



## ELECTRONIC LIBRARY MANAGEMENT SYSTEMS

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### **Abstract**

*Initially Libraries offered manual services, which took much time to organize. As time passed, we were introduced to the digitized format of the services that include storing, retrieving and arranging of books in electronic media formats. In this paper, the basic idea is to introduce a reminder via email and SMS to return back the books borrowed or to renew the books by extending the time period, for the students studying. This can be implemented through .Net and SQL Server which helps in building the software and updating the database. Through this the institute's library can keep record for the availability of books by the particular person and also their overdue charges.*

### **Introduction**

*“Without Library what can we have? No past and No future” - Ray Bradbury*

### **Evolution of Libraries**

Earlier the libraries consisted of archives and early form of writing. As time passed, the libraries generally consisted of written books and the libraries were classified into private and public libraries. The books were related to sacred and secular. Over the years, as books increased it led to building of libraries which were classified into public and private libraries. The increase in secular libraries led to increase in establishing access for public libraries. Demand for books led to increase in public libraries today.

As libraries came more and more into existence, they were classified into

1. Academic Libraries
2. Public Lending Libraries
3. Children Libraries
4. Research Libraries
5. Special Libraries

### **Need of Library Management System**

It is the software that gives solutions for the staff and the professionals working in library.

The Library Management takes control by the following process

### **Planning the construction of new libraries**

As population and demand rises for the book the necessity to build new libraries do rise. In order to meet the needs of the people, construction of new libraries and supplying with larger collections of books from different genre play a vital role.

### **Building maintenance**

It involves maintenance of electrical repairs, mechanical repairs, paintings, plumbing systems. Ensuring safety measures during the emergency with exit gates.

### **Digital catalogues**

Perform simple searches, quick searches and searches on particular author or book are the main aspects in the digital catalogues.

### **What does Library Management System do?**

The Library Management System is software for the control and transaction of library process. It is a windows application which can be developed with the help of .Net and SQL Server. The introduction of computers into academic libraries was largely a response to the problem of dealing with increased workloads with fewer staff,

and they are now able easily to handle most of the routine and repetitive work of the library staff. In addition, they have the capability to enhance the provision of management information, since automated data processing is able to present reports more accurately and much faster than manual systems.

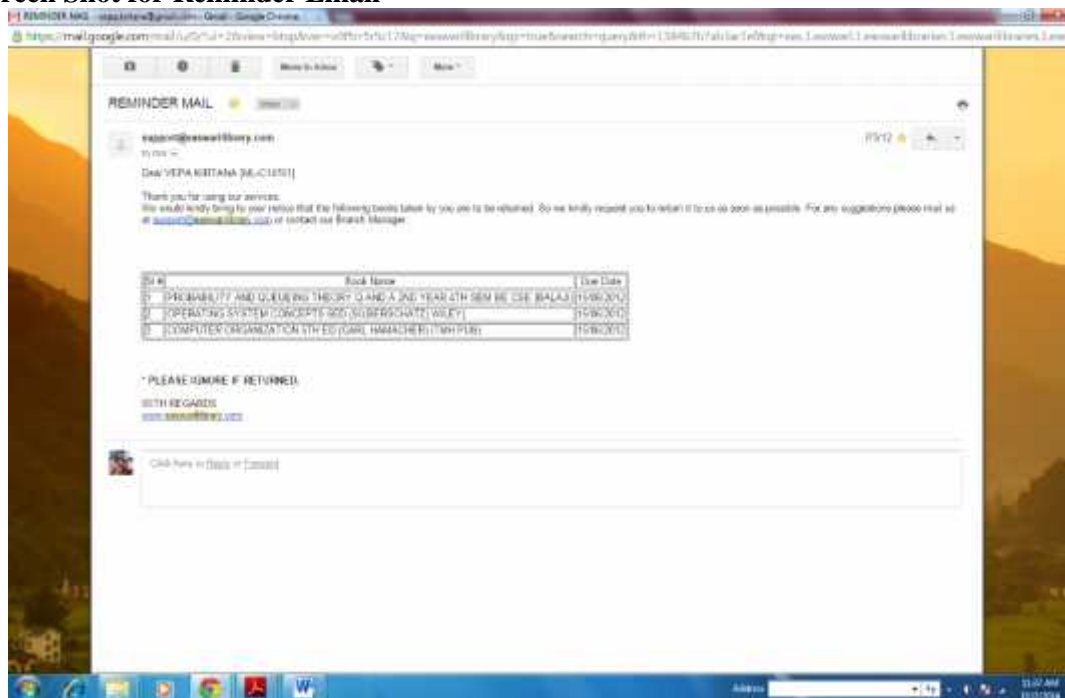
A database can be created using SQL Server where the students name, branch, books borrowed, return date and the unique number of the book in a table. The option for the renewal can also be attained and the database can be updated for individual students.

