FIRST AID APP

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Dissertation submitted in partial fulfilment of
the requirements for the
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(Business Information System)

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Information and Communication Technology Programme
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in partial fulfilment of the requirements for the
Bachelor of Technology (Hons)
(Information and Communication Technology)

Approved by,

_____

(AP Dr Vishweshwar Prabhappa Kallimani)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgments, and that the original work contained herein has not been undertaken or done by unspecified sources or persons.

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(Muhammad Hakim Sharin Bin Mohd Tauhid)

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ABSTRACT

In this paper research, author presents a first aid android app assistance given to any person suffering a sudden illness and injury in emergency case. Author himself had been experience in many emergency cases when somebody around us had suffering a sudden injury. This app provides simple step by step instructions for guide user through everyday first aid scenario. Next, first aid apps provide user the videos and animation for easy learning. The user can call 999 the emergency number for the app at any time.

Once the user downloads this android app from the Google Play Store then they can use this app without using internet connection. Preloaded content means the users have instant access to all safety information at any time even without reception or an Internet connection as offline mode. Then, this app provides the interactive quizzes that allow the user to earn rank that they can share with their friends and show off their lifesaving knowledge In emergency case, the user will use what type of illness or injury that happen then simple step by step instructions, animation and videos will provide for each scenario. The user can call 999 the emergency number if illness or injury is more critical and need ambulance. The user can use the step as safety tips and treatment for minor conditions while wait for ambulance arrive at the place. There are many situations that require first aid app and it can be used by untrained person.

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CHAPTER 1

INTRODUCTION

1.1 Background Study

According to the Wikipedia, Android is a mobile operating system developed by Google and based on the Linux kernel. Android was designed primarily for touchscreen mobile devices such as smartphones and tablet computers. It also designed for specialized user interfaces for televisions, cars, and wrist watches. The operating system uses touch inputs that correspond to real-world actions such as tapping, swiping, pinching and reverse pinching to manipulate on-screen objects. Android operating system had been used by several brands such as Samsung, Sony, Asus and Lenovo.

Figure 1: Android Lollipop 5.0 statue at Google

An Android application (apps) is a software application running on the Android platform. Android Apps use java core libraries and write java programming language. First, they are compiled to Dalvik executable to run on the Dalvik virtual machine. Dalvik virtual machine is a virtual machine specially designed for mobile devices. Developers may download the Android software development kit (SDK) from the Android website. The SDK includes tools, sample code and relevant documents for creating Android apps.

First aid can be defined as emergency care or treatment to any person suffering a sudden illness or injury. First aid is important thing to give instruction to the user in order to ease the pain, to maintain life, to promote recovery and to prevent patient condition from being worst until professional medical help can be obtained. It includes initial intervention in a serious condition prior to professional medical help being available such as performing cardiopulmonary resuscitation (CPR) whilst awaiting an ambulance. It also can be do it for complete treatment of minor conditions such as applying a plaster to a wound.

Figure 2: The universal first aid symbol

There are many situations which are require first aid and many countries have regulations which it specifies a minimum level of first aid provision in certain circumstances. This can include specific training or equipment to be available in the workplace, the provision of specialist first aid cover at public gatherings and mandatory

first aid training within schools. However, first aid does not necessarily require any particular equipment or prior knowledge. It can involve improvisation with materials available at the time and often by untrained persons.

1.2 Problem Statement

We may have only few seconds to save a life when we are in an emergency. Is anything that we can do in an emergency until help arrives? We should do because the only person we may have to depend on is ourselves. First aid is the emergency care given to a victim of injury or sudden illness before professional medical help arrives. Cardiopulmonary resuscitation (CPR) is a lifesaving method or technique useful in many emergencies such as heart attack which someone's breathing or heartbeat has stopped. It is method of combining chest compressions with rescue breathing to maintain a flow of oxygen-rich blood to the brain while the heart is not working.

In Malaysia, the number one killer in terms of diseases and health problems is heart attack. According to the World Health Organization (WHO), the total number of deaths in Malaysia resulted from coronary heart disease was at 22,701 in 2010. This makes to about 22.18 percentages of the total deaths in the country. Heart disease is different from stroke which is the second top killer in Malaysia. So, it can make different when everybody know how to do Cardiopulmonary resuscitation (CPR).

Imagine one day that we find our friend lying on the floor and unconscious. We have no idea how long he has been there and then run to call the ambulance. While the ambulance is on their way that person is helpless and we can't do anything for help him. Wouldn't you want to possess the skills needed to help save him? Therefore learning CPR skills are important and it could mean the difference between life and death.

Furthermore, most popular injuries happen among teenagers and high school students were sling. When our friends break their arms outside, first we have to do is getting the person to support the injured arm with his hand. Next, take the lower end of the bandage up over the hand forearm and tie it in the hollow just above the collarbone. Then, pin the

point near the elbow or twist and tuck it in. First aid skill and knowledge is really important in our daily life.

1.3 Objectives

Everybody should know how to manage first aid because it is one of the most valuable skills we can ever have. However, not all of us would endeavor to have first aid certification and most would probably think that they don't need to be certified. After all, common situations like a child falling down would just entail a mother cleaning up the wound and applying a plaster to the wound. But these are just the very basic first aid techniques that everyone knows how to do.

The main objective for the author to develop this application:

- To develop an application that giving first aid knowledge to the user by using this application.
- To provide global positioning system (GPS) to the nearest hospital.
- To test the user knowledge first aid by provide test for some situation in the application.

At this point, it makes sense for everyone to learn first aid skills and require having this knowledge so we can help each other. All we need to do is take advantage of them.

1.4 Project Scope

Project scope can be defined as what is needed to be completed in a project to deliver a product, service and the result. In this particular project, project mainly focused on the first aid instruction that is including the diagnosis, treatment and disposal.

For diagnosis, the user must first know how the accident or sudden injury has occurred. This can be got from the victim if he can tell or from witnesses. We called it as the history of the circumstance. The next step is the user need to see the symptoms such as faintness, thirst, pain or shivering. Then, the user looks at the signs which are differences from normal conditions. These may include swelling, congestion, paleness or deformity, which can be very easily observed by the first aider. Signs are the most reliable indications on which diagnosis can be based.

For treatment, the reason of the condition should be immediately removed with a view to avoid the condition from becoming worse. Special attention should be paid to cases of unconsciousness, shock, severe bleeding, and failure of breathing.

For quick disposal, the victim should either be examined by the doctor on the spot. If that is not possible then he should be immediately taken to his home or to a hospital according to conditions. The members of the victim's family or his relatives should be informed at once.

1.5 Relevance and Feasibility

This application was designed to help people when suffer a sudden injury and illness. When an injury suddenly happens then the user can choose from the apps what type of injury that happen. Next, this application will provide easy step by step instructions to help the user for give treatment to him or others. Then, the user also can watch the video that provided for each circumstance. By using this application, the user can answer the quiz given for their knowledge and will earn rank. The user can share with their friends the rank his earned and show off their lifesaving knowledge.

Furthermore, the user can learn much knowledge about emergency situation and circumstance. The user can minimize their panic when something happen. By using this application, first aid kit can be used by maximize the usage. People will know what to do for each component in first aid kit. Indirectly, this application will give the valuable knowledge to the user and it may save our life.

CHAPTER 2

LITERATURE REVIEW

Our personal life is highly dependent on the technology that people have developed (Ramey, 2012). In the recent years, advancement in technology has changed the way we learn, the way we purchase products, the way we communicate, the way we travel and so many changes have been taken. As the demands changes and the demand for advancing the type of technology we use is high. Almost everything we use has been restored to better standards and as a perfect example is a smartphone. The type of mobile phones we had in 1998 is no longer on demand in this century. Then, the demands from people about mobile phone have changed and this has lead into the development of mobile phone technologies and we called it as smartphone.

2.1 The influence of mobile technologies on healthcare and medical

Nowadays, technology plays important role in every industry that is include in our personal life. Many innocent lives have been helped by technology. Human medicine and health sciences have improved. Doctors and medical students have embarked on medical technological tools to carry out wide research on human health problems. This research has resulted into the growth of new treatments which have helped in curing most challenging human diseases. It also has helped in saving so many lives and it has also prolonged the human lifespan. This merger has proved by saving very countless number of lives all around the world.

According to Ramey (2012), Smart phone Ultrasound has been developed by experts at the Washington University in St.Louis using a $100,000 which was provided by

Microsoft. They managed to integrate a USB-based ultrasound probe with a Smart phone. The main objective was to create an simple hand sized ”Ultrasound device ” that can enable doctors in remote areas to image a patients kidney, eyes, liver, bladder and arteries so that they can easily detect any infections. This type of device can be of a good use in many developing countries and it can help in saving lives. Doctors and specialists can help out many patients in remote areas by using this mobile ultra sound.

Figure 3: Smart Phone Ultrasound

2.2 Mobile Technology

Mobile technology can be defined as the technology use in cellular communication and that is variety of device that allow user to access data and information wherever they are. A standard mobile device has gone from being no more than a simple two-way monitor to being a mobile phone, GPS navigation device, an embedded web browser and a handheld game console.

According to Huda (2014), 87% of the world population own mobile device in 2012. That shows that how growth mobile technology in today’s world and the next 10 years it may 100% of the world population will own mobile device. That conclude that the number of people own mobile device are more than people that have laptop. Growth in mobile technology gives big opportunity to many business industries such as banking,

health, tourism and so on. That has introduced a new dimension into marketing and advertisement for businesses worldwide.

2.3 Android mobile application

Android is a design of computing platform for touch screen device use in some brand of smart phone, tablet and other devices. Google own the android‘s technology which consist of an operating system, software and applications. Linux has been used as based for the Android operating system which provides advanced computer processing. Although Android technology is increasingly being used on a range of devices the most common hardware to use this platform is mobile phones. A large community of developers regularly writes applications including games, social networking, pictures, video and business modules for Android smart phones.

Android products that are used by thousands of developers because they are much more freely available for download if compare to iOS products. They have given software developers the opportunity to sell their creations to a wide group of consumers. Android offers developers the ability and tools to build innovative applications based on creativity and demand from the markets (Devashne, 2013). That shows why Android apps have many developers than other operating system. As a beginner developer, Android is the best platform for start develop some mobile application.

According to Noor (2012), smartphone’s world the operating system has been divided into some different platforms which are Android OS, WebOS, Blackberry OS, Windows Mobile, Symbian OS and iPhone OS. In 2011, Android has been the top smartphone’s operating system between all of the existing mobile phone’s operating system as described above. 48.8% of smartphone shipped worldwide throughout 2011 had been shipped together with Google’s free Android operating system. This is one of the factors that led the author to make a strong decision to develop the application in Android platform rather than other operating system. The table below shows the statistic of Smartphone’s operating system in 2011.

