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JUDUL: LIBRARY MANAGEMENT SYSTEM

SESI PENGAJIAN: 2004/2005

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LIBRARY MANAGEMENT SYSTEM

MOHD FAIRUZ ANWAR BIN MAHADI

This report is submitted in partial fulfillment of the requirements for the Bachelor of Information and Communication Technology (Software Development).

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2005

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I admitted that this project title name of

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DEDICATION

Specially dedicated to
My beloved one and family members who have
encouraged, guided and inspired me during the long hours of writing.

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The main objective of this Project Sarjana Muda 2 is to gain first-hand experience of project working as an engineering professional, including the technical application of engineering methods. This is for students to provide themselves to faces these new challenges and to ensure that they abide by the rules and regulation of KUTKM and the project criteria. This is KUTKM students will undergo the Project Sarjana Muda 2 successfully, effectively and to the best of their ability while maintaining the good name and reputation of KUTKM.

I'm would like to express my appreciation to the many people who have contributed to the successful completion of this Project Sarjana Muda 2. Most especially, I would like to thank my faculty supervisor Puan Wahidah Binti Md. Syah for supervise me during my Project Sarjana Muda 2 and En Mohd Faizal as my panel.

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ABSTRACT

The title of this thesis is "Library Management System". The main purpose of LMS to manage library daily operation efficiently. This system basically has four type of module that handles daily activity for the library. The four modules is User Manage Account module, Search record module, Book borrowing system module and Report Generator module. The library system is focusing to solve two major problem in case of the number of hours the library can get from the librarian and the average time in order to process a case of the new books. By using this system, the operation of borrowing and managing inventories is paperless. The processes of searching for books become much easier with just a help of mouse click. This library system provides a user-friendly data entry with dropdown button menu, list box and checkbox in purpose to make the input entry easier to understand and use. This library system also created to ensure that the library items store properly in order to maintain their security. Library Management System version 1.0 will be fully operated into Sekolah Menengah Kebangsaan Ayer Keroh's library once completely constructed.

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ABSTRAK

Tesis yang bertajuk "Library Management System" ini dibangunkan untuk menguruskan operasi harian perpustakaan dengan lebih efisien dan teratur. Sistem ini secara asasnya mengandungi empat modul yang merangkumi operasi pengurusan perpustakaan. Empat modul yang digambarkan ialah Pengurusan Akaun Pengguna, Carian rekod, Sistem Pinjaman buku dan Penghasilan laporan. Pembangunan sistem ini bertujuan untuk menyelesaikan dua permasalahan yang dihadapi oleh sistem secara manual iaitu jangkamasa yang mampu diperuntuk oleh pustakawan dan masa yang mencukupi untuk memproses kemasukan buku-buku baru. Dengan sistem ini, proses pinjaman buku dan pegurusan perkakasan perpustakaan tidak bergantung kepada kertas lagi. Sistem ini berciri mesra pengguna di mana proses memasukkan data adalah ringkas dan mudah difahami. Sistem ini juga dibangunkan bagi tujuan penyimpanan data yang tersusun dan terlindung. Apabila telah siap dibangunkan sepenuhnya, sistem ini akan mula beroperasi di perpustakaan Sekolah Menengah Ayer Keroh.

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LIST OF ABBREVIATIONS

KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
FTMK	Faculty of Information Communication Technology
PSM	Projek Sarjana Muda
CD-ROM	Compact Disk-Read Only Memory
DFD	Data Flow Diagram
ERD	Entity Relationship Diagram
ICT	Information Communication Technology
AUT	Application Under Test
GUI	Graphic User Interface
JAD	Joint Application Development
RAD	Rapid Application Development
LMS	Library Management System
SDLC	System Development Life Cycle
CPU	Centre Processor Unit
DBMS	Database Management System
ODBMS	Object Database Management System
SQL	Structured Query Language

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CHAPTER I

INTRODUCTION

1.1 Preamble/Overview

The Library management system version 1.0 (LMS) is design to provide one systematic system for librarians to manage booklist, inventory and borrowing process. Basically the system will be created using the Visual Basic and the system database will be build by Microsoft Access. The system is build for Sekolah Menengah Kebangsaan Ayer Keroh's library.