The basic idea is to present in this particular paper is to support a mail and send SMS to the students to remind them the due date to return the books.

The Database table would appear to be of this format **Table 1.1**

SL#	STUDENT NAME	DEPT	BOOK NAME	DUE DATE	BOOK IDNO
1	Shanmuga Priya V	CSE	Operating Systems	14/11/14	1201COS
2	Suganya N	CSE	Networks	18/11/14	1255CCN
3	Nivetha P M	CSE	Web Technology	20/11/14	1281CWT

### Sample Screen Shot for Reminder Email



### Problem Definition

Students generally forget to return back the books borrowed from the library. This could make them pay a huge overdue if not given in proper time. In order to remind them with the return and renewal options the library can use the automation reminder through the email and SMS facilities developed through .Net and SQL Server.

### Overview

A list of table that can used for knowing the number of books in the Library of the college will be useful to maintain the database and also while updating it while renewing the process.

These are the sample collection of books from the Library in a College from Department of Computer Science, keeping the record of the books available. Here are few books that are listed below:

**Table 1.2**

Fundamentals of Computing	50
Object Oriented Programming	50
Data Structures	100
Computer Organization Architecture	120
Operating Systems	70
Database Management Systems	55
Computer Networks	40
Programming Paradigms	100
Artificial Intelligence	135
Theory of Computation	60
Principles of Compiler Design	90
Visual Programming	20
Advance Database Technology	20
Web Technology	40
UNIX	40
Cryptography and Network Security	130
Computer Graphics	130
Data Warehousing	60
User Interface Design	60
Software Project Management	100
Software Quality Assurance	100
Information Security	20
High Speed Networks	20

### **Existing System**

Report generation was not available in the past years due to lack of technology. Keeping this view, libraries were mostly maintained in written formats. There were possibilities of mistakes taking place. Also having large volumes in library, it was difficult to maintain records in every book available in the library. With respect to this, tracking one particular book becomes difficult without the help of software. Stock maintenance of the books becomes difficult to keep a track on. Information about the issue and return/renewal becomes difficult when written format is used. No central database is available for the information to be saved. Overall, the existing system is not ideal and fast in nature.

### **Proposed System**

In the proposed system, the main objective is to develop software for the library using .Net and SQL Server. On the other hand the components are mainly focused on Stock Maintenance. There should be proper report on the number of books available and the condition of the books recorded in the database. The transaction entry for each book has to be recorded with the help of the database. Report generation becomes faster when software is develop and provides accurate results in the outcome. Sending Email and SMS are options that are involved in such a way that the student gets a reminder about the return of the books along with a renewal option so that the overdue charges do not become high.

### **Proposed system provides with following solutions**

The Library Management System becomes better and efficient providing the above services and it reduces the man power. The data can be retrieved fast with accuracy. The whole data is stored into a database and saves a lot of writing work. Using computers, important papers and research related books information are provided with authentication and security.



## Software Required

### .NET

The .Net framework can be used in building the software for Library Management System along with SQL Server to make the software understandable and easy to access with accuracy.

### What is .NET

- Microsoft's vision of the future of applications in the Internet age
  - Increased robustness over classic Windows apps
  - New programming platform
  - Built for the web
- .NET is a platform that runs on the operating system

### .NET

- Sits on top on the OS (currently all the Windows; Linux/Unix subset also available – Mono Project)
  - About 20MB download
- Provides language interoperability across platforms
- Strong emphasis on Web connectivity, using XML web services to connect and share data between smart client devices, servers, and developers/users
- Platform/language independent

## SQL Server

- Organizations today face numerous data challenges; for example, the need for faster and more data-driven decisions, the need to increase the productivity and flexibility of development staff, and pressure to reduce overall Information Technology budgets while at the same time scaling the infrastructure to meet ever-increasing demands.
- The next release of Microsoft® SQL Server™ is designed to help enterprises address these challenges. Microsoft SQL Server 2005 is a next-generation data management and analysis solution that delivers increased security, scalability, and availability to enterprise data and analytical applications, while making them easier to build, deploy, and manage.
- Building on the strengths of SQL Server 2000, SQL Server 2005 provides an integrated data management and analysis solution that will help organizations of any size to:
  - Build, deploy, and manage enterprise applications that are more secure, scalable, and reliable.
  - Maximize Information Technology productivity by reducing the complexity of building, deploying, and managing database applications.
  - Share data across multiple platforms, applications, and devices to make it easier to connect internal and external systems.
  - Control costs without sacrificing performance, availability, scalability, or security.
  - Read on to learn more about SQL Server 2005 advancements in three key areas: enterprise data management, developer productivity, and business intelligence as well pricing and licensing, upgrading to SQL Server 2005, and the Microsoft Windows Server System™.