Operating System	Shipments 2011 (millions)	Market share 2011	Annual growth
Android	237.7	48.8%	244%
iOS	93.1	19.1%	96%
Symbian	80.1	16.4%	-29.1%
Android	237.7	48.8%	244%
iOS	93.1	19.1%	96%
Symbian	80.1	16.4%	-29.1%
Android	237.7	48.8%	244%
iOS	93.1	19.1%	96%

Table 1: Worldwide Smartphone's Market based on Operating System in 2011 (Source: Noor, Spetember 2012)

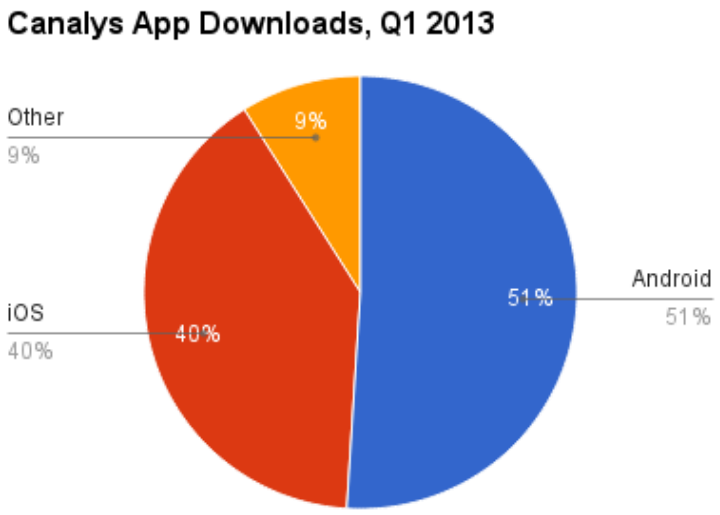


Figure 4: Which platform's users are downloading the most apps in quarter 1 of 2013?

That was another statistic show that Android is the perfect platform for author to develop mobile application. Android has been lead iOS and other platform in most application have been downloading by user.

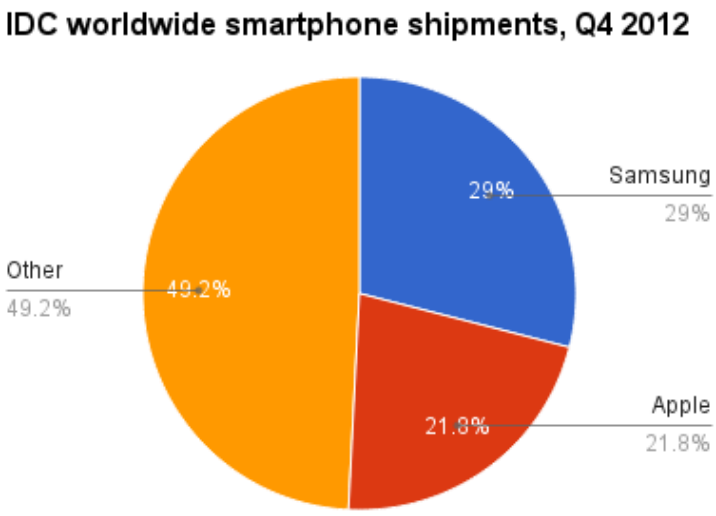


Figure 5: Which platform is selling the most smartphones?

According to McCracken (2013), Samsung has been leading for selling the most smartphone in quarter 4, 2012. Samsung which deals primarily Android as their main operating system has beat Apple that use iOS as the operating system. Majority of the other's company also use Android as the operating system and it shows how influence Android in smartphone.

2.4 Visual aid

According to Merriam-Webster, visual aid means that something you look at that is used to make something easier to understand. It also can define as an instructional device those appeals to primarily to vision such as map, model, chart, picture, video and poster. Visual aids can strongly help the effectiveness and efficiency of instruction and speech. Many instructions can benefit from having things, images and data presented in a clear way. Next, Visual aids vary in kind but there are similar tips for dealing with any kind of additional evidence that is shown to the user.

Furthermore, visual aid can help peak the user's interest due to its ability to increase the user's understanding and this automatically increase the knowledge retaining level of the user (Sara, 2013). According to a recent University of California at Los Angeles study, 55% percent of what the user learns comes directly from the visual messages and compared to 38% from audio messages. Then, by combining audio and visual presentation messages, the author can ensure their goals are achieve.

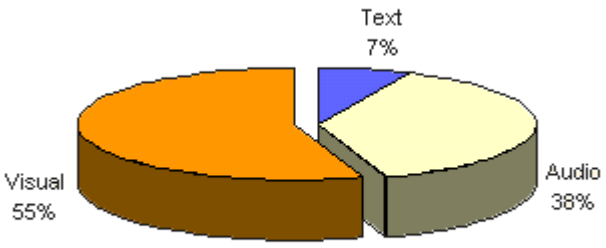


Figure 6: Impact of communication research by University of California (Source: WebConference.com)

2.5 Awareness towards first aid knowledge and skills

First aid means simple emergency medical care procedures intended for lay rescuers to perform before emergency medical professionals are available (Brouhard, 2012). It also can be called as emergency medical providers such as ambulance and other first responders for emergency case. First aid skill and knowledge is the valuable thing that people do not have it. Nowadays, lacks of first aid knowledge and skill have been give negative impact to the societies.

In the United Kingdom, a research done by St John Ambulance revealed that about 150,000 per year can give their life back in situations if more people know about first aid knowledge and skill ("Dramatic numbers dying from lack of first aid,"2010). That shows thousand people are dying but first aid can make the difference between death and life. The study show that they all dying because of the choking, asphyxiate from

block airway and heart attack. Armed with this knowledge we can all be the difference between a life lost and a life saved (Killen, 2010).

According to Luke (2012), lack of first aid knowledge and skills in population is killing more people than cancer in the Midlands. A research done by St John Ambulance state that cancer is the biggest killer in the Midlands. In fact lack of first aid knowledge is taking more lives than cancer. First aid can be the dramatic different in many circumstances that include the sudden injury and illness.

Survey discovered that 59% percent of the United Kingdom population would not feel confident enough to help save a life ("Dramatic numbers dying from lack of first aid,"2010). Then, the remaining 24% percent of that would do nothing and wait for the ambulance or someone who knows first aid. That shows the good country like United Kingdom also has lack of first aid knowledge and then what about our country, Malaysia. That's reason why we need pocket first aid knowledge like first aid mobile application to help us.

Furthermore, in another research in United Kingdom, almost half of the workforce in the United Kingdom population would have the ability to treat even the most minor injury in the workplace (Wigham, 2003). Then, the remaining 52% percent do not know where the first aid kit is located in the workplace. Besides that, it exposed that 43% percent of the employees have never had any training in regards of first aid at all. This shows the workplace did not provide them training for first aid and the workers also did not concern about first aid.

2.6 First aid dealing with common injury and illness

2.6.1 Heart attack

Acute Myocardial Infarction (AMI) commonly known as the heart attack is the most significant consideration in those suffering chest pains and it can cause of death. It's happen when the flow of oxygen-rich blood to a section of heart muscle suddenly

becomes blocked and the heart can't get oxygen. If blood flow isn't restored quickly then the section of heart muscle begins to die. Coronary heart disease is the number one killer in term of health problem and disease in Malaysia.

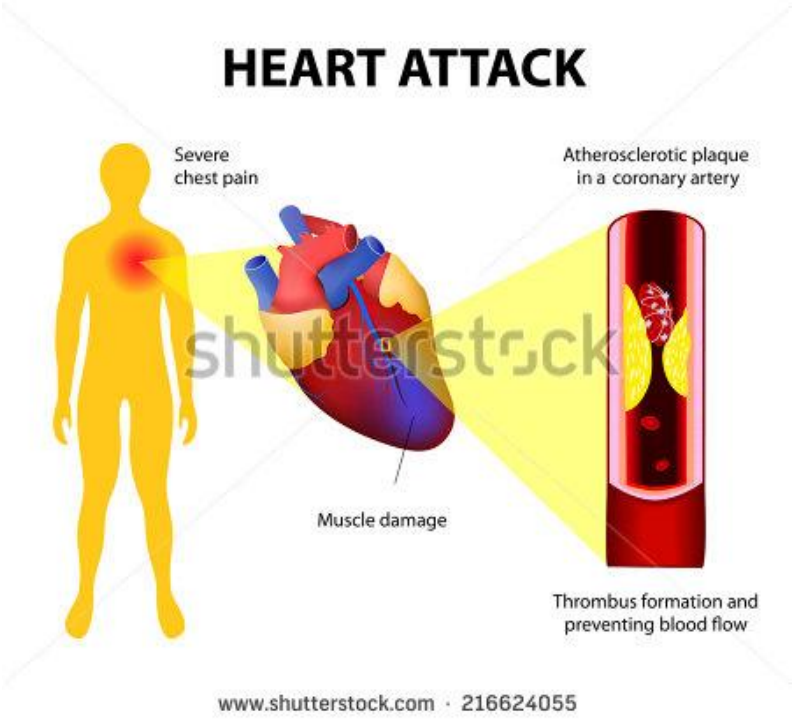


Figure 7: heart attack

The best way to fight with heart disease is to make to take a lot of fiber which are richly found in vegetables and fruits while minimizing food which are high in cholesterol (Lauren, 2015). In term of first aid, "there is no evidence could be found for the recommendation that someone suffering chest pain is bought into a sitting position" (Mason, Dawson, Chatters, Santarelli & Chapman, 2013) (p.9). However, expert opinion and symptoms resulting from heart attack make this a necessary part of first aid for chest pain. Early contact with doctor or call emergency number in response to chest pain leads to improved patient outcomes for those suffering heart attack due to earlier arrival in hospital and therapies.

2.6.2 Burn or scald

Figure 8: how to treat burn or scald

Burn injuries are a common cause of disease and death in worldwide. The British Red Cross recommends that the affected area is cooled under cold running water for at least 10 minutes before being covered with cling film or a clean plastic bag. Cooling of thermal burns with cold tap water is supported by a large body of evidence which demonstrates that it may induce painkilling. It will reduce the need for grafting and promote more rapid healing. "The optimal temperature of water used for cooling is between 12-18 degree of Celsius and the application should ideally occur without delay and for at least 10 minutes duration" (Mason, Dawson, Chatters, Santarelli & Chapman, 2013) (p.10).

2.6.3 Choking

According to the Nationwide Children's Hospital, choking is a leading cause of injury and death among children especially those younger than 4 years of age. The majority of choking cases among children are related with coin, toys and foods. In United States, a child can die every five days because of the choking on foods. No prevention has been taken seriously about the choking by any agencies and food production. Parents and

caregiver did not take seriously this problem and let their children to play with toys and coins.