The Library management system version 1.0 provides two types of application method for different user, regular user and administrator user. For regular user, they only can access the booklist function and book searching function. Only administrator is allowed to access to the restricted function such as create new user account.

The Library management system will store all the books and members information that consist book number, book title, author name and racks to the system database. The system also provides search function to help students find the book by number of book. Search function will search through the books database to look for the book and view where the book is situated. For the administrator user, only librarians have access to view or edit data from the system databases. Administrator user will handle administrative functions such create new LMS user account and decide the number of days allowed for the borrowed books. User needs to enter correct password and user id before user can access this function. From here, user can add, delete or update the book and borrower database.

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Since the amount of students/borrowers and books is increasing, it is necessary to prepare a space to store them. After a long time, the record book will be stockpiled. It needs well organized and it is hard to find the record in short time because they need to find it one by one. This will cost extra time and is not efficient at all.

Based on present method, librarian needs to record the entire booklist and borrower list manually using a logbook. This manual system is currently misspend time and might cause mistakes while recording process. The library's inventory such as books is always changes within certain time because of additional or lost of those inventories. With the present manually system, the monitoring process for this inventory become complicated. For example, if one over hundreds of books is lost, they need to check one by one of novel name through list of hundreds from logbook to search for the lost book data.

With the Library Management System Version 1.0, librarians are able to monitor and manage library's inventory much easier and more efficient. There is large amount of database to support the future needs and will give added advantages to the all library operations.

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1.2 Problem Statement

Basically, problem statement often have two elements which is the problem itself, stated clearly and with enough contextual detail to establish why it is important and the method of solving the problem, often stated as a claim or a working thesis.

1.2.1 Problem Analysis

There are some problems in previous system operation, which can be state in the documentation. There are: -

i) The number of hours the library can get from the librarian:

The librarian have a limited hours to complete manage all the library jobs such as take care of the arrangement and maintenance of library items.

ii) The average time in order to process a case of the new books:

The librarian need to misspend time in proper to manage of the book items along with the details like the title of the book, the publisher's and author's name, edition and whether that book is available for issue purpose.

1.2.2 Methods of Solutions

There are several types of solution for the problem statement above after the problems have been analysed in previous phase of development. All the specifications have referred to the problem statement below: -

i) The number of hours the library can get from the volunteers/librarian

Major categories are created to define specified task is conducted by chosen volunteers and the related items are kept into them so that the required item can be made available any time with ease. Plus quick processing of library monitoring status such as producing report for each activities and task.

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ii) The average time in order to process a case of the new books

With the help of reports like the stock-in-hand of the items existing in the library and subscription details report, the operation of process a case of new books become faster and easier.

1.3 Objectives

The main objectives of Library Management System are:

i) To build a system that can receive input and generate automatically output in easy way and short time.

ii) To build a monitoring system that be able to monitor and manage all library operations efficiently.

iii) Give an opportunity to librarians to reduce the time spends and mistake that always happens during manual method.

iv) To store properly the library items in order to maintain their security.

v) To enter and preserve details of the various issues and keep a track on their returns.

vi) To maintain the suppliers and publishers details so that the order can be placed on time.

vii) To maintain the record of the subscribed items.

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1.4 Project Scopes

It is necessary to define a scope when built up a project and following is the scope of Library Management System version 1.0.

This system is build for Sekolah Menengah Kebangsaan Ayer Keroh's library, so the system will store information of all books and records of borrower. However only the librarians who have specified access such administrator can handle administrative functions of this library system. This can avoid unauthorized user to enter the restricted area of this system especially system databases.