## What's New in SQL Server 2005

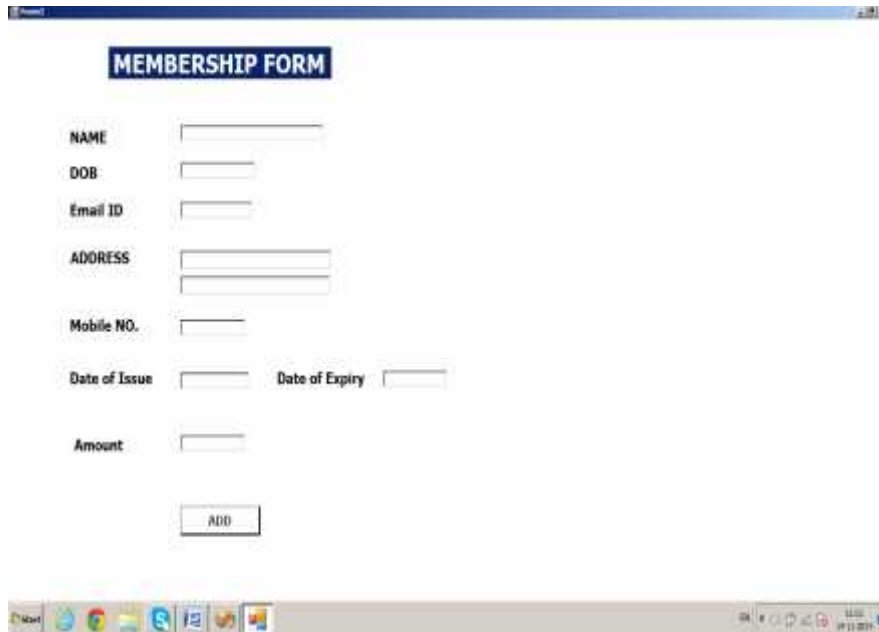
- *Enterprise Data Management*
- In today's connected world, data and the systems that manage that data must always be secure yet available to your users. With SQL Server 2005, users and Information Technology professionals across your organization will benefit from reduced application downtime, increased scalability and performance, and tight yet flexible security controls. SQL Server 2005 also includes many new and improved capabilities to help make your Information Technology staff more productive. SQL Server 2005 includes key enhancements to enterprise data management in the following areas:

- Manageability
- Availability
- Scalability
- Security

The library can maintain a management system with a help of software which includes for membership, stock maintenance, issue of books and renewal books.

With the help of this, the Library staff can look into the available list of books and remind the members through email and SMS.

The Membership and Stock Maintenance form are created below for the private and public libraries along with the universities usage.



