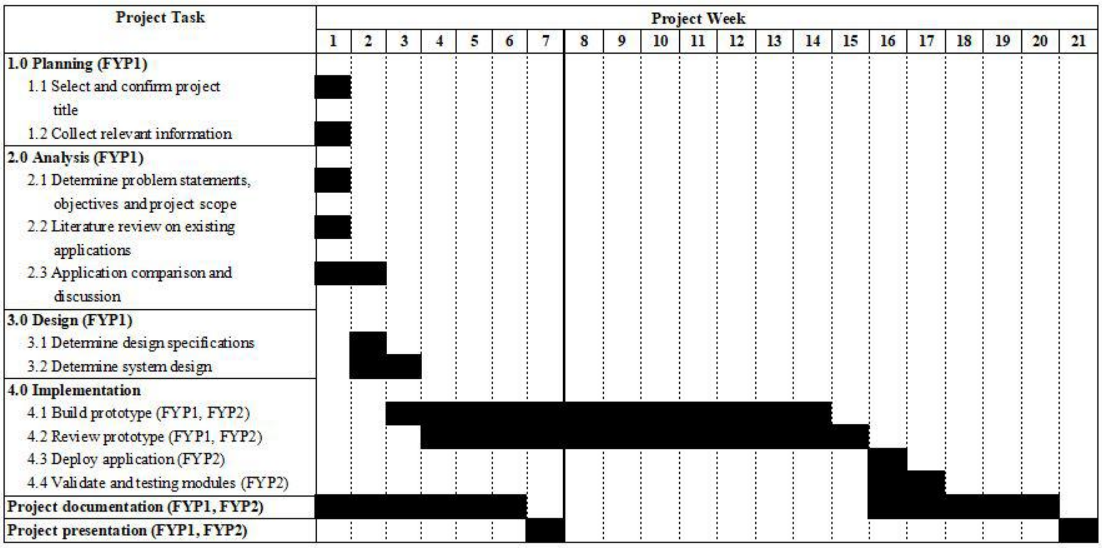
Table 2-5-1: Comparison between Existing Applications and Proposed Application.

After reviewing 4 existing study planner mobile applications, there are some common strengths which are found in these applications which are adding new schedule, sending schedule notification, updating progress, schedule overview, categorising and sorting schedule. Meanwhile, there is weakness in them which is lack of a function to help user to arrange the tasks in priority order.

Throughout the literature review, there are some recommendations which can be implemented to overcome the existing weakness. Therefore, a study planner mobile application with scheduling algorithm and time scheduler is proposed. The application will be focused mainly on these 2 scopes. At the end of the project, the application is able to help students to perform time scheduling on the priority-based tasks while providing the common functions of a usual study planner.

CHAPTER 3: SYSTEM METHODLOGY

3.1 Project Development



Project Task	Project Week																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.0 Planning (FYP1)																					
1.1 Select and confirm project title	■																				
1.2 Collect relevant information	■																				
2.0 Analysis (FYP1)																					
2.1 Determine problem statements, objectives and project scope	■																				
2.2 Literature review on existing applications	■																				
2.3 Application comparison and discussion	■	■																			
3.0 Design (FYP1)																					
3.1 Determine design specifications		■																			
3.2 Determine system design		■	■																		
4.0 Implementation																					
4.1 Build prototype (FYP1, FYP2)			■	■	■	■	■	■	■	■	■	■	■	■							
4.2 Review prototype (FYP1, FYP2)				■	■	■	■	■	■	■	■	■	■	■	■						
4.3 Deploy application (FYP2)																■					
4.4 Validate and testing modules (FYP2)																■	■				
Project documentation (FYP1, FYP2)	■	■	■	■	■	■										■	■	■	■	■	
Project presentation (FYP1, FYP2)							■														■

Figure 3-1-1: Workplan.

Figure 3-1-1 shows the workplan of the entire project in the form of Gantt chart with an estimated duration of 21 weeks. The tasks are classified into 4 phases which are Planning, Analysis, Design and Implementation.

Starting with FYP1, in the planning phase, number of meetings were held with supervisor, to discuss how the project is to be developed and the project title was decided. The estimated project timeline for the entire project to be completed is 2 semesters. Then, several researches had been carried out to collect relevant information on the proposed title.

In the analysis phase, the project had been investigated to study the project background information, current happening issues and problem statements. Objectives and project scope were identified based on the problem statements. Literature review on existing applications was further carried on to study on the features, strength and weakness of existing applications. The reviews carried out were being compared. Innovations and recommendations based on the weaknesses of existing applications were proposed in this project.

In the design phase, system design and its design specifications will be further identified. It includes the designing of the application's graphic user interface (GUI). The application's functional requirements, work-flow behaviour and layout's visual presentation will also be conveyed using Unified Modelling Language (UML) diagrams. Diagrams will be drawn using Microsoft Visual Paradigm.

In the implementation phase, the initial prototype is to be built based on the project scope. The initial prototype is then presented to supervisor and moderator to get feedbacks and reviews. Implementation of prototype continues in FYP2 until all the objectives are achieved. Upon achieving the objectives, the prototype will be finalised and deployed. The prototype will go through unit testing where each module will be tested individually. Results of testing will be documented.

Documentation is done throughout the process of FYP1 and FYP2, and to be submitted on the given deadlines. Presentation of FYP1 and FYP2 to supervisor and moderator are done by the end of each semester.

3.2 Project Verification Plans

Unit testing is expected to be carried out at the end of the implementation of final product. Unit testing will be tested on individual functions of each module.

3.2.1 Slot Management Module

Tables below show the verification plans for Slot Management Module.

Pre-condition(s): User is logged in to the application.

i. Function: Add slot

Purpose: To verify the functionality of add slot and correctness of outputs.

Step #	Test Steps	Input Data	Expected Result
1.	User selects a day from the options given.	Selected day by User.	The selected day is marked.
1a.	User selects “Monday”.	Monday	“Monday” is marked.
1b.	User selects “Tuesday”.	Tuesday	“Tuesday” is marked.
1c.	User selects “Wednesday”.	Wednesday	“Wednesday” is marked.
1d.	User selects “Thursday”.	Thursday	“Thursday” is marked.
1e.	User selects “Friday”.	Friday	“Friday” is marked.
1f.	User selects “Saturday”.	Saturday	“Saturday” is marked.
1g.	User selects “Sunday”.	Sunday	“Sunday” is marked.
2.	For each selected option, the application displays all the slots of the selected day on the UI.	Selected day by User.	All the slots of the selected day is shown.
2a.	User selects “Monday”.	Monday	All the slots of Monday is shown.
2b.	User selects “Tuesday”.	Tuesday	All the slots of Tuesday is shown.
2c.	User selects “Wednesday”.	Wednesday	All the slots of Wednesday is shown.
2d.	User selects “Thursday”.	Thursday	All the slots of Thursday is shown.
2e.	User selects “Friday”.	Friday	All the slots of Friday is shown.

Step #	Test Steps	Input Data	Expected Result
2f.	User selects “Saturday”.	Saturday	All the slots of Saturday is shown.
2g.	User selects “Sunday”.	Sunday	All the slots of Sunday is shown.
3.	User inputs a start time.	00:00 <= Start time <= 23:59	The input start time will be shown in the textfield provided.
4.	User inputs an end time.	00:00 <= End time <= 23:59	The input end time will be shown in the textfield provided.
5.	User clicks “Submit” button.	Submit	The application validates if the added slot is clashed with any other slots.
A5.1.	Application validates the added slot does not clashed with other slots.	Valid start time and end time	The application shall display message “Created Successfully” indicating the function is succeeded. Rescheduling is performed on ongoing tasks (if any) and all changes made are saved to database.
A5.2.	Application validates the added slot clashes with other slots.	Invalid start time or end time	Error message is displayed.

Table 3-2-1-1: Verification Plans for Slot Management Module: Add Slot.

ii. Function: Delete slot

Purpose: To verify the functionality of delete slot and correctness of outputs.

Step #	Test Steps	Input Data	Expected Result
1.	User slides a specific slot to be deleted.	Slide to delete a slot	A dialog is shown to prompt user to acknowledge the action.
1a.	User clicks yes.	Yes	The application validates if there is any task will be affected by the deletion.
A1a.1.	Application validates that no task is affected by the deletion.	Valid	The slot will be deleted from database and message "Slot is deleted" is displayed. Rescheduling is performed on ongoing tasks (if any) and all changes made are saved to database.
A1a.2.	Application validates that there is task affected by the deletion.	Invalid	A dialog will be shown to notify user on the affected task. The task is assigned with a date to be moved. User has to acknowledge the action.
A1a.2a.	User clicks yes.	Yes	The application shall reschedule all the tasks on the affected dates and move affected task (lower priority) to the assigned date. All changes made are saved to database.
A1a.2b.	User clicks cancel.	Cancel	The application will cancel the action of deletion.
1b.	User clicks no.	No	The application will cancel the action of deletion.

Table 3-2-1-2: Verification Plans for Slot Management Module: Delete Slot.

3.2.2 Task Management Module

Tables below show the verification plans for Task Management Module.

Pre-condition(s):

- User is logged in to the application.
- User has added slots of free time.

i. Function: Add task

Purpose: To verify the functionality of add task and correctness of outputs.

Step #	Test Steps	Input Data	Expected Result
1.	User selects task type from the options given.	Selected type by User.	The selected type is displayed in the box provided.
1a.	User selects “Revision”.	Revision	“Revision” is displayed in the box provided.
1b.	User selects “Assignment”.	Assignment	“Assignment” is displayed in the box provided.
2.	User inputs Subject.	(String) Subject	The application will get the input string by User and display on the textfield provided.
3.	User inputs Details.	(String) Details	The application will get the input string by User and display on the textfield provided.
4.	User inputs Date.	(DateTime) Date	The application will get the input datetime by User and display on the textfield provided.
5.	User inputs Duration.	(Duration) Duration	The application will get the input duration by User and display on the textfield provided.
6.	User clicks “Submit”	Submit	The application validates if the available slot(s) of the input date is enough for the new task.

Step #	Test Steps	Input Data	Expected Result
A6.1.	Application validates there is enough slots.	Valid	Message "Created successfully" is displayed. Application shall perform automated task arrangement and time scheduling, then save to database.
A6.2.	Application validates there is not enough slots.	Invalid	Error message is displayed. The application shall provide User with 4 options.
A6.2a.	User chooses to change date or shorten duration.	Change date/shorten duration	A dialog is shown to user to acknowledge the action.
A6.2a. 1.	User clicks yes.	Yes	The application shall prompt user back to the current add task page to change date or shorten duration. New task will be added to the input date if there is enough slot.
A6.2a. 2.	User clicks no.	No	The application shall prompt user back to Step A6.2.
A6.2b.	User chooses to add additional slot.	Add additional slot	A dialog is shown to user to acknowledge the action.
A6.2b. 1.	User clicks yes.	Yes	Application shall prompt user to add slot page.
A6.2b. 1.1.	User creates a slot.	Slot created	Application shall perform automated task arrangement and time scheduling on the input date, then save to database.
A6.2b. 2.	User clicks no.	No	The application shall prompt user back to Step A6.2.
A6.2c.	User chooses to save task to other dates.	Save to other dates	The application validates if there is enough slots to fit the new duration.
A6.2c. 1.	Application validates there is enough slots to fit.	Valid	5 suggested dates to User will be shown in dialog box.

Step #	Test Steps	Input Data	Expected Result
A6.2c. 1.1.	User selects a date from the options to add the new task.	Selected date by User.	Application shall perform automated task arrangement and time scheduling on the selected date, then save to database.
A6.2c. 1.1a.	User selects first date.	First date	Application shall perform automated task arrangement and time scheduling on the first date, then save to database.
A6.2c. 1.1b.	User selects second date.	Second date	Application shall perform automated task arrangement and time scheduling on the second date, then save to database.
A6.2c. 1.1c.	User selects third date.	Third date	Application shall perform automated task arrangement and time scheduling on the third date, then save to database.
A6.2c. 1.1d.	User selects fourth date.	Fourth date	Application shall perform automated task arrangement and time scheduling on the fourth date, then save to database.
A6.2c. 1.1e.	User selects fifth date.	Fifth date	Application shall perform automated task arrangement and time scheduling on the fifth date, then save to database.
A6.2c. 1.1f.	User cancels the action.	Cancel	The application shall prompt user back to Step A6.2.
A6.2c. 2.	Application validates there is not enough slots to fit.	Invalid	“No date found” is returned when User selects this option (Back to Step A6.2).

Step #	Test Steps	Input Data	Expected Result
A6.2d.	User chooses to move lower priority task of the input date to other date..	Move lower priority task to other date.	The application validates if there is available task to be moved.
A6.2d. 1.	Application validates there is available task to be moved.	Valid	Available task to be moved to an assigned date will be shown in dialog box. User has to acknowledge the action.
A6.2d. 1.1.	User clicks yes.	Yes	Application shall move the available task to assigned date and add the new task to input date. Automated task arrangement and time scheduling shall be performed and save to database.
A6.2d. 1.2.	User clicks no.	No	The application shall prompt user back to Step A6.2.
A6.2d. 2.	Application validates there is available task to be moved.	Invalid	“No task found” is returned when User selects this option (Back to Step A6.2).

Table 3-2-2-1: Verification Plans for Task Management Module: Add Task.

ii. Function: Edit task

Purpose: To verify the functionality of edit task and correctness of outputs.

Step #	Test Steps	Input Data	Expected Result
1.	User slides right to edit task.	Slide right to edit	A dialog box is displayed to ask user for action to be taken.
1a.	User selects “Edit”.	Edit	The application will prompt User to edit task page with all the respective task information fetched.
1a.1.	All the fetched information is displayed at its respective textfield.	Fetched information	All the fetched information is displayed at its respective textfield.
1a.2.	User edits the respective field.	Selected field by User.	Changes are made to selected field.
1a.2a.	User selects task type from the options given.	Selected type by User.	The new selected type is displayed in the box provided.
1a.2a.1.	User selects “Revision”.	Revision	“Revision” is displayed in the box provided.
1a.2a.2.	User selects “Assignment”.	Assignment	“Assignment” is displayed in the box provided.
1a.2b.	User selects Subject.	(String) Subject	The application will get the new input string by User and display on the textfield provided.
1a.2c.	User selects Details.	(String) Details	The application will get the new input string by User and display on the textfield provided.
1a.2d.	User selects Date.	(DateTime) Date	The application will get the input new datetime by User and display on the textfield provided.
1a.2e.	User selects Duration.	(Duration) Duration	The application will get the input new duration by User and display on the textfield provided.
1a.3.	User clicks “Submit”	Submit	The application validates if the available slot(s) of the input date is enough for the new task.

Step #	Test Steps	Input Data	Expected Result
A1a.3.1	The application performs the steps in Add Task starting from Step A6.1 onwards.	Add Task: Step A6.1	The application preforms the steps in Add Task starting from Step A6.1 onwards.
1b.	User selects “Mark as Completed”.	Mark as Completed	The application will update the respective task’s progress as Completed in database. Rescheduling is performed on the ongoing tasks of the selected date.
1c.	User selects “Cancel”.	Cancel	The application will cancel the action.

Table 3-2-2-2: Verification Plans for Task Management Module: Edit Task.

iii. Function: Delete task

Purpose: To verify the functionality of delete task and correctness of outputs.

Step #	Test Steps	Input Data	Expected Result
1.	User slides left to delete a specific task.	Slide left to delete	A dialog is appeared to prompt user to acknowledge the action.
A1.1	User clicks yes.	Yes	Respective task will be deleted and message “Task is deleted” is displayed. The application shall perform rescheduling on the ongoing tasks of the selected date.
A1.2	User clicks no.	No	The application will cancel the action.

Table 3-2-2-3: Verification Plans for Task Management Module: Delete Task.

3.2.3 Automated Task Arrangement Module

Table below shows the verification plans for Automated Task Arrangement Module.

Pre-condition(s):

- User is creating a new task.
- User is editing an existing task.

i. Function: Calculate priority value

Purpose: To verify the functionality of calculate priority value and correctness of outputs.

Step #	**Test Steps**	**Input Data**	**Expected Result**
1.	The application fetches the input date, input duration and created date of the creating or editing task.	Input date, input duration, created date	The application shall return a list of tasks sorted with highest priority value first.

Table 3-2-3-1: Verification Plans for Automated Task Arrangement Module: Calculate Priority Value.

3.2.4 Time Scheduler Module

Table below shows the verification plans for Time Scheduler Module.

Pre-condition(s):

- Automated Task Arrangement with scheduling is triggered.
- Rescheduling is triggered.

i. Function: Time scheduling

Purpose: To verify the functionality of time scheduling and correctness of outputs.

Step #	**Test Steps**	**Input Data**	**Expected Result**
1.	The application fetches the input date of the respective task.	Input date	The application shall return a list of tasks sorted with highest priority value first and correct scheduled time.

Table 3-2-4-1: Verification Plans for Time Scheduler Module: Time Scheduling.

3.2.5 Task Notification Module

Table below shows the verification plans for Task Notification Module.

Pre-condition(s): There exists more than one task in the application.

i. Function: Notify task

Purpose: To verify the functionality of notify task and correctness of outputs.

Step #	Test Steps	Input Data	Expected Result
1.	The application retrieves the information of the tasks from database.	Task information	A list of task information is retrieved.
2.	The list of task information is stored in local storage.	List of task information	The list of task information is stored in local database.
3.	A reminder notification is sent to User on the scheduled date and time.	Scheduled date, time	User receives the notification on the scheduled date and time.
4.	A second notification is sent to User to update progress once the expected duration is finished.	Expected duration	User receives the second notification once the expected duration is finished.
5.	User clicks the notification.	Clicks notification	The application will prompt User to the update progress page.
6.	User selects the action to be taken from given 2 options.	Selected option by User	The selected option will be executed.
6a.	User selects “Mark as Completed”.	Mark as Completed	The application will update the respective task’s progress as Completed in database.
6b.	User selects “Postpone”.	Postpone	The application will prompt user to edit task page. 3.2.2 Task Management Module: Edit task will be executed.

Table 3-2-5-1: Verification Plans for Task Notification Module: Notify Task.

3.3 System Functionalities for Mobile Student Study Planner

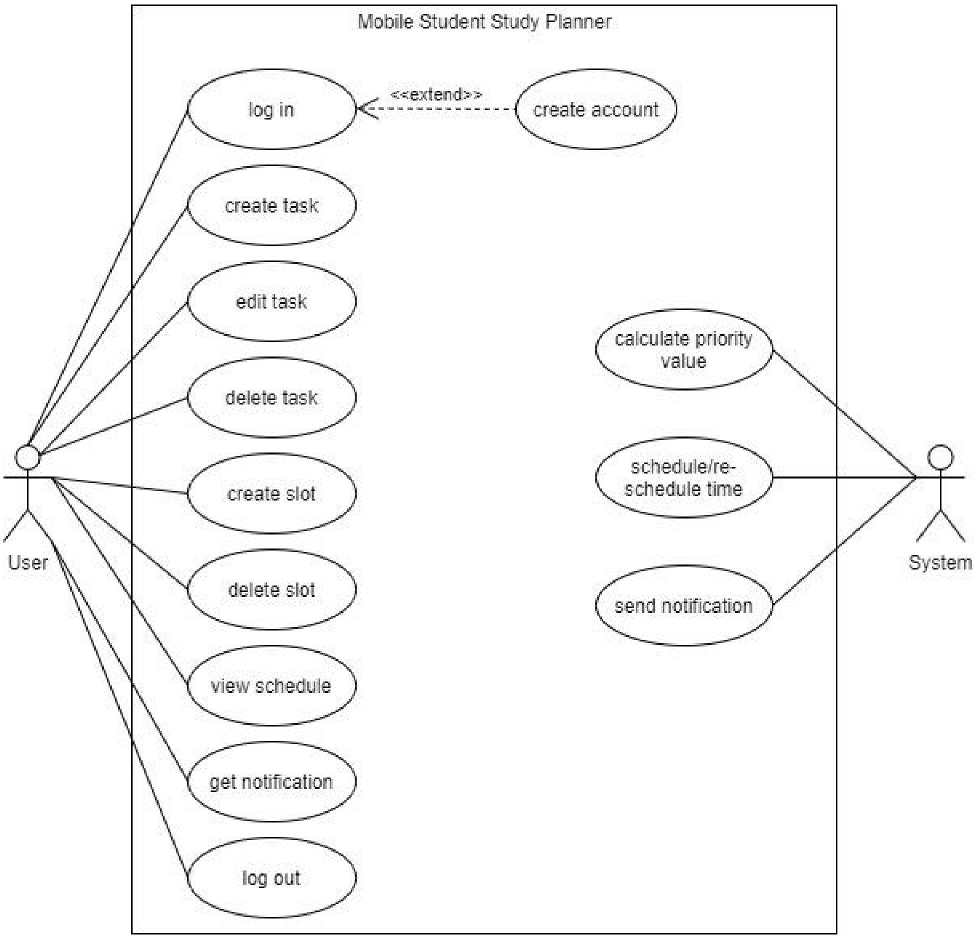


Figure 3-3-1: System Functionalities for Mobile Student Study Planner.

In the diagram, there are 2 actors consisting of user and system. From the diagram, user can perform functions such as log in, create, edit and delete task, create and delete slot, view schedule, get notification and log out. Whereas system can calculate priority value, schedule or reschedule time and notify task.

i. User Authentication

Log in

This function allows existing users to log in to the application by authenticating their e-mail and password. If they forget their password, they can renew their password by providing their e-mail. A link will be sent to their inbox and they may follow the link to renew their password.

Create account

This function allows new users to create an account in order to use the application. Upon registering, their emails and passwords will be stored into database and will be retrieved for authentication purpose the next time they log in.

Log out

This function allows users to log out from the application.

ii. Manage Task

Create task

This function allows users to create a task.

Edit task

This function allows user to edit a task or update progress.

Delete task

This function allows user to delete a task.

iii. Manage Slot

Create slot

This function allows user to create a slot.

Delete slot

This function allows user to delete a slot.

iv. View Schedule

This function allows users to view all their tasks in a calendar view. The tasks data are retrieved from the database and displayed in daily, weekly or monthly mode. Users can find their past or ongoing tasks here.

v. Notify Task

Get notification

This function allows users to receive notification on the scheduled time and after the duration is time's up. After receiving the second notification, user can update their progress or postpone by selecting the notification.

Send notification

This function allows the application to send notification to users on the scheduled time and after the duration is time's up.

vi. Automated Task Arrangement

Calculate Priority Values

This function allows the application to calculate priority values and assign to the tasks when users has provided the parameters needed for the calculation in creating or editing task.

Schedule/Re-schedule

This function allows the application to schedule or reschedule a time to the tasks when there are updates on every slot or ongoing task.

3.3.1 Design of Slot Management

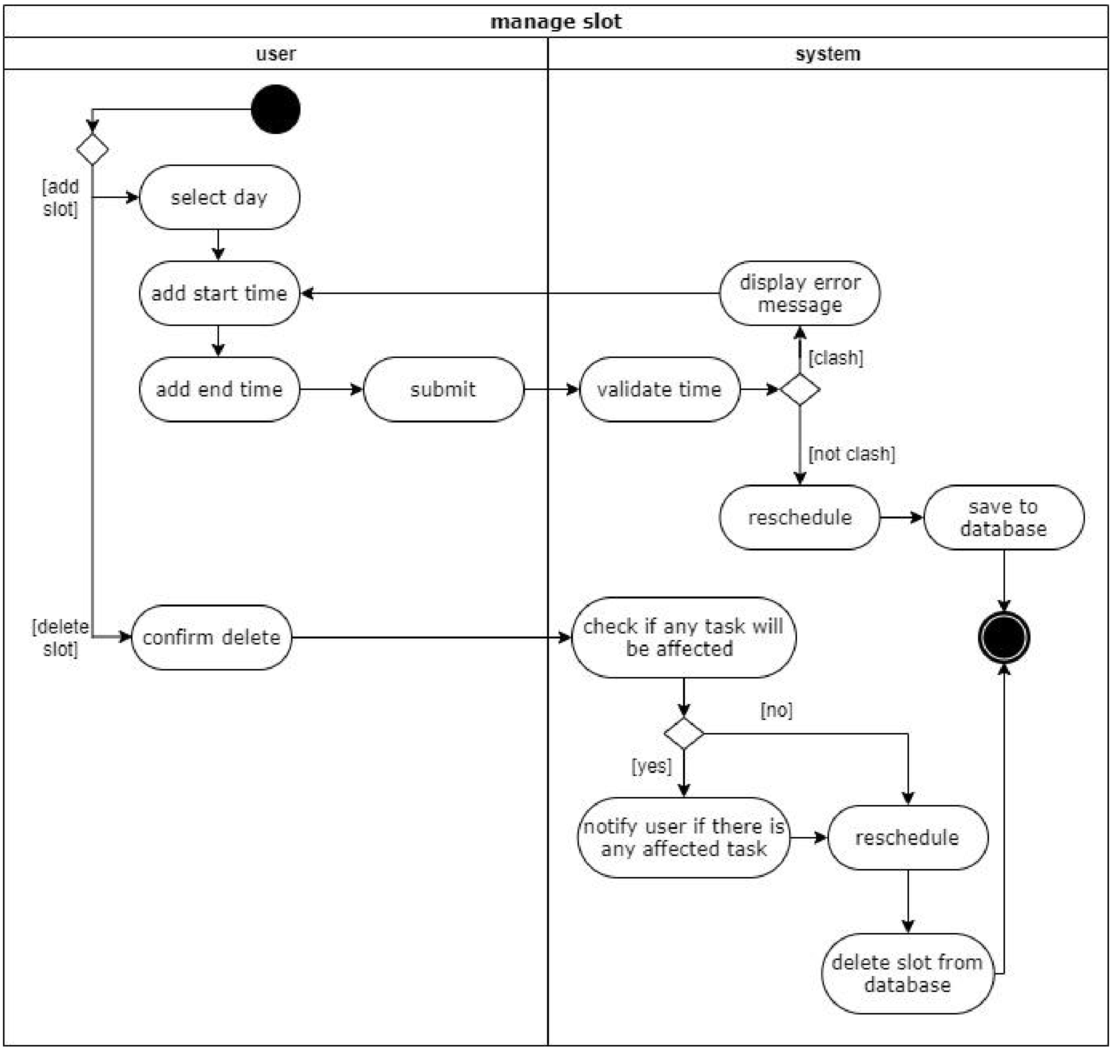


Figure 3-3-1-1: Design of Slot Management.

In Slot Management module, users can perform 2 functions: add and delete slot. To add a slot, user needs to input day, start time and end time. Upon submitting, the application will validate if the input time is clashed with other slots of the same day. If yes, an error message will be displayed to alert user to change the time. If not, task rescheduling will be executed by the application and the created slot will be saved to the database. To delete a slot, an alert dialog will pop out to ask user to double confirm. Then, the application will go through all the dates which share the same day and check if the slot is deleted, will it affect any of the tasks. If there exists affected task, the application will prompt an alert dialog to notify user about the changes. The application will reschedule and move the affected task to the assigned date and the slot will then be removed from the database.

3.3.2 Design of Task Management

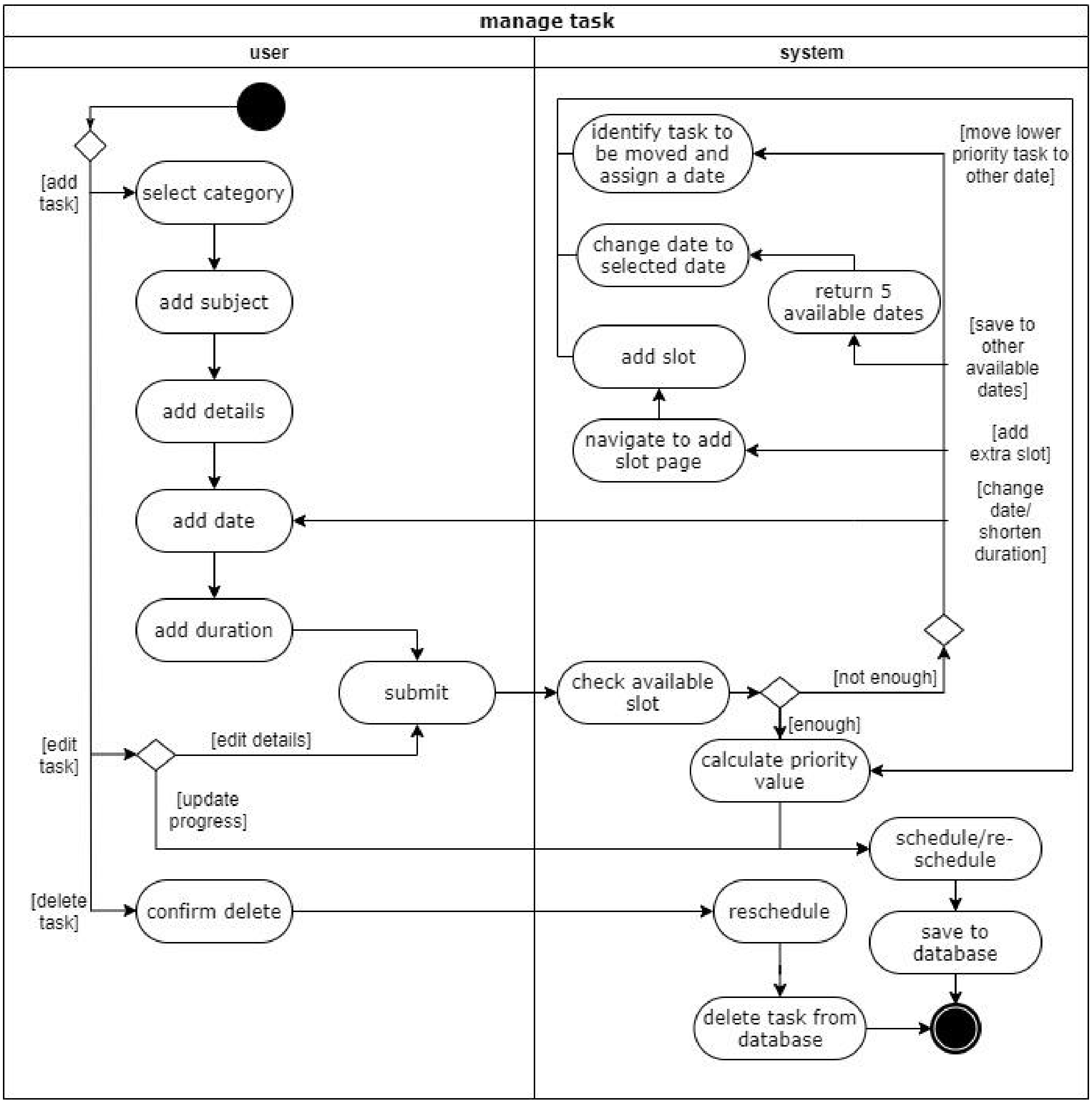


Figure 3-3-2-1: Design of Task Management.

In Task Management module, users can perform 3 functions: add, edit and delete task. To add a task, user needs to input category, subject, details, date and duration. Upon submitting, the application will validate if the available slots are enough to fit in the duration which user inputs. If there are enough slots, the application will calculate the priority value and assign it to the task. Then, the current task will be combined to other ongoing tasks to get scheduled or rescheduled based on the priority order. Once it is done, all the tasks will be saved to the database. If there are not enough slots, an alert message with current available duration and additional required duration will be shown to user. Along with the alert message, 4 options are given to user: change date/shorten duration, add additional slot, save to other available dates and move lower priority task to other date. Changing date/shorten duration will prompt user back to the interface to change current date or duration. Adding additional slot will prompt user to add a new slot to that specific day. Upon adding, the application will check if the duration of slot is enough to fit the additional required duration. Save to other available dates will go through the slots of each day and suggest user with 5 new dates which the current duration can fit in, without any needs for further inputs. Moving lower priority task to other date will get the lower priority task with sufficient duration to swap with the new task on the selected date. The lower priority task will be replaced by the new task and moved to an assigned date. Selection of any of the options will prompt the application to calculate a priority value for the new task and perform scheduling or rescheduling. Changes made with these 4 options will then be saved to the database.

To edit a task, user can choose to edit the task details or update the progress. The required parameters to perform specific function will be passed from the task. For editing the task details, user can change the fields which he desires. Then, the application will execute the same as creating a task upon submitting. Updating progress will trigger rescheduling on other ongoing tasks and update the progress of the task to ‘Completed’ in the database.

User can delete any task as no validation is required. User will need to confirm the action of deleting a task. Once confirmed, rescheduling will be performed on other ongoing tasks and the specific task will be removed from database.

3.3.3 Design of Automated Task Arrangement

Automated task arrangement is executed during the process of priority value calculation in 3.3.2 Design of Task Management. The scheduling algorithm proposed in this project is referenced to Highest Response Ratio Next (HRRN). HRRN scheduling is a non-preemptive algorithm. The scheduling is done by calculating a response ratio for each of the available tasks. The higher the response ratio, the higher the priority is given over the others. HRRN is proposed in this project for its non-preemptive mode. The formula to calculate response ratio:

$$Response\ Ratio = \frac{waiting\ time +\ \ estimated\ run\ time}{estimated\ run\ time}$$

To accommodate the algorithm to the proposed project, the response ratio will be the priority value calculated by the application; waiting time will be the duration between the date when task is created and the actual date of the task; estimated run time will be the task’s estimated duration. Therefore, the formula becomes:

$$Priority\ Value = \frac{(actual(\mu\text{s}) - created(\mu\text{s})) + duration(\mu\text{s})}{duration(\mu\text{s})}$$

where µs = microseconds.

The following scenario is to explain how the arrangement of tasks works:

Given A, B and C are the tasks to be done on the same day. The tables are the information of the required parameters stored in database.

Task	Date Created / Actual Date	Actual – Created (µs)	Estimated Duration (µs)	Priority Value
A	2020-07-28 18:01:19.135435 2020-07-30 00:00:00.000000	107921135435	$3.6e^9$ (1 hour)	$\frac{107921135435\ +\ 3.6e^9}{3.6e^9}$ = 30.9780931764
B	2020-07-28 18:08:26.948165 2020-07-30 00:00:00.000000	107494948165	$7.2e^9$ (2 hour)	$\frac{107494948165\ +\ 7.2e^9}{7.2e^9}$ = 15.9298539118

C	2020-07-29 16:22:57.684515 2020-07-30 00:00:00.000000	27423684515	$1.2e^{9}$ (30 minutes)	$\frac{27423684515\ +\ 1.2e^{9}}{1.2e^{9}}$ = 23.8530704292
D	2020-07-29 16:34:51.889081 2020-07-30 00:00:00.000000	26709889081	$7.2e^{9}$ (2 hours)	$\frac{26709889081\ +\ 7.2e^{9}}{7.2e^{9}}$ = 4.70970681681

Table 3-3-3-1: Design of Automated Task Arrangement.

Therefore, a list of tasks sorted with highest priority value first, A, C, B, D will be generated. The list is returned to the process of priority value calculation in 3.3.2 Design of Task Management.

3.3.4 Design of Time Scheduler

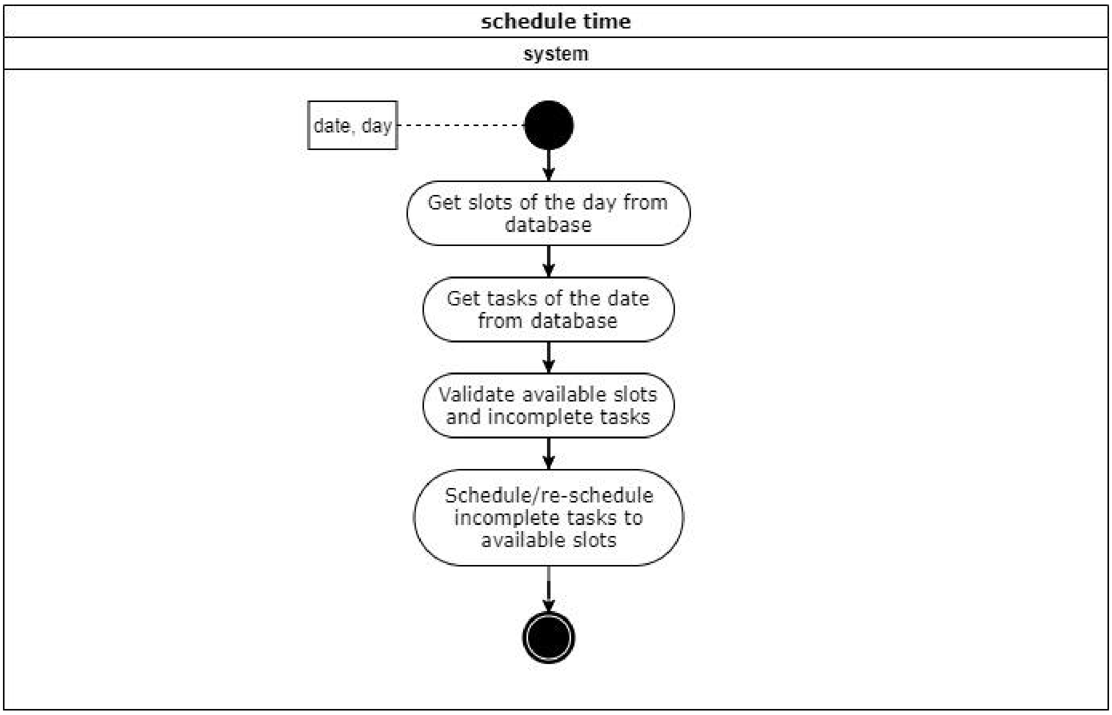

schedule time
system
date, day
Get slots of the day from database
Get tasks of the date from database
Validate available slots and incomplete tasks
Schedule/re-schedule incomplete tasks to available slots

Figure 3-3-4-1: Design of Time Scheduler.

