Senior Citizen Day Care Management Application for Nursing Staff

By

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Dissertation submitted in partial fulfilment of

the requirement for the

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(Business Information Systems)

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CERTIFICATION OF APPROVAL

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September, 2013

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 acknowledgements and that original work contained herein have not been undertaken or done by unspecified sources or persons.

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AMIRA NATASYA FARAHANA BT ABD. KADIR

ABSTRACT

Manage2Care is a mobile application in which is inspired to help the senior citizen. Nursing home is the place where many senior citizens that will be located or stayed at a shelter place and this is the place where trained staffs need to care for them. However, the staff might probably encounters or face difficulties such as overloaded with loads of work and they might not do the work in time. Apart from that, for some reasons the house management need to estimate the time for each of the senior citizen to accomplish their daily routine in the nursing home. These types of constraint will certainly cause the job done with the lack of effectiveness and efficiency reasons. To encounter this problem, the author comes up with the idea of a health-based management tool to help in managing the senior more efficiently and effectively. Some important features in this application consist of the application in which can save the senior citizen data that include medicine details and doctor appointment detail. Secondly, the application can forward the reminder to the management. In order to remind them, they need to save the important date at the application. The completion of the project is to be developed with Rapid Application Development methodology, the reason for using RAD is due to its own flexible and suitable applications to be developed in short duration of the time. Once the application has been completed, the prototype could be tested by the nursing staffs in nursing home. After the completion of prototype testing, the author acquires knowledge whether either this application will achieve the objectives of the project. Based on the user evaluation, 63.64% agree this application help them to completing the jobs.

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CHAPTER 1

INTRODUCTION

1.1 Background of study

A nursing home, convalescent home, skilled nursing facility (SNF), care home, rest home or intermediate care provides a type of residential care. They are a place of residence for people such as elderly who require continual nursing care and have significant deficiencies with daily activities. Nursing aides and skilled nurses are usually available 24 hours a day [1].

The managements of inmates in nursing home are not efficient and at times not effective. It is because the staffs need to make sure they do the jobs without any mistake and problems.

From the definition and roles for having a nursing home, technology has become the medium that facilitate in their performance where every staff can use the mobile application to manage the residents in the nursing home. This application will help the staff to manage the resident with high effective and efficiency.

Manage2Care application is aimed to become one of the solutions that could provide the information about the monitored objects (senior citizen), details his\her about the medication, doctor appointment and other relevant personal care. Other services may include the reminder to notify the nursing staff about the monitor objects daily routine. The application will provide a more efficient and effective approach over the traditional methods.

1.2 Problem Statement

Like many other countries, Malaysia faced the same difficulties with aging phenomena, even though Malaysian government has rises the issue of the elderly problems since 1995. There are many nursing homes in Malaysia but they are still lacking in term of the management skills because the staffs need to take care of more than one senior citizen at a time. The house management needs to handle many senior citizens daily.

Apart from that, the staffs do not have real-time information for quick reminders on the daily activities such as bathing, medication, and meal time. In addition, the staffs also need to ensure all the daily routine of the senior citizen can be completed without serious mistakes and problems.

Not only has that, the staffs still used conventional manual system to remind the important dates on white board and logbook. By having this application, the staff can set the alarm of the important date through this application and it will remind the nursing staffs.

1.3 Significant of Project

Based on these problems, the usage of mobile application is needed to make significant impact on nursing staffs in managing the senior citizen. Therefore, the role of assistive mobile application tool may increase the effectiveness of managing the senior citizen.

1.4 Objective

The main objectives of this project are:

i. To conduct the studies of daily routine management of senior citizen in nursing homes in Malaysia.
ii. To identify the major problems in the nursing home from the context of improved management in managing senior citizen.
iii. To identify the main requirement/needs to address the problem then to developing an appropriate mobile application.
iv. To design and develop a prototype mobile application for possible implementation in Malaysian senior citizen nursing homes.

1.5 Scope of Study

Based on the objectives in the previous sections, the scope of study is only focusing on the nursing staffs that manage the senior citizen at the nursing home. Furthermore, the main task of the project is to develop a mobile application focusing on creative alternative tool in managing the senior citizen with effectively and efficiency. Finally, a comparative study will be conducted to evaluate the performance of managing in two different approaches which are mobile application and traditional way of managing.

1.6 The Relevancy of the Project

The Mobile application that will develop provides a lot of benefits to its user, because it uses the mobile technology to deliver its potential on transforming the way of completed the jobs for the nursing staffs. With this application, the nursing staffs can completed their jobs effectively and efficiency. Each staff will have their own calendar on their Smartphone regarding their jobs. Apart from that, it can help the nursing staffs to complete the jobs without mistakes and problem. To develop this application it will take around 1 semester including the testing part.

CHAPTER 2
LITERATURE REVIEW

2.1 Definition of Senior Citizen.

Senior citizen is common polite designation for an elderly person and its means that person is already retired. This in turn usually implies or in fact means that person is over the retirement age, which varies according to country. The random age for the senior citizen is over 65 years old.

The senior citizen will often general physical decline and people become less active because of that it will cause wrinkles and liver spots on the skin due to loss of subcutaneous fat, change of hair color to gray or white, hair loss, reduced circulatory system function and blood flow, reduced lung capacity, reduced immune system function, changes in the vocal cords that produce the typical voice, heightened risk for injury from falls that otherwise would not cause injury and they will cause hearing loss. Diminished eyesight it will become more difficult to read in low lighting and in smaller print. Speed with which an individual reads may also be impaired. The old aged will cause reduced mental and cognitive ability. Sometimes, they will feel depressed mood and lessening or cessation of sex. It mean sometime because of physical symptoms such as erectile dysfunction in men, but often simply a decline in libido. The other cause is greater susceptibility to bone and joint diseases such as osteoarthritis and osteoporosis. The last one is the main major cause for senior citizen is loss memory is the common due to the decrease in speed of information being encoded, stored and received. It will take a more time to learn new information [2].

According to Erik Erikson's "Eight Stages of Life" theory, the human personality is developed in a series of eight stages that take a place from the times of birth and continue on throughout an individual complete life. The characterize old age as a period of "Integrity vs Despair", during which a person focuses on reflection back on his life [3].

2.2 Definition of Nursing Home

Nursing home is a place of resident for people who require continual nursing care and have significant deficiencies with activities of daily living. Nursing aides and skilled nurses are usually available 24 hours a day. Mostly the residents are senior citizen because they need the skilled nursing facility for receive physical, occupational and other therapies following an illness [6].