**MEMBERSHIP FORM**

NAME

DOB

Email ID

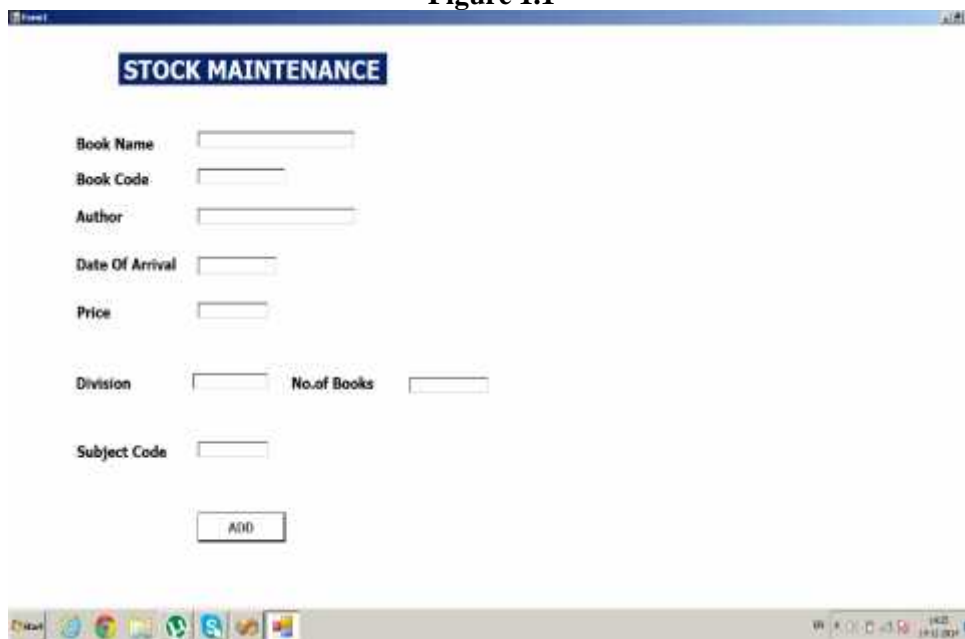
ADDRESS

Mobile NO.

Date of Issue  Date of Expiry

Amount

Figure 1.1



**STOCK MAINTENANCE**

Book Name

Book Code

Author

Date Of Arrival

Price

Division  No.of Books

Subject Code

Figure 1.2

Given below are the other two forms named Issue of Books and Renewal of Books in a University/College.



Figure 1.3

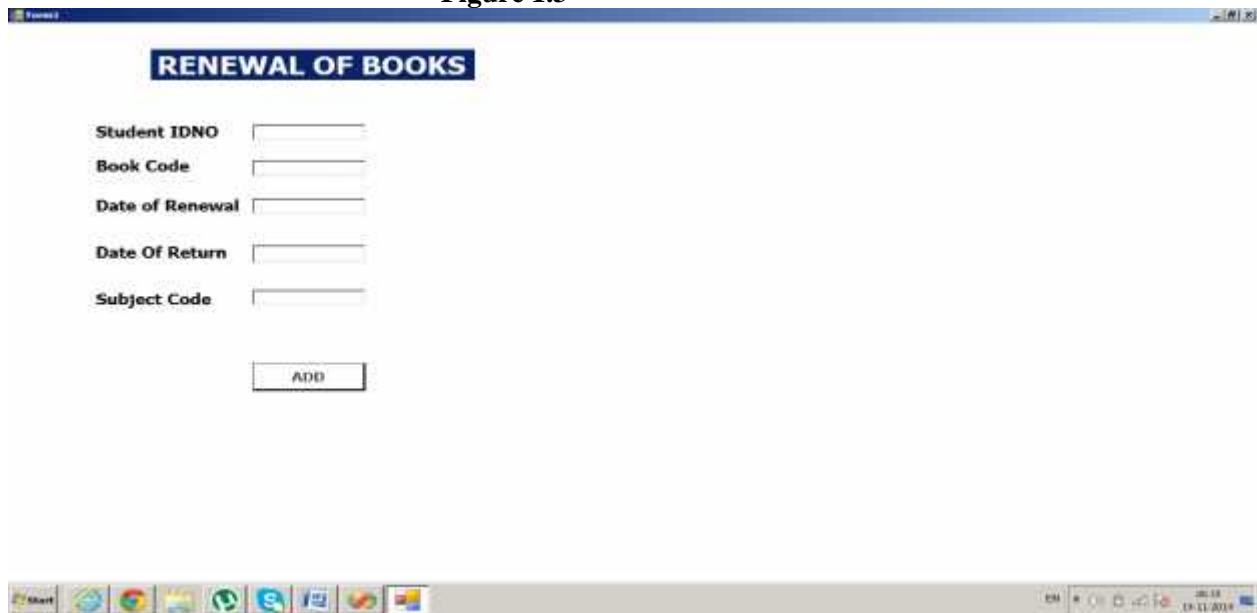


Figure 1.4

The above forms enable Reusability, Understandability, Accuracy, Cost Effectiveness

### Reusability

While building software it is always important to make sure that the software implementation can be developed or updated to the further level in future. This reduces the cost, design and testing costs.

### Understandability

Other than the creator it is very important that the users should be able to understand the software created and use it with ease.



### **Accuracy**

After the software being built it should be able to give the accurate results such that there are no mistakes in the output. Therefore accuracy is one important aspect in building up the software perfectly so that it gives good performance.

### **Cost effectiveness**

Creation of software is met with the budget and time period. It is desirable to aim for a system with minimum costs and meets the condition entirely.

### **Conclusion scope for further study**

This application can be further developed using .Net and SQL Server to meet the further needs for the Library Management Systems for the creation of software, which could make the coding lines lesser and easier for the creation of the software. Therefore, .Net and SQL Server is preferable ways.

In future the Library Management System can also be developed through a recorded voice with options where the member can be reminded regarding the books to return and can also give the options to renew through phone.

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