Time scheduler is implemented during the time scheduling or rescheduling in creating, editing or deleting a task, with reference to 3.3.2 Design of Task Management, and adding or deleting a slot, with reference to 3.3.1 Design of Slot Management. The parameter required for time scheduling is the date and day input by user. The application will retrieve the slots of the day and all the tasks on the date from the database. Then, the application will validate which slots are available and which tasks are still incomplete. The application then will schedule or reschedule the incomplete tasks into the available slots.

3.3.5 Design of Task Notification

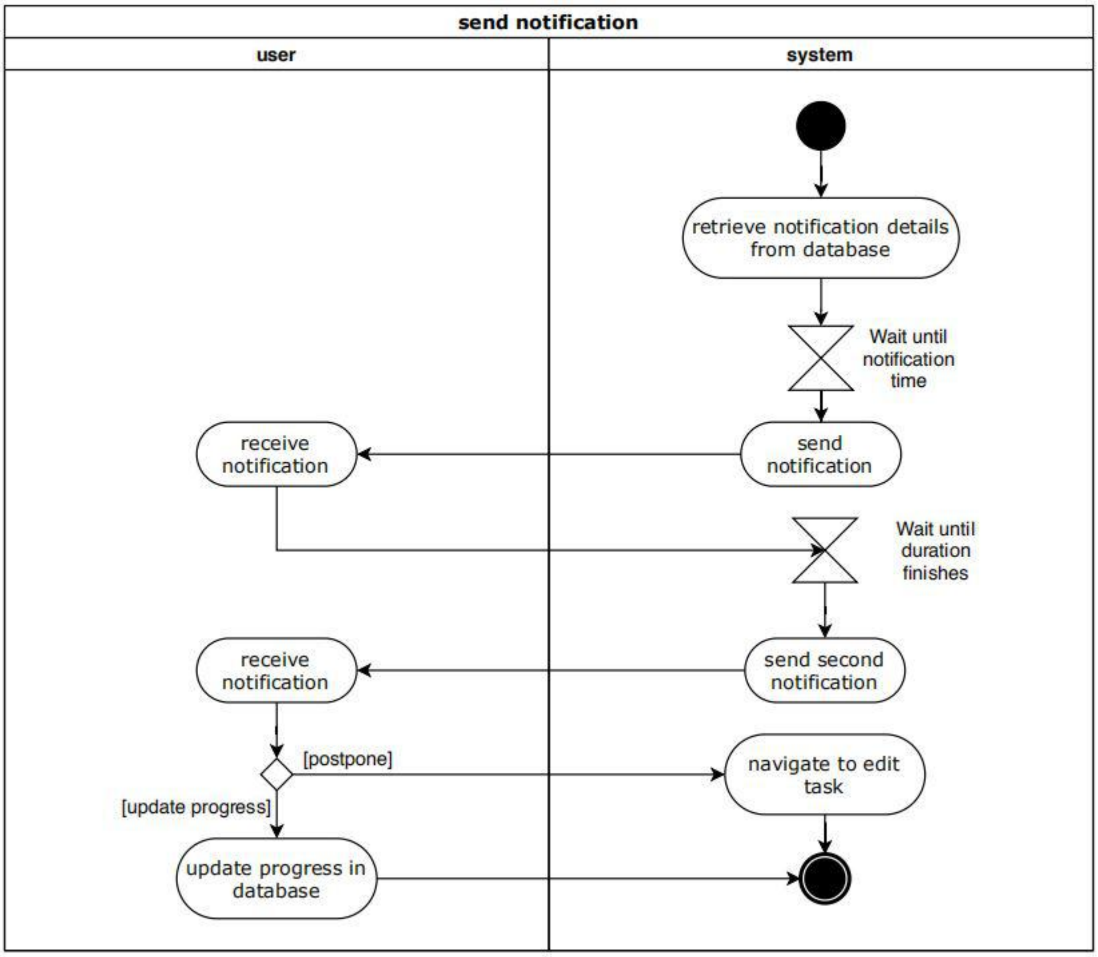


Figure 3-3-5-1: Design of Task Notification.

Initially, the application will retrieve the time to trigger tasks from the database and store it in local storage. When it reaches the scheduled time, a notification to remind users to carry out the task will be sent and the duration to carry out the task will start to time. Once the duration is finished, the application will send a second notification to remind users to update their progress. If they have completed the task, they can choose to update the task as 'Completed' and it will be saved to database. If they have not completed, they can choose to postpone the task to another date without redefining the entire task. The application will navigate users to the edit task details page. Users can postpone the task by updating the date of the task. The validation of editing task details is discussed in 3.3.2 Design of Task Management.

3.4 Hardware and Software Requirements

	Software / Hardware	**Requirements**
1.	Flutter (Flutter, 2020)	Version: 1.17.5 Operating System: Windows 7 SP1 or later (64-bit) Disk Space: 1.32GB (does not include disk space for IDE/tools. Tools: Windows PowerShell 5.0 or newer, Git for Windows 2.0
2.	Android Studio (Android Developers, 2020)	Version: 4.0.1 Operating System: Microsoft Windows 7/8/10 (64-bit) Disk Space: 2GB (minimum), 4GB (recommended) RAM: 4GB (minimum), 8GB (recommended)
3.	Firebase Cloud Firestore dependency in Flutter (Flutter Package, 2020)	Version: 0.13.7
4.	Mobile device	Platform: Android Operating System: Android 8.0 and above Supports WLAN

Table 3-4-1: Hardware and Software Requirements.

CHAPTER 4: SYSTEM DESIGN

4.1 System Architecture Design

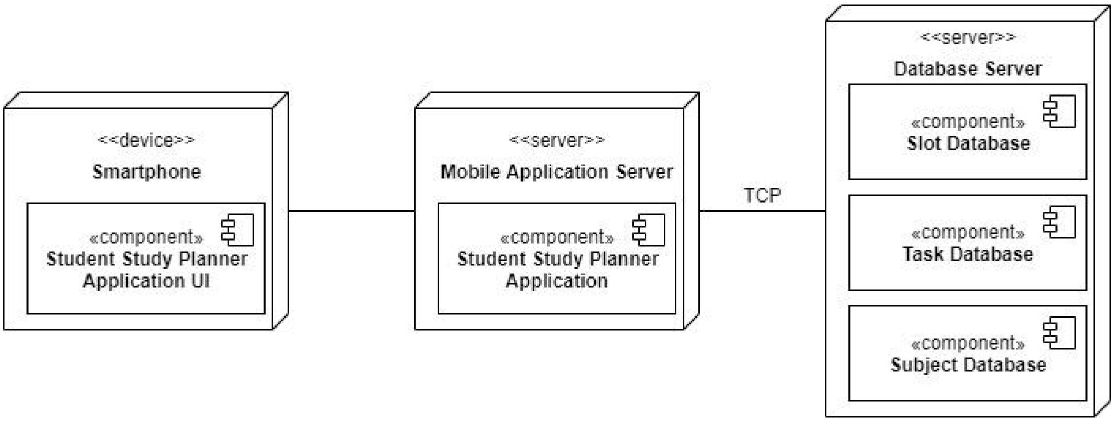


Figure 4-1-1: System Architecture Design

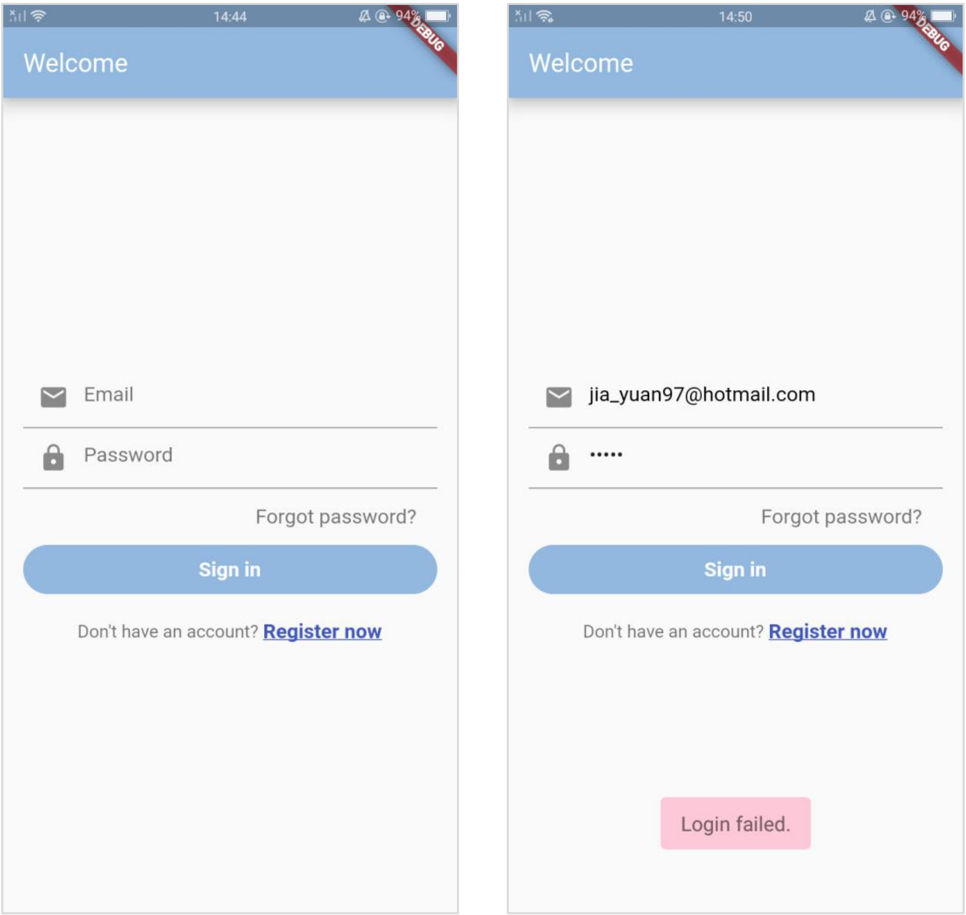
The system architecture design of the proposed application is a client-server model, as illustrated in Figure 4-1-1. Smartphone (Client) is used to run the proposed application, build user interfaces, provides inputs and outputs when user performs certain functions.

Mobile application server connects mobile application to the back-end system to support all the transactions and functions performed by the user and the application.

Firebase Cloud Firestore is used as the database server to store and sync data of the application. As all the application data is stored in Cloud Firestore, therefore Internet is required to connect both client and server in order to sync and retrieve data.

4.2 Graphical User Interface Design

4.2.1 User Authentication Module

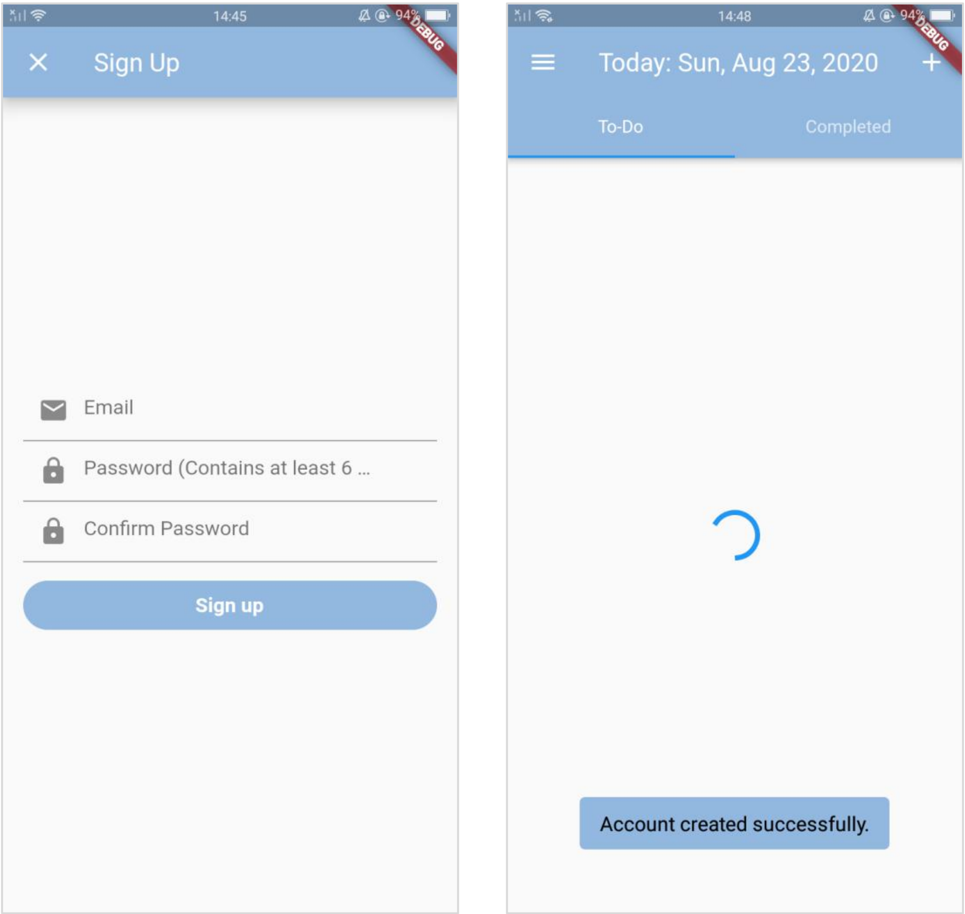


jia_yuan97@hotmail.com

Login failed.

Figure 4-2-1-1: Interface of Login.

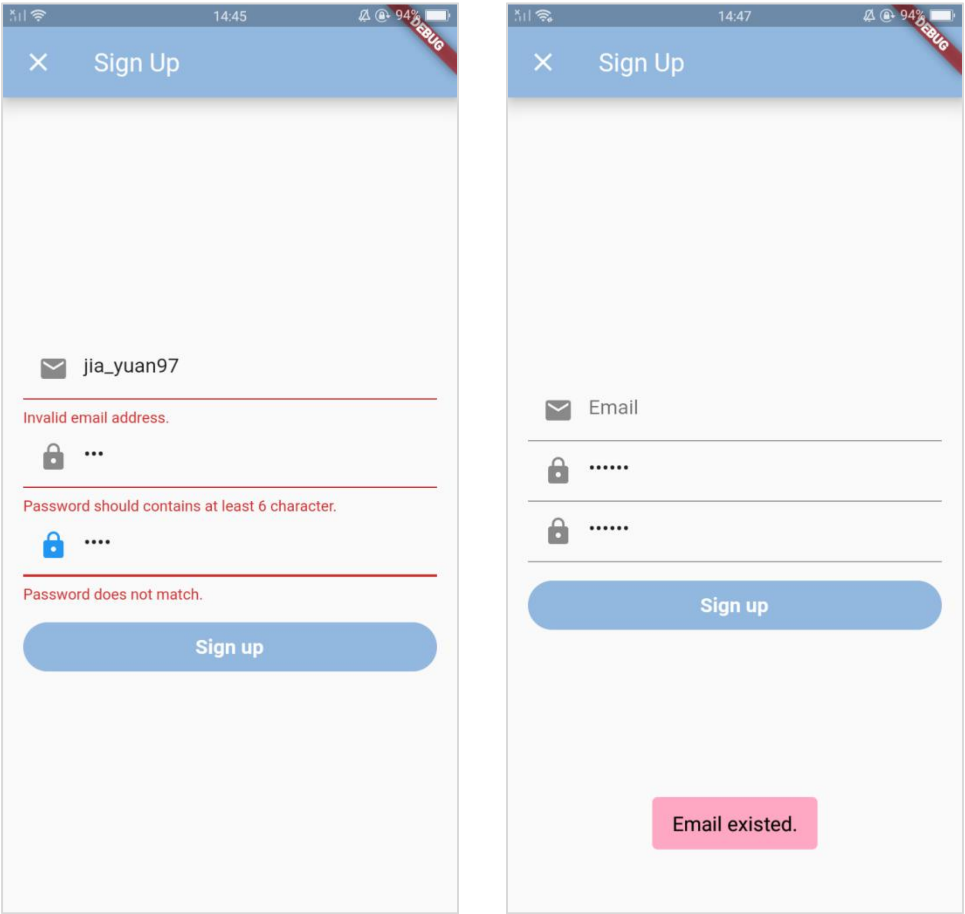
Figure 4-2-1-1 shows the login interface of the proposed application. Firstly, existing user needs to provide a registered account and password to log in to the application. Then, user clicks the “Sign in” button to authenticate the provided account. If user inputs the email address or password wrongly, an error message “Login failed” is displayed as shown. Upon successfully authenticated, user is navigated to the home page of the application (Figure 4-2-1-6). New user is required to create an account by clicking the “Register now” in this interface.



Account created successfully.

Figure 4-2-1-2: Interface of Create Account.

Figure 4-2-1-2 shows the create account interface of the application. New user is navigated to this interface upon clicking "Register now" on the login interface. New user needs to provide an email and password in order to be registered successfully. The third input is to confirm again if user types the correct password. After user clicks the "Sign up" button, the application validates if there is validation occurs. Upon successfully created an account, new user will be navigated to the home page of the application (Figure 4-2-1-6) and a message indicating "Account created successfully" is displayed.



14:45

Sign Up

jia_yuan97

Invalid email address.

•••

Password should contains at least 6 character.

••••

Password does not match.

Sign up

14:47

Sign Up

Email

••••••

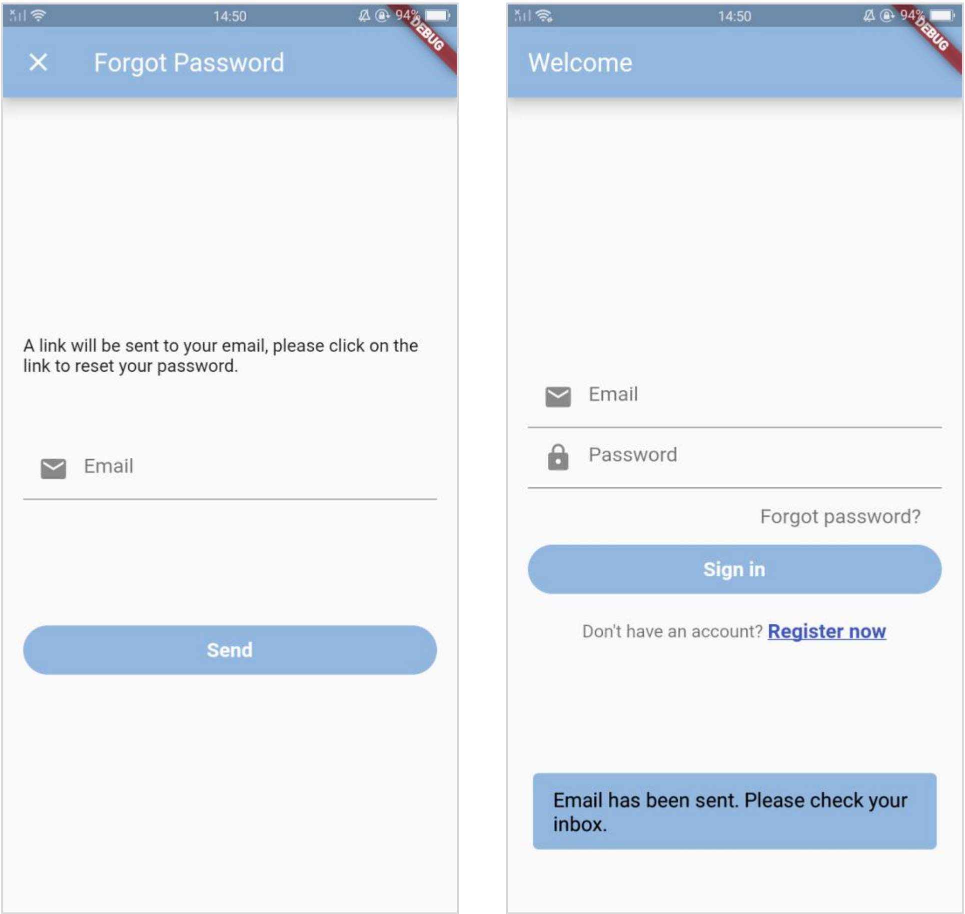
••••••

Sign up

Email existed.

Figure 4-2-1-3: Interface of Create Account (Validation Message).

Figure 4-2-1-3 shows the validation message on create account interface. These interfaces will be shown when the application validates that there is validation occurs when user is creating an account. A message stating "Invalid email address" is shown when user inputs an email address with incorrect format. A message stating "Password should contain at least 6 characters" is shown when user inputs less than 6 characters. When user inputs a different password in the third field, a message "Password does not match" is shown to notify user. If the application validates that the input email address is existed in the database, it will return a message "Email existed" to alert user and prompt user to re-enter a new email address.

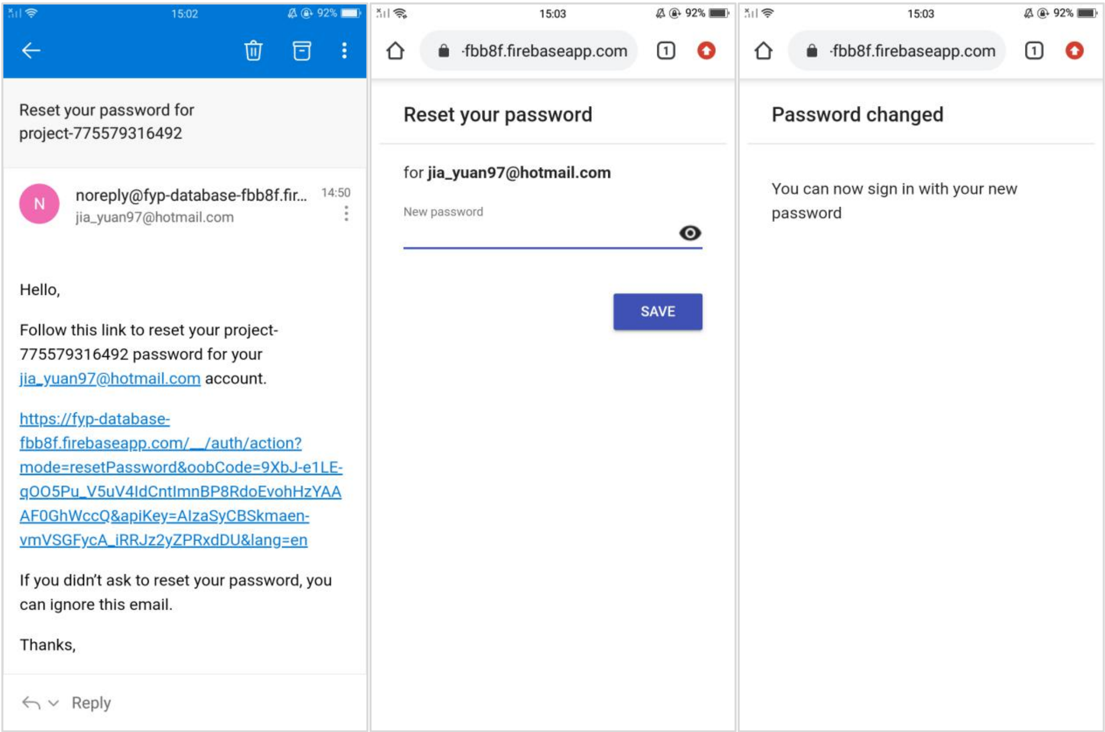


A link will be sent to your email, please click on the link to reset your password.

Email has been sent. Please check your inbox.

Figure 4-2-1-4: Interface of Forgot Password.

Figure 4-2-1-4 shows the forgot password interface of the proposed application. User will be navigated to this interface when user clicks the “Forgot password?” on the login interface. Firstly, user is required to provide the email address for the application to send a mail with link. Upon clicking the “Send” button, a link to reset password is sent to the provided email address. User is asked to check his inbox in order to complete the process of resetting password.



Reset your password for project-775579316492

noreply@fyp-database-fbb8f.fir...
jia_yuan97@hotmail.com

Hello,

Follow this link to reset your project-775579316492 password for your jia_yuan97@hotmail.com account.

https://fyp-database-fbb8f.firebaseapp.com/__/auth/action?mode=resetPassword&oobCode=9XbJ-e1LE-qOO5Pu_V5uV4IdCntImnBP8RdoEvohHzYAAAF0GhWccQ&apiKey=AIzaSyCBSkmaen-vmVSGFycA_iRRJz2yZPRxdDU&lang=en

If you didn't ask to reset your password, you can ignore this email.

Thanks,

Reset your password

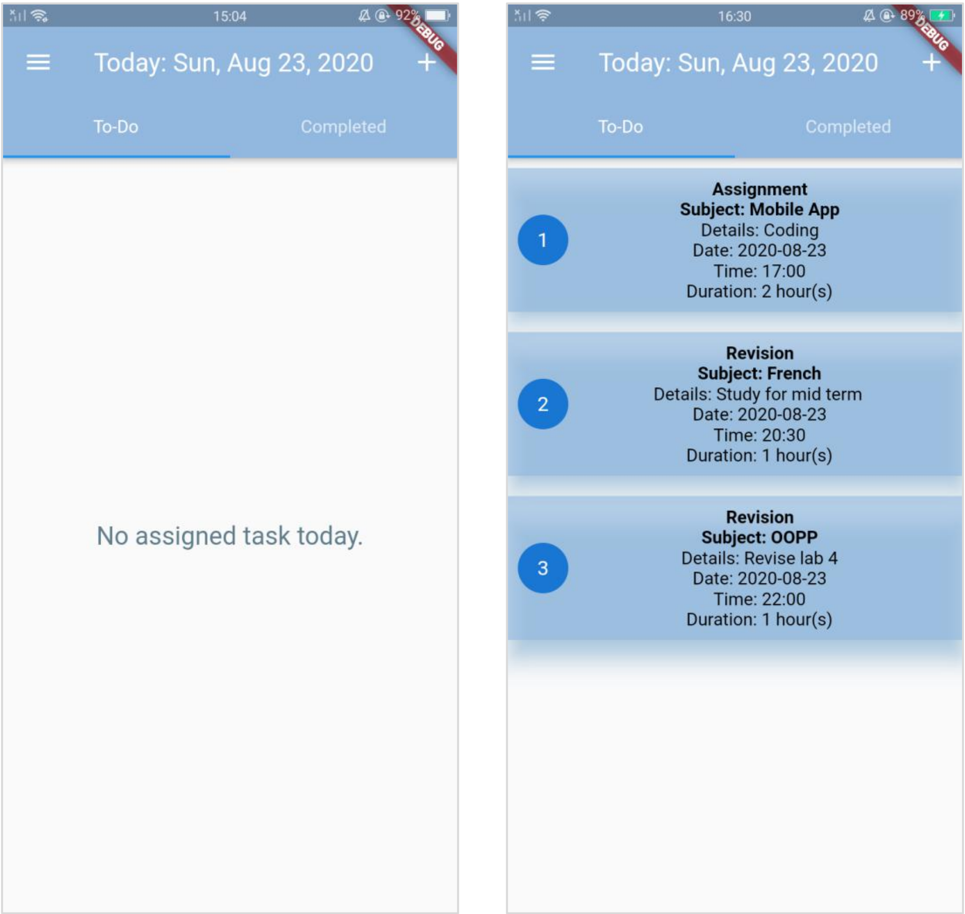
for **jia_yuan97@hotmail.com**

Password changed

You can now sign in with your new password

Figure 4-2-1-5: Interface of Forgot Password (Continued).

Figure 4-2-1-5 shows the interface of the received email in user's inbox. When user clicks on the link, he will be directed to reset password. User is required to enter a new password and save it. Once it is saved, user can now sign in with the new password.



Today: Sun, Aug 23, 2020

No assigned task today.

Today: Sun, Aug 23, 2020

1
Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

2
Revision
Subject: French
Details: Study for mid term
Date: 2020-08-23
Time: 20:30
Duration: 1 hour(s)

3
Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 22:00
Duration: 1 hour(s)

Figure 4-2-1-6: Interface of Home Page.

Figure 4-2-1-6 shows the home page interface of the proposed application. User will be navigated to this interface upon successfully registered or logged in. The figure shows different interfaces of home page when there is no task created and there is task created. Home page shows all the tasks of the current day only. To-Do indicates all the ongoing tasks for the day while Completed indicates tasks which have already been done for the day. To add a task, user has to tap on the add icon on the top right corner. To access to other interfaces of the application, user has to tap on the bar lines icon on the top left corner to get to a side navigation bar.

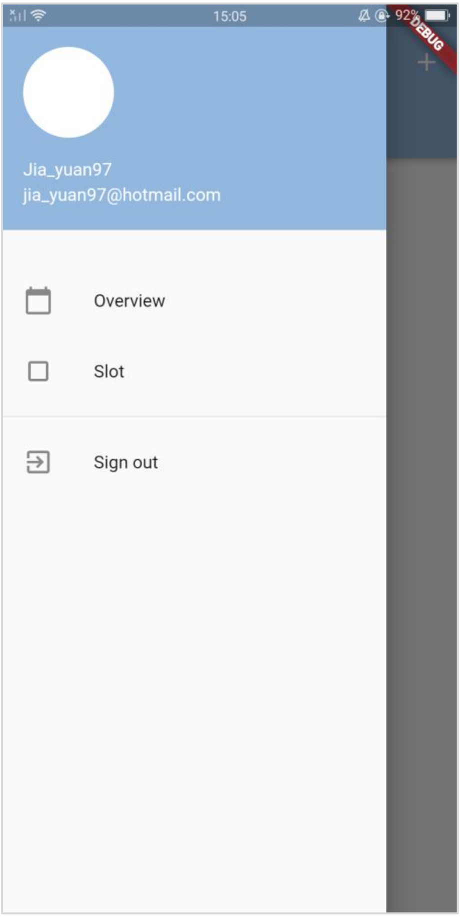
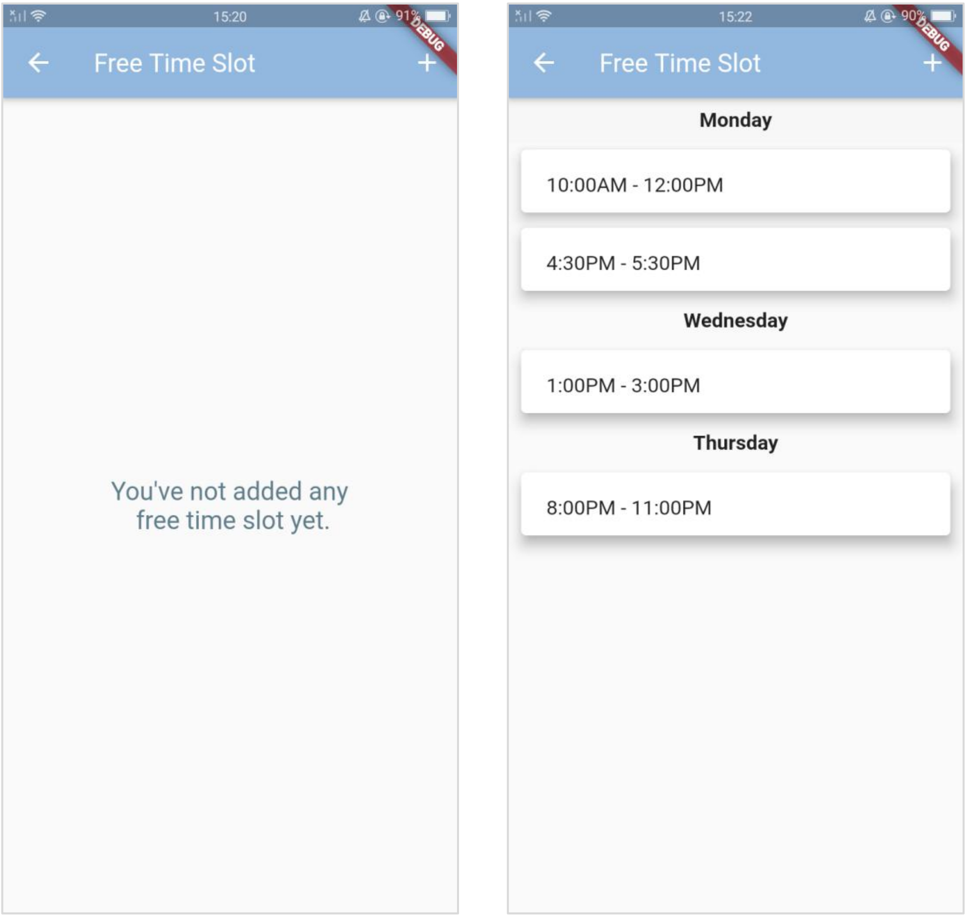


Figure 4-2-1-7: Interface of Side Navigation Bar.

Figure 4-2-1-7 shows the side navigation bar of the application which displays user information and several options of functions. User is navigated to the interface of Overview (Figure 4-2-5-1) when “Overview” is tapped; interface of Slot (Figure 4-2-2-1) when “Slot” is tapped; interface of Login (Figure 4-2-1-1) when “Sign out” is tapped. The “Sign out” function allows user to sign out from the current account.

4.2.2 Slot Management Module



You've not added any free time slot yet.

Monday

10:00AM - 12:00PM

4:30PM - 5:30PM

Wednesday

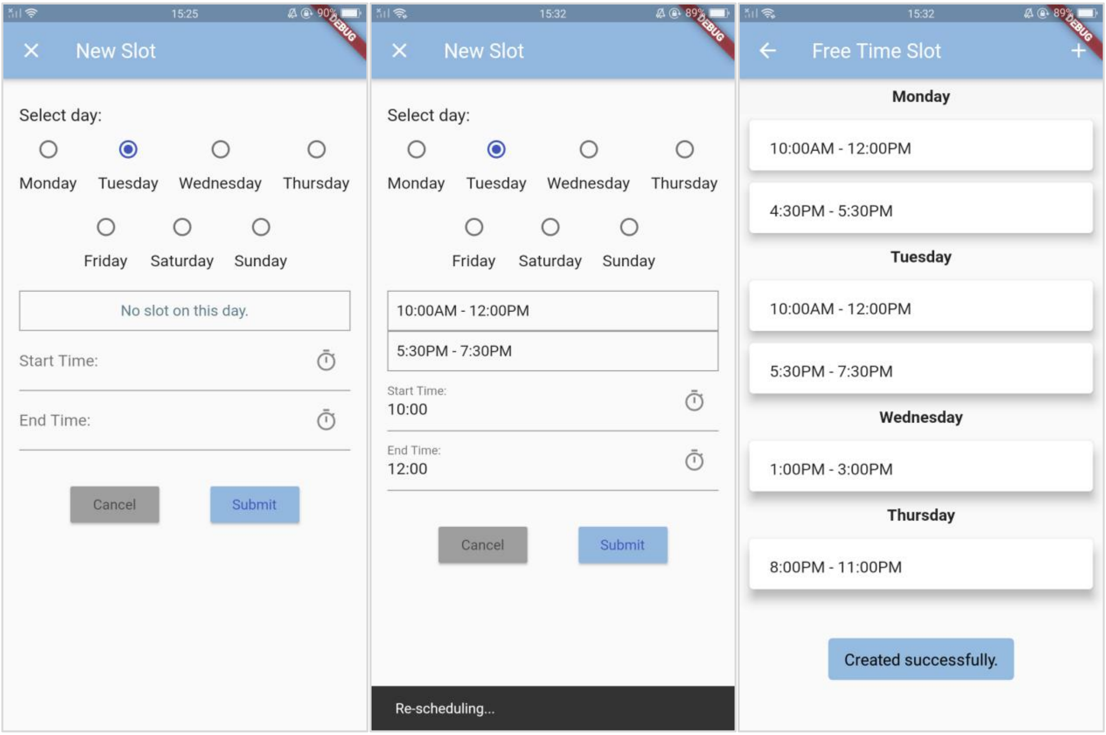
1:00PM - 3:00PM

Thursday

8:00PM - 11:00PM

Figure 4-2-2-1: Interface of Slot Page.

Figure 4-2-2-1 shows the slot page interface of the proposed application. User will be directed to this interface when user taps “Slot” in the side navigation bar. The figure shows different interfaces of slot page with and without the presence of slots. To add a slot, user has to tap on the add icon on the top right corner.



New Slot

Select day:

○ Monday ● Tuesday ○ Wednesday ○ Thursday

○ Friday ○ Saturday ○ Sunday

No slot on this day.

Start Time:

End Time:

New Slot

Select day:

○ Monday ● Tuesday ○ Wednesday ○ Thursday

○ Friday ○ Saturday ○ Sunday

10:00AM - 12:00PM

5:30PM - 7:30PM

Start Time: 10:00

End Time: 12:00

Re-scheduling...

