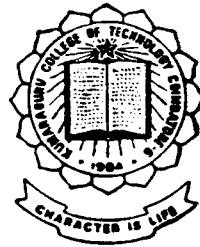
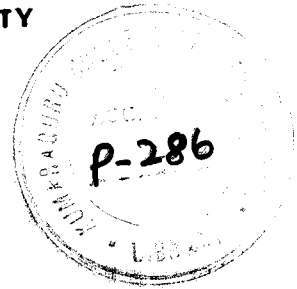


Library Management System

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF COMPUTER APPLICATIONS
OF BHARATIAR UNIVERSITY

By
S. SRI PARANDAMAN
9438MO206



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Kumaraguru College of Technology

COIMBATORE-641 006

June 1997


CERTIFICATE

This is to certify that this project work entitled

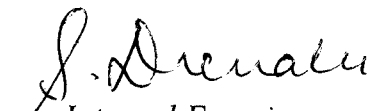
“LIBRARY MANAGEMENT SYSTEM”


submitted to Kumaraguru College of Technology, Coimbatore (affiliated to Bharathiar University) in partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications is a record of original work done by Mr.S. SRI PARANDAMAN, Reg No. 9438MO206 during his period of study in the Department of Computer Science and Engineering, Kumaraguru College of Technology, Coimbatore under my supervision and guidance and this project work has not formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.


Professor and Head


Staff-in-charge

submitted for University Examination held on 3/6/1997


Internal Examiner


3/6/97
External Examiner

DECLARATION

I hereby declare that this project work entitled

“LIBRARY MANAGEMENT SYSTEM”

submitted to Kumaraguru College of Technology, Coimbatore (affiliated to Bharathiar University is a record of original work done by me under the supervision and guidance of Mrs. Devaki, B.E., Lecturer, Department of Computer Science and Engineering, Kumaraguru College of Technology, Coimbatore and that this project work has not formed the basis for the award of any degree / Diploma / Associateship / Fellowship / or similar title to any candidate of any University.

Place : Coimbatore.

Date :

Signature of the candidate

S. Sri Parandaman

(S.SRI PARANDAMAN)

S. Devaki
Staff-in-charge

Mrs. DEVAKI
Senior Lecturer,
Department of Comp.Science & Engg.,
Kumaraguru College of Technology,
Coimbatore.



Mascot Systems Pvt. Ltd.
MASTECH (USA) GROUP COMPANY

10, MAIN ROAD,
AKKASANDRA,
OFF SARJAPUR ROAD,
ORAMANGALA EXTENSION,
BANGALORE - 560 034, INDIA.
PHONE + 91 80 5521 701/702/703/705/706
FAX + 91 80 5521 704
mascot@india.mastech.com

To Whomsoever It May Concern

This is to certify that **Mr. Sri Parandaman S.** student of Master of Computer Application, **Kumaraguru College of Technology**, Coimbatore, has undertaken his project work with us from January 1997 onwards for a period of 22 weeks. He was assigned the project 'Library Management System'. This project was developed using Powerbuilder 5.0 as the front - end, and Oracle 7.0 as the back - end. His performance during this period was satisfactory.

Yours Sincerely,
For Mascot Systems Pvt. Ltd.

Ms. Kavita Khanna
Manager Training & Selection

Mr. K.K. Bhagi
Project Manager

PITTSBURGH
WASHINGTON
SAN FRANCISCO
TORONTO
SINGAPORE

ACKNOWLEDGEMENT

First of all, I would like to express my sincere gratitude to **Dr. S. Subramaniam, Principal, KCT** for his support and guidance all through my MCA program.

I wish to express my sincere gratitude to my guide **Mrs. S. Devaki** and **Prof. P. Shanmugam, H.O.D, Department of CSE** for their support and guidance during the period of my project work.

I wish to express my gratitude to **Mrs. Kavitha Khanna, Manager Training & Selection, Mascot Systems Private Ltd .,** and **Mr. K.K. Bhagi, Project Manager** for being instrumental in providing me an opportunity to do my dissertation work in Mascot Systems Private Limited.

I would like to take this opportunity to thank the **faculty** of the Department of Computer Science and Engineering, KCT, Coimbatore for their guidance all through my MCA program.

Last but not the least I thank all the employees of Mascot Systems for making my stay a very comfortable and memorable one.

ABSTRACT

The project titled LIBRARY MANAGEMENT SYSTEM is a client - server based GUI application which aims at automating the library at Mascot Systems Private Limited .The system takes care of all the transactions that take place in the library namely issue , renewals , bookings , reservations , and cancellations .

The system is a very user friendly one , which interacts with the user providing him/her with information regarding the current status with respect to the transactions made and views of all information he is authorized to access in the database .

From the librarian's perspective the system automatically takes care of most of the interactions required with the user .

The system is automated to the level wherein the user only need to login to the system in order to have a book issued to him/her .

The Front End used is PowerBuilder 5.0.

The Back End used is Oracle 7.0.

The Operating System is Windows 3.1.

Contents

1. Introduction	Page No.
1.1 About the Organization	1
1.2 Objective of the System	3
1.3 Overview of the System	4
1.4 PowerBuilder Features	5
1.5 Oracle Features	10
2. System Study	
2.1 Existing System	15
2.2 Proposed System	16
3. System Design	
3.1 Data Design	18
3.2 Forms Design	19
4. Deveopement and Implementation	25
5. Conclusion & Scope	26
Bibliography	28
Appendix	
A . System Flow Diagram	29
B . Data Flow Diagram	32
C . Tables	37
D . Screens	42

ABOUT THE ORGANIZATION

Mascot Systems Pvt. Ltd., a two year old company came into existence as an off shore center for Mastech USA , the parent company. Mastech USA is \$100 million company having 16 branches all over the world. It is one of the fastest growing companies in US. Mastech has a very good client base. It is one of the **Fortune-500 Companies** and is expected to be one of the **Fortune-100 Companies** by the end of the year. Mastech has serviced and is serving 400 customers around the world.

Out of the 400 customers of Mastech, Mascot at present is servicing 30 customers. The Indian operations are 100% **EOU**. This business is made possible by the global presence of Mastech. Mascot is a **GLOBAL SOFTWARE SERVICE PROVIDER** and there lies the secret of its success in the software industry.

Mascot operates mainly on a **3x3** line of business principle. The three areas are

- Development
 - Maintenance and
 - Conversion / Migrations
- of commercial applications.

The three main working platforms are

- Mainframes
- Mid range, i.e. AS/400 and
- Client/Server Systems.

Apart from the above platforms now there are projects running on VC++ and Lotus notes.

Mascot regards its clients as partners in a process of understanding. At Mascot, ongoing communication throughout the project cycle is maintained in order to be responsive to our client's needs. Constant communication is the basic foundation of Mascot's client relationship. The vast geographical distance between the client and the Bangalore office is bridged by a full range of communication technologies that include phone, fax, electronic mail, voice mail and data exchange over a dedicated 128 kbps satellite link. Further the Lotus Notes based management and control system ensures that the client is always in touch.

Objectives of the System

OBJECTIVE

The objective of this system is to provide a user-interface which is friendly , could track the resources of the library properly , provide the users with easier accessibility to the information stored in the database and keep track of the circulations of all the resources . The users should be allowed to do all their transactions from their places itself.

PROJECT OVERVIEW

The system consists of two modules. One is the user's point of view and the other is the Librarian's point of view. From the user's screen, any authorized user can enter the system and obtain information about the library as well as his status in the library. The user interacts with the system through his screen which manipulates data to and from the back end.

The system is designed in such a way that the user cannot get access to the master table entries of the library management system. The User can perform viewing of the user's personal status in the library and transactions like booking, reservation, renewal and cancellations. All this the user can do from his place itself. The user is also provided with a view of the library catalogue. The user can only view the catalogue. The user can also query on Books, Magazines, Manuals & Standards and CD's in the Library.

The Librarian is responsible for entries in the Master tables and transactions like Issues and Cancellation of Bookings. The Librarian can also query the system about Books, Magazines, Manuals & Standards and CD's in the Library. The Librarian can also get information about any particular user. The Librarian is also provided with a list of Defaulters to whom the Librarian can send reminders through E-mail. The Librarian is also provided with utilities to generate reports for Issued Items, Defaulters List, etc.

Introduction to PowerBuilder

PowerBuilder is a graphical application development environment. Using PowerBuilder, programmers can easily develop powerful client / server applications that access databases. PowerBuilder provides all the tools programmers need to build management information applications.

