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JUDUL: LIBRARY SYTEM FOR EDUCATIONAL ORGANIZATION

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## **LIBRARY SYSTEM FOR EDUCATIONAL ORGANIZATION**

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

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

## DECLARATION

I hereby declare that this project title name of  
**LIBRARY SYSTEM FOR EDUCATIONAL ORGANIZATION**

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

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## **DEDICATION**

To Almighty, Allah SWT

To my greatest idol, Rasulullah SAW

To my beloved parents, Amran Ahmad, Siti Zabidah Yusoff and My Family

To my kind supervisor, Mr Sazalinsyah Razali

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THANK YOU

## **ABSTRACT**

This project is entitled Library System for Educational Organization. This report clarifies the development process of library system from the beginning until the end. This library system is developed in order to enhance the business flow of the existing library system. Some features are added in this system in order for it to become more systematic and efficient. Kolej Universiti Teknikal Kebangsaan Malaysia library was the main information resource and testing of this project. Currently, most of the libraries are still using manual process in order to complete their business flow. This system main objective is to solve the problems that always occur at the circulation counter where loan, returning and renewal process are done. The manual process are replaced using computerize system and at the same time paper usage is reduced. This library system ease the circulation process and provide efficient online registration and book renewal process. Object Oriented Analysis and Design was chosen as a methodology to develop this system. The main users of this system are librarians and patrons, and each user has their own access privileges to this system. The main functionalities of this system includes loan, returning and renewal process, book-alert, generate report, searching, and online database. This system proved to be beneficial to library management and successfully achieved its objectives.

## ABSTRAK

Projek ini bertajuk *Library System for Educational Organization*. Dokumen ini menerangkan tentang proses pembangunan sistem perpustakaan secara berperingkat bermula dari peringkat awal hinggalah ke peringkat akhir. Sistem perpustakaan yang dibangunkan adalah untuk mempertingkatkan aliran proses yang berlaku dalam sistem perpustakaan yg sedia ada. Terdapat beberapa ciri yang telah ditambah untuk memastikan sistem yang bakal dibangunkan adalah lebih sistematik dan efisien. Perpustakaan Kolej Universiti Teknikal Kebangsaan Malaysia telah dijadikan sumber utama untuk mendapatkan maklumat. Kebanyakan perpustakaan yang ada sekarang, masih lagi menggunakan proses manual untuk menjalankan aliran proses mereka. Sistem ini dibangunkan adalah untuk menyelesaikan masalah yang wujud terutamanya di kaunter sirkulasi di mana proses peminjaman, pemulangan dan pembaharuan tarikh pinjaman berlaku. Pembangunan projek ini adalah penting untuk memudahkan aliran proses yang berlaku. Proses yang berlaku secara manual akan digantikan oleh sistem berkomputer di mana dalam masa yang sama ia menjimatkan penggunaan kertas. Sistem perpustakaan memudahkan proses yang berlaku di bahagian kaunter sirkulasi dan juga menyediakan pendaftaran atas talian. Metodologi yang akan digunakan untuk membangunkan sistem ini adalah *Object Oriented Analysis and Design*. Pengguna sistem yang dibangunkan ini adalah terdiri daripada ahli perpustakaan dan juga pustakawan dan setiap pengguna memiliki tahap tertentu untuk mengakses sistem ini. Kefungsian sistem ini adalah termasuk proses pinjaman, pemulangan dan pembaharuan tarikh pinjaman, *book-alert*, laporan statistik, carian dan juga pangkalan data atas talian. Sistem ini terbukti berfaedah kepada pihak pengurusan perpustakaan dan mencapai objektif pembangunan dengan jayanya.

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## LIST OF ABBREVIATIONS

<b>Terms</b>	<b>Meaning</b>
ASP	Active Server Page
CBD	Component Based Development
CSCI	Component Software Configuration Item
ERD	Entity Relational Diagram
IIS	Internet Information Service
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
LSEO	Library System for Educational Organization
MMU	Multimedia Universiti
OMT	Object Modeling Technology
OO	Object Oriented
OOAD	Object Oriented Analysis Design
OPAC	Online Public Access Catalogue
PTAR	Perpustakaan Tun Abdul Razak
RAD	Rapid Application Development
RUP	Rapid Unified Process
SMS	Short Message System
UC	University of Canterbury
UIA	Universiti Islam Antarabangsa
UML	Unified Modeling Language



## LIST OF ATTACHMENTS

<b>ATTACHMENT</b>	<b>TITLE</b>
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# **CHAPTER I**

## **INTRODUCTION**

### **1.1 Overview**

Chapter 1, the first chapters in this report, describes about the purposes of the project. It gives adequate information about the performance and also overview the rest of the system. This chapter starts with project background which is describes about current system and also the overview about the project that have been proposed. After that, it will be continue with problem statements and objectives for this project. The project boundaries will be explained in detail in scopes section. This chapter will be continued with project significance, expected output and conclusion.

### **1.2 Project Background**

The library fosters excellence in education, research and services by providing access to knowledge and optimal learning environment. Library is a place that provides comprehensive access to facilitate information transfer. Library also has a responsibility to provide learning opportunities and resources which assist user in developing efficient and effective skill in accessing and

organizing information. Library will provide significant resources in a variety format, including books, recorded materials, journals, magazines, thesis and etc.

Mostly, current library system in educational organization still uses manual process in order to complete process flow such as borrowing and returning. Usually, patrons consist of students, staffs, lecturers, and outsiders. All process needs patrons to apply a library card. Patrons wishing to receive a library card should complete a library card application. For students, lecturer, and staffs library card is always valid, but for the outsiders the privilege expires on three years after the date of issue. Any card can be renewed on or around the time the card is expired.