The types of staff that will handle the nursing home are administration. Once the resident moved into nursing home, the resident might not have any significant contact with administration unless the significant contact sends the resident and register the resident in nursing home. The administration staff might not big because of that a staff maybe will have much responsibility to handle.

The staff for support personnel department will focus on caring the building and grounds. They need to keep the inside and outside of the building in clean. The staffs also need to arrange about external activities such as planning for holiday's event.

Direct care staff is the one who will interact with the resident every day. This is the type of direct care staff, registered nurse (RN), licensed practical nurse (LPN) or licensed vocational nurse (LVN) and certified nursing assistant (CAN).

For the Medical staff, nearly most of the residents in nursing home need some type of the medication. The nursing facilities can take care about the medical needs to be taken care of. The most staff in this department needs to have training how to deal with the patience with some manner of specialized need.

The most important staff in nursing home is the services staff. The staff will help the residents with custodial care such as bathing, getting dressed and eating it also will include medical monitoring and treatments. The skilled care will include the services provided by specially trained professionals, such as occupational and respiratory therapists.

2.3 Existing Mobile Application

Now days, people will spend 24 hours with their cell phone. The main reason people will prefer to use the mobile application in their daily life rather than manual ways or web. Based on the survey conducted by Mary Meeker, the people around US will spend 81 minutes per day using mobile apps, compared to 74 minutes of web surfing. The shift comes as combined tablet and Smartphone shipments eclipsed those of desktops and notebooks for the first time. Flurry found the user spend 9% more time, on average, using mobile application per days. The reports also found that will growth in mobile application usage mostly from more sessions per user, rather than longer sessions overall [4].

2.3.1 MyMedicAlarm

MyMedicAlarm will show the user about the user details such as user picture, name, date of birth, gender, blood group, RH factor, allergy and note. By using the application, the user can also add other member details. The other feature for this application is medicine. The users need to fill in the form about medicine and this application will alert the user the right time to eat the medicine.

2.3.2 Medicine

Medicine application will show the user about medicine. The user need to key in all the data about the medicine picture, name,

dosage, time, repeat, repeat every day, week or year and reminder. This application also will remind the user the right time to eat the medicine.

2.3.3 DoseOrganzer

DoseOrganzer application is the reminder to user to eat the medicine. The users need to add the details about medicine such as picture, name, drug type, dosage, direction, reminder and schedules time. This application will remind the user and user must tick at this application for the application save the history. This application will save all the history about the medicine take by the user.

2.3.4 MedO'ClockLite

MedO'ClockLite application is to remind the user about all the important date such as doctor appointment, medical contact, medical note, medical list and medical clock. The user just need to input the data about and this application will remind or alert the user.

2.4 Research by Malaysia Government

The population who are aged 60 and over in Malaysia is estimated at about 1 million now, and is projected to increase to 1.5 million by the turn of the century, and 4 million by the year 2005. At year 2000, it around 1 million and the government estimated by the year 2025 the amount will be 2.7 million. The growth pattern of the different age categories indicate that while increases in all age categories are expected, the increase is more marked at the older ages [5].

Based on the research, they found that the between senior citizen in Malaysia and other country. The senior citizen in Malaysia, they cannot independence, they still need other people to take care of them such as do the daily routine and external activities. Rather than other than Malaysia countries, they would like to stay in nursing home because the does not want to stay with their relative.

Malaysia government has been monitoring the situation and already planned solutions that will cover this issue. But mostly whatever that the government deployed is rather slow more and un-effectively. Lack of facilities improvement and not enough doctor or health care experts also contribute to this problem. Malaysian government also has deployed a plan to build assisted living homes close to urban are [6].

2.5 Smartphone User

All around the world, most of people using their mobile phone to do many things such as find the entertainment, buy things, and doing the jobs. Based on the statistics, Malaysia has become one of the countries with the increasing number of mobile phone users.

The statistics showed the Malaysian citizen who owns mobile phone is around 85%. The mobile phones now days are addressed as ‘Smartphone’. The functionality for the Smartphone same as mobile phone but expanded in term of the list of information processing functionality such as managing personal time schedule, access the internet, editing the document, utilizing location-awareness function and others application that provided by the operating system such as iOS and Android.

Based on the research done by Mohd Azam, Abdullah Zawawi and Zainal Abidin, they are more than 1000 respondent that help to complete the survey. Based on the gender, the males that using the Smartphone is around 52.2% rather than female (47.8%).

Based on the age, the high range of age is at 17-26 years old at 64.9% and 20.8% at 27-36 years old. Based on the research, the author can see that, the student and the employees mostly probably used the Smartphone in daily.

Based on the occupation, the range for the government sector is 6.5% and for the self-employed is 9.1%. Based on this range, the author can see that the employees do not really using those Smartphone in daily.

2.6 Ageing in Malaysia

Based on research by Ong Fon Sim (2001) the population of senior citizen will increase to 1.4 million. This is based on medical knowledge and the resultant improvement in health. Even though, the Malaysian population does not reach the ageing proportion, the ageing phenomenon will eventually occur. In 2020, 9.5% of the population will be 60 years old and over.

Based on research done in 1991, Chinese ethic group is the highest group of senior citizen 7.6 percents, Indian 6.9 percent, bumiputera 5.4 percent and other 6.9 percent. The prediction of growing senior citizens will be increased in 2020, the Chinese group still become the highest population of senior citizen by 14.4 percent, Indian by 10.4, bumiputera by 7.9 percent and other by 8.3 percent.

The population is difference among three major ethic groups. The Chinese community has highest proportion of senior citizen compare to other ethic. It is clear that the ageing phenomenon is more acute among Chinese than any of the other ethnic groups.

2.7 Electronic Information Systems in Nursing Homes in United States

Nursing homes have been thought to lag behind other health care settings in the adoption of health information technologies. As in other settings, adoption of electronic information systems in nursing home has the potential to add value by improving efficiency in administrative and operational areas, and more importantly, by helping to integrate services and improve quality of care. Because quantitative data that can be tracked over time are a core requirement for continuous quality improvement, it follows that improvement in systems that facilitate data collection and tracking for patient care can also facilitate continuous quality improvement.

The services that provided by this system are admission, discharge and transfer, physician orders, medication orders and drug dispensing. Other services that will provide are procedure information, patient medical records, and daily personal care by nursing assistant, billing, staff information and human resource information.

