INDIVIDUAL ASSIGNMENT

TECHNOLOGY PARK MALAYSIA

CT098-3-2-RMCT

RESEARCH METHODS FOR COMPUTING AND TECHNOLOGY

UC2F1910IT(CC)

HAND OUT DATE: 02 JUNE 2020

HAND IN DATE: 5 September 2020

WEIGHTAGE: 50%

INSTRUCTIONS TO CANDIDATES:

1 **Submit your assignment at the administrative counter.**

2 **Students are advised to underpin their answers with the use of references (cited using the Harvard Name System of Referencing).**

3 **Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld.**

4 **Cases of plagiarism will be penalized.**

5 **The assignment should be bound in an appropriate style (comb bound or stapled).**

6 **Where the assignment should be submitted in both hardcopy and softcopy, the softcopy of the written assignment and source code (where appropriate) should be on a CD in an envelope / CD cover and attached to the hardcopy.**

7 **You must obtain 50% overall to pass this module.**

Research Methodology in Computing and Technology (RMCT)

Assignment: Project Proposal

Summary of Assignment:

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Intake Code:	UC2F1910IT(CC)
Module Code:	CT098-3-2
Module Title:	Research Methodology in Computing and Technology (RMCT)
Module Lecturer:	Dr. Siti Sarah Binti Maidin
Weighting:	Coursework weighted at 40% (report) + 10% (presentation)
Assessment Title:	Research Paper
Assessment Type:	Individual work
Hand out date:	02 JUNE 2020
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Integration Cloud-Based blood bank system

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Abstract — ***In the hospital, blood is very important so that every hospital must have enough blood type to provide the people who are in need. Therefore, blood bank and hospitals must be having the same information to let blood transfer to the specific hospital immediately. If the hospital and the blood bank are not integrated, the system cannot detect whether the hospital got enough stock or not. Thus, blood bank and the hospital need to link together to let the transfer work more easily. In this research, cloud-based blood bank system will be discussed to ensure that the hospital can keep tracking the blood to make sure the stock is always available.***

Index Terms - Blood bank system, Blood type, Hospital, Transfer,

1. Introduction

In 21st century, medical technology has made a significant improvement compared to the past. Blood is playing a vital role in medicine study and can be used for research and development of medical technology. Furthermore, blood can used to save people who has accident or doing surgery, but due to not enough blood in the hospital which leads unfortunate cases. There are many cases where they donated wrong blood due to lack of basic information that are related to patient so that hospital could not provide specific blood for the patient. Besides that, blood bank sometime may face inaccessibility to the blood available where it requires because of the distances (Patnaik, 2016).

This research study will be focused on cloud-based blood bank system as blood bank is an essential part in every country because blood bank is able to distribute each blood type that are needed to all hospital in the country. Therefore, cloud-based blood bank system should be implemented so that it can allow blood deliver to hospital on time when it needed to make it more efficiency.

2. Background

According this article it mention problem of transporting and storage of blood it is because when the hospital not enough blood type such as O, A, B, AB, etc (Brown, 2004). Every hospital will host their blood donation event so that it has sufficient blood to provide to patient who are in need. The requirement to donate blood is age needs to be between 18 until 60 years old and body weight must be requiring at least 45 kg (myhealth, 2019). After the donor has donated blood, it takes a lot of work to ensure the quality of the blood. Some hospital will have blood refrigerator to store blood so it can be collect at any time (Heddle *et al.*, 2012). Moreover, it is important that the blood should be preserved in the dedicated blood refrigerator at 2oC to 6oC without unnecessary delay to maintain the quality of the blood, the dedicated blood refrigerator must have a quality control program. Therefore, blood bank system will assist in setting up a quality assurance system. (Emmanuel, 2010)

One of the challenges is platelet transport container does not hold ice packs. But due to long-distance platelet transport could not keep blood in desire temperature, an ice pack can be put at the bottom of

the container to maintain an ambient temperature for platelet viability(Amukele *et al.*, 2017). The table below explain the condition of the blood quality. (Malaysia, 2020)

