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ONLINE BLOOD DONATION RESERVATION & MANAGEMENT SYSTEM

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ONLINE BLOOD DONATION RESERVATION AND MANAGEMENT SYSTEM

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**This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Database Management)**


**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2006**

DECLARATION

I hereby declare that this project report entitles

ONLINE BLOOD DONATION RESERVATION AND MANAGEMENT SYSTEM

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

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DEDICATION

To my beloved parents, your love, support and understanding are my greatest inspiration.

To my supervisor, Miss Nor Mas Aina Md Bohari, for your guidance, encouragement and ideas.

To my friends, who always there when I'm in need.

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With the helps from the mentioned parties, I managed to accomplish the final year project successfully. Thank you.

ABSTRACT

Online Blood Donation Reservation and Management System (OBDRMS) is a web database application that enables the public to make online session reservation, to view nationwide blood donation events online and at the same time provides centralized donor and blood stock database. This application is developed by using JSP/Servlet technology from J2EE with the MySQL 5.0 as the database management system. The methodology used to develop this system as a whole is Object Oriented Analysis and Design; whilst, the database for OBDRMS is developed by following the steps in Database Life Cycle. The targeted users for this application are the public who is eligible to donate blood, system moderator, administrator from National Blood Center and the staffs who are working in the blood banks of the participating hospitals. The main objective of the development of this application is to overcome the problems that exist in the current system, which are the lack of facilities for online session reservation and online advertising on the nationwide blood donation events, and also decentralized donor and blood stock database. Besides, extra features in the system such as security protection by using password, generating reports, reminders of blood stock shortage and workflow tracking can even enhance the efficiency of the management in the blood banks. The final result of this project is the development of web database application, which is the OBDRMS.

ABSTRAK

Sistem Penempahan dan Pengurusan Pendermaan Darah secara atas Talian (OBDRMS) adalah aplikasi pangkalan data web yang membolehkan orang awam untuk membuat penempahan sesi secara atas talian, melihat kempen perdermaan darah untuk seluruh negara dan pada masa yang sama menyediakan pangkalan data penderma dan stok darah secara berpusat. Aplikasi ini dibangunkan dengan menggunakan teknologi JSP/Servlet dari J2EE dengan MySQL 5.0 sebagai sistem pengurusan pangkalan data. Metodologi yang digunakan untuk membangunkan keseluruhan sistem ini adalah Analisa dan Rekabentuk Berorientasikan Objek; pada masa yang sama, pangkalan data untuk OBDRMS dibangunkan dengan mengikuti langkah-langkah dalam Kitar Hayat Pembangunan Pangkalan Data. Sasaran pengguna untuk aplikasi ini adalah orang awam yang layak untuk menderma darah, penyelenggara utama sistem, pentadbir dari Pusat Darah Negara dan staf-staf yang bekerja di tabung darah dalam hospital yang mengambil bahagian dalam sistem ini. Objektif utama pembangunan aplikasi ini adalah untuk mengatasi masalah-masalah yang terdapat di dalam sistem semasa, iaitu ketiadaan kemudahan untuk membuat penempahan sesi secara atas talian dan pengiklanan untuk kempen perdermaan darah untuk seluruh negara, dan juga ketiadaan pangkalan data untuk penderma dan stok darah yang berpusat. Di samping itu, ciri-ciri tambahan di dalam sistem seperti perlindungan sekuriti dengan menggunakan kata laluan, penghasilan laporan, peringatan untuk kekurangan stok darah dan penjejakan aliran kerja boleh menambahkan keberkesanan pengurusan di tabung darah. Hasil akhir dari projek ini adalah pembangunan aplikasi pangkalan data web, iaitu OBDRMS.

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LIST OF ABBREVIATION

TERM	DESCRIPTION
3NF	Third Normal Form
AJK	Ahli Jawatan Kuasa
CPU	Computer Processing Unit
CVS	Concurrent Version System
DBLC	Database Life Cycle
DBMS	Database Management System
DCL	Data Control Language
DDL	Data Definition Language
DML	Data Manipulation Language
EERD	Extended Entity Relationship Diagram
ERD	Entity Relationship Diagram
FK	Foreign Key
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
ID	Identity
IDE	Integrated Development Environment
IE	Internet Explorer
J2EE	Java 2 Platform, Enterprise Edition
JDBC	Java Database Connectivity
JDK	Java Development Kit
JSP	JavaServer Pages
KG	Kilogram
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia

LAN	Local Area Network
MVC	Model-View-Controller
ML	Milliliter
NIC	Network Interface Card
OBDRMS	Online Blood Donation Reservation and Management System
ODBC	Open Database Connectivity
OOAD	Object Oriented Analysis and Design
PC	Personal Computer
PK	Primary Key
PSM	Projek Sarjana Muda
SDLC	Software Development Life Cycle
SQL	Structured Query Language
UML	Unified Modeling Language
URL	Uniform Resource Locator

CHAPTER I

INTRODUCTION

This chapter describes about the project background, problem statements, objectives, scopes, project significance, the expected output and finally the conclusion for this chapter.