CHAPTER 3

METHODOLOGY

3.1 Project Methodology

System Development Life Cycle (SDLC) is a process of understanding on how the information system (IS) can support business needs, designing the system, build it and delivering it to users. The type of System Development Life Cycle used for this application is Rapid Application Development. Rapid Application Development (RAD) is a programming methodology that uses minimal planning and rapid development of prototype in its process of application development cycle. This style of development method will require fewer time frames for the planning phase and focusing more on the creation of series to improved models based on the change of the requirement. It is a robust model in building a functioning prototype according to series of devised manners and persistently refined and updated

.

The reason why this model fits with the project because of the development of the application will need the shorter planning period and focuses more on development of the application itself. RAD also the emphasis is low and fast delivery.

There are four stages in building models of Rapid Application Development (RAD):

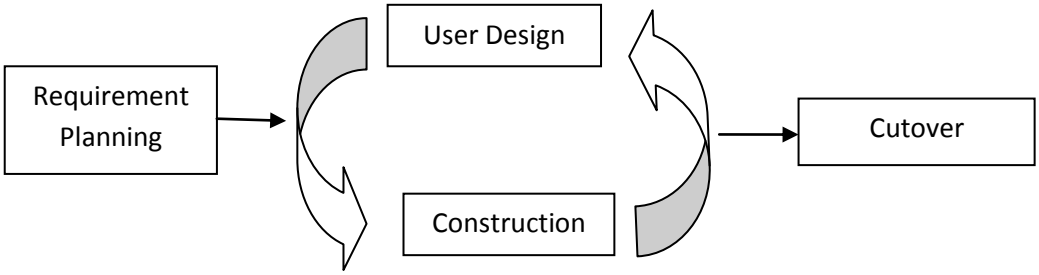

Figure 1: Rapid Application Development (RAD)

Phase1: Requirement Planning

Data collection and application requirement stage where the developer and the user will come out with the agreement upon the designed blueprint. At this stage, analysis of the problem and it solutions will be done. The activity on this part is:

i. Research depth on the problem and find the solution.
    - At this phase, the author will do some research about the problem that will facing by nursing staffs and come out with the mobile application solution that will help the nursing staff to do the jobs effectively.

ii. Further research on the managing process.
    - The author does the research on the daily routine of senior citizen.

iii. Focus on nursing staffs.
    - The mobile application is focusing on the senior citizen because it will help the management to managing the senior citizen. However, the user of this application is nursing staffs.

iv. Requirement and hardware selection.
    - The hardware that will be used in this mobile Eclipse.

v. Resources collection which all taken from internet, survey and interview.
    - The resources collection the author taken from internet, survey and interview to help the student to creating the features for the mobile application.

Phase 2: User Design

At this point, the author will come out with the creation a flow of the application with graphical workflow on the behaviour, action and function that will have in the application. The timeframe and the next stage demanded massive user interaction with improved the prototypes developed.

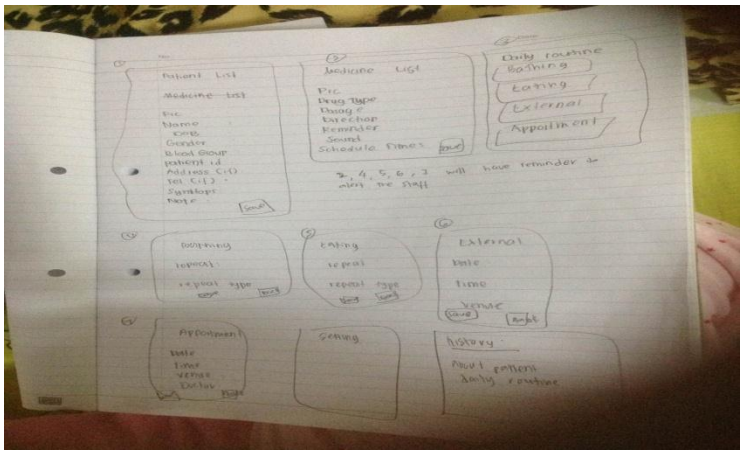

Figure 2: Sketch of rough idea

Phase 3: Construction

The actual development period of the program this is based on the earlier discussion. At this phase, the development of the application is constructed using the software development kit to draw the character, layout and such. This phase however will continuously be repeated by going back to the second phase to fine-tune the prototype.

Phase 4: Cutover

This phase focuses on coding and testing of the project. It actually involves the actual development of the application where the system specification is converted into an executable system. Then, the project needs to be tested for conformance with the system requirement. If there are any comments during the testing phase, the comment are used to reanalyse, redesign and re-implement a second prototype which provides different features. Then, the project may proceeds to the real implementation after confirm with the system prototype. Lastly, making it available to the end user who includes training of the mobile application and then the development cycle is finished.

3.2 Project Activity

Phases	Activities
Planning	Identify the mobile apps to be develop.
	Create the project flow chart and grantt chart.
	Prepare related literature and research to support the project.
	Seacrh require tools and software while learn on how to implemet the project.
Analysis	Gathering the information from respective nursing home, research, conduct survey to determine how the management managing the senior citizen.
Design	Design the prototype

Figure 3: Project Activity

3.2.1 System Architecture

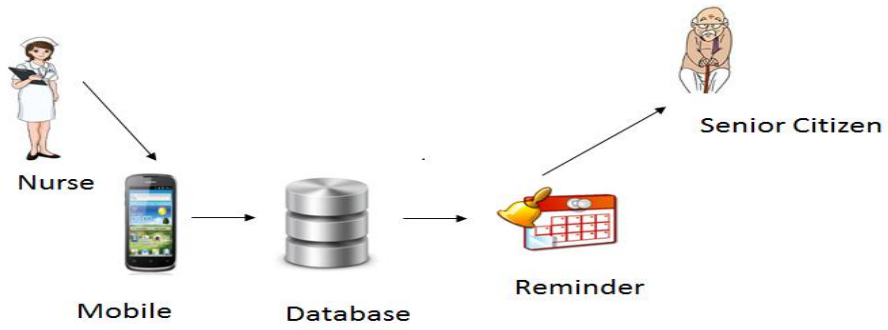

Figure 4: System Architecture

3.3 Requirement Tools

For the development of the application, the author has chosen few tools. The author will develop the apps by using eclipse. The host device, it will be any device that use Android operating system.

3.4 Key Milestones

Each of the activities are considered a milestone, in a throwaway prototyping sense that the first activity is finished before being able to

continue to the next. A Gantt chart is created in the beginning, but after experiencing a number of unpredictable roadblocks, more rapid development model has been adapted in this project.

