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JUDUL: PHARMACY MANAGEMENT SYSTEM

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Saya LEE MEI CHOO
(HURUF BESAR)

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PHARMACY MANAGEMENT SYSTEM

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2004

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DEDICATION

To my late father, Mr Lee Hock Lye, for without him, this would have been impossible.

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ABSTRAK

Sistem Pengurusan Farmasi akan dilaksanakan di Jabatan Farmasi, Poliklinik Komuniti Ayer Keroh. Jabatan ini menggunakan sistem manual untuk menguruskan dan mengendalikan urusan seharian mereka. Sebagai contoh, apabila stok ubatan baru sahaja diterima, pegawai farmasi terpaksa mencatatnya secara manual. Ini secara tidak langsung menambahkan beban tugas pegawai farmasi. Masa yang diluangkan untuk membuat kerja-kerja manual ini sebenarnya boleh digunakan untuk memberi kauseling dan nasihat kepada pesakit yang memerlukannya. Dengan adanya Sistem Pengurusan Farmasi, ubatan dapat diproses lebih cepat. Sebarang percanggahan ubat dalam preskripsi dapat dikesan oleh sistem. Sistem Pengurusan Farmasi mementingkan metodologi berorientasikan objek (OO), yang terdiri daripada Requirements Modeling, Analysis Modeling, Design Modeling, Implementation Modeling, Coding, Quality Assurance & Testing and Maintenance. Unified Modeling Language digunakan untuk menunjukkan interaksi antara pengguna dan sistem. Di samping itu, Sistem Pengurusan Farmasi menggunakan senibina 3-tingkat. ASP.NET digunakan sebagai bahasa pengaturcaraan. Kesimpulannya, Sistem Pengurusan Farmasi dibangunkan untuk memelihara produktiviti, keberkesanaan dan keselamatan di kalangan pesakit di Poliklinik Komuniti Ayer Keroh.

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ABSTRACT

Pharmacy Management System revolves around the Ayer Keroh Community Polyclinic's Pharmacy Department. Currently, the department utilizes a manual system to manage and monitor the pharmacy. This involves manual entry upon arrival of new batches of drugs. In addition, ordering of drugs is also done manually. Thus, in this aspect, the workload of the pharmacist increases. With the proposed system, drugs will be processed easily. Any drug interactions and contradictions in the prescription will be detected by the system. Stock replenishment is invoked when the quantity-on-hand is lesser than the reorder point. Pharmacy Management System emphasized the Object-Oriented life cycle as the software methodology because classes and objects can be reusable. The object-oriented life cycle phase comprises of Requirements Modeling, Analysis Modeling, Design Modeling, Implementation Modeling, Coding, Quality Assurance & Testing and Maintenance. Unified Modeling Language is used to model the system functionality and interactions between the users. On the other hand, this system is designed on the 3-tier architecture. Microsoft Windows is chosen as the application platform integrated with Microsoft ASP.NET as the programming language. To conclude, Pharmacy Management System is developed to maintain the productivity, efficiency and patients' confidentiality at the Ayer Keroh Community Polyclinic.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	MEANING
AKCP	Ayer Keroh Community Polyclinic
A_M	Analysis Modeling
ASP.NET	Active Server Pages.NET
D_M	Design Modeling
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	Hyper Text Transfer Protocol
I_M	Implementation Modeling
IT	Information Technology
JSP	Java Server Page
MS	Microsoft
ODBC	Open Data Base Connectivity
OO	Object-Oriented
OS	Operating System
PMS	Pharmacy Management System
PSM	Projek Sarjana Muda
Q_AT	Quality Assurance & Testing
R_M	Requirement Modeling
RM	Ringgit Malaysia
TCP/IP	Transmission Control Protocol / Internet Protocol
UML	Unified Modeling Language

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IE	Internet Explorer

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CHAPTER I

INTRODUCTION

1.1 Preamble/Overview

This chapter gives an overall introduction of the project. It describes the overview of project, problem statements, objective, scopes, contributions and the expected outcome of the project.

