Bhujbal Knowledge City
MET's Institute Of Engineering

Adgaon, Nashik-422003.

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A

PROJECT

ON

"LIBRARY MANAGEMENT SYSTEM"

SUBMITTED IN

DEPARTMENT OF MCA

GUIDED BY

Prof. Aruna Deogire

PRESENTED BY

Mr. Jagdish P. Chopde (Roll No : 05)

Ms. Sneha P. Sabale (Roll No : 26)

SYMCA

Bhujbal Knowledge City
MET's Institute Of Engineering

Adgaon,Nashik-422003.

Affiliated to

University Of Pune

Department Of Master of Computer Application

CERTIFICATE

This is to certify that project entitled

"LIBRARY MANAGEMENT SYSTEM"

Has satisfactorily completed by

Mr. Jagdish P. Chopde

Ms. Sneha P. Sabale

In partial fulfillment of term work for

Degree in Master of Computer Application

For the academic year 2010-2011

(Prof. Aruna Deogire)
Project Guide

(Prof. Aruna Deogire)
H.O.D. (MCA)

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Mr. Jagdish P. Chopde
Ms. Sneha P. Sabale
SYMCA

Abstract

The Proposed Library management system performs tasks automatically. The proposed system performs functions such as book management, membership management, book circulation, two types of searching such as keyword search and full search. It generates all of types of reports required by administrator. Barcode reader is used to read the barcodes of accession numbers and ISBN numbers of books. So it is very efficient for maintaining, updating and searching the data.

It performs functions such as :

1. It maintains the records of Employees.
2. It maintains the records of Members.
3. It maintains the records of Books.
4. It performs transactions such as Issuing and Returning books.
5. It provides the Barcode Reader facility for reading Accession No. and ISBN No. of Books and Member Library No. of Members.
6. It generates updated reports of current status of Transactions, Books, Members and Employees.
7. It provides efficient searching facility for searching Books, Members and Employees.

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Chapter 1

Introduction

The Proposed Library management system performs tasks automatically. It maintains all records of library members, books, employees, transactions very efficiently. Barcode reader is used to read the barcodes of accession numbers and ISBN numbers. So it is very efficient for maintaining, updating and searching the data.

In the Proposed System, we handle three main entities as Employees, Members and Books. Separate GUIs are provided to add, update these entities. It provides searching facilities for books by book titles and authors, etc. It also provides searching for members and employees by their name and member library number. Within Search facility there are two types of Searching as Keyword Search and Full Search. It also provides updated records of all employees, members, available books and current transactions of the members (issuing and returning books) with printing, exporting, searching and zooming facilities.

Chapter 2

System Analysis

2.1 Existing System

The existing library management system of MET library is done manually. All the records of library members, books, employees, book issue and return transactions, etc. are maintained manually in books which is an overhead for the librarians. It is very time consuming so the existing system is not so efficient for searching, updating and maintaining records.

2.2 Proposed System

The Proposed Library management system performs tasks automatically. It maintains all records of library members, books, employees, transactions very efficiently. Barcode reader is used to read the barcodes of accession numbers and ISBN numbers of Books. So it is very efficient for maintaining, updating and searching the data.

2.3 Scope of the System

In the Proposed System, we handle three main entities as Employees, Members and Books. Separate GUIs are provided to add, update these entities. It provides searching facility for books by book titles and authors, etc. It also provides searching facility for members and employees by their name and member library number. Within Search facility there are two types of Searching as Keyword Search and Full Search. It also provides updated records of all employees, members, available books and current transactions of the members (issuing and returning books) with printing, exporting, searching and zooming facilities.

2.4 Advantages of Proposed System:

1. It provides user friendly GUI for maintaining information about members, employees and books.
2. It provides instant report of day to day transactions that are executed in the library.
3. It provides strong security. It provides same login facility for every type of Employee in library (like Administrator, Processing and Circulation) with the help of user name and password.
4. It provides very efficient and easy way for searching books, members, employees.
5. It provides unlimited data storage capacity at Backend and easy data Backup and Restore facility.
6. It provides instant help about any features in a software by means of documentation provided in the software.