User Interface

The User interface of a PowerBuilder application consists of Menus and Windows that users interact with. PowerBuilder applications can include all the standard window Controls such as Buttons, Checkboxes, Dropdown listboxes, and Edit boxes.

Event Driven

PowerBuilder applications are event-driven in the sense that users control what happens by the actions they take. For example, when a user clicks a button, chooses an item from a menu, or enters data into an edit box, one or more Events are triggered. Programmers write scripts that specify the processing that should happen when events are triggered

PowerScript Language

Programmers write scripts using PowerScript, the PowerBuilder language. Scripts consist of PowerScript commands, functions, and statements that perform processing in response to an event. For example, the script for a button's Clicked event might retrieve and display information from the database. The execution of an event script can also cause other events to be triggered. For

example, the script for a Clicked event in a button might open another window, which triggers the Open event in that window.

PowerScript Functions

PowerScript provides a rich assortment of built-in functions programmers can use to act upon the various components of their application. For example, there is a function to open a window, a function to close a window, a function to enable a button, a function to retrieve data, a function to update the database, and so on. In addition, the programmers can build their own functions to define processing that is unique to their application.

Object-oriented Programming with PowerBuilder

Each menu or window that the programmer creates with PowerBuilder is a self-contained module called an Object. The basic building blocks of a PowerBuilder application are the objects programmers create. Each object contains the particular characteristics and behaviors (properties, events, and functions) that are appropriate to it. By taking advantage of object-oriented programming techniques such as encapsulation, inheritance, and polymorphism, the programmers can get the most out of each object they create thus making their work more reusable, extensible, and powerful.

Cross-platform Development

PowerBuilder supports cross-platform development and deployment. For example, programmers can develop an application using PowerBuilder running on Windows and deploy the very same application without changes

on the Macintosh . Or vice versa. Programmers can even have a cross-platform team of developers, some using Windows and some using Macintosh , developing the same application at the same time.They can freely share PowerBuilder objects used in the application, because the objects are the same across the different computing platforms that PowerBuilder supports.

Database connectivity

PowerBuilder provides easy access to corporate information stored in a wide variety of databases. Using PowerBuilder, programmers can access databases in either of the following ways :

- # By using the Powersoft ODBC interface
- # By using one of the Powersoft database interfaces that provide a direct database connection.

The Powersoft ODBC interface allows programmers to access the database by using Open Database Connectivity (ODBC), Microsoft's standard for database connectivity. When programmers use the ODBC interface, they define an ODBC data source that consists of the data they want to access and its associated DBMS or file manager, operating system, and, if present, network software that accesses the DBMS. The data source stores and manages the data on behalf of their application.

Programmers can access an ODBC data source that resides locally on your computer or remotely on a network server. For example, programmers can access a Sybase SQL Anywhere database created on a remote server by installing the SQL Anywhere ODBC driver and defining the ODBC data source.

A Powersoft Database Interface is a direct (native) connection to a database. PowerBuilder does not go through ODBC to access a database through a Powersoft database interface. Each Powersoft database interface has its own interface DLL that communicates with the specified database. When programmers use a Powersoft database interface, the interface DLL connects to the database through the database vendor's application programming interface (API).

What's New in PowerBuilder 5.0

Distributed Computing

PowerBuilder 5.0 gives users the ability to build applications that run in a distributed computing environment. Distributed computing allows users to get the most out of their investment in the client/server architecture. By building distributed applications, users can:

- Centralize business logic on servers.
- Partition application functions between the client and the server, thereby reducing the client workload.
- Make their applications scalable and easy to maintain.

Distributed computing offers a natural way to separate user interface components from the business logic required by an application. In a distributed application, a client can invoke services provided by remote objects. A client can invoke methods (functions and events) that are associated with a remote object as if they were defined on a local object.

PowerBuilder Foundation Classes

PFC is delivered as a set of PowerBuilder libraries (PBLs). These libraries contain the ancestor and descendent objects users use to write an application with PFC. The main PowerBuilder objects users use with PFC are as follows :

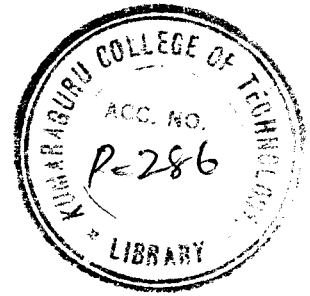
- Windows
- Menus
- Datawindow Objects
- User Objects

PFC uses all facets of PowerBuilder's object-oriented capabilities :

- It uses inheritance to implement a hierarchy of windows, menus, and user objects.
- It uses encapsulation to isolate each object's data and code.
- It uses Polymorphism to provide same-named functions (within one object, within an inheritance hierarchy, and among multiple objects)

PowerBuilder Component Gallery

PowerBuilder 5.0 includes a number of OLE custom controls (OCX) for use with the application development environment. The Component Gallery provides a collection of custom controls that encapsulate functionality that can be assembled into a larger application architecture. Other components that provide database access, network access, message handling, telecommunications and multi-media functions are now widely available.



Oracle features



ORACLE FEATURES

Oracle - An Overview

ORACLE has been one of the leading relational database management systems for host computers since its initial release in the early 1980. Oracle Corporation joined with the growing list of database vendors that provide the necessary communication links to turn their host-based databases into client-server databases. ORACLE is now one of the top three client-server database server products in the world.

Features and Capabilities

ORACLE's most powerful features are its **portability** and **scalability**. Versions are available for virtually every major hardware and software platforms in existence, including PCs, Macintoshes, Mainframes, and most Unix variants. Applications written in one platform can easily be ported to another one, because of the Oracle's SQL pre-compiler.

Databases and Tables

ORACLE's system tables are called the data dictionary. Information about the user rights, database components, views and indexes, default values, data constraints, and other database functions are stored here. The data dictionary stores its information in columns and rows, and the Data Base Administrator (DBA) can query it just like any other ORACLE database.

Administration

ORACLE provides SQL*DBA, a character mode command line interface used to administrate and query databases. In addition to executing directly entered SQL statements, SQL*DBA can execute series of SQL and PL/SQL statements stored in a text file.

Sql*Plus

ORACLE includes a program called SQL*PLUS which is an enhanced version of the SQL*DBA included in the ORACLE Server Package. Like SQL*DBA, SQL*Plus is an interactive character-mode utility that lets the user directly enter SQL and PL/SQL commands at the SQL prompt, or run a text file that contains SQL or PL/SQL commands. The main enhancement that SQL*Plus brings to the character-mode interface is the ability to format the output from SELECT commands, making the output easier to read.

PL/SQL

PL/SQL is primarily an application development language that adds a number of Procedural, Non-SQL statements to the built-in SQL. The biggest advantage of PL/SQL is that it groups SQL commands, Operators and functions into a block that can be set to the RDBMS as a single unit. The PL/SQL blocks reduce network traffic by sending all the statements at once, and then waiting for the RDBMS's response. Its other advantages are procedural capability and portability.

THE ENHANCED ORACLE 7.0

Some of the features of ORACLE 7.0 are given below:

Data Objects:

The number of items that fall into this item has been expanded beyond tables, views, snapshots, roles(user groups), procedures, packages, triggers and integrity constraints.

Snapshots:

Snapshots lets the application manually make a read-only copy of one or more rows from a remote database table on the local server. ORACLE 7.0 attaches a snap which contains the status of the database and the time at which the process is invoked. If more than one user use the DML operations to access the same database , the ORACLE 7.0 checks the snap and produce the result according to the status.

multithreading :

UNIX considers ORACLE as a single process. But ORACLE server has several user processes. By using the multithreading concept ORACLE split its slice and attach this slice to each user process. According to that time slice each process will be executed.

Two Phase Commit :

Its is possible to use one DML statement to operate on two different

databases that are remotely located and are connected and depend on one another. There is a chance that the DML statement may raise problems in any one of the databases at the time of saving the changes permanently. By the use of the two phase commit, first the lower level database is committed temporarily. After the higher level database is committed correctly, the changes are committed on the two databases.

Constraints :

ORACLE 7.0 has one important feature to create or drop constraints for the tables according to the users wish.

Functionality

All referential integrity functions are now active and can be enabled or disabled as needed. ORACLE automatically enforces unique keys, and delete cascade can also be made active, which automatically delete child rows when the parent row is deleted.

Stored Procedures and Triggers

Stored procedures are SQL or PL/SQL procedures or functions that are compiled and stored with the database on server. Instead of sending the entire procedure down to the cable, the application simply call the stored procedure, which is then executed directly on the server. It also supports 'Triggers', which are specialized stored procedures that are automatically executed whenever a user inserts, updates, or deletes data from a table.

