

EMERGENCY CALL MOBILE APPLICATION
BY
LIAN SOON LEE

A REPORT
SUBMITTED TO
Universiti Tunku Abdul Rahman
In partial fulfillment of the requirements
for the degree of
BACHELOR OF INFORMATION SYSTEMS (HONS)
INFORMATION SYSTEM ENGINEERING
Faculty of Information and Communication Technology
(Perak Campus)

JAN 2016

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Title: Emergency Call Mobile Application

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Date: 12 APRIL 2016

Date: 12 APRIL 2016

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DECLARATION OF ORIGINALITY

I declare that this report entitled Emergency Call Mobile Application 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.

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Date : 12 APRIL 2016

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I would like to express my sincere thanks to my supervisors, Mr. Phan Koo Yuen has given me this opportunity to work on this emergency call mobile application and given me a lot of guidance and support in this project. Basically this project title is come from Mr. Phan, again a million thanks to Mr. Phan willing to give me a chance to work on this project. Because of this project I get to learned how to develop a mobile application in a proper procedure.

Moreover, I would like to say thanks to my friend and family for their love, encouragement and support. Because of their idea and opinion, I get to know what improvement I should make in this project are.

ABSTRACTS

Emergency call mobile application will work like an emergency pocket assistant to help people during the urgent situation. The idea for this application is easy and effective. The basic concept of this mobile application is, when the user fall into the emergency situation, he or she can just press the power button of smartphone for specific times in order to activate all the emergency function inside the app, and then the function will help the user to look for help or tell someone the current urgent situation in a short period of time. The emergency function will be send emergency message, personal information and GPS location through SMS to particular contact, and also time interval function, phone call function and social network function. Besides, the user also can trigger the emergency function from their smart watch. There are some of the existing emergency type mobile apps in the current market, but there are some problem exist in the existing apps. Such as the way to trigger the function are not effective, do not support smart watch and cannot post emergency status or image in social network. For the emergency mobile application in this project will be more effective and innovative compare to the existing apps.

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LIST OF ABBRIVIATION

<i>APP</i>	Application
<i>GPS</i>	Global Position System
<i>SMS</i>	Short Message Services
<i>SQL</i>	Standardized Query Language
<i>SDK</i>	Software Development Kit
<i>API</i>	Application Program Interface
<i>RAM</i>	Random Access Memory
<i>ROM</i>	Read Only Memory
<i>APK</i>	Android Application Package
<i>FYP</i>	Final Year Project
<i>EMER</i>	Emergency Call Mobile Application

Chapter 1: Introduction

1.1 Introduction

Emergency call mobile application is a system that use to help people when they are in urgent situation. For example when a people kidnapped by a kidnapper, during the extreme situation, they can just press one button from the mobile phone or smart watch all the personal information will be send through SMS to two or three important person or even some government official that set by the user. The personal information of the user, the coordinate of the user current location and the emergency message set by the user will attach together in SMS and send. In addition, the app will help the user to call someone when the emergency function is triggered. Besides, the apps will help the user to post emergency status or post captured photo on social network like Facebook. Other than that, the user can choose the specific time interval to re-launch the emergency function. So, this is how the application operate to help people.

Moreover, the idea of the emergency mobile application that we develop in this project is quick, easy and effective. Therefore, we decide to set only one button to let user to click. For example the user want to operate the apps, they just need to press one button in order to activate all the function in the apps. This will make the user feel easy, effective and less burden when they need to operate the apps, because fast and quick is the most important things during emergency situation. The basic concept of the mobile application that we develop in this project will be like when the user click and enter in first time the apps will pop-up a screen and ask user to register some personal information. The personal information will include the name of the user, date of birth, identity number, personal contact number, address and some personal message. Besides, the apps will need some emergency contact number from user. The contact number can be the relative of the user or even the friend of the user. The apps use send all the information or even call the emergency contact during the emergency situation. To trigger the emergency function the user can press the physical button of smartphone like the power button or trigger from smart watch.

1.2 Problem Statement

1. The way to active the apps are not effective

Some of the existing apps procedure to active the apps is less straight forward. The way means that how the user active the app, For instance the user need to unlock the phone and click on the widget or icon of the apps then only the function inside the apps will activate. People might be face this problem when they want to active the apps. This problem is important, this is because when a person are in urgent or emergency, they might feel trouble to unlock the phone, if the person phone are using screen lock pattern or pin number this might more worst and also waste time to unlock the phone

2. Do not have smart watch trigger function

Most of the existing emergency apps does not support smart watch. This is because wearable technology are still consider new to the world. So that people will lack understanding about it. The smart watch trigger function is important, this is because during emergency situation, people might not easily to get their phone from the pocket or the phone might place somewhere nearby the user. So it is hard to trigger the emergency function, if user that he or she have smart watch, most of the time the smart watch will wear on the wrist. Therefore, the user can be easily trigger the emergency function from their smart watch to look for help.

3. Lack of feature to post emergency status or post image to social network

Besides message or calling to the emergency contact. Post status or post image on social network is also a good way to get help from other people. Most of the existing emergency apps does not provide this functionality. This function is important this is because, nowadays most of the people are more rely on social network in order to communicate between their friend and family, so that social network became a daily task for people to talk and know what are the status of their friend are going on. Therefore, if the user post the emergency status or post emergency image to social network, the friend and family of the user in social network will be easily get notice by the status or the image that post by the user, so this can improve the possibility of rescue to the user during the urgent situation.

1.3 Motivation

Presently, smartphone become a common use electronic device that people will have nowadays. The mobile application inside the smartphone can be used to help people finish their task. But if the mobile application can be used to rescue or provide help for people when they are in emergency situation, this will become a huge benefit for people. For example if he or she are kidnapped by someone, at that time the victim might not have enough time or energy to type some message to send to someone or even call someone by searching the contact in the phone, this will waste a lot of time, but if the smartphone inside have a mobile application that can automatically send emergency message or call someone by trigger one button in the phone or in the smart watch, then the victim can be easily look for help at the short period of time. The reason that we develop this type of mobile application is because we want to provide an easy, fast and effective way to look for help for all people when they are in trouble, the apps will act like a little emergency assistant in the smartphone.

Moreover, there are few existing emergency mobile apps in the current market, but there are few way that can be improve such as the way to active the apps, do not support smart watch trigger function or the way to spread the emergency message. By solving or improving the function in the mobile apps in order to let user have a good and effective emergency assistant to help them when they are in trouble. In the end of our project is to improve the function of the emergency mobile application and to improve the helpfulness of the apps to the people during emergency situation.

1.4 Project scope

This project is to develop an emergency mobile application that can help people rescue themselves when they are in an emergency situation. This mobile app is targeted on all the users that are using smartphones. In order to deliver a reliable and good system, iterative and incremental models have been chosen to become a software methodology for this project. This software methodology allows the developer to add or improve the functionality of the system using the incremental way. There are seven phases covered in this model, which are initial planning, planning and requirement, analysis and design, testing, implementation, evaluation, and deployment. But we will not cover all the tasks that are performed in each phase, as each phase only covers a specific scope for this project.

The scope for each phase will be:

Phase	Scope
1. Initial planning	The basic and rough plan will be covered in this stage in order to form a basic concept of the system.
2. Planning and requirement	The requirement gathering will be covered to collect the user's needs and wants, besides the actual work plan will be made in order to have a guide for the process of the project.
3. Analysis and design	Analyse the user requirements will be covered to create the standard of the system and system design will be included to form the layout of the system.
4. Testing	System testing and acceptance testing will be covered and carried out in the phase, to test the working system and learn the problem.
5. Implementation	System working confirmation will be covered to ensure the fully working system.
6. Evaluation	Cover system benchmarking to evaluate the performance of the system.
7. Deployment	Cover transformation of the system.

Table 1-1: Scope of Methodology

The scope for the mobile application

1. This mobile app is target for all smartphone user, who ever have smartphone that will be able to use this mobile application.
2. This mobile app are applicable to the user that have smart watch.
3. This mobile app require use mobile data in order to post status and image to social network.
4. GPS is require to get the current location of the user.
5. Camera is require to capture the user current situation.
6. This mobile app will send SMS to the emergency contact that set by user. The SMS will include all the personal information of the user.
7. The mobile app need the permission of the user to post emergency status or image on the specific social network.
8. The password protection is include in the apps in order to protect unauthorized access.
9. Bluetooth connection is require for smart watch user to trigger the emergency function from smart watch.
10. The mobile app require all the personal information from the user, some emergency contact and personal message to create an account in the app.

1.5 Project objectives

In this project, the emergency based mobile application is to develop to help people to act quickly when they are in emergency situation. The system will help to send all the personal information including the location, sound recorder or picture of the user to the emergency contact that the user set in the system. The information will send when the user trigger the system.

Goal to achieve in this project:

- i. To apply physical button active function to trigger the system instead of using the system icon or widget. User can activate all the function by pressing one physical button, such as power button or volume button.
- ii. To apply the smart watch trigger function in order to improve the effectiveness of the ways to trigger emergency function.
- iii. To add post emergency status function. Post emergency status and post captured image on social network. Post status or image on social network like Facebook or Twitter to increase the rescue possibility.
- iv. To develop a simple, effective and user friendly emergency mobile application. Provide user a straight forward interface and friendly mobile application environment.
- v. To apply the time interval function. Provide time interval function to let user to select their own prefer duration and number of times to re-launch the emergency function.

1.6 Impact, significance and contribution

1. Impact

This emergency mobile application will provide user a fast way to look for help. Besides, because of the complete information that set in the apps by the user, the emergency contact or police official will be easy to know who and what exactly is happening in that emergency situation. The rescue process will be performed quickly and accurately according to the user complete information.

2. Significance

Because of the busy and dangerous world today, we need easy and fast way to get help when we are in trouble. For example an invisible emergency assistant that will help people during some stressful situation. Emergency mobile application will be an invisible assistant. People just need to install this mobile application in their smartphone, it will act like an emergency assistant. User can trigger it anytime anywhere as long as emergency is happen. After the user trigger the apps, all the personal information will send to specific contact person to look for help. The user no need to type message or search contact in order to look for help.

3. Contribution

By using this emergency mobile application people can be react fast or look for help in a short period of time when they are in trouble. The emergency mobile application could be reduce the possibility of people kidnapped by someone or increase the chance of people get rescue. Other than the emergency mobile application will improve the efficiency of police or the friend and family to look for the user that are in trouble. For example when the people who installed this apps, suddenly some emergency situation is happen, the user will trigger the apps in order to look for help in quickly without suffering.

1.7 Background Information

Nowadays, smartphone is one of the electronic gadget that people cannot lack it, this is because smartphone have many type of mobile application that can help people do a lot of task and some of the apps can even provide some emergency function to let people look for help. Mobile application is a software or program that develop by IT developer in order to solve problem or entertaining people. In the current market mobile application can divide in three type, for example native apps, mobile web apps and hybrid apps.

Then, native apps is a mobile application that can allow user access through the icon, it can download from the website or mobile apps store. It can perform in offline. Mobile web apps is not exactly a mobile application , this is because it run by a browser and it is like a webpage or website, most of the time user are access through the bookmark of the webpage or website. Hybrid apps is a mobile application that contain the part of native apps and part of mobile web apps, this is because the mobile application is run on the device and it is written in web technology such as HTML5, JavaScripts etc.

Besides, according the description of the type of mobile application above, the type that we choose to develop an emergency call application in this project is native apps. The reason that we choose native type apps, this is because native apps can access all the feature in the device itself and the apps can operate without an internet connection or with internet connection. Create this apps we need to access the camera and also the GPS location system inside the smartphone. The camera is use to capture the photo or video and the GPS location system is use to get user location. Moreover, this mobile will access the message apps and phone call apps inside the phone, in order use to send and call the specific emergency contact that set by the user. Therefore, native apps is the suitable type use to develop emergency mobile application for this project.

Chapter 2: Literature Review

2.1 Article Review

The main topic that use to review the literature is emergency based mobile application. There are many literature and theories that are related to this kind of topic, but in this review we will only focus on three group. Which is the emergency based handling system, the mobile emergency response technology by using geolocation and safety triggering system. This three group will be mainly focus and review, in order to improve the understanding of emergency based mobile application.

1. Emergency based handling system



Figure 2-1: EHS system portal

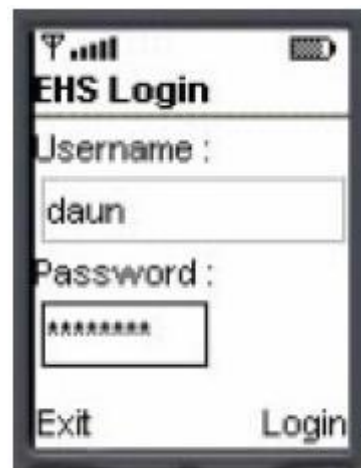


Figure 2-2: EHS Mobile Application

Firstly, the meaning of emergency based handling system group is when people have any incident or emergency, people will use the system to get help and the system will handle this every critical situation to provide help and response to the people. Maznah Kamat, Anazida Zainal & Rashidah Kadir conducted a research and development regarding the emergency handling system. They developed the system call emergency handling system (EHS), they applied location based technologies to this system, in order to detect the caller or the user location and connect to a database server. This kind of system they enable user to send a emergency message to a police station, rescue team, hospital etc. The receiver will check and ensure the location when they login in to the system portal and check the message of the sender to estimate the location (Maznah Kamat, Anazida Zainal & Rashidah Kadir 2003).

Strength:

- Provide a user friendly interface in order to let user more easy to function.
- Able to suggest the user nearest emergency service station and let user report to the nearby station.

Weakness

- User need to login in to the application before they request for help, if in the stressful situation this might be affect the effectiveness of the request
- Did not provide a message resending function for the user, in order to let the user resending the message in the specific interval of time without pressing a button.

2. Emergency response technology by using geolocation

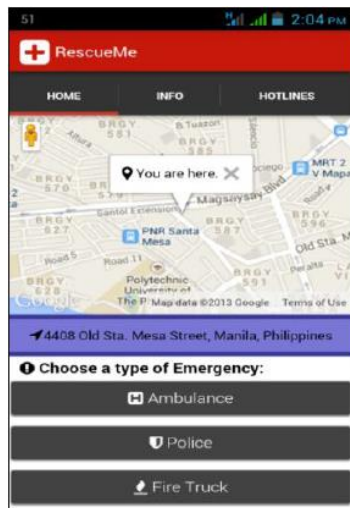


Figure 2-3: RescueMe Apps



Figure 2-4: RescueMe Apps

Following the first group, the second group is the mobile emergency response technology by using geolocation. The meaning of this group is using the location service in smart phone such as GPS and A-GPS to keep track user location when the user are in urgent. Jethro, Ritz and Engr conducted a research or a development regarding the mobile emergency response technology by using geolocation. They develop a mobile application can RescueMe, which using this technologic and the mobile application will work together with the web application command center. The command center will read the user information when the user request certain emergency unit. The application will have three type of emergency unit, for example ambulance,

police and fire truck. After the command center get the user information from the mobile application, the command center will immediately plot the information on google map (Jethro, Ritz & Engr 2014).

Strength:

- The mobile application have a clear and simple user interface.
- The mobile application can detect user location and plot it in google maps in real time.

Weakness:

- The mobile application did not provide a setting for the user to sending emergency message to their friend or related , the apps just provide several hotline for user to call.
- The apps will became ineffective if the user don't have stable network connection

3. Safety triggering system

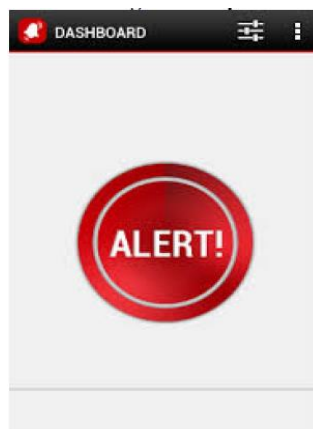


Figure 2-5: Safety triggering system

The last group is safety triggering system. Safety triggering system is when a person who fall in to a stressful situation, in that situation they feel trouble to doing anything, the safety triggering system will help the user handle everything when the user trigger the system. Kalyanchakravarthy, Lakshmi, Rupavathi & Lakshman Kumar conducted a research and development about safety triggering system. They develop an android based safety triggering mobile application, the main purpose of them to create this apps is woman's safety, to provide a quick react when the user are in emergency situation. This application will operate when the user press the power button of the

phone, after pressed the power button, the phone will popup an alert screen and the screen will show user a button, when the pressed the triggering button to active the apps and the apps will starting perform the emergency function at the background. The application will detect the current location of the user and append with the message together and send it to the user family and friend, the user can stop application continue sending message by using the personal password (Kalyanchakravarthy, Lakshmi, Rupavathi & Lakshman Kumar 2014).

Strength:

- Provide a quick ways for user activate the application by one click.
- The apps can resending the emergency message without pressing any button.

Weakness:

- The application do not provide sound recording or video recording function, in order to record down everything during the emergency situation and append together with the message together.
- The apps did not provide a phone call function, in order to let user send the message at the same time they can also call the emergency contact by one click.

In conclusion, by going through all the three group which is emergency based handling system, the mobile emergency response technology by using geolocation and safety triggering system in this literature review. The group of safety triggering system will be more suitable for the world today and it is more related to my project, this is because my project will be more on safety triggering emergency call mobile application such as pressed a physical button to send all information of the user in order to get help. In this whole process of literature review, I learned the different function and purpose of different group and my understanding regarding the emergency based system become stronger. In order for me to create a useful emergency system, the review and also comparison that I make in this review will help me a lot and give me an idea how to make my system become more useful.

2.2 Review Existing Mobile Application

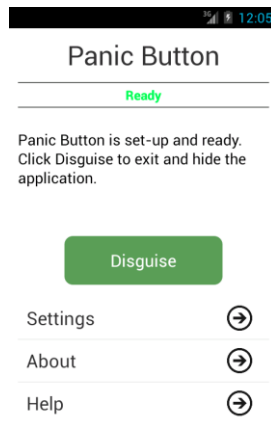


Figure 2-6: Panic Button



Figure 2-7: Emergency Button



Figure 2-8: RescueMe Apps

Existing Mobile Apps	Active the apps by pressed one physical button	Smart watch trigger function.	Post Status and post capture image on social network
Panic Button	Yes	No	No
RescueMe	Yes	No	No
Emergency Button	No	No	No
Proposed System	Yes	Yes	Yes

Table 2-1: Comparison of the Existing Apps

Nowadays, there are many emergency based mobile application in the market, but in this review I will only choose three apps to testing and compare. Based on Table 2-1 there are three apps are in a same type which is safety triggering system. The purpose to review this three apps is to get more idea from the existing apps and learn the standard of safety triggering system.

The first apps that we review is Panic Button, this apps can help user to send emergency message to specific contact every 5 minute, the emergency message is send through SMS, inside the message will attach the user current GPS location. The strength of the apps is send the emergency alert to particular contact every 5 minutes with the user current location. The weakness is the user cannot custom set time interval to resend the emergency alert, the app only provide the default time interval which is 5 minutes.

The second apps is RescueMe, this apps can perform basic emergency function such as trigger the system by one click and the system provide selection of different interval of time. The strength of this apps is allow user to trigger the system by using physical button such as volume key and power button. The weakness of this apps is the interface of the apps is not user friendly and it does not support smart watch trigger function.

The last apps is Emergency Button, this apps can perform basic emergency function to trigger the system by pressed the button in the apps and the user interface of this apps is clear and simple. The strength of this apps is allow user to user to send email and also sms together when the apps is triggered. The weakness of this apps is did not provide a resending function for user to resend the emergency message.

In conclusion, after go through this three apps, each of apps have their own advantage. But by comparing all the existing apps and the function show in Table 1.0, the proposed system in this project will be able to cover all the three function, for example the proposed system will cover the active the apps by using physical button function, smart watch trigger function and post status and post capture image on social network. Therefore the proposed system have a huge advantage over the three existing emergency mobile apps.

2.3 Fact Finding

In order to collect a complete and accurate data in this project. We will only focus on the people who using smart phone. Then, the range of the people that we target is the people who age above 16 years old and below 50 years old. By carrying the feasibility analysis the method that we choose to collect data for the analysis is questionnaire.

The reason that we choose questionnaire as the dataset collection method is because, questionnaire can target large amount of people in order to collect large amount of information. For example we create some question that relate to the emergency mobile application and distribute to particular amount of people in order to receive different opinion or information from the same amount of people. Besides, questionnaire method are more objective, the way of the response that get from the audience are more standardized.

In addition, questionnaire is a cost-effective method by compare to other method, such as interview method. For instance, if the project need to collect large amount of information or data from different geographical area then for interview this might not be a good idea because there is no point for interview large amount of people, the expense for travelling will be horrible and also time consuming. Therefore, questionnaire will be good choice.

Moreover, the format that we choose to set the survey question is closed ended question and multiple choice question. There three section that set in the questionnaire. The first section will be some question to get basic personal information from the audience. For example, the age of the audience, the education level of the audience, the specialization of the audience etc. The second section will be the question about the function and feature. In this section close-ended will be set, the audience can choose only one response out of five, the response will be very useful, useful, neutral, not useful and useless. The question will regarding the usefulness of the function and feature that will set in the emergency mobile apps. The third section will multiple choice question. The section basically is to understand how people understand about emergency mobile apps.

