HEALTHCARE WARD MANAGEMENT SYSTEM

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BORANG PENGESAHAN STATUS TESIS*

JUDUL: HEALTHCARE WARD MANAGEMENT SYSTEM

SESI PENGAJIAN: 2014/2015

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IZZLYN IZZATY BINTI ZULKEFLI

This report is submitted in partial fulfilment of the requirements for the award of Bachelor of Computer Science (Software Development)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALYSIA MELAKA

2016

DECLARATION

I hereby declare that this project report entitled

HEALTHCARE WARD MANAGEMENT SYSTEM

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : _____ Date: _____

(IZZLYN IZZATY BINTI ZULKEFLI)

I hereby declare that I have read this project report and found this project report is sufficient in term of the scope and quality for the award of Bachelor of Computer Science (Software Development) With Honours.

SUPERVISOR : _____ Date: _____

(PROF. DR MOHD KHANAPI ABD GHANI)

DEDICATION

Dear Allah SWT

Alhamdulillah thank you Allah because finally I have managed to finish this project by Your Guidance and Your Love.

Dear My Beloved Family

Thank you for believing me in everything that I do and put your trust on me for completing this project.

Dear Supervisor and Lecturer

Thank you for the opportunities that you have gave to me and always motivate me to not giving up on this project.

Dear Friends

The knowledge that we have share with each other and those guidance comes with support is a something that I really appreciate the most.

ACKNOWLEDGEMENTS

I am truly thankful to Allah SWT for giving me a good health and a strength on finishing this project. I am feel blessed with the ideas and knowledge given to me that help me a lot on finishing this project.

I would like to express my sincere gratitude for my supervisor Assoc. Prof. Dr Mohd Khanapi bin Abd Ghani for giving me this opportunities and put a trust on me for completing this project. The supports and encouragement that he gave motivates me to not giving up in this project.

I am most grateful when I have a friends and colleagues that willing to help me when I got a problem with my project. They are willing to spend their time in helping me to find the solution for my problem.

Lastly, I would like to thank you for my beloved father, Zulkefli Bin Mamat and my beloved mother, Rohaya Binti Mat Deris for their loves and supports throughout the time when I was at my best and at my worst. Thank you for believing in me.

ABSTRACT

Healthcare Ward Management System is a web-based application system and is one of the module in iHIS- Healthcare System. iHIS- Healthcare System used by the healthcare organization to managing the organization and the patient. To develop Healthcare Ward Management System, the data will be accessed first from the sources which are Development Server and Staging Server. The method used in order to access the Development Server by using Remote Method Invocation (RMI). RMI is an Application Program Interface (API) which provided the structure on creating the distributed application in java. This will enabling the remote communication by using the invoke method. The invoke method makes the development server data accessible by other workstation. Healthcare Ward Management System is developed using the programming language which is JavaServer Pages (JSP) and the web services which is Apache Tomcat 8. The methodology approach in this development of Healthcare Ward Management System is Agile Model. The Agile Model is more on Extreme Programming and more dynamic in terms of the software development. The .Healthcare Ward Management System is designed to be a responsive page that can make it accessible through any devices. The current system is still using the manual process that requires time and resources to manage the ward process. The development of Healthcare Ward Management System will overcome the problem of time delay and unorganized way of placing the patient into and out of the ward. This will minimize the current time process as the system will be run smoothly across the ward management. Lastly, the Healthcare Ward Management System will benefit more on the staff nurse in order to manage all the ward process properly and effectively without causing the unnecessary problem in order to make sure that patient have timely access to the ward as all the data is computerized.