Activities	Week
Selection of Project	2
Planning and Research Analysis	10
User Design	14

Table 1: Key Milestones FYP 1

Activities	Week
Project Work Continues	1-10
Submission of Progress Report	4
Pre-SEDEX	10
Submission of Dissertation	12
Oral Presentation (VIVA)	13
Submission of Project Dissertation (Hard Bound)	15

Table 2: Key Milestones FYP 2

3.5 Gantt Chart

A Gantt chart was created in the beginning but after experiencing a number of unpredictable roadblocks, more rapid development model has been made in this project.

No.	Project Activities	Week													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	**Selection of Project Title**														
	Search for Project Title														
	Project Title Approval														
2	**Submission of Proposal for Research**														
	Writing Project Proposal														
	Submit Proposal and Approval														
3	**Submission of Extended Proposal**														
	Perform Literature Review Research														
	Identify Project Methodology														
	Design Project Flow and Gantt Chart														
	Submit Extended Proposal														
4	**Proposal Defense/Progress Evaluation**														
	Prepare Presentation Slide														
	Proposal Defense & Progress Evaluation														
5	**Submission of Interim Report**														
	Project Works Continue														
	Submission of Interim Report														

Process
Suggested Milestone

Figure 5: Gantt chart FYP 1

Week	Activity	Description
1	Selection of project title	The author made a discussion with the supervisor regarding the project title.
2	Research on project title	The author does the research about project title and collecting all the data about the project.
	Planning and Research Analysis	
3 - 6	Literature Review Research	The author conduct the research mainly for the literature review part by finding the government research regarding the senior citizen and the similar features of mobile application that will develop.
7 - 8	Conduct Survey and Interview	The author conducted a survey and interview to identify the daily routine of senior citizen and to indentify the current project that will face by management unit.
9 - 10	Determine Mobile Application Scope	The author needs to identify the needs for developing of the mobile application.
	User Design	
11 - 12	Design Story Board Diagram	The author does the draw to sketch of the design mobile application that will developed.
13 - 14	Preliminary Screen Layout	The author does the prototype of the mobile application

Table 3: List of Activities FYP 1

No	Project Activities	Weeks														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	**System Construction**															
	Development Phase															
	System Implementation															
2	**Progress report Submission**															
	Writing of Progress Report															
	Submission of Progress report															
3	**Pre-SEDEX Presentation**															
	Prepare Presentation Slide															
	Present for Pre-SEDEX															
4	**Submission of Dissertation**															
	Writing Dissertation															
	Submit Dissertation															
5	**Viva : Oral Presentation**															
	Project Works Finished															
	Prepare Presentation Slide															
	Present for Viva															
6	**Submission of Final Dissertation**															
	Writing Final Dissertation															
	Submit Final Dissertation															

Process

Suggested Milestone

Figure 6: Gantt Chart FYP 2

3.6 Questionnaire

For the survey, the author had formulated four (4) questions will be formed in Likert scale (1 being strongly disagree or hard to 5 being strongly agree or easy – which depends on the questions asked) and then open ended questions about extra comments or feedbacks will be given to evaluate the effectiveness of the Manage2Care.

No	Items	1	2	3	4	5
1	Do you enjoy using this mobile application					
2	Do you think this application will help your daily work in nursing home					
3	Do you think this application user-friendly					
4	I will using this application for completing the job					

Figure 7: User Testing Form

CHAPTER 4

RESULT AND DISCUSSION

This aspect combines the identification of problems for the project and its collections of data. The primarily for lubricating the development period of model of the application. Below are some of the concepts and idea on how the author has decided in structuring the earlier prescribed blueprint of Manage2Care.

4.1 Interview for Data Collection

The student has conducted an interview session to nursing home because the student needs to identify the daily routine for the senior citizen.

Based on the interview session that has been conducted, the student has found the daily routine for senior citizen. The table below show the daily routine for senior citizen.

Time	Activities
0600-0700	Bathing
0700-0800	Exercise
0800-0900	Breakfast
0900-1100	Medical check up
1100-1200	Lunch (for those can't eat)
1200-1300	Lunch (for those can eat)
1300-1600	Free Activity
1600-1700	Tea Break
1700-1800	Exercise
1800-0600	Free Activity

Table 4: Daily Routine for Senior Citizen

Based on table 3, it shows, that senior citizen routine start at 0600 until 1800. They will perform the routine with monitoring by the nursing staff. At 0600 the nursing staff will do the bathing for those senior citizen that not able to bath by them self. For senior citizen that has the ability to take a bath or shower by them, they can do by themselves and be monitored by nursing staff.

At 0700, the senior citizen will do the exercise activity and at 0800, they will have they breakfast.

After breakfast, the doctor and nurse will do the medical check up for each senior citizen and to make sure the stay healthy. For those who have problem with their kidney, nurse will clean the kidney 3 times per month.

After the check up, the nursing staff will give the dairy products (milk) to those senior citizens who cannot eat as they lunch and for those can eat they will have the lunch at 1200.

At 1600, they will have a tea break and will be continued with the exercise activity. After that they will do some exercise. At night, they will be allowed to do free to do personal activities.

4.2 Prototype

Figure below show the screen shot of the Manage2Care.

i. Welcome

Figure 8: Welcome Screen

This is the first screen upon launching Manage2Care. It is very important to have this part as to hide the activities happening in the background for the application to completely load the category.

ii. Menu Screen

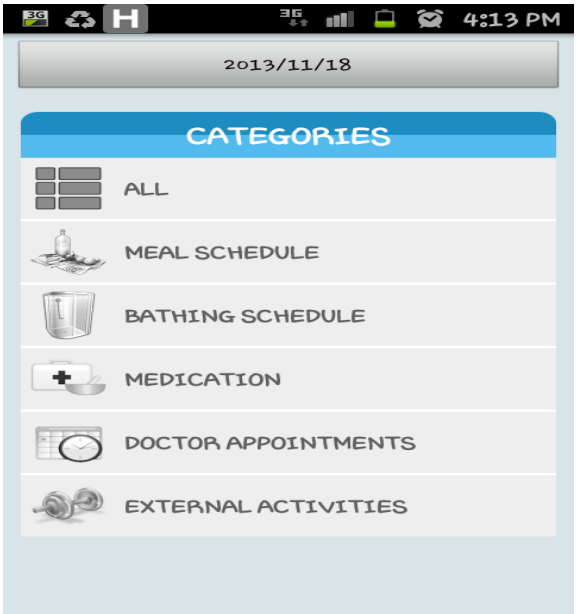

Figure 9: Main Menu

After welcome screen, the menu screen will be presented. Here, the user will be given five to choose from: - Meal Schedule, Bathing Schedule, Medication, Doctor Appointments and External Activities. Each of these buttons will navigate to its own user interfaces.