Backup and Recovery

When a database is running, Version 7.0 keeps a separate transaction log for each database instance operating on the server. The entire database no longer has to be taken off-line to perform a backup or restore. Individual tables can be backed up while users continue to have access to other tables in the database.

Security

The most significant new feature is the addition of ' Roles ',Oracle's name for user groups. Users can be designated as part of a role, and security rights can be granted on a role basis. This simplifies the process of maintaining user privileges. When the DBA creates a new user, the user automatically assumes the same privileges as the group.

Version 7.0 has enhanced database auditing as well. The DBA can set up the auditing process to audit individual user actions, table accesses, and even the execution of particular SQL statements.

Cost-Based Optimization

Version 7.0 supports cost-based SQL-optimization in addition to the rule-based optimization supported by ver 6.0. Cost-based optimization examines the SQL statements and optimizes them based on how much processor time each execution takes.

EXISTING SYSTEM

The existing LIBRARY MANAGEMENT SYSTEM is not automated and is being handled completely by the Librarian. The Librarian is currently storing the data in MS-Excel files and opens the files whenever updations pertaining to issue / return of books are being made.

No tables are being maintained and the books are issued totally at the Librarian's discretion. The data stored in MS-Excel files are not formatted in any specific order. The Librarian manually checks the issue entries periodically in order to decide upon the defaulters and then the users are intimated either through E-mail or by telephone.

Reasons for wanting a new system

- To introduce a certain degree of automation.
- To provide additional facilities to the users like bookings / reservations / requisitions for new books and to totally automate it.
- To allow for the users to be able to directly renew the books the user is holding without having to manually do so.
- To have a standard format of data storage and retrieval method.

Software Used

The existing system is not automated. The Librarian only stores the transactions in MS-Excel files hence no software is used.

PROPOSED SYSTEM

The proposed system is an automated one which provides direct interaction between the facilities available to the library along with other new features. The proposed system allows automation to the degree that the users can perform transactions like booking / renewal / cancellation and requests for new books from their place itself by logging their name into the Library Management System.

The proposed system also prompts the Librarian with the defaulters list as well as users' priorities regarding the issues of books. The Librarian can also view the reports such as issued books, defaulters list, Vendor order information and user information. The number of renewals made for a particular book by a particular user is also restricted and is taken care of by the system itself.

Major features in the proposed system

- Availability of the catalogue on-line for the users to view instead of having to go to the library to do the same.
- Additional features such as Booking / Reservation / Requisition of books will be included for more efficiency.
- Ease of storage of new books in the catalogue in a more formatted and compact method.
- The librarian will be prompted during transactions if any wrong or illegal operations are being performed.

- The renewal of books can be done by the user directly through the system without having to go through the librarian.
- The librarian will be prompted by the system to send reminders to the users who have not renewed / returned the books that have been issued to them on time.
- Information regarding newly arrived books can be accessed on-line by the users.

Software proposed to be used

The software proposed to be used for the proposed system is PowerBuilder 5.0 running on MS - Windows 3.11 and the Back end proposed is Oracle 7.

DATA DESIGN

The needs for the design as identified from the system study are as follows. The tables are to be designed for the various resources to incorporate for entering the details of the sources, issuing of resources, booking of resources, reservation & cancellation of resources, renewal of resources, reports of transactions. Taking these issues into consideration the tables are designed. The listing of these tables are given below :

- Book_Master
- Magazine_Master
- Manual_Std_Master
- CD_Master
- Vendor_Master
- Booking_Table
- Reserve_Table
- Issue_Renew_Table
- Book_Magazine_requisition
- Vendor_Order
- Magazine_Arrival
- Booking_History

The structure of these tables are given under **Appendix C**.

FORMS DESIGN

The forms design is the process designing the forms and also identifying the processes to be incorporated in them. The Management of each resource in the library are done with the help of a separate set of forms. The forms design for the management of the library resources are explained under the respective headings below .

Books Management

The books in the library are a vast resource covering most of the software being currently used in Mascot Systems Private Limited. There are also books which cover other Hardware related topics , Management related and also books of a general nature .

All books that have been catalogued in the library are given a unique accession number . The accession number is basically a sequence number which uniquely identifies any book . The data that is stored about the book in the *Entry Form* of books is as follows .

- Title of the book
- Author
- Accession Number
- Classification Number
- Publisher
- Publication Date
- Arrival Date
- Catalogued Date
- Price

- Keywords
- Description of the book
- Patent Number
- ISBN Number

When a book is issued an entry is made in the Issue Table with the following details in the *Issue Form* of the book .

- login_id
- Issue Date
- Book Accession Number
- Due Date

When a book is returned the entry made in the issue renewal table is deleted .

Management of Magazines

The library also subscribes to various Technical , Management and general magazines . The magazines are identified by their classification number and date of publication .

The information that is required to be stored about the magazines in the *Entry Form* is as follows .

- Magazine Title
- Magazine Classification Number
- Magazine Periodicity
- Magazine Publication Date
- Magazine Price
- Magazine Vendor Number
- Magazine ISSN Number

On issue of the magazine the following details about the magazine required to be stored in the *Issue Form* of the magazine.

- Login_id
- Title
- Date of Publication of the Magazine
- Date of Issue
- Due date

When a Magazine is returned the entry made in the issue renewal table is deleted .

Management of Standards and Manuals

The library has various Standards and The Manuals of the various software available for the employees .

The Manuals and Standards are uniquely identified by their Accession Number . The data regarding the Manuals and Standards that are stored in the Entry Form of the Standards and Manuals is as follows .

- Manual/Standard Title
- Accession Number
- Classification Number
- Version/Patent number
- Publication Date
- Arrival Date
- Catalogued Date
- Publisher
- Price

On issue the following details regarding the Manuals and standards need to be stored in the issue form .

- Title
- Date of issue
- Login_id
- Accession number
- Due Date

When a Manual or Standard is returned the entry made in the issue renewal table is deleted .

Managing Compact Discs

The Library also manages the various Compact Discs which come along with the books and Magazines in the library .

The Compact Disc can be uniquely identified by the CD Number. The data that is required to be stored in the *Entry form* of the Compact Discs is as follows .

- CD Number
- Book Access Number
- Magazine Classification Number
- Magazine Publication Date
- CD Keywords
- CD Description

On issue of a Compact Disc , the following details are stored in the issue form .

- CD Number
- Login_id

- Date of Issue
- Due Date

When a Compact Disc is returned the entry made in the issue renewal table is deleted .

Managing Vendors

Along with the resources available in the library information about the Vendors who supply the various Vendors and the books they supply are stored.

The Vendors can be uniquely identified by the Vendor Number .

The data that is required to be stored in the *Entry Form* for Vendors is as follows .

- Vendor Number
- Vendor Name
- Vendor Specialty
- Vendor Address
- Vendor Phone Number
- Vendor E-Mail Id
- Vendor Details

When an order is to be placed with a Vendor then the following details are required for the *Order Form*.

- Order Number
- Vendor Number
- Order Date

Once an order has been satisfactorily completed the entry in the Vendor Order table is deleted .

Managing Requests

In order to access the resources that are not available in the library the users can request for resources using the *Requisition Form* . This form has the following data .

- Requisition Number
- Requisition Status
- Login_id
- Title
- Author
- Periodicity
- Price
- Person Approved By

Once the requisition has been approved and the order is placed with the vendor the entry in the Requisition table is deleted .

Queries Form Design

Various queries can be made to the system and this is handled by the queries form . The input is usually the Login_id only where information regarding the transactions made by the user assigned that Login_id . The input can also be the resource in which all the current transactions on the resource can be queried upon .

Reports Form Design

The reports forms handle all the reports that have to be generated by the system . The Reports Forms Include the following .

- Issued Status Details
- Defaulters List
- Vendor Order
- Requisitions

DEVELOPMENT AND IMPLEMENTATION

The completion of the design process initiates the next step of development and implementation. After the design is completed the tables are created first. These tables are the core for the development of the user interface. The processes as identified from the design of forms are developed using PowerBuilder 5.0 GUI.

The application was tested with sample data before implementing it at the user site. In the testing process the main issues taken into consideration are

- Data Validation and Security.
- User-friendliness.
- Process validation.
- Report formats.
- Preparing the feedback information on the testing process.

After completing the testing process the application is implemented at the user site and the users are given training on how to use the system. If, after testing some changes are found to be made then they are incorporated into the application before implementation.