ABSTRAK

Healthcare Ward Management System ialah sistem aplikasi yang berasaskan web dan merupakan salah satu modul dari IHIS (Integrated Health Information System). IHIS digunakan oleh organisasi penjagaan kesihatan dalam menguruskan sebuah organisasi dan pesakit. Untuk membangunkan Healthcare Ward Management System, data akan diakses dari sumber iaitu Development Server dan Staging Server. Kaedah yang digunakan untuk mengakses Development Server adalah dengan mengunakan Remote Method Invocation (RMI). RMI adalah Application Program Interface (API) yang menyediakan struktur dalam membentuk aplikasi teredar di dalam java. Kaedah sembah membuat data Development server diakses oleh stesen kerja lain. Healthcare Ward Management System dibangunkan dengan mengunakan Bahasa pengaturcaraan iaitu JavaServer Pages (JSP) dan perkhidmatan web iaitu Apache Tomcat 8. Pendekatan metodologi dalam pembangunan Healthcare Ward Management System ialah Agile Model. Agile Model adalah lebih kepada Extreme Programming dan lebih dinamik dari segi pembangunan perisian. Healthcare Ward Management System direka untuk menjadi halaman responsive yang boleh membuat ia boleh diakses melalui mana-mana peranti. Sistem semasa masih menggunakan proses manual yang memerlukan masa dan sumber untuk menguruskan proses wad. Pembangunan Healthcare Ward Management System akan mengatasi masalah kelewatan masa dan cara yang tidak teratur meletakkan pesakit ke dalam dan keluar dari wad. Ini akan mengurangkan proses semasa system akan berjalan dengan lancer di seluruh pengurusan wad. Akhir sekali, Healthcare Ward Management System akan memberi manfaat kepada kakitangan jururawat untuk menguruskan semua proses wad dengan betul dan berkesan tanpa menyebabkan masalah yang tidak perlu untuk memastikan bahawa pesakit mempunyai akses tepat pada masanya ke wad kerana semua data berkomputer.

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1.0 INTRODUCTION

1.0 Introduction

Healthcare Ward Management System is developed as Projek Sarjana Muda 1 in partial fulfilment of the requirement for the subject BITU 3973. This system is use to assist the staff of the healthcare to manage the inpatient, beds, rooms and wards. The staff can assign inpatient based on the availability of the bed/ward/room. This system also will ease the staff to track patients ward information when the patient shift from one ward to another in fast and effective way. Besides, the information of patient discharge and the bed/ward/room status can be maintained and stored properly in a save data storage. The system will help the staff to organize the ward rooms without having a time delay. Furthermore, ward management system will help everyone to save their time, effort and costs.

JavaServer Pages (JSP) will be used to develop the inpatient module that will include all the ward management which are managing the inpatient flow, beds, rooms and wards of the healthcare ward. This project using JSP because it will helps software developer to create dynamically generated web pages based on HTML5, XML or other document types.

1.2 Problem statements

There are problem faced by the staff on placing the patient into their wards because they have to do it manually in the most unorganized ways. The staff should transfer the patient from one ward to another ward effectively to avoid the time delay during the process. A lot of time would be consume in managing the patient into or out of the ward because there is no proper way in managing the patient effectively.

1.3 Objective

To develop Healthcare Ward Management System in order to give a good facility for the staff to manage the ward properly and effectively. To improve the ward management across the health system in order to enhance the current ward management system. To ensure patient have timely access to their bed/ward/room to save the patient management time without delay.

1.4 Scope

This project will cover one of the module on IHIS (Integrated Health Information System) which is inpatient management modules. This modules will help the staff on handling and manage the inpatient in a healthcare. Below is the list of the users involved in this modules and their job description:

Table 1.1: User of the System

User	Description
Inpatient	• Register in inpatient management, get a ward, room and a bed.
Medical Officer	• Manage the inpatient ➢ Register the inpatient ➢ View all wards, rooms and beds available • Assign the inpatient into the ward,room and beds. • View inpatient status
Staff Nurse	• Manage the inpatient ➢ Register the inpatient ➢ View all wards, rooms and beds available • Assign the inpatient into the ward,room and beds. • View inpatient status
Administrative Assistant	• Maintain the wards, rooms and beds available, occupied or pending • Update the status of wards, rooms and beds all the time.

1.5 Project Significance

The software development team are requires to finish and completing the module given. Since this project is developed with a real project environment, thus it is quite challenging on completing the tasks on time as the module will be integrated in to a server. The main user is the staff nurse that will handling this module in order to manage the inpatient. The system is develop to assist the staff nurse on reducing the time consuming on managing the inpatient in and out of the ward, rooms and beds.

1.6 Expected Output

The expected output for this project is that the ward management can be managed in the most effective way to reduce the time delay in managing the inpatient in and out of wards, rooms and beds.

1.7 Conclusion

As a conclusion, the Chapter of Introduction stated the main reason on why this Healthcare Ward Management System must be developed. The summary on this chapter will give the first view to the readers about this project. Next, in Chapter 2 will describe more about literature review and project methodology that are used in this project.

2.0 LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter will discuss more on literature review and project methodology on this project. The literature review will describe more about the research that has been conducted during this project which are journals, related websites, academic article and the existing system. For the project methodology, the methodology that has been used for this project will discuss more in this chapter.