iii. Selecting Date

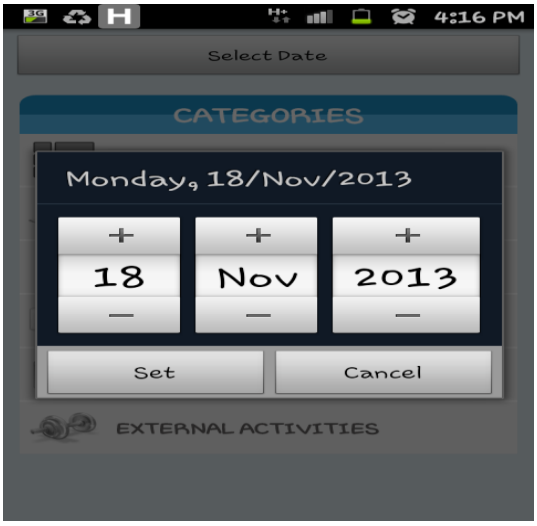

Figure 10: Calendar Screen

The user needs to select the date that they want to remind. It can be previous and future date.

iv. Meal Schedule

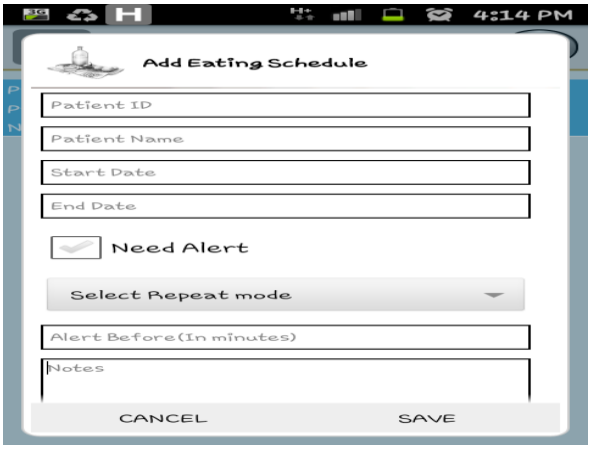

Figure 11: Form for Meal Schedule

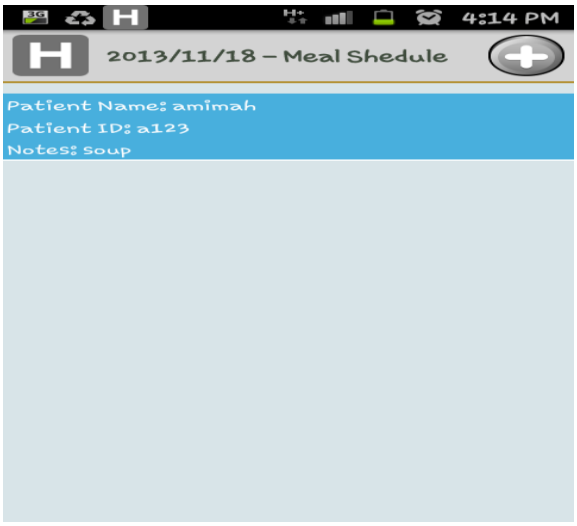

Figure 12: Report for Meal Schedule

For the alert, the user needs to fill up the form for meal schedule category. The form will come out as the report for meal schedule for each patient. Then alert will remind based on the date and time selected by user. The meal schedule will be on blue color.

v. Bathing Schedule

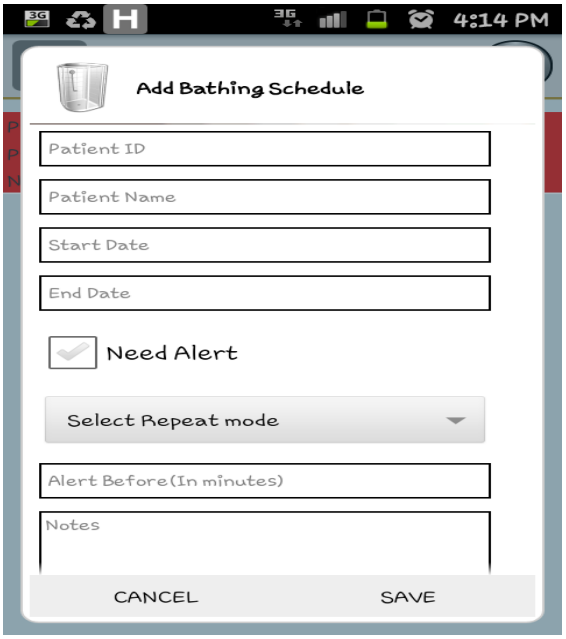

Figure 13: Form for Bathing Schedule

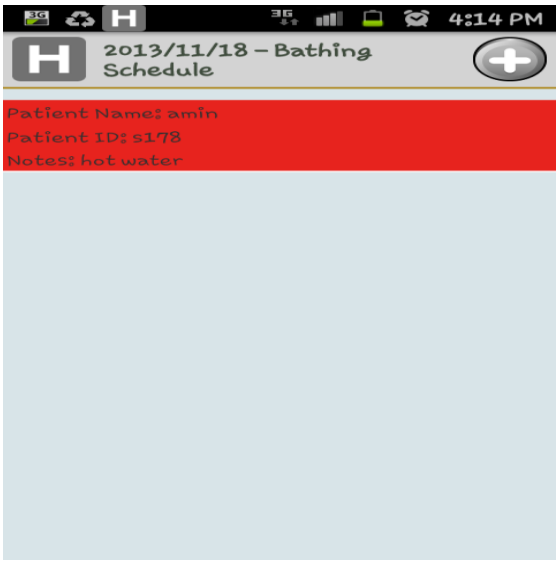

Figure 14: Report for Bathing Schedule

For the alert, the user needs to fill up the form for bathing schedule category. Then alert will remind based on the date and time selected by user. The bathing schedule will be on red color.