CONCLUSION

The Software for the **Library Management System** has been developed and has fulfilled the necessary requirements as identified in the requirements document.

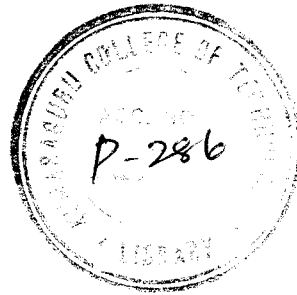
The **LMS** handles the user's transactions like booking, renewal, cancellation and requests for new books and it also handles the librarian's transaction like entries in the master table, issues, defaulters list and Vendor order information.

This software allows the user to give queries independent of the Oracle SQL format which removes the need for the user to learn the syntax of Oracle SQL. The Librarian will be prompted if any wrong or illegal operations are being performed during transactions.

The result of the project is a system which covers all aspects of library management it reduces the librarian's work and increases the efficiency of the system.

SCOPE FOR FUTURE ENHANCEMENTS

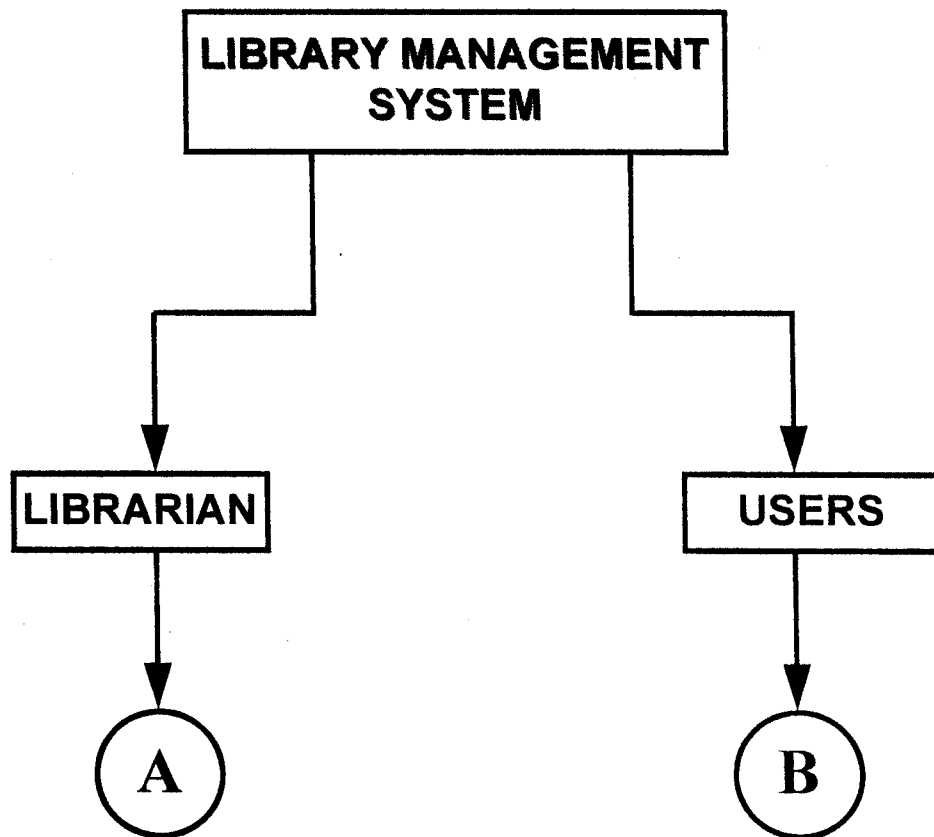
The package is developed to incorporate all the current requirements. In future the system can be enhanced to provide more functionalities such as mailing facility within the package and it could be improved by providing more reports. The changes can be made easily because of the flexible structure used in the design of the package.