Free Time Slot

Monday

10:00AM - 12:00PM

4:30PM - 5:30PM

Tuesday

10:00AM - 12:00PM

5:30PM - 7:30PM

Wednesday

1:00PM - 3:00PM

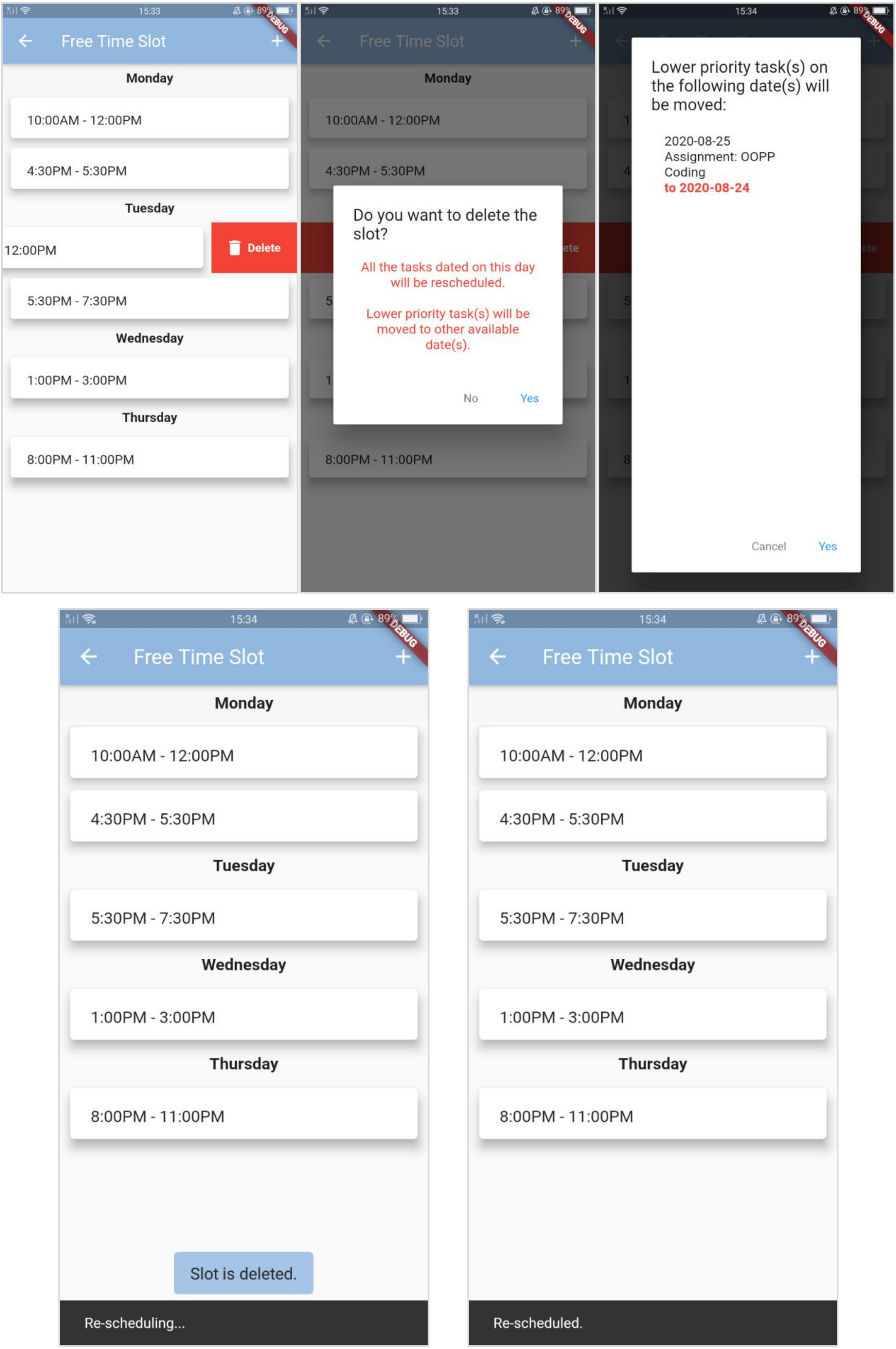
Thursday

8:00PM - 11:00PM

Created successfully.

Figure 4-2-2-2: Interface of Add Slot.

Figure 4-2-2-2 shows the add slot interface of the proposed application. User is navigated to this interface when user clicks the add icon on the interface of slot page. Firstly. user is required to input day, start time and end time. Once user clicks “Submit”, rescheduling is performed on the tasks of the dates with the selected day and a “Created Successfully” message is displayed.



Do you want to delete the slot?

All the tasks dated on this day will be rescheduled.

Lower priority task(s) will be moved to other available date(s).

No Yes

Lower priority task(s) on the following date(s) will be moved:

2020-08-25
Assignment: OOPP
Coding
to 2020-08-24

Cancel Yes

Slot is deleted.

Re-scheduling...

Re-scheduled.

Figure 4-2-2-3: Interface of Delete Slot.

Figure 4-2-2-3 shows the delete slot interface of the proposed application. User can delete a slot on the slot page. Firstly, user swipes to delete a specific slot, a dialog box will appear to ask user to confirm the action. Once user confirmed the action, the application will validate if there is any task is affected by the deletion. As shown in the figure, the application validates that if user is to delete the selected slot on Tuesday, the overall duration on Tuesday is not enough to accommodate the total duration of the existing tasks on 2020-08-25. Therefore, the lower priority task is identified to be moved to other date to accommodate the deletion. If user clicks 'Yes', the slot will be deleted with a message "Slot is deleted" to notify user and rescheduling will be performed on the ongoing tasks of the dates with the selected day.

4.2.3 Task Management Module

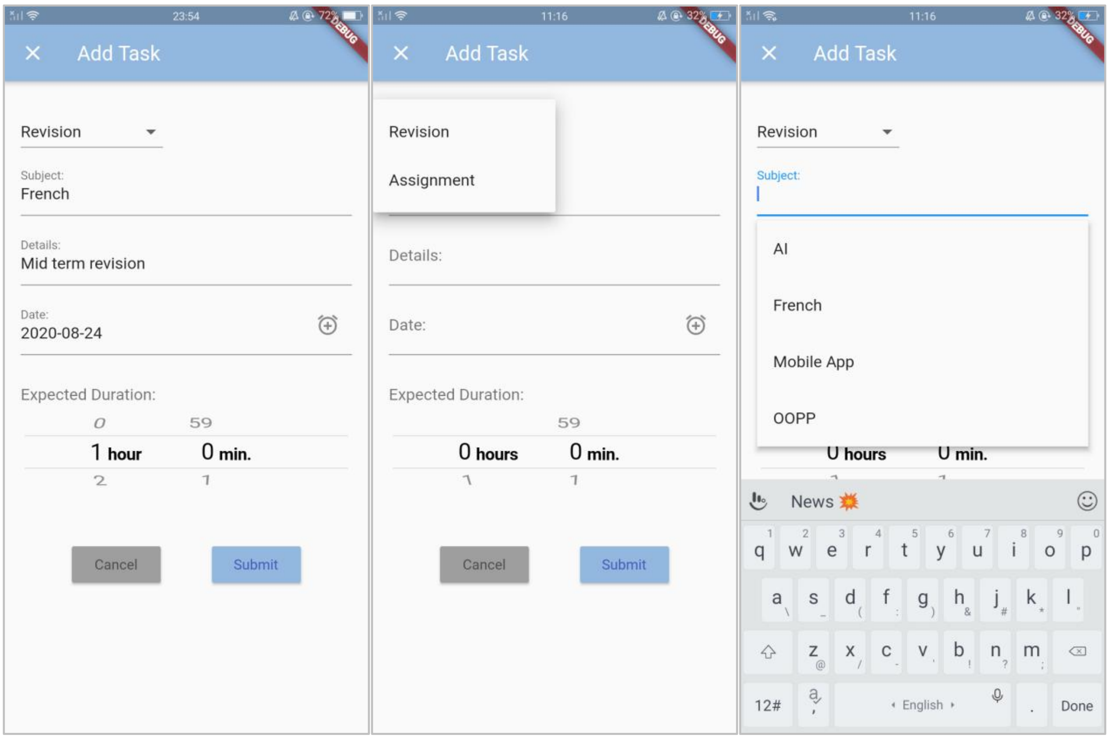
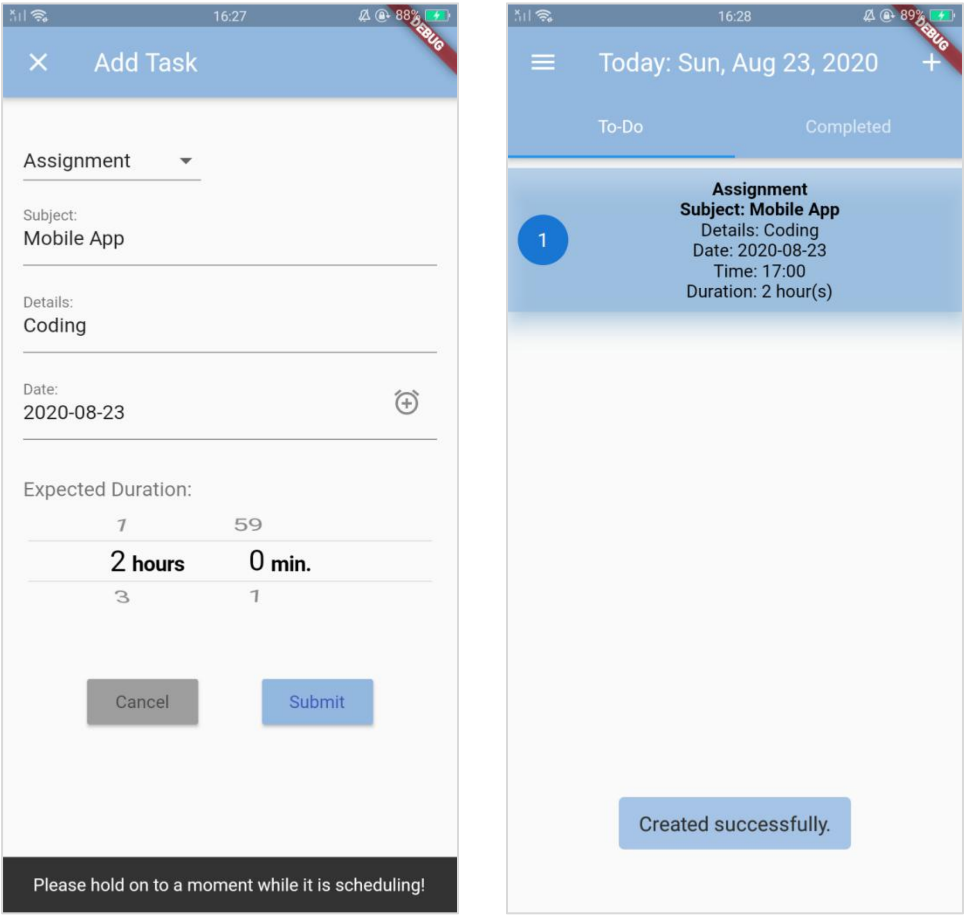


Figure 4-2-3-1: Interface of Add Task.

Figure 4-2-3-1 shows the add task interface of the proposed application. User is navigated to this interface upon clicking the add icon on the home page. Firstly, user is required to select a type for the new task (Revision/Assignment). Then, user is required to input a subject. If the subject has been created by user before, user can select the subject from the autocomplete list. After that, user proceeds to input details, date and expected duration. There are several results upon adding a task. The results is discussed in the following figures.



Assignment

Subject:
Mobile App

Details:
Coding

Date:
2020-08-23

Expected Duration:
2 hours 0 min.

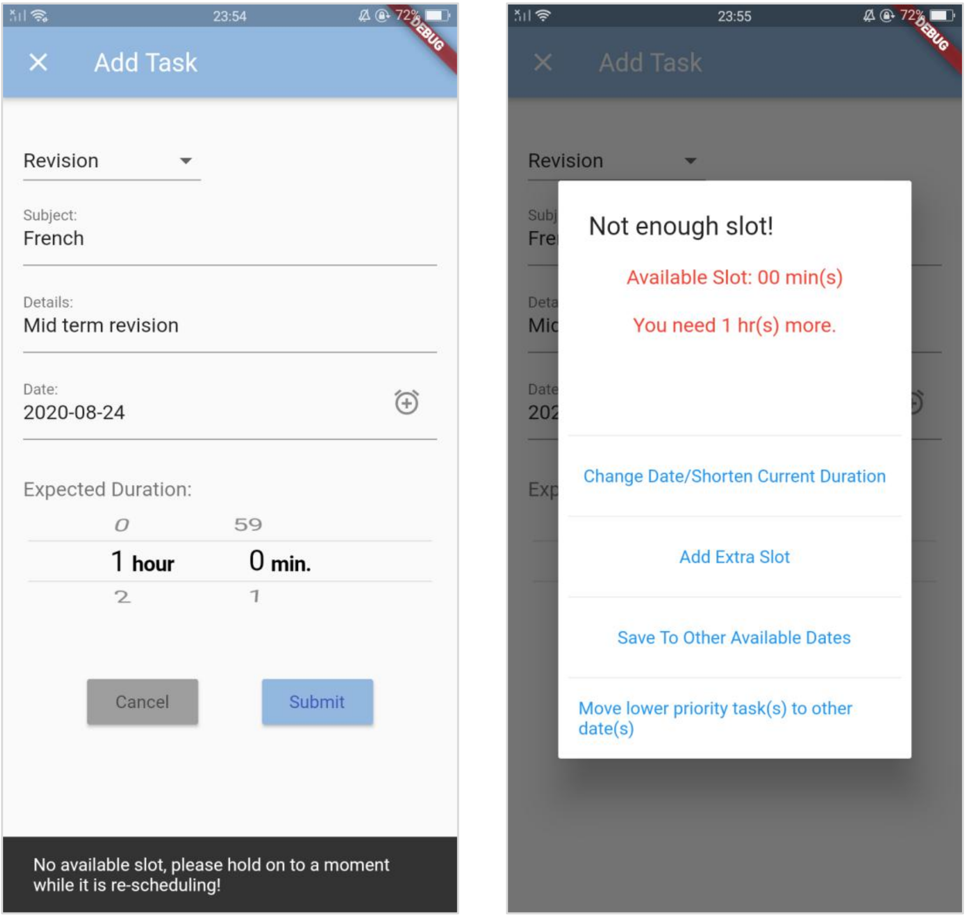
Please hold on to a moment while it is scheduling!

Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

Created successfully.

Figure 4-2-3-2: Interface of Add Task (Enough Slot).

Figure 4-2-3-2 shows the add task interface of the proposed application when application validates there is enough slot on the selected day to add the new task. Automated task arrangement and scheduling is done and the new task is added successfully with message "Created successfully" is displayed.


23:54
72%
DEBUG
Add Task
Cancel
Submit
23:55
72%
DEBUG
Add Task
Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)

Revision

Subject:
French

Details:
Mid term revision

Date:
2020-08-24

Expected Duration:
0 59
1 hour 0 min.
2 1

No available slot, please hold on to a moment while it is re-scheduling!

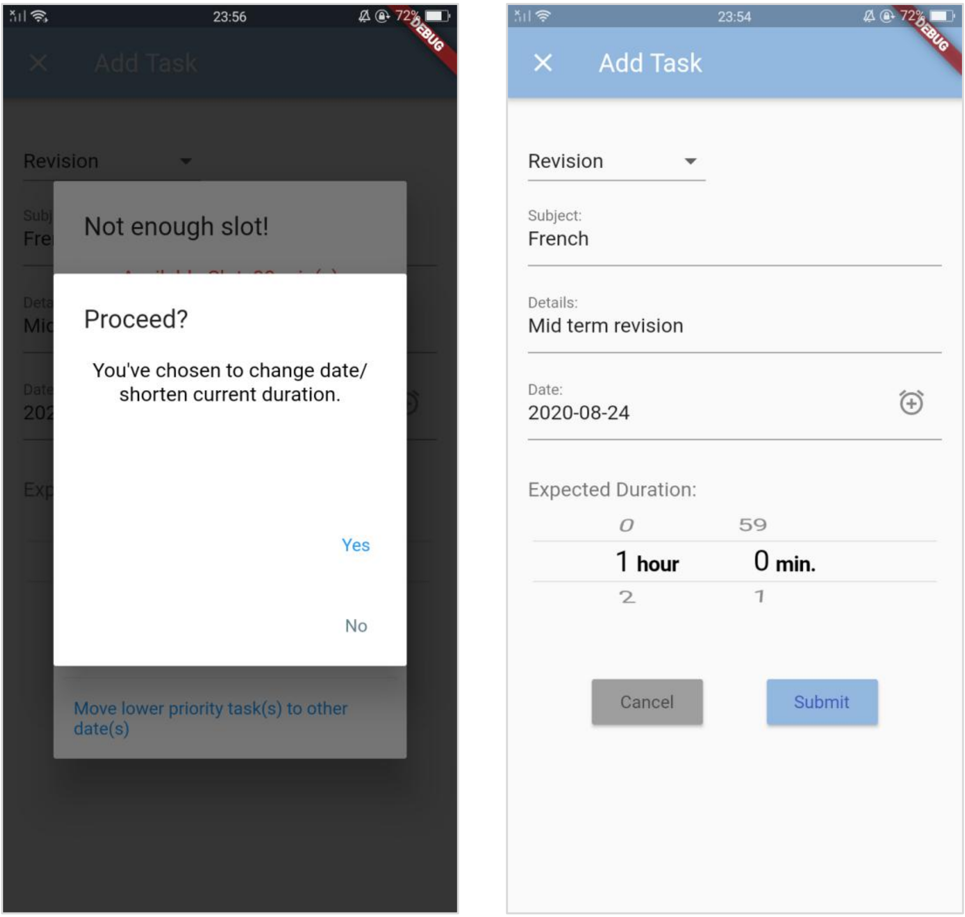
Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

Figure 4-2-3-3: Interface of Add Task (Not Enough Slot).

Figure 4-2-3-3 shows the add task interface of the proposed application when application validates there is not enough slot on the selected date to add the new task. A dialog box with 4 options is shown to inform user the total duration of available slot on the selected date and the duration user needs to add in order to add the new task to the selected date successfully. The interfaces of the options are shown in the following figures.



23:56

Add Task

Revision

Not enough slot!

Proceed?

You've chosen to change date/ shorten current duration.

Yes

No

Move lower priority task(s) to other date(s)

23:54

Add Task

Revision

Subject:
French

Details:
Mid term revision

Date:
2020-08-24

Expected Duration:

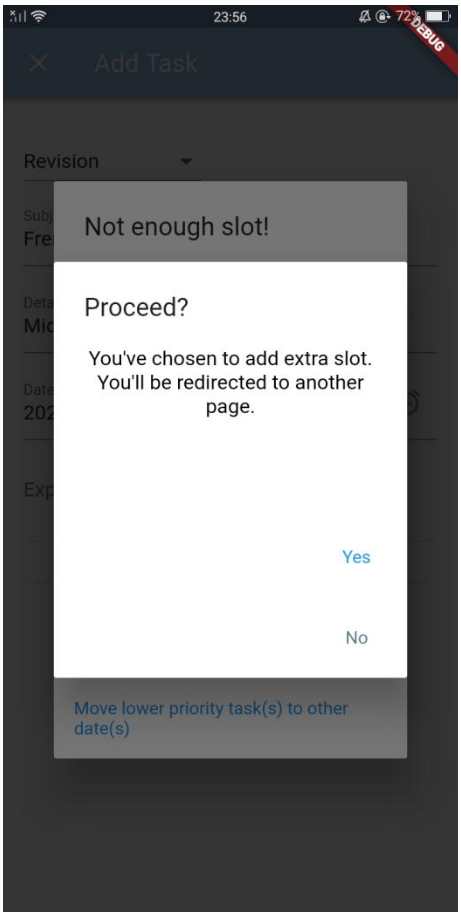
0 59
1 hour 0 min.
2 1

Cancel

Submit

Figure 4-2-3-4: Interface of Change Date / Shorten Duration.

Figure 4-2-3-4 shows the change date or shorten duration task interface of the proposed application when user chooses to change date or shorten duration. A dialog box is displayed to ask user to confirm the action. Once confirmed, it will prompt user back to the current add task page to change a date or shorten a duration which is not more than the total duration of available slots shown on the previous dialog box. After user made the changes, he is required to click the 'Submit' button and upon successfully adding a task (enough slots), the interfaces will be the same as shown in Figure 4-2-3-2. If the application validates again that there is not enough slots, user will be prompted back to the interface of add task with not enough slot (Figure 4-2-3-3).



23:56

Add Task

Revision

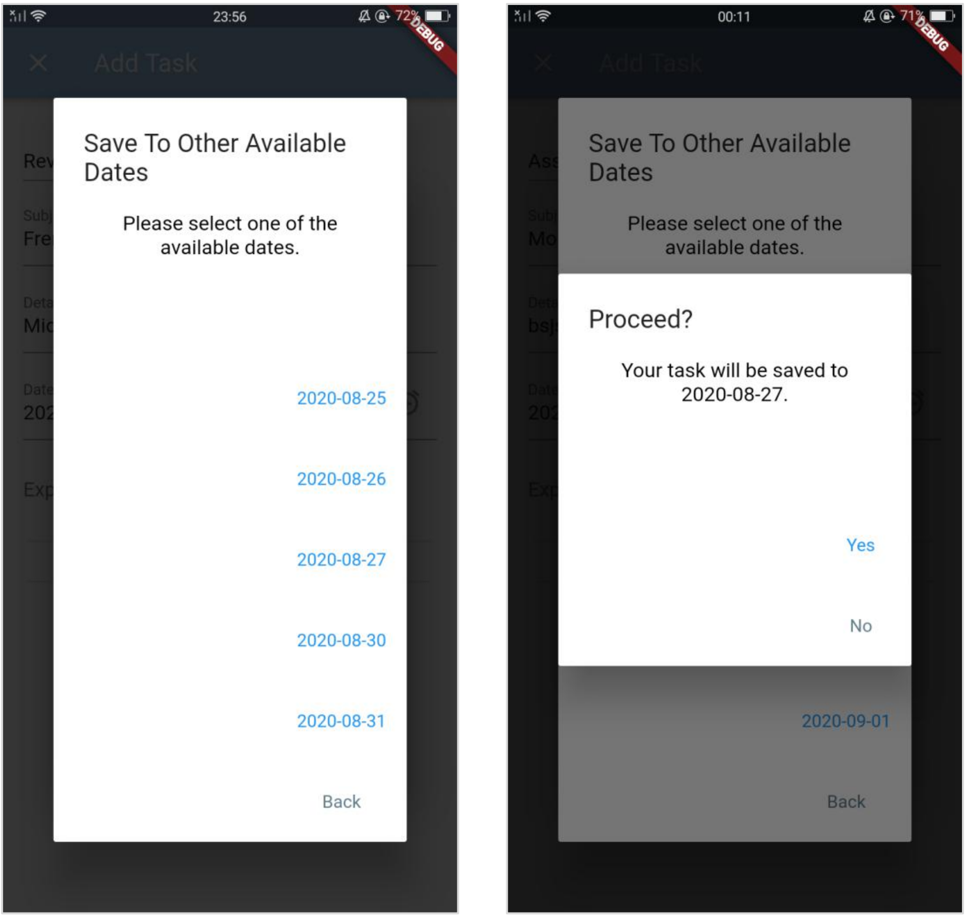
Not enough slot!

Proceed?

You've chosen to add extra slot. You'll be redirected to another page.

Figure 4-2-3-5: Interface of Add Extra Slot.

Figure 4-2-3-5 shows the add extra slot interface of the proposed application when user chooses to add extra slot. A dialog box is displayed to ask user to confirm the action. Once confirmed, it will navigate user to the add slot page as shown in Figure 4-2-2-2. After user successfully added a slot, he will be prompted back to the current add task page and clicks ‘Submit’. Upon successfully adding a task (enough slots), the interfaces will be the same as shown in Figure 4-2-3-2. If the application validates again that there is not enough slots, user will be prompted to the interface of add task with not enough slot (Figure 4-2-3-3).



Save To Other Available Dates

Please select one of the available dates.

Save To Other Available Dates

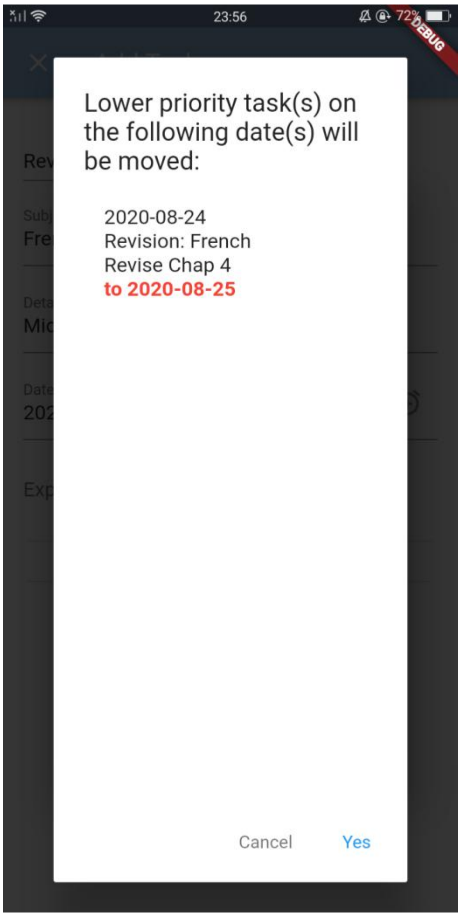
Please select one of the available dates.

Proceed?

Your task will be saved to 2020-08-27.

Figure 4-2-3-6: Interface of Save To Other Available Dates.

Figure 4-2-3-6 shows the save to other available dates interface of the proposed application when user chooses to save to other available dates. A dialog box with 5 suggestions of dates is displayed to let the user to choose which date they prefer the new task to be saved to. Then, a dialog box will be displayed to ask user to confirm the action. Once confirmed, the application will save the new task to the selected date and the task is created successfully.

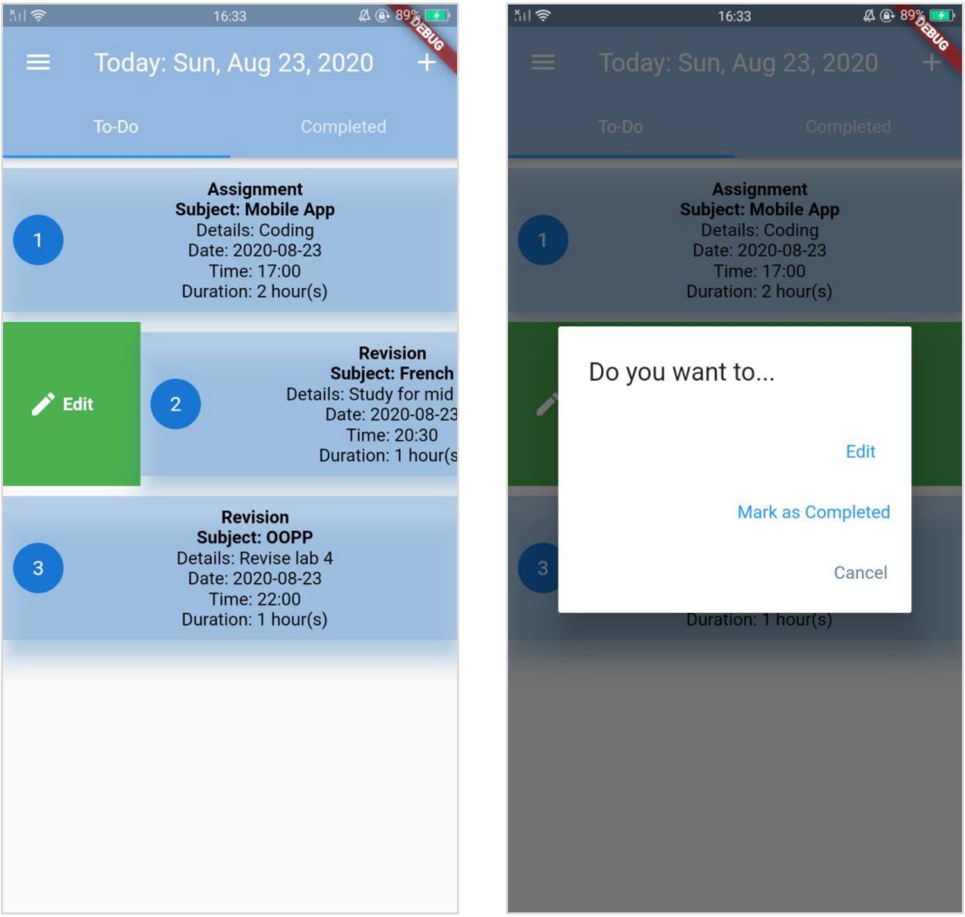


Lower priority task(s) on the following date(s) will be moved:

2020-08-24
Revision: French
Revise Chap 4
to 2020-08-25

Figure 4-2-3-7: Interface of Move Lower Priority Task To Other Date.

Figure 4-2-3-7 shows the move lower priority task to other date interface of the proposed application when user chooses to move lower priority task to other date. A dialog box is displayed to inform user on the lower priority tasks affected and requires user to confirm the action. Once confirmed, the application will save the affected task to the assigned date and the new task to the selected date successfully.



16:33 89%

DEBUG

Today: Sun, Aug 23, 2020

To-Do Completed

1
Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

Edit

2
Revision
Subject: French
Details: Study for mid
Date: 2020-08-23
Time: 20:30
Duration: 1 hour(s

3
Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 22:00
Duration: 1 hour(s)

Do you want to...

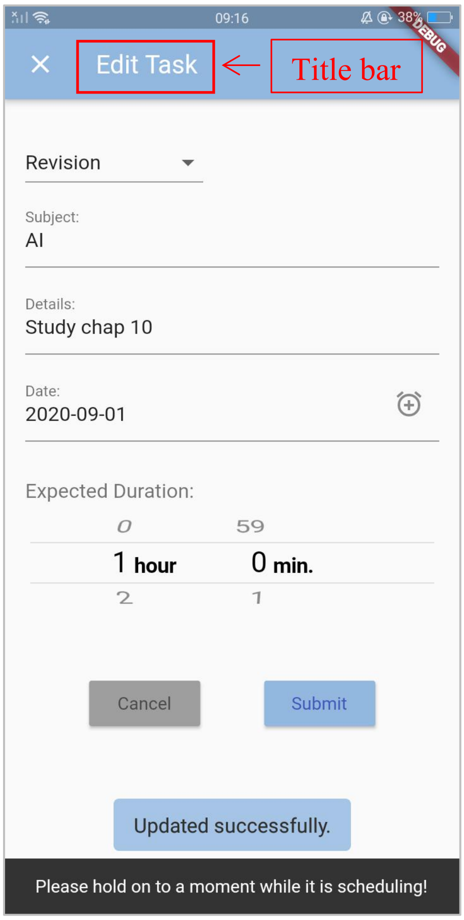
Edit

Mark as Completed

Cancel

Figure 4-2-3-8: Interface of Edit Task.

Figure 4-2-3-8 shows the edit task interface of the proposed application. A dialog box is displayed to ask user to choose an action whether to “Edit” or “Mark as Completed”. The results of selecting “Edit” or “Mark as Completed” is further discussed in the following figures.



Revision

Subject:
AI

Details:
Study chap 10

Date:
2020-09-01

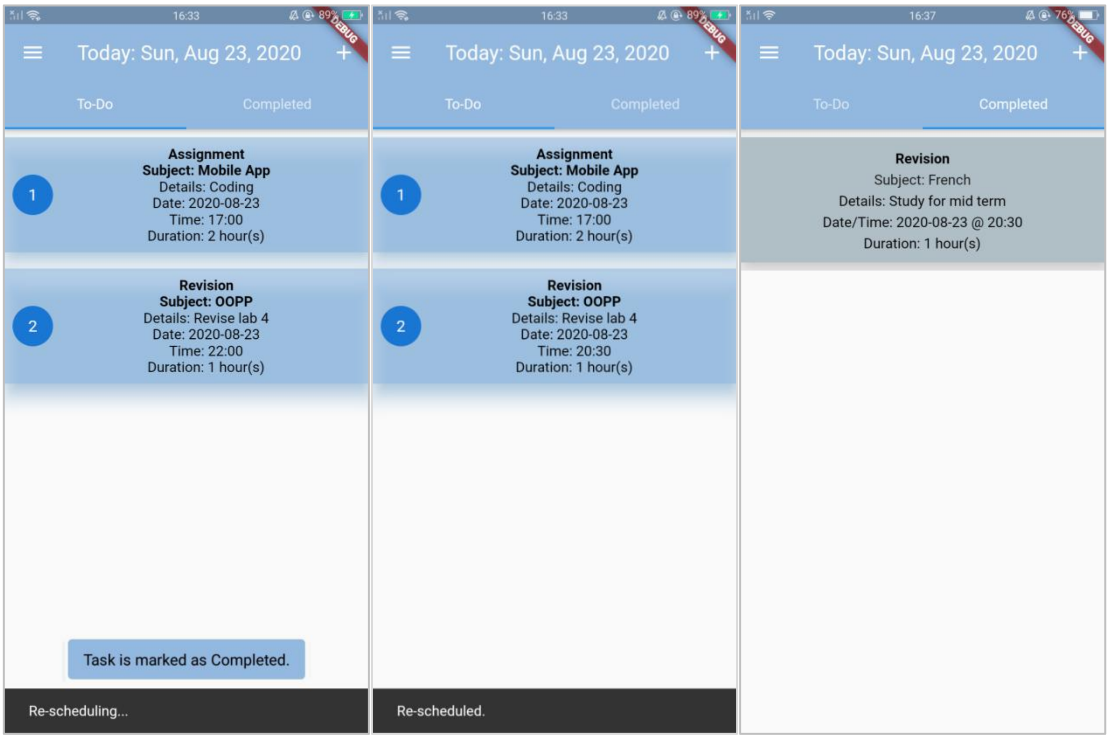
Expected Duration:
1 hour 0 min.

Updated successfully.

Please hold on to a moment while it is scheduling!

Figure 4-2-3-9: Interface of Edit Task (Edit).

Figure 4-2-3-9 shows the edit interface of the proposed application when user chooses to edit the task after swipes right to edit. All the details of the respective task is autofilled in its respective field. As editing task shares the same functions as adding task, therefore Figure 4-2-3-1 to Figure 4-2-3-7 are also the interfaces of edit task after clicking the 'Submit' button, but with the title bar "Edit Task".



16:33

Today: Sun, Aug 23, 2020

To-Do Completed

1 Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

2 Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 22:00
Duration: 1 hour(s)

Task is marked as Completed.

Re-scheduling...

16:33

Today: Sun, Aug 23, 2020

To-Do Completed

1 Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

2 Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 20:30
Duration: 1 hour(s)

Re-scheduled.

16:37

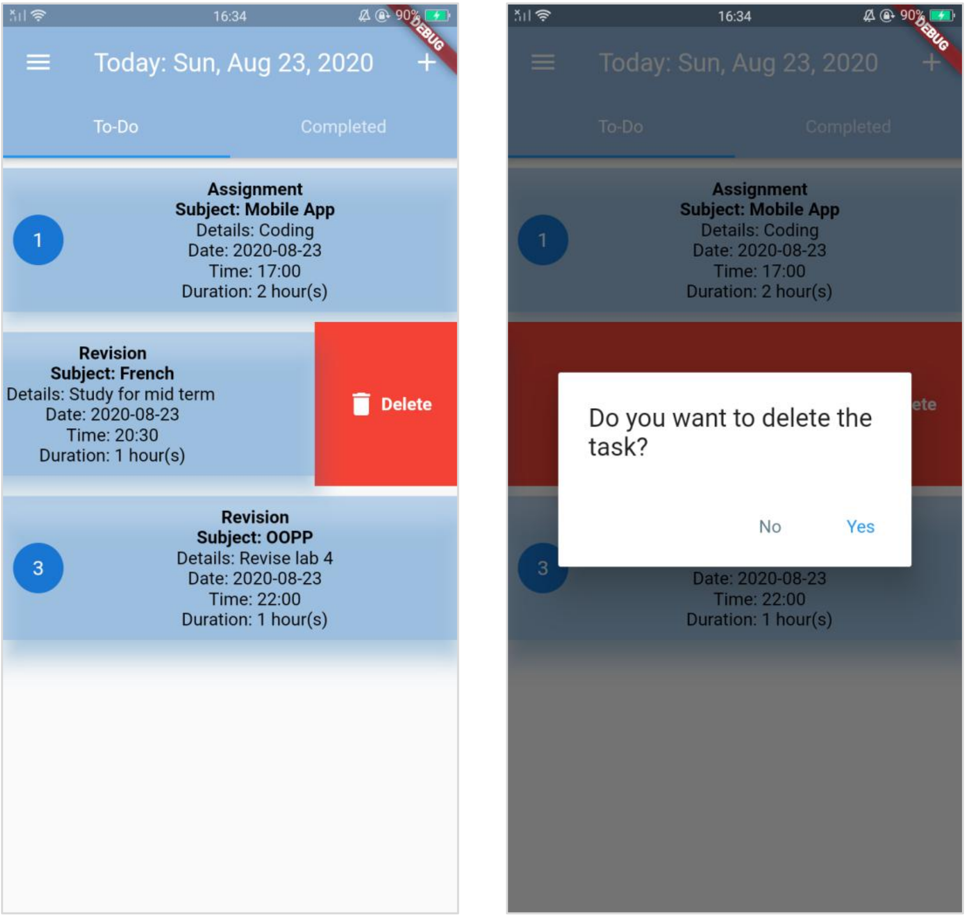
Today: Sun, Aug 23, 2020

To-Do Completed

Revision
Subject: French
Details: Study for mid term
Date/Time: 2020-08-23 @ 20:30
Duration: 1 hour(s)

Figure 4-2-3-10: Interface of Edit Task (Mark as Completed).

Figure 4-2-3-10 shows the mark as completed interface of the proposed application. If user chooses to mark the task as completed (continued from Figure 4-2-3-8), the task will be updated to “Completed” in the database and rescheduling is performed on the ongoing tasks. The updated task is then displayed under the “Completed” section on the home page.



Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

Revision
Subject: French
Details: Study for mid term
Date: 2020-08-23
Time: 20:30
Duration: 1 hour(s)

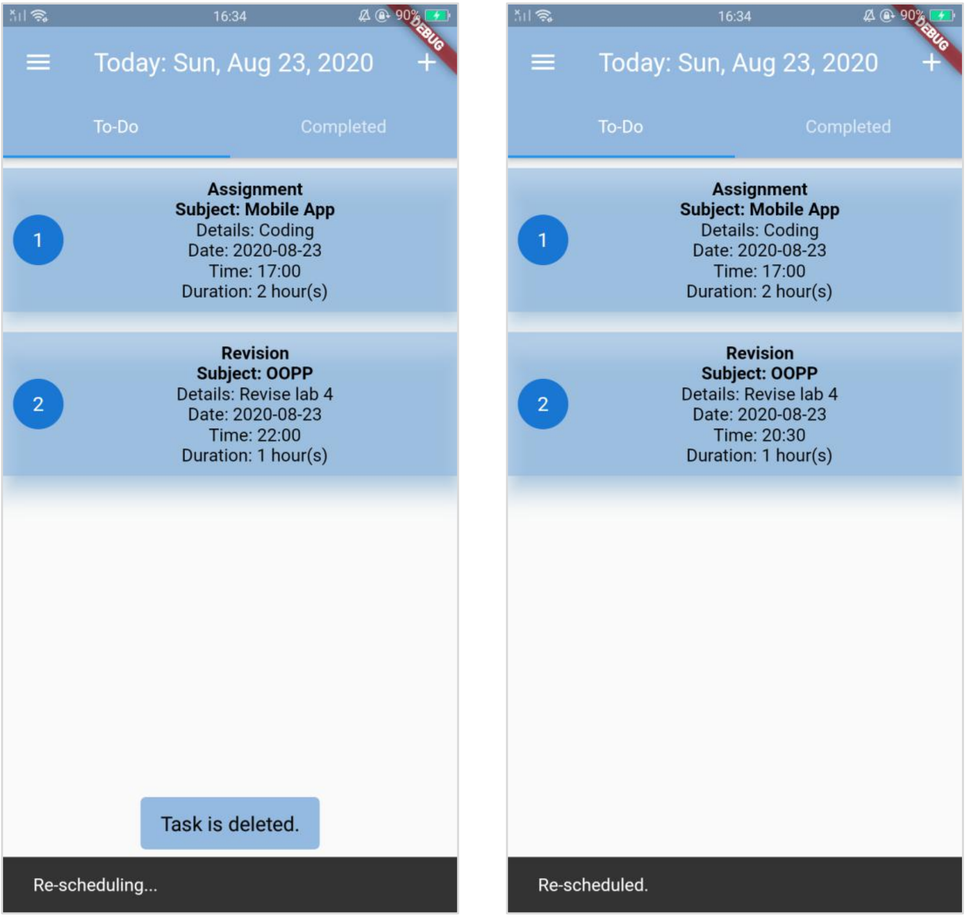
Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 22:00
Duration: 1 hour(s)

Do you want to delete the task?