Actually, foods also give big contribution to the cause of the choking to the children and adult. Grapes, popcorn and nut are examples of food that can be easily become lodged in children throat and lungs. In order to minimize the risk of the choking, parents need to take a few steps such as keep away coins and small stuff from children. Next, do not give the children any firm foods unless it have been cut into very small of pieces and avoid to give them other high risk foods such as nut, seeds and hard candy.

Figure 9: perform abdominal thrust (Heimlich Maneuver)

Parents and caregiver in nursery need to know and learn about first aid for choking. Cardiopulmonary resuscitation (CPR) also needs to be learned by many people as it can be basic first aid for many injury and illness. First aid for choking to conscious adult, determine whether the person can cough or speak. Next, if the person cannot react to that then need to perform an abdominal thrust (Heimlich Maneuver) repeatedly until the foreign body is expelled (Eisenberg, 2010). For late stages of pregnancy woman and obese persons, a chest thrust may be used. If the adult or children are become unresponsive then need to do CPR.

2.6.4 Animal bites

According to Garth et al (2015), It is difficult to determine exact incident of bite wound because of many animal bites case never been reported. In United States, there were estimates that about 70 million pet dogs and 74 million pet cats in 2012. Animal bites at the hand have a high risk for infection because of the relatively poor blood supply of many structures in the hand. In conclude, the better the vascular supply and the easier the wound is to clean then the lower the risk of infection.

Any animal bite that breaks the skin such as dog bite will cause a wound that is exposed to infection. That's why we need a faster and efficient first aid treatment. For serious wounds, control bleeding by applying direct pressure and raising the injured part (Newman, 2009). Cover the wound with a sterile dressing, bandaged in place and arrange for the casualty to go to hospital.

Figure 10: Animal bites

For superficial bites, wash the wound thoroughly with soap and warm water. Pat the wound dry with clean gauze swabs and cover with a sterile dressing. Advise the casualty to see a doctor in case he or she needs primary immunization against tetanus, or a booster.

2.6.5 Asthma attack

In asthma attack, if we see someone hard or difficult to breathing then we remember him to keep calm and make that person to sit comfortable position (Newman, 2009). Then, to ensure that person to take a dose from their inhaler

2.7 CPR can save a life

According to the B.E.CPR website, cardiopulmonary resuscitation (CPR) can be defined as emergency procedure lifesaving that need to be taken when someone heartbeat or breathing stopped. It is procedure that consist mouth to mouth respiration and chest compression method. CPR makes the oxygenated blood to mix to vital organs such as heart and brain. CPR can save a person alive until more advanced procedures such as defibrillation. Defibrillation can be defined as an electric shock to the chest can treat the cardiac arrest.

Figure 11: illustration how to perform CPR

2.8 Common injury among young generation

Based on youthsafe.org, young people are on the high risk of injury due to the fact that they are at the stage where their curiosity levels are at their highest, peer pressure and

tendencies to taking risk without thinking it through. These factors are one of the main contributors of injuries that occur to the young adults worldwide nowadays.

Sustaining an injury or two is no strange phenomenon for young adults, especially active teenagers of today. Injuries can be classified into several categories such self-inflicted, home-related and also sports-related injuries. Based on webmd.com, self-injuries, also known as self-harm, self-mutilation and non-suicidal injuries are injuries that are being inflicted to one self with intention of committing suicide or for self-satisfaction to relief inner pain. Self-inflicted injury that is the most common among young adults is cutting or slicing them whether with a knife or other sharp objects that are available at sight.

Home-related injuries are injuries such as falls, airway obstruction and poisoning which is one of common causes of injuries or death. Based on an article in US News & World Report written by Luke Mullins, he stated that every year in United States of America, more than 18,000 Americans died due to home-related accidents. Home has become the second most common location for injuries, just behind car-related injuries just based on that fact alone. This shows how serious home-related injuries can be.

For active young adults, having a risk to sport-related injuries is no strange case to them as they are prepared to bear with the risk of it while doing sports. Example of sport-related injuries sprain, muscle pull and also shoulder injury are common injuries for young athletes all around the world. Futsal, for example, is one of the common sports that are popular among the young. It is not impossible for a young player to suffer any of the injuries related to futsal. Universiti Malaya Associate Professor, Razif Ali stated that once a body structure is fully torn, it does not heal and he also said that the most common injuries that a futsal players experienced are mostly involves the knee, the ankle, the back and also groin area.

CHAPTER 3

METHODOLOGY

3.1 Research Methodology

Methodology can be defined as systematic and theoretical analysis of the approaches applied to a field of study. It includes the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it comprises concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques. The general research strategy that outlines the way in which a research project is to be undertaken and identifies the methods to be used in it. A methodology does not set out to provide solutions as it is.

The present subsection describes the approaches which were undertaken in order to carry a research relevant to the project. Since quantitative research method is considered reliable and objective, as well as are said to allow critical interpretation of the results, it was used. The research was designed to gather the user expectations as well as to understand the need of an app with such functionality. It is about the ability to give the user knowledge about first aid and assistance to the user when involve in sudden injury or illness.

3.1.1 Data Gathering

In this project there are few processes have been considered to be used in order to make the assignment comprehensive and efficiently implemented. First, I have conducted an internet research and find 10 journals that are related to my final year project. For keep this report updated and fresh, I decided to select the journals that were written from years 2008 until now.

During this assessment, I have made observation, discussion and survey for this project. To gather the user expectations as well as views on the idea of the app, a quantitative research was conducted. Questionnaires are a widely used method of data gathering for quantitative research, and hence one was used here. The research consisted of a 10-questions online questionnaire which was aimed to all people.

Besides that, I have made some discussion with AP Dr. Vishweshwar, my supervisor final year project and he gives many contributions about the idea of this project. He provides me much information that I needed. Next, I also have some discussion with my fellow colleague. The task force will brainstorm the ideas and discussion how the best way to implement the project. Then, I have doing focus groups that are form of interviewing where there are several participants. In focus groups, my fellow colleague and I have interviewed Dr Ahmad Sobri, our coordinator final year project 1 to get information about how to choose final year project topic, what need to include in interim report and proposal defense.

3.1.2 Data analysis and results

Through analysis and inference, meaningful information is deducted from a questionnaire. Similar approach was used to analyze the responses given in the questionnaire distributed to respondents. The responses' data was graphically represented in Microsoft Excel and from there inferences the questions asked were made. The results are provided in Chapter 4.

3.2 Development Methodology

This chapter will cover the details explanation of methodology that is use during the project which purposed on making this project in complete state and working perfectly. Many methodology or findings from this project or related field are generated and documented into the text format report. This can be used as reference for the future for upcoming projects which may be related to this project. In order to evaluate the project, there are several methodologies that the author used to approach with the project.

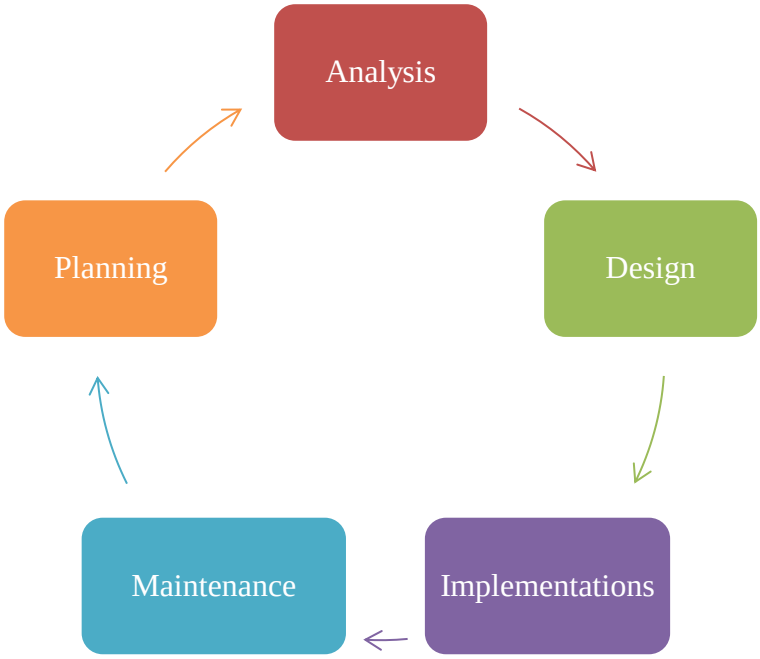


Figure 12: Model of the System Development Life Cycle

The development of software follows standard framework of methodologies then I planned to use System Development Life Cycle (SDLC) for this project (see figure). The above represented methodology (figure) was chosen because a systems development life cycle (SDLC) is composed of a number of clearly defined and different work phases which are used by systems developers to planning, design, build, test, and deliver information systems. SDLC aims to produce high quality systems that meet customer

expectations. Then, it delivering systems which move through each clearly defined phase within cost estimates and schedule time.

3.2.1 Planning

Planning is the early stage of the System Development Life Cycle (SDLC) and that is the important stage that will bring where the direction of the project. This is the first phase when author need to do a research what type of mobile application need to be done and useful to people. After doing some internet research, author decided to do mobile application entitled 'First Aid Apps'. Next, the project title was proposed to Dr. Ahmad Sobri, Final Year Project Coordinator and AP Dr. Vishweshwar have been assigned as my supervisor for Final Year Project.

Furthermore, brief research regarding this topic to the existence apps that have same functionality. Then, the outlines of the activities as the part of the development life cycle were plotted in the Gantt chart (see table). As planned, the overall Final Year Project 1 (FYP1) was scheduled for 14 weeks from Jan 2015 until April 2014.

3.2.2 Analysis

Analysis runs simultaneously with the planning so that the plans are consistent in fulfilling the objectives that have been set during planning. From this time, the analysis activities for the present project were carried in parallel with the planning activities. The author was carry the research regarding the topic to understand the concept of the proposed app further developed. Next, the author also making research to identify the target of the user and the main functionality was set forth.

The concept have been to have the first aid apps, but not similar to the apps that already in the market because it will redundant and unlikely to be used. The main target users that have been identified were the young generations that will be most likely life depends on the mobile application. It will help the young generations that have lack of

knowledge and skill regarding the first aid. The main functionality of this app is to make the differences between death and life.

After the questions which are often asked during analysis were answered, a literature review was conducted to find approaches used by other studies in proposing similar functionality. The analysis culminated with the drafting of the initial system requirements that would be used to build the app.