Information and communication technology (ICT) plays a vital role in Malaysia's healthcare industry today. This leads to various studies and researches being conducted to selected government healthcare facilities. It is necessary to ensure a technologically appropriate, equitable, affordable, efficient, environmentally adaptable and consumer-friendly system, designed to fully utilize the ICT for the maximum benefit in the healthcare industry, in respect of government-based facilities. In seminar held in June 1998 on Managed Care Organizations, *There are absence of integrated medical benefits, absence of uniform fees schedule and under-utilization of ICT in many Malaysia managed care organizations. (Dr Lim, Kuan Joo, 2001).* This particular remark subtly reminded the appropriate parties that the healthcare industry in Malaysia, especially in the government sector is in dire need of improvement in order to be of an equivalent competitor, if not, better than their brothers and sisters in the private sectors.

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Therefore, in order to exploit the ICT in healthcare industry, Pharmacy Management System is being developed. PMS is a robust, integrated pharmacy management system built on state-of-art client/server technology. PMS deals with the maintenance of drugs and consumables in the pharmacy unit. The set-up of PMS will ensure availability of sufficient quantity of drugs and consumables materials for the patients. This will enhance the efficiency of clinical work and ease patient's convenience, bearing in mind that Malaysia is heading towards pharmaceutical care of patients. In addition, PMS will be able to process drug prescriptions with ease. PMS is designed to detect any drug interactions, contraindications and polypharmacy in a prescription. All of these are very common yet fatal mistakes that often overlooked by the pharmacy assistant upon dispensing the medications to the unsuspecting patients. This common mistake is the number one factor in death-associated medical errors [7,16].

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1.2 Problem Statement

The proposed system will be implemented in the pharmacy unit of Ayer Keroh Community Polyclinic. At present, manual system is being utilized here. This system requires the pharmacist to manually monitor each drug that is available in the polyclinic. This involves manual entry upon arrival of new batches of drugs and upon drugs' movement out of the unit, e.g. dispensing to patients or product recall or loan to other clinics/hospitals. Upon a certain period, e.g. every month, the pharmacist is required to generate reports on the movement of drugs. This is to monitor the justification of ordering in order to replenish the already diminishing stocks. In addition, ordering of drugs is also being done manually. Significant amount of time is allocated for writing the order as one needs to go through the stocks' balance and based on the figures, one is supposed to make a rough estimate of the amount to order. This usually led to mistakes as one may over or under-order. Thus, in this aspect, the workload of a pharmacist increases. As a result, sometimes, patient care, in terms of counseling, is compromised due to time constraints.

1.3 Objectives

- To identify medication pattern usages, e.g. dosing regimen.
- To minimize human errors in medication safety
- To facilitate accessibility of drugs' information and information management among clinical employees
- To provide optimal drugs inventory management by monitoring the drugs' movement in the pharmacy unit.
- To be able to generate reports within a significantly short period of time, despite simultaneous usage of database for the purposes stated above.

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1.4 Scope

The user for this system will be the Ayer Keroh Community Polyclinic's Pharmacy Department and physicians. The information management provided by the system involved all the clinical employees of the clinic. This accessibility of the information will be of great advantage as it reduced further medical errors associated with physicians and nurses.

This system handles all aspects of the inventory control function. It allows the pharmacist to receive new batches of drugs, delete obsolete drugs and modify the current dosage and indications of a drug in the database. Furthermore, the system eases the process of stock replenishment.

On the other hand, PMS enables dispensation process. It stores all the physicians' prescription of the patients. A summarized list of the drugs dispensed to the patient can be viewed for monitoring purposes.

PMS will be able to generate report on the list of drugs dispensed in the polyclinic for a given time period. A statistically graph will depict the dispensed drugs data in respect to their averages, variances, frequency distributions and confidence intervals for medications and patients. A report will also be generated to inform and alert the user if the stock holding quantity reaches a low level. Thus, the pharmacist will need to replenish the drugs.

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