	Whole Blood/ Packed Cell	Platelet Concentrate	Cryo/ FFP/LP
Collection	Blood box WITH ice	Blood box WITHOUT ice	Blood box WITH ice
Storage	+2^{0}C to +6^{0}C	Room temperature +20^{0}C to +24^{0}C on agitator DO NOT STORE IN FRIDGE	SHOULD NOT BE STORED OR KEPT IN THE WARDS
Use	As soon as possible	Transfuse immediately	Transfuse immediately

Figure 1 Blood maintenance condition

Blood bank is a place where donor blood is divided into components, stored, and prepared for transfusion to recipients. A blood bank can be separate with the facility or part of a larger hospital laboratory.(Drucker, Williams and Price, 1982)

Blood bank need to store blood to provide hospital immediately. Red blood cells can be preserved for period of 42 days under refrigeration, or frozen for up to 10 years.

Blood bank system is very important in our medical technology so that it should research more in hospital and the blood bank should collect the information and to know more about how it works. Based on research know that Malaysia blood bank is call National Blood Centre and is located at Kuala Lumpur. Then StemLife Logistics is one of the logistics to deliver the blood to the hospital (stemlife, 2020). In Covid-19 the blood bank stock in the Malaysia is down by 40% as blood collection efforts have been almost half due to movement control order (MCO) (ANNUAR, 2020). It is because no one able to go outside due to restrictions and hospital unable to host blood donation event as they are busy fighting with Covid-19.

3. Problem Statement

Blood Bank system unable to send the blood to the hospital due to far location and lack of time. Besides that, this can cause patient unable to get treatment on time because of the blood affected some virus and bacteria. There some hospital may have located at a far location, and this can be very challenging they have unable to deliver the blood to the specified places on time (Pierskalla, 2005).

4. Aims and Objectives

This research the aim is to develop blood bank system to convince hospital management distribute the blood to let the patient get treatment in time.

I. To identify the current problem implementing blood system that will help to deliver the blood on time to hospital.

II. To propose a blood bank system which enables the hospital to check and know blood stock in the blood bank more clearly.

5. Research Questions

To determine the Cloud-Based blood bank system are possibility developer.

I. Where are the cover area of hospital for the blood bank system?

II. How to check the blood stock whether is enough using the blood bank system?

6. Significance of the work

Based on this research, researcher want to create cloud-based blood bank system it is because as many hospitals also does not enough blood into their blood stock so that they need to contact blood bank to deliver the blood. But at the same time if the patient wants the blood emergency the hospitals sure cannot supply the

blood directly. So, this cloud-based blood bank system can prevent the hospital are not enough blood. Cloud-based blood bank system is a make sure all the hospital has enough blood when emergency situation(Chaudhari *et al.*, 2018). So that the patients are not because of the blood to die. This system also can convince blood bank to allocation to all hospital. This system can show all the data of the hospital blood status.

7. Methodology

Qualitative analysis refers to the research. This approach is used to explain views and beliefs. It creates solutions for multiple challenges and helps to establish hypotheses or ideas for future quantitative research. Typically, this approach is used to consider the view and expectations. This creates perspectives of various topics and helps establish hypotheses or ideas for future qualitative research. The qualitative approach helps explore new perspectives and individual views through the study to look deeper into problems(carol, 2016). Therefore, this research qualitative is most suitable based on this research. It is because qualitative can know more about in-depth details. It is also face-to-face to interview the interviewee. Furthermore, blood bank system needs to be more specific for nurse and doctor to know clearer about the feedback using cloud-based blood bank system.

The sampling technique that will be most suitable to use in this research is snowball sampling. Since snowball sampling can make correct for the information it is because this sampling is use by find people with a specific skill or expertise in a specific field. For examples, this sampling is specific nurse and doctor. In patient care the blood bank plays an important role. Errors linked to transfusion have severe implications for patient including death(Naderifar, Goli and Ghaljaie, 2017). So that snowball sampling can more accurately conduct this research. Snowball sampling is help researcher to quickly to find a sample to analysis the data. For example, in hospital there have many nurses and doctors need to ask so this sampling need to referrals so it can make a population in this research until the research is enough to collect the data. Besides that, this it also cost effective to compared other methods it is because this is based on referrals each other to get the data (questionpro, 2020). In this research study researcher target the respondents which are IMU hospital doctors and nurses which located in Kuala Lumpur. In fact, doctor and nurse will oversee using the system to transfer the blood. The researcher requires 3 doctors and nurses from IMU Hospital to conduct an interview.