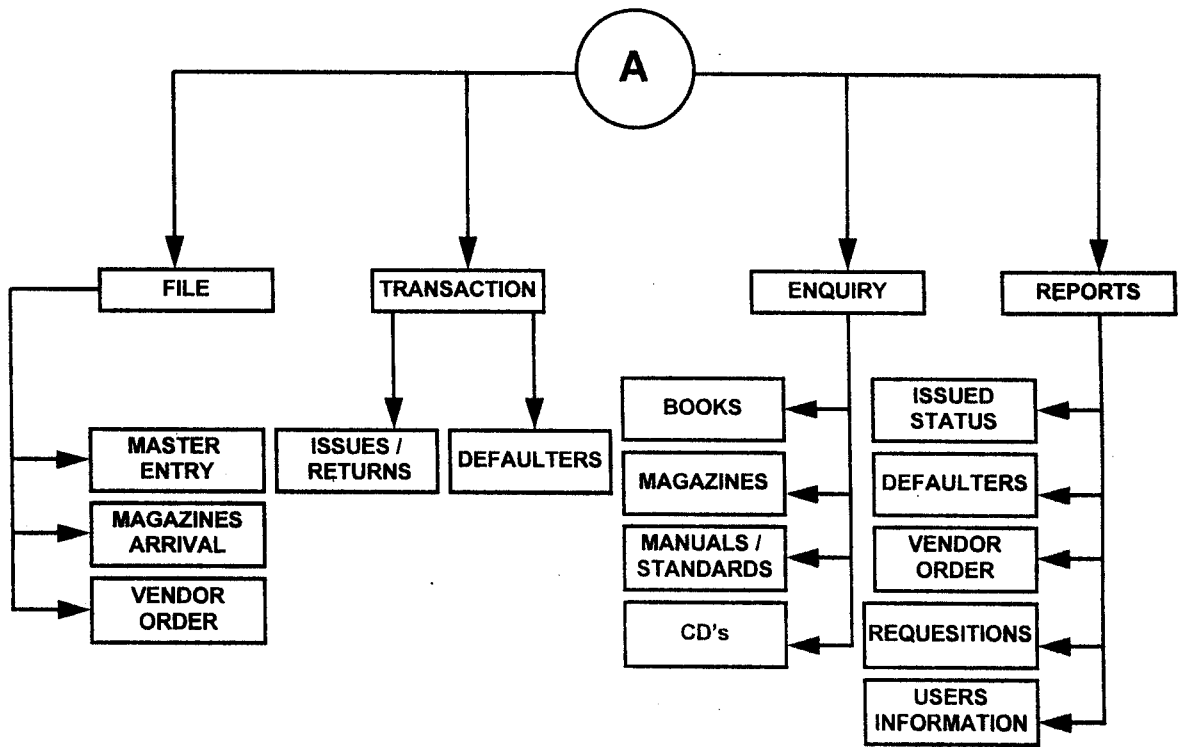


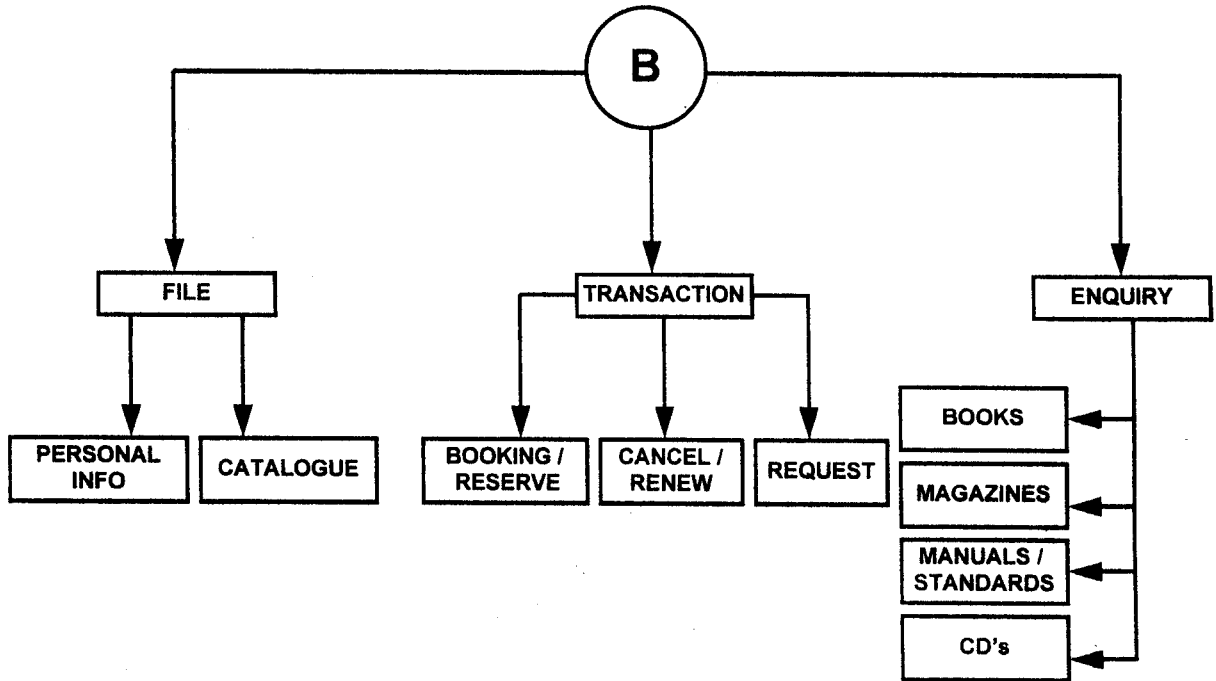
Bibliography

BIBLIOGRAPHY

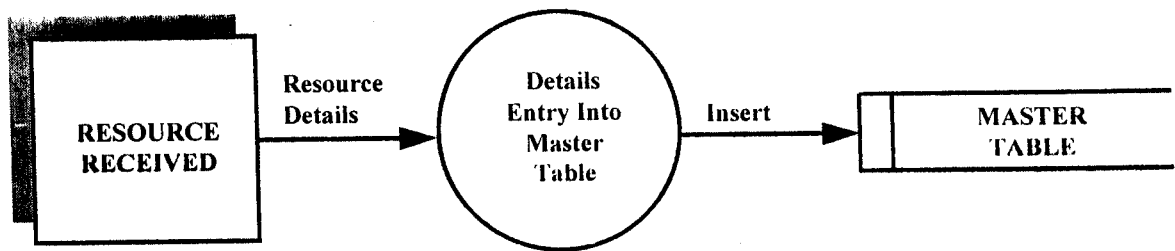
- 1. Roger Pressman, Software Engineering, McGrawHill Publications.**
- 2. Ivan Bayross, Oracle 7, BPB Publications - 1995.**
- 3. Steven M. Bobrowski, Mastering Oracle 7 & Client - Server Computing, BPB Publications.**
- 4. Hugo Toledo. Jr, ORACLE , Osborne McGrawHill - 1996.**
- 5. Elias M. Awad, Systems Analysis and Design, Galkotia Publications - 1995.**
- 6. PowerBuilder 5.0 Manual, Sybase Inc - May, 1996.**