vi. Medication

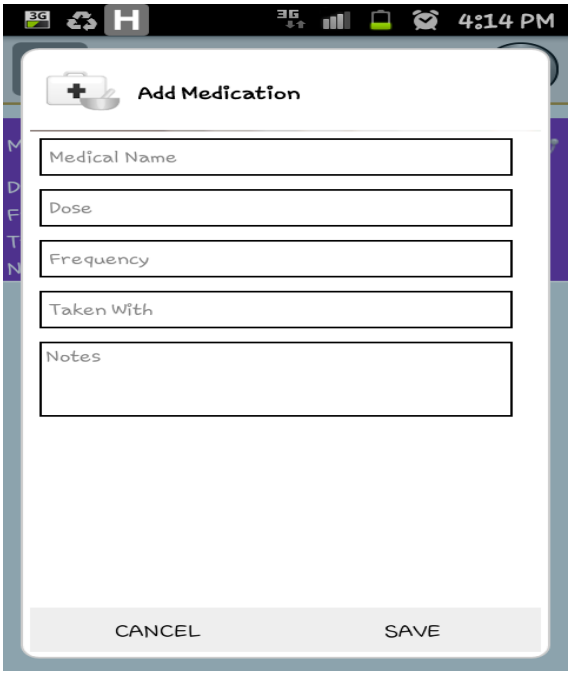

Figure 15: Form for Medication

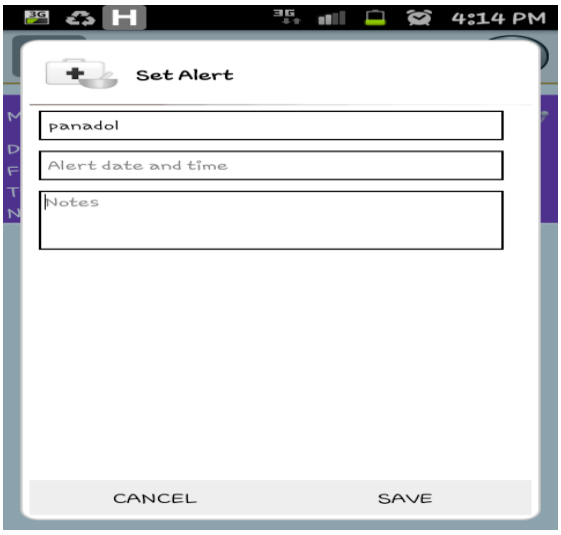

Figure 16: Reminder for Medication

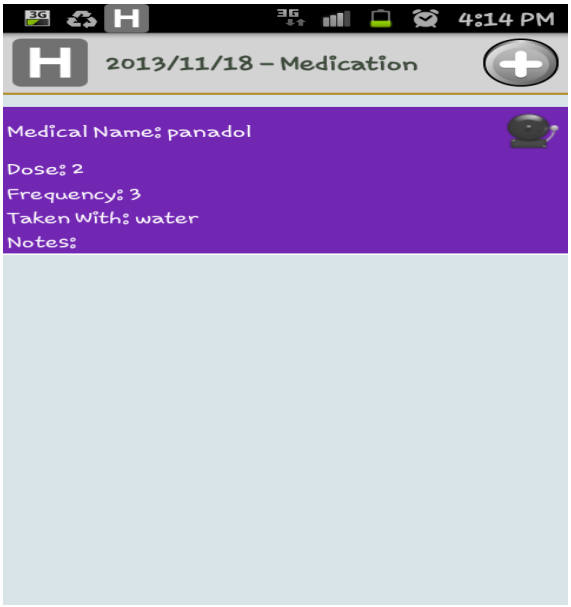

Figure 17: Report for Medication

For the alert, the user needs to fill up the form for medication category. Then alert will remind based on the date and time selected by user. The medication will be on purple color. For medication the user can choose either the user need alert or not.

vii. Doctor Appointment

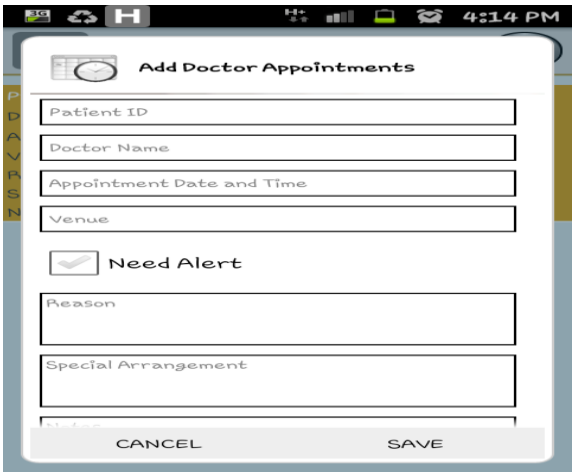

Figure 18: Form for Doctor Appointment

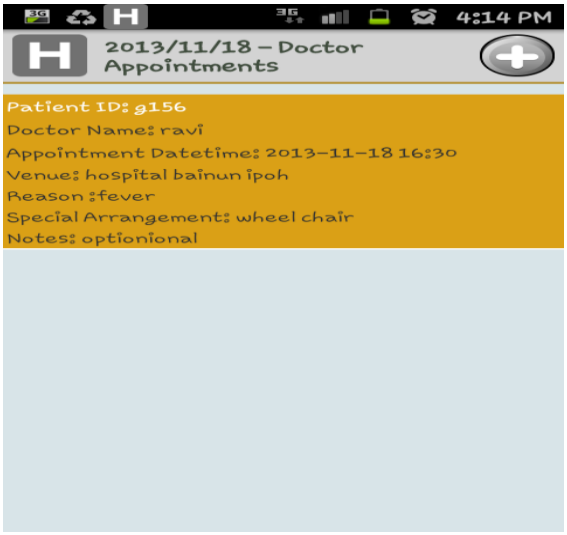

Figure 19: Report for Doctor Appointment

For the alert, the user needs to fill up the form for doctor appointment category. Then alert will remind based on the date and time selected by user. The doctor appointment will be on orange color.

viii. External Activities

Figure 20: Form for External Activities

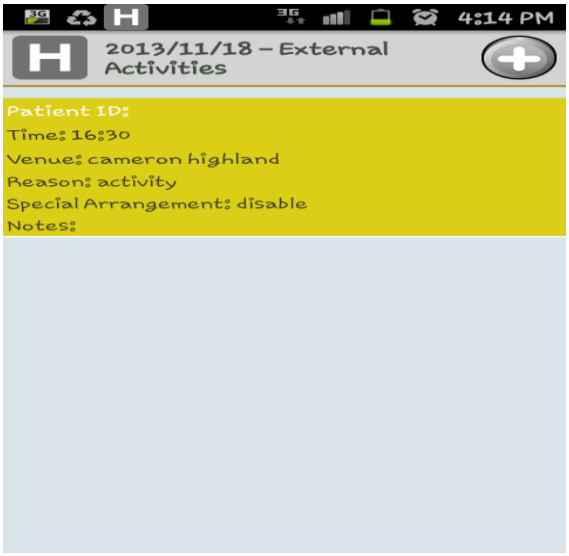

Figure 21: Report for External Activities

For the alert, the user needs to fill up the form for external activity category. Then alert will remind based on the date and time selected by user. The external activities will be on yellow color.