No Yes

Figure 4-2-3-11: Interface of Delete Task.

Figure 4-2-3-11 shows the delete task interface of the proposed application. When user swipes left to delete a task, a dialog box is displayed to prompt user to confirm the action.



16:34 90%

Today: Sun, Aug 23, 2020

To-Do Completed

1
Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

2
Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 22:00
Duration: 1 hour(s)

Task is deleted.

Re-scheduling...

16:34 90%

Today: Sun, Aug 23, 2020

To-Do Completed

1
Assignment
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

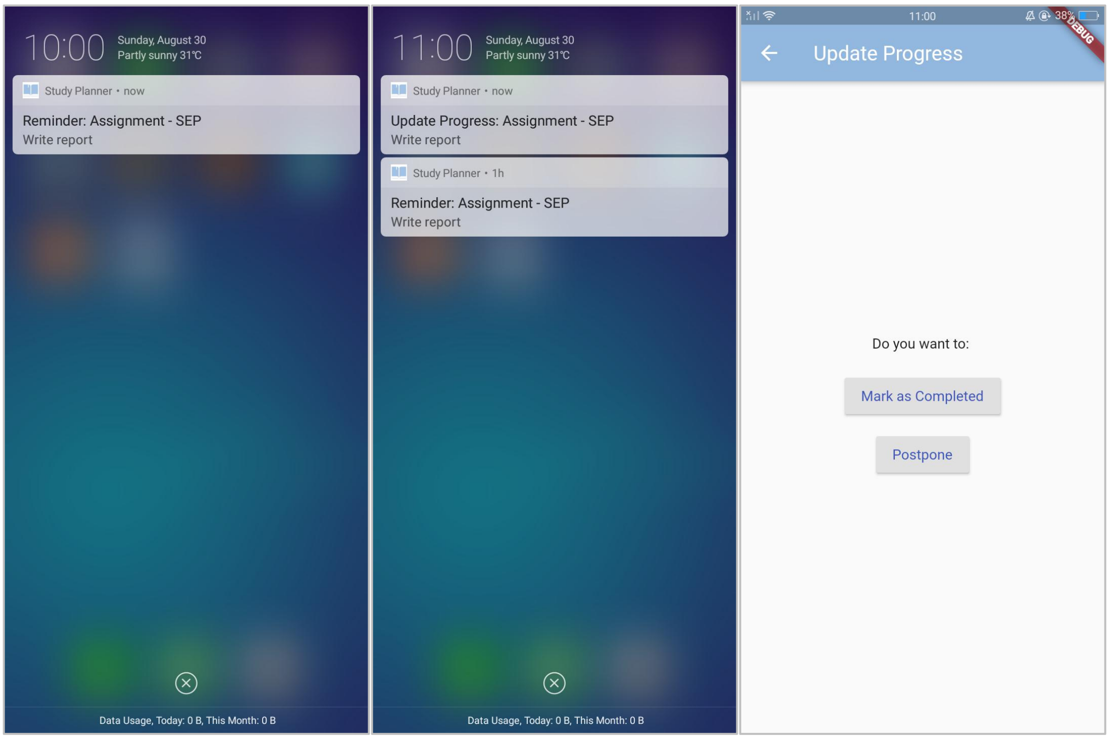
2
Revision
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 20:30
Duration: 1 hour(s)

Re-scheduled.

Figure 4-2-3-12: Interface of Delete Task (Continued).

Figure 4-2-3-12 shows the continuation of delete task interface of the proposed application. Once user confirmed the deletion in Figure 4-2-3-11, the selected task will be deleted from database and rescheduling is performed on the ongoing tasks.

4.2.4 Task Notification Module



10:00 Sunday, August 30 Partly sunny 31℃

Study Planner • now
Reminder: Assignment - SEP
Write report

Data Usage, Today: 0 B, This Month: 0 B

11:00 Sunday, August 30 Partly sunny 31℃

Study Planner • now
Update Progress: Assignment - SEP
Write report

Study Planner • 1h
Reminder: Assignment - SEP
Write report

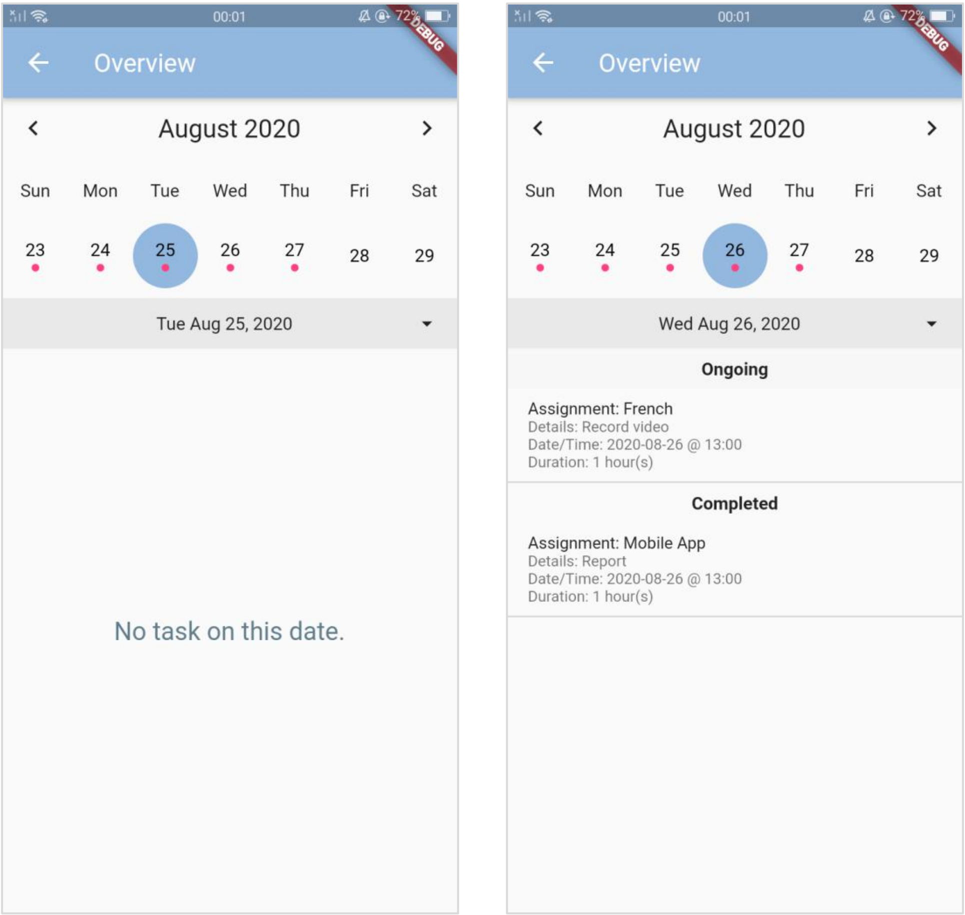
Data Usage, Today: 0 B, This Month: 0 B

Do you want to:

Figure 4-2-4-1: Interface of Notify Task.

Figure 4-2-4-1 shows the notify task interface of the proposed application. A notification is sent to user on the scheduled time. Once the duration is up, a second duration is sent to remind user to update the progress. User clicks on the notification to update the progress and is navigated to the update progress interface by the application. User can choose to either mark the task as completed or postpone the task if they are not able to carry out the task on the scheduled time. If user selects “Mark as Completed”, the task will be updated as ‘Completed’ in the database. If user selects to postpone the task, the interfaces involved will be the same as the interfaces of Edit Task (Figure 4-2-3-9).

4.2.5 Overview Module



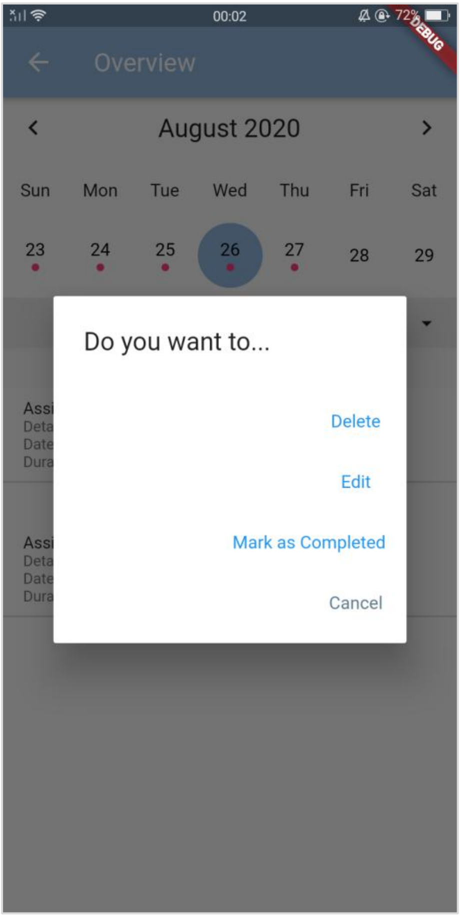
No task on this date.

Assignment: French
Details: Record video
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Assignment: Mobile App
Details: Report
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Figure 4-2-5-1: Interface of Overview Page.

Figure 4-2-5-1 shows the overview page interface of the proposed application. User is navigated to this interface when he clicks the "Overview" option in the side navigation bar. The figure shows different interfaces of overview page when it is without and with the existence of tasks. On this interface, user is able to view all the past and ongoing tasks by selecting a date.



Do you want to...

Delete

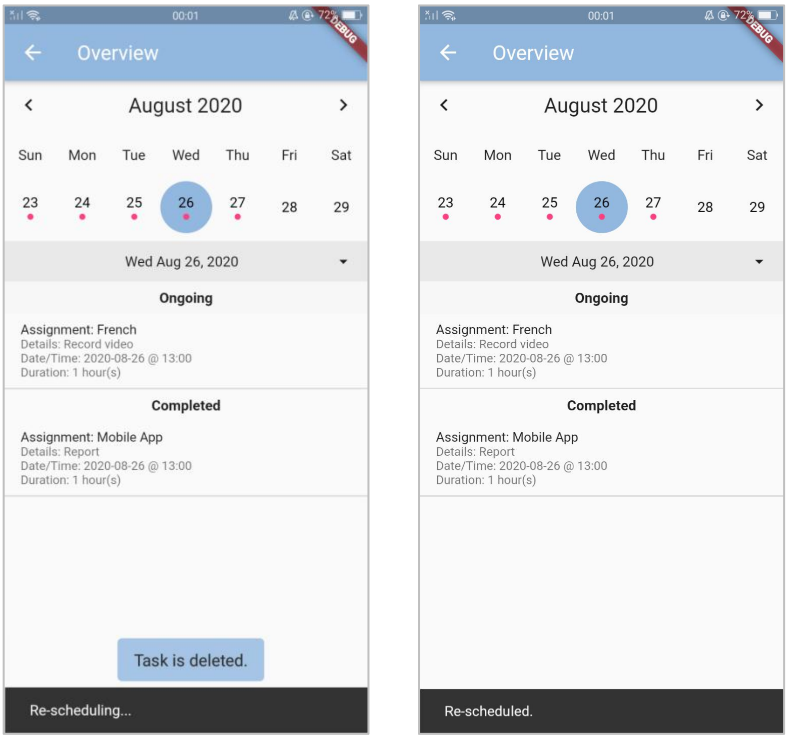
Edit

Mark as Completed

Cancel

Figure 4-2-5-2: Interface of Overview Page (Continued).

Figure 4-2-5-2 shows the continuation of overview page interface of the proposed application. On this interface, user also able to modify the tasks by clicking on a specific task. The modification includes deleting a task, editing a task and marking a task as completed. The interfaces after user deletes a task successfully is shown in Figure 4-2-5-3; edits a task successfully is shown in Figure 4-2-5-4; marks a task as completed is shown in Figure 4-2-5-5.



Wed Aug 26, 2020

Ongoing

Assignment: French
Details: Record video
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Completed

Assignment: Mobile App
Details: Report
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Task is deleted.

Re-scheduling...

Wed Aug 26, 2020

Ongoing

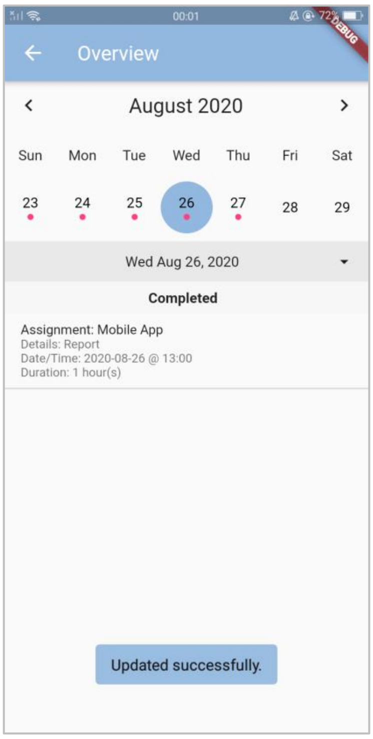
Assignment: French
Details: Record video
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Completed

Assignment: Mobile App
Details: Report
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Re-scheduled.

Figure 4-2-5-3: Interface of Overview Page (Delete Task).



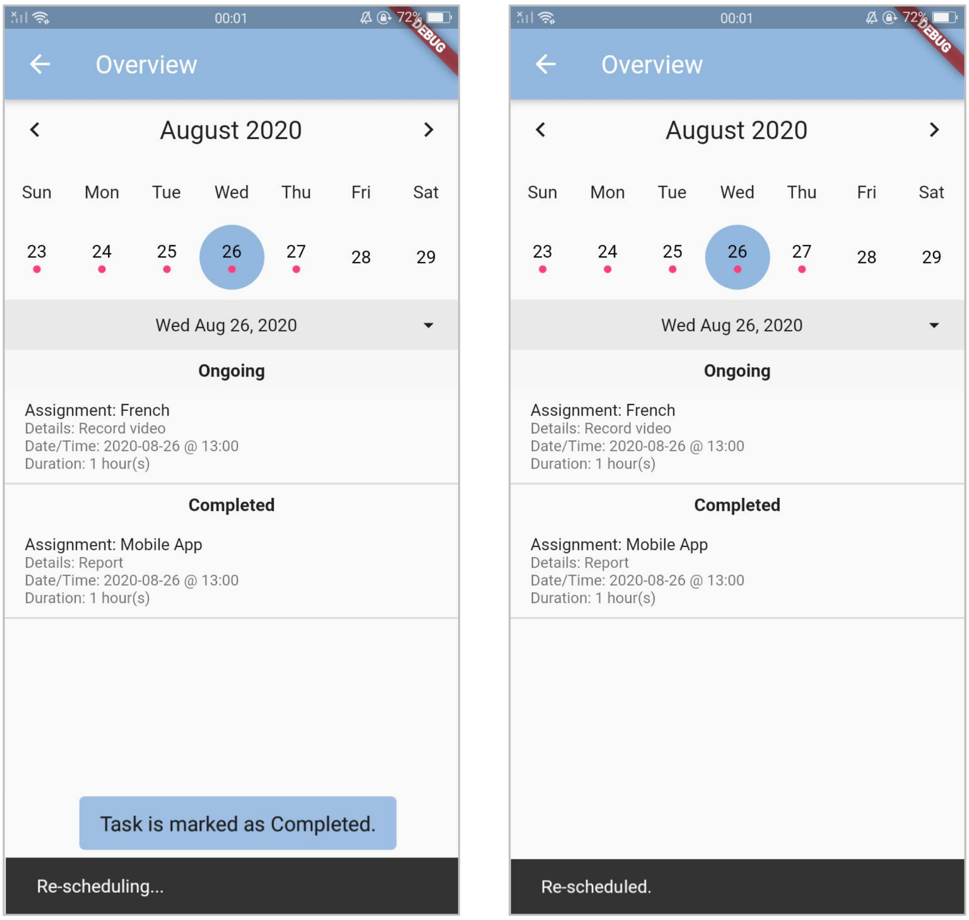
Wed Aug 26, 2020

Completed

Assignment: Mobile App
Details: Report
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Updated successfully.

Figure 4-2-5-4: Interface of Overview Page (Edit).



Ongoing

Assignment: French
Details: Record video
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Completed

Assignment: Mobile App
Details: Report
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Task is marked as Completed.

Re-scheduling...

Ongoing

Assignment: French
Details: Record video
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Completed

Assignment: Mobile App
Details: Report
Date/Time: 2020-08-26 @ 13:00
Duration: 1 hour(s)

Re-scheduled.

Figure 4-2-5-5: Interface of Overview Page (Mark as completed).

4.3 Data Storage Design

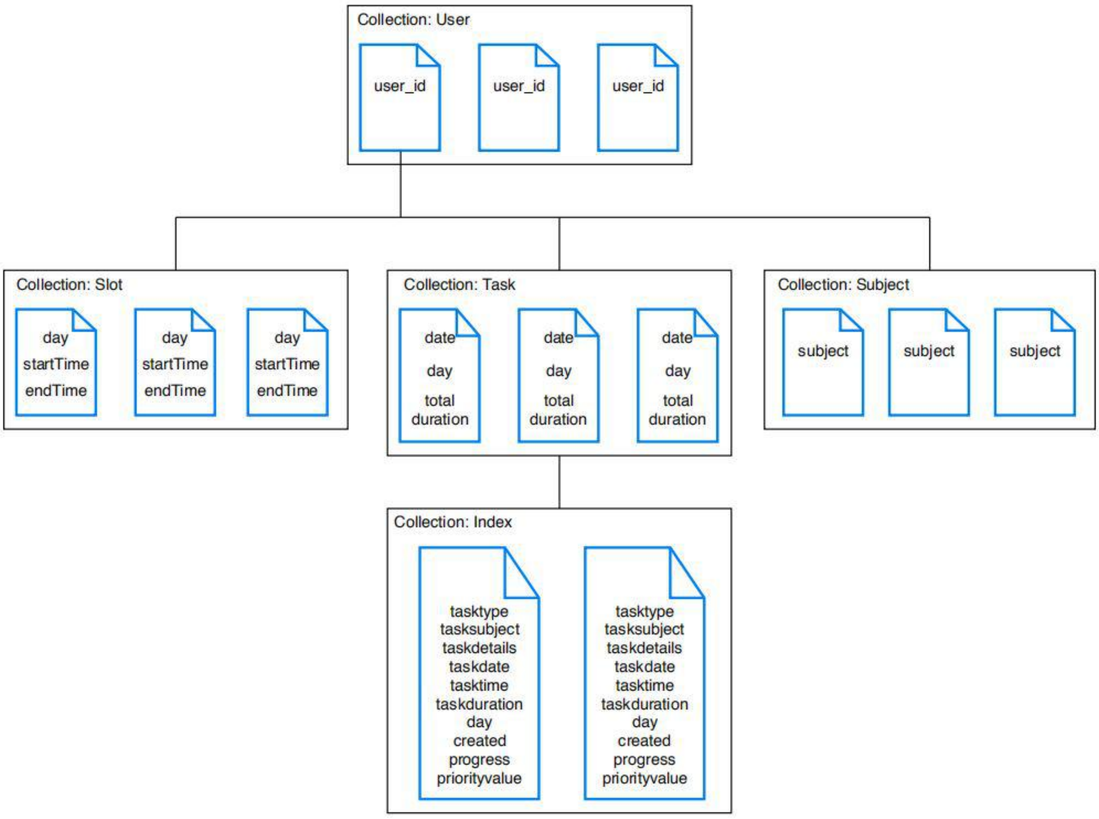


Figure 4-3-1: Data Storage Design

Cloud Firestore is a NoSQL, document-oriented database to store and sync data for client-side and server-side development (Firebase, 2020). All data is stored in documents, which are then organized into collections.

Upon successful registration, a unique “user_id” will be assigned to each combination of email address and password. It is stored as a document in the “User” collection. Each document represents one user.

When user creates a slot, the details of the slot is stored in the “Slot” collection. Each document represents one slot. The data in this collection will be retrieved when implementing functions such as time scheduling, getting next available date, validates if there are any slot clashes, validates if the slots are enough for added tasks and validates if a slot is safe to delete.

In the “Task” collection, each document contains the overall task information of a specific date. The data stored in this collection will be retrieved when validating if a slot is safe to delete.

All the created tasks of the specific date are stored in the “Index” collection. Each document represents one task. The data stored in this collection will be retrieved to trigger notification, display at calendar and home page, get next available date and time scheduling.

The “Subject” collection stores the subjects which user inputs when creating a task as a document. During creating task process, autocomplete function is enabled in subject field to make user inputs more convenient. Therefore, the data in this collection is retrieved for the autocomplete function.

CHAPTER 5: SYSTEM TESTING

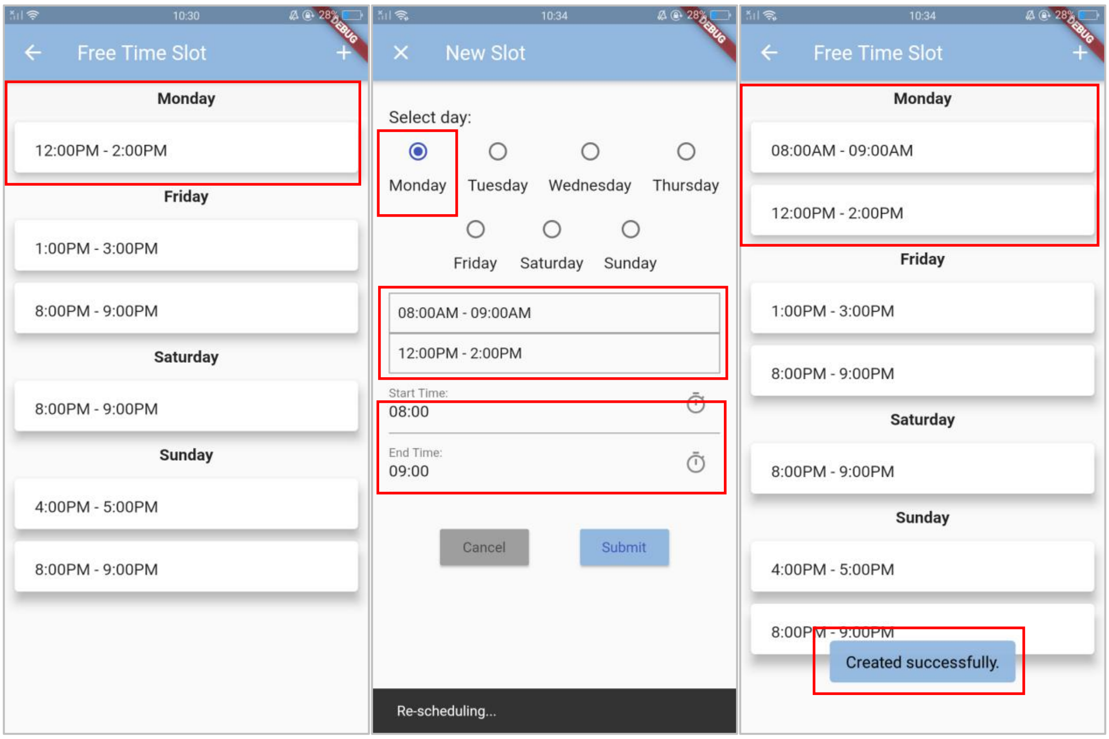
Unit testing was carried out on individual functions of each module. The test cases of each individual function and results of testing are further recorded in the tables of the following sub chapters.

5.1 Slot Management Module

5.1.1 Add Slot

Project Name	Mobile Student Study Planner	
Module Name	Slot Management Module	
Reference Document	add.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_SMM_001	
Test Scenario	To verify the functionality of add slot and correctness of outputs.	
Test Case Description	Test the functionality of add slot (valid start time, valid end time).	
Pre-condition	1. User is logged in to the application.	
Expected Result	The application shall display message “Created Successfully” indicating the function is succeeded. Rescheduling is performed on ongoing tasks (if any) and all changes made are saved to database.	
Actual Result	The application displays message “Created Successfully” indicating the function is succeeded. Rescheduling is performed on ongoing tasks and all changes made are saved to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Selects a day from the options given.		“Monday”
2. Displays all the slots of the selected day on the UI.		“Monday”
3. Inputs a valid start time.		08:00
4. Inputs a valid end time.		09:00
5. Clicks “Submit” button.		Submit

Table 5-1-1-1: Test Cases for Slot Management Module: Add Slot.



Monday

12:00PM - 2:00PM

Friday

1:00PM - 3:00PM

8:00PM - 9:00PM

Saturday

8:00PM - 9:00PM

Sunday

4:00PM - 5:00PM

8:00PM - 9:00PM

Select day:

● Monday ○ Tuesday ○ Wednesday ○ Thursday

○ Friday ○ Saturday ○ Sunday

08:00AM - 09:00AM

12:00PM - 2:00PM

Start Time:
08:00

End Time:
09:00

Re-scheduling...

Monday

08:00AM - 09:00AM

12:00PM - 2:00PM

Friday

1:00PM - 3:00PM

8:00PM - 9:00PM

Saturday

8:00PM - 9:00PM

Sunday

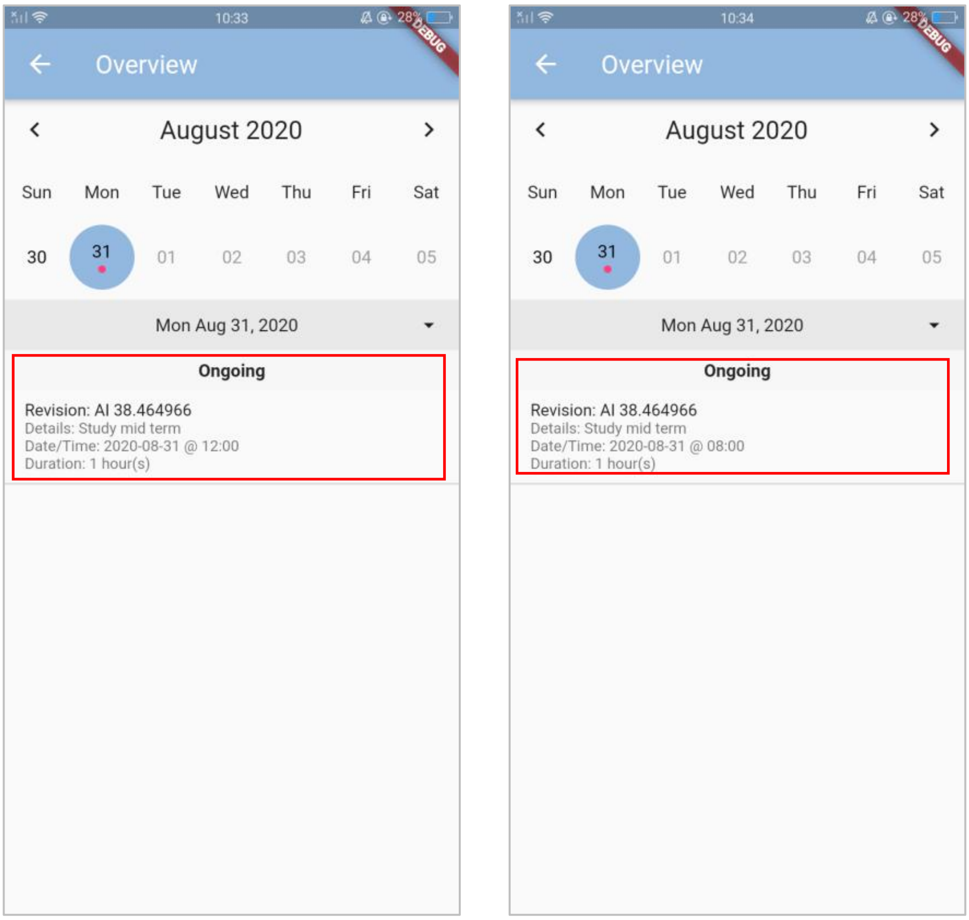
4:00PM - 5:00PM

8:00PM - 9:00PM

Created successfully.

Figure 5-1-1-1: Test Results of TC_SMM_001.

First picture in Figure 5-1-1-1 shows the slots before adding a new slot from 08:00AM - 09:00AM. Upon adding a new slot, rescheduling is performed on ongoing tasks in second picture and all changes made are saved to database. Then, the application displays message “Created Successfully” indicating the function is succeeded. The slot for 08:00AM - 09:00AM is created successfully.



Ongoing

Revision: AI 38.464966
Details: Study mid term
Date/Time: 2020-08-31 @ 12:00
Duration: 1 hour(s)

Ongoing

Revision: AI 38.464966
Details: Study mid term
Date/Time: 2020-08-31 @ 08:00
Duration: 1 hour(s)

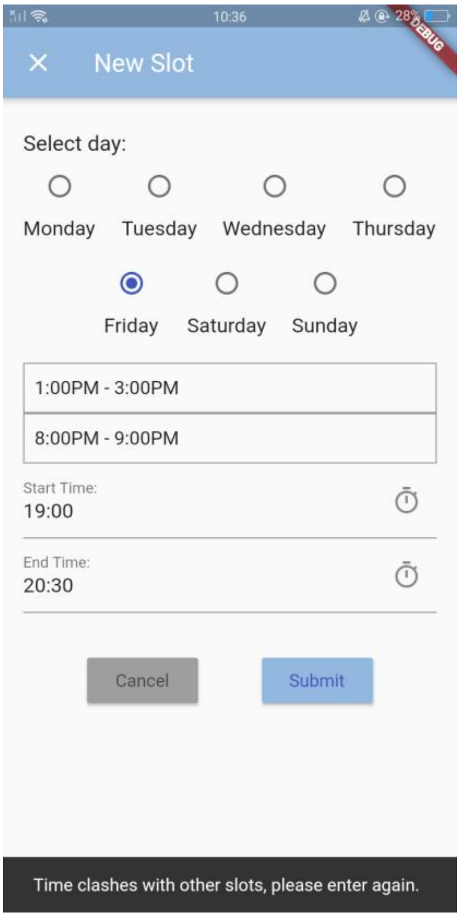
Figure 5-1-1-2: Test Results of TC_SMM_001.

First picture shows the current assigned time of the task before the new slot in Figure 5-1-1-1 is added is 12:00PM. After the slot of 08:00AM is added, rescheduling is done correctly where the assigned time of the task is rescheduled to 08:00AM. Therefore test results of TC_SMM_001 is "Pass" as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Slot Management Module
Reference Document	add.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_SMM_002
Test Scenario	To verify the functionality of add slot and correctness of outputs.
Test Case Description	Test the functionality of add slot (valid start time, invalid end time).
Pre-condition	1. User is logged in to the application.
Expected Result	Error message is displayed.
Actual Result	Error message is displayed.
Test Result	Pass

Test Steps	**Test Data**
1. Selects a day from the options	“Friday”
2. Displays all the slots of the selected day on the UI.	“Friday”
3. Inputs a valid start time.	19:00
4. Inputs an invalid end time.	20:30
5. Clicks “Submit” button.	Submit

Table 5-1-1-2: Test Cases for Slot Management Module: Add Slot.



Select day:

○ Monday ○ Tuesday ○ Wednesday ○ Thursday

● Friday ○ Saturday ○ Sunday

1:00PM - 3:00PM

8:00PM - 9:00PM

Start Time:
19:00

End Time:
20:30

Time clashes with other slots, please enter again.

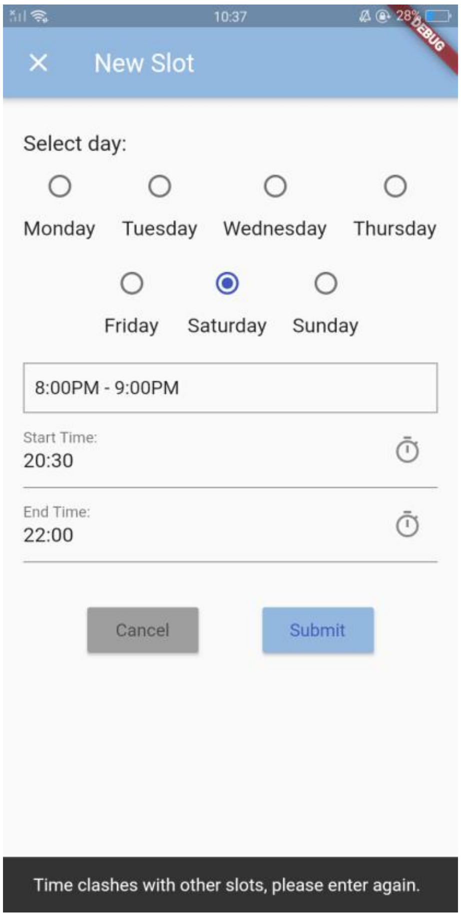
Figure 5-1-1-3: Test Results of TC_SMM_002.

Figure 5-1-1-3 shows an error message is displayed when valid start time (19:00) and invalid end time (20:30) as inputs. Therefore, the test results of TC_SMM_002 is "Pass" as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Slot Management Module
Reference Document	add.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_SMM_003
Test Scenario	To verify the functionality of add slot and correctness of outputs.
Test Case Description	Test the functionality of add slot (invalid start time, valid end time).
Pre-condition	1. User is logged in to the application
Expected Result	Error message is displayed.
Actual Result	Error message is displayed.
Test Result	Pass

Test Steps	**Test Data**
1. Selects a day from the options	“Saturday”
2. Displays all the slots of the selected day on the UI.	“Saturday”
3. Inputs an invalid start time.	20:30
4. Inputs a valid end time.	22:00
5. Clicks “Submit” button.	Submit

Table 5-1-1-3: Test Cases for Slot Management Module: Add Slot.



New Slot

Select day:

○ Monday ○ Tuesday ○ Wednesday ○ Thursday

○ Friday ● Saturday ○ Sunday

8:00PM - 9:00PM

Start Time:
20:30

End Time:
22:00

Time clashes with other slots, please enter again.

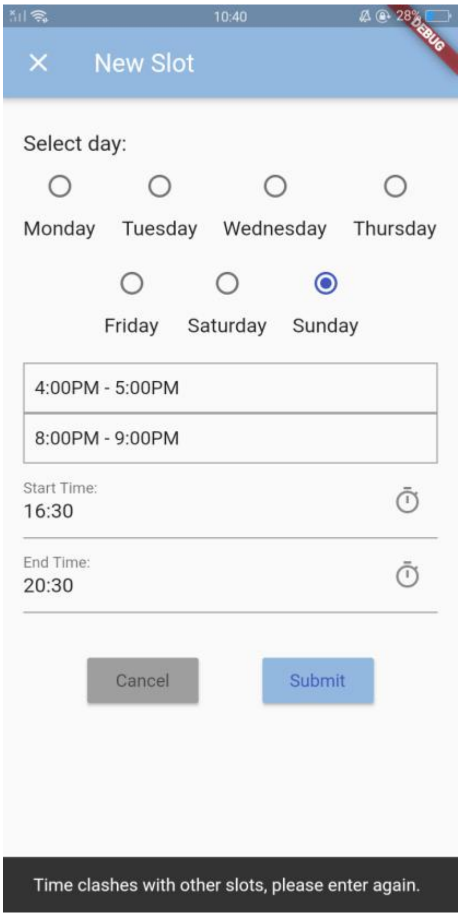
Figure 5-1-1-4: Test Results of TC_SMM_003.

Figure 5-1-1-4 shows an error message is displayed when invalid start time (20:30) and valid end time (22:00) as inputs. Therefore, the test results of TC_SMM_003 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Slot Management Module
Reference Document	add.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_SMM_004
Test Scenario	To verify the functionality of add slot and correctness of outputs.
Test Case Description	Test the functionality of add slot (invalid start time, invalid end time).
Pre-condition	1. User is logged in to the application
Expected Result	Error message is displayed.
Actual Result	Error message is displayed.
Test Result	Pass

Test Steps	**Test Data**
1. Selects a day from the options	“Sunday”
2. Displays all the slots of the selected day on the UI.	“Sunday”
3. Inputs an invalid start time.	16:00
4. Inputs an invalid end time.	20:30
5. Clicks “Submit” button.	Submit

Table 5-1-1-4: Test Cases for Slot Management Module: Add Slot.



Select day:

○ Monday ○ Tuesday ○ Wednesday ○ Thursday

○ Friday ○ Saturday ● Sunday

4:00PM - 5:00PM

8:00PM - 9:00PM

Start Time:
16:30

End Time:
20:30

Time clashes with other slots, please enter again.