2.2 Facts and findings

This section will explain about the past research that has been study in order to find the parameter which will be used as domain reference.

The facts and finding that are related to the project development will be discussed in this section. There are parts which will be explain and discuss about the case study of the existing system. The case study will lead the developer to develop a new product of software application based on the strength and weakness of the existing system and priority to cover the problems that mentioned on the previous chapter

2.2.1 Domain

Time Delay

The ward management system in hospital and healthcare are complicated as it is not easy to develop a system that is user friendly and met all the user requirements. This due to complex nature of the hospital itself. The demand for a hospital care is increased steadily over the past decade in Malaysia. Like Hospital Melaka Thus, the hospital will require the ability to manage this demands relies on there being sufficient capacity across the health system. The ability move the patients into and out of an inpatient without delay is a key to maintaining the standards of the hospital.

Managing the ward in organized way

The staff facing the problem when they have to transfer the patient from one ward to another ward. The staff needs a perfect ward management that will work effectively to avoid unnecessary mistakes. For example of the mistakes that will happens is, the staff can cause a death of inpatient due to the unorganized way of ward management when transferring the inpatient in or out of the ward. The current work flow for a ward management system of the hospital is using the number of available beds to measure the hospital capacity. Now, this type of measurement is no longer in used as it was replaced by the new work flow within the new ward management system. The feasibility of using the web service technology to improve the work flow management system helps the staff to customize their work.

2.2.2 Existing System

2.3.1 Comparison of Existing System

The existing system is quite not user friendly and it causing a lot of time consuming to manage the patient into or out of their bed, ward, room. Hospital Pantai at Melaka are still using the manual way on viewing the summary of bed booking master. The summary of bed booking master in those hospital is viewed by Microsoft Excel which is not managed in the most effective way. If the staff nurse want to view the bed,room,ward available, they have to open the Microsoft Excel and go through one by one. Besides, if the staff nurse want to update the bed,ward and room status, they have to update it manually. This causing the time delay when transffering or admit the patient into the ward as the process of ward management is not done effectively. Those the Healthcare Ward Management Sytem is developed to overcome the problem that faced by the staff nurse. Now, all the view and data will be keep in computerized. The ward management system is now become user friendly as the staff nurse will no longer need to update the summary of bed booking master. The bed booking master now will automatically updated as long as the admit, tranfer and discharge patient are done successfully in the other function. It will automatically retrieve the data and summarize it. The bed booking master summary will ease the staff nurse to view the bed,ward,room status in order to manage the patient and allocate them to the bed,ward, room available.

2.2.3 Technique

2.3 Project Methodology

A. Approach or methodology used in project

A system development methodology is a framework or a standard process that are used during the development of the system. The process that's included are planning the system, analyse the system, design the system and implement the system. The Software Development Life Cycle (SDLC) is the selected approach used for this project development. SDLC consists of many activities that included variety of methodology model that will help on developing the project.

The methodology used is agile methodology as it is an innovative approach to articulate a well-organized project management procedure and allow for recurrent alteration of the software products. Besides, agile methodology is easy to manage during the development as it will required no planning and giving the flexibility to software developers. Another selected approach that is used during this project development is Database Life Cycle (DBLC). The DBLC consists of five stages that starts with requirement analysis, logical design, physical design, and implementation followed by maintenance.

The first stage which is requirement analysis will describe more about what are the contain of the data that the database will kept and what are the main function that will need by those database in order to meet the user requirements. Next stage is the logical design which that will require the developer to distribute the object and the characteristic of the business into the entities and attributes. The output for this stage is an Entity Relationship Diagram (ERD) that will represents the entities, attributes and the relationship involved graphically. The next stage is physical design that will described about the prototyping of the system. The objective of the physical design is to implement the features of the system that will met the user requirements. The fourth stage is the implementation stage. This stage is the stage where the programming process will be done during the system development after satisfying with the physical design and logical design stage. The last stage is the maintenance

where all the process of maintaining and monitoring the database of the system will take places.

The maintaining will be needed if the new user requirements are arise while the monitoring is where the performance of the system will be observed from time to time to make sure the database of the system will reorganized back if the performance of the system falls below an acceptance level.

2.4 Project Requirements

All the project requirement that is used during this project will be described on this section. The requirement include software requirement, hardware requirement and other requirement. The software requirement will describe more of software system used during this project development while the hardware requirement is the hardware resources that will be need in order to use the software system.