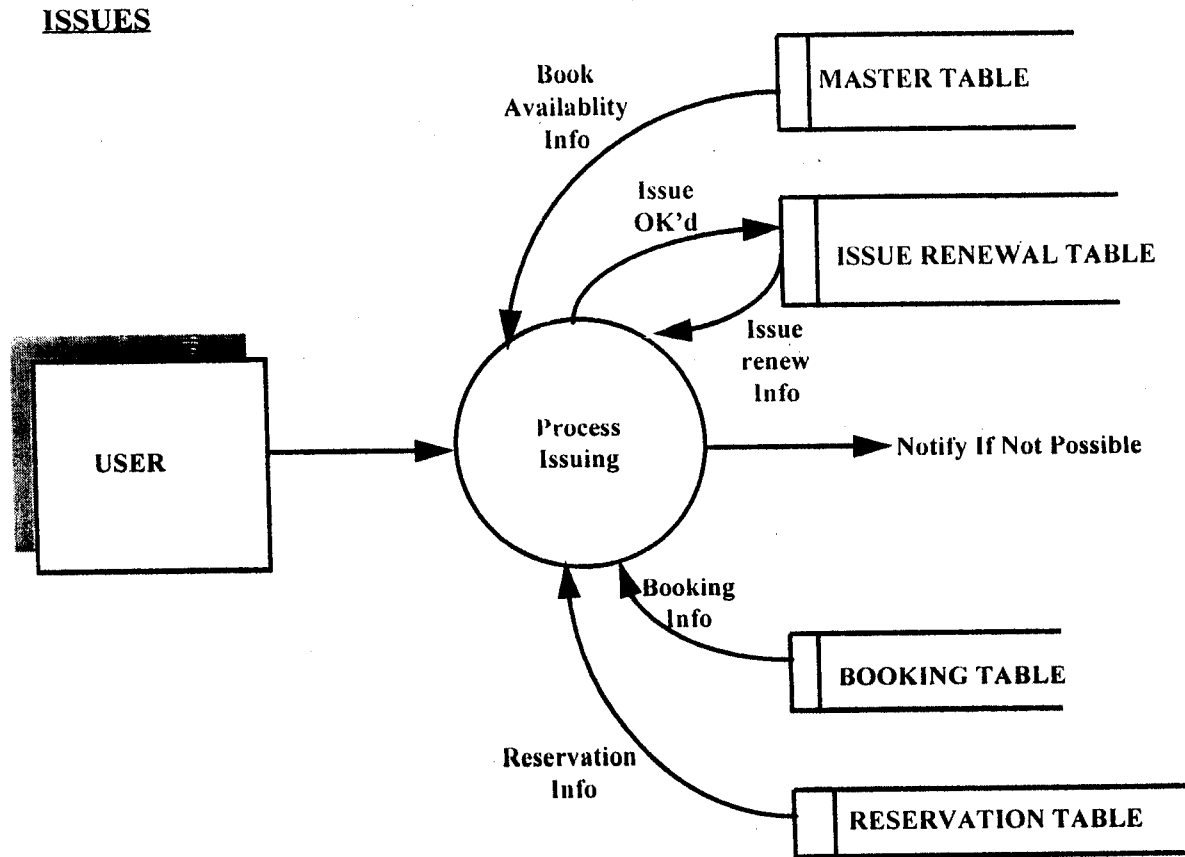




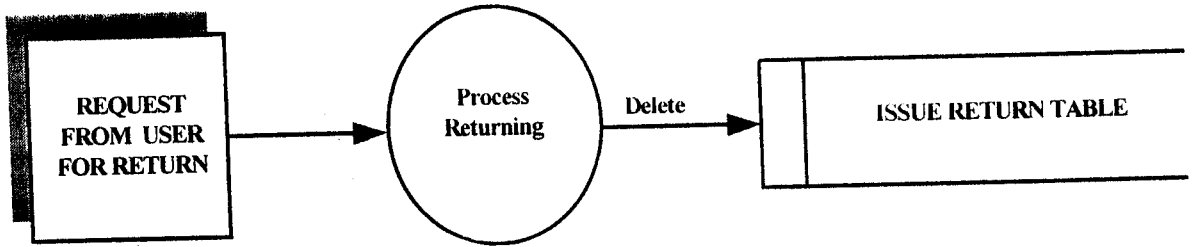


MASTER ENTRIES

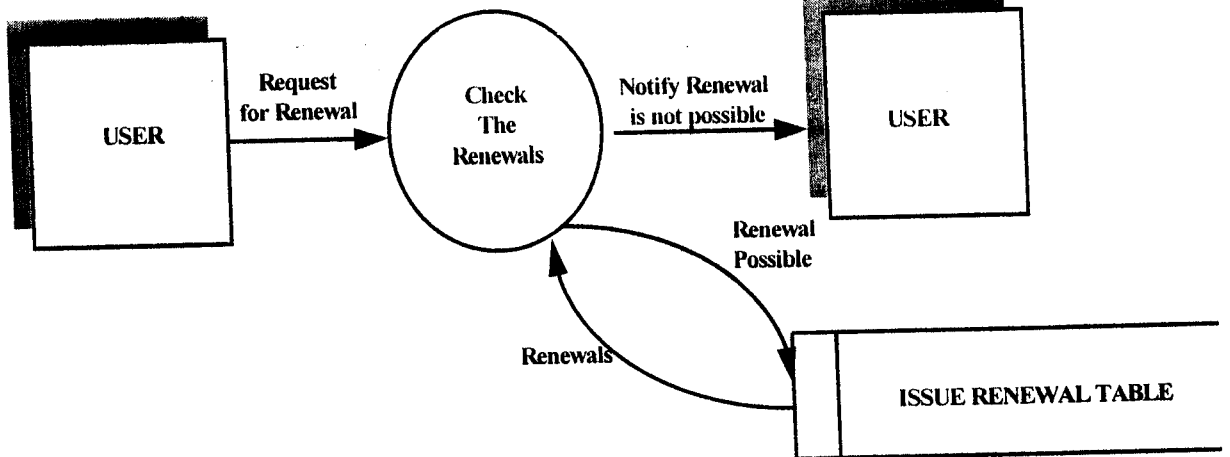




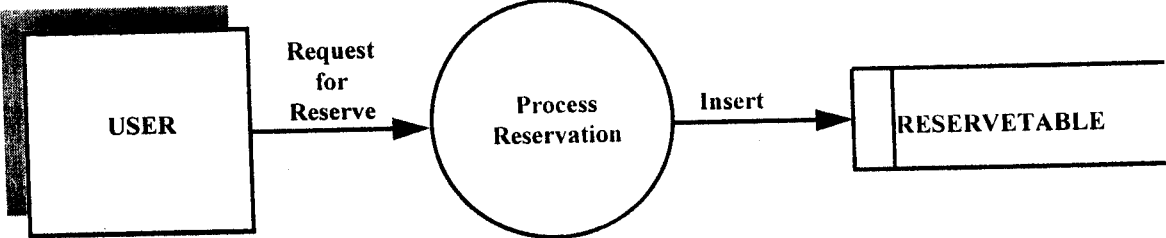
RETURNS



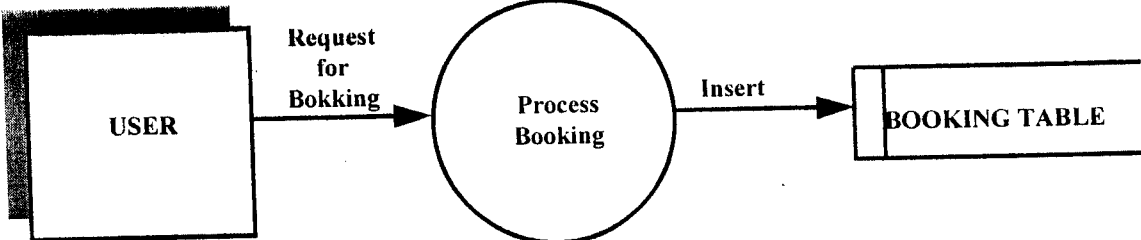
RENEWALS



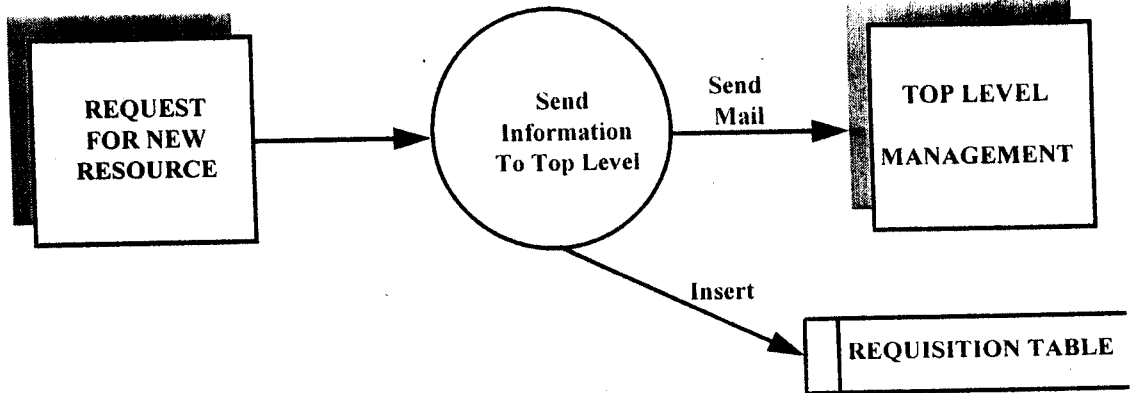
RESERVATION



BOOKING



REQUISITION FOR NEW RESOURCES



NEW VENDOR ORDER

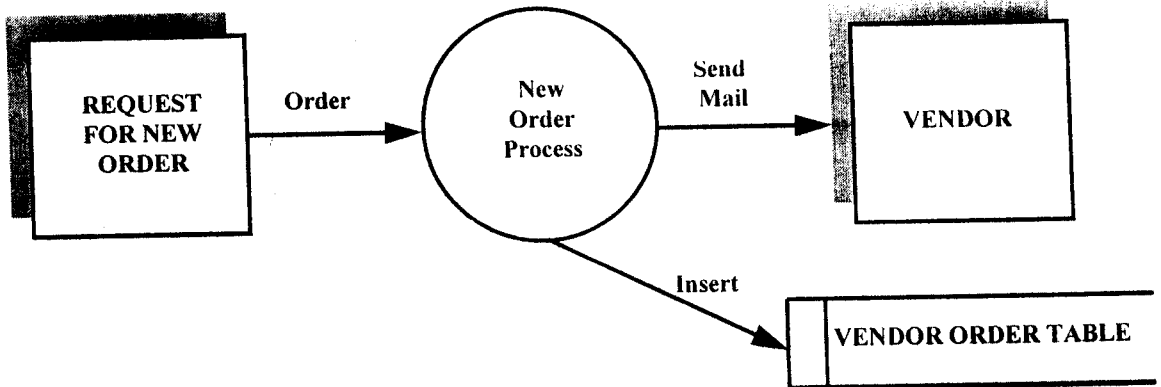


Table Name - BOOK_MASTER
Primary Key - Book_Acc_No (Book Accession Number)
Description - Contains details about the books in the library.

COLUMN NAME	TYPE	NULL ?
Book_Acc_No	Number(5)	Not Null
Book_Title	Varchar2(50)	
Book_Author	Varchar2(50)	
Book_Class_No	Varchar2(10)	
Book_Publisher	Varchar2(25)	
Book_Pub_Date	Date	
Book_Price	Varchar2(10)	
Book_Arr_Date	Date	
Book_Cat_Date	Date	
Book_Keywords	Varchar2(20)	
Book_Description	Varchar2(100)	
Book_ISBN	Char(10)	
Book_Patent_No	Char(10)	
Book_Reference	Boolean	Not Null

Table Name - MAGAZINE_MASTER
Primary Key - Mag_Class_No (Classification Number).
Description - Contains details about the magazines in the library.

COLUMN NAME	TYPE	NULL ?
Mag_Title	Varchar2(25)	Not Null
Mag_Class_No	Varchar2(10)	Not Null
Mag_ISSN	Varchar2(10)	
Mag_Period	Char(1)	
Mag_Price	Varchar2(10)	
Mag_Vendor_No	Number(5)	

Table Name - MANUAL_STD_MASTER

Primary Key - MS_Acc_No (Accession Number).

Description - Contains details about the Manuals and Standards in the library.

COLUMN NAME	TYPE	NULL ?
MS_Title	Varchar2(50)	Not Null
MS_Acc_No	Number(4)	Not Null
MS_Class_No	Varchar2(10)	
MS_Ver_Pat_No	Varchar2(10)	
MS_Pub_Date	Date	
MS_Publisher	Varchar2(25)	
MS_Price	Varchar2(10)	
MS_Arr_Date	Date	
MS_Cat_Date	Date	
MS_Indicator	Char(1)	Not Null

Table Name - CD_MASTER

Primary Key - CD_No (CD Accession Number).

Description - Contains details about the CD's in the library.

COLUMN NAME	TYPE	NULL ?
CD_No	Number(3)	Not Null
Book_Acc_No	Number(6)	
Mag_Class_No	Varchar2(10)	
Mag_Pub_Date	Date	
CD_Keyword	Varchar2(20)	
CD_Description	Varchar2(50)	

Table Name - VENDOR_MASTER

Primary Key - Vendor_No (Vendor Accession Number).

Description - Contains details about the vendors.

COLUMN NAME	TYPE	NULL ?
Vendor_No	Number(4)	Not Null
Vendor_Name	Varchar2(50)	
Vendor_Speciality	Char(1)	
Vendor_Address	Varchar2(50)	
Vendor_Phone	Varchar2(12)	
Vendor_Email	Varchar2(50)	
Vendor_Details	Varchar2(100)	

Table Name - MAGAZINE_ARRIVAL

Primary Key - Mag_Class_No + Mag_Pub_Date.

Description - Contains details about the magazines with published date.

COLUMN NAME	TYPE	NULL ?
Mag_Class_No	Varchar2(10)	Not Null
Mag_Pub_Date	Date	Not Null

Table Name - BOOKING_TABLE

Primary Key - Booking_Key (Unique Key).

Description - Contains details about bookings made by users.

COLUMN NAME	TYPE	NULL ?
Booking_Key	Varchar2(20)	Not Null
Login_Id	Varchar2(20)	Not Null
Booking_Date	Date	Not Null

Table Name - RESERVE_TABLE

Primary Key - Reserve_Key (Unique Key)

Description - Contains details about reservations made by users.