2.4 Data Collection

For this project, by performing the feasibility analysis the data collection method that we choose is questionnaire. We have prepared 30 copied of the questionnaire and distribute to specific target audience. Our target audience which is the age are between 16 to 50 smartphone users. The purpose to carry this analysis is we want to know how much people understand toward emergency mobile apps, how people think about the usefulness of function and feature that will include inside the mobile application and how people actually behave during emergency situation.

1. Function and feature analysis

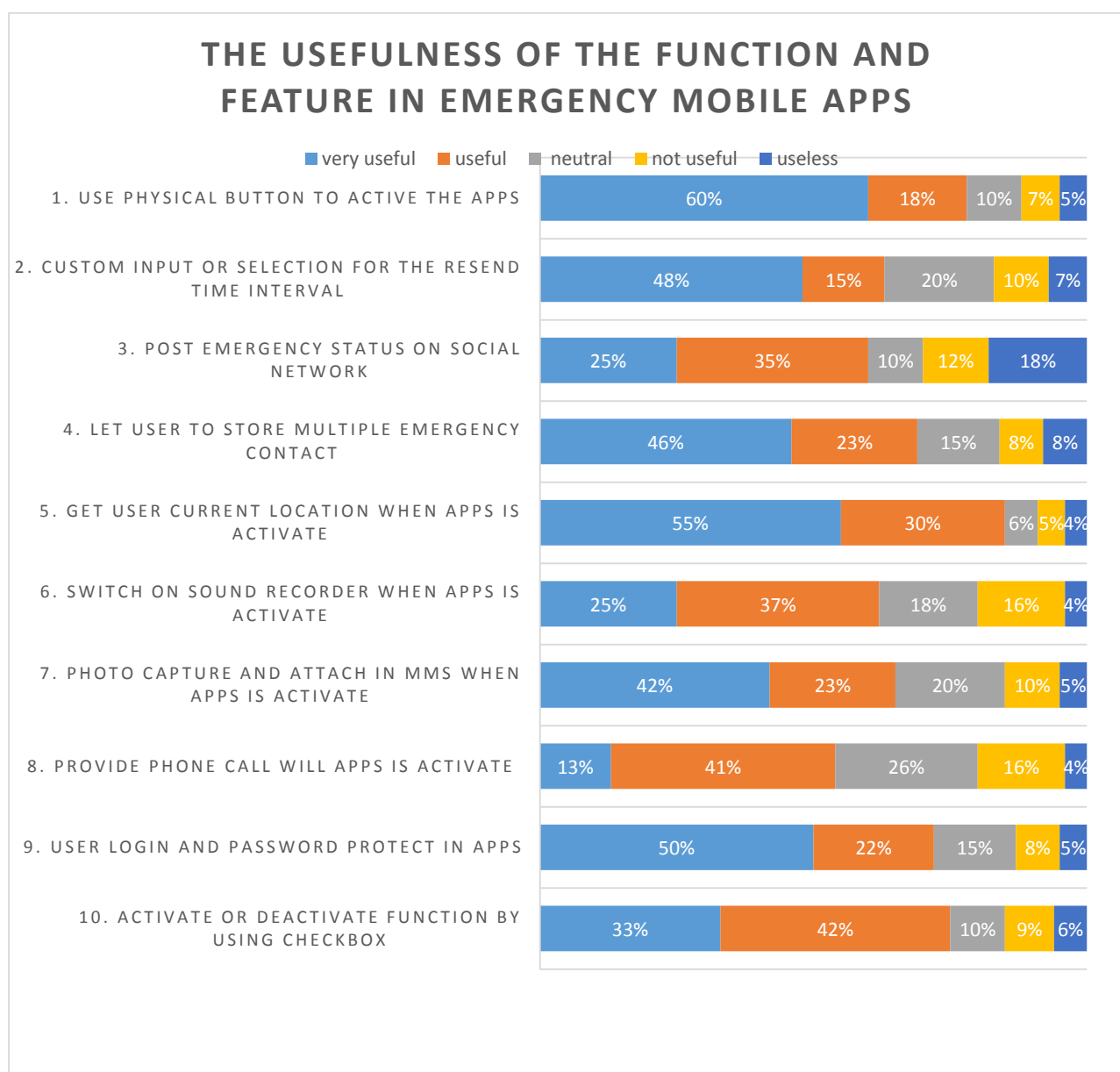


Figure 2-9: Function and Feature analysis

In figure 2-9 is the bar chart that present the data that we collect from the audience. The bar chart show the different function and feature and different percentage that we analyse from the data. This study is about the usefulness of the function and feature will include inside the emergency mobile application. From this study we know that the smartphone user think that using physical button to active the apps is very useful because more than half of the audience choose 'very useful' as the response. Besides, there are 48% of the audience think that custom input or selection for the resend time interval is very useful, from the analysis we can assume that people prefer select or key in the resend time instead of the system set fixed time interval. Other then that, audience think the get current location is very useful, because the percentage of the audience choose the 'very useful' response is 55%, we can understand that why people think that this is very useful, because when people need help during trouble the location position is important for rescue purpose. Moreover, there are some function that people think that is just useful for them but not very useful, the function which is post emergency status on social network, switch on sound recorder when apps is activate, provide phone call while apps is activate and activate and deactivate other emergency function by using checkbox. Most of the people choose 'useful' response for this four function instead of 'very useful', means that the percentage of the 'useful' response is higher than 'very useful'.

2. Analysis of multiple choice question

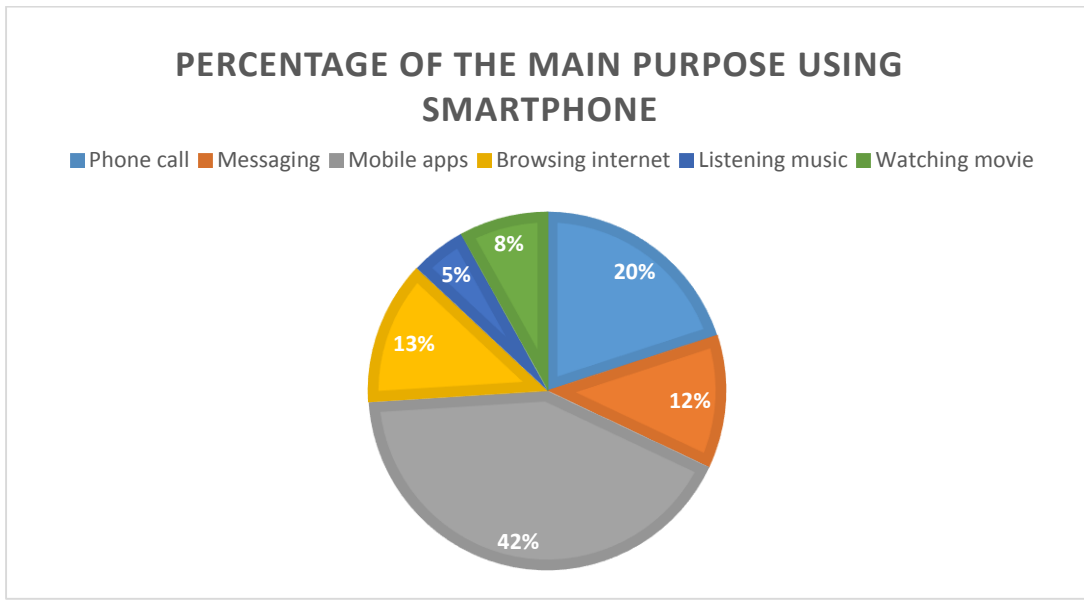


Figure 2-10: Analysis MCQ question 1

Based on the figure 2-10, there is the data that people feel toward the main purpose using smartphone. As we can see that, Mobile apps have the highest percentage which is 42% by comparing to other choices. Which mean people think that mobile apps are the main purpose that people using smartphone. We assume that the reason that the audience choose ‘mobile apps’ as their question, is because the trend and the technology nowadays. For example now people use and buy phone is not because of the phone call, the main thing they want is the specification of the phone, the higher the specification the more mobile apps they can install and the more smooth the mobile application will run.

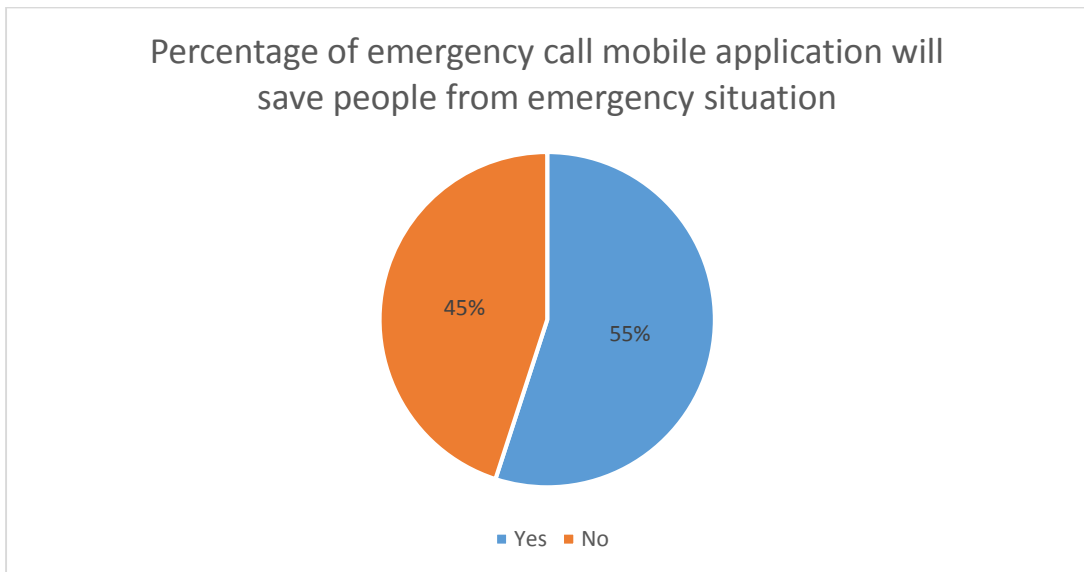


Figure 2-11: Analysis MCQ question 2

Based on figure 2-11, the pie chart show that the data of people think emergency call mobile application will save people. There are 55% of people think the mobile apps can save people from trouble, but the other side of people think that it cannot save people from trouble which is 45%. The percentage of between this to choice are very close. There are some reason that people choose 'NO' as the response, such as some of people think that mobile apps is not effective, some of people also think that smartphone will easy run out of battery therefore no use for the mobile apps if no battery for the smartphone etc. But there are still more than half of the people think that emergency mobile application can save people from emergency situation.

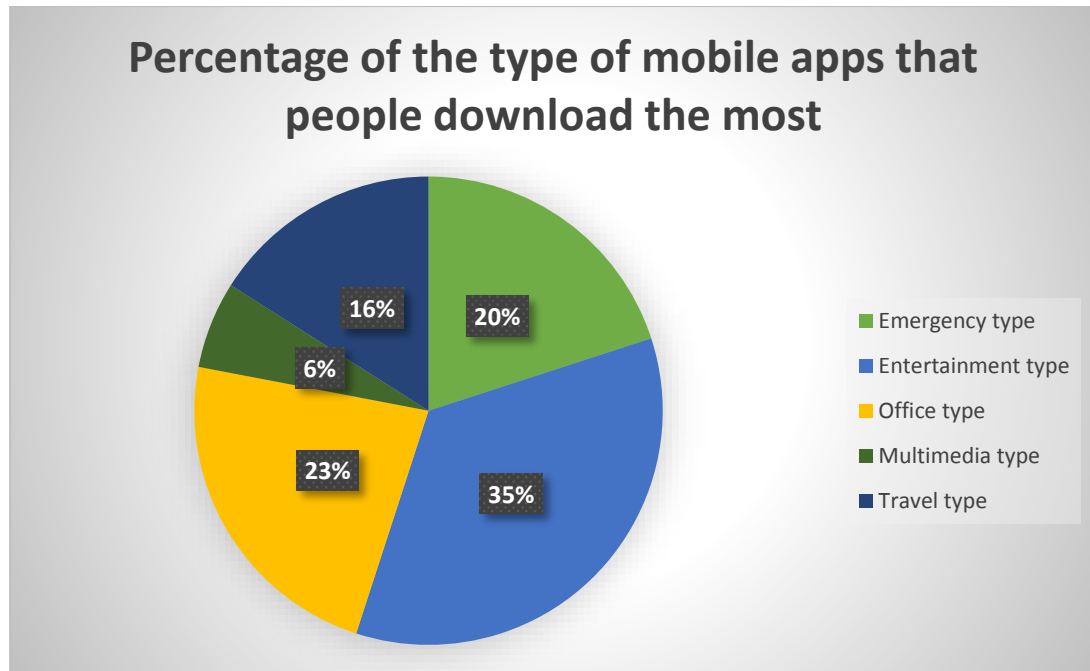


Figure 2-12: Analysis MCQ question 3

The pie chart above present the data about the type of mobile application the people download the most. Entertainment type of mobile apps have the high percentage by compare to other type which is 35%, the type that relate to this project which is the emergency type have 20% and slightly lower than office type which is 23%, the travel type mobile apps get 16% from the audience. The lowest will be the multimedia apps.

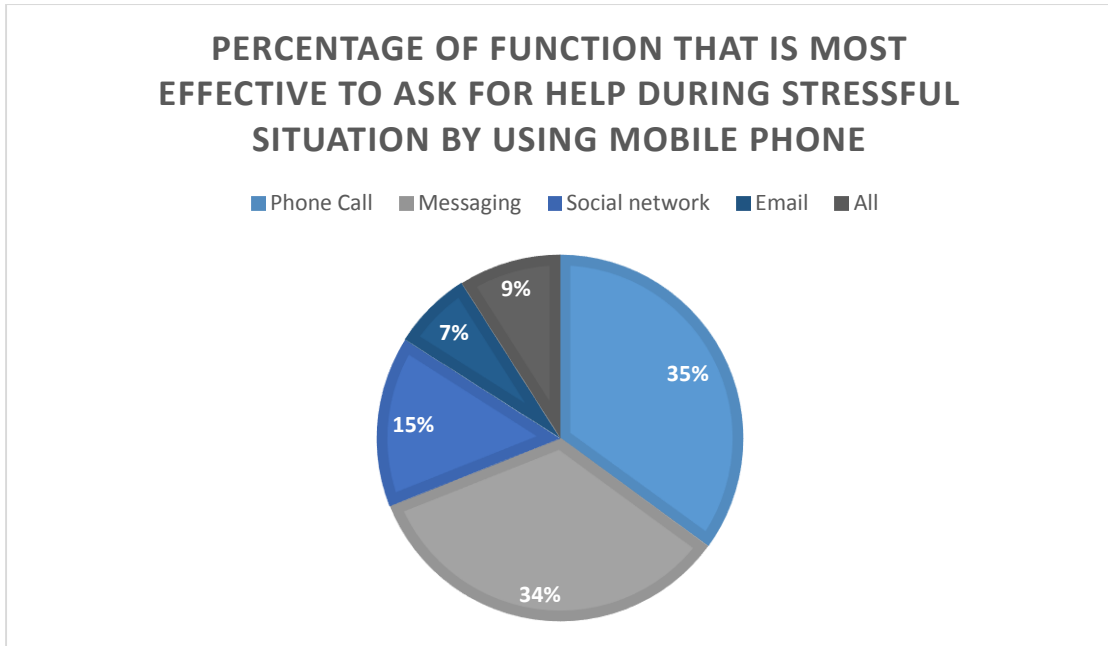


Figure 2-13: Analysis MCQ question 4

Based on figure 2-13, the pie chart is about the percentage of the function that is most effective to ask for help during stressful situation by using mobile phone. The phone call function have 35% percentage which is the highest by comparing to other function. Most of the people think phone call function is an effective function, the reason might be most of the time when people are in trouble or emergency situation the action we will do always is call someone to get help, so this became a common action for people. The messaging function have a very close percentage compare to phone call function which is 34%.

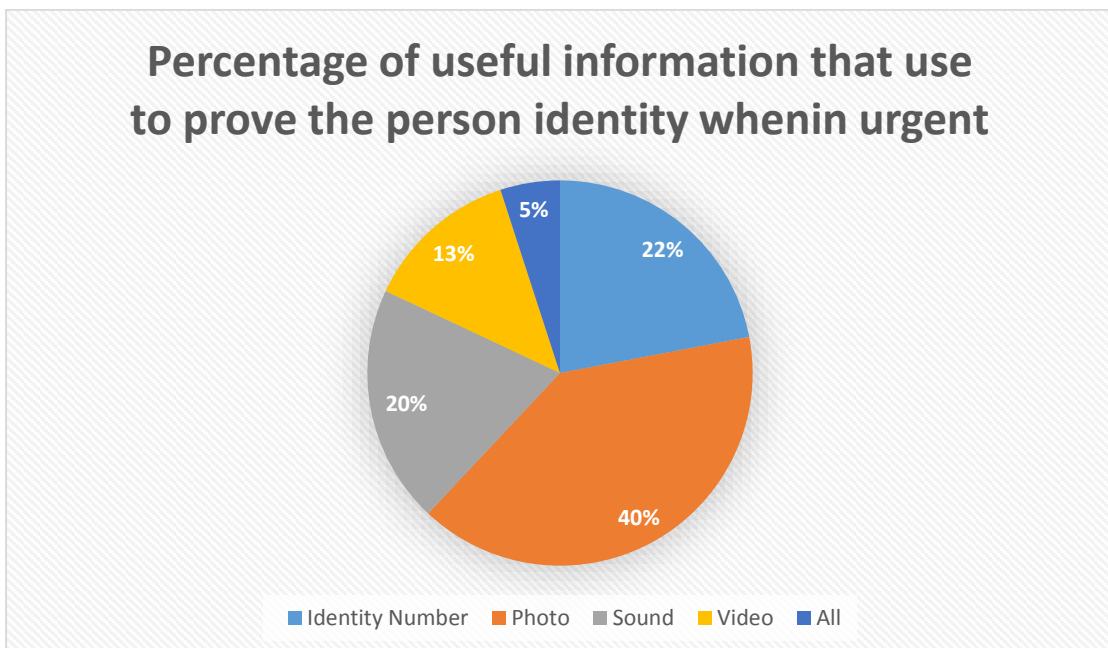


Figure 2-14: Analysis MCQ question 5

In figure 2-14 are the data that we get from the respondent about the useful information that use prove the person identity during urgent situation. There are 40% of the people choose photo as the most useful information, identity number and sound have 22% and 20% respectively and there are 13% of people think video information are useful, the lowest percentage which is 5% all information. Photo have the high percentage the reason might be people think once anything is happen photo captured is a strong prove by compare to other info.

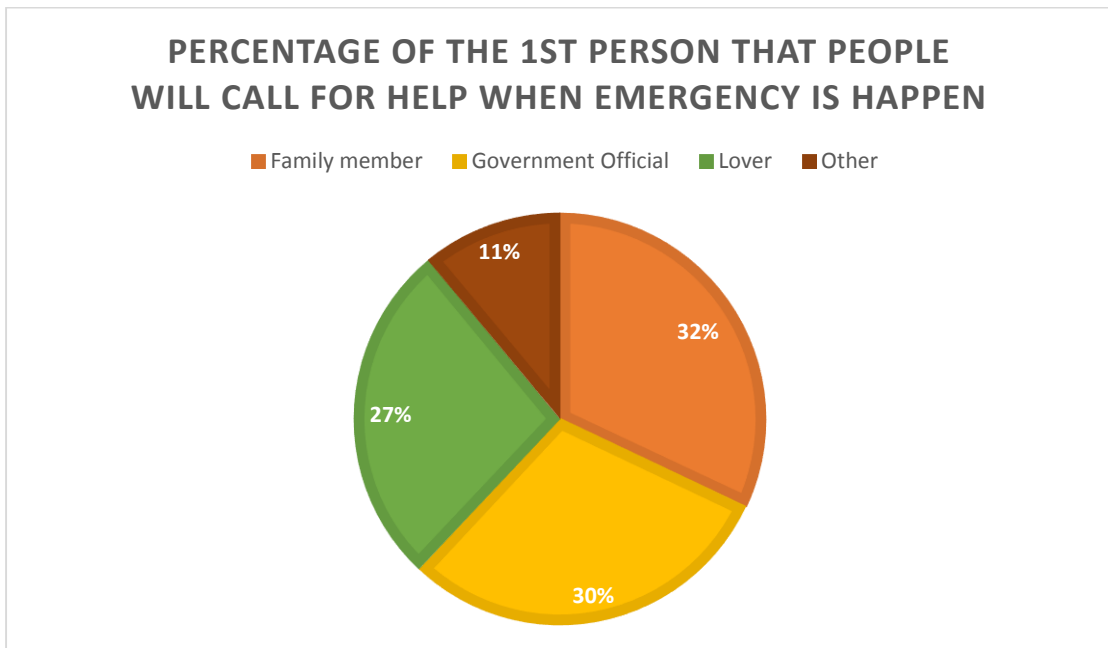


Figure 2-15: Analysis MCQ question 6

Based on figure 2-15, the pie chart show the percentage of the 1st person that people will actually call for help when emergency is happen. Family member have the highest percentage which is 32%, the second highest will be the 30% Government officer. Lover are 27% a little lower compare to the first and second. The lowest percentage is other which is 11%. The people who choose other means that they have their own different people they want to call during urgent.