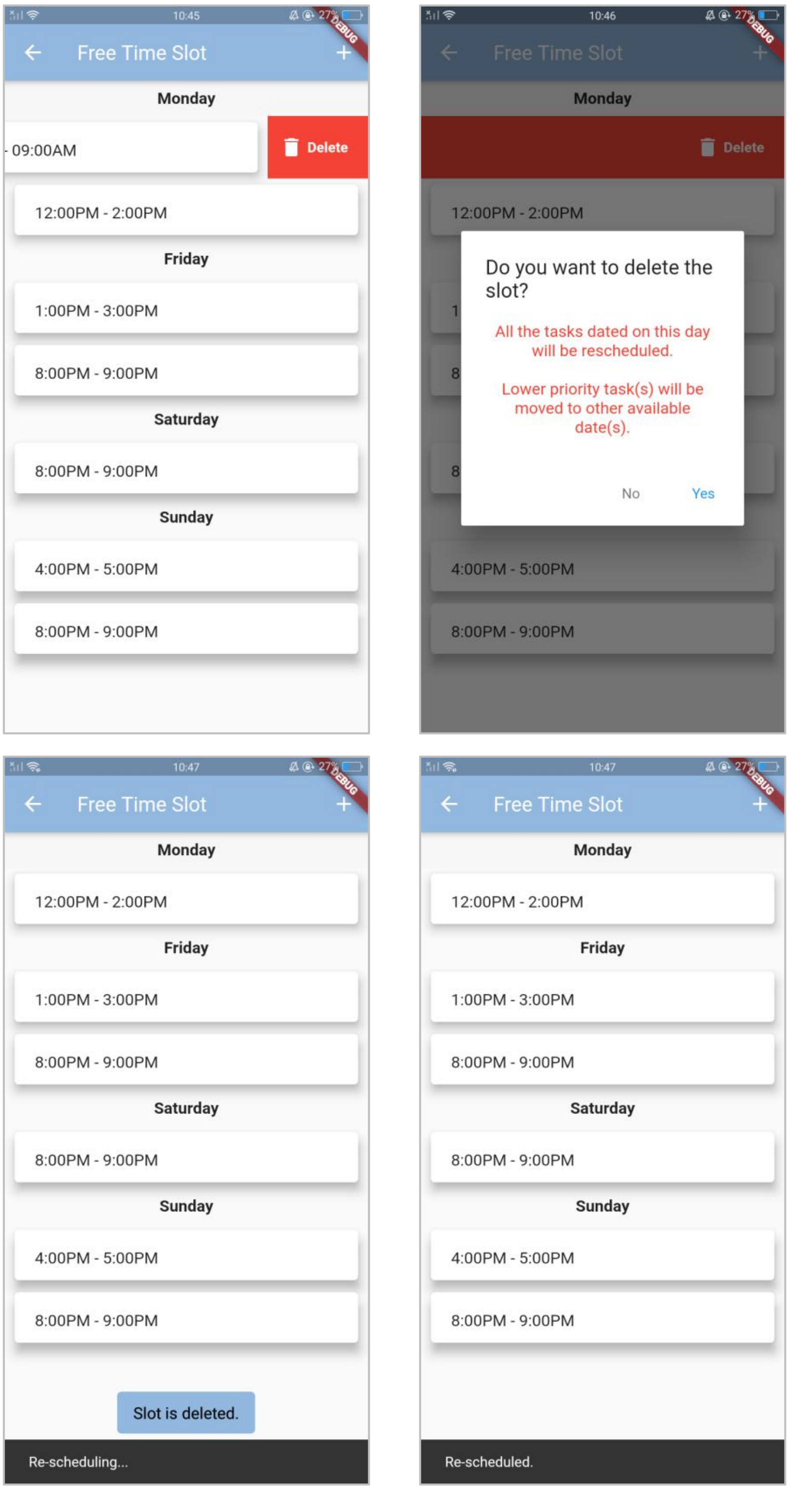
Figure 5-1-1-5: Test Results of TC_SMM_004.

Figure 5-1-1-5 shows an error message is displayed when invalid start time (16:30) and invalid end time (20:30) as inputs. Therefore, the test results of TC_SMM_004 is “Pass” as actual result met the expected result.

5.1.2 Delete Slot

Project Name	Mobile Student Study Planner	
Module Name	Slot Management Module	
Reference Document	freetime.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_SMM_005	
Test Scenario	To verify the functionality of delete slot and correctness of outputs.	
Test Case Description	Test the functionality of delete slot (confirm delete, no task is affected).	
Pre-condition	1. User is logged in to the application.	
Expected Result	The slot will be deleted from database and message "Slot is deleted" is displayed. Rescheduling is performed on ongoing tasks (if any) and all changes made are saved to database.	
Actual Result	The slot is deleted from database and message "Slot is deleted" is displayed. Rescheduling is performed on ongoing tasks and all changes made are saved to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Slides a specific slot to delete.		"Monday 8:00AM - 9:00AM"
2. Click yes		Yes

Table 5-1-2-1: Test Cases for Slot Management Module: Delete Slot.



Monday

- 09:00AM

12:00PM - 2:00PM

Friday

1:00PM - 3:00PM

8:00PM - 9:00PM

Saturday

8:00PM - 9:00PM

Sunday

4:00PM - 5:00PM

8:00PM - 9:00PM

Do you want to delete the slot?

All the tasks dated on this day will be rescheduled.

Lower priority task(s) will be moved to other available date(s).

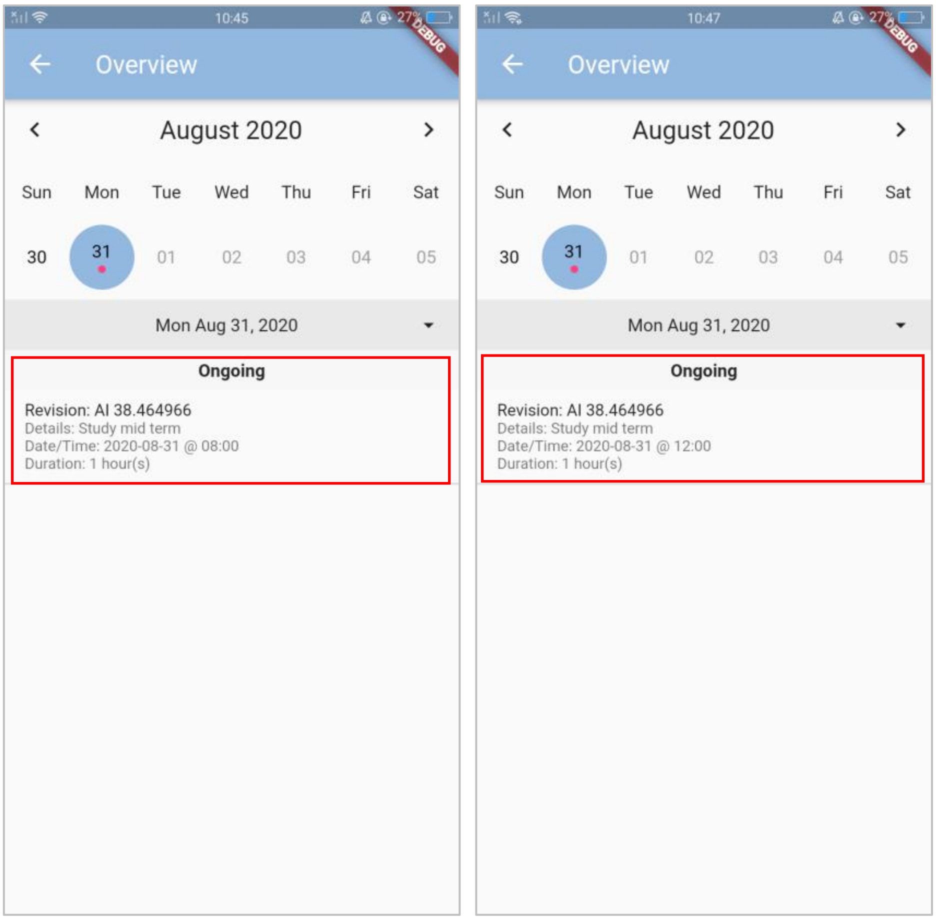
Slot is deleted.

Re-scheduling...

Re-scheduled.

Figure 5-1-2-1: Test Results of TC_SMM_005.

First picture in Figure 5-1-2-1 shows that a Monday slot of 08:00AM - 09:00AM is deleted. An alert dialog will be popped out to let user confirm the action. Once user clicks yes, the slot is deleted from database and message “Slot is deleted” is displayed. Rescheduling is performed on ongoing tasks and all changes made are saved to database.



Revision: AI 38.464966
Details: Study mid term
Date/Time: 2020-08-31 @ 08:00
Duration: 1 hour(s)

Revision: AI 38.464966
Details: Study mid term
Date/Time: 2020-08-31 @ 12:00
Duration: 1 hour(s)

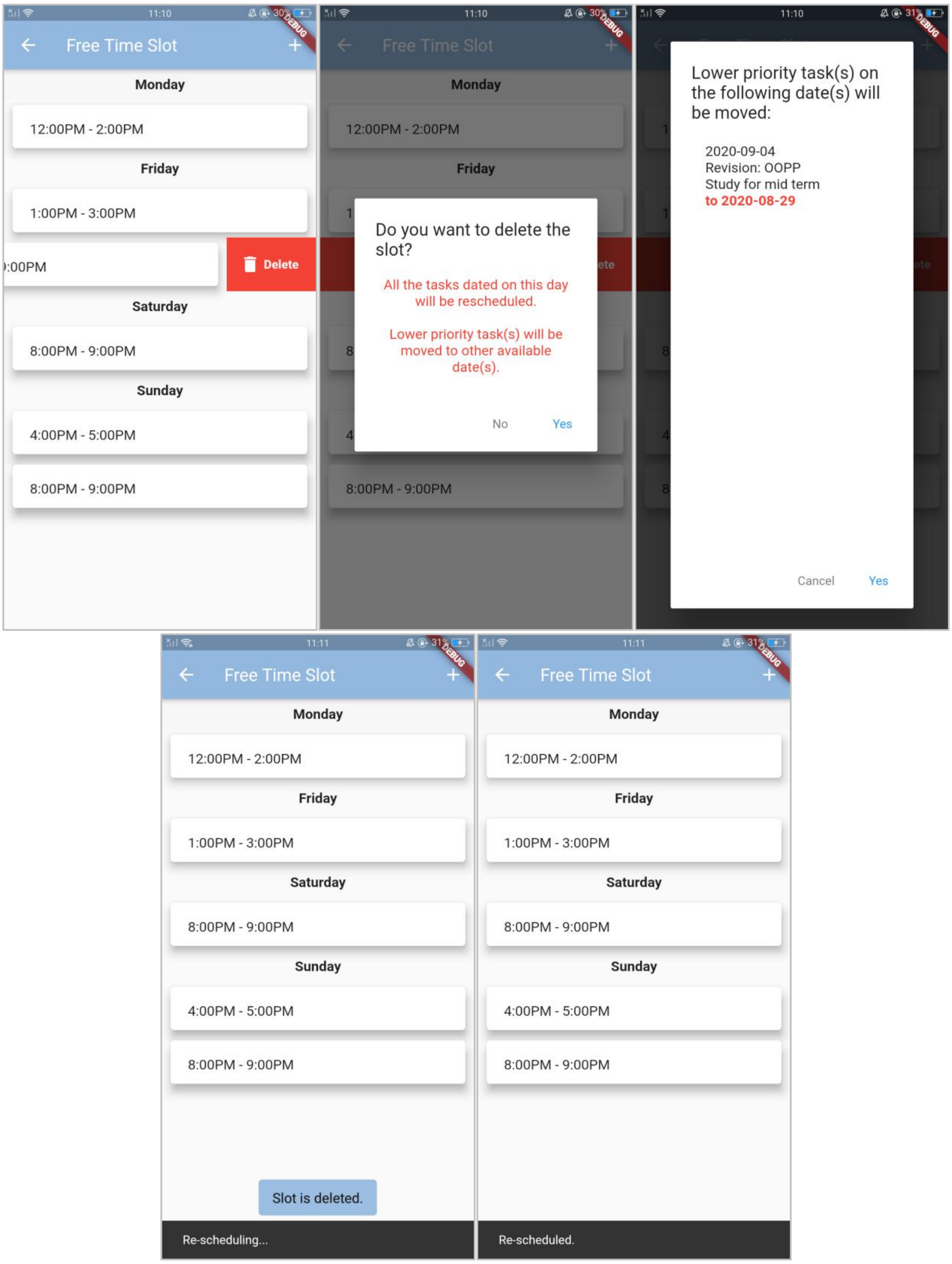
Figure 5-1-2-2: Test Results of TC_SMM_005.

First picture shows the current assigned time of the task before the new slot in Figure 5-1-2-2 is added is 08:00AM. After the slot of 08:00AM is deleted, rescheduling is done correctly where the assigned time of the task is rescheduled to 12:00PM. Therefore test results of TC_SMM_005 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Slot Management Module
Reference Document	freetime.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_SMM_006
Test Scenario	To verify the functionality of delete slot and correctness of outputs.
Test Case Description	Test the functionality of delete slot (confirm delete, has affected task).
Pre-condition	1. User is logged in to the application.
Expected Result	The application shall reschedule all the tasks on the affected dates and move lower priority task to the assigned date. All changes made are saved to database.
Actual Result	The application reschedules all the tasks on the affected dates and move lower priority task to the assigned date. All changes made are saved to database.
Test Result	Pass

Test Steps	**Test Data**
1. Slides a specific slot to delete.	“Friday 8:00PM - 9:00PM”
2. Click yes	Yes
3. Click yes	Yes

Table 5-1-2-2: Test Cases for Slot Management Module: Delete Slot.



Do you want to delete the slot?

All the tasks dated on this day will be rescheduled.

Lower priority task(s) will be moved to other available date(s).

Lower priority task(s) on the following date(s) will be moved:

2020-09-04
Revision: OOPP
Study for mid term
to 2020-08-29

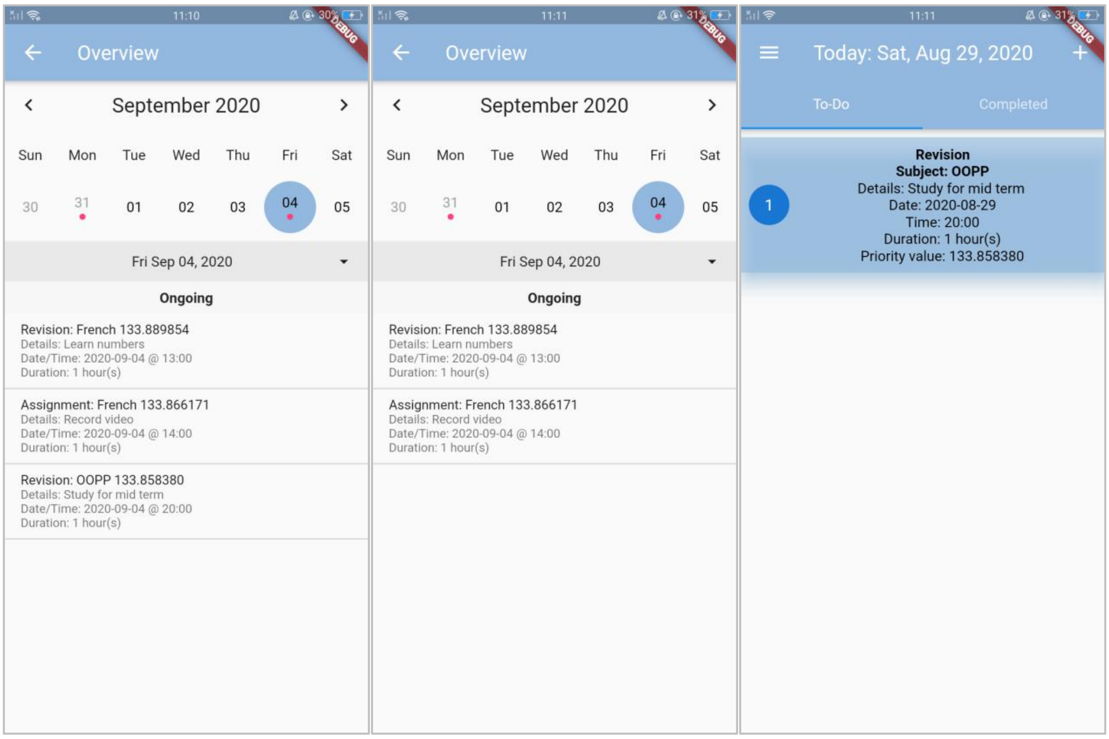
Slot is deleted.

Re-scheduling...

Re-scheduled.

Figure 5-1-2-3: Test Results of TC_SMM_006.

First picture in Figure 5-1-2-3 shows that a Friday slot of 08:00PM - 09:00PM is deleted. An alert dialog will be popped out to let user confirm the action. Once user clicks yes, the application validates that there is task which will be affected if this slot is deleted. An alert dialog to notify user about the changes is popped out. Once user clicks yes, the application reschedules all the tasks on the affected dates and move affected task with lower priority (Figure 5-1-2-4) to the assigned date. All changes made are saved to database.



Overview

September 2020

Sun Mon Tue Wed Thu Fri Sat

30 31 01 02 03 04 05

Fri Sep 04, 2020

Ongoing

Revision: French 133.889854
Details: Learn numbers
Date/Time: 2020-09-04 @ 13:00
Duration: 1 hour(s)

Assignment: French 133.866171
Details: Record video
Date/Time: 2020-09-04 @ 14:00
Duration: 1 hour(s)

Revision: OOPP 133.858380
Details: Study for mid term
Date/Time: 2020-09-04 @ 20:00
Duration: 1 hour(s)

Overview

September 2020

Sun Mon Tue Wed Thu Fri Sat

30 31 01 02 03 04 05

Fri Sep 04, 2020

Ongoing

Revision: French 133.889854
Details: Learn numbers
Date/Time: 2020-09-04 @ 13:00
Duration: 1 hour(s)

Assignment: French 133.866171
Details: Record video
Date/Time: 2020-09-04 @ 14:00
Duration: 1 hour(s)

Today: Sat, Aug 29, 2020

To-Do | Completed

1
Revision
Subject: OOPP
Details: Study for mid term
Date: 2020-08-29
Time: 20:00
Duration: 1 hour(s)
Priority value: 133.858380

Figure 5-1-2-4: Test Results of TC_SMM_006.

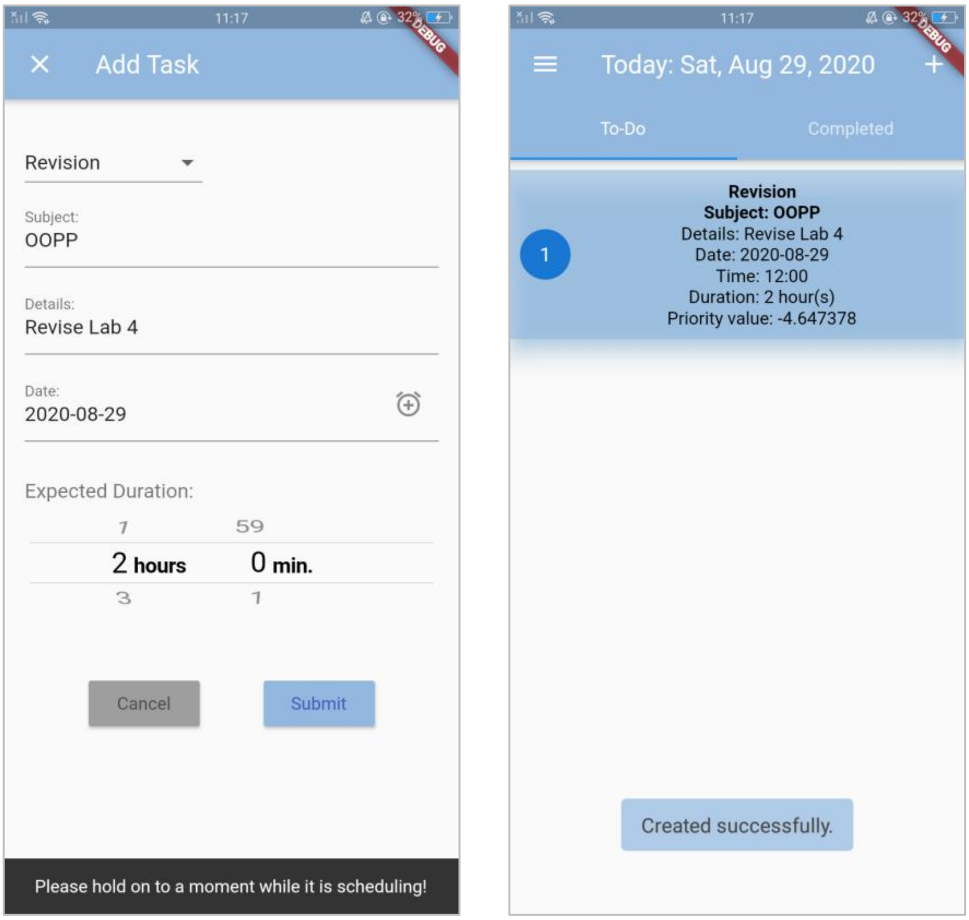
First picture shows all the tasks of the date (4/9/2020) which will be affected if the slot is deleted in Figure 5-1-2-3. Deletion of the slot will result in insufficient slot on this date. Hence, the lower priority task will be moved to an assigned date. From the first picture, the lower priority task identified in the previous section is the correct output. As the slot is deleted, second picture shows that the tasks are rescheduled while third picture shows the affected task is moved to the assigned date. Therefore, the test results of TC_SMM_006 is “Pass” as actual result met the expected result.

5.2 Task Management Module

5.2.1 Add Task

Project Name	Mobile Student Study Planner	
Module Name	Task Management Module	
Reference Document	addtask.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_TMM_001	
Test Scenario	To verify the functionality of add task and correctness of outputs.	
Test Case Description	Test the functionality of add task (enough slot).	
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.	
Expected Result	Message "Created successfully" is displayed. Application shall perform automated task arrangement and time scheduling, then save to database.	
Actual Result	Message "Created successfully" is displayed. Application performs automated task arrangement and time scheduling, then save to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Selects task type from the options given.		"Revision"
2. Inputs Subject.		"OOPP"
3. Inputs Details.		"Revise Lab 4"
4. Inputs Date.		2020-08-29
5. Inputs Duration.		2:00:00.000000
6. Clicks "Submit"		Submit

Table 5-2-1-1: Test Cases for Task Management Module: Add Task.



Revision

Subject:
OOPP

Details:
Revise Lab 4

Date:
2020-08-29

2 hours 0 min.

Please hold on to a moment while it is scheduling!

Revision
Subject: OOPP
Details: Revise Lab 4
Date: 2020-08-29
Time: 12:00
Duration: 2 hour(s)
Priority value: -4.647378

Created successfully.

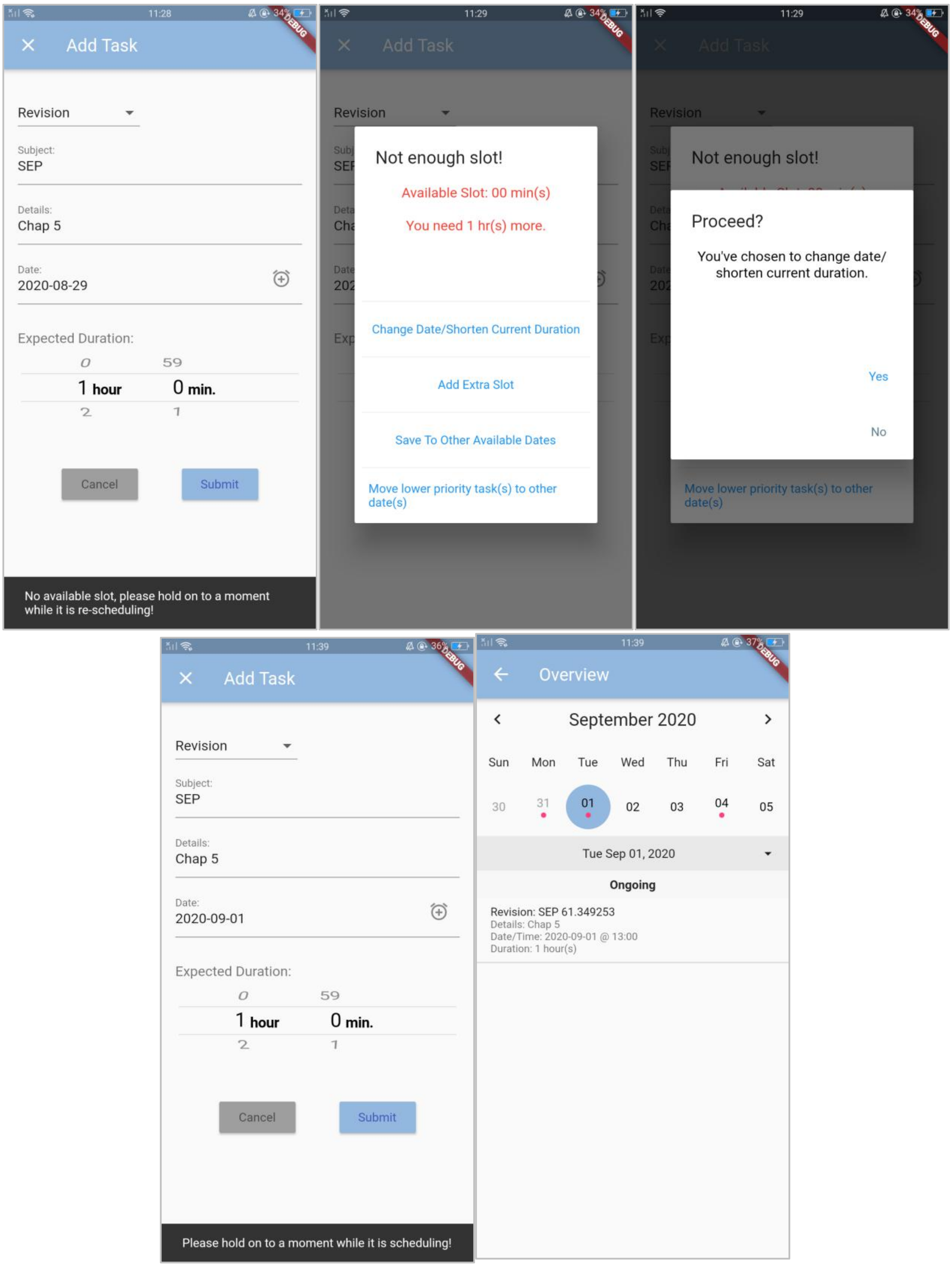
Figure 5-2-1-1: Test Results of TC_TMM_001.

Figure 5-2-1-1 shows that a task is added successfully when there is enough slot to fit in. Message "Created successfully" is displayed. Application performs automated task arrangement in return with higher priority task first and time scheduling to the new task and save to database. Therefore, the test results of TC_TMM_001 is "Pass" as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Task Management Module
Reference Document	addtask.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TMM_002
Test Scenario	To verify the functionality of add task and correctness of outputs.
Test Case Description	Test the functionality of add task (not enough slot, change date/ shorten duration).
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.
Expected Result	The application shall prompt user back to the current add task page to change date or shorten duration. New task will be added to the input date if there is enough slot.
Actual Result	The application prompts user back to the current add task page to change date or shorten duration. New task is added to the input date which with enough slot.
Test Result	Pass

Test Steps	**Test Data**
1. Selects task type from the options given.	“Revision”
2. Inputs Subject.	“SEP”
3. Inputs Details.	“Chap 5”
4. Inputs Date.	2020-08-29
5. Inputs Duration.	1:00:00.000000
6. Clicks “Submit”	Submit
7. Clicks “Change date/shorten duration”	Change date/shorten duration
8. Clicks yes	Yes

Table 5-2-1-2: Test Cases for Task Management Module: Add Task.


11:28
DEBUG
Add Task
Cancel
Submit
11:29
Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)
Yes
No
11:39
Overview
Sun
Mon
Tue
Wed
Thu
Fri
Sat
30
31
01
02
03
04
05

Revision

Subject:
SEP

Details:
Chap 5

Date:
2020-08-29

Expected Duration:
1 hour 0 min.

No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

Proceed?

You've chosen to change date/ shorten current duration.

Revision

Subject:
SEP

Details:
Chap 5

Date:
2020-09-01

Expected Duration:
1 hour 0 min.

Please hold on to a moment while it is scheduling!

September 2020

Tue Sep 01, 2020

Ongoing

Revision: SEP 61.349253
Details: Chap 5
Date/Time: 2020-09-01 @ 13:00
Duration: 1 hour(s)

Figure 5-2-1-2: Test Results of TC_TMM_002.

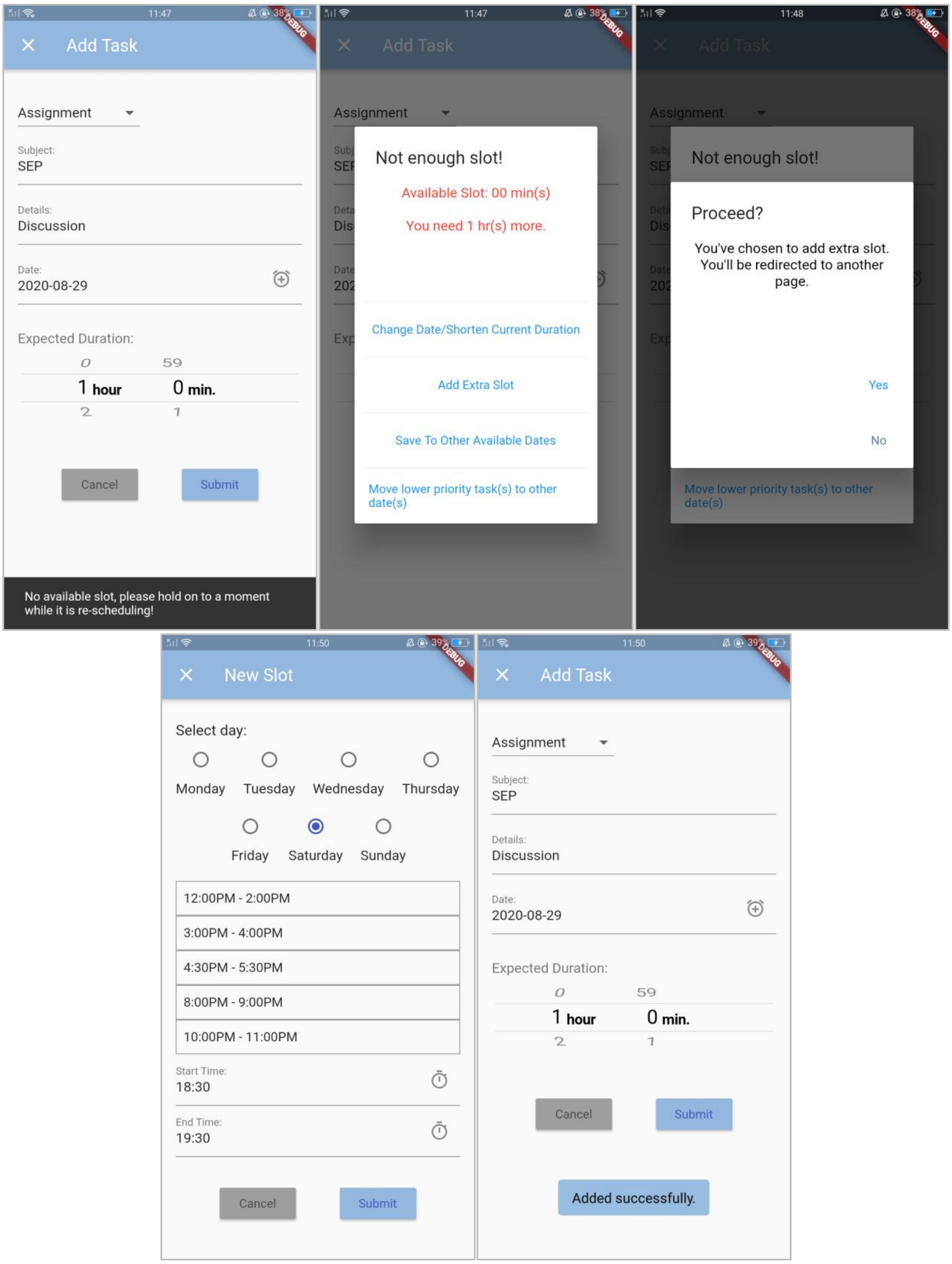
Figure 5-2-1-2 shows that a task is failed to add as there is not enough slot to fit in. An alert dialog is displayed to ask user to choose an action. User chooses change date or shorten duration and confirm the action. The application prompts user back to the current add task page to change date or shorten duration. User changes the date to

2020-09-01 and the new task is successfully added to the input date as there is enough slot. Application performs automated task arrangement in return with higher priority task first and time scheduling to the new task and save to database. Therefore, the test results of TC_TMM_002 is "Pass" as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Task Management Module
Reference Document	addtask.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TMM_003
Test Scenario	To verify the functionality of add task and correctness of outputs.
Test Case Description	Test the functionality of add task (not enough slot, add extra slot).
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.
Expected Result	Application shall prompt user to add slot page. Application shall perform automated task arrangement and time scheduling on the input date, then save to database.
Actual Result	Application prompts user to add slot page. Application performs automated task arrangement and time scheduling on the input date, then save to database.
Test Result	Pass

Test Steps	**Test Data**
1. Selects task type from the options given.	"Assignment"
2. Inputs Subject.	"SEP"
3. Inputs Details.	"Discussion"
4. Inputs Date.	2020-08-29
5. Inputs Duration.	1:00:00.000000
6. Clicks "Submit"	Submit
7. Clicks "Add extra slot"	Add extra slot
8. Clicks yes	Yes
9. Creates a slot	18:30 - 19:30

Table 5-2-1-3: Test Cases for Task Management Module: Add Task.



Add Task
Assignment
Cancel
Submit

Subject: SEP

Details: Discussion

Date: 2020-08-29

Expected Duration: 1 hour 0 min.

No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)

Proceed?

You've chosen to add extra slot. You'll be redirected to another page.

Select day:

○ Monday ○ Tuesday ○ Wednesday ○ Thursday

○ Friday ● Saturday ○ Sunday

12:00PM - 2:00PM

3:00PM - 4:00PM

4:30PM - 5:30PM

8:00PM - 9:00PM

10:00PM - 11:00PM

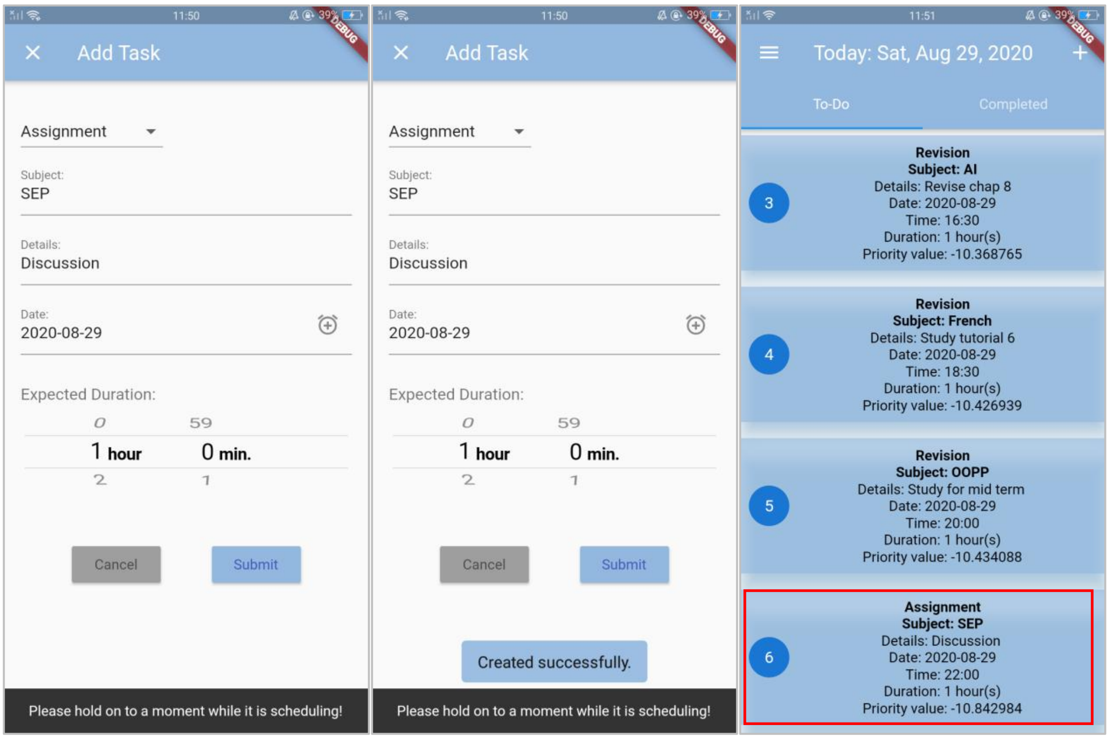
Start Time: 18:30

End Time: 19:30

Added successfully.

Figure 5-2-1-3: Test Results of TC_TMM_003.

Figure 5-2-1-3 shows that a task is failed to add as there is not enough slot to fit in and user chooses to add extra slot. The application prompts user to the add slot page to add a slot. User adds a slot from 06:30PM to 07:30PM. The slot is added successfully.



Add Task

Assignment

Subject: SEP

Details: Discussion

Date: 2020-08-29

Expected Duration: 1 hour 0 min.

Cancel Submit

Please hold on to a moment while it is scheduling!

Add Task

Assignment

Subject: SEP

Details: Discussion

Date: 2020-08-29

Expected Duration: 1 hour 0 min.

Cancel Submit

Created successfully.

Please hold on to a moment while it is scheduling!