3.2.3 Design

In design phase, it refers to the method of the unique circumstance or development of the mobile application. The Design phase of System development Life Cycle (SDLC) involves a particular and systematic approach to defining the system. Assessments regarding how the application will to function, operate, the components, interfaces, databases, and global positioning system (GPS) service provider for the application were made. The design strategy revolved uniquely on having the student building the application.

This is where the process of designing the application takes place. It is important to make a right Unified Modeling Language (UML) diagram such as use case diagram. In this period, the design of Graphical User Interface (GUI) of this application also needs to be done. For create the user interface, the author create using MIT App inventor and Android Studio. It gives the author how this project is going to be and give big picture. In order to require minimal user input, the architecture design of the app was derived and to enhance from several consulted literature materials that's why the interface was design. Design is very important stage that can decide what the outcome of the project.

3.2.4 Implementations

The implementation phase is where all the plans which ongoing at the planning phase until the design were put into motion. Implementation stage is the process where author

start to develop the project by writing coding for that particular application. This process determines what type of software used to write the coding and I decided to use android studio as my platform for doing this project. Then, these flows include how to transform a sketch of Graphical User Interface (GUI) into a real GUI and so on.

During this stage, the prototype should be completed 100% and has been testing in different stages. As a result from the testing, the author needs to make a complete application of the prototype before launch it.

3.2.5 Maintenance

Maintenance will be the last phase of the system development life cycle (SDLC). The maintenance phase covers all activities that are required once the application is operating. This phase is to make sure that the applications continue to work properly and serve the purpose as it should. This include the activity such as fixing bugs, maintaining security, providing support materials for users, updating and upgrading if needed. The author should always be responsible towards maintaining it especially content of information provided. Content need to be updated every time and the author need to evaluate the user feedback either positive or negative. The feedback can consider as for the future development and improvement.

3.3 Use Case Diagram

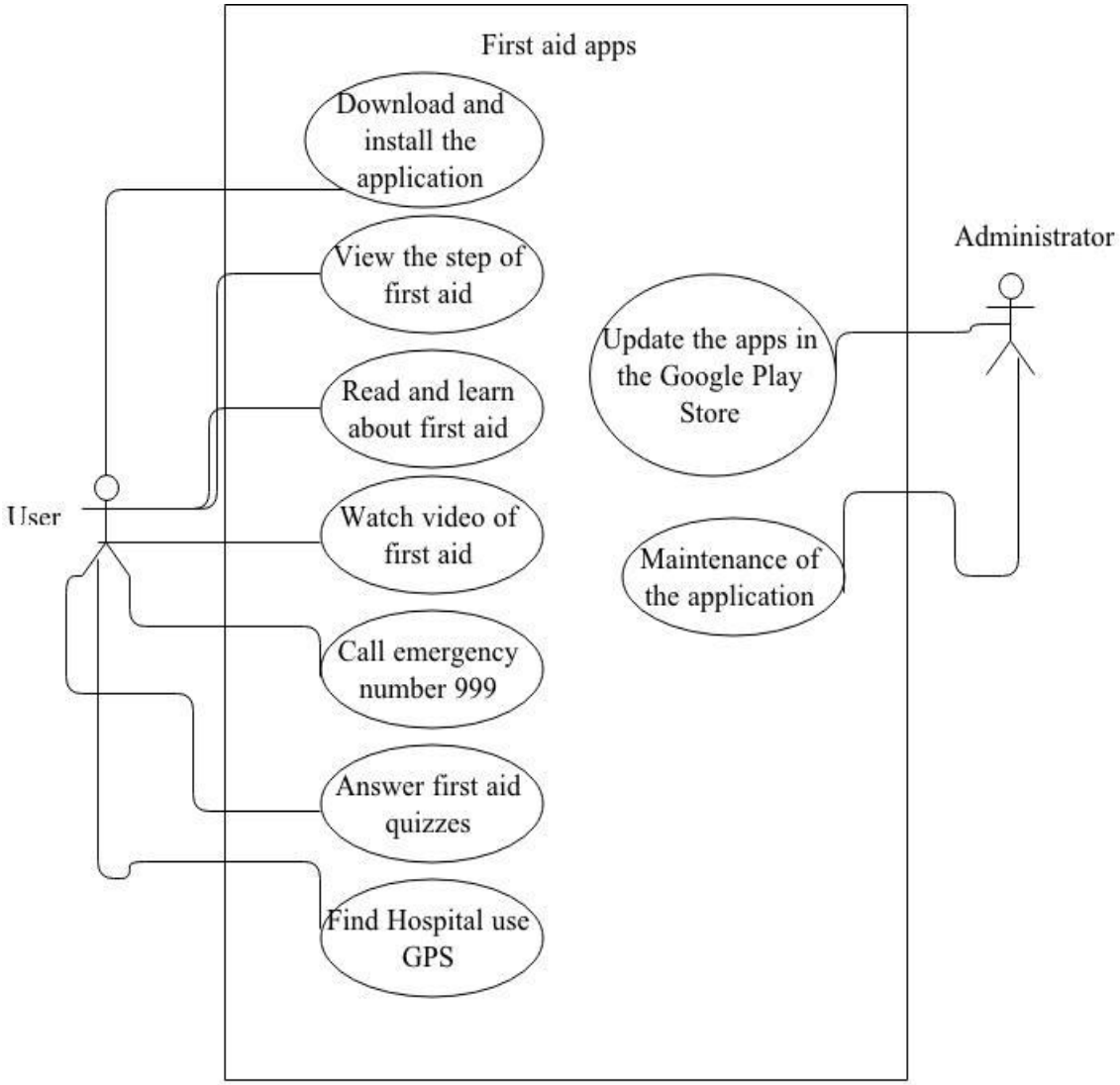


Figure 13: Use case diagram for first aid apps

3.4 Key Milestone of FYP I

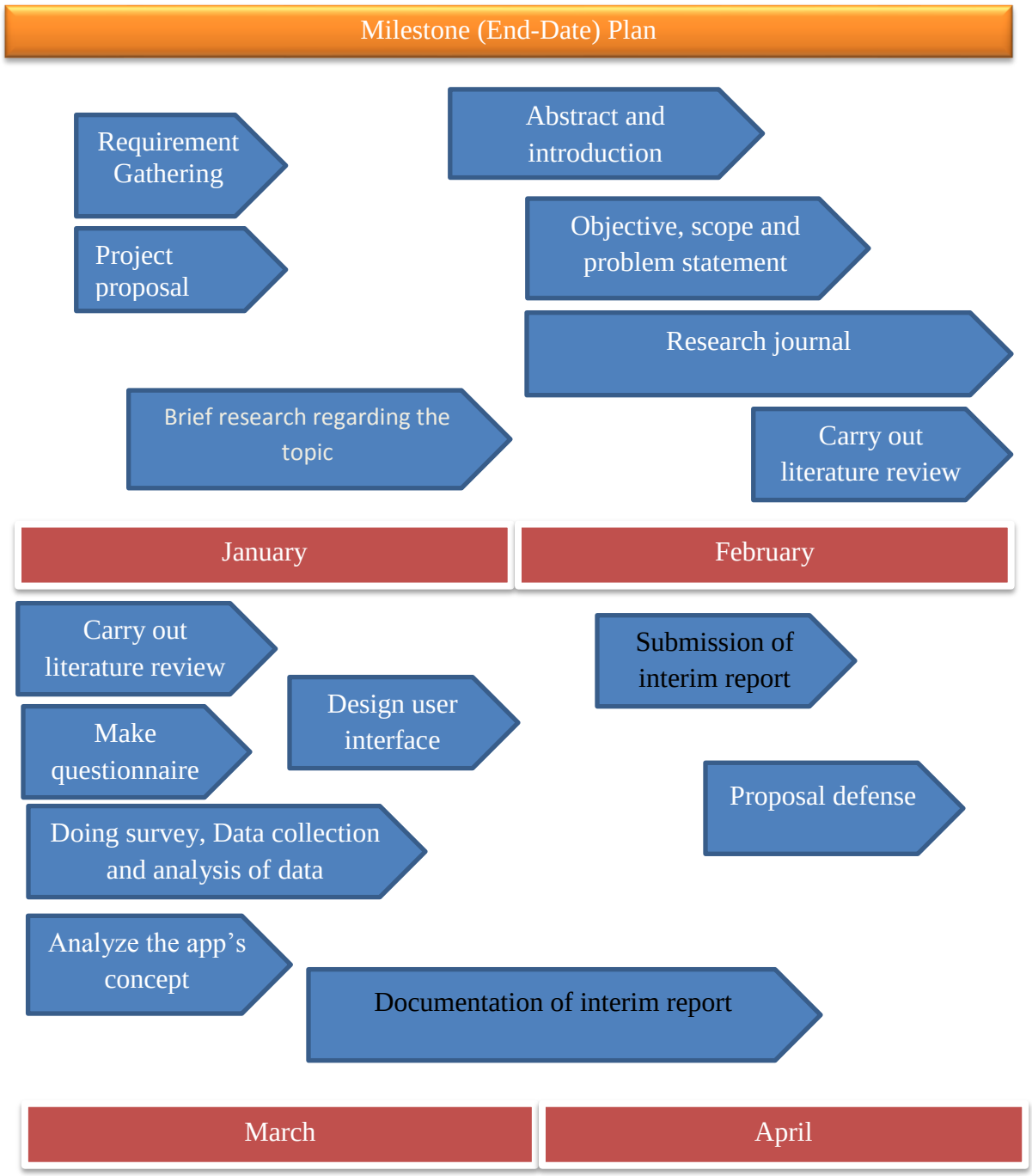


Figure 14: Key Milestone for FYP I

3.5 Gantt chart for FYP I

		Week	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	Task Name		January			February				March				April	
1	Requirement gathering														
2	Project proposal														
3	Brief research regarding the topic														
4	Submission of Logbook														
5	Abstract and introduction														
6	Objective, scope and problem statement														
7	Research journal														
8	Analyze the app's concept														
9	Carry out literature review														
10	Make questionnaire														
11	Doing survey														
12	Data collection														
13	Analysis data														
14	Design user interface														
15	Documentation of interim report														
16	Submission of interim report														
17	Proposal defense														

Table 2: Gantt chart for FYP I

3.6 Gant chart for FYP II

		Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ID	Task Name		May			June				July				August			
1	Submission of logbook																
2	Pre Sedex																
3	Submission of technical report																
4	Submission of Dissertation (Softbound)																
5	Submission of Dissertation (Hardbound)																
6	Viva Presentation																

Table 3: Gantt chart for FYP

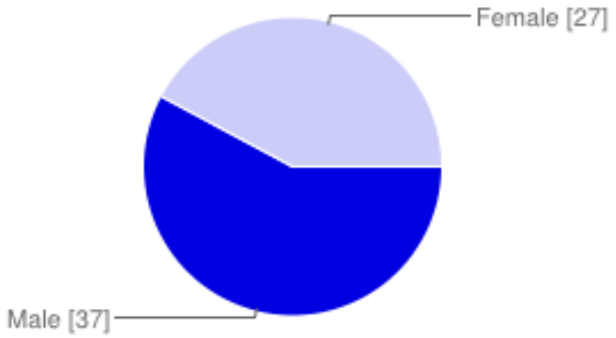
CHAPTER 4

RESULT AND DISCUSSION

4.1 Questionnaire's Results and Analysis

As been mentioned earlier in Chapter 3 methodology, the author is decide to do survey to gather information from user towards the first aid mobile application. The author has been prepared questionnaire that consisted of eleven questions which two questions about demographic of the respondent while another nine questions related to the main topic. The author believed by doing this survey, it will be a great help to get the feedback regarding mobile application from respondent. The questionnaires are close-ended questions.