Interview is suitable in qualitative research because it can have a better understanding about the research subject and usually open-ended question will be ask so that the in-depth information be use as data analysis(DeBose, 2018). The researcher needs to use Zoom to do the interview. It is because in qualitative research is preferred face to face interview but due to this period is covid-19 so researcher need to do by Zoom meeting application. Based on this research are use Zoom meeting application it is because Zoom meeting can record those meeting for viewing or record later(Tillman, 2020). So that the researcher can watch again about the interviewee and analysis it. According this research, the researcher is require going to send 10 doctors and nurses email make appointment to interview in Zoom meeting application and this research are expected to interview is 3 doctors and nurses.

For the data analysis, as for this research are going to use ATLAS.TI software to analysis the data. ATLAS.ti software is a leading qualitative analysis platform for those seeking to see the big picture and

appreciate the information. It reveals meanings and relationships which enable users to base their findings on the data (PAT Research, 2017). So that it can help the researcher to analysis the interviewee data.

Figure 2 ATLAS.TI logo (PAT Research, 2017)

8. Overview of the Proposed System

This propose system is to allow blood bank operated using Cloud-based blood bank system. Therefore, the application is needed as it benefits the medical personnel saving time and money with clicking the notepad to order the blood model. The application is running 24 hours so the medical personnel can make up the final decision and make the order anytime.

First, to implement the application in all the notepad where they can get the latest information. For example, the number of blood type will display on the notepad, so the medical personnel do not need to travel many times to getting the blood type as the information has shown at the notepad.

Doctor and nurse can use the application and search out the blood model as they needed where the system will show the results directly to see whether the blood model is enough for the number of patients. Furthermore, nurse has the authority to accesses to the application and directly order the blood to the blood bank system so that is does not need to bother doctors. After the decision has made by doctor and nurse, the blood bank will receive the order and according to the lists of the blood model to make a delivery to the hospital. The advantage of using this application is preparing to send that hospital in a shorter time.