COLUMN NAME	TYPE	NULL ?
Reserve_Key	Varchar2(20)	Not Null
Login_Id	Varchar2(20)	Not Null
Reserve_Date	Date	Not Null
Queue_No	Number(3)	

Table Name - ISSUE_RENEW_TABLE

Primary Key - IR_Key (Unique Key)

Description - Contains details about the issues and renewals made.

COLUMN NAME	TYPE	NULL ?
IR_Key	Varchar2(20)	Not Null
Login_Id	Varchar2(20)	Not Null
Issue_Date	Date	
Due_Date	Date	
Renew_No	Number(1)	

Table Name - BOOK_MAGAZINE_REQUISITION

Primary Key - Req_No (Requisition Number)

Description - Contains details about the requests made to the librarian regarding New Books and Magazines.

COLUMN NAME	TYPE	NULL ?
Req_No	Number(5)	Not Null
Req_Status	Char(1)	
Login_Id	Varchar2(20)	
Title	Varchar2(50)	
Author	Varchar2(50)	
Periodicity	Char(1)	
Price	Varchar2(10)	
Approved_By	Varchar2(20)	

Table Name - VENDOR_ORDER

Primary Key - Order_No (Order number).

Description - Contains details about orders made to the vendors.

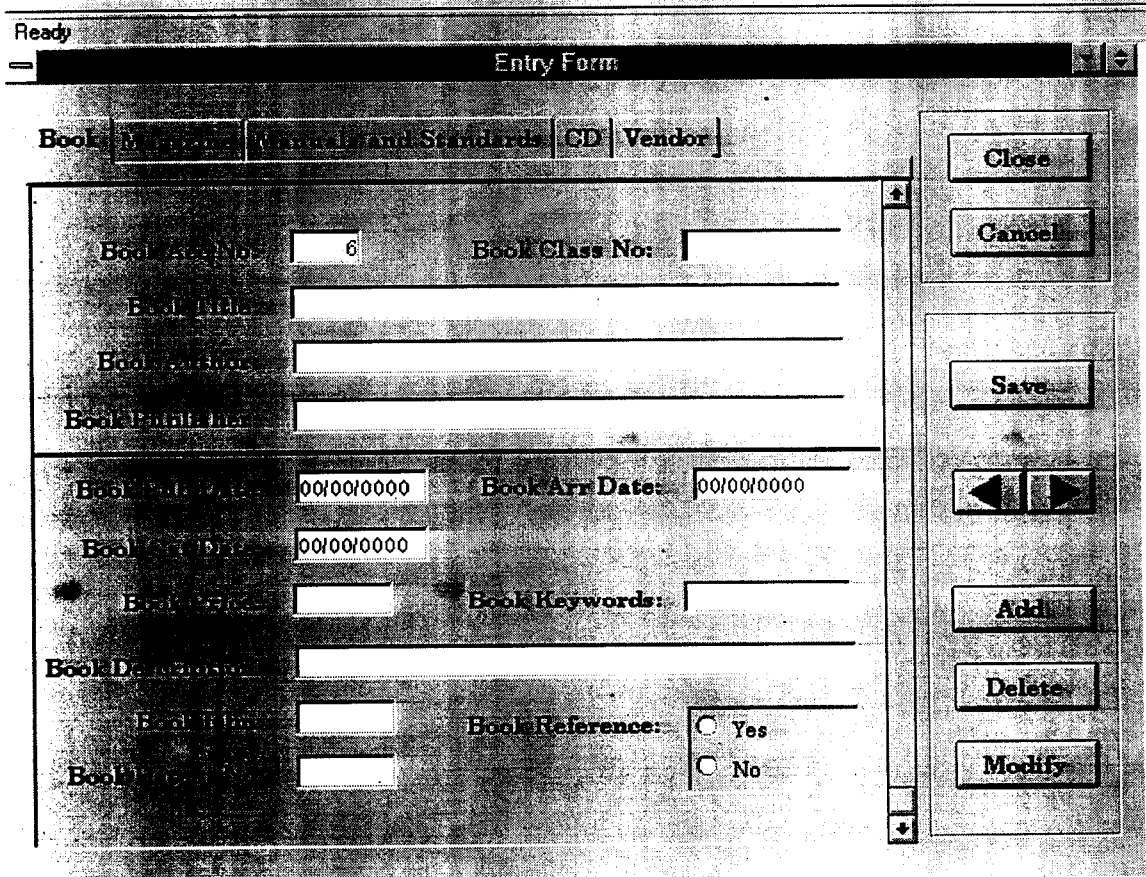
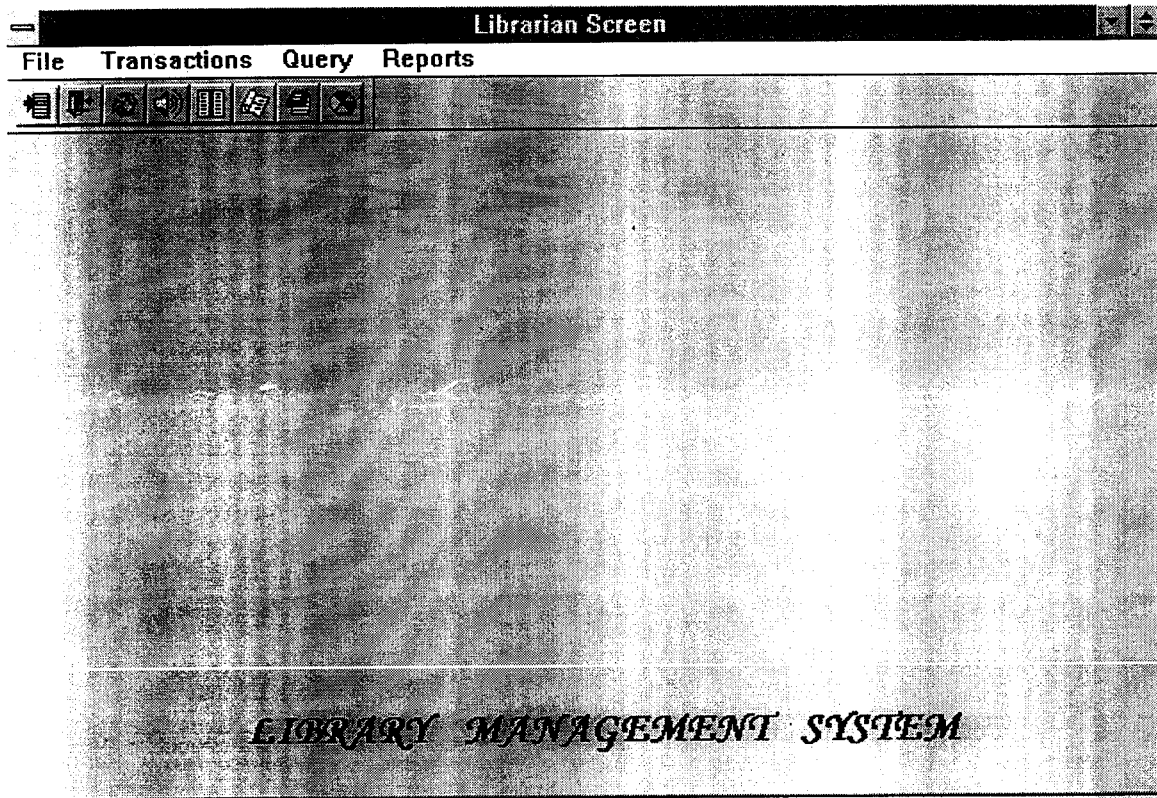
COLUMN NAME	TYPE	NULL ?
Order_No	Number(4)	Not Null
Vendor_No	Number(4)	Not Null
Order_Date	Date	
Expected_arr_date	Date	
Details	Varchar2(100)	

Table Name - BOOKING_HISTORY

Primary Key - Booking_Key (Unique Key)

Description - Contains history details of the Booking table.