4.3 User Evaluation

After conducting some survey and testing with eleven nursing staff with the help of the teacher and through phone communication in which the nursing staff was agree to help the author in conducting the survey as well as testing application, the author had concluded the analysis and outcome data, which are illustrated in following graph.

Figure 22: User Testing

1. Do you enjoy using this mobile application

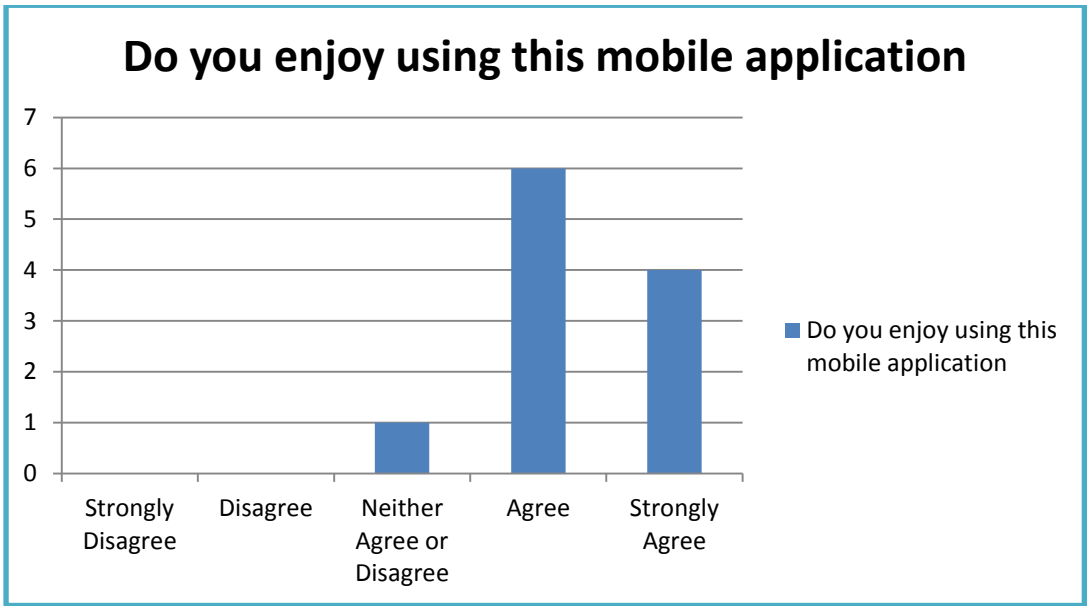

Figure 23: Survey Question Number 1

The above graph shows the result of the rate of the user on enjoy using the Manage2Care application. Most of participants were answering that they are agree that this application is enjoy using. 4 of them are strongly agree that they are enjoying using this application and one of them neither agree or disagree.

2. Do you think this application will help you daily work in nursing staff

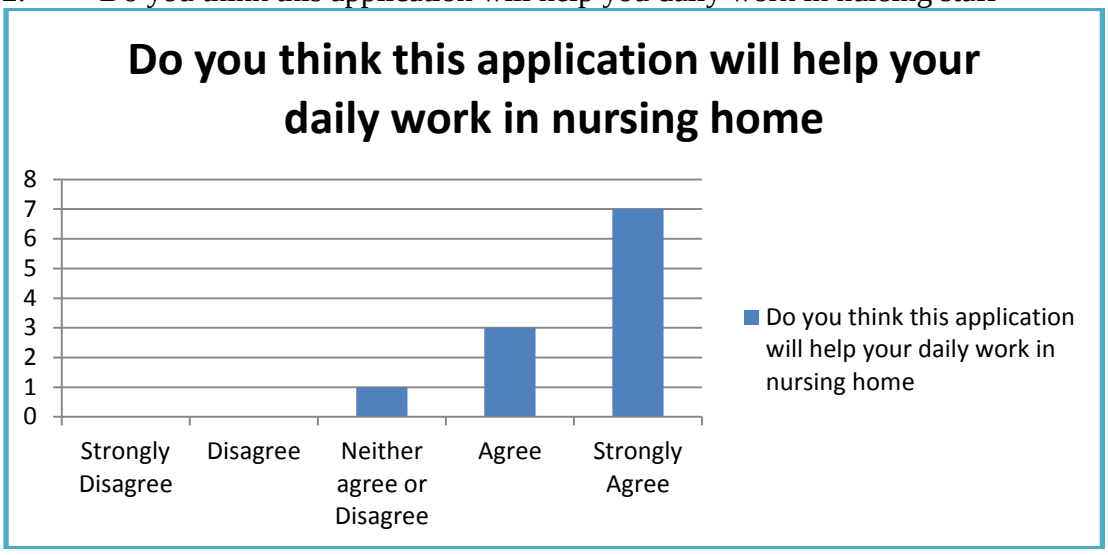

Figure 24: Survey question number 2

The above graph shows the result of the rate of the user on this application can help your daily work in nursing home. Most of them, answering strongly agree this application could help them to completing the job. Three of them just agree with the question.