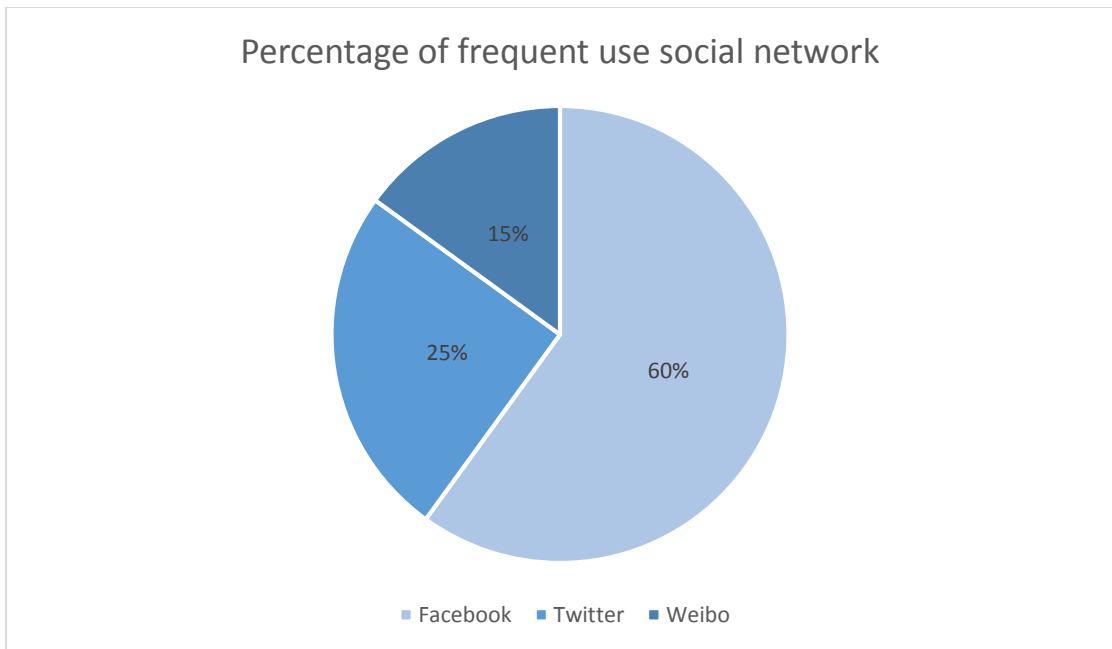


Figure 2-16: Analysis MCQ question 7

The pie chart show that the percentage of people frequent use social network. As we can see that Facebook have more than half percentage 60% by comparing to the other two social network. Twitter have the second highest which is 25%. The lowest will be Weibo 15%. This analysis is to find out which social network that people are actually frequently use, by study this analysis we can decide the social network that will set in the emergency apps function correctly.

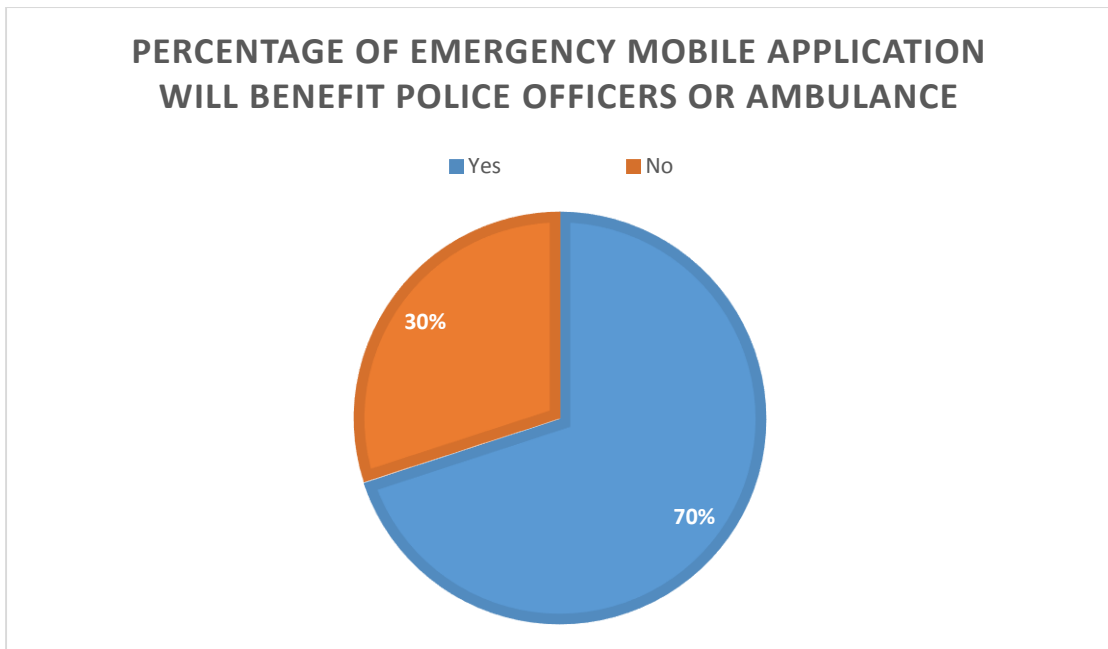


Figure 2-17: Analysis MCQ question 8

Based on figure 2-17, we had collect the data about the people think that emergency mobile application will benefit police officers or ambulance. There are 70% of people that yes, it is benefit for police officers and ambulance. But there are 30% of people think that is no. The reason for people choose no might be the officers will think that the information send to them are not real or they think this is just someone playing to them or so on.

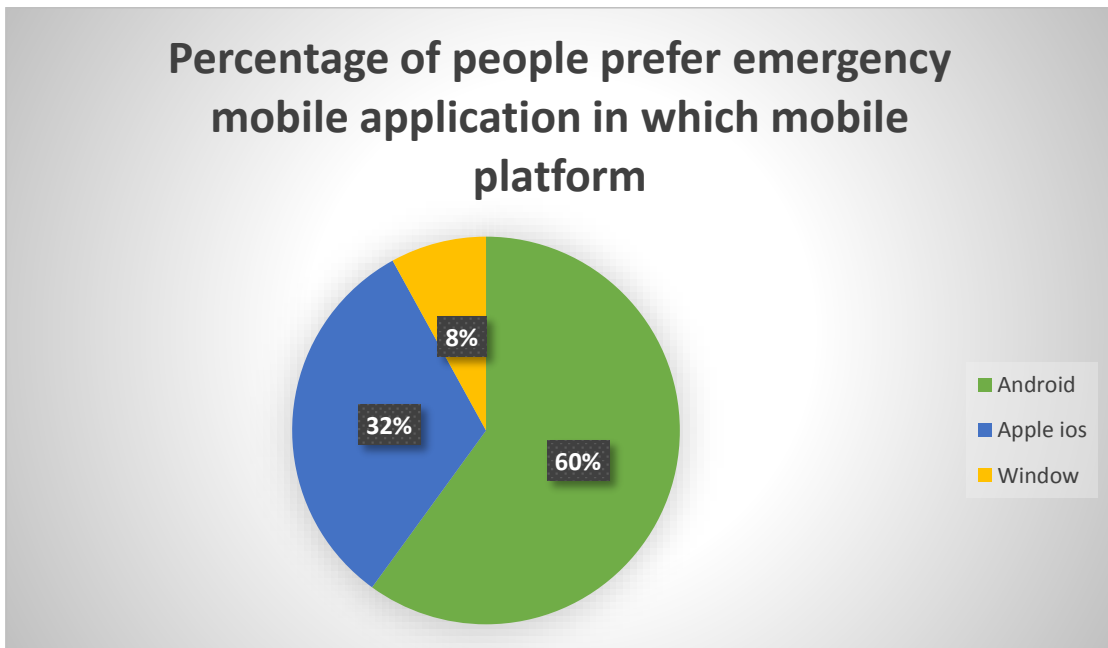


Figure 2-18: Analysis MCQ question 9

The pie chart show the percentage of people prefer emergency mobile application in which mobile platform. According to the result there are 60% of people want emergency mobile in Android platform, 32% of people choose Apple ios and only 8% of people choose Window. Now in the current market most of the smartphone are using Android as the OS, android can fit in different type of mobile phone. There large number of user using Android compare to Apple ios and Window. Therefore, this might be a reason that people choose want emergency mobile apps develop in Android platform.

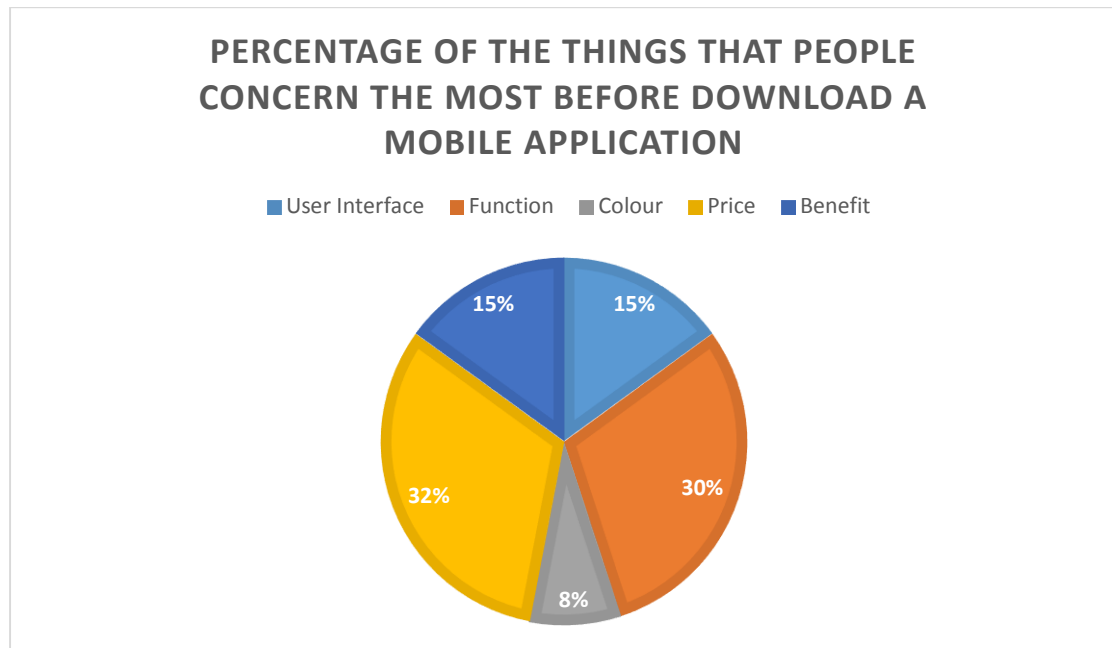


Figure 2-19: Analysis MCQ question 10

Based on figure 2-19, the data are collected are result in the percentage of the things that people concern the most before download a mobile apps. Price and function have a very close percentage which is 32% and 30% respectively. Which mean most of the people will more concern on the price and function of the apps before download. User interface and benefit have the same percentage. The lowest will be colour which is 8%.

Chapter 3: System Design

3.1 System Design

3.1.1 Use Case Diagram

The use case diagram is used to describe how the system works and interacts. The reason to use a Use Case Diagram is because it can clearly show the overall system in a perfect view, including every function and method in the system.

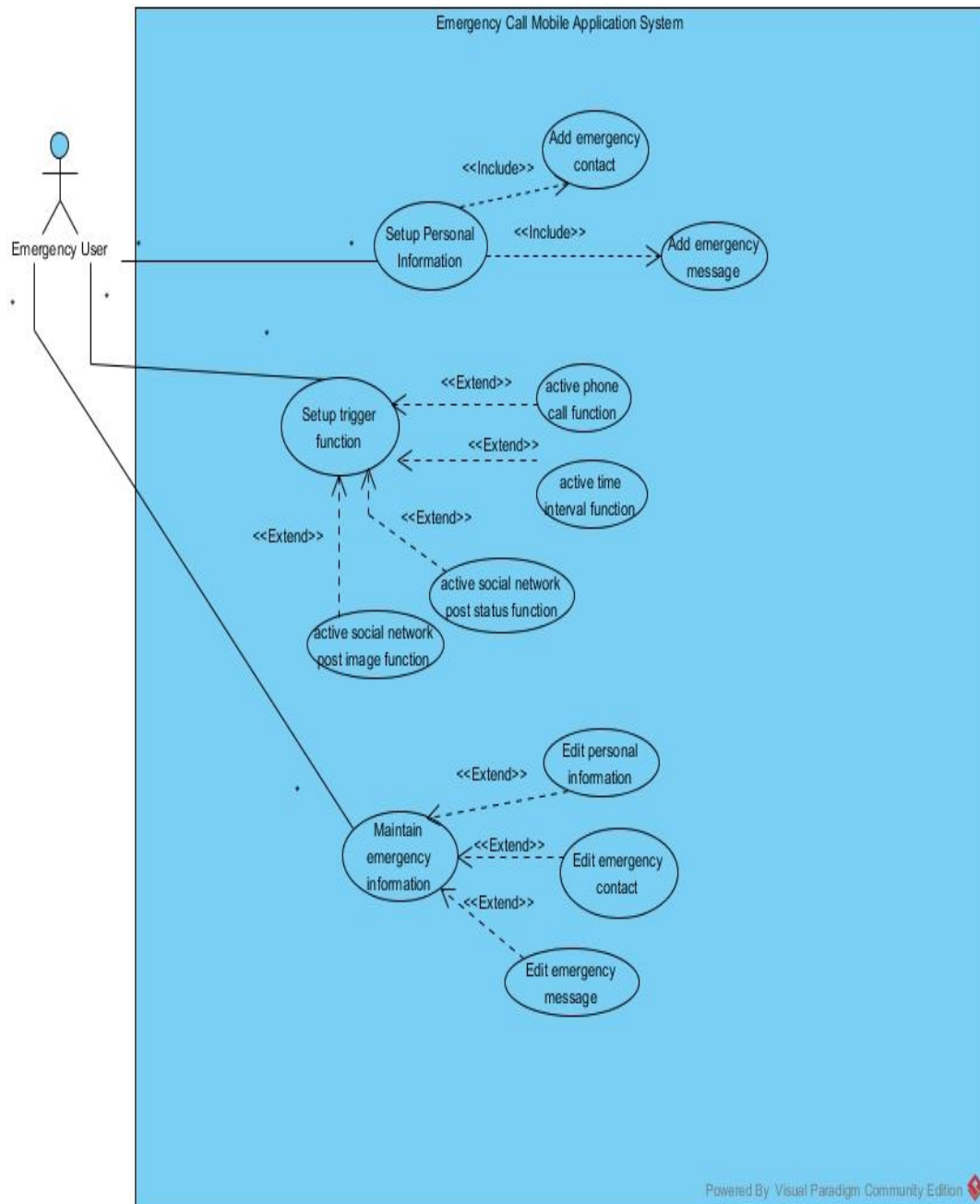


Figure 3-2: Use case diagram

Emergency user is the people who use the emergency mobile apps, after the user register an account it will proceed to setup personal information to enter the user full name, telephone number etc. After finish setup all the personal information the user need to add emergency contact and also emergency message. This two use case are include in the setup personal information use case, which mean the two include use case will execute after the main use case.

Besides, the user can setup the emergency trigger function, user can choose which function will active and which function will not active when the user trigger the apps. The function will be phone call function, multimedia message function, time interval function and social network function.

In addition, the user can edit emergency information, which is personal information, emergency contact and emergency message. User can edit the content inside these information.

3.1.2 Activity Diagram

Activity diagram will show each of the function process in detail view. The reason to choose Activity Diagram is because it can show how each of the function operate step by step.

1. Setup personal information

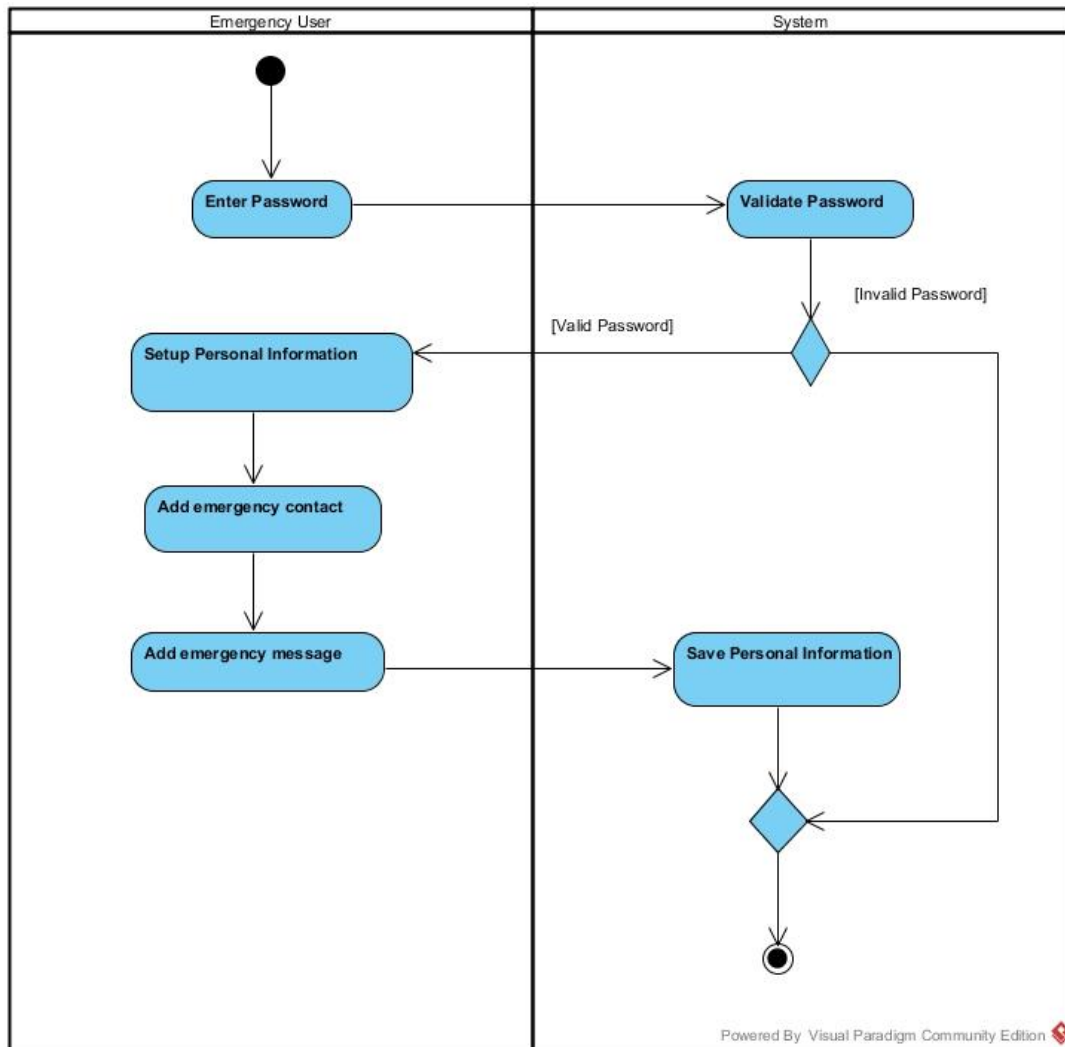


Figure 3-3: Activity diagram of setup personal information

When the user setup the personal information the user need to key in the password, after that the system will validate the password. If the password is wrong the system will end the task, if the password is correct then will proceed to setup personal information, after finish setup personal information will proceed to add emergency contact and emergency message, after done all the setup the system will save the all information to particular database table.