2.4.1 Software and software server Requirement

The software requirement of this project is shown below:-

Table 2.1: Software Specification

Software Specification	Description
Server name	Development Server
IP Address	10.73.32.200
Operating Server	Windows Server 2008 R2 Enterprise
Development Tools	NetBeans IDE 8.1
	Microsoft Office 2010
	Microsoft Visio 2010
	StarUML
MySQL Configuration	MySQL server 5.0 Database Name: emedica
Web Service Configuration	Version: Apache Tomcat 8.0.27.0 Port: 80
RMI	No RMI server is installed

2.4.2 Hardware and network Requirement

Table 2.2: Hardware Specification

Hardware Specification	Description
RAM	4.00 GB
Processor	Intel Xeon CPU E3-1220 V2@3.10 GHz 3.10GHz
System Type	64 bit Operating System
Size of Hard Disk	1 TB
Computer Name	biocore-group
Full Computer Name	biocore-grp
Workgroup	BIOCORE

2.4.3 Other Requirements

Other requirements used during the development of this project are the Bio-Core Lab, Faculty of Information and Technology, UTeM as this project will require the server and staging in this lab in order to develop system of the project.

2.5 Project Schedule and Milestones

2.5.1 Project Milestones

Table 2.3: Project Milestones

Week	Activity	Note/Action
1 13 – 17 Feb	Proposal PSM : Submission & Presentation	Deliverable – **Proposal** Action – Student
2 20 – 24 Feb	Proposal Correction/Improvement Chapter 1	Action – Student
3 27 Feb – 3 Mar	Chapter 1 (System Development Begins)	Deliverable – **Chapter 1** Action – Student, Supervisor
4 6 – 10 Mar	Chapter 1 & Chapter 2	Action – Student
5 13 – 17 Mar	Chapter 2	Action – Student
6 20 – 24 Mar	Chapter 2 Chapter 3	Deliverable – **Chapter 2** **Progress Presentation 1** Action – Student, Supervisor
7 27 – 31 Mar	Project Demo & Chapter 3 Chapter 4	Action – Student
8	**MID SEMESTER BREAK**	
9 10 – 14 April	Project Demo & Chapter 4	Deliverable – **Chapter 3** Action – Student, Supervisor
10 17 – 21 April	Project Demo & Chapter 4	Deliverable – **Progress Presentation 2** Action – Student, Supervisor
11 24 – 28 April	Project Demo	Action – Student
12 1 April – 5 May	Project Demo & PSM Report	Action – Student, Supervisor, Evaluator

13 8 – 12 May	Project Demo & PSM Report	Action – Student, Supervisor, Evaluator
14 15 – 19 May	Project Demo & PSM Report	Deliverable – **PSM Report** Action – Student, Supervisor
15 22 – 26 May	**FINAL PRESENTATION (PA)**	Action – Student, Supervisor, Evaluator
16 29 May – 2 June	**REVISION WEEK** Correction draft report based on supervisor's and evaluator's comments during the final presentation session. Submission overall marks to PSM/PD committee.	Action – Student, Supervisor, Evaluator. PSM/PD committee.
	FINAL EXAMINATION	
1 3 – 7 July	Chapter 4: Design Chapter 5: Implementation	Deliverable - Chapter 4 Action – Student
2 10 July – 14 July	Chapter 5: Implementation Supervisors and based assessments evaluator with students	Deliverable – Presentation Progress 1 (PP1) Action – Supervisor, evaluator and student
3 17 July – 21 July	Chapter 5: Implementation Chapter 6: Testing	Deliverable - Chapter 5 Action - Student
4 24 July – 28 July	Chapter 6: Testing Based assessments supervisor with students	Deliverable - Presentation Progress 2 (PP2) Action – Supervisor and student
5 31 July – 4 Aug	Chapter 6: Testing Chapter 7: Conclusion Presentation Schedule	Deliverable - Chapter 6 Action – Student and PSM Committee
6 7 Aug – 11 Aug	Chapter 7: Conclusion PSM Report Draft (Complete) Determination of Student Status	Deliverable - Chapter 7 Action – Supervisor and Student
7 14 Aug – 18 Aug	Final Presentation (FP)	Deliverable - PSM Report Draft Action – PSM Committee, supervisor and student
8	PSM Report Draft Correction	Action – PSM Committee