Today: Sat, Aug 29, 2020

To-Do Completed

3
Revision
Subject: AI
Details: Revise chap 8
Date: 2020-08-29
Time: 16:30
Duration: 1 hour(s)
Priority value: -10.368765

4
Revision
Subject: French
Details: Study tutorial 6
Date: 2020-08-29
Time: 18:30
Duration: 1 hour(s)
Priority value: -10.426939

5
Revision
Subject: OOPP
Details: Study for mid term
Date: 2020-08-29
Time: 20:00
Duration: 1 hour(s)
Priority value: -10.434088

6
Assignment
Subject: SEP
Details: Discussion
Date: 2020-08-29
Time: 22:00
Duration: 1 hour(s)
Priority value: -10.842984

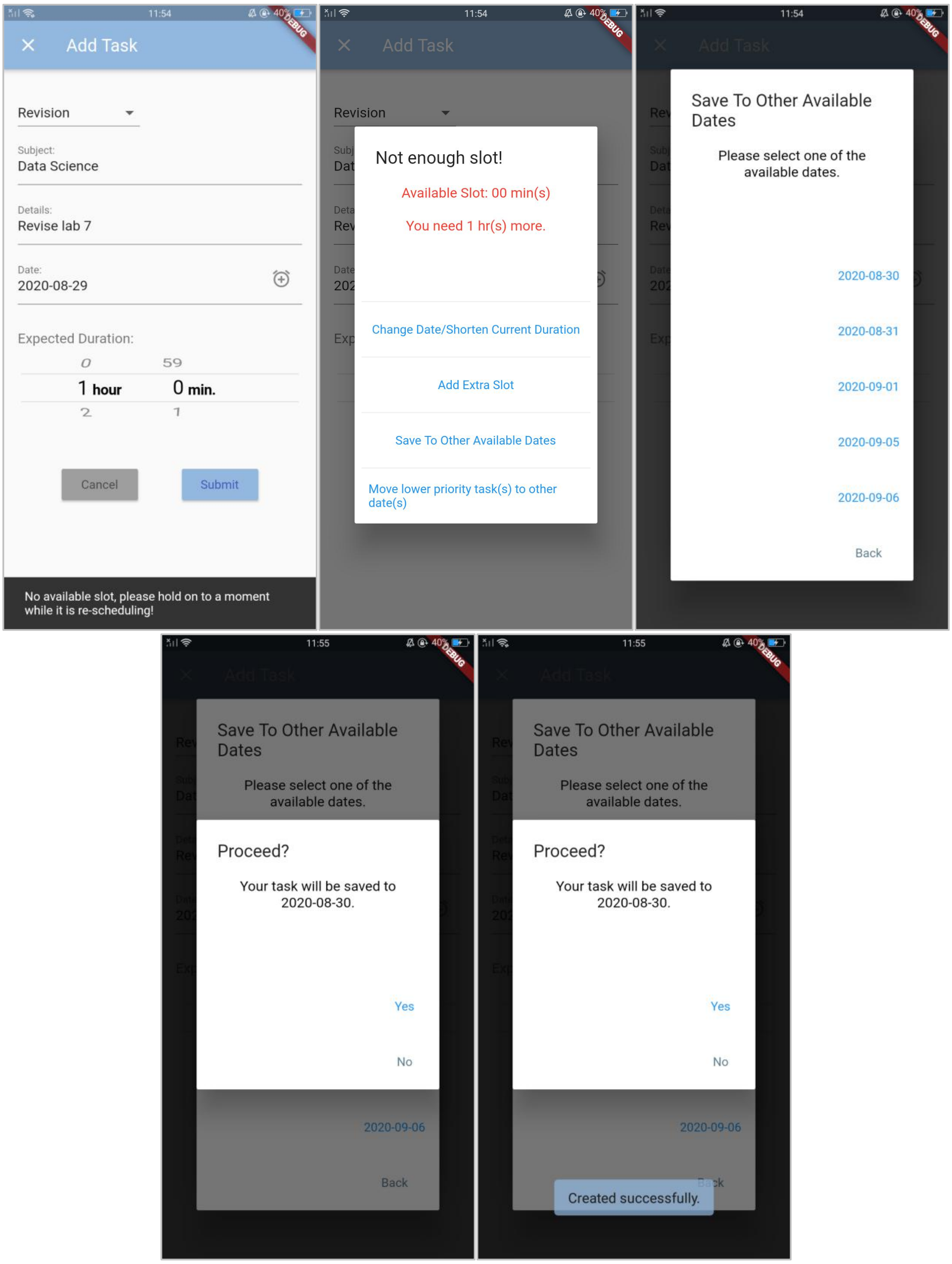
Figure 5-2-1-4: Test Results of TC_TMM_003.

The new task is now can be successfully added to the input date as there is enough slot. Application performs automated task arrangement in return with higher priority task first and time scheduling to the input date and save to database. From the last picture, the new task is placed at last as it has the lowest priority value. Therefore, the test results of TC_TMM_003 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Task Management Module
Reference Document	addtask.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TMM_004
Test Scenario	To verify the functionality of add task and correctness of outputs.
Test Case Description	Test the functionality of add task (not enough slot, save to other dates).
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.
Expected Result	5 suggested dates to User will be shown in dialog box. Application shall perform automated task arrangement and time scheduling on the selected date, then save to database.
Actual Result	5 suggested dates to User is shown in dialog box. Application performs automated task arrangement and time scheduling on the selected date, then save to database.
Test Result	Pass

Test Steps	**Test Data**
1. Selects task type from the options given.	“Revision”
2. Inputs Subject.	“Data Science”
3. Inputs Details.	“Revise lab 7”
4. Inputs Date.	2020-08-29
5. Inputs Duration.	1:00:00.000000
6. Clicks “Submit”	Submit
7. Clicks “Save to other available dates”	Save to other available dates
8. Selects a date	2020-08-30
9. Clicks yes	Yes

Table 5-2-1-4: Test Cases for Task Management Module: Add Task.



Add Task

Revision

Subject: Data Science

Details: Revise lab 7

Date: 2020-08-29

Expected Duration: 1 hour 0 min.

No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

Save To Other Available Dates

Please select one of the available dates.

Proceed?

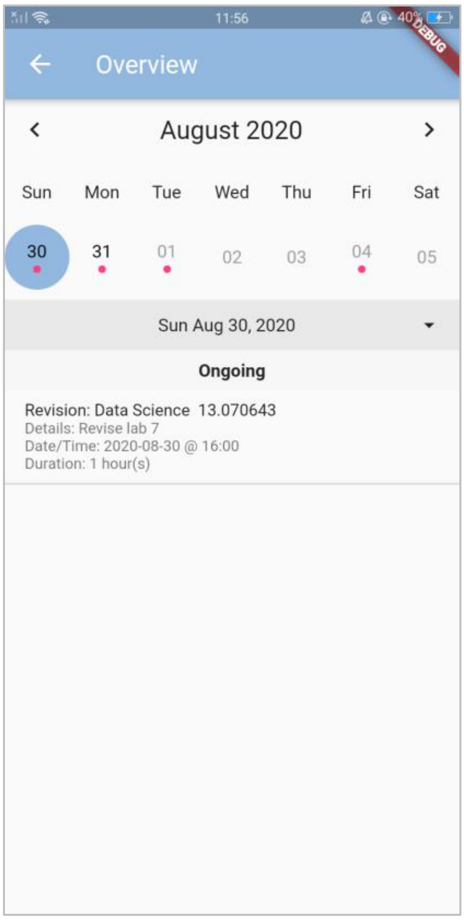
Your task will be saved to 2020-08-30.

Created successfully.

11:54
11:55
DEBUG
Cancel
Submit
Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)
2020-08-30
2020-08-31
2020-09-01
2020-09-05
2020-09-06
Back
Yes
No

Figure 5-2-1-5: Test Results of TC_TMM_004.

Figure 5-2-1-5 shows that a task is failed to add as there is not enough slot to fit in and user chooses to save to other available dates. 5 dates are returned to user. User selects 2020-08-30 and confirm the action. The task is added successfully. Application performs automated task arrangement in return with higher priority task first and time scheduling to the selected date and save to database.



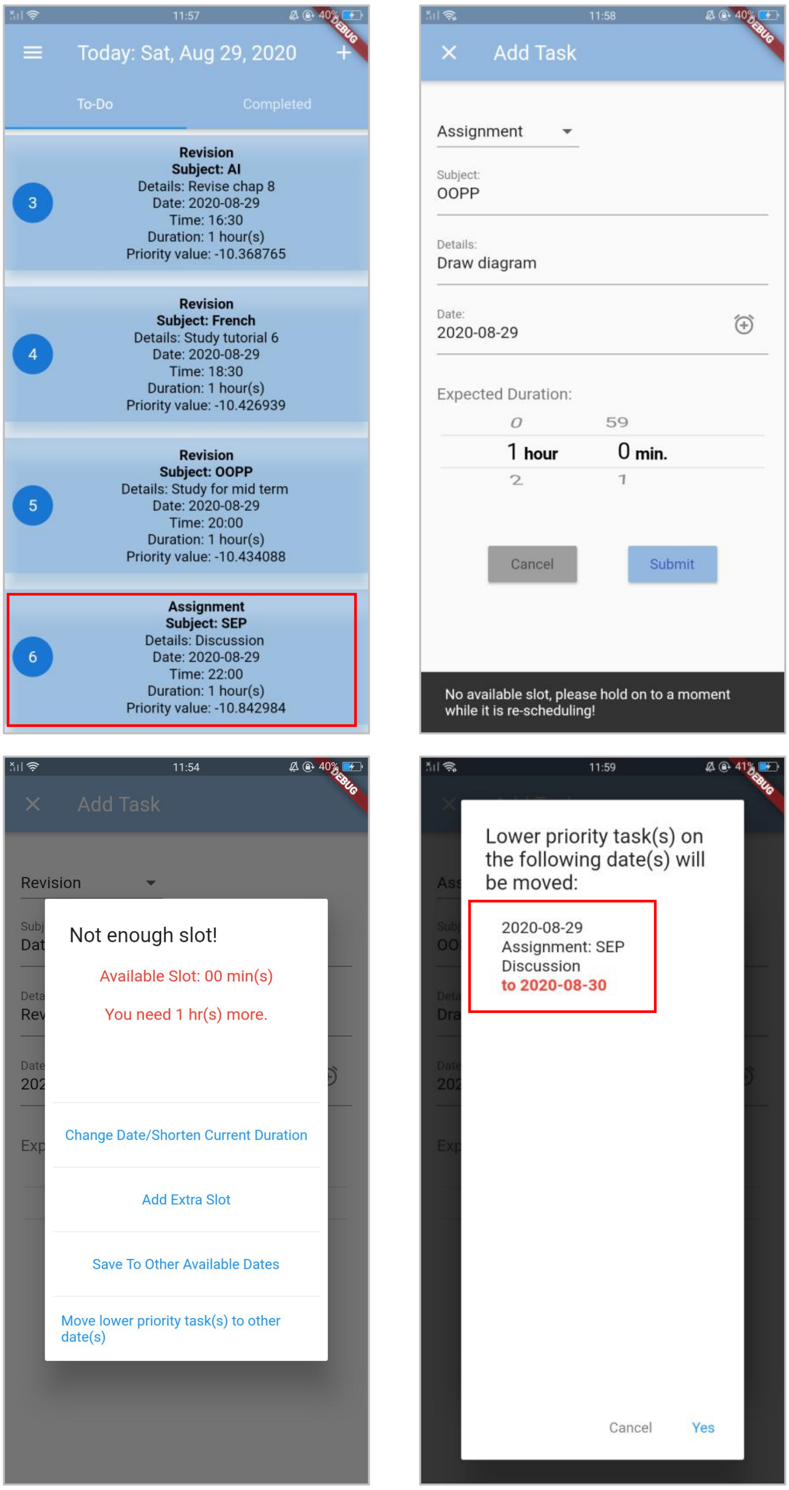
Revision: Data Science 13.070643
Details: Revise lab 7
Date/Time: 2020-08-30 @ 16:00
Duration: 1 hour(s)

Figure 5-2-1-6: Test Results of TC_TMM_004.

Figure 5-2-1-6 shows that the new task is successfully added to the selected date and is scheduled. Therefore, the test results of TC_TMM_004 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner	
Module Name	Task Management Module	
Reference Document	addtask.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_TMM_005	
Test Scenario	To verify the functionality of add task and correctness of outputs.	
Test Case Description	Test the functionality of add task (not enough slot, move lower priority task to other date).	
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.	
Expected Result	Application shall move the available task to assigned date and add the new task to input date. Automated task arrangement and time scheduling shall be performed and save to database.	
Actual Result	Application moves the available task to assigned date and add the new task to input date. Automated task arrangement and time scheduling are performed and save to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Selects task type from the options given.		“Assignment”
2. Inputs Subject.		“OOPP”
3. Inputs Details.		“Draw diagram”
4. Inputs Date.		2020-08-29
5. Inputs Duration.		1:00:00.000000
6. Clicks “Submit”		Submit
7. Clicks “Move lower priority task to other date”		Move lower priority task to other date
8. Clicks yes		Yes

Table 5-2-1-5: Test Cases for Task Management Module: Add Task.



3
Revision
Subject: AI
Details: Revise chap 8
Date: 2020-08-29
Time: 16:30
Duration: 1 hour(s)
Priority value: -10.368765

4
Revision
Subject: French
Details: Study tutorial 6
Date: 2020-08-29
Time: 18:30
Duration: 1 hour(s)
Priority value: -10.426939

5
Revision
Subject: OOPP
Details: Study for mid term
Date: 2020-08-29
Time: 20:00
Duration: 1 hour(s)
Priority value: -10.434088

6
Assignment
Subject: SEP
Details: Discussion
Date: 2020-08-29
Time: 22:00
Duration: 1 hour(s)
Priority value: -10.842984

Assignment

Subject:
OOPP

Details:
Draw diagram

Date:
2020-08-29

Expected Duration:
1 hour 0 min.

No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

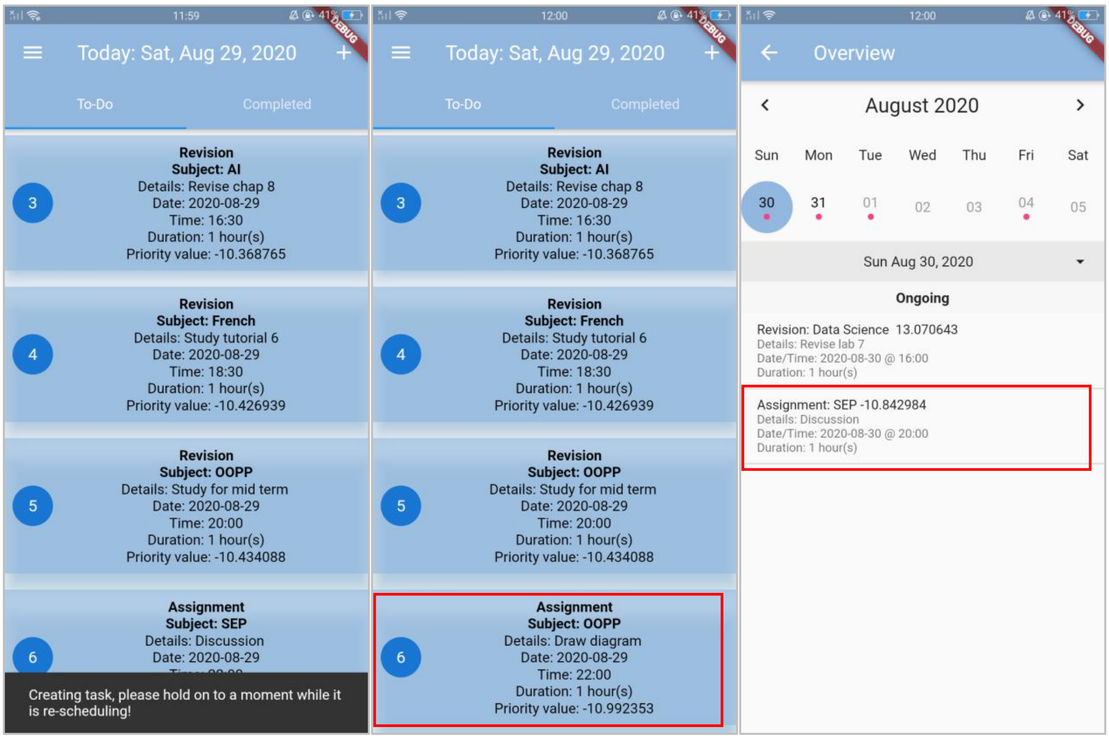
Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)
11:59

Lower priority task(s) on the following date(s) will be moved:

2020-08-29
Assignment: SEP
Discussion
to 2020-08-30

Figure 5-2-1-7: Test Results of TC_TMM_005.

The first picture shows the lower priority task which will be moved in this test case. A task is failed to add as there is not enough slot to fit in and user chooses to move lower priority task to other date. The lower priority task is shown correctly referring to the first picture. User confirms the action.



3
Revision
Subject: AI
Details: Revise chap 8
Date: 2020-08-29
Time: 16:30
Duration: 1 hour(s)
Priority value: -10.368765

4
Revision
Subject: French
Details: Study tutorial 6
Date: 2020-08-29
Time: 18:30
Duration: 1 hour(s)
Priority value: -10.426939

5
Revision
Subject: OOPP
Details: Study for mid term
Date: 2020-08-29
Time: 20:00
Duration: 1 hour(s)
Priority value: -10.434088

6
Assignment
Subject: SEP
Details: Discussion
Date: 2020-08-29

Creating task, please hold on to a moment while it is re-scheduling!

3
Revision
Subject: AI
Details: Revise chap 8
Date: 2020-08-29
Time: 16:30
Duration: 1 hour(s)
Priority value: -10.368765

4
Revision
Subject: French
Details: Study tutorial 6
Date: 2020-08-29
Time: 18:30
Duration: 1 hour(s)
Priority value: -10.426939

5
Revision
Subject: OOPP
Details: Study for mid term
Date: 2020-08-29
Time: 20:00
Duration: 1 hour(s)
Priority value: -10.434088

6
Assignment
Subject: OOPP
Details: Draw diagram
Date: 2020-08-29
Time: 22:00
Duration: 1 hour(s)
Priority value: -10.992353

Sun Aug 30, 2020

Ongoing

Revision: Data Science 13.070643
Details: Revise lab 7
Date/Time: 2020-08-30 @ 16:00
Duration: 1 hour(s)

Assignment: SEP -10.842984
Details: Discussion
Date/Time: 2020-08-30 @ 20:00
Duration: 1 hour(s)

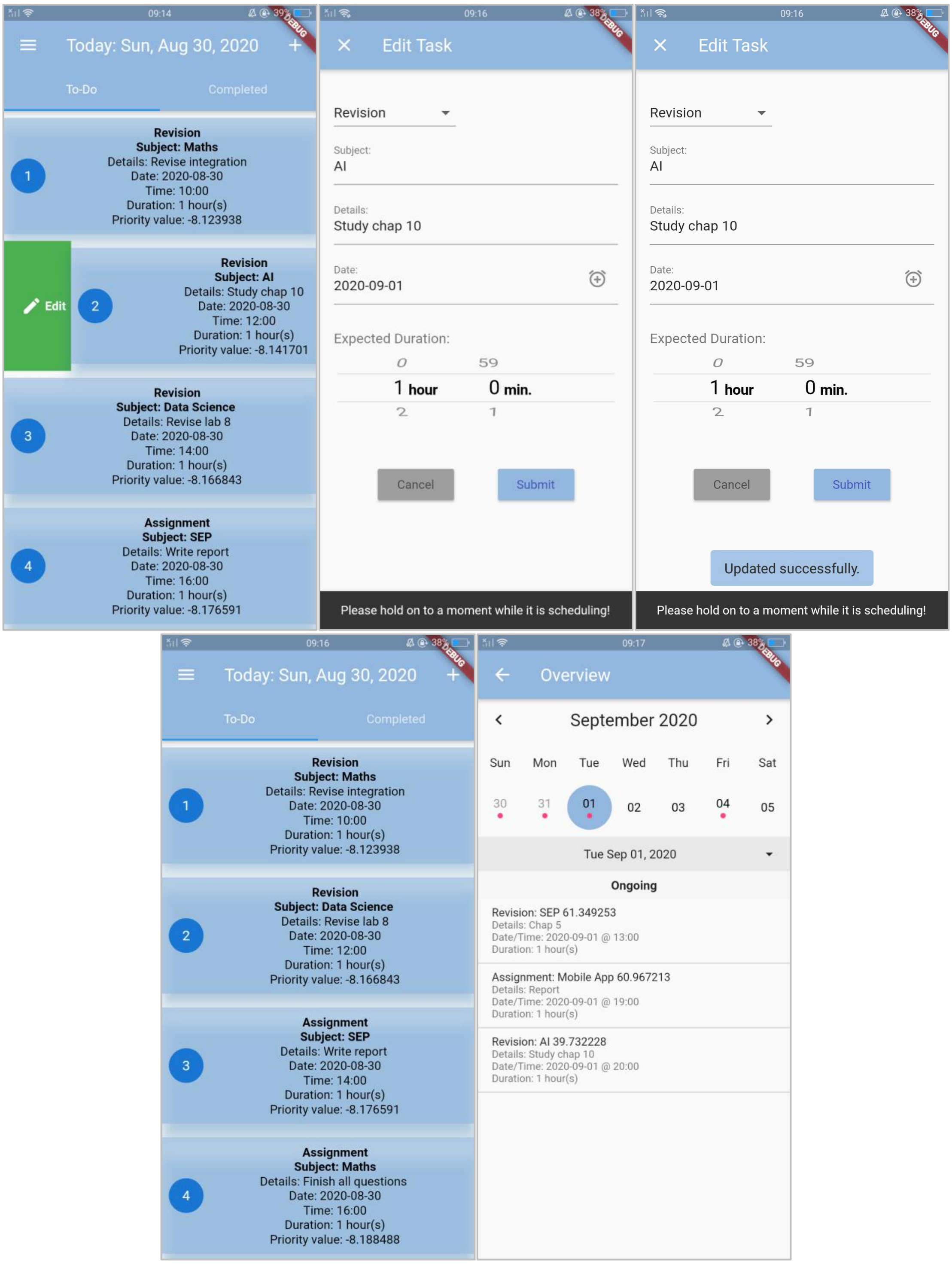
Figure 5-2-1-8: Test Results of TC_TMM_005.

The new task is added to the input date. It is arranged according to priority value and scheduled. Lower priority task is moved to the assigned date successfully. Therefore, the test results of TC_TMM_005 is “Pass” as actual result met the expected result.

5.2.2 Edit Task

Project Name	Mobile Student Study Planner
Module Name	Task Management Module
Reference Document	edittask.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TMM_006
Test Scenario	To verify the functionality of edit task and correctness of outputs.
Test Case Description	Test the functionality of edit task (edit, enough slot).
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.
Expected Result	Message “Updated successfully” is displayed. Application shall perform automated task arrangement and time scheduling, then save to database.
Actual Result	Message “Updated successfully” is displayed. Application performs automated task arrangement and time scheduling, then save to database.
Test Result	Pass
Test Steps	**Test Data**
1. Slides right to edit task.	“Revision”, ”AI”, ”Study chap 10”, 2020-09-01, 1:00:00.000000
2. Selects “Edit”.	Edit
3. All the fetched information is displayed at its respective textfield.	“Revision”, ”AI”, ”Study chap 10”, 2020-08-30, 1:00:00.000000
4. Edits the respective field.	2020-09-01
5. Clicks “Submit”	Submit

Table 5-2-2-1: Test Cases for Task Management Module: Edit Task.



09:14

Today: Sun, Aug 30, 2020

To-Do | Completed

1 **Revision**
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

Edit 2 **Revision**
Subject: AI
Details: Study chap 10
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.141701

3 **Revision**
Subject: Data Science
Details: Revise lab 8
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.166843

4 **Assignment**
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.176591

09:16

Edit Task

Revision

Subject:
AI

Details:
Study chap 10

Date:
2020-09-01

Expected Duration:
0 59
1 hour 0 min.
2 1

Cancel Submit

Please hold on to a moment while it is scheduling!

09:16

Edit Task

Revision

Subject:
AI

Details:
Study chap 10

Date:
2020-09-01

Expected Duration:
0 59
1 hour 0 min.
2 1

Cancel Submit

Updated successfully.

Please hold on to a moment while it is scheduling!

09:16

Today: Sun, Aug 30, 2020

To-Do | Completed

1 **Revision**
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

2 **Revision**
Subject: Data Science
Details: Revise lab 8
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.166843

3 **Assignment**
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.176591

4 **Assignment**
Subject: Maths
Details: Finish all questions
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.188488

09:17

Overview

September 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	01	02	03	04	05

Tue Sep 01, 2020

Ongoing

Revision: SEP 61.349253
Details: Chap 5
Date/Time: 2020-09-01 @ 13:00
Duration: 1 hour(s)

Assignment: Mobile App 60.967213
Details: Report
Date/Time: 2020-09-01 @ 19:00
Duration: 1 hour(s)

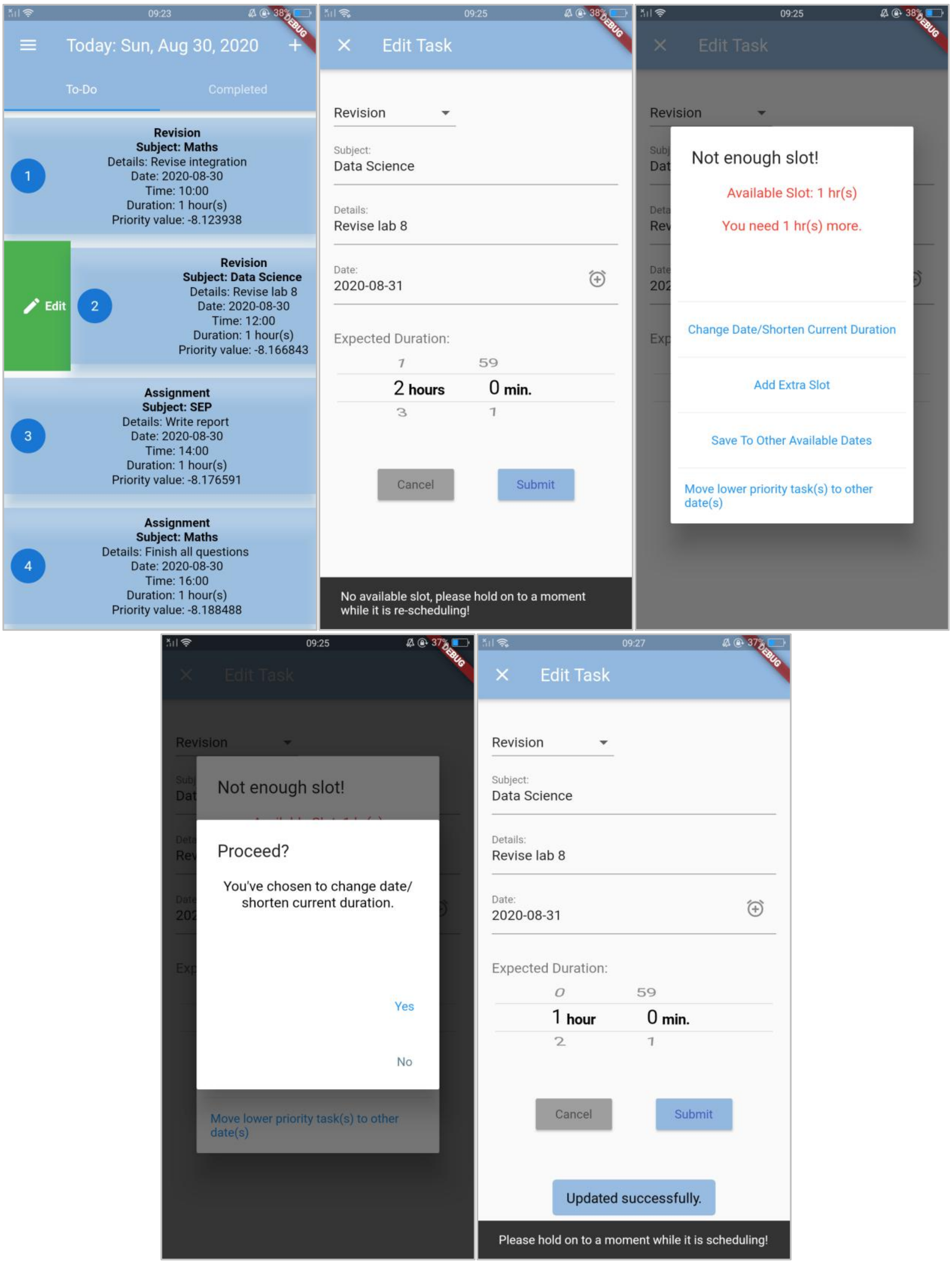
Revision: AI 39.732228
Details: Study chap 10
Date/Time: 2020-09-01 @ 20:00
Duration: 1 hour(s)

Figure 5-2-2-1: Test Results of TC_TMM_006.

Figure 5-2-2-1 shows that a task is edited successfully when there is enough slot to fit in. Message “Updated successfully” is displayed. Application performs automated task arrangement in return with higher priority task first and time scheduling to the new task and save to database. Therefore, the test results of TC_TMM_006 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Task Management Module
Reference Document	edittask.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TMM_007
Test Scenario	To verify the functionality of edit task and correctness of outputs.
Test Case Description	Test the functionality of edit task (edit, not enough slot, change date/ shorten duration).
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.
Expected Result	The application shall prompt user back to the current edit task page to change date or shorten duration. New task will be added to the input date if there is enough slot.
Actual Result	The application prompts user back to the current edit task page to change date or shorten duration. New task will be added to the input date if there is enough slot.
Test Result	Pass
Test Steps	**Test Data**
1. Slides right to edit task.	“Revision”, ”Data Science”, ”Revise lab 8”, 2020-08-30, 1:00:00.000000
2. Selects “Edit”.	Edit
3. All the fetched information is displayed at its respective textfield.	“Revision”, ”Data Science”, ”Revise lab 8”, 2020-08-30, 1:00:00.000000
4. Edits the respective field.	2020-08-31, 2:00:00.000000
5. Clicks “Submit”	Submit
6. Clicks “Change date/shorten duration”.	Change date/shorten duration
7. Clicks yes	Yes

Table 5-2-2-2: Test Cases for Task Management Module: Edit Task.



Today: Sun, Aug 30, 2020

1
Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

2
Revision
Subject: Data Science
Details: Revise lab 8
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.166843

3
Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.176591

4
Assignment
Subject: Maths
Details: Finish all questions
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.188488

Edit Task
Revision
Subject: Data Science
Details: Revise lab 8
Date: 2020-08-31
Expected Duration: 2 hours 0 min.

No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!
Available Slot: 1 hr(s)
You need 1 hr(s) more.

Proceed?
You've chosen to change date/ shorten current duration.

Edit Task
Revision
Subject: Data Science
Details: Revise lab 8
Date: 2020-08-31
Expected Duration: 1 hour 0 min.

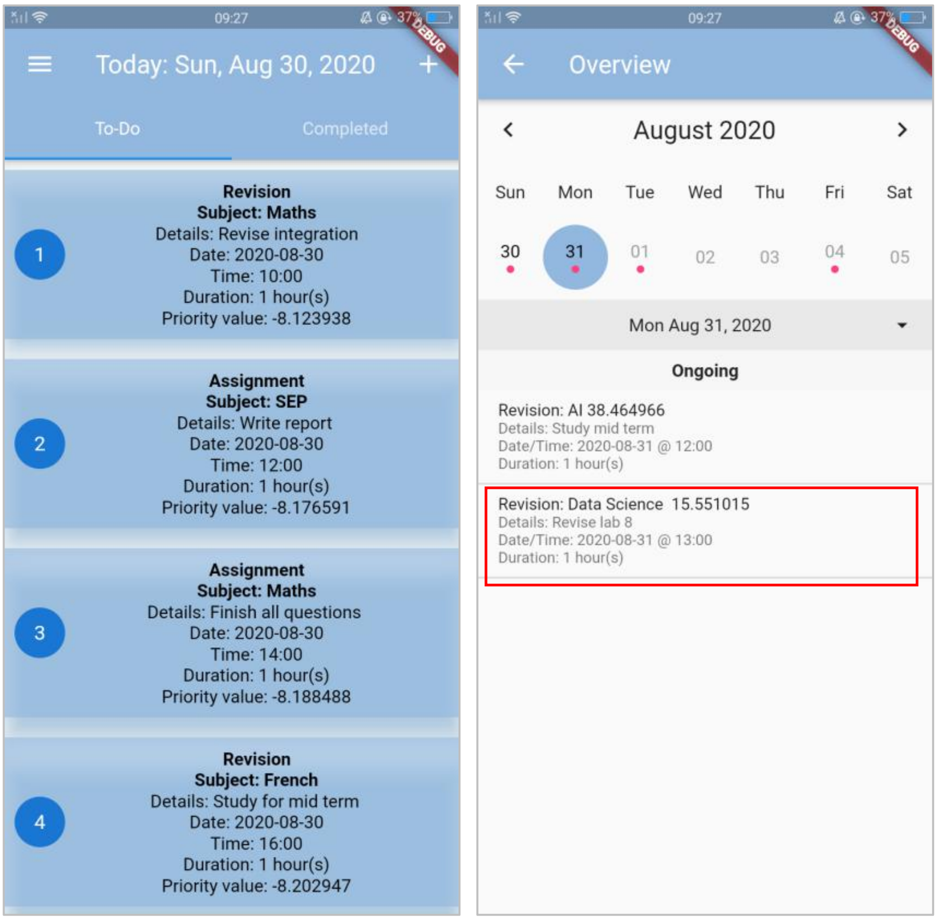
Updated successfully.

Please hold on to a moment while it is scheduling!

09:23
To-Do
Completed
Edit
09:25
Cancel
Submit
Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)
Yes
No
09:27
DEBUG

Figure 5-2-2-2: Test Results of TC_TMM_007.

Figure 5-2-2-2 shows that a task is failed to add as there is not enough slot to fit in. An alert dialog is displayed to ask user to choose an action. User chooses change date or shorten duration and confirm the action. The application prompts user back to the current add task page to change date or shorten duration. User changes the duration from 2 hours to 1 hour and the new task is successfully updated to the input date as there is enough slot.



Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.176591

Assignment
Subject: Maths
Details: Finish all questions
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.188488

Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.202947

Revision: AI 38.464966
Details: Study mid term
Date/Time: 2020-08-31 @ 12:00
Duration: 1 hour(s)

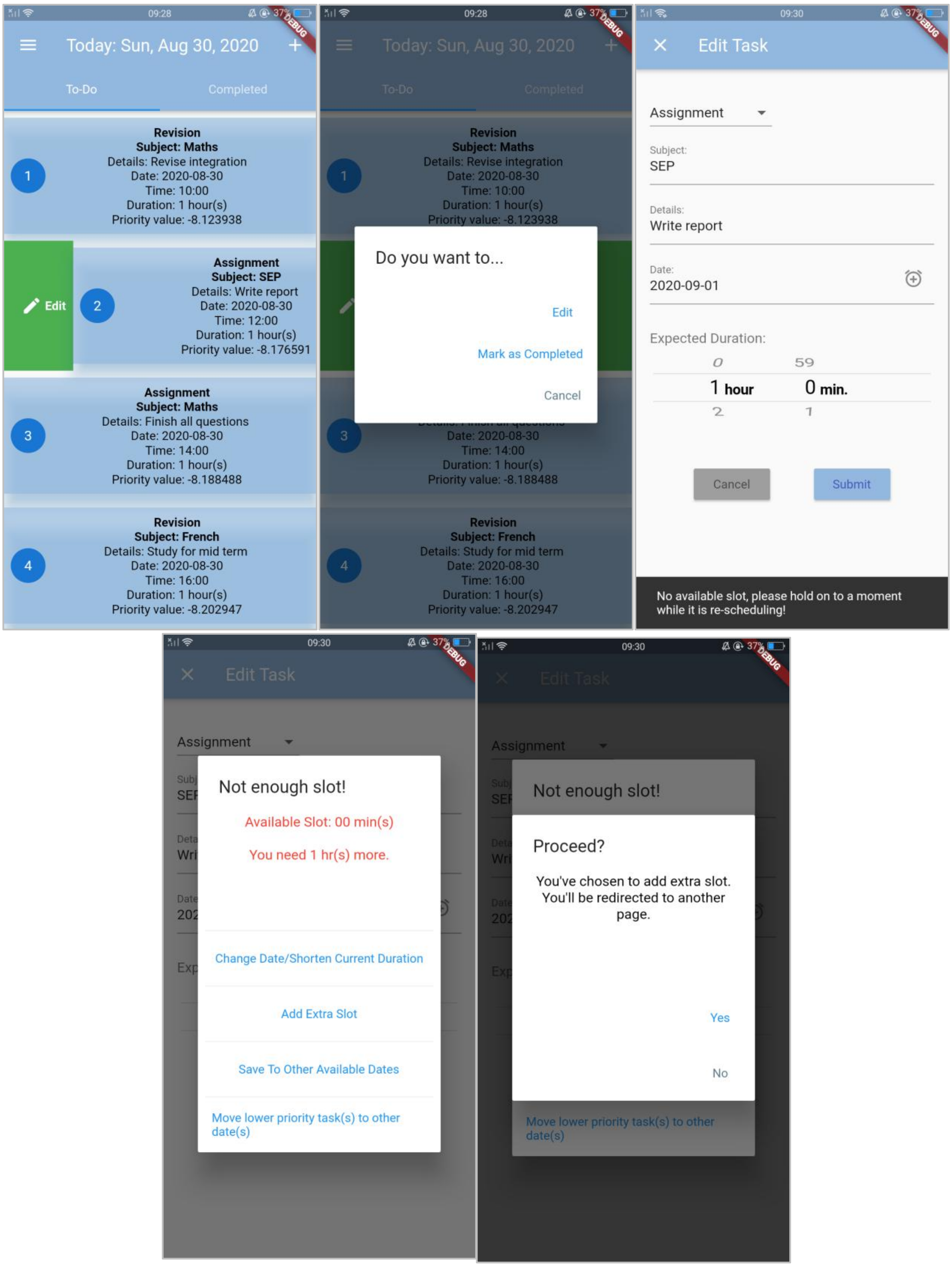
Revision: Data Science 15.551015
Details: Revise lab 8
Date/Time: 2020-08-31 @ 13:00
Duration: 1 hour(s)

Figure 5-2-2-3: Test Results of TC_TMM_007.