2. Add emergency contact

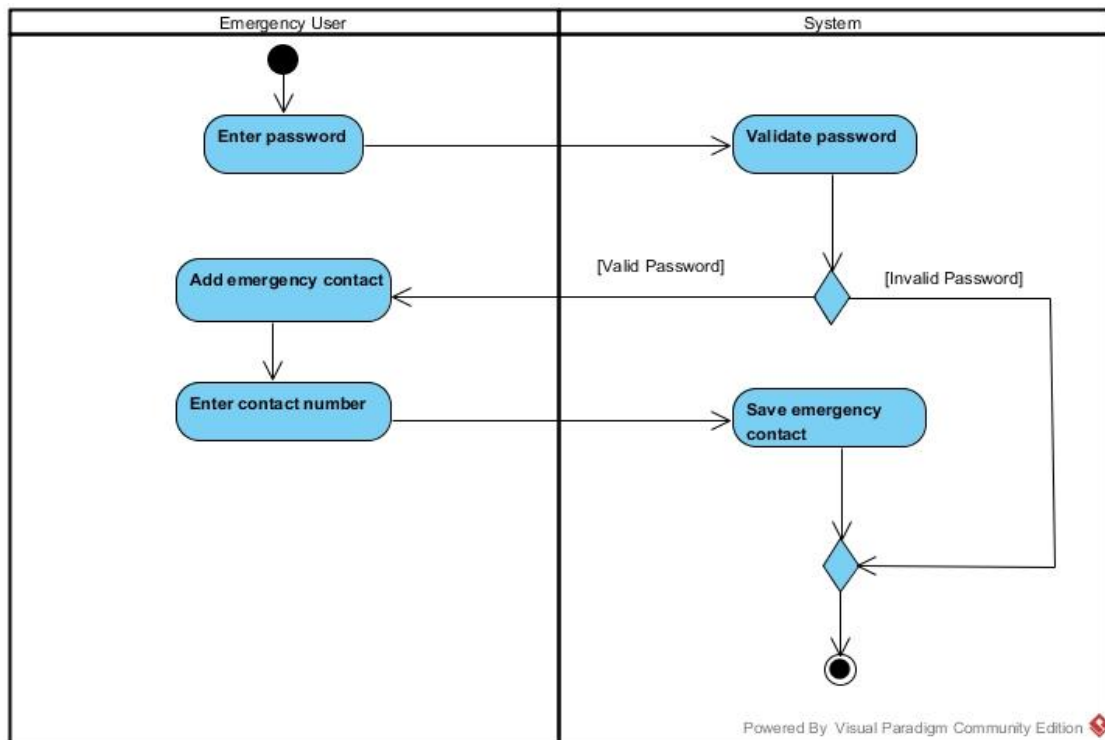


Figure 3-4: Activity diagram of add emergency contact

When the user add emergency contact the user need to key in the password, after that the system will validate the password. If the password is wrong the system will end the task, if the password is correct then will proceed to add emergency contact, then user will enter the contact number that will use during the apps trigger moment. After done enter the contact number, the system will save the contact to the database table

3. Add emergency message

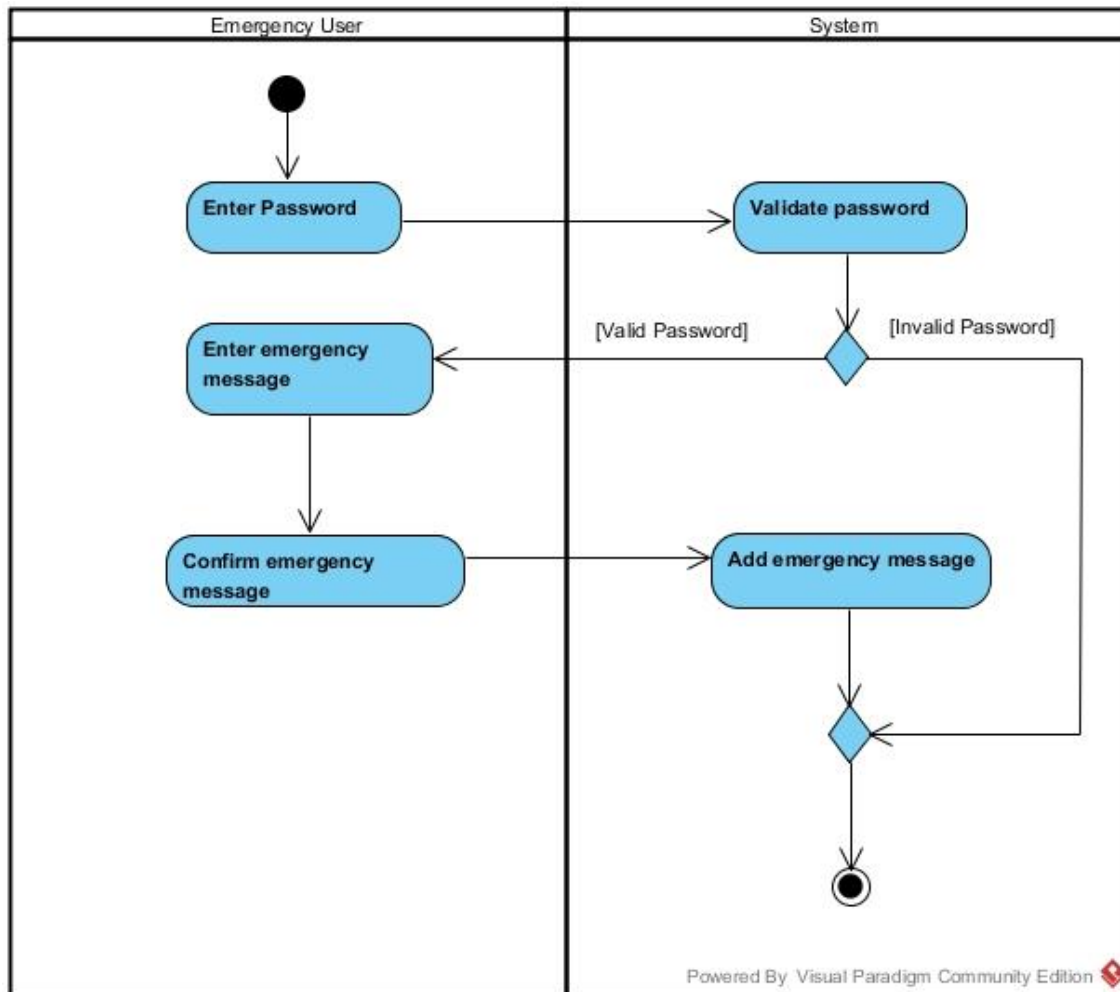


Figure 3-5: Activity diagram of add emergency message

Before the user add emergency message the user need to key in the password, after that the system will validate the password. If the password is wrong the system will end the task, if the password is correct then will proceed to add emergency message, then user will enter the message such as "Please help me!!!" that will send to emergency contact during the apps trigger moment. After done enter the message, the system will save the message to the database table.

4. Setup emergency trigger function

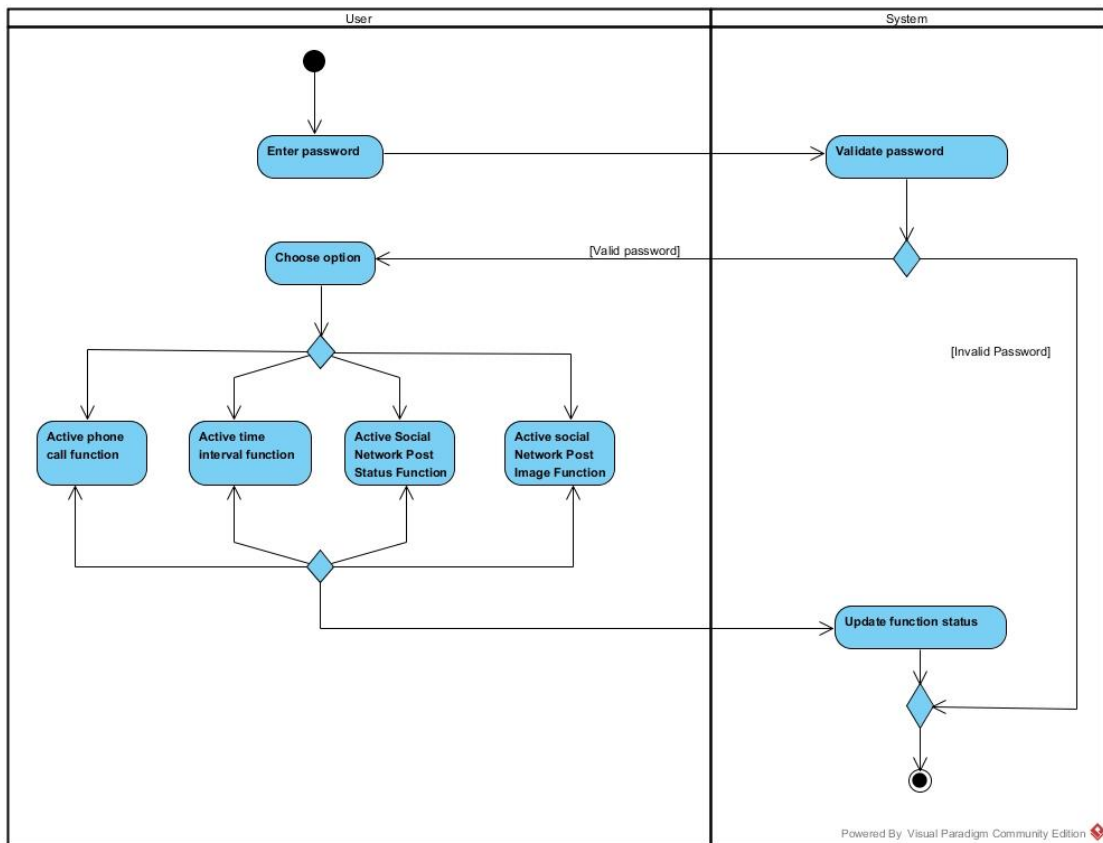


Figure 3-6: Activity diagram of setup emergency trigger function

User need to enter the password before setup the function, after entered the password system will validate the password. If the password is wrong the system will end the setup task, if the password is correct then will proceed to choose option, then user can choose which function they want to setup active. The emergency function that provide the user to active is active phone call function, active time interval function, active social network post status function and active social network post image function. After done choosing the option, the system will update the function status.

5. Maintain emergency information

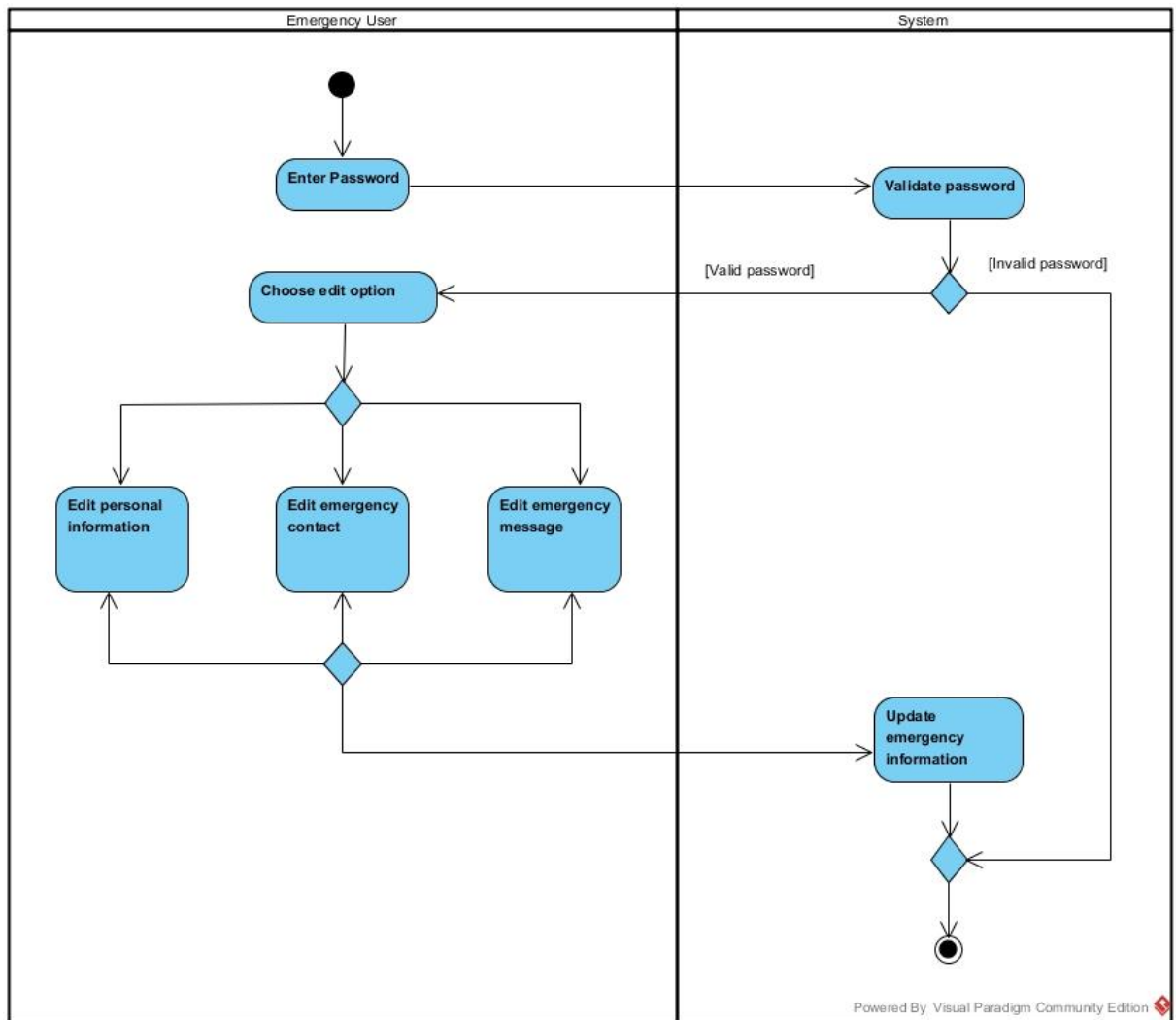


Figure 3-7: Activity diagram of maintain emergency information

User can edit all the information that he or she save at the previous time, before edit the information, password verification is needed, after pass the verification user can choose the edit option, after the editing the information the system will update the information to particular database table.

3.1.3 Sequence Diagram

Sequence Diagram is the advance version of the Activity diagram. It will show each of the process run in detail. The reason to choose Sequence Diagram is because it will show user how the object deliver or send sequence message between each other.

1. Setup personal information

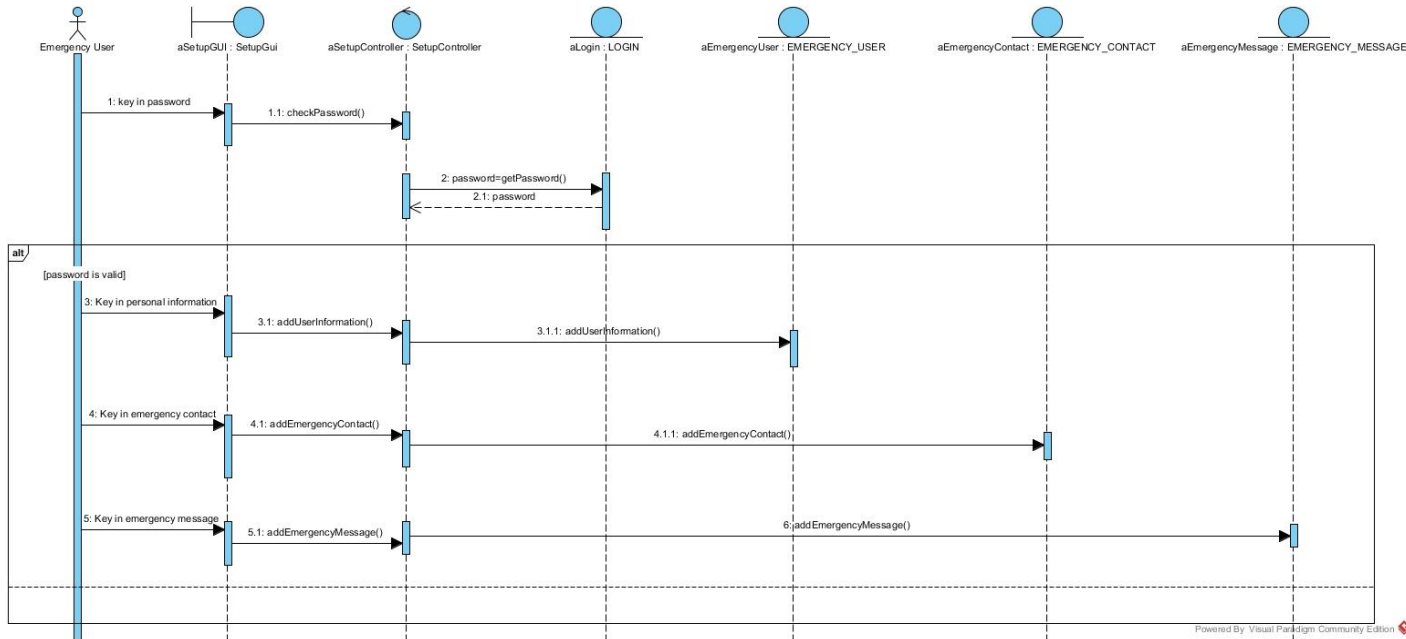


Figure 3-8: Sequence diagram of setup personal information

This diagram is show detail process on how the user setup the personal information. After the user pass the verification stage, they can proceed to key in personal information, after done the system will call addUserInformation() function to save the information. Then, the system will proceed to key in emergency contact, after done key in everything the system will call addEmergencyContact() function to add the contact number. Now, proceed to last setup which is add emergency message, the system will call addEmergencyMessage() function to add the message, after the user done key in the help message.

2. Add emergency contact

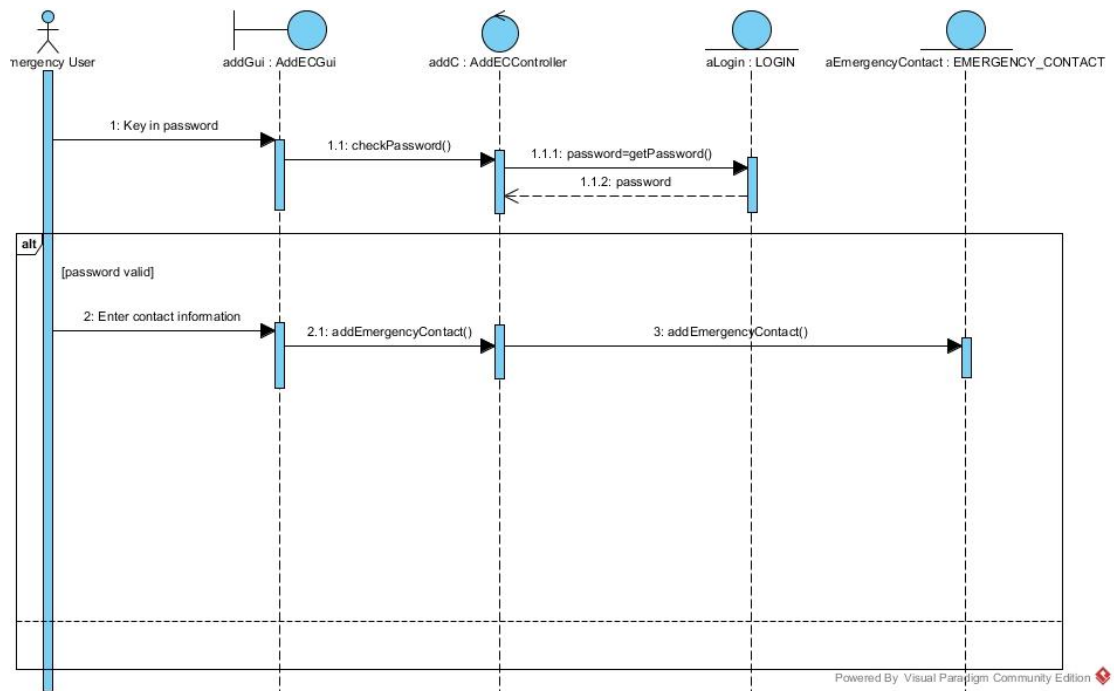


Figure 3-9: Sequence diagram of add emergency contact

This diagram show the detail view of add emergency contact process. First, the user need to verify through password, after done verification. The user can enter the contact number, the system will call addEmergencyContact() function to add the contact number to the system.

3. Add emergency message

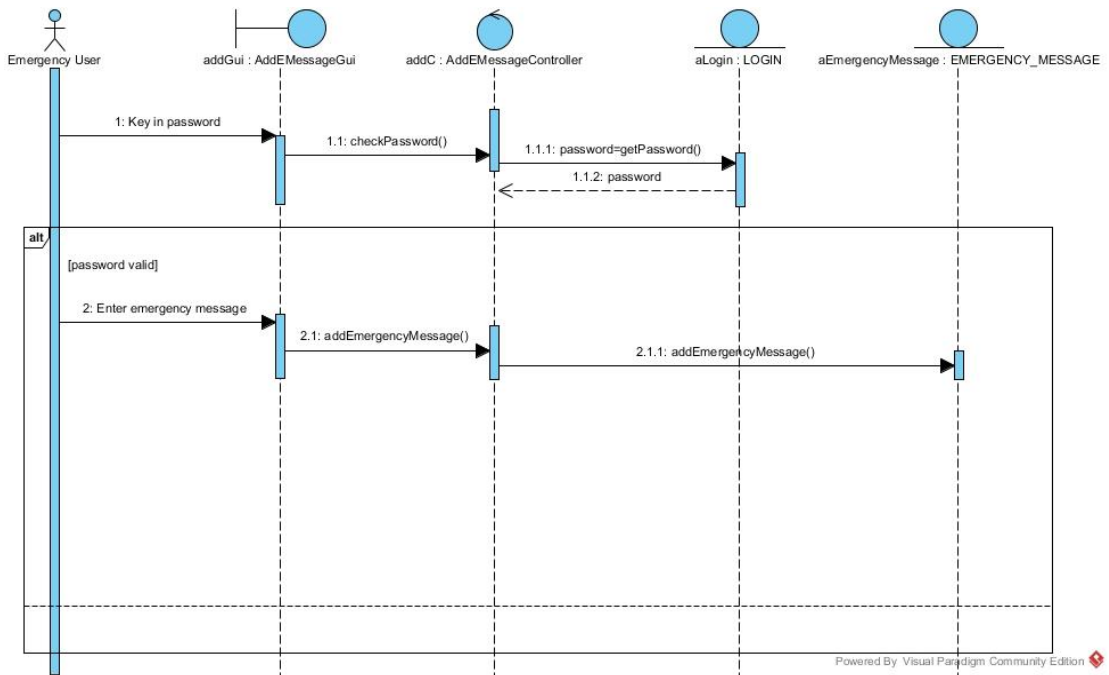


Figure 3-10: Sequence diagram of add emergency message

This diagram show the detail view of add emergency message process. First, the user need to verify through password, after done the password checking. The user can key in the important message, the system will call addEmergencyMessage() function to add the message to the system.