By using manual system, each process that occurred must be directly interacting with librarian especially in borrowing and returning process. Furthermore, patrons have to search the books that they want by manually and this process will take a lot of time. For borrowing process, librarian will recorded the patron's info, books info and also the date to return the book in the card at the back of the book. After that, the card will be included in the library card. Each patron has a different privilege about the quantity of the books that they can borrow. Students, staffs and outsiders can borrow ten books at one time while lecture have a priority to borrow twenty books at one time. Duration times for return the books usually is two week until one month.

For returning process, patrons must be directly interacting with the librarian at the counter. Librarian will check the borrowing status of the patrons or fine that they have to pay. Patrons must pay a fine if the date for return the books are overdue the duration times. Usually, patrons must pay a fine RM0.50 for each day and for each book. Because of this problem, the aim of this system is to develop new assessment tools to support the library services, resources and activities.

Nowadays, information and communication technology (ICT) brings tremendous changes in the library, which makes ICT as a platform to spread the latest information. Many parties are interested to increased ICT usage in total, in order to ensure the management process run smoothly. Because of that, Library System for Educational Organization (LSEO) has been proposed to be developed and implemented for educational organization. This library system is proposed because to develop effective facilities with the latest technology.

In this system, a few features were introduced in order to make the process flow more systematic and effective. The concept of the process flow is same but, only the implementation is quite different. This library system will use bar code to ensure error-free when entry of book numbers, and ISBN. The data of the books will be defined using the bar code at the book. Besides that, this system also uses Short Messenger Services (SMS) alert to remind patron about related things such as the day to return the book. Patrons must return the book on the time, or else they will have to pay a fine. Because of that, SMS is one of the methods that are used to decrease the problem that occurred in patron's side.

This system also gives advantages to the patron where patron is able to find the book that related using searching module. Searching module will provide the information that is needed such as book name, author and simple description of the book. Hence, patrons do not need to come to the library if the book needed is not in the library list. Besides that, in order to ease the evaluation of services, statistic module is producing for library management. Renewal module also provided in this system to ease the process to renew the date of returning.

### 1.3 Problem Statements

Mostly the library for educational organization still uses a manually system to handle the process flow in the library especially in borrowing and returning process. In the manual process, library cards will be used to record the books and patron information. Problems that occurred in such manual process will implicate the both parties of the users which are library management and patrons.

The problems that occurred in manual process at library side are:

**i) Probabilities of human error**

Probabilities of human error are high especially while data entry process happens. This mistake always occurred because librarians have to manually enter the books and patron information when a patron wants to borrow books. Bar code application is proposed in order to overcome this problem.

**ii) Wasting time in returning process**

The returning process that occurred will take a time because librarians need to find the information about the books and patron's in the library card. This problem can be overcome because all data stored in the same database and do not need a long time to access the information about patron and the books.

**iii) More space usage in filing**

The current library system used a manual filing where a lot of paper usage in order to record the data of the books and patrons. This process will cause a more space usage in filing. Using this system, the data management more systematic and process likes creation record, maintaining and updating, disposition and write-off data can occur smoothly.

**iv) Data difficult to manipulate repeatedly**

Data manipulation process such as to update or renew the duration time of borrowing quite difficult and take a time to do in repeatedly. For renew the duration time of borrowing, librarian should find the patron record and repeat the borrowing process again.

The problems that occurred in the manual process at patron side are:

**i) Forget to return the books**

Patron always forgot to return the book on time. The fine will be increased on a daily basis if patrons do not return the book on time. Because of that, SMS application is a feature that is included in this system to remind the patron about returning process in that day.

**ii) Difficult to get information about the books**

Quite difficult for the patron to get information about the books that the library has. Because of this factor, patron should have to come to the library and find the books that they need by their own. Using this system, patron can search the book in the library list without being the library. Besides that, librarian also will remind the patron about newly arrived books using email alert.

**iii) Difficult to renew the date of returning**

Patrons have a problem when they need to renew the book. Patrons should come with the book at circulation counter and the new date of renewal will updated in the book. Because of this factor, renewal online will provided to cater this problem.

## 1.4 Objectives

This project is carried out with the following objectives. There are four fundamental objectives of this project:

**i) To ease the process flow**

To ensure the best services will be delivered to both parties of the user which are library management and patrons in order to ease the process flow especially in borrowing, returning, searching, renewal and etc.

**ii) To ensure the system have a software quality**

To ensure the system possess software qualities such as correctness, reliability, efficiency, integrity and usability in order to overcome the problems that occurred in manual process.

**iii) To reduce the probabilities of human error**

Human error can be reduced especially in data entry during borrowing and returning process.

**iv) To easily manage the data**

To provide useful data management ability that can manipulate the data more effectively and have a flexible system.

## 1.5 Scopes

This system has been proposed to develop at Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM), in order to enhance the current system. The users that are involved in this system are patrons and library management. To ensure this project work and more specifically clear, it will be conducted on the following project scope:

### i) **Registration Module**

Patrons for library are students, and lectures. Each of them must register to be a member and have a capability to use the facilities that are provided.

### ii) **Authorization Module**

This module is responsible for managing the access right between library users. This module will categorize the user based on priorities which are admin and patrons.

### iii) **Borrowing Process Module**

This module will be used by librarian when borrowing process is happen. Using this module, librarian will keep the information of the books using bar code. The librarian has an access right to manipulate the data such as insert, delete, search and update.

### iv) **Returning Process Module**

This module is for librarian to handle the returning book process. Librarian will flag it the temporary data of the patron to proof that returning process is done.