3. Do you think this application user-friendly

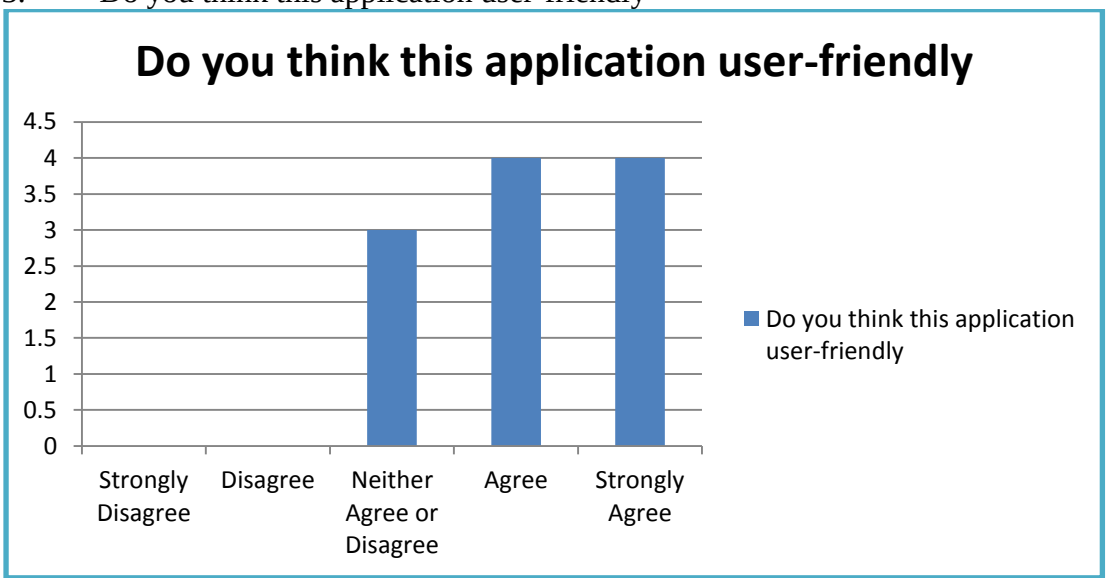

Figure 25: Survey question number 3

The above graph shows the result of the rate of the user think this application is user-friendly or not. The rate for agree and strongly agree is equal. The participants mostly agree that Manage2Care is user-friendly.

4. I will using this application for completing the job.

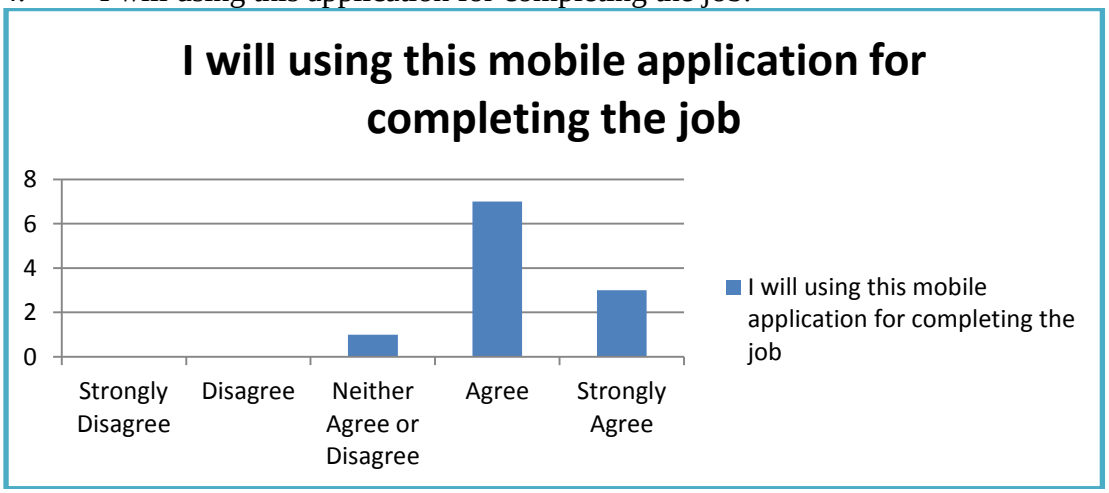

Figure 26: Survey question number 4

About 63.64 percent of the users agree will use this application to completing their job. About 27.28 percent strongly agree to use Manage2Care.

As the conclusion, the application was found to be suitable and able to meet the objectives and scope of study, which is creating a mobile healthy application for nursing staff. Manage2Care also able to functioning well as desired in is blueprint concept. The users' feedback and comments will be put the recommendation for the project in the next chapter. Other than that, Manage2Care is able to deliver the desired outcomes.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Relevancy to the Objective

As stated previously, the objective of this research is to investigate the problems faced by the nursing staff to managing the senior citizen in conducting their daily routine and to help a nursing staffs to manage senior citizen without mistake and problem. Besides that, this research also focuses function that can be implemented on the mobile application to help the nursing staffs. In terms of relevancy, it can be concluded that it is relevant to the objective proposed earlier where the documentation is a supporting material to assist the development of this project.

Thus, several conclusions have been made:

i. It is important to nursing staff to make sure the senior citizen completed their routine in daily. Mobile application will developed based on requirement needs by nursing staffs.

ii. Now a days, most of people will used their phone to help them completed their jobs. The effective ways to ensure they will complete the jobs without mistake and problem is by using the Smartphone application.

In short, the proposal mobile application does follow the objective and scopes defined, the activities that have been conducted that include research and mostly application of theories into practice are relevant to the objective specified.

5.2 Recommendations

There are several recommendations to be made to expand this project. Recommendations are not meant to be used to change this project wholly but to allow improvements in certain aspects and to put some factors into consideration before proceeding with the development of the software.

One of the recommendations is the data gathering process for this project should not be limited to interviewing the nursing staff that manage senior citizen only. Interviews or questionnaire should be conducted to who works at hospital or clinic since they also involve on the managing the patients. Besides that, in order to complete the project early and more effective, the development phase need to be done within the time frame as what has been planned. This project can be completed at least to the minimum requirement. It also depends on the amount of scope creep that would be encountered which is inevitable. Due to the scope creep and testing difficulties, the project might be delay some times. The requirements are quite challenges so it is also difficult to gauge how perfect the mobile application can be within the time frame.

5.3 Conclusion

Manage2Care is able to create a reminder to the nursing staff. This application has successfully extending the management beyond the border of the nursing home. Although Manage2Care still need more improvement in order to make it more stable and much better, the application has a bright hope in providing the 21st century's way of managing.

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APPENDIX

Introduction Manage2Care:

Manage2Care application is aimed to be one of the efficient ways to provide the information about the monitored objects (senior citizen), details his/her about medication, doctor appointment and other relevant personal care. Other service many include the reminder to notify the nursing staff about monitor objects daily routine. This application is to help managing the senior citizen more effectively and efficiently.

Name :

Staff Number :

Organization :

1	Strongly Disagree
2	Disagree
3	Neither Agree nor Disagree
4	Agree
5	Strongly Agree

No.	Question	1	2	3	4	5
1	Do you enjoy using this mobile application					
2	Do think application will help your daily work in nursing home					
3	Do you think this application user-friendly					
4	I will using this application for completing the job					