The project background describes about the general idea of this project or system that is going to be developed. Meanwhile, the problem statements describes about the problems faced by the blood bank with the current system whereas the objectives are the aims to solve the problems. The project scope covers the system functionalities, the targeted users, the technologies used, system deployment and the chosen methodology to develop OBDRMS. The project significance states the importance of this project and the parties that will gain benefits from it. On the other hand, the expected output is about the functions and the features that the system will offer and lastly is the conclusion that concludes this chapter.

1.1 Project Background

The system that is going to be developed is Online Blood Donation Reservation and Management System (OBDRMS). This is a web-based database application system that is to be used by the hospital blood bank or blood center as a means to advertise the nation wide blood donation events to the public in order to

raise up the public awareness on the events and at the same time allows the public to make online reservation on their desired session. In addition, the system also provides functions for the hospital administrators to manage the appointments made by the donors, the blood stock and donor. This system also has the ability to keep track of the donor's donation records and the blood stock in the blood bank.

This project intends to computerize the blood and donor management system in a hospital blood bank in order to improve the record management efficiency due to the grown size of records of data.

1.2 Problem Statements

Currently, the public can only know about the blood donation events through conventional media means such as radio, news paper or television advertisements. Even if there is electronic means, it is only used to publicize about that hospital or medical center blood donation drives provided if that hospital or medical center is having an online portal. There is no nation wide information regarding the blood donation drive available on any of the portal.

Besides, for those who want to make blood donation, they cannot make early reservation or booking on the session and day that they are free online. It is a very important facility for those who are very busy and yet enthusiastic people to know and be sure when they can make blood donation rather than trying to figure out where and when they can make blood donation when they are free.

The current system that is using by the blood bank of most of the government hospital is manual system. With the manual system, there are problems in managing the donors' records. The records of the donor might not be kept safely where there might be missing of donor's records due to human error or disaster such as fire or flood. Besides that, human errors might occur when the staff keeps more than one record for the same donor.

There is also no centralized database used to keep the donors' records. Each blood bank is having their own records of donors. If a donor makes donation in different hospital, no previous records can be traced except if the donor brings along the donation certificate. Hence, the donor is considered to be a first-timer if they make blood donation in a new place.

Without an automated management system, there are also problems in keeping track of the actual amount of each and every blood type in the blood bank. Man-made error such as forget to record the usage or input of the blood can cause the inaccuracy in the amount of certain blood type available in the blood bank. In addition, there is also no alert available when the blood quantity is below its par level.

1.3 Objectives

After defining the problems exist in the current system, the objectives of the OBDRMS are as follows:

1. To provide a means for the hospital's blood bank to publicize nationwide information about the blood donation events to the public.
2. To allow the public and organization to make online reservation on the day and session that they want or free to make blood donation.
3. To provide an efficient donor and blood stock management functions to the blood bank by providing the logging functions in order to control and trace the workflow.
4. To provide authentic and authorized features to the current system where private and confidential data can only be viewed by authorized user.
5. To provide the recording functions for every process of the blood in order to keep track of the blood stock accurately.

6. To provide backup and recovery and data integrity features to the database.
7. To improve the efficiency of blood stock management by alerting the blood bank administrator when the blood quantity is below its par level.
8. To provide synchronized and centralized donor and blood stock database to the blood bank.

1.4 Scopes

The deliverable of this project is the OBDRMS, which is a web-based database application system. The scope of the project will cover the system functionalities, technologies used, the targeted users, system deployment and methodology.

1.4.1 Scope of System Features and Functionalities

The scope of system functionalities is based on the functions and features available in the system. The first part described about the features available in the system database and the latter part describes about the modules available in this system.

1.4.1.1 Database Features

The effectiveness of a system relies a lot on the features provided by the database. Generally, there are three main (3) features available in the database of the OBDRMS, which are:

1. Data Encryption

The database encryption is a very important feature to protect the data from being attacked by the intruders especially the sensitive and confidential data such as the passwords.

2. Backup and Recovery

This feature ensures the availability of consistent data in the event of data loss. Periodic data backup will be used to ensure the minimum loss of data.

3. Data Integrity

The data integrity feature is enforced with the proper use of primary and foreign key rules where it reduces redundant records in the database.

1.4.1.2 System Functions or Modules

The functions or modules that the OBDRMS will provide are described as follows:

1. Login

The system provides security features through password security where only authorized user can access to the system with different authorization level.

2. Publication of nation wide blood donation event

This module allows the blood bank administrator to publicize the nation wide blood donation events online. The public can view the venue and time of the blood donation drives to be held.

3. Online Reservation and Management

The public can make online reservation on their desired session and date. The blood centers' administrators can then manage their appointments by either to approve or reject the appointments.

4. Blood stock management

The blood bank administrators can manage the blood stock starting from the blood collection, to blood screening, processing, storage, transference and lastly transfusion through this system. Moreover, there is also logging function available so that each process or workflow can be traced from the database. The system will also give an alert to the administrator whenever the blood quantity is below its par level.

5. Donor Management

The records of all donors and their history are kept in one centralized database and thus reducing duplicate data in the database. Donors can make blood donation in any blood center and their records are maintained by the OBDRMS.

6. Reporting

The system is able to generate pre-defined reports such as the list donors, staffs, and hospitals, the blood quantity in a blood bank, and the workflow for each blood donation process.

7. Others

Other management functions such as the management of participated hospitals or medical centers and system users and their authorization levels are also available in this system.