The survey has been distributed online through social media such as Facebook and Google Plus. From this survey, total 64 valid responses have completed this questionnaire. From the total 64 respondents, 57.8% that means 37 respondents were male while 42.2% or 27 respondents were female. Respondents fill the survey according to their experience about first aid knowledge. Each question was highlighting each situation and problem which is commonly experience by each people. Following are the results of the survey.

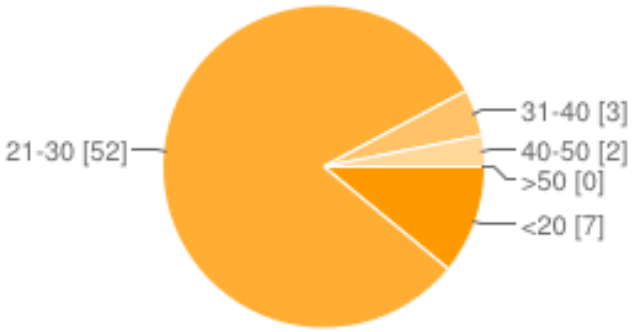


Male: 57.8%

Female: 42.2%

Figure 15: Percentages of gender's respondent

What is your age?



<20: 10.9%

21-30: 81.3%

31-40: 4.7%

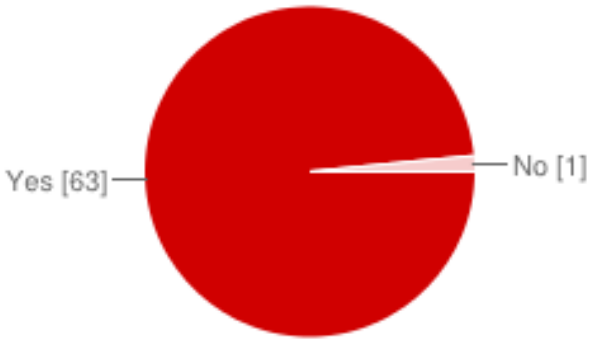
40-50: 3.1%

>50: 0%

Figure 16: Percentages of total respondent age

As figure above, shows that most respondents from 21-30 age group which is 81.3% equal to 52 respondents. Then, it follows by <20 age group which is 10.9%, 31-40 age group which is 4.7% and lastly 40-50 age group is 2 respondents only. From this survey, there is no respondent from >50 age group. Basically, this only to know respondent's age as part of demographic question and this online survey more targeting to the young people. Other demographic question such as nationality and occupation did not include in this survey as that are not relevant for this project.

Do you own a smartphone?

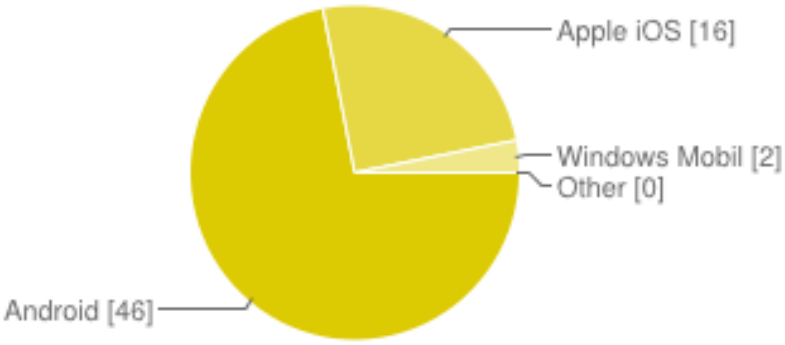


Yes:	98.4%
No:	1.6%

Figure 17: Percentage of the respondent that own a smartphone

Referring to the figure above, the questions aim whether the respondents have smartphone or not. Then, the result of the survey shows that 98.4% equal to 63 out of the total 64 has smartphone and only 1 respondent not own smartphone. That shows how influence mobile technology in the world that almost every people on the earth has smartphone. Two respondents from age group 40-50 also own a smartphone and for the one who answered 'No' from the age group 21-30 that may be do not have enough money to buy a smartphone.

What type of operating system in your smartphone?



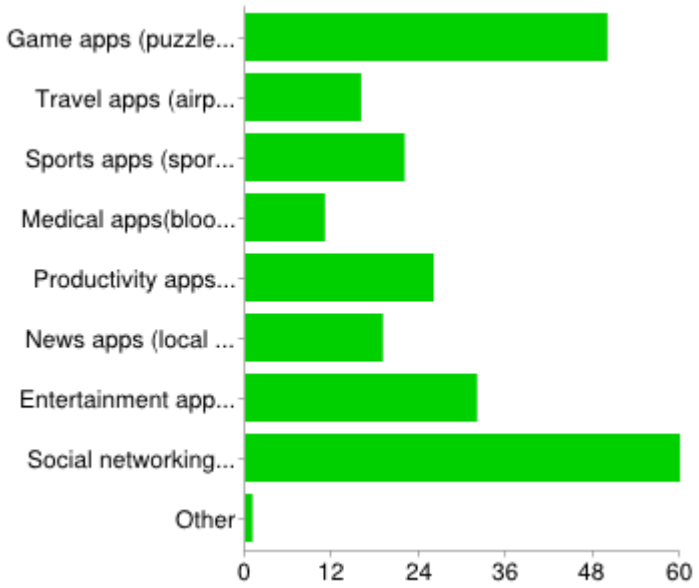
Android:	71.9%
Apple iOS:	25%
Windows:	3.1%
Other:	0%

Figure 18: type of operating system in respondent's smartphone

The next question is to know what type of the operating system in the respondent's smartphone. The survey shows that 71.9% of the respondents are use Android operating

system then followed by Apple iOS 25% and lastly Windows Mobile which is 2 respondents only. No respondent use other smartphone's operating system than Android, Apple iOS and Windows Mobile in this survey. For this question, we can see that Android operating system is the favorite platform for most respondents and beat the famous Apple iOS. That shows Android is the perfect platform for author to develop mobile application.

Which type of apps do you currently have on your smartphone? (You may choose more than one)?



Game apps (puzzles, charades, etc.):	78.1%
Travel apps (airplane tickets, tourist guides, public transportation info, etc.):	25%
Sports apps (sports schedules, scores, headlines, etc.):	34.4%
Medical apps (blood pressure, ipharmacy, etc):	17.2%
Productivity apps (calendar, to do list, price checker, etc.):	40.6%
News apps (local news, national headlines, technology announcements, etc.):	29.7%
Entertainment apps (movie trailers, celebrity gossip, radio station guides, etc.):	50%
Social networking apps (location check-ins, friend status updates, etc.):	93.8%
Other:	1.6%

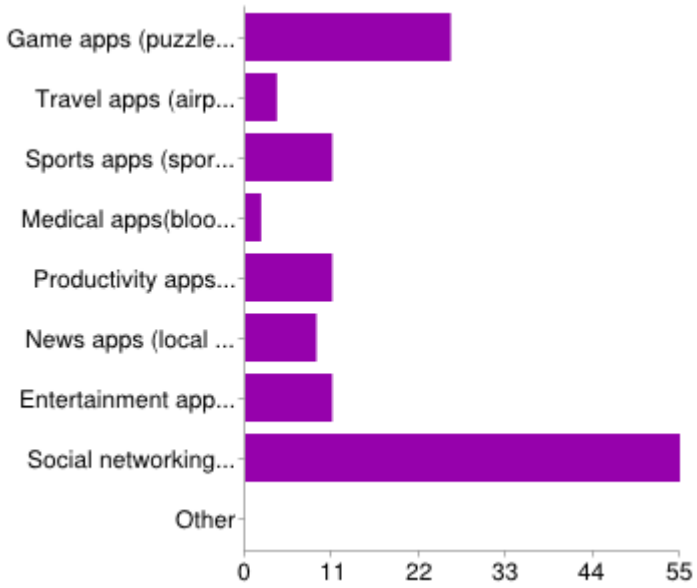
Figure 19: Type of applications in respondent smartphone

Furthermore, the respondents have been asked about type of application that had in their smartphone. The result shows as the figure above, most of the respondents have social networking application which is 93.8% respondents. Then, it followed by game

application which is 78.1%, entertainment apps 50%, productivity apps 40.6%, sports apps 34.4%, news apps 29.7%, travel apps 25%, medical apps 17.2% and others 1.6%.

Social networking apps and game apps have been leading because that have too many both apps in Google Play Store that cause people want to download it. When we open Google Play Store we can see that social networking application and game application are leading free apps and paid apps. When got too many applications in one type that makes the developer needs to compete with each other in order to get the best apps. In conclude, they will provide the better application for the user. From this survey, the results show that medical apps are the second lower mobile application that respondents had in their smartphone. That's because medical application are less in number in Google Play Store if compared to social networking and game application. The existing medical apps are not as good as other category of mobile application.