COLUMN NAME	TYPE	NULL ?
Booking_Key	Varchar2(20)	Not Null
Login_Id	Varchar2(20)	Not Null
Booking_Date	Date	Not Null



Entry Form

Book | Magazine | **Manuals and Standards** | CD | Vendor

Magazine Title:

Obtention No:

Magazine ISSN:

Magazine Period: Daily Fortnight
 Weekly Monthly

Price:

Vendor No:

Close

Cancel

Save

◀ ▶

Add

Delete

Modify

Entry Form

Book | Magazine | **Manuals and Standards** | CD | Vendor

Ms Acc No:

Ms Title:

Ms Class No:

Ms Ver Pat No:

Ms Pub Date:

Ms Publisher:

Ms Price:

Ms Arr Date:

Ms Cat Date:

Ms Indicator: Manuals Standards

Close

Cancel

Save

◀ ▶

Add

Delete

Modify

Entry Form

Book | Magazine | **Manuals and Standards** | CD | Vendor

Cd No:

Book Acc No:

Mag Class No:

Mag Pub Date:

Cd Keyword:

Cd Description:

Buttons: Close, Cancel, Save, Navigation, Add, Delete, Modify

Entry Form

Book | Magazine | **Manuals and Standards** | CD | Vendor

Vendor No:

Vendor Name:

Vendor Speciality: Books Magazine

Vendor Address:

Vendor Phone:

Vendor Email:

Vendor Details:

Buttons: Close, Cancel, Save, Navigation, Add, Delete, Modify

Issue and Return Screen

Issue and Return

Book

Magazine

Manual

CD

Acc.No:

Details...

Title:

Author:

Class No:

Publisher:

Pub Date:

Login Id:

Issue
Return
Close

Book Enquiry Screen

Book Enquiry Screen

Title: or

Author:

Retrieve

Retrieve all

Keywords:

Acc.No:

Clear

Close

Acc No	Title	Author	Book Publisher

Double Click on the Row for more information

Book Enquiry Screen

Magazine Enquiry Screen

Class No: or

Pub Date:

Title:

Mag Title	Mag Class No	Mag Vol No	Mag Pub Date	Mag Price

Double Click on the Row for more Information

Manuals and Standards Enquiry Screen

Manuals and Std's Query Screen

Title: or

Acc no:

Manuals Standard

Class.No:

Title	Acc No	Class No	Pub Date	Price	Indicator

Double Click on the Row for more Information

USER SCREEN

File Transaction Enquire

LIBRARY MANAGEMENT SYSTEM

Ready

Personal Information

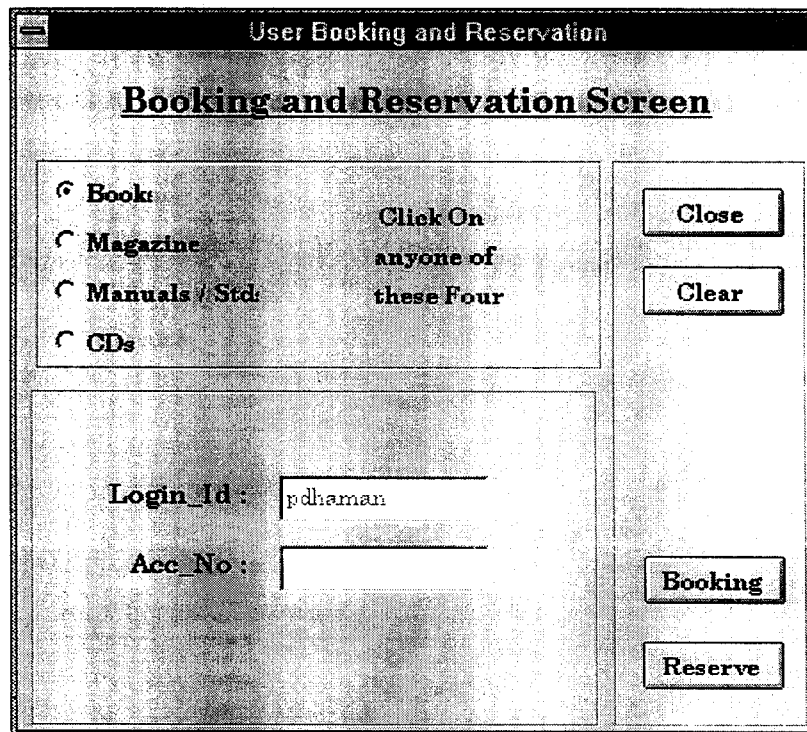
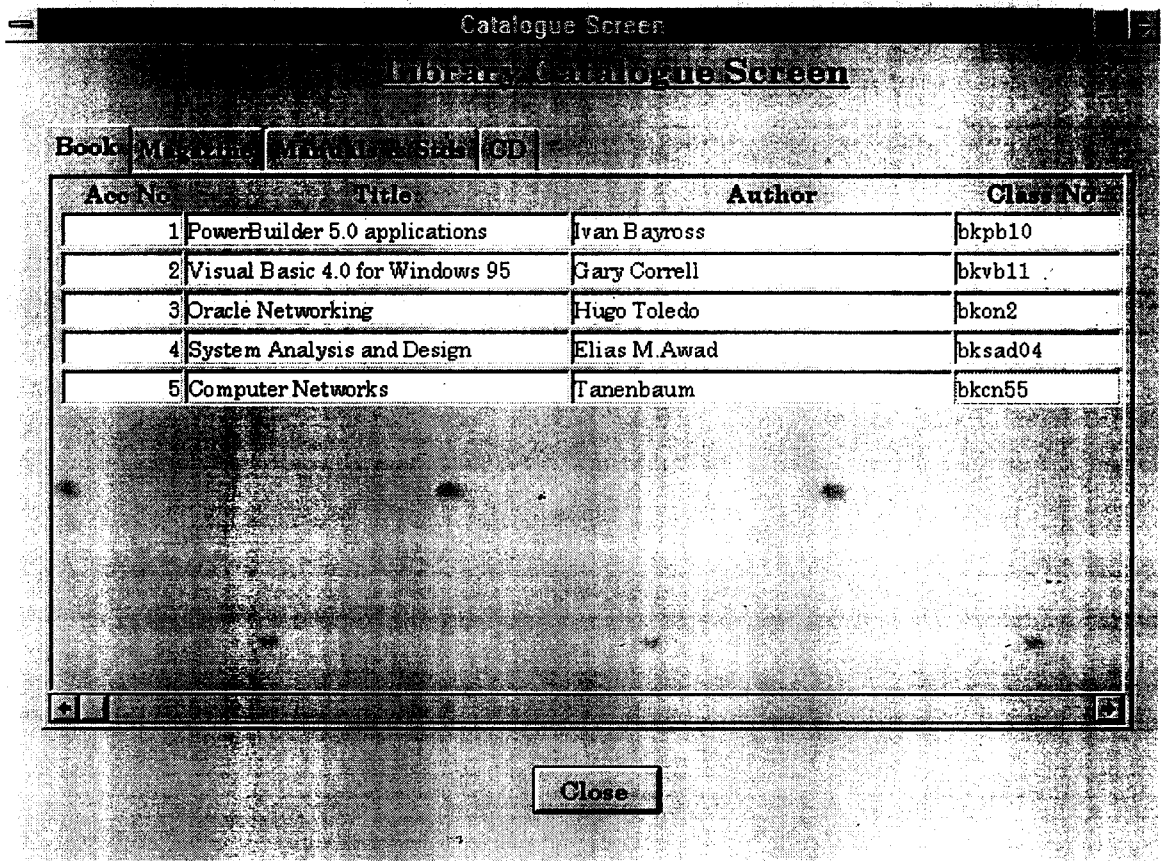
Personal Information Screen

Booking Status						
Login Id	Date	Type	Acc.No.	Class.No	Publ.Date	
pdhaman	2/2/97	Book	1			
pdhaman	5/5/96	Magazine		dq002	03/03/1995	
pdhaman	3/3/96	Magazine		ct001	02/02/1992	

Double Click on the row for more information

Reservation Status						
Login Id	Type	Acc.No.	Class No.	Pub.Date	Q No.	Reserve Date
pdhaman	Book	3			1	01/01/1997
pdhaman	Book	4			3	01/02/1997

Books Issued						
Login Id	Type	Acc.No.	Class No.	Issue Date	Due Date	Renew No
pdhaman	Book	1		22/04/1997	07/05/1997	0
pdhaman	Magazine		dm003	11/11/1995	18/11/1995	1
pdhaman	Magazine		by004	12/12/1997	27/12/1997	2



User Renewal and Cancellation

Renewal and Cancellation Screen

Renewal | Cancellation

Issue Status

Login Id	Type	Acc.No.	Class.No.	Issue Date	Due Date	Renew.No
pdhaman	Book	1		22/04/1997	07/05/1997	0
pdhaman	Magazine		dm003	15/04/1997	15/05/1997	1
pdhaman	Magazine		by004	08/04/1997	23/05/1997	2
pdhaman	Book	2		22/04/1997	06/07/1997	4

← No further Renewals.

Books and Magazines Requisition Screen

Book | Magazine

Login Id:
 Title:
 Author:
 Price:
 Approved By: