E-HKBS PAPERLESS PATIENT RECORD SYSTEM

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(Multimedia Computing)

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And the last acknowledgement is express to all of my friends. Thanks for working out with the spotted errors and for providing invaluable advices for the project.
ABSTRACT

Hospital Kota Belud, Sabah (HKBS) was first built in 1946. Generally it can be considered as an old hospital, but now HKBS has made a lot of improvement in their buildings structure, numbers of staffs, numbers of patients and beds and so forth. However, HKBS currently is still using the old method that is using paper as their patients’ records. It seems that the current method (manual system) is not sufficient and efficient. It may or will lead to some major problems such as increase the cost of paper usage (lots of papers needed), lack of security (authorities and misfiling), unclear information (poor handwriting) and more.

E-HKBS Paperless Patient Record System (E-HKBS), is a propose application software which believes that has the ability to encounter the problems. Those abilities are such as accepting, storing and processes patients’ data. It will prepare a user interface for staff to perform their tasks such as mentioned previously.

E-HKBS will be built based on web-based system technology. Clients and server are normally consisted in this system. Clients will be available at every department in HKBS are ready to be used by staffs to perform their tasks. Meanwhile the dedicated server is able to store and manages patients’ data where it is a database.

Although manual system will be replaced by paperless system and it had happened in no matter what kind of departments, thus, the usability and accessibility of a system (user interface) cannot be put aside. Web-based system especially, always involves the good principal of usability and accessibility in their web interface.

This is what E-HKBS meant to be – applying technology with principals in the sense to produce quality, efficient, effective, and productive system for HKBS.
**ABSTRAK**

Hospital Kota Belud, Sabah (HKBS) mula dibina pada tahun 1946. HKBS kini telah banyak berkembang dari segi bilangan bangunan, pekerja, pesakit, katil dan sebagainya. Namun begitu, HKBS masih menggunakan kertas untuk mengendalikan rekod-rekod pesakit.

Teknik pengendalian maklumat pesakit (manual system) tersebut adalah kurang sempurna dan tidak efisyen. Perkara tersebut telah menyebabkan beberapa masalah seperti peningkatan kos kertas, kurang kawalan keselamatan maklumat pesakit, maklumat kurang jelas dan sebagainya.


Sistem E-HKBS dibina menggunakan teknologi sistem laman web (web-based system) yang melibatkan 'client dan server'. Client yang berada di setiap jabatan/wad sedia digunakan oleh kakitangan manakala server yang merupakan pangkalan data mampu menyimpan dan mengurus rekod-rekod pesakit.

Walaupun sistem manual bakal diganti dengan sistem tanpa kertas, namun kepenggunaan dan kecapaian (usability and accessibility) sesuatu sistem tidak diabaikan. Sistem E-HKBS sentiasa mempraktikkan prinsip ‘usability and accessibility’ dalam antarabahasa penggunanya (user interface).

Begitulah sistem E-HKBS – mempraktikkan prinsip ke dalam teknologi untuk menghasilkan sistem yang berkualiti, efisyen dan efektif kepada HKBS.
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CHAPTER 1: INTRODUCTION

1.1 Introduction

Final Year Project is a course which is compulsory to be taken by student of Faculty of Computer Science & Information Technology. This course is part in the fulfillment of requirements for pursuing the Degree of Bachelor of Science with Honours (Computer Science). The developed project is related to the real environment which had involved the cooperation of the researcher and subjects. Therefore, with this opportunity, the knowledge of Information Technology (IT) was being applied and practiced it in the real world. These had not only gained more knowledge and skills of an individual, but also the appreciation of the technology of IT in how it will solve major problems in the public.

Generally in Malaysia, there are some departments are still using manual system in their working environment. Here, applying the powerful IT can make a total changes in their department. So, generally this report is all about the process of implementation of IT in a department and how it can solves their problem.

Hospital Kota Belud, Sabah (HKB) was being selected as the research subject. Insufficient working process was found in the department where they are still using papers for storing the patients’ record (manual system). According to researcher, if this kind of method is being continued, it will lead to some major problems and gives some impact to the department in the future.
A system called E-HKBS Paperless Patient Record System, which was for the Final Year Project, has being developed to show how it may make changes in the department.

1.2 Problem Statement

Problems were being identified which had entitled to define the project’s objectives as well as the project’s scope. Below section will discuss about the current situation in HKB, problem statements and impacts.

1.2.1 Current Situation

Every hospital is dealing with a number of patients’ record. Sometimes it may reach from hundred to hundred thousands of records. This goes the same with HKB. Currently in HKB, respectively the Record Room (RR) keeps patient records. A patient record includes the patient’s register number, IC number, personal particulars and so forth. Since they are all written on papers, so, all of them are arranged inside a rack. Every department in HKB usually borrows the patient’s data for references but they must return it back to the RR. Only related staffs are able to borrow, update and make new record. Besides, only the officers of Medical Record Unit can dispose the patient records.
1.2.2 Problems of Current Manual System

From the studies of the current manual system of HKB, it has gave a clear view where there were some problems occurred (or will occurred in the future) in the department. Those problems where being analyzed and listed as the following:

i. Patient’s information still has to be written on papers, lots of papers.

ii. Spaces are limited for storing those records, whereas required spaces will increase when files are getting more.

iii. Written information problems (poor handwriting).

iv. Misfiling or misplaced the record (or might be lost though)

v. Problems when trying to trace (search) a particular patient’s record when he/she came for treatment and needed the data for review/update.

vi. Unsecured way of keeping those files. This may lead to unauthorized staffs where they may simply ‘take’ and ‘view’ them.

vii. Security when transferring the patient’s notes from one unit to the other.