Basically this system got four major functions; there is Library User Account Manage System, Search Record, Book Borrowing System and Report Generator. From all of four functions mentioned, The Library User Account Manage System can only be access by LMS administrator.

Library Management System version 1.0 will be fully operated into Sekolah Menengah Kebangsaan Ayer Keroh's library once completely constructed. The interface and database will only design in single language, which is English.

1.5 Contributions

Using this system, the operation of borrowing and managing inventories is paperless. It means we do not need to use any paper for the system and logbook is no longer will be library database. It will reduce the usage of papers.

It is more efficient and makes the process of searching for books become easier. These because what they need to do is just insert information of book such book's id and system will find and views the book item such author, category and publisher. The system will also view rack that the book are situated.

The process of keeping borrower information and books inventory become more sophisticated. Each operation for both functions is handle by the system to

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define the period of time for borrowing, penalty calculation for late return book and total of books that still remain every week for inventory check.

The system is easy to use. User just need to insert input and click some button to get output for all functions provided by Library Management System Version 1.0. The interface design of the system is attractive. This system provides a user-friendly data entry with dropdown button menu, list box, and checkbox in purpose to make the input entry easier to understand and use. The time of loading is fast. So, the users do not need waiting for a long time to get result from the system.

1.6 Expected Output

Based on the expected end-result for the Library Management System, below is the summary of expected output for the module exist in Library Management System: -

i) Library User Account Manage System

a) The user with valid user name and password can access the Library Management System.
b) The system displays the user account information including user id and password.
c) The system shall give the response for invalid username and password.
d) The system allows only administrator to choice actions including removing, changing and adding user account and account information.

ii) Search Record

a) The system allows the user typing in search criteria including book id as a key word for the search criteria.
b) The system display books item such title; author and publisher that are match the search criteria.
c) The system shall give the response for invalid search criteria.

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iii) Book Borrowing System

a) When check out the books, when required by librarians, the system show the information about books which is borrowed before and not returned yet including book id and member id.
b) The system allows the user to specify a checking out book using its Id.
c) The system allows the user to specify a checking in book using its Id.
d) The system allows the user to specify that a penalty is paid after book is consider check out (return).
e) The system commits the check in and check out data to the database as soon as the data is entered.

iv) Report Generator

a) The system have a report feature that will allow the user to generate a report showing the information of all the sign out book in a time period which is the search criteria input by user. The information includes the number of books, the time period and the information is grouped by book categories.
b) The system has a report feature that will allow the user to generate a report showing the information about all the users who have overdue books and penalty.
c) The system shall generate those reports to the display, a file or a printer that is linked to the system.

1.7 Conclusion

As a conclusion, this chapter describes the feasibility study and summary of analysis about Library Management System. It is including the objectives of project implementation, scopes of project, the aspect of research, the project contributions and the expected output. The methodologies of Library Management System to gathering the collection are from a series of observation and researching. The observation process enables the identification of safety issues and systemic deficiencies outside of the formal audit process. The research method can be analysed from journals, books, experts and Internet resources.

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CHAPTER II

LITERATURE REVIEW

2.1 Introduction

The literature study in previous system could give more references in system development process. All the advantages in the previous system can be implement during the system development. The characteristic of the previous system such as interfacc, module flow, process and security level should be improve and enhance from the previous system.

The library management feasibility study encompasses all of the research activities that will discuss in this chapter. In this chapter, there are discussions about the information that related from library management concepts includes fact-finding, project theory, previous system study and result from literature study.

Library Management System Version 1.0 is the system that been created and modified from the problem that occur on current/manual system. Specific researches need to be form to expel all the weaknesses and strengths of current library systems. There are four types of source on how to get the evidence for the research purpose: -

Systems are created to solve problems. The former case study can think of the systems approach way of dealing with a problem. The purpose of former case study implementation is: -

i) To understand and define the different phases of system developments life cycle
ii) To know and studied the components of system analysis
iii) To know the components of system designing

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