Application performs automated task arrangement in return with higher priority task first and time scheduling to the tasks on new date and previous date and save to database. Therefore, the test results of TC_TMM_007 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner	
Module Name	Task Management Module	
Reference Document	edittask.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_TMM_008	
Test Scenario	To verify the functionality of edit task and correctness of outputs.	
Test Case Description	Test the functionality of edit task (edit, not enough slot, add extra slot).	
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.	
Expected Result	Application shall prompt user to add slot page. Application shall perform automated task arrangement and scheduling on the input date, then save to database.	
Actual Result	Application prompts user to add slot page. Application performs automated task arrangement and scheduling on the input date, then save to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Slides right to edit task.		“Assignment”, ”SEP”, ”Write report”, 2020-08-30, 1:00:00.000000
2. Selects “Edit”.		Edit
3. All the fetched information is displayed at its respective textfield.		“Assignment”, ”SEP”, ”Write report”, 2020-08-30, 1:00:00.000000
4. Edits the respective field.		2020-09-01
5. Clicks “Submit”		Submit
6. Clicks “Add extra slot”.		Add extra slot
7. Clicks yes		Yes
8. Creates a slot		10:00 - 11:00

Table 5-2-2-3: Test Cases for Task Management Module: Edit Task.



Today: Sun, Aug 30, 2020

Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.176591

Assignment
Subject: Maths
Details: Finish all questions
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.188488

Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.202947

Do you want to...

Edit Task

Subject: SEP

Details: Write report

Date: 2020-09-01

Expected Duration: 1 hour 0 min.

No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

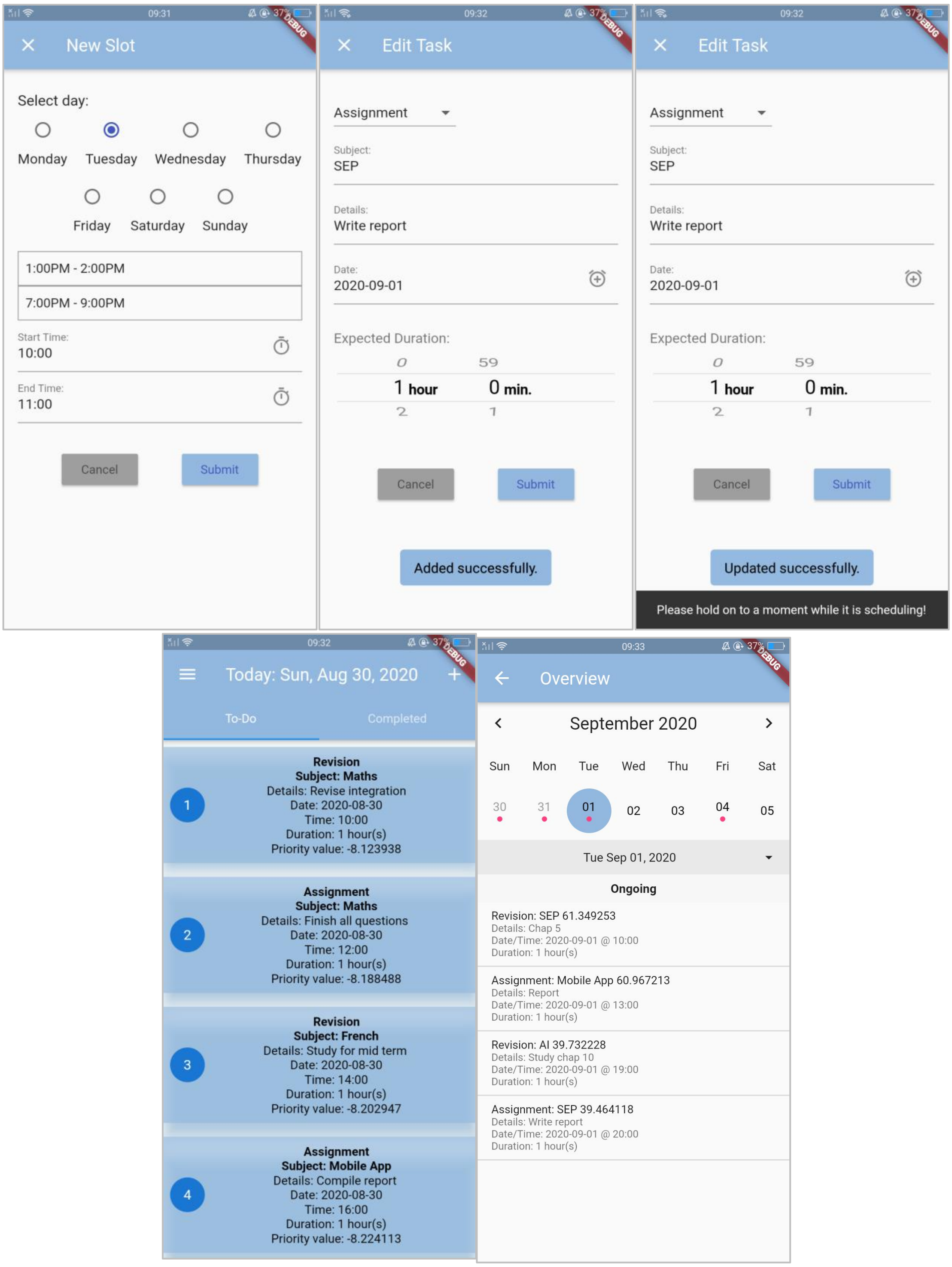
Proceed?

You've chosen to add extra slot. You'll be redirected to another page.

09:28
To-Do
Completed
1
2
3
4
Edit
Mark as Completed
Cancel
09:30
Assignment
Cancel
Submit
Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)
Yes
No
DEBUG

Figure 5-2-2-4: Test Results of TC_TMM_008.

Figure 5-2-2-4 shows that a task is failed to add as there is not enough slot to fit in and user chooses to add extra slot.



Select day:

○ Monday ● Tuesday ○ Wednesday ○ Thursday ○ Friday ○ Saturday ○ Sunday

1:00PM - 2:00PM

7:00PM - 9:00PM

Start Time: 10:00

End Time: 11:00

Assignment

Subject: SEP

Details: Write report

Date: 2020-09-01

Expected Duration: 1 hour 0 min.

Added successfully.

Updated successfully.

Please hold on to a moment while it is scheduling!

1 Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

2 Assignment
Subject: Maths
Details: Finish all questions
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.188488

3 Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.202947

4 Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

Tue Sep 01, 2020

Ongoing

Revision: SEP 61.349253
Details: Chap 5
Date/Time: 2020-09-01 @ 10:00
Duration: 1 hour(s)

Assignment: Mobile App 60.967213
Details: Report
Date/Time: 2020-09-01 @ 13:00
Duration: 1 hour(s)

Revision: AI 39.732228
Details: Study chap 10
Date/Time: 2020-09-01 @ 19:00
Duration: 1 hour(s)

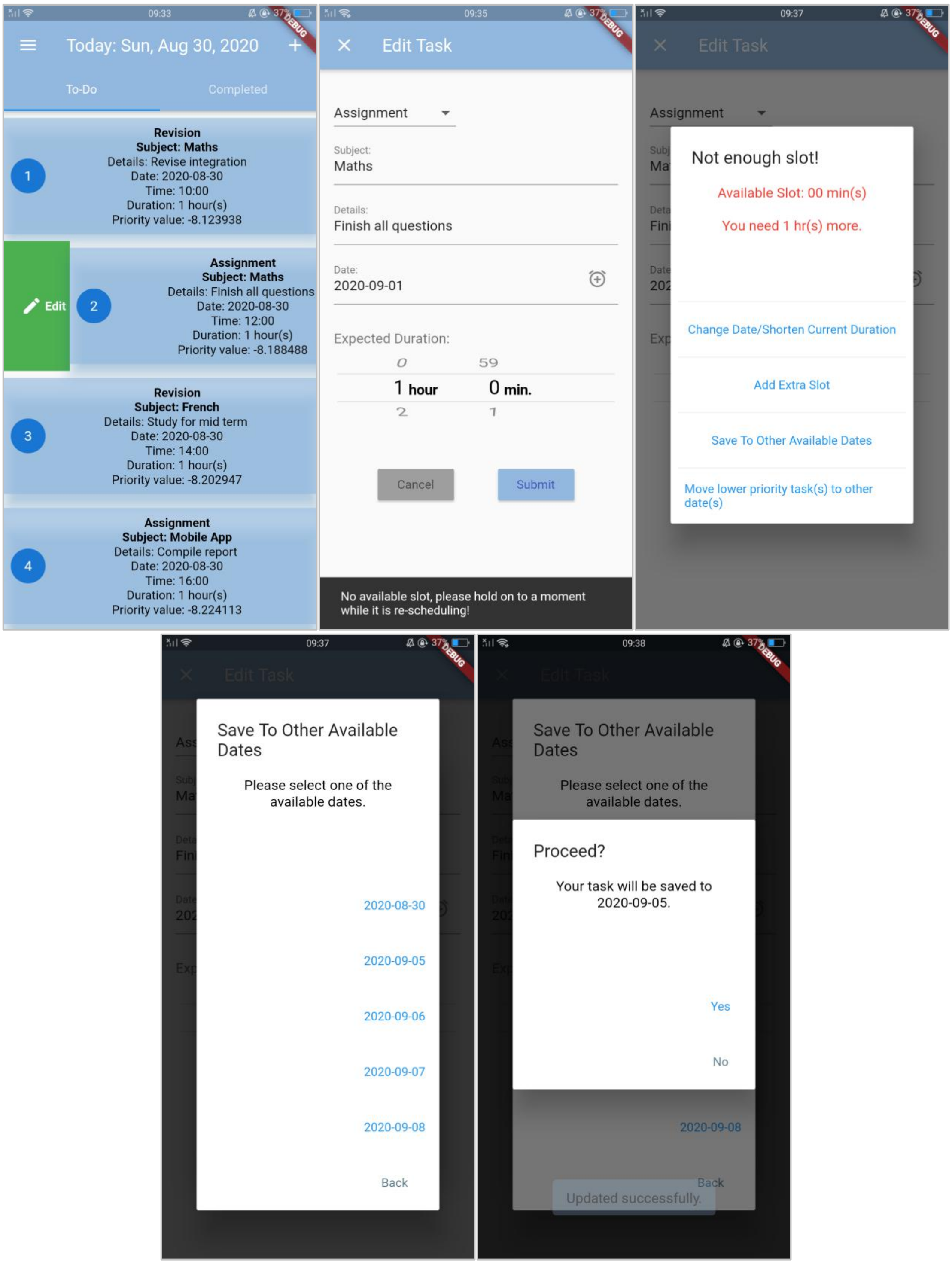
Assignment: SEP 39.464118
Details: Write report
Date/Time: 2020-09-01 @ 20:00
Duration: 1 hour(s)

Figure 5-2-2-5: Test Results of TC_TMM_008.

The application prompts user to the add slot page to add a slot. User adds a slot from 10:00AM to 11:00AM. The slot is added successfully. The new task is now can be successfully added to the input date as there is enough slot. Application performs automated task arrangement in return with higher priority task first and time scheduling to the tasks on new date and previous date and save to database. From the last picture, the new task is placed at last as it has the lowest priority value. Therefore, the test results of TC_TMM_008 is "Pass" as actual result met the expected result.

Project Name	Mobile Student Study Planner	
Module Name	Task Management Module	
Reference Document	edittask.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_TMM_009	
Test Scenario	To verify the functionality of edit task and correctness of outputs.	
Test Case Description	Test the functionality of edit task (edit, not enough slot, save to other dates).	
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.	
Expected Result	5 suggested dates to User will be shown in dialog box. Application shall perform automated task arrangement and scheduling on the selected date, then save to database.	
Actual Result	5 suggested dates to User is shown in dialog box. Application performs automated task arrangement and scheduling on the selected date, then save to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Slides right to edit task.		"Assignment", "Maths", "Finish all questions", 2020-08-30, 1:00:00.000000
2. Selects "Edit".		Edit
3. All the fetched information is displayed at its respective textfield.		"Assignment", "Maths", "Finish all questions", 2020-08-30, 1:00:00.000000
4. Edits the respective field.		2020-09-01
5. Clicks "Submit"		Submit
6. Clicks "Save to other available dates".		Save to other available dates
7. Selects a date		2020-09-05
8. Clicks yes		Yes

Table 5-2-2-4: Test Cases for Task Management Module: Edit Task.



09:33

Today: Sun, Aug 30, 2020

To-Do | Completed

1 Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

Edit 2 Assignment
Subject: Maths
Details: Finish all questions
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.188488

3 Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.202947

4 Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

09:35

Edit Task

Assignment

Subject: Maths

Details: Finish all questions

Date: 2020-09-01

Expected Duration: 1 hour 0 min.

Cancel | Submit

No available slot, please hold on to a moment while it is re-scheduling!

09:37

Not enough slot!

Available Slot: 00 min(s)

You need 1 hr(s) more.

Change Date/Shorten Current Duration

Add Extra Slot

Save To Other Available Dates

Move lower priority task(s) to other date(s)

09:37

Save To Other Available Dates

Please select one of the available dates.

2020-08-30

2020-09-05

2020-09-06

2020-09-07

2020-09-08

Back

09:38

Save To Other Available Dates

Please select one of the available dates.

Proceed?

Your task will be saved to 2020-09-05.

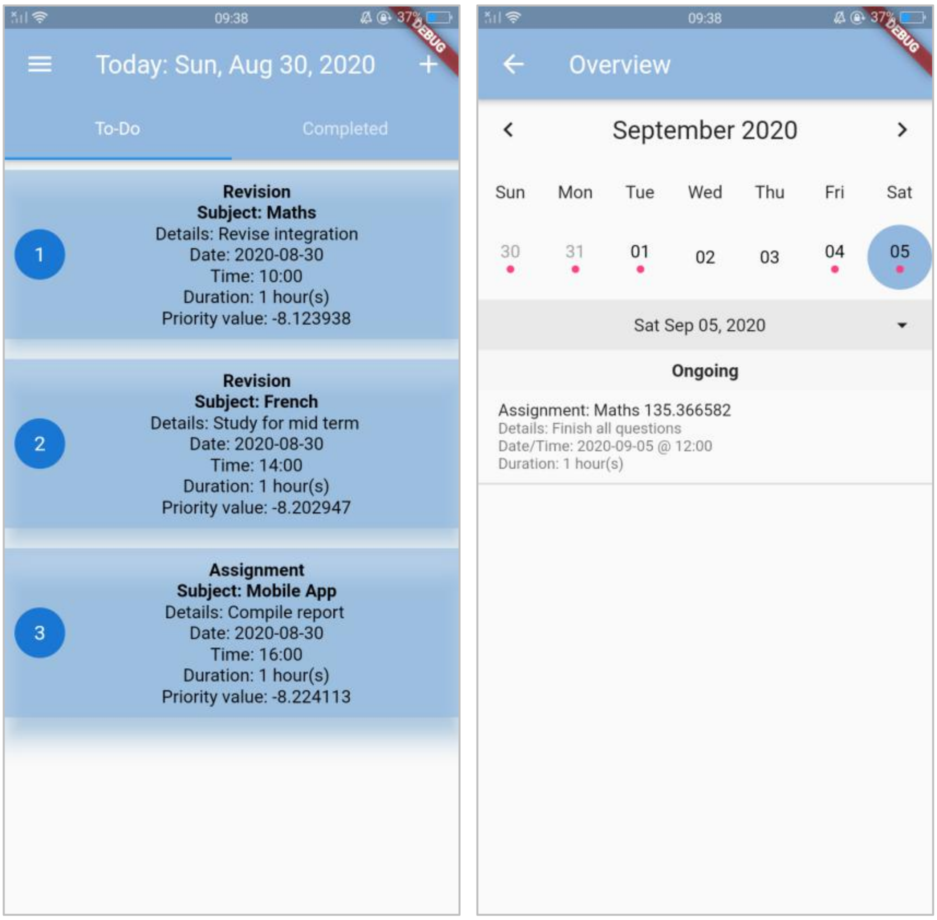
Yes

No

Updated successfully.

Figure 5-2-2-6: Test Results of TC_TMM_009.

Figure 5-2-2-6 shows that a task is failed to add as there is not enough slot to fit in and user chooses to save to other available dates. 5 dates are returned to user. User selects 2020-09-05 and confirm the action. The task is updated successfully. Application performs automated task arrangement in return with higher priority task first and time scheduling to the selected date and save to database.



Today: Sun, Aug 30, 2020

1
Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

2
Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.202947

3
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

September 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30 ●	31 ●	01 ●	02	03	04 ●	05 ●

Sat Sep 05, 2020

Ongoing

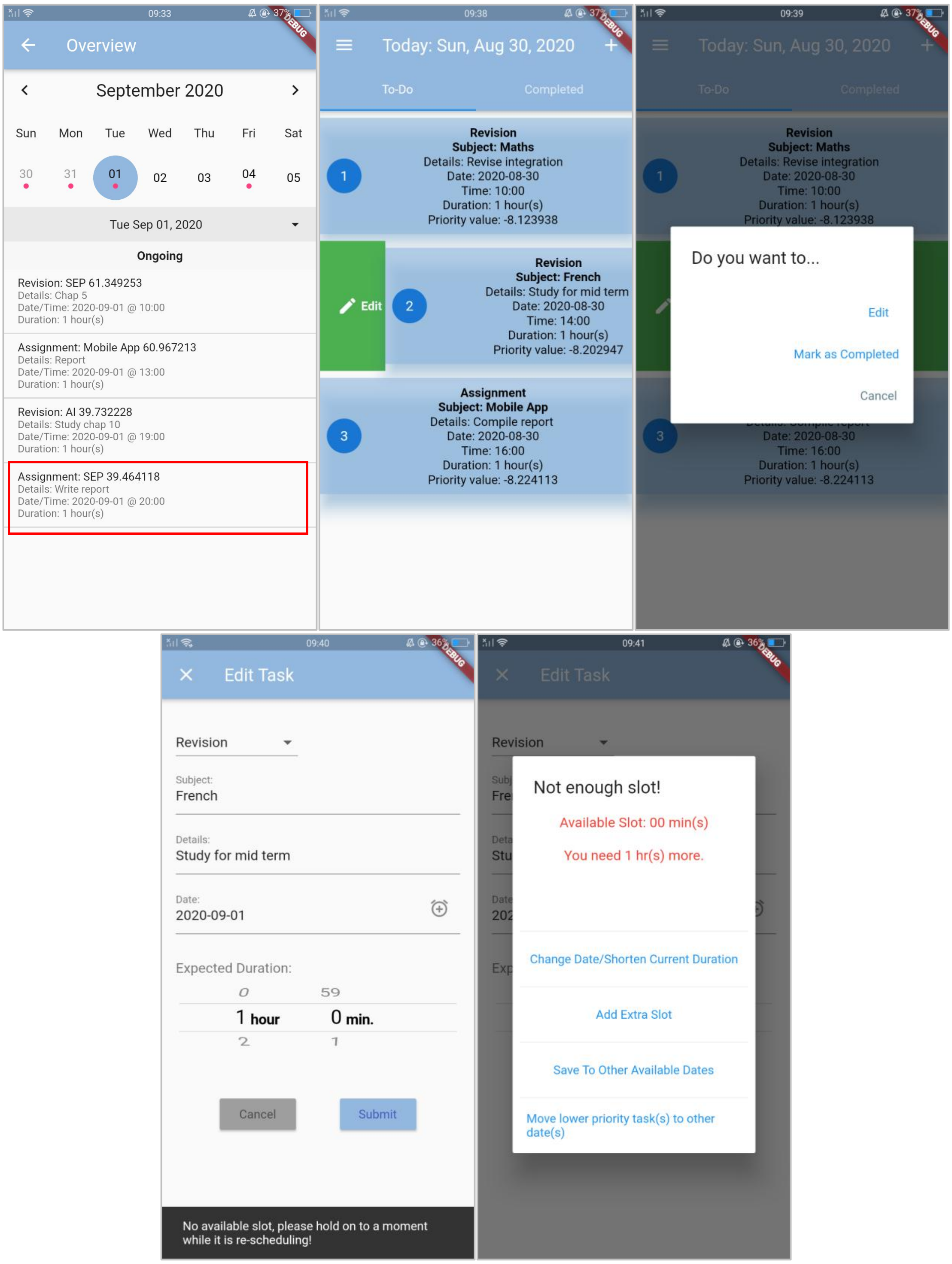
Assignment: Maths 135.366582
Details: Finish all questions
Date/Time: 2020-09-05 @ 12:00
Duration: 1 hour(s)

Figure 5-2-2-7: Test Results of TC_TMM_009.

Figure 5-2-2-7 shows that the task is successfully updated to the selected date and is scheduled. Therefore, the test results of TC_TMM_009 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner	
Module Name	Task Management Module	
Reference Document	edittask.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_TMM_010	
Test Scenario	To verify the functionality of edit task and correctness of outputs.	
Test Case Description	Test the functionality of edit task (edit, not enough slot, move lower priority task to other date).	
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.	
Expected Result	Application shall move the available task to assigned date and add the new task to input date. Automated task arrangement and time scheduling shall be performed and save to database.	
Actual Result	Application moves the available task to assigned date and add the new task to input date. Automated task arrangement and time scheduling are performed and save to database.	
Test Result	Pass	
Test Steps		**Test Data**
1. Slides right to edit task.		“Revision”, ”French”, ”Study for mid term”, 2020-08-30, 1:00:00.000000
2. Selects “Edit”.		Edit
3. All the fetched information is displayed at its respective textfield.		“Revision”, ”French”, ”Study for mid term”, 2020-08-30, 1:00:00.000000
4. Edits the respective field.		2020-09-01
5. Clicks “Submit”		Submit
6. Clicks “Move lower priority task to other date”.		Move lower priority task to other date
7. Clicks yes		“Assignment”, ”SEP”, ”Write report”, 2020-08-30, 1:00:00.000000

Table 5-2-2-5: Test Cases for Task Management Module: Edit Task.



Revision: SEP 61.349253
Details: Chap 5
Date/Time: 2020-09-01 @ 10:00
Duration: 1 hour(s)

Assignment: Mobile App 60.967213
Details: Report
Date/Time: 2020-09-01 @ 13:00
Duration: 1 hour(s)

Revision: AI 39.732228
Details: Study chap 10
Date/Time: 2020-09-01 @ 19:00
Duration: 1 hour(s)

Assignment: SEP 39.464118
Details: Write report
Date/Time: 2020-09-01 @ 20:00
Duration: 1 hour(s)

1
Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

2
Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.202947

3
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

Do you want to...

Revision
Subject: French
Details: Study for mid term
Date: 2020-09-01
Expected Duration: 1 hour 0 min.

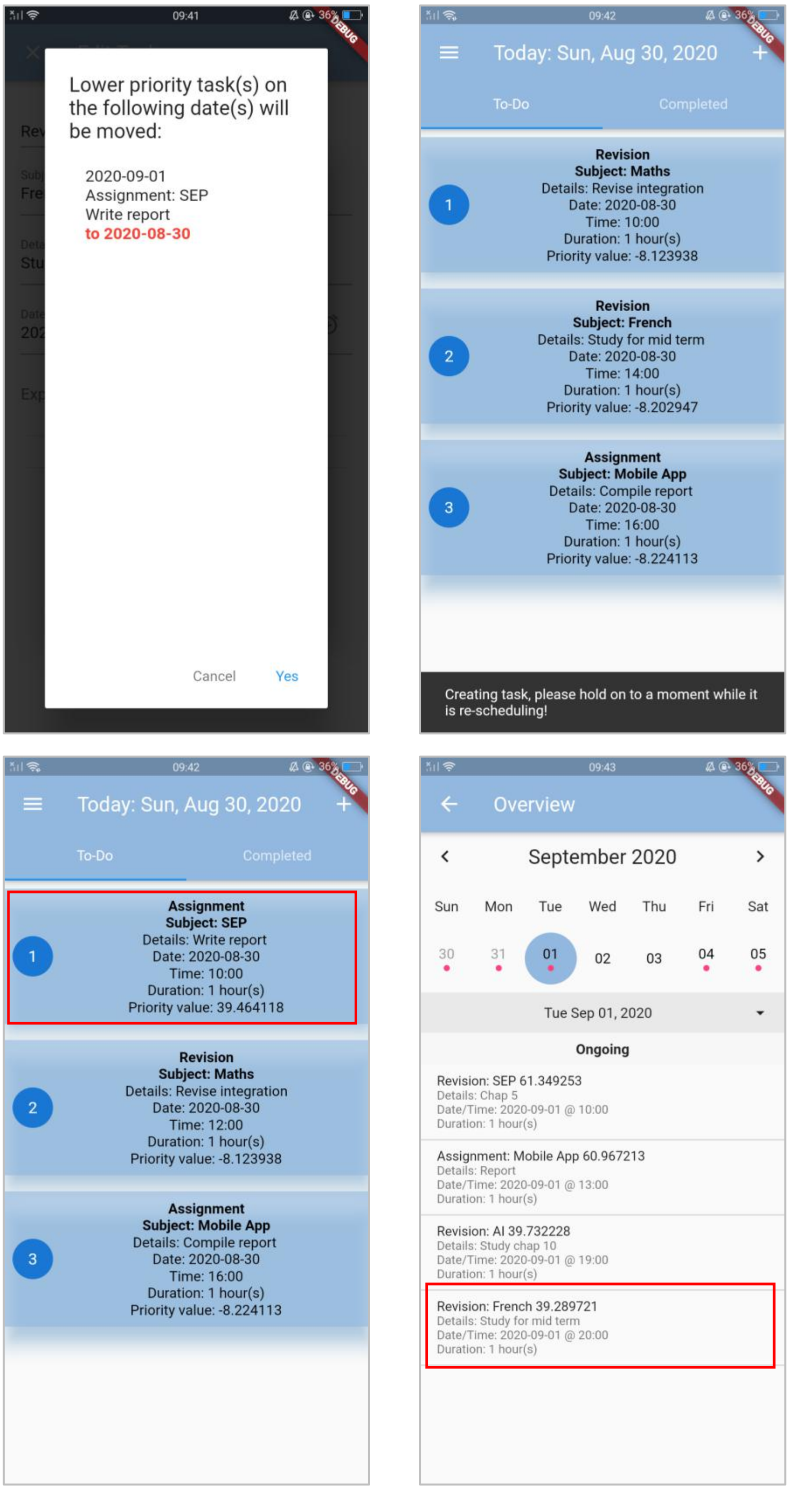
No available slot, please hold on to a moment while it is re-scheduling!

Not enough slot!
Available Slot: 00 min(s)
You need 1 hr(s) more.

Change Date/Shorten Current Duration
Add Extra Slot
Save To Other Available Dates
Move lower priority task(s) to other date(s)

Figure 5-2-2-8: Test Results of TC_TMM_010.

The first picture shows the lower priority task which will be moved in this test case. A task is failed to add as there is not enough slot to fit in and user chooses to move lower priority task to other date.



Lower priority task(s) on the following date(s) will be moved:

2020-09-01
Assignment: SEP
Write report
to 2020-08-30

1
Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: -8.123938

2
Revision
Subject: French
Details: Study for mid term
Date: 2020-08-30
Time: 14:00
Duration: 1 hour(s)
Priority value: -8.202947

3
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

Creating task, please hold on to a moment while it is re-scheduling!

1
Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: 39.464118

2
Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.123938

3
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

Tue Sep 01, 2020

Ongoing

Revision: SEP 61.349253
Details: Chap 5
Date/Time: 2020-09-01 @ 10:00
Duration: 1 hour(s)

Assignment: Mobile App 60.967213
Details: Report
Date/Time: 2020-09-01 @ 13:00
Duration: 1 hour(s)

Revision: AI 39.732228
Details: Study chap 10
Date/Time: 2020-09-01 @ 19:00
Duration: 1 hour(s)

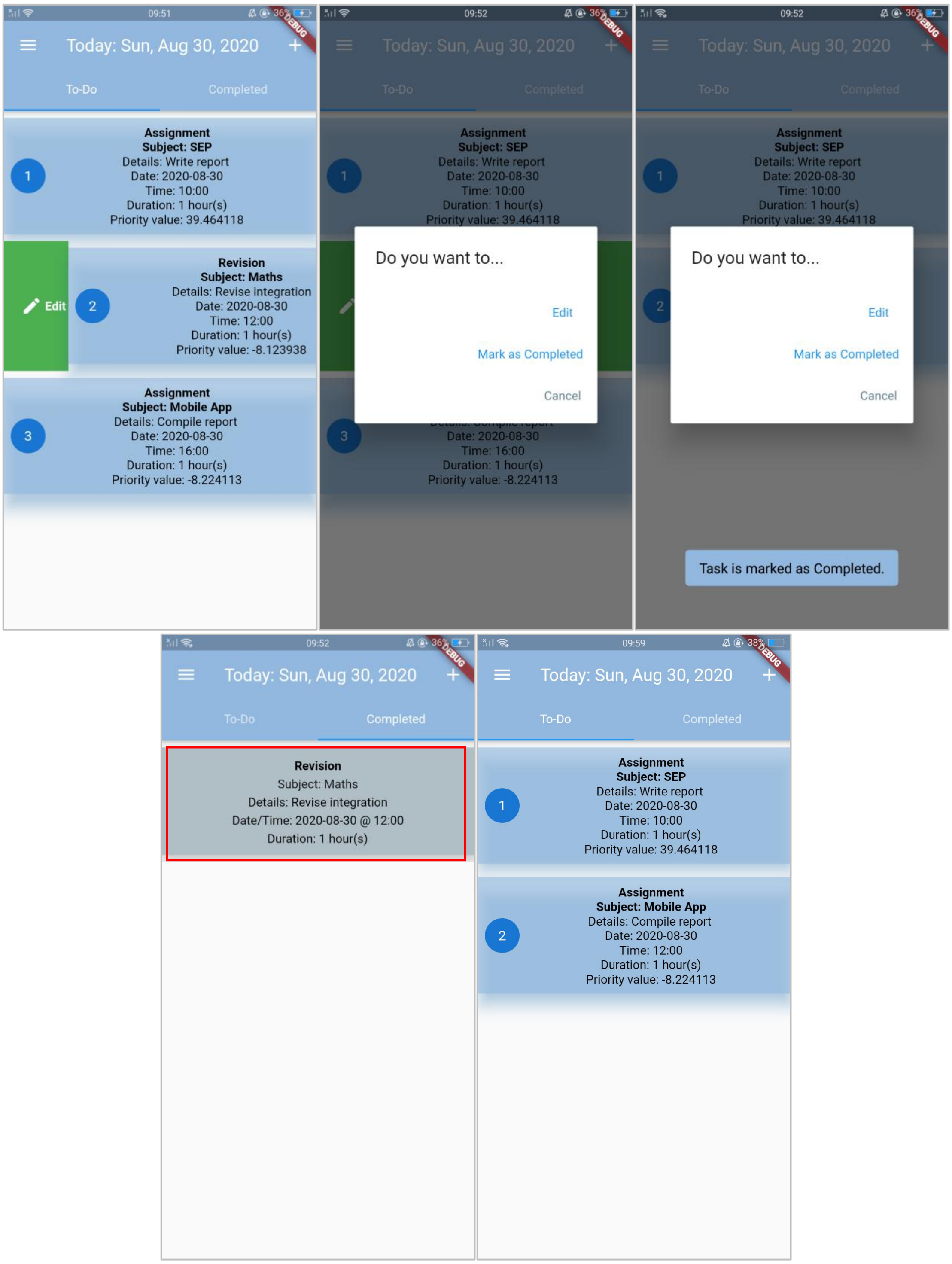
Revision: French 39.289721
Details: Study for mid term
Date/Time: 2020-09-01 @ 20:00
Duration: 1 hour(s)

Figure 5-2-2-9: Test Results of TC_TMM_010.

The lower priority task is shown correctly referring to the previous picture. User confirms the action. The edit task is added to the input date. It is arranged according to priority value and scheduled. Lower priority task is moved to the assigned date successfully. Therefore, the test results of TC_TMM_010 is “Pass” as actual result met the expected result.

Project Name	Mobile Student Study Planner	
Module Name	Task Management Module	
Reference Document	edittask.dart	
Created by	Chai Jia Yuan	
Date of creation	24/8/2020	
Date of review	29/8/2020	
Test Case ID	TC_TMM_011	
Test Scenario	To verify the functionality of edit task and correctness of outputs.	
Test Case Description	Test the functionality of edit task (mark as completed).	
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.	
Expected Result	The application will update the respective task's progress as Completed. Rescheduling is performed on the ongoing tasks of the selected date.	
Actual Result	The application updates the respective task's progress as Completed. Rescheduling is performed on the ongoing tasks of the selected date.	
Test Result	Pass	
Test Steps		**Test Data**
1. Slides right to edit task.		"Revision", "Maths", "Revise integration", 2020-08-30, 1:00:00.000000
2. Selects "Mark as Completed".		Mark as Completed

Table 5-2-2-6: Test Cases for Task Management Module: Edit Task.



1
Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: 39.464118

2
Revision
Subject: Maths
Details: Revise integration
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.123938

3
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 16:00
Duration: 1 hour(s)
Priority value: -8.224113

Do you want to...

Edit

Mark as Completed

Cancel

Task is marked as Completed.

Revision
Subject: Maths
Details: Revise integration
Date/Time: 2020-08-30 @ 12:00
Duration: 1 hour(s)

1
Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: 39.464118

2
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.224113

Figure 5-2-2-10: Test Results of TC_TMM_011.

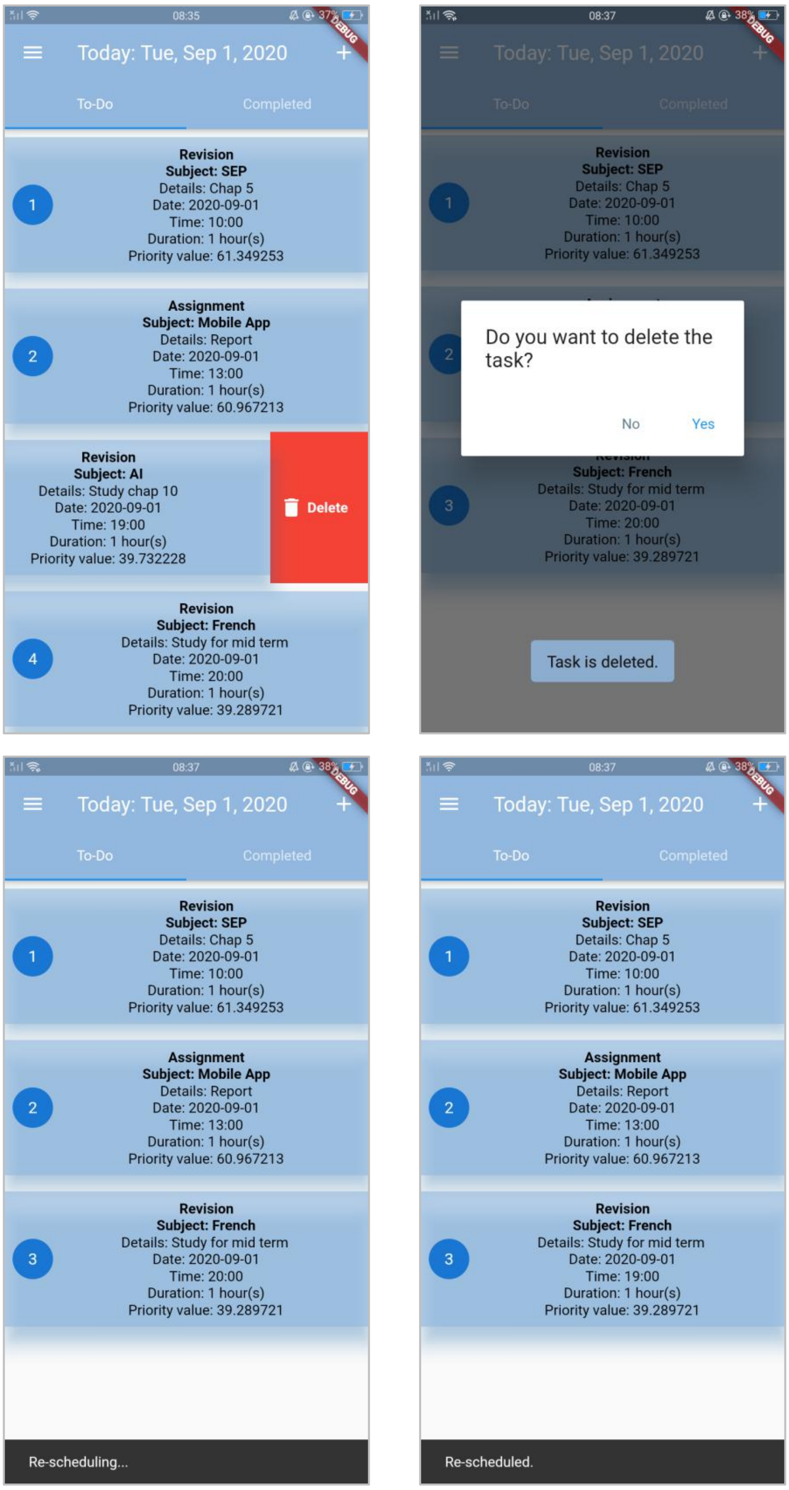
Figure 5-2-2-10 shows the result when user marks a task as completed and the application updated the respective task's progress as Completed in database. The second last picture is an interface to show that the progress is updated in database and therefore the task is shown in the Completed page. The last picture shows that rescheduling is performed on the ongoing tasks of the selected date. Therefore, the test results of TC_TMM_011 is "Pass" as actual result met the expected result.

5.2.3 Delete Task

Project Name	Mobile Student Study Planner
Module Name	Task Management Module
Reference Document	today.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TMM_012
Test Scenario	To verify the functionality of delete task and correctness of outputs.
Test Case Description	Test the functionality of delete task (confirm delete).
Pre-condition	1. User is logged in to the application. 2. User has added slots of free time.
Expected Result	Respective task will be deleted and message “Task is deleted” is displayed. The application shall perform rescheduling on the ongoing tasks of the selected date.
Actual Result	Respective task is deleted and message “Task is deleted” is displayed. The application performs rescheduling on the ongoing tasks of the selected date.
Test Result	Pass

Test Steps	**Test Data**
1. Slides left to delete task.	“Revision”, ”AI”, ”Study chap 10”, 2020-09-01, 1:00:00.000000
2. Clicks yes.	Yes

Table 5-2-3-1: Test Cases for Task Management Module: Delete Task.