4. Setup emergency trigger function

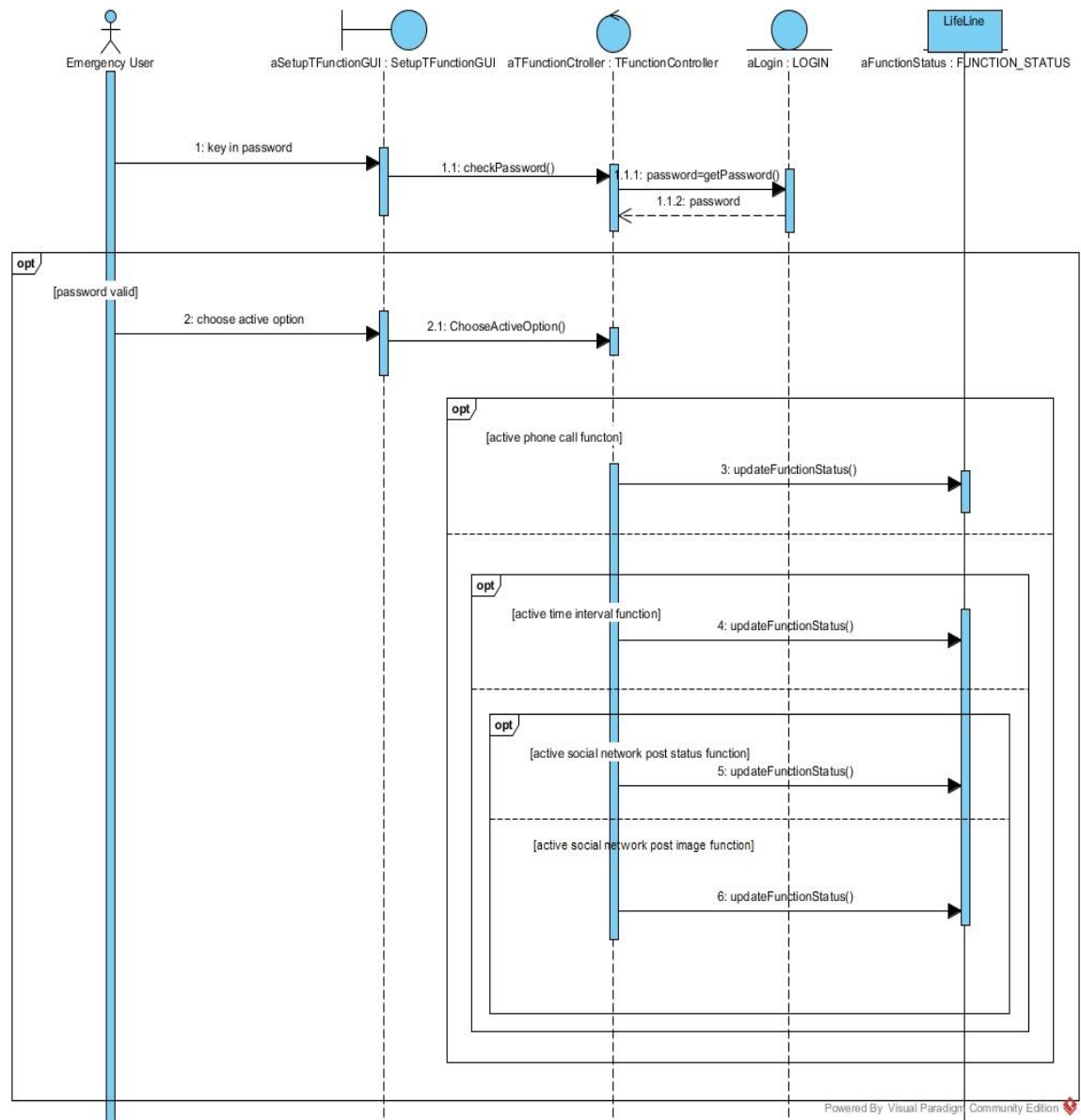


Figure 3-11: Sequence diagram of setup emergency trigger function

This diagram show detail on the process of setup emergency trigger function. As usual the user need to verify themselves before perform any changes. After pass the verification the user can choose which option they want to perform, the option will be active phone call function, active time interval function, active social network post status function and active social network post image function. The system will call the updateFunctionStatus() function to update the function status when the user to the particular option.

5. Maintain emergency information

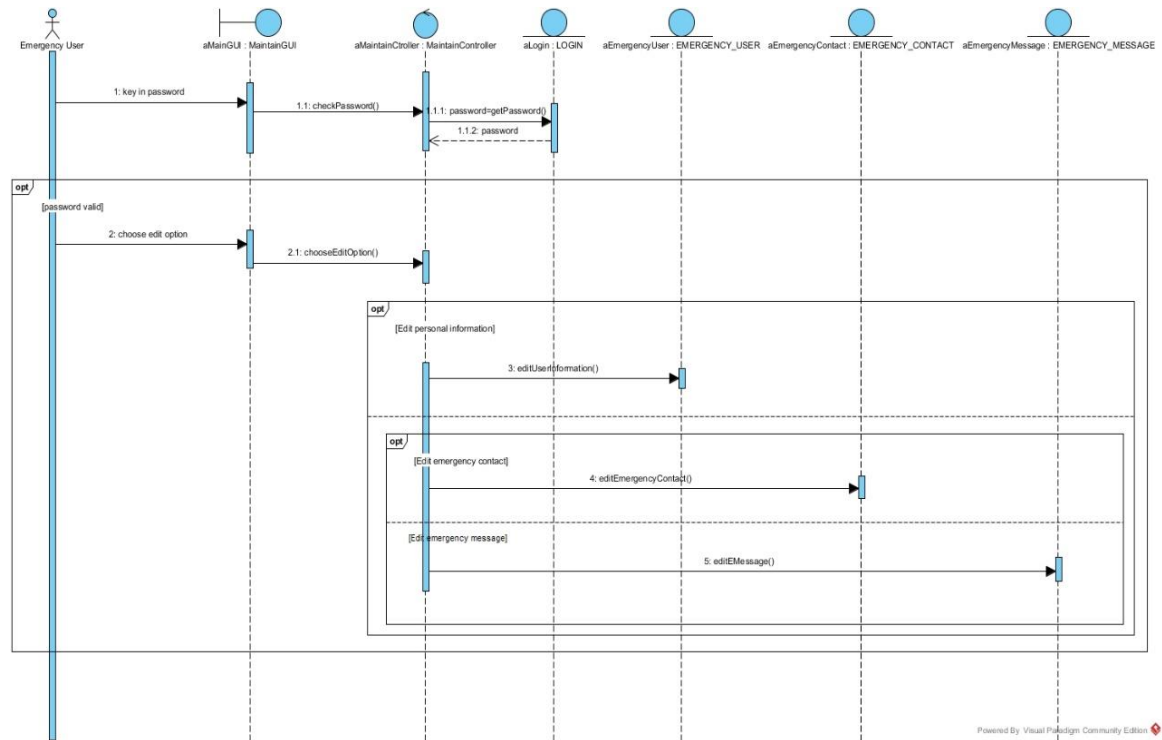


Figure 3-12: Sequence diagram of maintain emergency information

This diagram show the process of maintain emergency information in detail. The user can edit all the information if they want to. The user can edit the personal information, emergency contact and emergency message. After done editing the information the system will call the edit() function to update the database table. Different information have their own edit() function.

3.1.4 Class Diagram

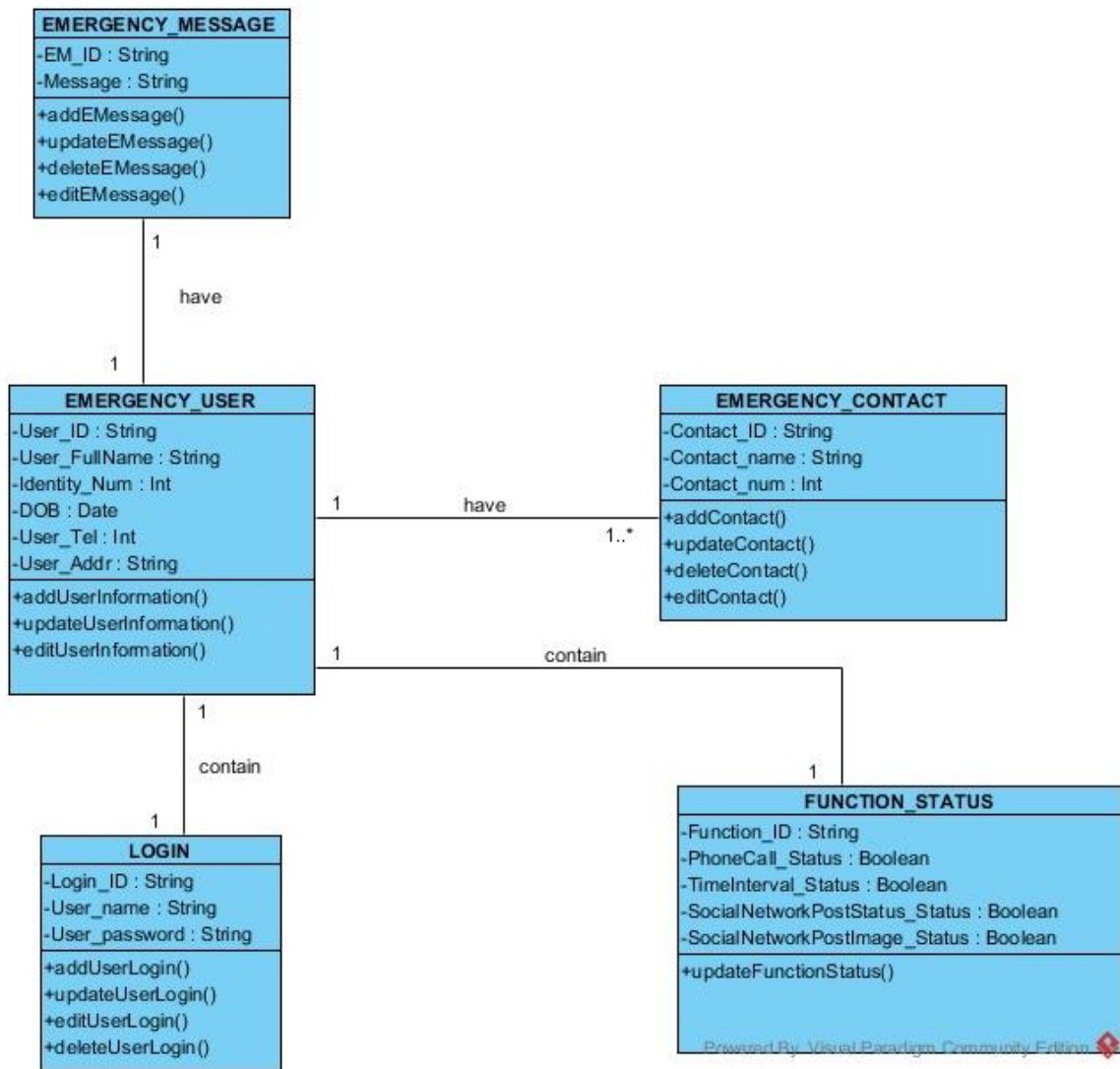


Figure 3-13: Class diagram of emergency call mobile application

3.1.5 Entity Relationship Diagram (ERD)

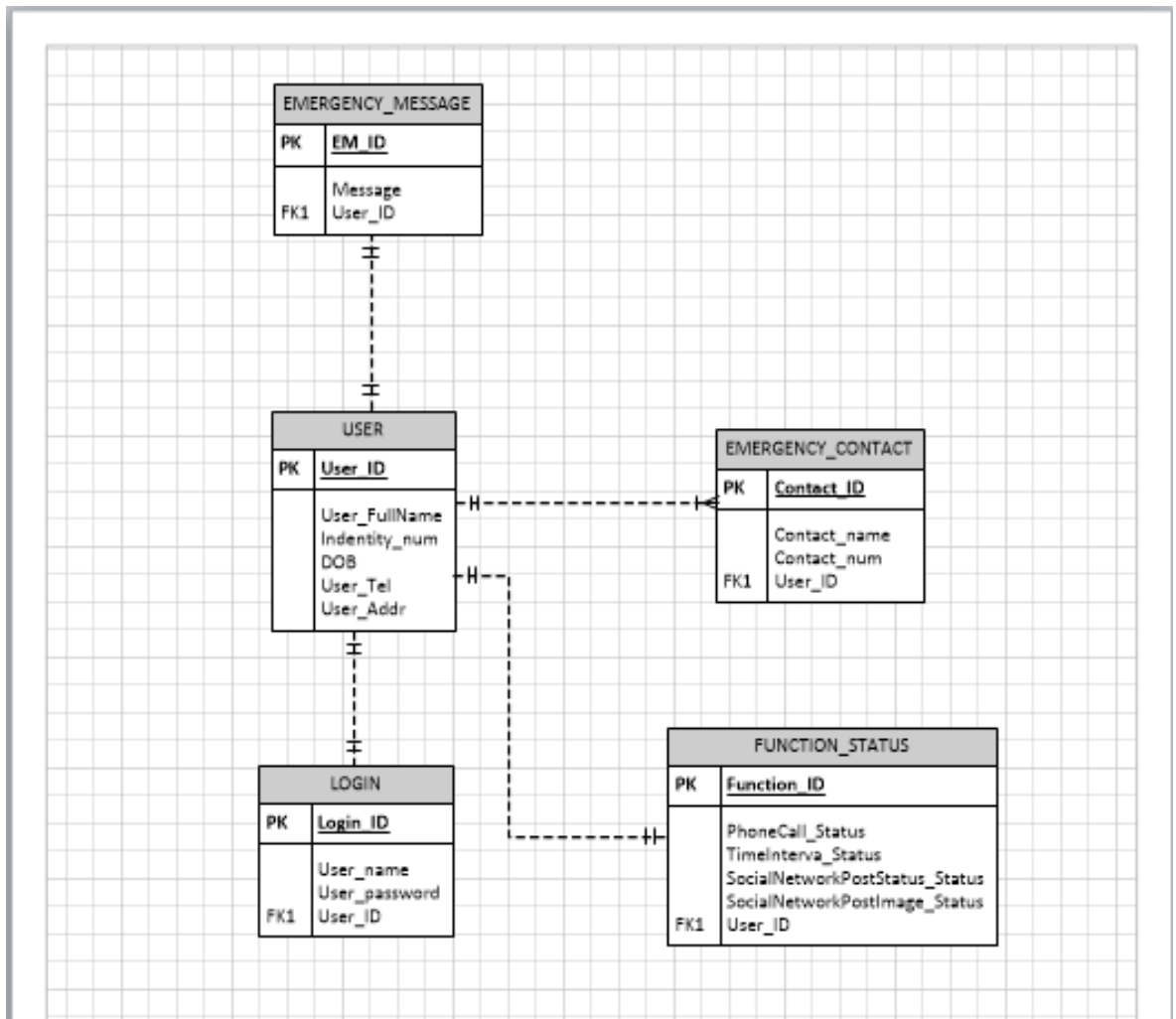


Figure 3-14: ERD of emergency call mobile application

3.1.6 System Overview

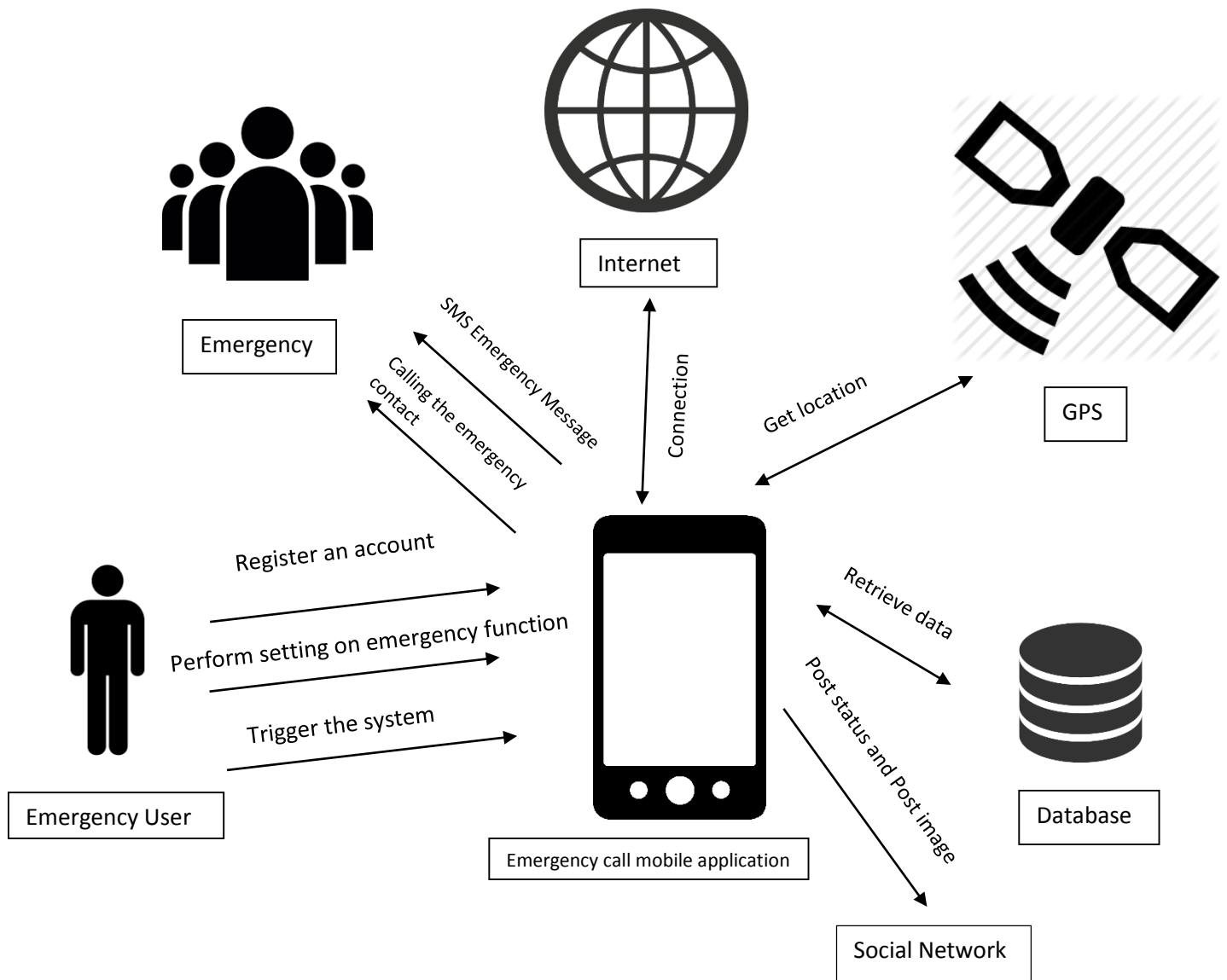


Figure 3-15 System Overview of Emergency Call Application

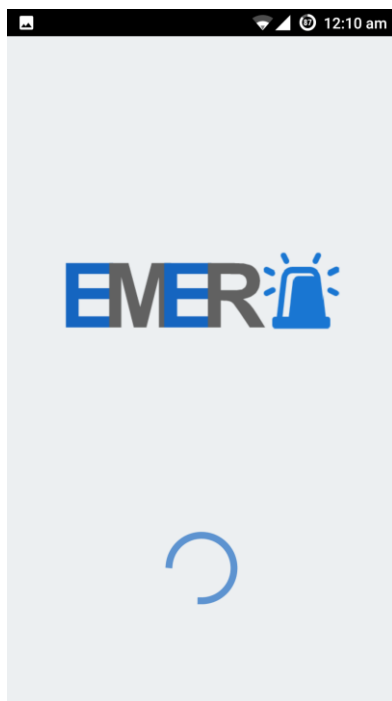
The figure 3-15 shows that the overall system of emergency call application, the diagram show that the application pay an important role in all the process. The user need to register an account and the info will store in the database. The information will include the name, date of birth, identity number, personal phone number and address of the user. The user is require to add one emergency contact to the emergency mobile application during the account registration process. Besides, the user is also require to add an emergency message during the process of account registration. After the registration is done, the user can now log into the system and perform setting on the

emergency trigger function to see which emergency function they want to activate. When system is trigger, at first the emergency call mobile application will get the all the information from the database and send it to the emergency contact and the application also call the emergency contact as well. If the user enable the time interval function, then after the emergency function is triggered, the system will re-launch the emergency function according to the number of times and the duration that set by the user. Moreover, if the user enable the social network post status or post image function, after the emergency function is triggered the system will help the user post emergency status on social network or post the captured image on social network. The user require to switch on the emergency function before trigger from the power button, after the user switch on the emergency function, then it is ready to be trigger. Once the emergency function is triggered, the system will switch off the emergency function in order to prevent the user accidently trigger the emergency function.

3.2 System Functionality

This is all about the function and feature of the emergency call mobile application. Inside this chapter all of the functionality of the emergency call mobile application will be clearly describe with example provided. The name that we set for the application is EMER, the word “EMER” are original come from the word “emergency”. So, we just make use the four character of the word “emergency”, which is “EMER” to use as the mobile application name.

3.2.1 Application first start and account sign up



This is the emergency call mobile application splash screen, when the user press on the app icon the app will first start the splash screen to show the application logo and also the circle progress indicator. The splash screen will stay on the screen around three second then only proceed to another page.