In a typical day, which types of apps do you use on your smartphone most often? (You may choose more than one)



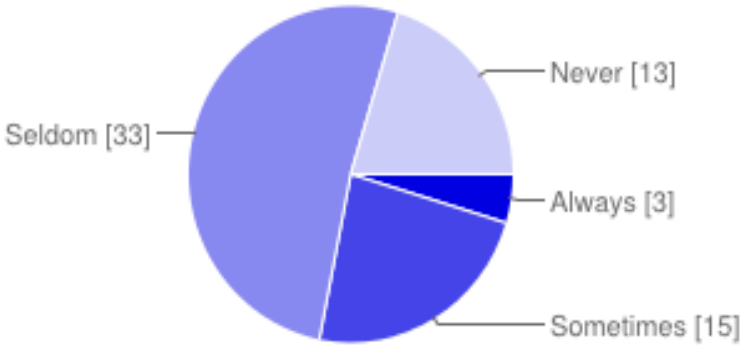
Game apps (puzzles, charades, etc.):	40.6%
Travel apps (airplane tickets, tourist guides, public transportation info, etc.):	6.3%
Sports apps (sports schedules, scores, headlines, etc.):	17.2%
Medical apps (blood pressure, ipharmacy, etc):	3.1%
Productivity apps (calendar, to do list, price checker, etc.):	40.6%
News apps (local news, national headlines, technology announcements, etc.):	14.1%
Entertainment apps (movie trailers, celebrity gossip, radio station guides, etc.):	17.2%
Social networking apps (location check-ins, friend status updates, etc.):	85.9%
Other:	0%

Figure 20: Percentages of mobile application that respondent always use

The figure above shows that types of apps those respondents that always use in their daily life. The most application that use by respondents are social networking 85.9% then it follows by game apps and productivity apps 40.6%. Others are entertainment apps 17.2%, sport apps 17.2%, news apps 14.1%, travel apps 6.3%, medical apps 3.1% and others 0%. Once again social networking apps proves that the best category application if compared to others. As we can see in Google Play Store top chart apps always been leading by social networking application such as Facebook, Twitter, Instagram, Whatsapp and WeChat.

That is because the quality and quantity of the application available influence the user to use what type of the mobile application. Only 3.1% of respondents most often use medical apps in their daily life. It shows most people do not care about medical application and the reason may be medical apps are not many available. The next reason the existing medical apps did not provide best quality and people only care about entertainment and enjoyable thing.

In the last 12 months, how often did emergency case (sudden illness or injury) happen at your surrounding?

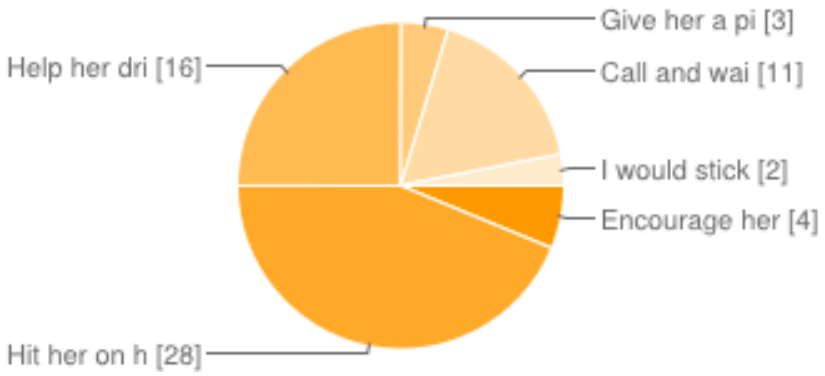


Always:	4.7%
Sometimes:	23.4%
Seldom:	51.6%
Never:	20.3%

Figure 21: how often respondent see emergency case in their surrounding

The next question aim that how often the emergency case happen in respondent's surrounding in the last 12 months. 51.6% of respondents answered "seldom" then followed by sometimes which is 23.4% and never which is 20.3%. Only 4.7% of respondent always involve or see emergency case in their daily life. From this survey, we can see that total of people answered always, sometimes and seldom are 79.7%. That shows emergency case will happen in our surrounding although once per year. Each people must have first aid knowledge and skills for human being.

You are out in a busy cafe and notice that a woman on the table next to you has stopped talking, is turning red and clutching her throat. You ask her if she is choking and she nods yes. She is panicking. What do you do next?



Encourage her to try and breathe through her nose:	6.3%
Hit her on her back 5 times followed by 5 quick abdominal thrusts:	43.8%
Help her drink some water:	25%
Give her a piece of bread to swallow:	4.7%
Call and wait for ambulance:	17.2%
I would stick my fingers down her throat and try to pull the object out:	3.1%

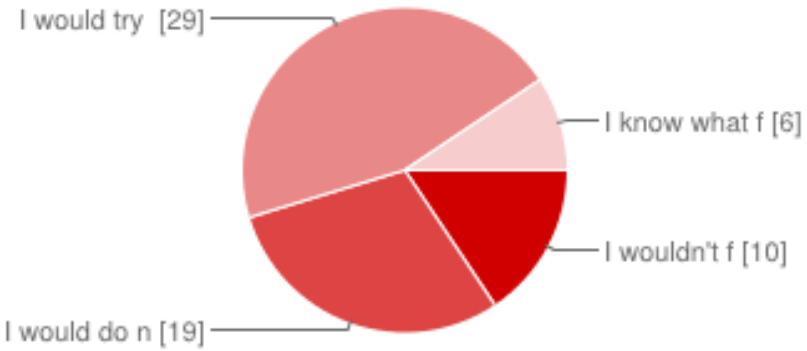
Figure 22: Percentages of this situation

In this question, the author would like to know the knowledge of first aid of respondents by given them situation as above. Only 43.8% of respondents know the actual way to overcome choking which is hit her on her back 5 times followed by 5 quick abdominal thrusts. While others 56.2% respondents did not know the actual step and they answered encourage her to try and breathe through her nose by 6.3%, help her drink some water is

25%, give her a piece of bread to swallow is 4.7%, call and wait for ambulance 17.2% and lastly I would stick my fingers down her throat and try to pull the object out 3.1%.

From this survey's situation, we can see that only 43.8% respondents can save that woman life in the cafe while others cannot. Sometimes people take easy of this simple situation but actually it can cause of death. That's why we need to learn first aid as we can make the different between death and life. Some other step also might be correct but not the fast and perfect step should be taken. Example, if we take step 'calls and waits for ambulance' then it takes long time and the woman may be death.

Would you be able to give assistance to someone who had scolded themselves with boiling water and suffering from third degree burns?



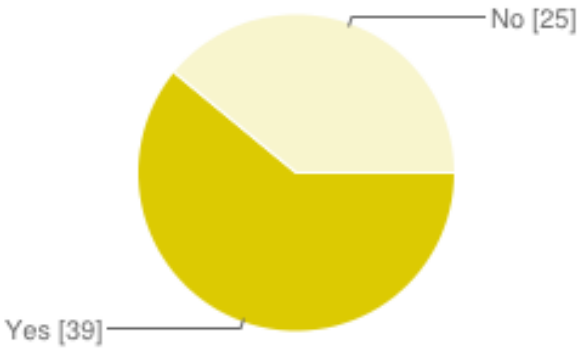
I wouldn't feel confident trying to save a life:	15.6%
I would do nothing and wait for an ambulance to arrive or hope that a passer-by knows first aid:	29.7%
I would try and do first aid even though I am not sure what to do:	45.3%
I know what first aid to do:	9.4%

Figure 23: Percentages of this situation

As above situation, only 9.4% of respondents know what first aid to do. While others 90.6% of respondents, did not have enough knowledge to save a life. For those for first time to attempt the first aid will might be doing the wrong procedure. We can see from above 45.3% answered 'I would try and do first aid even though I am not sure what to do' may do the wrong procedure and worst the condition of the patient. The precautions step to take is call and wait for ambulance for those who do not have knowledge about first aid. However, time lost equals to live lost. An ambulance responding to a call for a

life-threatening situation can take up to 8 minutes to arrive but a friend or loved one can die while waiting for ambulance. By knowing this, it's clear that first aid can make the difference between life and death.

Would you recognise the signs of a heart attack or stroke if someone was having one?



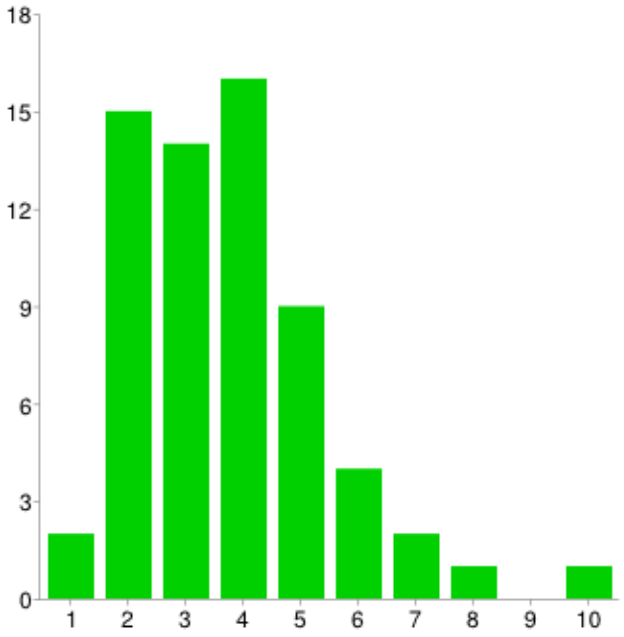
Yes: 60.9%

No: 39.1%

Figure 24: Percentages of respondent that recognize heart attack and stroke

As the figure above, only 60.9% of respondents can recognize sign of a heart attack and stroke while others 39.1% did not know.

From the scale from 1 to 10, what do you think your first aid skill and knowledge?



1: 3.1%

2: 23.4%

3: 21.9%

4: 25%

5: 14.1%

6: 6.3%

7: 3.1%

8: 1.6%

9: 0%

10: 1.6%

Figure 25: Respondent's scale of first aid skill and knowledge

In this figure shown that majority of the respondent answered scale 2, 3 and 4 which is 23.4%, 21.9% and 25% respectively. Then, follow by scale 5 which is 14.1%, scale 6 is 6.3%, scale 7 and 1 is 3.1%, and lastly scale 8 and 10 which is 1.6% of respondents. No respondent give 9 scales as their first aid skill and knowledge. The survey shows that respondent's first aid skill and knowledge is below average because majority of the respondents answered below scale 5.

If there is mobile application for the first aid app, would you download and use it

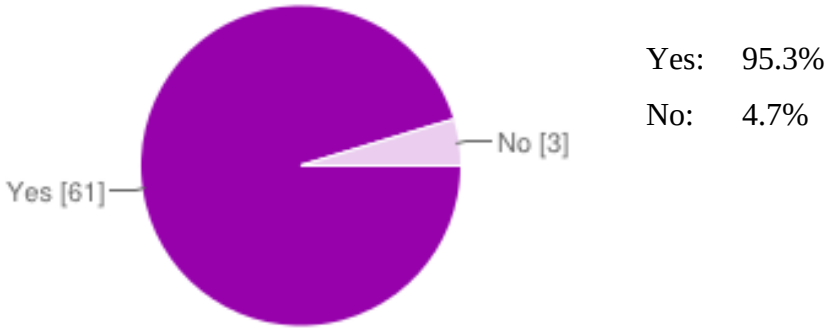


Figure 26: Percentages of respondent's would download the first aid apps

In this question, the author aim would like to know if first aid apps have been develop then respondent will download it or not. 95.3% of respondents would download this application while 4.7% of them would not like. This can conclude that even though most of the respondents do not have or use medical application and the reason for that might be the existing applications not much appealing to them.

4.2 Prototype application screenshot

Prototype is the part in design phase of the system development life cycle (SDLC). This is early stage of the prototype for the author. The author decided to do rapid prototyping for this project development. This is to ensure that the application will meet the author objective and meet user expectation. This is the revision for the future development for end product.

Figure 27: First aid application home page screenshot

As the figure above, the user can user what action that they want to take. If the user in then emergency case then they need to click ‘emergency’. Learn more is for the user to learn first aid by following each injury and illness. Next, test is for the user answer the quiz that provided and the purpose is for test the knowledge of the user for the situation given. Then, button ‘find hospital’ is for the user to find the nearest hospital from the place that user search.

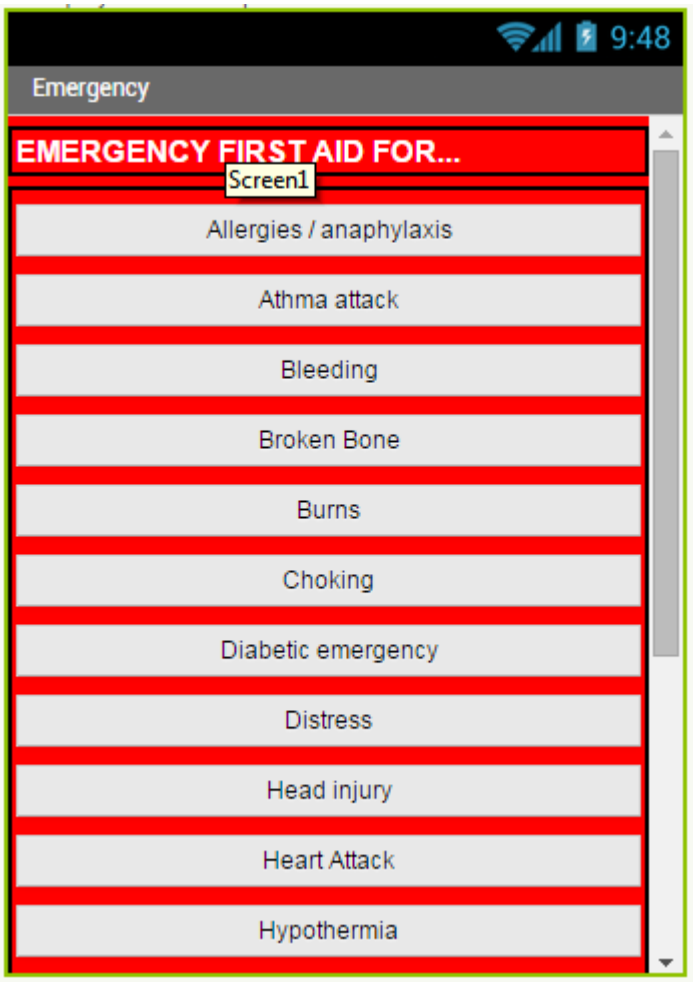


Figure 28: Screenshot of emergency page

The figure above show screenshot of the emergency page and the user need to choose what type of emergency circumstance that happen to them. Each situation will show easy step to step instruction first aid to save a life.

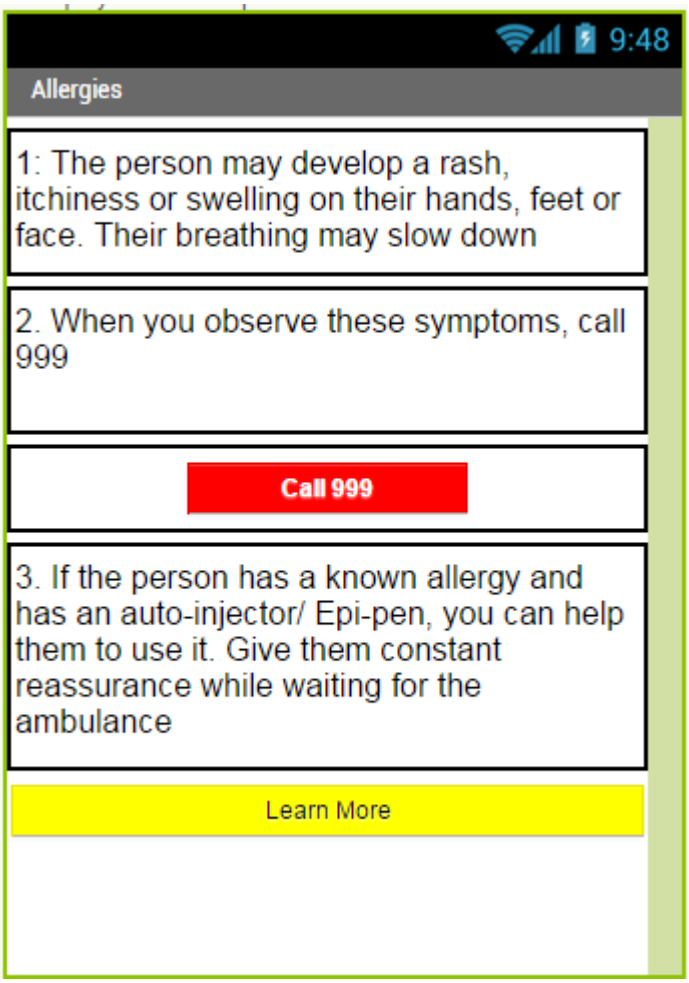


Figure 29: Step for emergency in allergies

The user needs to follow the provided easy step to step instruction in case of emergency. Learn more will describe more about the step and describe certain scientific phrase that user did not understand. The user can call emergency number 999 from this application without exit the application. That will make easy for the user in emergency circumstance because time lost is equal to life lost. In the learn more, the user also can watch a video that provided to clear visual aid how to follow the step of first aid in each situation.

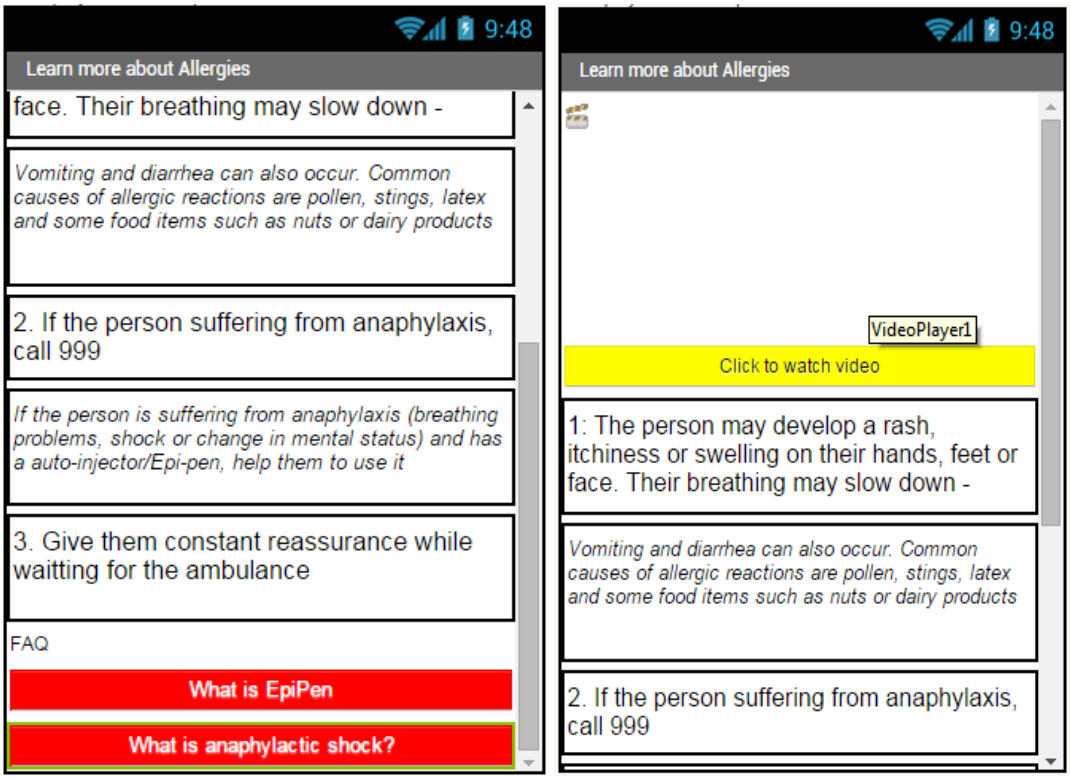


Figure 30: Screenshot learn more about allergies

Learn more about allergies will describe more detail for each step need to be taken and the user can watch the video from here.

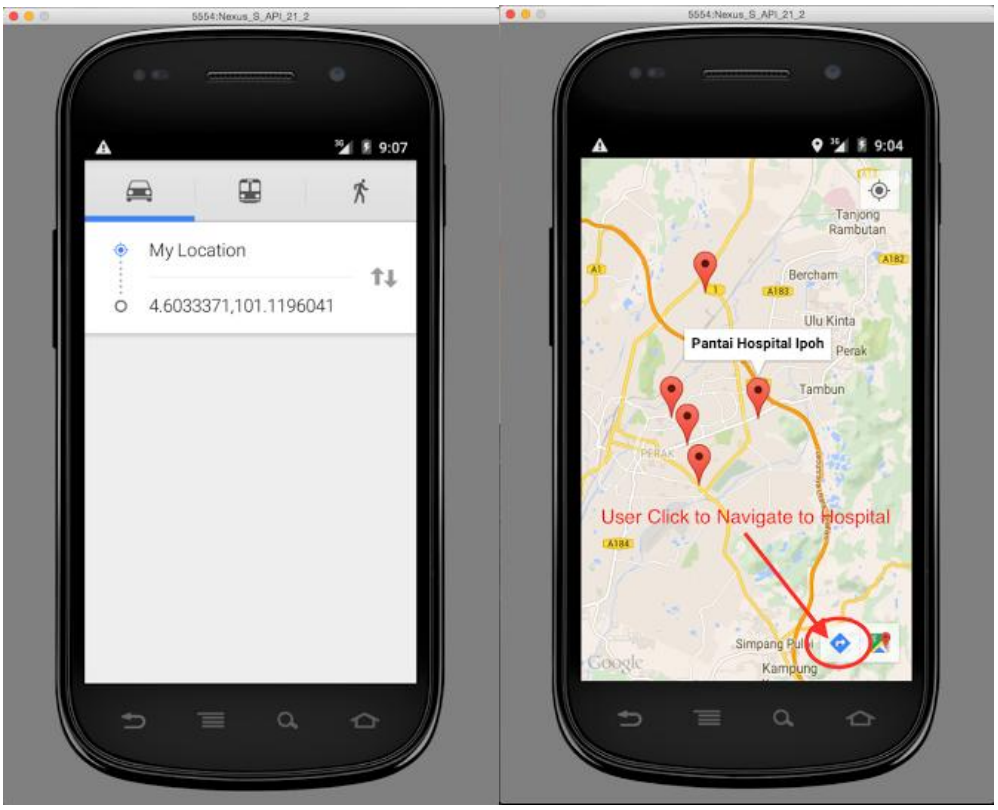


Figure 31: Screenshot for find hospital page

After the choose find hospital from the main menu then this screen will appear. Next, user need to use their current location to find the nearest hospital. User need to click the nearest location that appear on the application and choose what type of the transport that use and start navigation.

4.3 Prototype study and post survey

The application (First Aid App) was installed to the test machine was presented to 10 personnel to evaluate and test. This study was aimed at identifying the level of acceptance of the prototype as well as evaluating the user's perception of the application. The users were given a time to experience the application. The post test was divided into two groups.

- Users

- Two peoples from my family were chosen to test the application. They were one male and one female from the age range of 45 to 55.

- Eight students were also selected randomly from age range 19 to 25 to operate the application.

Every personnel were given adequate time and explanation individually with a user manual on the system and functionalities during testing. Post testing, they were required to answer a questionnaire on their opinion after trying out the prototype.

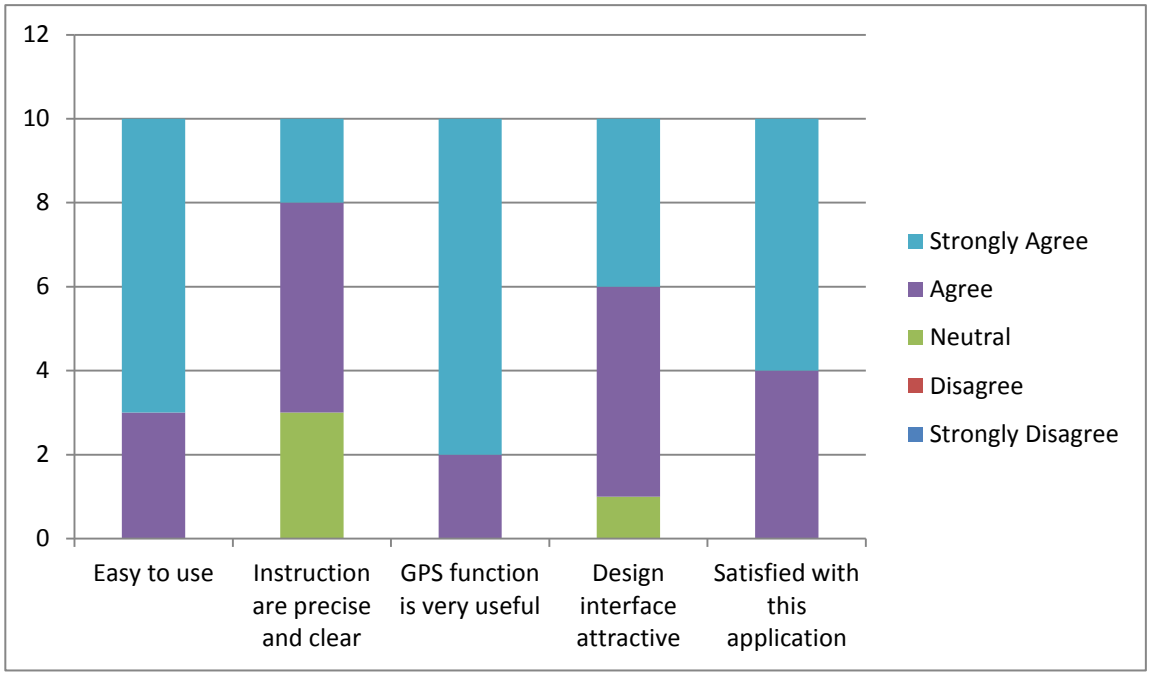


Figure 32: Bar chart of the post survey of the user testing

Figure above shows that result post survey from the user regarding this application. According to the survey show many positive feedbacks from the user about this application.

4.4 Discussion

From the survey, there's many things that author understand and learn for the respondents. Android application is the right platform for author to start develops the first aid application. The popularity and functionality of the Android application make it being the top of the operating system of the smartphone among the respondents. It shows that majority of the respondents use Android operating system then other operating system especially Apple iOS. Once upon time ago, Apple iOS was leading of operating system of the smartphone until Android has been developing by Google. Nowadays, both operating systems have been the biggest rival in operating system for smartphone.

According to the survey had been done, majority of the respondents have lack knowledge and skills of the first aid. That is shown how important this application to the societies as it makes a different between life and death. From one of the question in the survey, we can see that majority of the respondents not have enough knowledge and confidence to save a life. As a 92.2% of respondents were below 30 years old, the author conclude those young generations have lack of knowledge of first aid and this application targeting for them.

Furthermore, majority of the respondents do not have medical application in their smartphone that may the medical application did not much provide in market. Medical application also has been second lower as the often application use in daily life. That is because most of them hard to see medical application in market and the existence medical application were not good enough. Then, many respondents also may not find medical application that suit to their taste.

The result shows the developing of the first aid Android application can give a positive impact to the population as majority of the people has lack knowledge of first aid. 95.3% of the respondents want to download this application if available in the market. It shows demand is very high but the supply is low. To conclude, that this application can be remarkable in changing people's behavior.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

The development of the Android application for the first aid need to be conduct in two academic semesters which are Jan 2015 and May 2015. As the author decides to do the development of the application basis on System Development Life Cycle (SDLC), the phases have been separate into two. For Jan 2015, planning phase, analysis and design have been done while Implementation and maintenance phase will be carried out in second academic semester which is May 2015.

In conclusion, First Aid Mobile App is still under development as for the time being. This project is heading its way in fulfilling the objective which is the author aims to develop a first aid medium platform mobile application for with the aid of visual aid in order to help easier learning in first aid treatments. In addition, the project is fairly relevant to all people, focusing to the younger generations because this mobile app will help to encourage them in learning the correct first aid treatments in order to help save a life in the future.

Before the development of the application, a study was conducted to find current existing application and based on those, a seek areas of improvement. After doing survey, the author sees although that have many medical apps in market but respondents seem do not have it in their smartphone. That may the current existence medical applications are not quite interactive if compared to other category of the application. Besides that, the author assumes that medical apps not much provide in the market and that may people do not know the existence of this application.

In recommendation, from the experience of the author after had finish the first session of Final Year Project, the first future work that come in mind is to build the first aid applications in other language. Although English language is the global language, it will be better if author can build it also in local language such as in Bahasa Malaysia. Example, the older generation of Malaysian majority cannot understand well in English language then this application will not help them much. Next, Malaysians will be more motivated to them to learn about first aid if the application in the Bahasa Malaysia because it makes them easy to understand.

Other improvement in future that author want to do is to provide functionality that the user can have connection with online doctor for each type of specialists. From this, any enquiries can be directly asked to the online doctor. That is also a unique functionality that did not provide by other application and easy for the user.

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APPENDICES

7.1 Sample of the questionnaire

First Aid App

We may have only few seconds to save a life when we are in an emergency. Is anything that we can do in an emergency until help arrives? We should do because the only person we may have to depend on is ourselves. This study aims to help people when in emergency case when you suddenly having illness and injury.

The author would like you to spend some of the quality time in answering this survey. Your cooperation is truly appreciated. Thank you.

* Required

Gender *

- Male
- Female

What is your age? *

- <20
- 21-30
- 31-40
- 40-50
- >50

Do you own a smartphone? *

- Yes
- No

What type of operating system in your smartphone?

- Android
- Apple iOS
- Windows Mobile
- Other:

Which type of apps do you currently have on your smartphone? (you may choose more than one) *

- [ ] Game apps (puzzles, charades, etc.)
- [ ] Travel apps (airplane tickets, tourist guides, public transportation info, etc.)
- [ ] Sports apps (sports schedules, scores, headlines, etc.)
- [ ] Medical apps(blood pressure, ipharmacy, etc)
- [ ] Productivity apps (calendar, to do list, price checker, etc.)
- [ ] News apps (local news, national headlines, technology announcements, etc.)
- [ ] Entertainment apps (movie trailers, celebrity gossip, radio station guides, etc.)
- [ ] Social networking apps (location check-ins, friend status updates, etc.)
- [ ] Other:

In a typical day, which types of apps do you use on your smartphone most often? (you may choose more than one) *

- [ ] Game apps (puzzles, charades, etc.)
- [ ] Travel apps (airplane tickets, tourist guides, public transportation info, etc.)
- [ ] Sports apps (sports schedules, scores, headlines, etc.)
- [ ] Medical apps(blood pressure, ipharmacy, etc)
- [ ] Productivity apps (calendar, to do list, price checker, etc.)
- [ ] News apps (local news, national headlines, technology announcements, etc.)
- [ ] Entertainment apps (movie trailers, celebrity gossip, radio station guides, etc.)
- [ ] Social networking apps (location check-ins, friend status updates, etc.)
- [ ] Other:

In the last 12 months, how often did emergency case (sudden illness or injury) happen at your surrounding? *

- Always
- Sometimes
- Seldom
- Never

You are out in a busy cafe and notice that a woman on the table next to you has stopped talking, is turning red and clutching her throat. You ask her if she is choking and she nods yes. She is panicking. What do you do next?

- Encourage her to try and breathe through her nose
- Hit her on her back 5 times followed by 5 quick abdominal thrusts
- Help her drink some water
- Give her a piece of bread to swallow
- Call and wait for ambulance
- I would stick my fingers down her throat and try to pull the object out

Would you be able to give assistance to someone who had scolded themselves with boiling water and suffering from third degree burns? *

- I wouldn't feel confident trying to save a life
- I would do nothing and wait for an ambulance to arrive or hope that a passer-by knows first aid
- I would try and do first aid even though I am not sure what to do
- I know what first aid to do

Would you recognise the signs of a heart attack or stroke if someone was having one? *

- Yes
- No

From the scale from 1 to 10, what do you think your first aid skill and knowledge *

	1	2	3	4	5	6	7	8	9	10	
Very poor	○	○	○	○	○	○	○	○	○	○	Very good

If there is mobile application for the first aid app, would you download and use it? *

- ○ Yes
- ○ No

Basic first aid - animation

Short animation explaining the basics of First Aid. Watch and learn

Submit

100%: You made it.

Never submit passwords through Google Forms.