1 Revision
Subject: SEP
Details: Chap 5
Date: 2020-09-01
Time: 10:00
Duration: 1 hour(s)
Priority value: 61.349253

2 Assignment
Subject: Mobile App
Details: Report
Date: 2020-09-01
Time: 13:00
Duration: 1 hour(s)
Priority value: 60.967213

Revision
Subject: AI
Details: Study chap 10
Date: 2020-09-01
Time: 19:00
Duration: 1 hour(s)
Priority value: 39.732228

4 Revision
Subject: French
Details: Study for mid term
Date: 2020-09-01
Time: 20:00
Duration: 1 hour(s)
Priority value: 39.289721

Do you want to delete the task?

Task is deleted.

1 Revision
Subject: SEP
Details: Chap 5
Date: 2020-09-01
Time: 10:00
Duration: 1 hour(s)
Priority value: 61.349253

2 Assignment
Subject: Mobile App
Details: Report
Date: 2020-09-01
Time: 13:00
Duration: 1 hour(s)
Priority value: 60.967213

3 Revision
Subject: French
Details: Study for mid term
Date: 2020-09-01
Time: 20:00
Duration: 1 hour(s)
Priority value: 39.289721

Re-scheduling...

1 Revision
Subject: SEP
Details: Chap 5
Date: 2020-09-01
Time: 10:00
Duration: 1 hour(s)
Priority value: 61.349253

2 Assignment
Subject: Mobile App
Details: Report
Date: 2020-09-01
Time: 13:00
Duration: 1 hour(s)
Priority value: 60.967213

3 Revision
Subject: French
Details: Study for mid term
Date: 2020-09-01
Time: 19:00
Duration: 1 hour(s)
Priority value: 39.289721

Re-scheduled.

Figure 5-2-3-1: Test Results of TC_TMM_012.

Figure 5-2-3-1 shows the result when user deletes a task. Respective task is deleted and message “Task is deleted” is displayed. Rescheduling is performed on the ongoing tasks of the selected date. Therefore, the test results of TC_TMM_012 is “Pass” as actual result met the expected result.

5.3 Automated Task Arrangement Module

5.3.1 Calculate Priority Value

Project Name	Mobile Student Study Planner
Module Name	Automated Task Arrangement Module
Reference Document	addtask.dart, edittask.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_ATAM_001
Test Scenario	To verify the functionality of calculate priority value and correctness of outputs.
Test Case Description	Test the functionality of calculate priority value.
Pre-condition	1. User is creating a new task. 2. User is editing an existing task.
Expected Result	The application shall return a list of tasks sorted with highest priority value first.
Actual Result	The application returns a list of tasks sorted with highest priority value first.
Test Result	Pass
Test Steps	**Test Data**
1. The application fetches the input date, input duration and created date of the creating or editing task.	TC_TMM_001, TC_TMM_002, TC_TMM_003, TC_TMM_004, TC_TMM_005, TC_TMM_006, TC_TMM_007, TC_TMM_008, TC_TMM_009, TC_TMM_010

Table 5-3-1-1: Test Cases for Automated Task Arrangement Module: Calculate Priority Value.

Test results of TC_ATAM_001 depends on the test results of 5.2.1 Add Task and 5.2.2 Edit Task. Based on the test results on 5.2.1 Add Task and 5.2.2 Edit Task, the calculate priority value function able to return list of task sorted with highest priority value first. Therefore, the test results of TC_ATAM_001 is “Pass” as actual result met the expected result.

5.4 Time Scheduler Module

5.4.1 Time Scheduling

Project Name	Mobile Student Study Planner
Module Name	Time Scheduler Module
Reference Document	add.dart, freetime.dart, addtask.dart, edittask.dart, today.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_TSM_001
Test Scenario	To verify the functionality of time scheduling and correctness of outputs.
Test Case Description	Test the functionality of time scheduling.
Pre-condition	1. Automated Task Arrangement with scheduling is triggered. 2. Rescheduling is triggered.
Expected Result	The application shall return a list of tasks sorted with highest priority value first and correct scheduled time.
Actual Result	The application shall return a list of tasks sorted with highest priority value first and correct scheduled time.
Test Result	Pass
Test Steps	**Test Data**
1. The application fetches the input date of the respective task.	TC_SMM_001, TC_SMM_005, TC_SMM_006, TC_TMM_001, TC_TMM_002, TC_TMM_003, TC_TMM_004, TC_TMM_005, TC_TMM_006, TC_TMM_007, TC_TMM_008, TC_TMM_009, TC_TMM_010, TC_TMM_011, TC_TMM_012

Table 5-4-1-1: Test Cases for Time Scheduler Module: Time Scheduling.

Test results of TC_TSM_001 depends on the test results of 5.1.1 Add Slot, 5.1.2 Delete Slot, 5.2.1 Add Task, 5.2.2 Edit Task and 5.2.3 Delete Task. Based on the test results on the sub chapters mentioned, the time scheduling function able to return list of task sorted with highest priority value first with correct scheduled time. Therefore, the test results of TC_TSM_001 is "Pass" as actual result met the expected result.

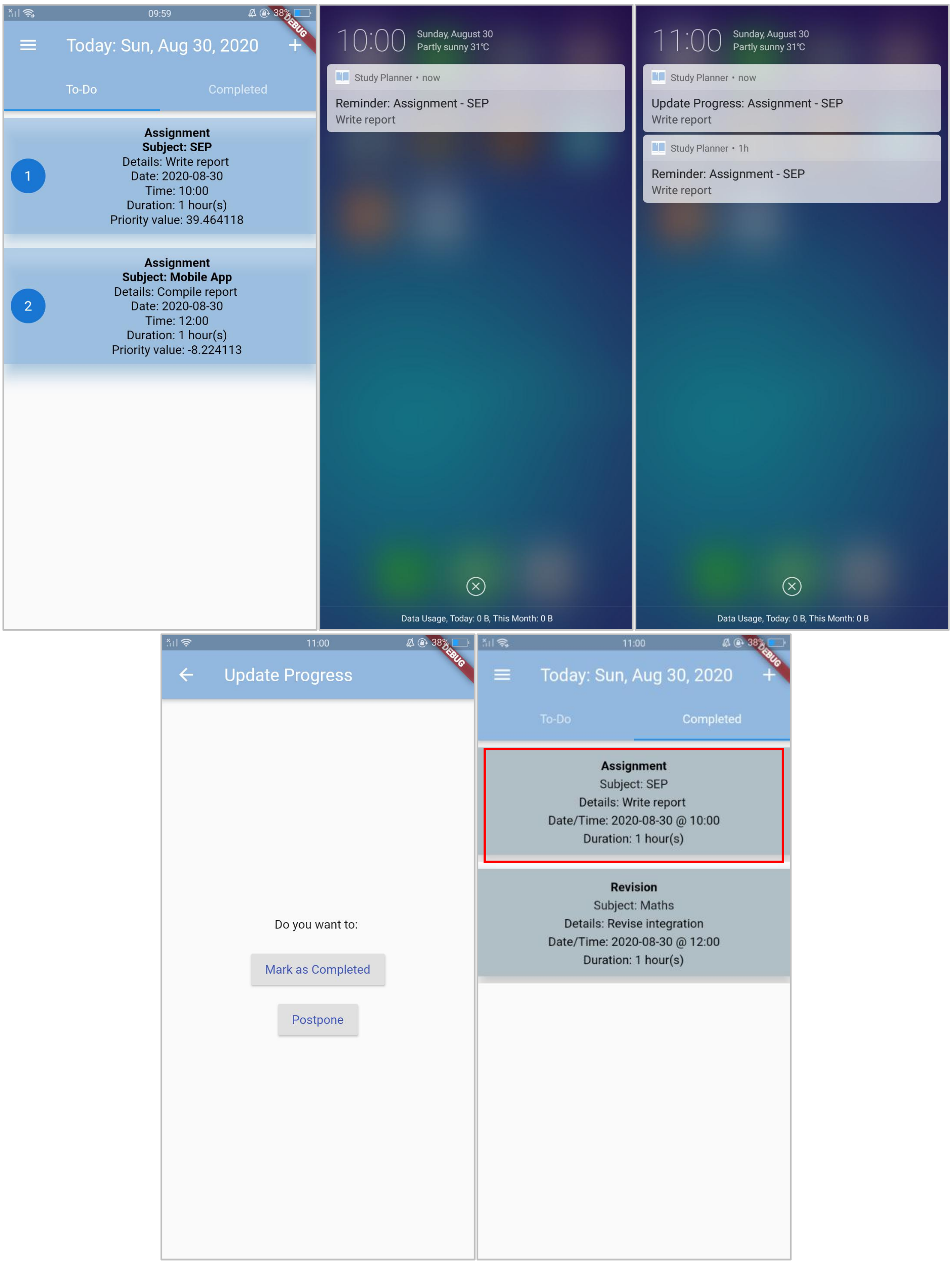
5.5 Task Notification Module

5.5.1 Notify Task

Project Name	Mobile Student Study Planner
Module Name	Task Notification Module
Reference Document	today.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_NM_001
Test Scenario	To verify the functionality of notify task and correctness of outputs.
Test Case Description	Test the functionality of notify task (Mark as Completed).
Pre-condition	1. There exists more than one task in the application.
Expected Result	The application will update the respective task’s progress as Completed in database.
Actual Result	The application will update the respective task’s progress as Completed in database.
Test Result	Pass

Test Steps	**Test Data**
1. Retrieves information of the tasks from database.	“Assignment”, ”SEP”, ”Write report”, 2020-08-30, 10:00, 1:00:00.000000
2. Stored in local storage.	“Assignment”, ”SEP”, ”Write report”, 2020-08-30, 10:00, 1:00:00.000000
3. Send a reminder notification to User on the scheduled date and time.	2020-08-30, 10:00
4. Send a second notification to User to update progress once the expected duration is finished.	2020-08-30, 11:00
5. User clicks the notification.	“Assignment”, ”SEP”, ”Write report”, 2020-08-30, 10:00,1:00:00.000000
6. User selects “Mark as Completed”.	Mark as Completed

Table 5-5-1-1: Test Cases for Task Notification Module: Notify Task.



Today: Sun, Aug 30, 2020

1
Assignment
Subject: SEP
Details: Write report
Date: 2020-08-30
Time: 10:00
Duration: 1 hour(s)
Priority value: 39.464118

2
Assignment
Subject: Mobile App
Details: Compile report
Date: 2020-08-30
Time: 12:00
Duration: 1 hour(s)
Priority value: -8.224113

10:00 Sunday, August 30 Partly sunny 31℃

Study Planner • now
Reminder: Assignment - SEP
Write report

Data Usage, Today: 0 B, This Month: 0 B

11:00 Sunday, August 30 Partly sunny 31℃

Study Planner • now
Update Progress: Assignment - SEP
Write report

Study Planner • 1h
Reminder: Assignment - SEP
Write report

Data Usage, Today: 0 B, This Month: 0 B

Update Progress

Do you want to:

Today: Sun, Aug 30, 2020

Assignment
Subject: SEP
Details: Write report
Date/Time: 2020-08-30 @ 10:00
Duration: 1 hour(s)

Revision
Subject: Maths
Details: Revise integration
Date/Time: 2020-08-30 @ 12:00
Duration: 1 hour(s)

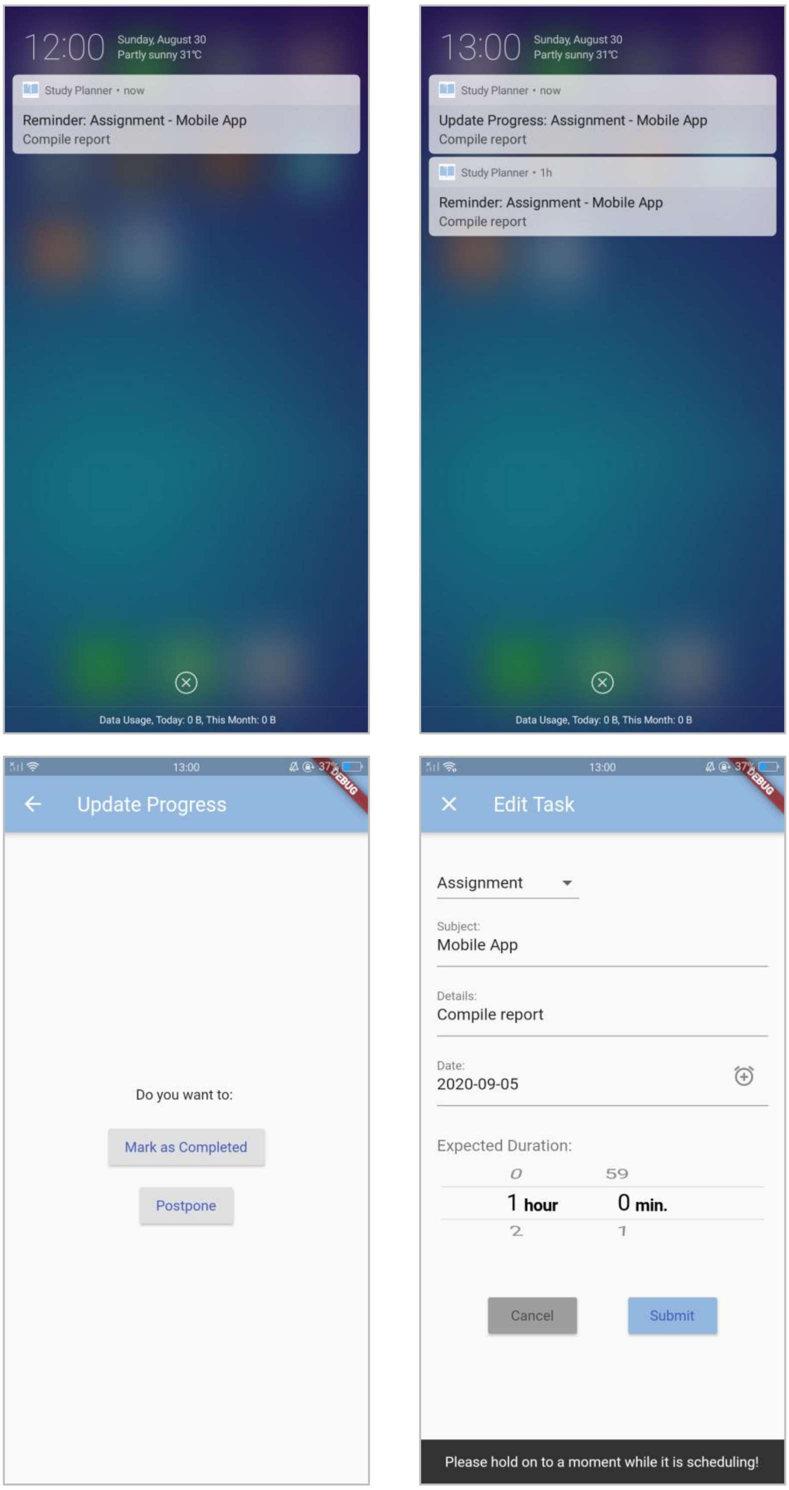
Figure 5-5-1-1: Test Results of TC_NM_001.

Figure 5-5-1-1 shows the actual results of TC_NM_001. User receives a reminder on the scheduled time and a second reminder to update the progress. User chooses to mark as completed. The respective task's progress is then updated in database. Therefore, the test results of TC_NM_001 is "Pass" as actual result met the expected result.

Project Name	Mobile Student Study Planner
Module Name	Task Notification Module
Reference Document	today.dart
Created by	Chai Jia Yuan
Date of creation	24/8/2020
Date of review	29/8/2020
Test Case ID	TC_NM_002
Test Scenario	To verify the functionality of notify task and correctness of outputs.
Test Case Description	Test functionality of notify task (Postpone).
Pre-condition	1. There exists more than one task in the application.
Expected Result	The application will prompt user to edit task page (5.2.2 Edit Task).
Actual Result	The application will prompt user to edit task page (5.2.2 Edit Task).
Test Result	Pass

Test Steps	**Test Data**
1. Retrieves information of the tasks from database.	“Assignment”, ”Mobile App”, ”Compile report”, 2020-08-30, 12:00, 1:00:00.000000
2. Stored in local storage.	“Assignment”, ”Mobile App”, ”Compile report”, 2020-08-30, 12:00, 1:00:00.000000
3. Send a reminder notification to User on the scheduled date and time.	2020-08-30, 12:00
4. Send a second notification to User to update progress once the expected duration is finished.	2020-08-30, 13:00
5. User clicks the notification.	“Assignment”, ”Mobile App”, ”Compile report”, 2020-08-30 12:00, 1:00:00.000000
6. User selects “Postpone”.	“Assignment”, ”Mobile App”, ”Compile report”, 2020-09-05, 1:00:00.000000

Table 5-5-1-2: Test Cases for Task Notification Module: Notify Task



12:00 Sunday, August 30 Partly sunny 31℃

Study Planner • now
Reminder: Assignment - Mobile App
Compile report

Data Usage, Today: 0 B, This Month: 0 B

13:00 Sunday, August 30 Partly sunny 31℃

Study Planner • now
Update Progress: Assignment - Mobile App
Compile report

Study Planner • 1h
Reminder: Assignment - Mobile App
Compile report

Data Usage, Today: 0 B, This Month: 0 B

Update Progress

Do you want to:

Mark as Completed

Postpone

Edit Task

Assignment

Subject: Mobile App

Details: Compile report

Date: 2020-09-05

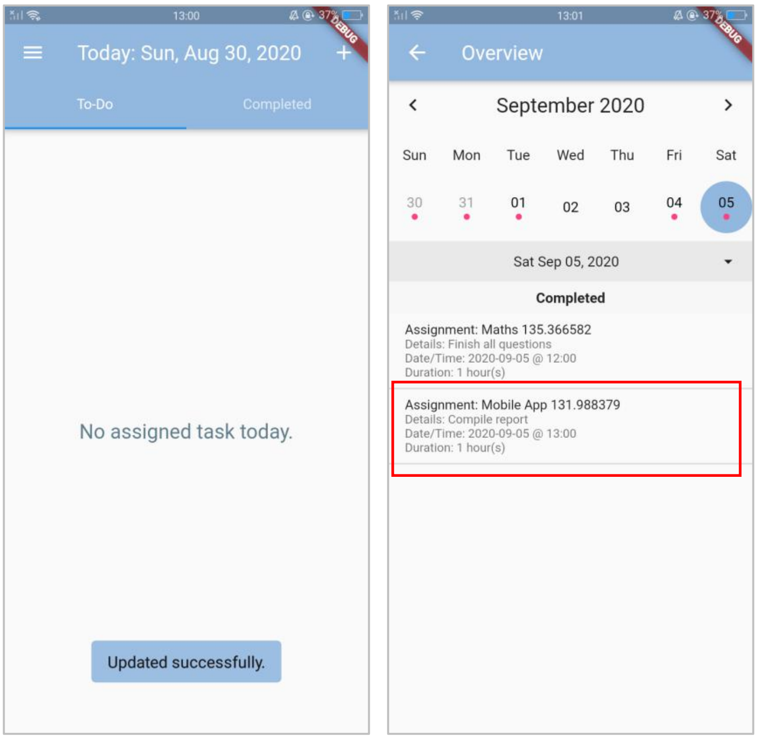
Expected Duration: 1 hour 0 min.

Cancel Submit

Please hold on to a moment while it is scheduling!

Figure 5-5-1-2: Test Results of TC_NM_002.

Figure 5-5-1-2 shows the actual results of TC_NM_002. User receives a reminder on the scheduled time and a second reminder to update the progress. User chooses to postpone the task. The application prompts user to edit task page. The test results of edit task can be referred to 5.2.2 Edit Task.



No assigned task today.

Updated successfully.

Sat Sep 05, 2020

Completed

Assignment: Maths 135.366582
Details: Finish all questions
Date/Time: 2020-09-05 @ 12:00
Duration: 1 hour(s)

Assignment: Mobile App 131.988379
Details: Compile report
Date/Time: 2020-09-05 @ 13:00
Duration: 1 hour(s)

Figure 5-5-1-3: Test Results of TC_NM_002.

Once the task is updated successfully, the postponed task will be moved to the new date as show in Figure 5-5-1-3. Therefore, the test results of TC_NM_002 is “Pass” as actual result met the expected result.

CHAPTER 6: DISCUSSION

The first objective of the project is to develop a mobile student study planner which helps students to arrange their tasks in priority order. Based on the test results in 5.3 Automated Task Arrangement Module and 5.4 Time Scheduler Module, the outputs of the test results proved that the application is able to calculate a priority value and assign it to a respective task, and arrange the tasks with higher priority values first every time user creates or edits a task. For every rescheduling triggers, the application is able to reschedule the tasks based on the priority order. Therefore, the set objective 1 is achieved.

The second objective of the project is to develop a mobile student study planner which schedules a time to the tasks created by the students. Based on the test results in 5.4 Time Scheduler Module, the outputs of the test results proved that the application is able to auto assign a time to the tasks created by user when the respective function is triggered. Several situations have been considered in the test results and is categorised into scheduling or rescheduling. Upon scheduling or rescheduling, the application generated a time based on the slots given by the user and assigned to the tasks according to its priority values. The assigned time was correctly assigned to the tasks. Therefore, the set objective 2 is achieved.

The third objective of the project is to develop a mobile student study planner which provides students a second reminder notification when the assigned duration has ended. Based on the test results in 5.5 Notification Module, the outputs of the test results proved that the application is able to send a second reminder notification to user when the assigned duration to the task has ended. In the application, the assigned duration started to count down when the first notification is sent to user on the scheduled time. Once the assigned duration is up, a second notification is sent. Therefore, the set objective 3 is achieved.

In conclusion, all of the objectives as stated in 1.3 Project Objectives have been achieved.

The limitation of the application is the time assignment. In this project, the time is assigned to the task by fitting in the task with highest priority value first, followed by the others. Hence, separation on the task's duration is unavoidable. For example, a task with 2 hours might be separated into 2 slots with 1 hour each. Therefore, future improvement on this limitation can be made where the application can provide additional setting to user. The additional setting is to allow user to choose not to separate the task's duration.

Besides, as the application is partially performing automated time scheduling, the future enhancement can be a fully automated time scheduling where user does not need to provide a date to the task. The date and time of all the tasks will be automatically assigned by the application.

With reference to the previous enhancement, another future enhancement which can be implemented is generating a preview of the timetable to user upon every scheduling or rescheduling. User is allowed to modify the tasks on the timetable preview to his preferences, and save the timetable.

CHAPTER 7: CONCLUSION

In the present time, study planner often comes to help in facilitating the students to manage their studying time and activities. With a good plan on these, the heavy workloads of students can be balanced and contributes to a higher productivity and efficiency of work. One of the weaknesses of the existing applications is absence of a feature to help students to arrange their tasks in priority order and the necessity to implement a second reminder notification upon assigned duration finishing. Hence, to accommodate the feature of arranging tasks in priority order, another weakness is the absence of a time scheduler.

The objectives of this project are to develop a mobile student study planner which helps students to arrange their tasks in priority order, schedules a time to the tasks created by the students and to provide students a second reminder notification when the assigned duration has ended. Helping student to arrange their tasks automatically is useful in assisting them to decide which tasks to be prioritised. Meanwhile for time scheduling, it is to fit for the purpose of the previous feature mentioned. An implementation of a second reminder is aimed to minimise inaccurate time allocation when scheduling or rescheduling tasks.

As it is found that the above features of the study planner can be further innovated in the existing applications, hence based on the objectives above, the innovations of the proposed project are to implement those features in a study planner besides having the common features in existing applications.

In conclusion, the proposed project implements a study planner mobile application focusing on the functions of automated task arrangement, time scheduler and sending second notification. The features of automated task arrangement and time scheduler achieved the purposes of helping students to arrange their tasks in priority order while the sending second notification feature achieved the objective of implementing a second reminder. With the implementation of the proposed project, it is believed that it will be resulted in a better learning outcome for the students and help distribute their tasks more evenly and efficiently with the added features.

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FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 2
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Discussed about FYP1 project scope.

Discussed new ideas on the project scope.

2. WORK TO BE DONE

Do some research on the new ideas.

3. PROBLEMS ENCOUNTERED

Project scope in FYP1 is hard to be implemented.

4. SELF EVALUATION OF THE PROGRESS

Slow.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 3
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Study Planner	

1. WORK DONE

Revised FYP 1 report.

Confirmed the project scope.

2. WORK TO BE DONE

Continue to code.

3. PROBLEMS ENCOUNTERED

No problems encountered.

4. SELF EVALUATION OF THE PROGRESS

Slow.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 4
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Demonstrated half prototype.

2. WORK TO BE DONE

Continue to code.

Enhance project scope.

3. PROBLEMS ENCOUNTERED

Project scope is too simple.

4. SELF EVALUATION OF THE PROGRESS

Slow.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 6
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Completed part of coding.

2. WORK TO BE DONE

Continue to code.

Write report.

3. PROBLEMS ENCOUNTERED

None.

4. SELF EVALUATION OF THE PROGRESS

Moderate.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 8
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Completed part of coding.

Demonstrated half prototype.

Submitted draft report to supervisor for checking.

2. WORK TO BE DONE

Continue to code.

Enhance functions.

Continue to write report.

3. PROBLEMS ENCOUNTERED

None.

4. SELF EVALUATION OF THE PROGRESS

Moderate.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 10
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Completed part of coding.

2. WORK TO BE DONE

Continue to code.

Continue to write report.

3. PROBLEMS ENCOUNTERED

Time constraints.

4. SELF EVALUATION OF THE PROGRESS

Moderate.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 11
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Finalised prototype.

Submitted draft report to supervisor for checking.

2. WORK TO BE DONE

Continue to write report.

3. PROBLEMS ENCOUNTERED

None.

4. SELF EVALUATION OF THE PROGRESS

Moderate.

Supervisor's signature

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 1, Year 4	**Study week no.:** 12
Student Name & ID: Chai Jia Yuan 1701899	
Supervisor: Dr Ku Chin Soon	
Project Title: Mobile Student Study Planner	

1. WORK DONE

Finalised FYP2 report.

2. WORK TO BE DONE

Send finalised report to supervisor for checking.

Prepare oral presentation.

3. PROBLEMS ENCOUNTERED

None.

4. SELF EVALUATION OF THE PROGRESS

Moderate.

Supervisor's signature

Student's signature

APPENDIX B: POSTER

MOBILE STUDENT STUDY PLANNER

BY CHAI JIA YUAN

INTRODUCTION

- Inefficient time management causes students to have low productivity in studies.
- There are similar mobile applications in the market, but it can be further innovated.

PROBLEM STATEMENT

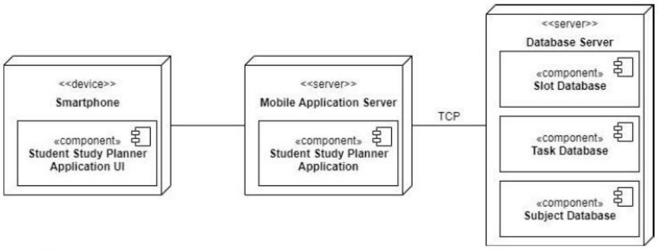
- Absence of a feature to help students to arrange their tasks in priority order.
- Absence of a time scheduler to accommodate the automated task arrangement.
- The necessity to implement a second reminder notification upon assigned duration finishing.

PROJECT OBJECTIVES

To develop a mobile student study planner which:

- Helps students to arrange their tasks in priority order.
- Schedules a time to the tasks created by the students.
- Provides students a second reminder notification when the assigned duration has ended.

SYSTEM ARCHITECTURE



DISCUSSION

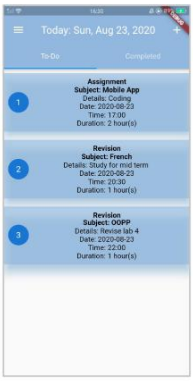
Future improvements / enhancements:

- Additional setting for user to decide task separation.
- Fully automated time scheduling.
- Timetable preview.

CONCLUSION

- Study planner often comes to help in facilitating the students to manage their studying time and activities.
- A good plan ahead helps to balance the heavy workloads and contributes to a higher productivity and efficiency of work.
- Better learning outcome and help distribute tasks more evenly and efficiently.

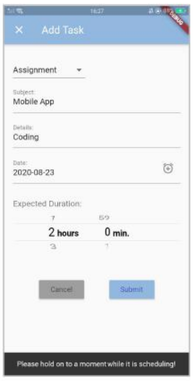
RESULTS


Today: Sun, Aug 23, 2020

1 **Assignment**
Subject: Mobile App
Details: Coding
Date: 2020-08-23
Time: 17:00
Duration: 2 hour(s)

2 **Revision**
Subject: French
Details: Study for mid term
Date: 2020-08-23
Time: 20:30
Duration: 1 hour(s)

3 **Revision**
Subject: OOPP
Details: Revise lab 4
Date: 2020-08-23
Time: 22:00
Duration: 1 hour(s)


Add Task

Assignment

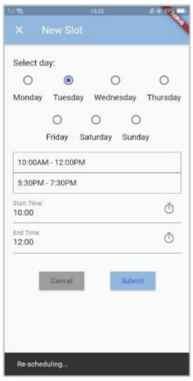
Subject: Mobile App

Details: Coding

Date: 2020-08-23

Expected Duration: 2 hours 0 min.

Please hold on to a moment while it is scheduling!


New Slot

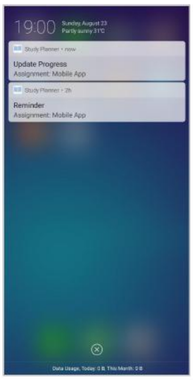
Select day:
○ Monday ● Tuesday ○ Wednesday ○ Thursday
○ Friday ○ Saturday ○ Sunday

10:00AM - 12:00PM
5:30PM - 7:30PM

Start Time: 10:00

End Time: 12:00

Re-scheduling...

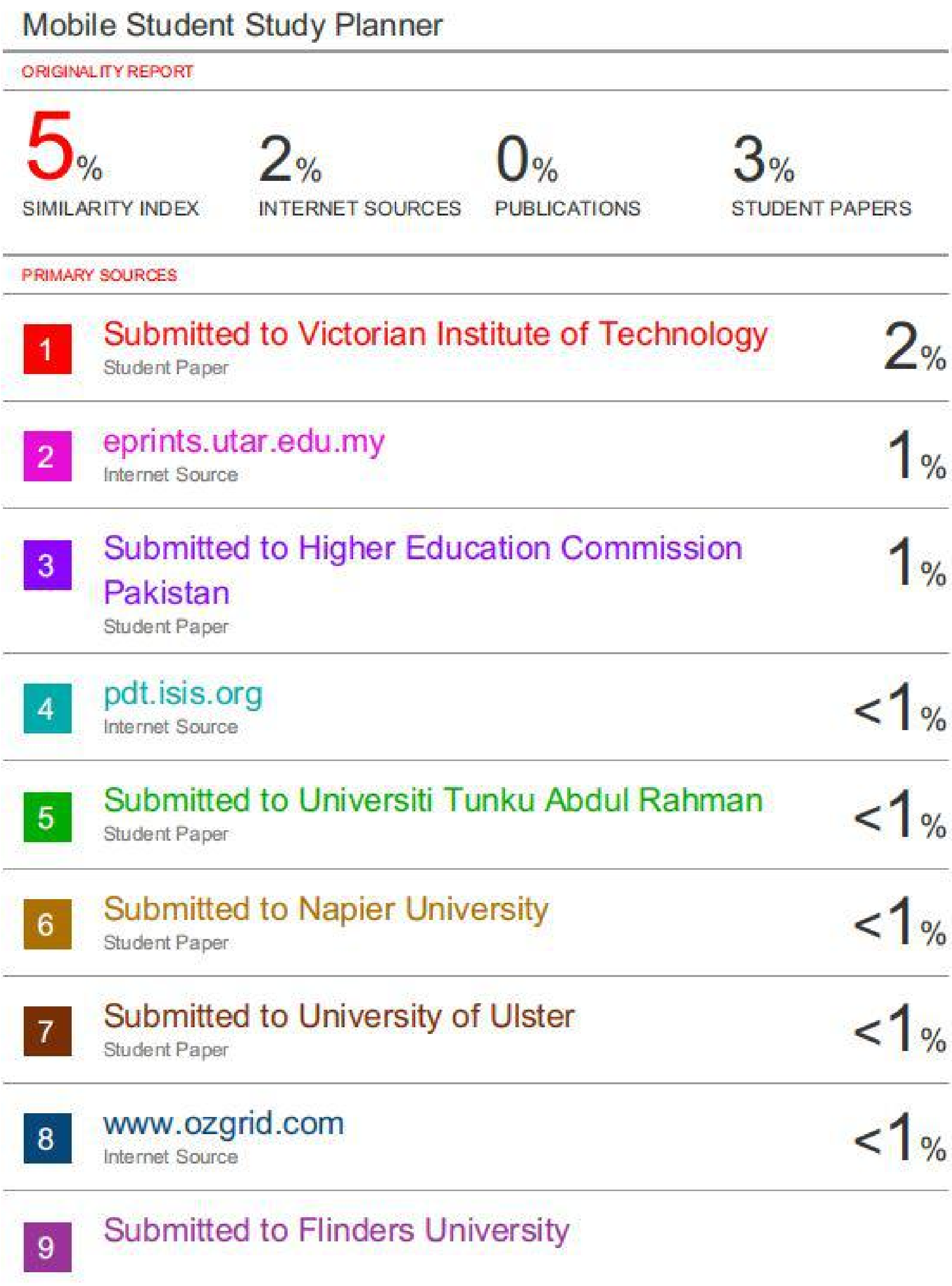

19:00 Sunday, August 23
Partly sunny 31°C

Study Planner • now
Update Progress
Assignment: Mobile App

Study Planner • 2h
Reminder
Assignment: Mobile App

Data Usage, Today: 0 B, This Month: 0 B

PLAGIARISM CHECK RESULT



Mobile Student Study Planner

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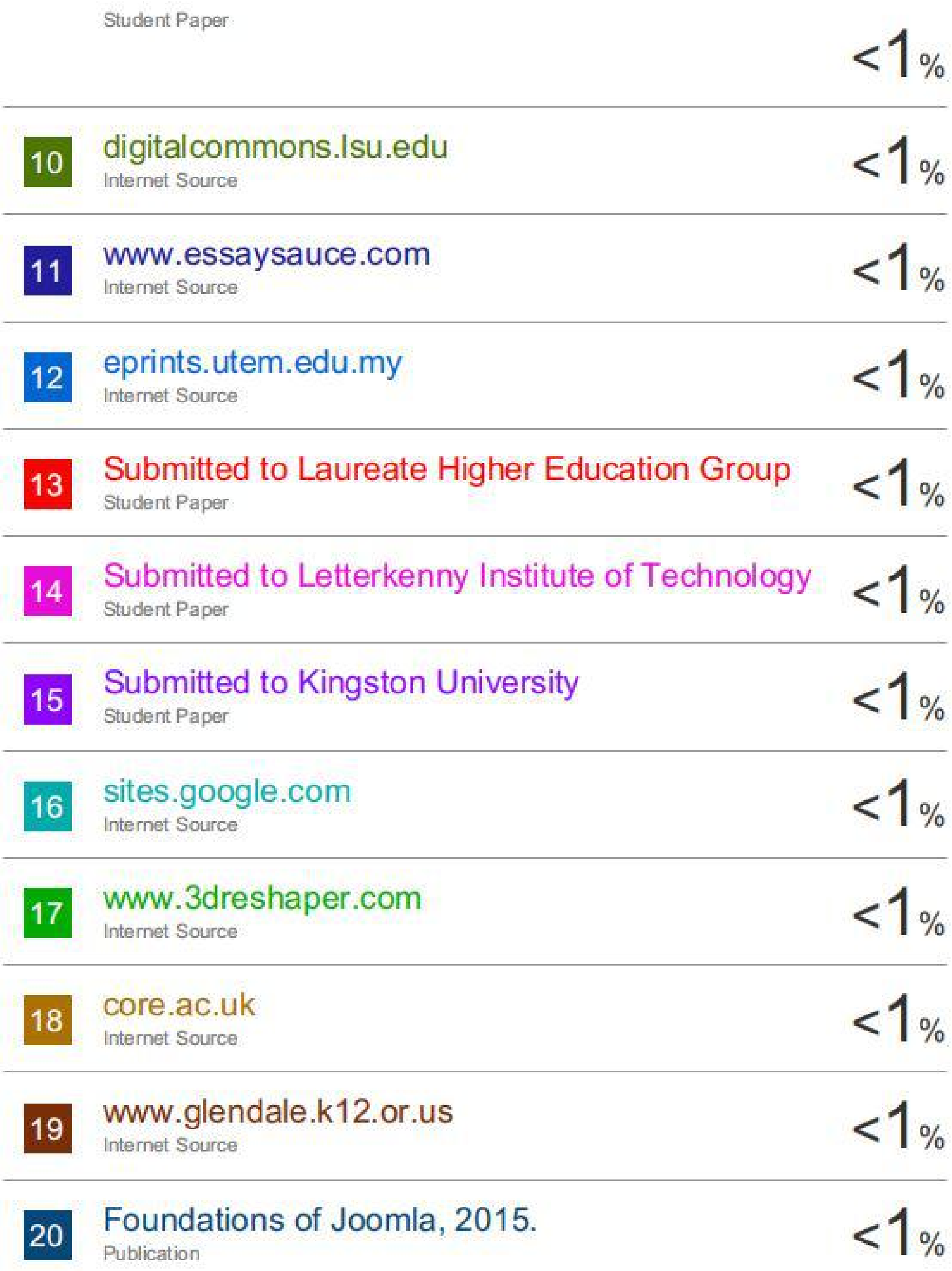

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