Chapter 3

Feasibility Study

The feasibility of the system can be examined under heads viz. Technical feasibility, Economical feasibility and Operational feasibility.

3.1 Technical Feasibility :

Technical feasibility plays an important role in feasibility study. This study reveals all the technical aspects and its corresponding results

After overview in organisation, we make sure that technical equipement, system software and hardware in the organisation need to be teachnically feasible for fulfilling market requirements. So we have to develop our system equipement according to the technical feasibility.

- It has user friendly GUI.
- It provides strong security. It provides same login facility for every type of Employee in library (like Administrator, Processing and Circulation) with the help of user name and password.
- It has optimized coding.

- It provides fast access.

3.2 Economical Feasibility:

During economical feasibility study, the actual cost of implementation is calculated. Based on this information the acceptance of the system depends.

Economical feasibility is one of the most important aspects to be considered. This study reveals all the benefits and drawbacks in implementation of system. The total cost incurred for the development and implementation will be minimum.

So the system is economically feasible.

3.3 Operational Feasibility:

Operational feasibility is the important part of feasibility study. Here, we consider the capabilities of end user that how he can easily handle the computer. In our project, the technology used is .Net which is GUI, due to which user can easily handle it.

The system is user friendly and easy to use. Only little instruction may be required for user so that he can easily operate the system. Operational feasibility study is necessary because user of system should properly understand system where there is no need of extra skills

Therefore after consideration of all aspects of feasibility study, it was decided that system will be computerized.

Chapter 4

Hardware And Software Requirements

4.1 Software Requirements

- Backend: MS SQL Server 2008
- Frontend: C# .Net

4.2 Hardware Requirements

- Processor: Compatible with .Net Framework
- Memory: Minimum 64 MB
- Auxillary Storage: Minimum 5 MB Free Space

Chapter 5

E-R DIAGRAM

5.1 Symbols Used In E-R Diagram

The E-R model uses few basic concepts in producing an E-R diagram. These concepts are:-

Entity
Relationship
Attribute

5.1.1 Entity:

An entity is an object or anything, which is distinguishable from other objects.

5.1.2 Relationship:

A relationship is a meaningful association, a linking or connection between entities.

5.1.3 Attribute:

An attribute is any aspect quality or description of either an entity or relationship.