8.1. Flow Chart to propose the system

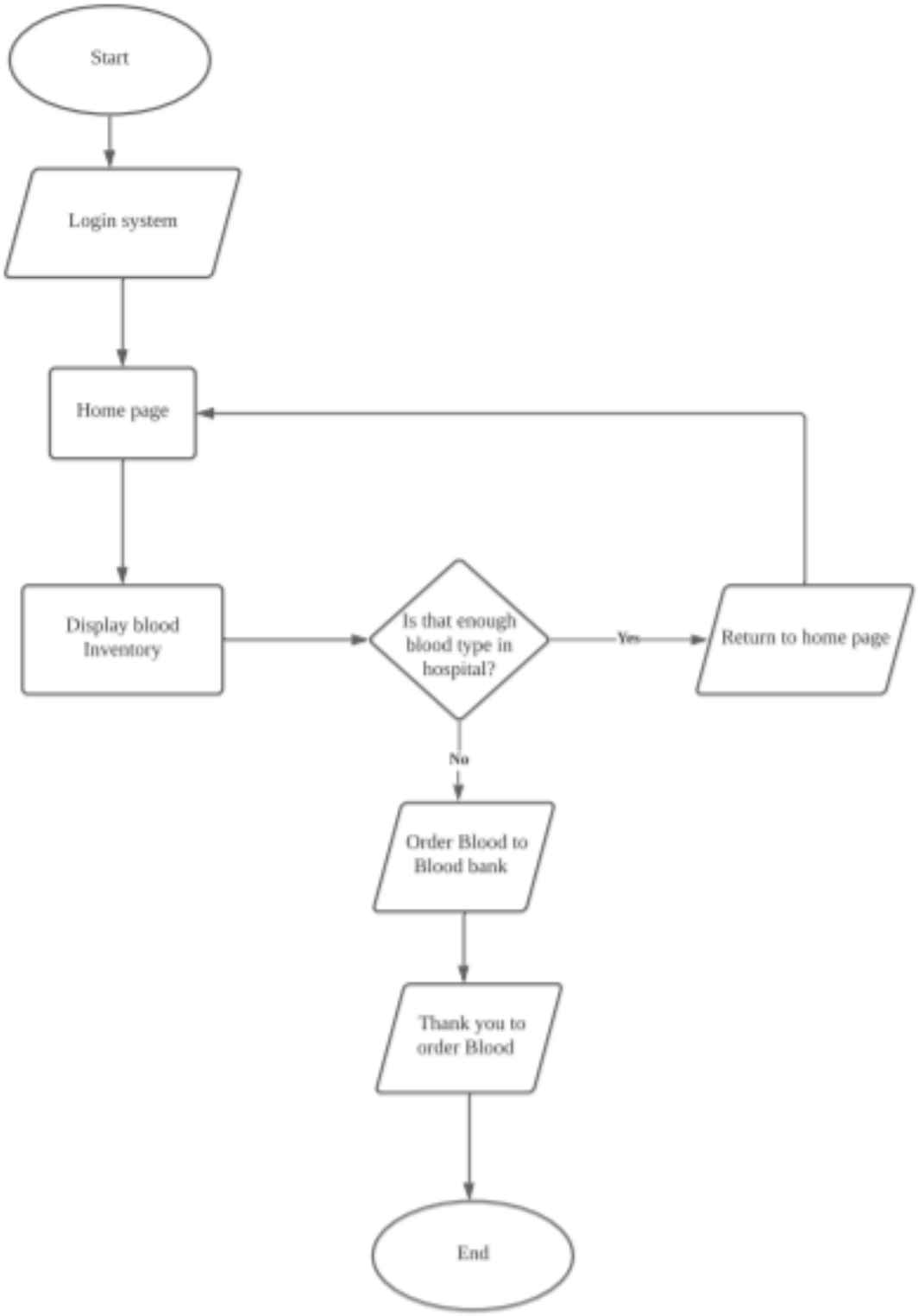

Figure 3 Flow chart of cloud-based blood bank system

8.2 Flowchart Elaboration

First staff can start the cloud-based system and access the homepage which have the option to display the entire blood inventory in the hospital updated in real time using cloud-based system. In addition to check the stock of different blood type the staff can check individually which type of blood is available and if its available the staff will take the blood bag and it will auto deduct from the cloud database using Barcode scanning technology. If there is not enough stock and for the type of blood the staff can order blood from the blood bank using the current system. A thank you message will appear after the user have order the blood type. Lastly after ordering the blood the system will end its process and shut down automatically.

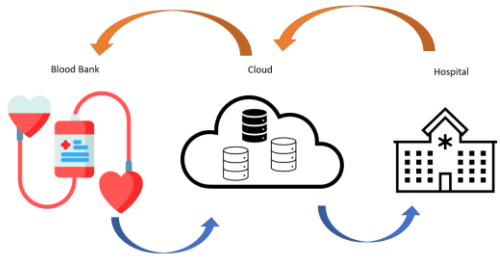

Figure 4 Process for Blood bank and hospital

9. Conclusion

This research is showing that cloud-based blood bank system can make hospital and blood bank to ensure the blood are faster deliver to the direct hospital. Hospital staff just using application to click some step, blood bank will get it the information for a second. So that this system will become future by all the medicine field. This research also help that know many hospital are not enough the blood stock at the time it is because every hospital got many patient want blood to do surgery at the same time therefore hospital may need to do the donation blood event to let donor donate the blood to ensure that their hospital are have stock to support all the patient.

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Appendix

Aim:	To develop blood bank system to convince hospital management distribute the blood to let the patient get treatment in time.	
Research Problem (RP)	**Research Objective (RO)**	**Research Question (RQ)**
1. Blood Bank system unable to send the blood to hospital due to far location and lack of time.	1. To identify the current problem implementing blood system that will help to deliver the blood on time to hospital.	1. Where are the cover area of hospital for the blood bank system?
	2. To propose a blood bank system which enables the hospital to check and know blood stock in the blood bank more clearly.	2. How to check the blood stock whether is enough using the blood bank system?