1.3 Objectives

Problems of manual systems in HKB had being identified and well studied. Therefore, this had given some idea in defining the objectives or purposes of the project. Below are the lists of important objectives for the project:

i. Transform the manual system into a paperless system by using computer technology where it may increase the quality, systematic and secured of filing system, which keeps patients’ data in HKB.
ii. Able to change the whole personality of HKB that it will become more matured, respected and become a role model for other hospitals.

iii. Enhanced the working experience for each staffs in the hospital.

iv. As an early preparation in facing vision 2020 where during that time it is expected that each and every organization applied computer technology.

1.4 Scopes

The objectives of project had being defined well. Thus, it will make the selection of project scopes easier. By defining good and correct scopes will then lead the project to meet the needs and requirements of objectives. Appropriate project’s scopes and also outside the project scopes have been identified well.

1.4.1 Project scopes

i. Upgrade the manual system of HKB by developing a computer system software. It may have the functions as stated below:

   a. Staff may able to enter, delete, update and retrieve patients’ information.

   b. Administrator can manage users which will operate the E-HKBS system

   c. A database, which can stores the patients’ record (case note) and user account.

ii. The system will be developed by using web-based technology.

iii. Prepare a web-page interface for staff to perform their tasks.
iv. The interface of the web system has to be neat and simple, learnable and user friendly by applying the principal of usability and accessibility of a web page.

v. The system will have a search function so that tracing (search) of record can be done faster and effectively.

vi. For security purposes, staffs in every unit/ward, which intend to use the system, will have their own authority access (user account).

vii. Deletion of patient’s data/record can only be done by administrator of Medical Record Unit.

1.4.2 Out of project scope

i. Designing, configuring and installation/ implementation/ engineering of the intra networking systems.

ii. Internet setup or connection for the hospital.

iii. Creating HKB’s personal website, portal and staff information system.

iv. Medicine information system database such as diseases, sickness or other medicine information.

v. Using any existing real patients’ data or record for analyzing and testing purposes during the development of the system.

vi. Involving patients as the system user.
1.5 Proposed System (E-HKBS) and System’s Significance

E-HKBS Paperless Patient Record System - a system that had fulfilled the project scopes had being proposed. E-HKBS system is a development of web-based system. This system will be explained in detail in Chapter 2, which includes its comparison with the manual system. Advantages about it will also be explained in that chapter.

Nevertheless, the expected outcome of E-HKBS can be seen after the end of the development. Besides that, E-HKBS is expected to be user friendly, learnable and easy to use. Furthermore, it is applicable and ready for any upgrades in the future. Security of database also being concerned where only authorized staffs may operate the system and perform task. E-HKBS is significantly to increase the working processes performance. Besides, it is expected that the proposed system will change the reputation of the hospital where they are using computer system in their department. Thus, these will gives the confidence for the patients where they are receiving good services from the hospital.

1.6 Outline of Project Report

Overall, this seven chapters’ report will explain the E-HKBS system development in detail. Other related information regarding the system will also be included in this report. Table 1.1 shows their description:
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<td>Introduction</td>
<td>Gives a brief history and current situation in the hospital. Problem statements, objectives, project scopes and also proposed system were included.</td>
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<tr>
<td>2.</td>
<td>Literature review</td>
<td>Explains of related information about the proposed system such as principles, technologies and software are used. Reviews and comparisons on other existed systems are also included.</td>
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<td>3.</td>
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<td>This chapter is about the discussion of analysis and research which required in the system.</td>
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<td>4.</td>
<td>Design of Recommended System</td>
<td>Logical and physical designs are discussed in this chapter. Pictorial representations of flow of data in the system, database design and user interface design will be discussed.</td>
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<td>5.</td>
<td>Implementation</td>
<td>Implementation of developed system will be explained in detail in this chapter.</td>
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<tr>
<td>6.</td>
<td>Testing and Evaluation</td>
<td>Test and evaluate the system to know about its achievements level.</td>
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<tr>
<td>7.</td>
<td>Conclusion and Future Work</td>
<td>Conclude and giving some suggestions in improving the system’s quality in the future.</td>
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*Table 1.1: Outline of Project Report.*
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter will discuss on some studies, which are related and will help in the development of project. It is wise to make further studies on some principles, theories and also techniques that are written by other researcher or specialist. Although this may take some times but it is very useful during the development, in the sense of producing a quality system.

Generally, the studies in this literature review contain reviewing on existing systems and their comparison. Besides that, a detail description of the proposed system and its methodology/procedures will be discussed next. Some other principles are also being concerned such as the fundamental of web usability. Finally, Software and technology review will be explained at the end of this chapter of literature review.

2.2 Background of Hospital Kota Belud, Sabah

A brief description of Hospital Kota Belud, Sabah background which includes its history, vision and mission will be discussed in the following section:

2.2.1 History

Hospital Kota Belud (HKB) is situated in the West Coast of Sabah which is approximately 80 kilometer from the State Capital, Kota Kinabalu. HKB was being the first hospital built in the town of Kota Belud in year 1946. HKB began its operational as a cottage hospital with only 40 beds. At that time, only four staffs which two of them are medical assistant and the other two are