Figure 3-16 EMER splash screen

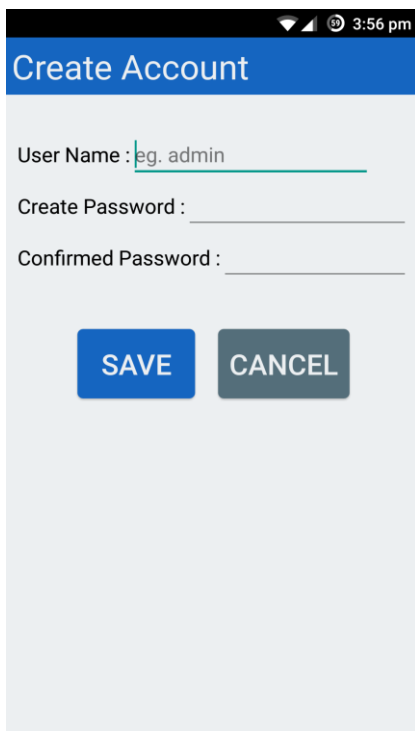


Figure 3-17 create account

This is the create account page of emergency call mobile application, user need to create an account before using the apps. This screen user will only see it on the first time after installed the app. There are three field on the screen to get user input, the field which is “User Name”, “Create Password” and “Confirmed Password”. The user need to key in the password twice in order to double make sure the password is correct. After key in all the information the user can just press the “Save” button to save all the information. “Cancel” button will let user cancel this app session. If the entered password not match, a small the system will prompt the user to tell the user the entered password are not match with each other.

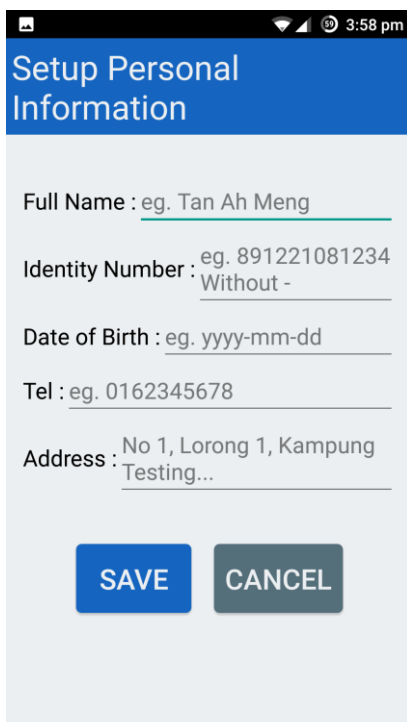
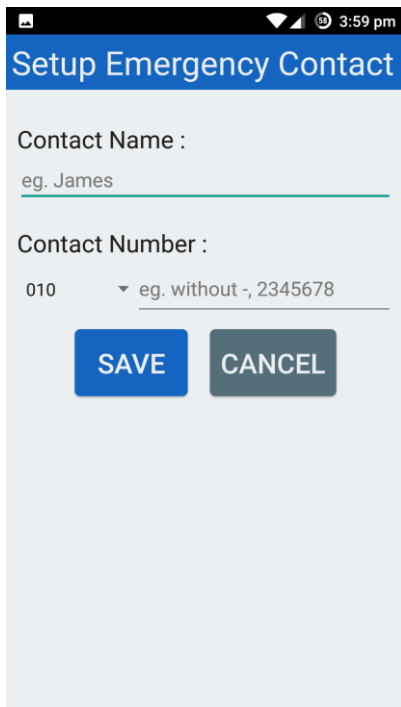


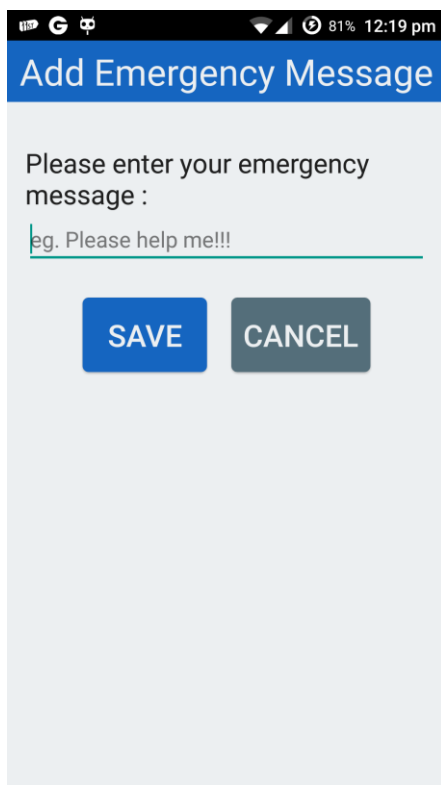
Figure 3-18 Setup personal information

This is the setup personal information page, after the user successful setup their user name and password, then user will proceed to this page in order fill up some personal information. There are total five field in this screen, which is “Full Name”, “Identity Number”, “Date of Birth”, “Tel” and “Address”. The personal information that the user entered will send to the emergency contact through SMS when user trigger the emergency function. The user require to fill in all the information in order to proceed to next page.



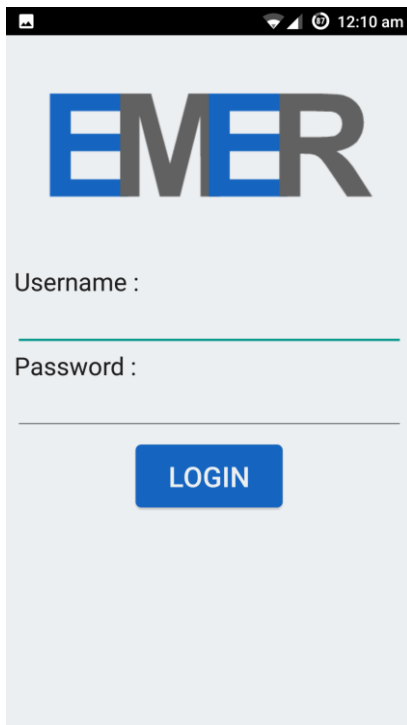
This is setup emergency contact page. After user done setup all information in the setup personal information page, the system will let user proceed to this page. The user need to enter the name and the contact number in this page. The user can further add more contact in the edit emergency contact page. User can only add up to five emergency contact.

Figure 3-19 Setup emergency contact



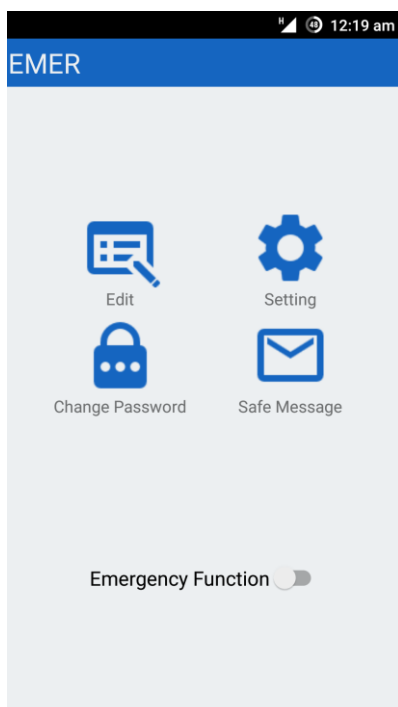
This is add emergency message page. The message that the user enter in this screen will send to the emergency contact when the user trigger the emergency function. The user can edit the message in the edit emergency message page.

Figure 3-20 Add emergency message



This is the login page of emergency call mobile application. After the user finish filled up all the required information. Then, the user will be proceed to the login page. After the user successful login to the system, the main page of app will be show to the user. To successful log into the system the username and the password that the user enter must be correct. Each time the user want to activate the emergency function or make some changes, he or she is require to login into the system.

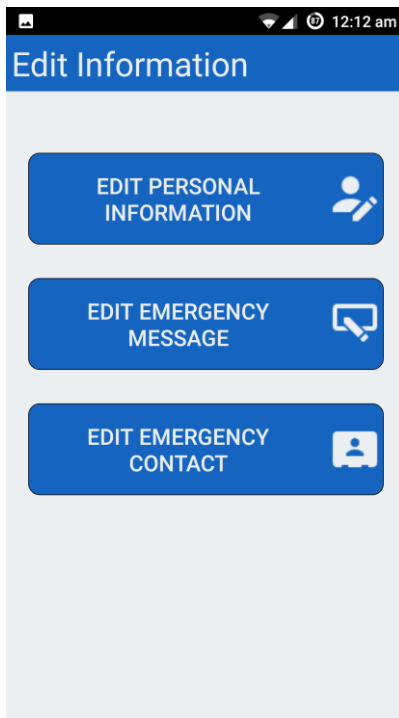
Figure 3-21 Login



This is the home page of emergency call mobile apps. The home page total have four button consist of four different function. User can press button to redirect to different page. The first button is “Edit Information” button, if the user want to edit some information, then the user just need to press this button to redirect to the edit information page. The second button is “Setting Trigger Function” button, user can enter to the setting trigger page by pressing this button. The third button is “Change Password” button, by pressing this button, the user will be able to change their password. The fourth button is the “Safe Message” button, if the user press this button, he or she can send the safe message to their emergency contact to tell them you are currently safe.

The bottom part of the home page contain one switch, which is “Emergency function” switcher, when the user want to use the emergency function he or she is switch on the emergency function by using this switcher. After the user switch on the emergency function. Then the system will be ready to be trigger.

3.2.2 Edit function



This is page that allow the user to edit all the information that he or she are entered previously during the account setup session. User can edit their personal information, emergency message and emergency contact. By pressing the button to enter inside the information that user want to edit.

Figure 3-23 Edit information

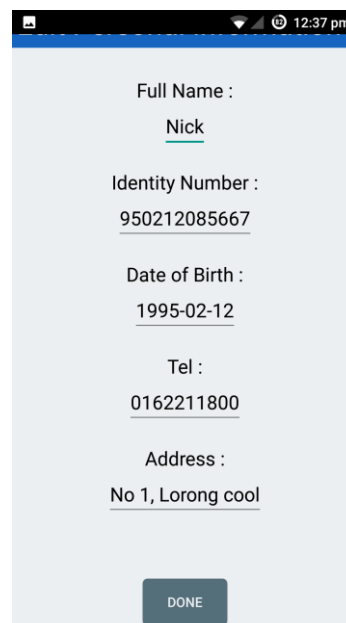


Figure 3-24 Edit personal information(1)

Figure 3-25 Edit personal information(2)

This is the edit personal information page. The user can edit their all information in this page. To start edit, the user need to press the edit button to start editing, before press edit button the page will look like figure 3-23, after press edit button the page

will look like figure 3-24, after finish editing, the user need to press done button to save all the edited information in to the database.

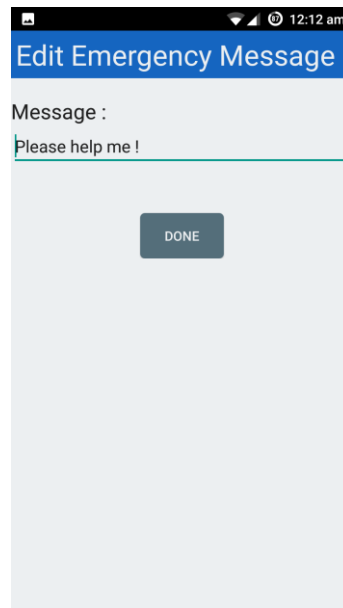
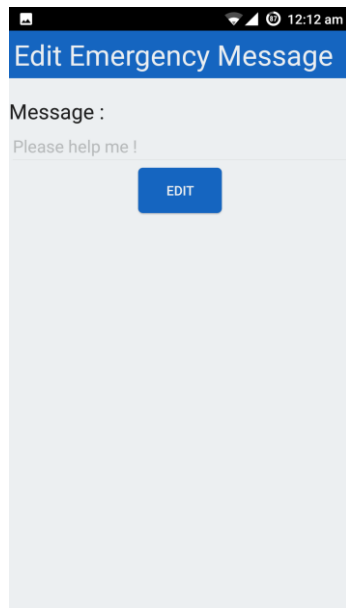


Figure 3-26 Edit emergency message(1) Figure 3-27 Edit emergency message(2)

This is the edit emergency function page. The user can edit their emergency message in this page. To start edit, the user need to press the edit button to start editing, before press edit button the page will look like figure 3-25, the text field are not editable, after press edit button the page will look like figure 3-26, after finish editing, the user need to press done button to save the edited message.

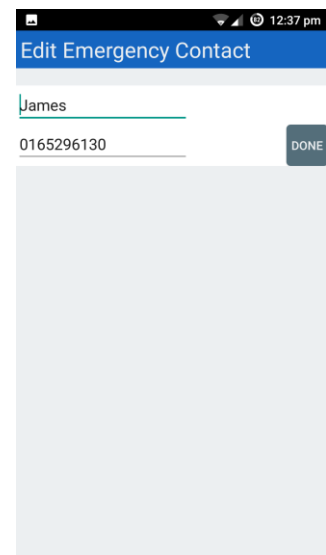
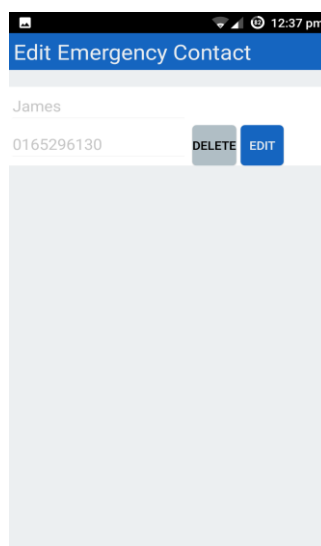
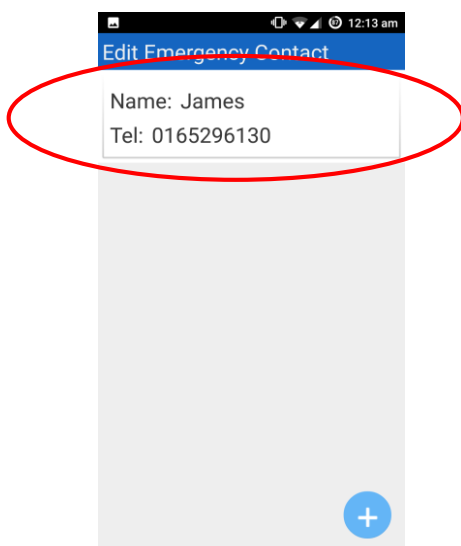


Figure 3-28 Edit contact(1) Figure 3-29 Edit contact(2) Figure 3-30 Edit contact(3)

This is the edit emergency contact page, the user can perform add, update and delete to the emergency contact in this page. To edit the emergency contact the user need to

press the contact list in order go to edit contact page. The contact list will be like figure 3-27 with the red circle, in this page user will be able view all the emergency contact and add new emergency contact. The edit contact page will be like figure 3-28 this page will show after the user pressed the contact list, in edit contact page the user can choose either edit or delete the emergency contact, if the user want to edit the emergency contact, he or she need to press the edit button in order to edit the information, just like figure 3-29, after finish editing just press done button to save the information.

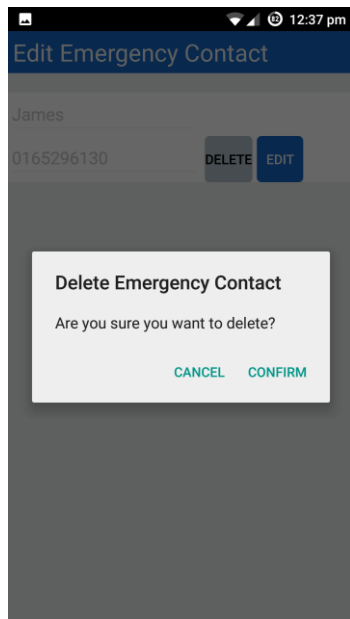


Figure 3-31 Edit contact(4)

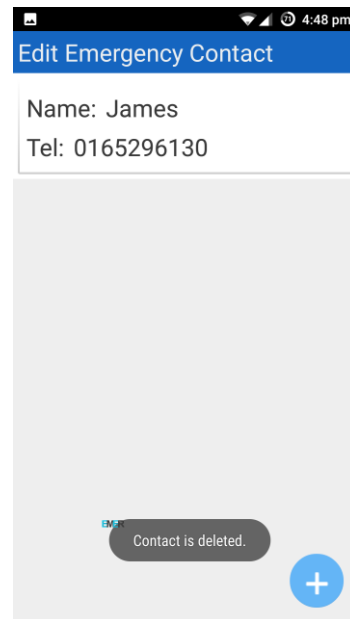
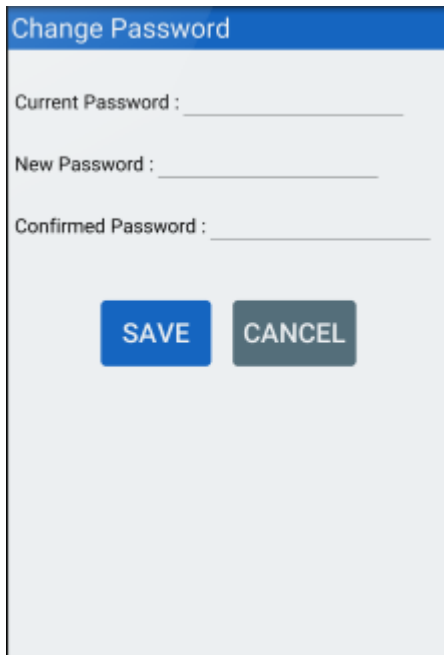


Figure 3-32 Edit contact(5)

If the user want to delete the particular contact, the just need to press the delete button, after the delete button is pressed the alert dialog will pop-up to ask user make sure he or she want to delete the contact if the user press confirm the contact will be deleted and will return to edit emergency contact page, and a small dialog will show the user the contact is deleted just like figure 3-31.

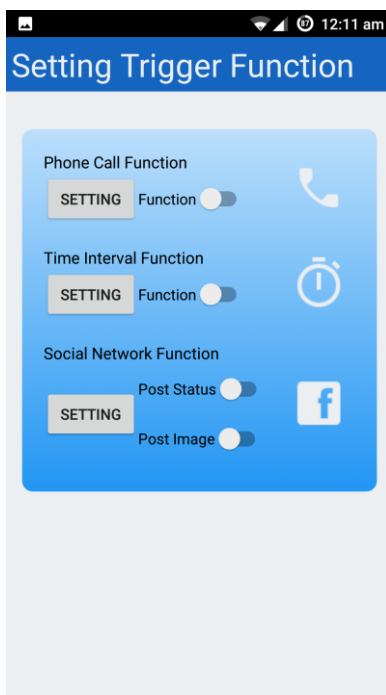
3.2.3 Change password function



This is the change password page, in this page the user can perform changing on their password, the user require to enter their current for verification then only follow by the new password and re-enter to confirm the password. User can enter to this page by press the change password button on the home page.

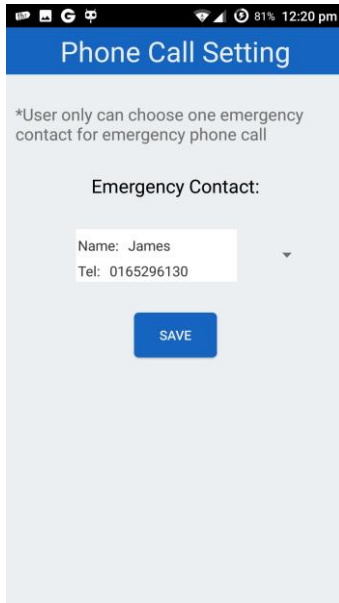
Figure 3-33 Change password

3.2.4 Emergency function setting



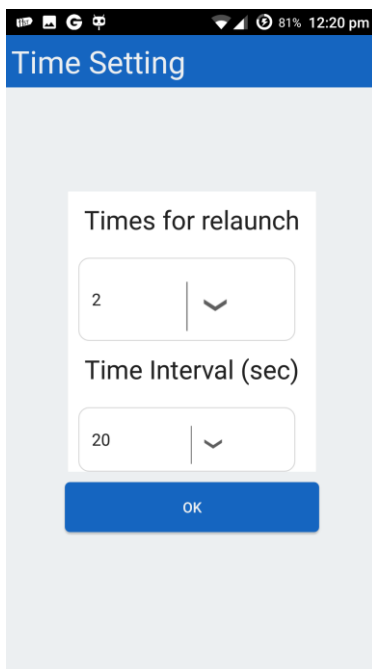
This is the emergency function setting page, in this page the user will be able active or inactive the emergency function like phone call function, time interval function or social network function. Besides, the user can perform some setting on the particular function by pressing the setting button.

Figure 3-34 Function setting



This is the phone call setting page, when the user press the setting button of phone call function, this page will be show. The user can only choose one emergency contact for the phone call function. By choosing the contact, the user can press on the drop down list in order to select the particular contact. In order to save the setting, the user just need to press save button to save the setting.

Figure 3-35 Phone call setting



This is the time interval setting page. User can choose their prefer times for re-launch and time interval by pressing the drop down list. The times for re-launch setting is for user to choose how many times he or she want the emergency function to re-launch, the time interval setting is how long the user prefer to re-launch the emergency function. After finish the setting, the user just need to press ok button to save the setting.

Figure 3-36 Time interval setting

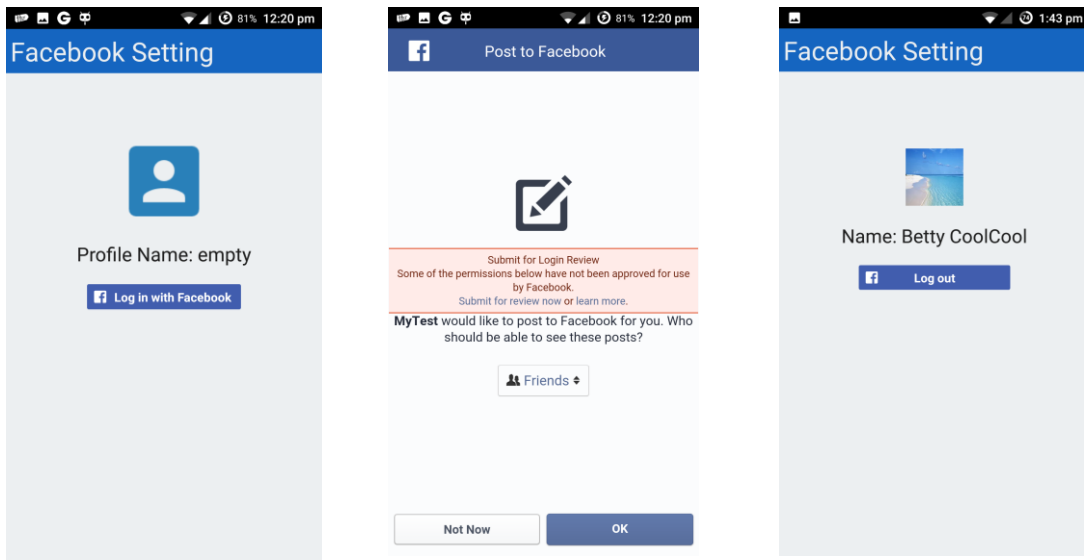


Figure 3-37 Facebook setting(1) Figure 3-38 Facebook setting(2) Figure 3-39 Facebook setting(3)

This is the social network setting page or can be Facebook setting page, in order to use the social network function, the user require to link their Facebook account to the emergency call mobile application. To start liking, the user need to press the “log in with Facebook” button just like figure 3-36, after press log in the request permission page will show to the user, for example figure 3-37. The emergency call mobile application will automatically help the user post emergency status or image with their account. So, Facebook is require the user to accept the permission in order to let this mobile application post status. Therefore, the user is require to press the ok button in order to accept the permission and proceed the log in session. After successful log in the user profile image and name will be retrieve and show to the user just like figure 3-38.

3.2.5 Safe message function

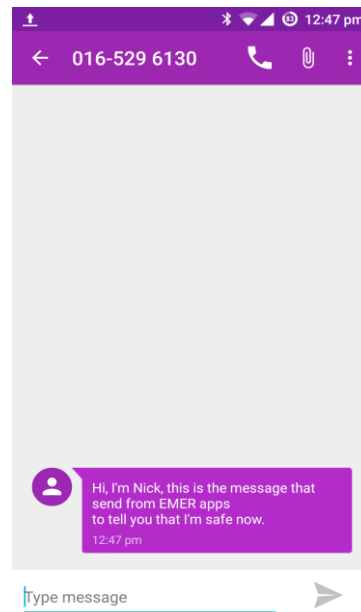
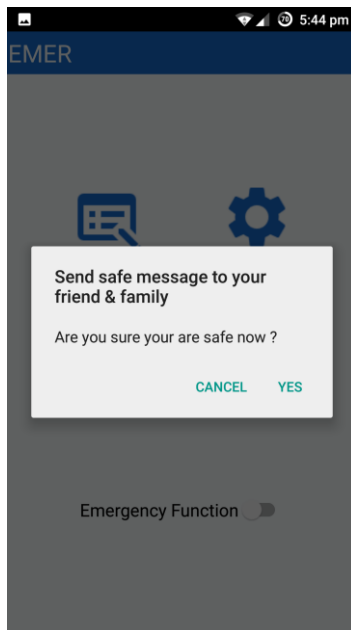


Figure 3-40 Safe message function(1) Figure 3-41 Safe message function(2)

This is the safe message function. To use this function the user just need to press the safe message button at the home page. After the user press the button, the alert dialog will be show, just like figure 3-39 to ask user whether he or she are in safe condition, if the user press yes, the safe message will be send to all emergency contact to tell the user friends and family, he or she currently are safe. The example message that the emergency contact will receive will be like figure 3-40.

3.2.6 Trigger emergency function

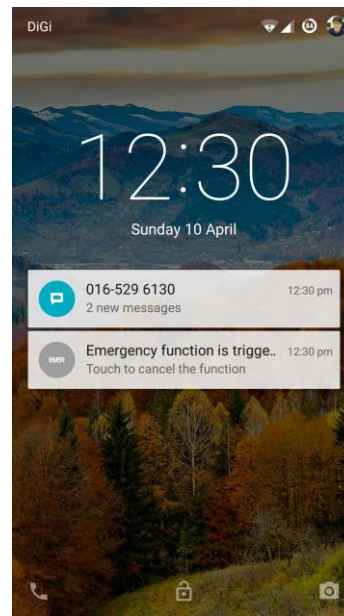
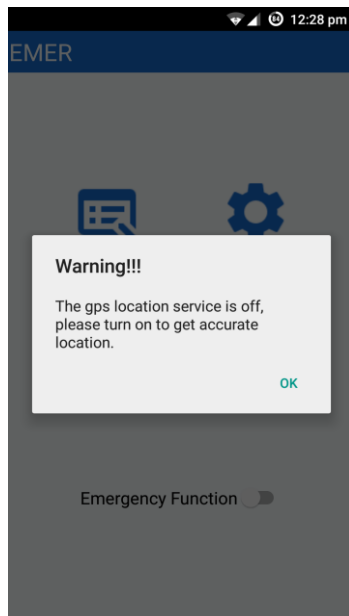


Figure 3-42 Trigger emergency function(1) Figure 3-43 Trigger emergency function(2)

When the user want to activate the emergency function, he or she need to turn their GPS function if not the user will get notice by the system, like figure 3-41. The need to turn on the GPS function then only can activate the emergency function. After the user activate the emergency function then the emergency function will be run in the background service of the smartphone no matter the app is close or kill in task manager, the emergency function will still on . After the user is triggered the emergency function, the app will show the notification to tell the user the emergency function is being triggered. If the user want to immediately stop the emergency function, he or she can press the notification to cancel the emergency function. The notification will be look like figure 3-42.

3.2.7 Example of message

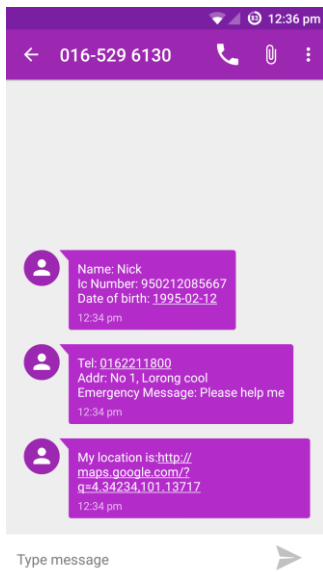


Figure 3-44 Message(1)



Figure 3-45 Message(2)



Figure 3-46 Message(3)

The figure above is the message that the emergency function sent or post after the emergency function being triggered. Figure 3-43 is the SMS message that will receive by the emergency contact. Figure 3-44 and 3-45 is the emergency status and image that post by the system after the emergency function being triggered.

3.2.8 EMER for smart watch



Figure 3-47 EMER wear(1)



Figure 3-48 EMER wear(2)

The figure above is the example of emergency call mobile application in smart watch. The red circle that indicate in figure 3-46 is the icon of emergency call mobile application in smart watch, when the user press the icon, it will proceed to the button trigger page, just like figure 3-47, use can press the “turn on” button to trigger the emergency function in the smart watch phone. Besides, after the user trigger the emergency function a notification will show up on the watch as well as on the smartphone.

Chapter 4: Methodology and Tools

4.1 Methodology



Figure 4-1: Iterative and Incremental Development Model

The software methodology that are used for this project is Iterative and incremental development. Iterative and incremental development is the method that use to produce a good quality and reliable system. This model allow the developer to increase the functionality of the system in the increment way. Basically, this method has divided into two approach which is iterative and incremental approach.

In iterative approach the author can choose to review or redesign part of the system and improve some of the feature in order to make the system become better. For instance every times the developer review or revisit the system, some modification or improvement will be made in that iteration. By the way, the developer can get user feedback in order to make quality improvement for the system.

In incremental approach the developer are develop and analyse the system many times at different portion, each times the new feature of the system will be add incrementally until the whole system is finish developed. Besides, the system design, testing and implement also will perform incrementally until the system is done. In the end of the development the author will check the system completion and make sure it is fulfil the user requirement.

The reason that choosing this methodology is because the method allow the emergency mobile apps add new feature in anytime. For example when the developer is working on the photo auto capture module in the process and they figure out that

video recorder function can be improve the functionality of the system, the developer can just redesign and make modification of the system. Besides, the method allow the developer to design and testing the emergency call mobile application in an incrementally way. For example during each iterative process some of the feature and the function of the system will be added or modify. The function such as the social emergency post function, sound recorder function etc. More over the method allow the developer to get user feedback in order to make a good improvement for the system.

The stage of iterative and incremental development are divided into six stage, which is initial planning, planning and requirement, analyse and design, test, evaluation and deployment.

Stages

1. Initial Planning

- Rough work plan for this project had been carry out, for instance decide the function and the feature that should have in the apps.

2. Planning and requirement

- Carry feasibility analysis to analyse user requirement, the method have been choose to collect data for the analysis is questionnaire.
- The project work plan will be make during this stage, Gantt Chart will be used to support the project work plan.

3. Analysis and design

- The data have been collected will analyse in this stage.
- The standard of the system or apps will be based on the analysis result.
- System design will carry out in this stages, the system design will be use case diagram, activity diagram, sequence diagram, entity relationship diagram and class diagram.
- Simple layout of the system will be construct in this stage.

4. Testing

- In this phase system testing and acceptance testing will be carry out.
- The system will test with test plan in order check each functionality in the mobile application and check the bugs contain inside the app.

5. Implementation

- Test the bug in the system.
- The system will be fully integrated and construct.

6. Evaluation

- Benchmarking the system to know standard of the system.
- To check whether the system match the user requirement.

7. Deployment

- Transform the system to fully working system.
- Deploying the complete function system to the user.

4.2 Timeline

4.2.1 FYP I Gantt Chart

	Task Name	Duration	Start	Finish	Predecessor
1	Review Preliminary Report	2 days	Mon 8/6/15	Tue 9/6/15	
2	Chapter 1: Introduction	8 days	Wed 10/6/15	Fri 19/6/15	1
3	Define Problem Statement	3 days	Wed 10/6/15	Fri 12/6/15	
4	Define Motivation	3 days	Mon 15/6/15	Wed 17/6/15	3
5	Scope and Objectives Formulation	2 days	Thu 18/6/15	Fri 19/6/15	4
6	Chapter 2: Literature Review	11 days	Mon 22/6/15	Mon 6/7/15	2
7	Review Article and mobile apps	3 days	Mon 22/6/15	Wed 24/6/15	
8	Prepare and distribute Questionnaire	4 days	Thu 25/6/15	Tue 30/6/15	7
9	Data Collection and Analysis	4 days	Wed 1/7/15	Mon 6/7/15	8
10	Chapter 3: Proposed Method/ Approach	12 days	Tue 7/7/15	Wed 22/7/15	6
11	Describe Methodologie and general wo	4 days	Tue 7/7/15	Fri 10/7/15	
12	Prototype system design	6 days	Mon 13/7/15	Mon 20/7/15	11
13	Define implementation issue	2 days	Tue 21/7/15	Wed 22/7/15	12
14	Chapter 4: Conclusion	1 day	Thu 23/7/15	Thu 23/7/15	10
15	Summarise the project	1 day	Thu 23/7/15	Thu 23/7/15	
16	Finalise the report	1 day	Fri 24/7/15	Fri 24/7/15	14
17	FYP 1 report submission	1 day	Mon 27/7/15	Mon 27/7/15	16
18	Develop the system prototype	15 days	Tue 28/7/15	Mon 17/8/15	17
19	Testing and Evaluation	7 days	Tue 18/8/15	Wed 26/8/15	18
20	Finalize Prototype	4 days	Thu 27/8/15	Tue 1/9/15	19
21	Design Poster	3 days	Wed 2/9/15	Fri 4/9/15	20
22	Oral Presentation and poster submission	1 day?	Mon 7/9/15	Mon 7/9/15	21

Figure 4-2: FYP I Gantt Chart 1

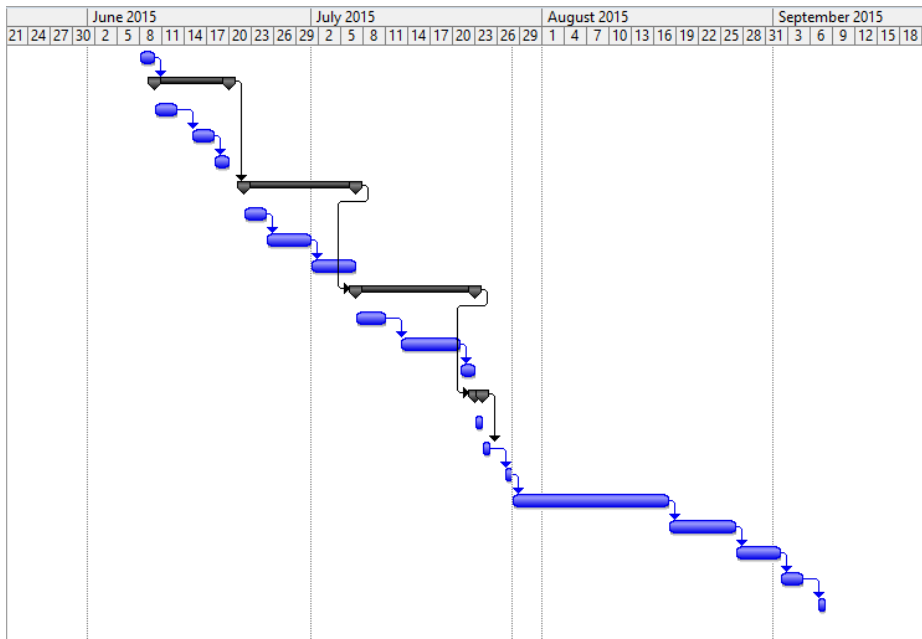


Figure 4-3: FYP I Gantt Chart 2

4.2.2 FYP II Gantt Chart

	Task Name	Duration	Start	Finish	Predecessors	Re:
1	FYP 1 Report Review	2 days	Mon 18/1/16	Tue 19/1/16		
2	System Design	5 days	Wed 20/1/16	Tue 26/1/16	1	
3	Complete Final Report Draft	6 days	Wed 27/1/16	Wed 3/2/16	2	
4	Implementation Part 1	12 days	Thu 4/2/16	Fri 19/2/16	3	
5	Draft Report Submission	1 day	Mon 22/2/16	Mon 22/2/16	4	
6	Implementation Part 2	10 days	Tue 23/2/16	Mon 7/3/16	5	
7	Test and Evaluation	5 days	Tue 8/3/16	Mon 14/3/16	6	
8	Final Implementation	10 days	Tue 15/3/16	Mon 28/3/16	7	
9	Benchmark and evaluate system performance	5 days	Tue 29/3/16	Mon 4/4/16	8	
10	Finalize the documentation	4 days	Tue 5/4/16	Fri 8/4/16	9	
11	Full report submission	1 day	Mon 11/4/16	Mon 11/4/16	10	
12	Poster edit or design	4 days	Tue 12/4/16	Fri 15/4/16	11	
13	Oral Presentation and Poster Submission	1 day	Mon 18/4/16	Mon 18/4/16	12	

Figure 4-4: FYP II Gantt Chart 1

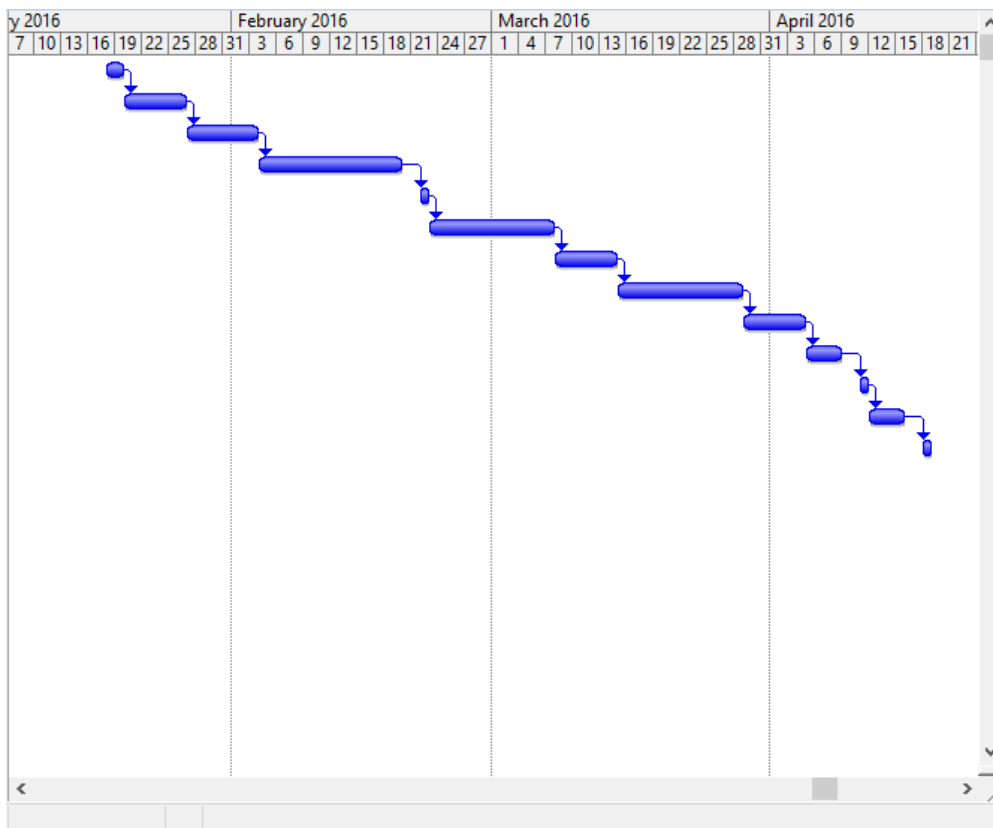


Figure 4-5: FYP II Gantt Chart 2

4.3 Tools are used

1. Platform used

Android

The proposed system are in mobile application. Therefore the android platform will be choose to become the system platform that use in this system. Android is a famous mobile platform people well known about it. It is a linux kernel based mobile platform, the reason to choose android is because android mobile apps can fit in many type of smart phone.

2. Language used

JAVA

The proposed system are in android platform. Therefore Java will be used in this development. Java is an object oriented programming that use to develop various type of system. Nowadays, most of the system are using Java programming language to develop. The reason to use Java to develop the system is because most of the android application are develop using Java and it is object oriented.

XML

Android application is require xml language to design the layout and graphic user interface of the mobile application. The layout size, text, colour, background and so on is require to use xml language in order to make change.

3. Database

SQLite

SQLite is an open source database which is support the standard type of SQL command. It is a light weight database that embedded inside android operating system. It can binding large amount of programming language.

4. Software

Android Studio

Android Studio is a straight forward integrated development environment software that are mainly for android development, by using android studio user will be able to develop different kind of android related project. Besides, it is an open source software.

4.4 The Device specification that used in this project development

This is the computer specification that used to develop the apps throughout this project.

Processor	Intel i5 M3210@2.5Ghz
RAM	4GB
Hard Drive	500GB
OS	Windows 8 Pro 64bit
Video Card or memory	Nvidia Geforce GT 630M, 2GB RAM

Table 4-1: Specification of computer

This is the smartphone that used to debug and test the functionality of the mobile application.

Processor	Quad-core 2.0Ghz
RAM	3GB RAM
OS	Android Version 5.1.1 Lollipop

Table 4-2: Specification of smartphone

This is the smart watch that used to debug and test in this project development

Processor	Quad-core 1.2 GHz
RAM	512MB RAM
OS	Android Wear Version 6.0.1 Marshmallow

Table 4-3: Specification of smartphone

4.5 Requirement

4.5.1 User Requirement

- User should be able add to the personal information to the system.
- User should be able to add emergency contact to the system.
- User should be able to add emergency message to the system.
- User should be able to login to the system.
- User should be able to perform change on personal information.
- User should be able to perform change on emergency contact.
- User should be able to perform change on emergency message.
- User should be able perform setting on emergency trigger function.
- User should be able to activate and deactivate the emergency function.
- User should be able to trigger the emergency function by pressing power button for specific times
- User should be able to trigger the emergency function from the smart watch

4.5.2 System Requirement

- The system shall allow the user to add personal information.
- The system shall allow the user to add emergency contact.
- The system shall allow the user to add emergency message.
- The system shall allow the user to login if the user pass the correct authentication.
- The system shall allow the user edit and update on their personal information.
- The system shall allow the user add, update and delete on emergency contact.
- The system shall allow the user edit and update on emergency message.
- The system shall allow the user make change on the emergency trigger function.
- The system shall allow the user activate and deactivate the emergency function.
- The system shall allow the user trigger the emergency function from power button.
- The system shall allow the user trigger the emergency function from smart watch.

4.6 System Performance Definition

The emergency call mobile application are the mobile apps that will help people during emergency situation. The system will work when the user press the physical button of the phone, which is home button or power button. We assume that around one to two minutes all the information will send to the particular contact. When the user activate the emergency function all the personal information, emergency contact and some trigger function will directly activate in the background.

Besides, this apps will be more efficient compare to existing apps. The emergency mobile application will allow user to do some setting on the trigger function and they can choose which function that he or she want to activate. But most of the existing apps, all the trigger function will be activate by default, the user cannot deactivate the trigger function. The trigger function that will include inside the emergency call mobile apps will be phone call function, time interval function, social network post status function and social network post image function. For the phone call function user can only choose one contact from the emergency contact list. If this function is activate, the contact that set by the user will call after the emergency message is send to the emergency contact.

Moreover, for the time interval function, the user can set their own prefer number times and duration to re-launch the emergency. Which mean when the user trigger the emergency function, the emergency message will send, by default the message will only send once a time. But, if user want to automatically resend the message after some period of time, then the user need to perform some setting and activate this time interval function. The user can set the number of times and duration for re-launch the emergency function by choosing selection that provide by the system. The third trigger function that will include inside the apps will be the social network function. This trigger function will let user post emergency status and post auto captured image on social network. We plan to set Facebook as default social network inside this trigger function. The reason we choose Facebook is because of the analysis, from the analysis we know that a lot of people using Facebook instead of other social network. Therefore we choose Facebook as default. Before the function work, the user need to sign in and link their Facebook account to the emergency call mobile apps, the user need to accept the post permission that request by the emergency call mobile application in order to post status and image.

4.7 Implementation Issues and Challenges

During the project development, we have face some challenge and also issue. The first challenge and issue will be the xml language, this is the programming langue that we are not so familiar. But xml will be include in the development, this is because most of the interface in android are using xml to develop. So that, we need to learn this language in order to design a good user interface.

Moreover, the second will be the local database in android. In this project we are focusing in local database which is SQLite database. This database will allow user to store their data inside the smartphone and the database not require network service. We plan to store all table and also data inside this database. But database will on use in one activity. Which mean one the database create on the first activity the second activity will not share the data. This is the restriction of SQLite database. Therefore we need to find out the way to pass data from first activity to second activity, this will be the huge challenge for us.

Besides, the third will be mobile app “bug” problem. If we find a bug during developing the apps. We need to spend almost two or three hour to look for the solution to solve the bug. Sometimes a day still cannot find any solution. So, this might one of the reason to slow down our project progress. In addition, the virtual machine of android that use to display outcome is slow. For example when we finish develop the apps then we want to test the apps, after run the apps we need to wait some time to get the output.

Chapter 5: System implementation and Testing

5.1 System implementation

For implementation of emergency call mobile application, the mobile application will release and signed hash key as android “.apk” format. Before release, we need to add a line of code in the app.gradle file in order to make the android wear module compile with the mobile app module while releasing the app. After successful release the emergency call mobile application, then it will install in the smartphone. The requirement for the smartphone in order to install the emergency call mobile application is android version 4.0.3 or later, at least dual core processor, at least 8 GB of ROM and at least 1 GB of RAM. The smartphone is also require to have data connection, GPS function and Camera. For requirement of the smart watch is android wear version 5.0.1 or later, dual core processor, 4GB or storage, 512MB of RAM. The smartphone and smart watch that use in this project development is Samsung Galaxy Note 3 and Asus Zenwatch first generation. With the specification that are fulfil the requirement. After installed emergency call mobile application in the smartphone, if the android system detected the user smart watch is connected to the phone then the android system will push emergency call android wear module to the smart watch and installed. If the user don't have smart watch the emergency call mobile application will still perform normal. When first start the app the user is require to go through the process of setup account, enter personal information, enter emergency message and enter emergency contact. After finish all the setup, then the can using their own username and password login to system. Every times when the user want to perform any setting, editing or activate the emergency function, it is require to log in to the system. When the activate the emergency function the function will directly run in background service of the smartphone no matter the user close the app or kill the app in the task manager, the function will still running.

5.2 Verification plan

The function and feature in emergency call mobile application will be test according the verification. The section of function and feature will be test is user account signup section, login section, edit information section, show personal information section, emergency function setting section, send safe message section and activate emergency function.

The example of verification plan:

User input	Expected Results	Actual Output

Table 5-1 Example of verification plan

The verification plan will fill in necessary test case that are related to the section of function and feature of emergency call mobile application. For instance, in signup section, the function will be test is add personal information then the expected results will be successful added personal information, if the user enter wrong format of information or miss enter any information the expected results will be please in all the information in the correct format. Actual Output will be fill in after the actual test in the smart phone.

5.3 Testing

The emergency call mobile application will be install in smart phone and test with require test cases in order to get the actual output and result.

5.3.1 User account signup section

User input	Expected Results	Actual Output
<p><u>Function:</u> Create Account</p> <p>-user enter their user name, password and confirm password, then click “save”.</p>	<p>User account is successfully created.</p> <p><u>Exception:</u></p> <p>If the user enter wrong information, error will prompt up to indicate user the information is wrong.</p>	<p>User account is successfully created.</p> <p><u>Exception:</u></p> <p>If the user enter wrong information, error will prompt up to indicate user the information is wrong.</p>
<p><u>Function:</u> Add personal information</p> <p>-user enter their name, identity number, date of birth, telephone number and address, then click “save”.</p>	<p>Personal information is inserted successfully created.</p> <p><u>Exception:</u></p> <p>If the user enter wrong information, error will prompt up to indicate user the information is wrong.</p>	<p>Personal information is inserted successfully created.</p> <p><u>Exception:</u></p> <p>If the user enter wrong information, error will prompt up to indicate user the information is wrong.</p>
<p><u>Function:</u> Add emergency contact</p> <p>-user enter emergency contact name and phone number, then click “save”.</p>	<p>Emergency contact is inserted successfully.</p> <p><u>Exception:</u></p> <p>If the user enter without enter any information, error will prompt up to indicate</p>	<p>Emergency contact is inserted successfully.</p> <p><u>Exception:</u></p> <p>If the user enter without enter any information, error will prompt up to indicate</p>

	user the information is empty.	user the information is empty.
<p><u>Function:</u> Add emergency message</p> <p>-user enter emergency message and click “save”</p>	<p>Emergency message is inserted successfully.</p> <p><u>Exception:</u></p> <p>If the user without enter any message, error will prompt up to indicate user the field is empty.</p>	<p>Emergency message is inserted successfully.</p> <p><u>Exception:</u></p> <p>If the user without enter any message, error will prompt up to indicate user the field is empty.</p>

Table 5-2 User account signup section

5.3.2 Login section

User input	Expected Results	Actual Output
<p><u>Function:</u> Login</p> <p>-user enter the user name and password and press “Login” button.</p>	<p>The user is successful enter to the main page of emergency call mobile application, if the username and password is correct.</p> <p><u>Exception:</u></p> <p>If the user enter the wrong username or password, error will prompt to user and indicate the user the username or password is wrong.</p>	<p>The user is successful enter to the main page of emergency call mobile application, if the username and password is correct.</p> <p><u>Exception:</u></p> <p>If the user enter the wrong username or password, error will prompt to user and indicate the user the username or password is wrong.</p>

Table 5-3 Login section

5.3.3 Edit information section

User input	Expected Results	Actual Output
<p><u>Function:</u> Edit personal information</p> <p>-user edit their personal information by pressing “edit” button and click “save” button after finish editing.</p>	<p>The user will be able to edit and save their information.</p>	<p>The user can perform edit and save their information after editing.</p>
<p><u>Function:</u> Edit emergency contact</p> <p>-user add, update and delete the emergency contact by pressing “add”, “edit” and “delete” button.</p>	<p>The user will be able to add, update and delete the emergency contact</p> <p>Alert dialog will prompt user if the user want to delete the particular emergency contact.</p>	<p>The user can successfully add, update and delete the emergency contact.</p> <p>Alert dialog prompt the user when the user want to delete the particular emergency contact.</p>
<p><u>Function:</u> Edit emergency message</p> <p>-user edit the emergency message by pressing “edit” button.</p>	<p>The user will be able to edit the emergency message.</p>	<p>The user can edit the emergency message and save.</p>

Table 5-4 Edit information section

5.3.4 Show personal information section

User input	Expected Results	Actual Output
<p><u>Function:</u> Show personal information</p> <p>-user can review their information by pressing “Profile” button.</p>	<p>The personal information will display to user after the user press the “Profile” button.</p>	<p>The personal information is successfully display to the user.</p>

Table 5-5 Show personal information section

5.3.5 Emergency function setting section

User input	Expected Results	Actual Output
<p><u>Function:</u> Phone call function</p> <p>-user active or inactive the phone call function</p> <p>-user perform phone call setting.</p> <p>-use choose the particular emergency contact for the phone call function.</p>	<p>Phone call function can be active and inactive.</p> <p>The phone call function setting will show to user after the user press the “setting” button.</p> <p>The particular emergency contact will be successfully save.</p>	<p>Phone call function can be active and inactive.</p> <p>The phone call function setting is show to user after the user press the “setting” button.</p> <p>The particular emergency contact is successfully save.</p>
<p><u>Function:</u> Time interval function</p> <p>-user active or inactive the time interval function</p> <p>-user perform time interval setting</p>	<p>Time interval function can be active and inactive.</p> <p>The time interval function setting will show to user</p>	<p>Time interval function can be active and inactive.</p> <p>The phone call function setting is show to user after</p>

<p>-user choose their prefer times and duration to re-launch the emergency function.</p>	<p>after the user press the “setting” button. The times and duration will be successfully save.</p>	<p>the user press the “setting” button. The times and duration is successfully save.</p>
<p><u>Function:</u> Social network function</p> <p>-user active or inactive the post status function</p> <p>-user active or inactive the post image status function</p> <p>-user perform the social network setting</p> <p>-user synchronise their Facebook account to the emergency call mobile application.</p>	<p>Post status function can be active or inactive</p> <p>Post image status function can be active or inactive</p> <p>The social network function setting will show to user.</p> <p>The user will successfully synchronise their Facebook account to this mobile application.</p>	<p>Post status function can be active and inactive</p> <p>Post image status function can be active or inactive</p> <p>The social network function setting is show to user after the user press the “setting” button.</p> <p>The user is successfully synchronise their Facebook account to emergency call mobile application.</p>

Table 5-6 Emergency function setting section

5.3.6 Activate emergency function

User input	Expected Results	Actual Output
<p><u>Function:</u> Activate emergency function</p> <p>-user active and inactive the emergency function</p> <p>-user trigger the emergency function through press the power button for specific time</p> <p>-user trigger the emergency function through smart watch</p>	<p>Emergency function can be activate or inactivate</p> <p>The emergency function will be successfully triggered after the user pressed the power button for specific times.</p> <p>The emergency function will be successfully triggered after the user press the emergency button from their smart watch</p>	<p>Emergency function can be activate or inactivate</p> <p>The emergency function is successfully triggered after the user pressed the power button for specific times.</p> <p>The emergency function is successfully triggered after the user press the emergency button from their smart watch</p>

Table 5-7 Activate emergency function

Chapter 6: Conclusion

6.1 Conclusion

In conclusion, the system will deliver in the end of this project will be emergency type mobile application. This mobile apps will be work like an emergency assistant to help user to look for help during the stressful situation. The apps will work when the user trigger it by the physical button or trigger by smart watch. After the apps is activate all the trigger function will work in background of the smartphone. The idea for this mobile apps is quick, easy and effective. So, there are only one button to let user trigger the apps.

We found out that there are some existing problem are exist in the existing emergency type mobile apps. The way of the apps are not effective, the apps does not provide photo capture or sound recorded attach in the emergency message and also lack of the social network function, the social network function will let user to post emergency status on social network. These are all the problem that are current happen in the existing apps.

The reason that motivate us to improve the function of this mobile apps is because we want all the people have an efficient and powerful mobile apps to help people from urgent situation. This will become a huge benefit for people. The proposed solution that will use to solve the existing problem will be change the way to active apps to physical then user can quick and fast to activate the apps. Moreover, allow user to trigger the emergency function from smart watch and also provide social network function to let user post emergency status on social network.

6.2 Problem during project development

During the development of this project we had face some problem regarding the hardware receiver of the smartphone, the emergency call mobile application require get the power button input of the smartphone in order to trigger the emergency function. The problem is we do not know which type of hardware receiver is require to get the input, so we need to figure out which receiver we need to use in order to receive the input of the power button. Beside this problem, the other problem is related to the smart watch, the smart watch that we used in this project is powered by android wear, which mean the smart watch is running in android wear operating system. Android wear consider a new technology and it is newly introduce to the world not more than two years, so that the solution and the resource can be found is limited. So this consider a huge challenge and problem for us in this development. The other problem is about the social network SDK that we use in this development. In this project we choose Facebook as the social network that use to post emergency status and post image. But we are not familiar with the class and method inside SDK. Therefore, we need to do some study and research to build up our knowledge in order to implement SDK in the emergency call mobile application. Although, we face some problems and challenges in this project, but we try to overcome it and we learn a lot from the problems and challenges.

6.3 Objectives Achieved

In the end of this project development, the emergency call mobile application had achieved the objectives that set in the initial stage of the project. The first objective is we had applied the physical button active function in emergency call mobile application to trigger the emergency function instead of using system icon or widget. The second objective is emergency call mobile application had applied the smart watch trigger function in order to improve the effectiveness of the ways to trigger emergency function. The following objectives we had archive is successful added the post emergency status function in emergency call mobile application. The fourth objective is the emergency call mobile application successful developed in the concept of user friendly and provide a straight forward interface to the user. The last objective that we had applied the time interval function in emergency call mobile application in order to let user to select their own prefer duration and number of times to re-launch the emergency function.

6.4 Future Improvement

For the future improvement for this project development, we think that the emergency call mobile application can further improve with these idea. The first idea is the GPS tracking accuracy could be improve further in order get more accurate coordinate of user current location. Besides, the emergency call mobile application can apply wrist gesture function to the smart watch in order to trigger emergency function. For instance when the user are in emergency situation they can just twist their smart watch on their wrist with specific gesture in order to trigger emergency function. Other than that, the emergency call trigger function may include inside the smart watch in order to let the user can perform setting changing easily. For instance, the user can change the setting of emergency trigger function to active or inactive some emergency function in the smart watch when the phone are not nearby the user. Moreover, the emergency call mobile application may include sending emergency email function in order to improve the rescue possibility. For example, during emergency situation when the user trigger the emergency function the email will auto send to particular email address with the emergency message and photo capture attach together. Lastly, video recorder can be add inside emergency function in order to

Chapter 6: Conclusion

record the situation of the user that are currently happen. For example, when the user trigger the emergency function the video recorder will turn on and record a short video clip to prove the user are in emergency situation.

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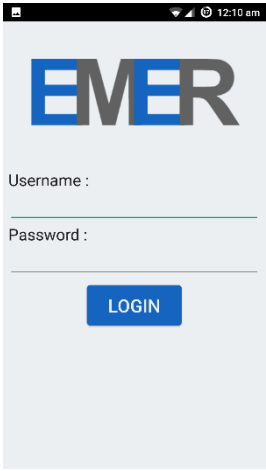
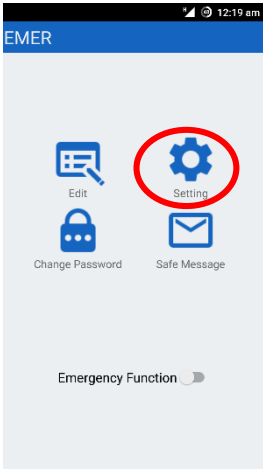
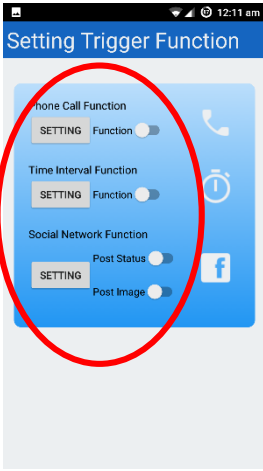
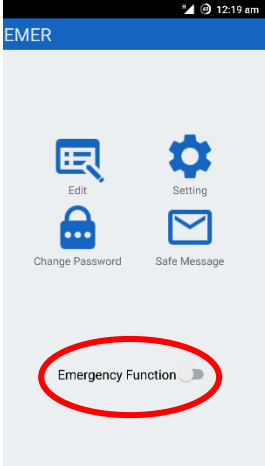
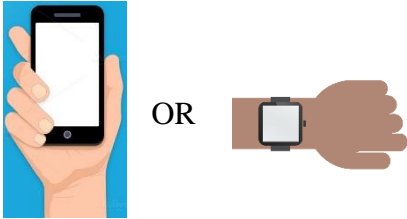
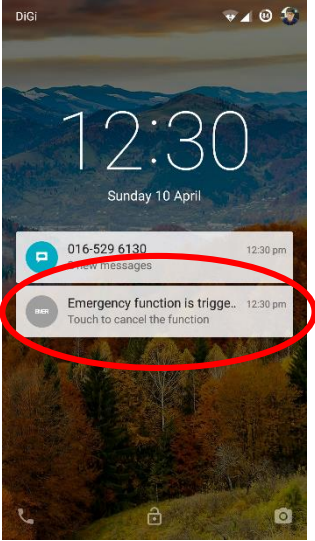
Appendix A – Turnitin Report

The screenshot displays a Turnitin report interface. At the top, the document title is 'FYP2-Emergency Call Mobile Application' by 'SOON LEE LIAN'. The similarity score is 2% (SIMILAR), with 0 out of 0 sources identified. The report is categorized under 'Originality'. The main content area shows the beginning of 'Chapter 1: Introduction', specifically section 1.1. The text describes an emergency call mobile application designed to assist users in urgent situations, such as kidnapping, by sending personal information via SMS to designated contacts. It also mentions features like location tracking and social media integration (Facebook). The report notes that the application is intended to be quick, easy, and effective, with a focus on user-friendly operation during emergencies. The match overview on the right lists eight sources, all with similarity scores below 1%.

Rank	Source	Similarity
1	Submitted to Royal Holl... Student paper	<1%
2	Submitted to University... Student paper	<1%
3	Submitted to INTI Inter... Student paper	<1%
4	Submitted to University... Student paper	<1%
5	soar.wichita.edu Internet source	<1%
6	Beginning Visual Web ... Publication	<1%
7	Petri Pulli. "Ubiquitous ... Publication	<1%
8	Submitted to Blake Hall... Student paper	<1%

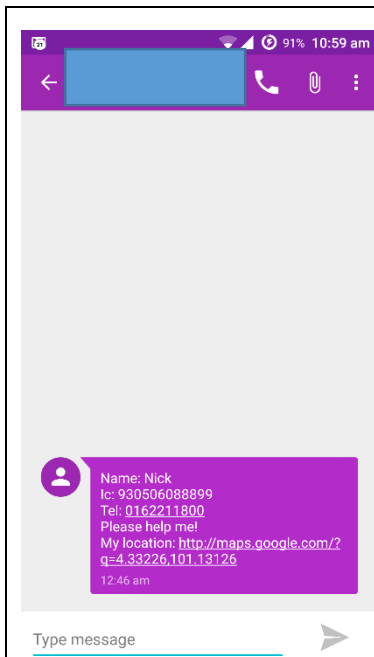
Appendix B – User Guideline

1. How to Use Emergency Call Mobile Application

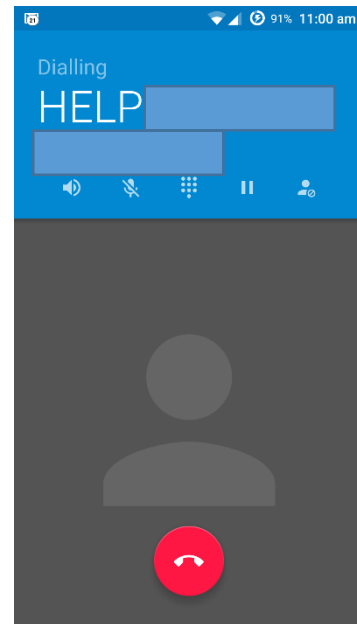
 <p>Step 1: The user need to login into the app with their registered username and password.</p>	 <p>Step 2: Pressing the “Setting” button in order to perform setting on emergency function</p>	 <p>Step 3: User can choose which function they want to active or inactive when they user trigger the emergency function.</p>
 <p>Step 4: Done perform setting in the emergency functions, now the user can activate the emergency function. Make sure the GPS and DATA network is enable.</p>	 <p>Step 5: User is ready to trigger the emergency function, they can trigger it from their smartphone or smartwatch.</p> <p>For smartphone: -Press power button 3 times in order to trigger the function.</p> <p>For smartwatch: -Press the emergency virtual button to trigger the function.</p>	 <p>Step 6: Once the emergency function has been triggered, notification will show to user, and all the function will automatically perform in background.</p>

Appendix

2. Sample Output



This is the emergency message that will receive by the emergency contact that set by the user. The message will include the user current location.



If the user active the Phone Call function, the app will help the user call the particular emergency contact



If the user active the Post Status function, the app will help the user post the emergency status on Facebook.



If the user active the Post Image function, the app will automatically help the user capture photo and post on Facebook.