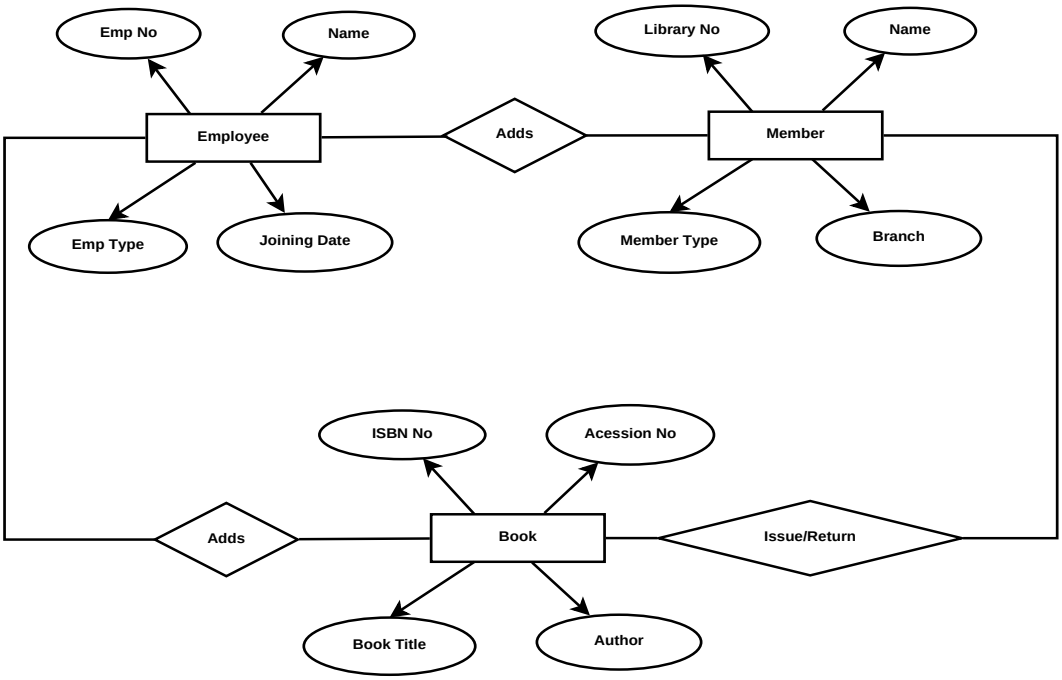

Figure 5.1: E-R Diagram of Library Management System

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Chapter 6

NORMALIZATION

Normalization is the Process of efficiently organizing the data in a Database. There are two rules of Normalization process, eliminating redundant data and ensuring data dependencies that make sense.

6.1 Database

We have taken the efforts for making our Project Database efficiently Normalized.

Table 6.1: Employees table

Column-name	Datatype	Constraints
EmpNo	int	Primary Key
EmpTypeID	int	Not null
Password	nvarchar(30)	Not Null
StatusNow	bit	Not Null

Table 6.2: MembersInfo table

Column-name	Datatype	Constraints
MemLibNo	nvarchar(10)	Primary Key
FName	nvarchar(30)	Not null
MName	nvarchar(30)	Not null
LName	nvarchar(30)	Not null
City	nvarchar(50)	Not Null
State	nvarchar(50)	Not Null
Address	nvarchar(100)	Not Null
PhoneNo	numeric(12, 0)	Null
MobileNo	numeric(12, 0)	Not Null
EMail	nvarchar(50)	Not Null
BloodGroup	nvarchar(5)	Null
AdmReceiptNo	nvarchar(20)	Not Null
AdmReceiptDate	date	Not Null
LibRegPageNo	int	Not Null
BranchId	int	Not Null
EmpNo	int	Not Null
Class$_{post}$	nvarchar(30)	Not Null
Year	nvarchar(10)	Null
ID	nvarchar(20)	Not Null
MemTypeId	int	Not Null
AccountOpeningDate	date	Not Null
MemStatusId	int	Not Null
NoOfBooksIssued	int	Not Null
Photo	image	Null

Table 6.3: BookInfo table

Column-name	Datatype	Constraints
ISBN	nvarchar(30)	Primary Key
BookTitle	nvarchar(50)	Not null
Author	nvarchar(100)	Not Null
Publication	nvarchar(50)	Not Null
PublicationYear	char(5)	Not Null
Edition	nvarchar(20)	Null
Volume	nvarchar(15)	Null
TotalPages	int	Not Null
MediaId	int	Not Null
SubjectID	int	Not Null
BranchId	int	Not Null
Language	nvarchar(30)	Not Null

Table 6.4: Books table

Column-name	Datatype	Constraints
AccessionNo	int	Primary Key
ISBN	nvarchar(30)	Not null
BookStatusId	int	Not Null
BillID	int	Not Null
Price	numeric(9, 2)	Not Null
RackNo	int	Not Null
Attachment1	int	Null
Attachment2	int	Null
EmpNo	int	Not Null
AddingDateTime	datetime	Not Null

Table 6.5: Circulations table

Column-name	Datatype	Constraints
TransId	int	Primary Key
MemLibNo	nvarchar(10)	Not null
AccessionNo	int	Not Null
IssueDateTime	datetime	Not Null
ExpectedDateTime	datetime	Not Null
ReturnDateTime	datetime	Null
IssueEmpNo	int	Not Null
ReturnEmpNo	int	Null

Chapter 7

Snap Shots of Project

7.1 Login Screen

Figure 7.1: Login Screen

7.2 Employee (Add/Update)

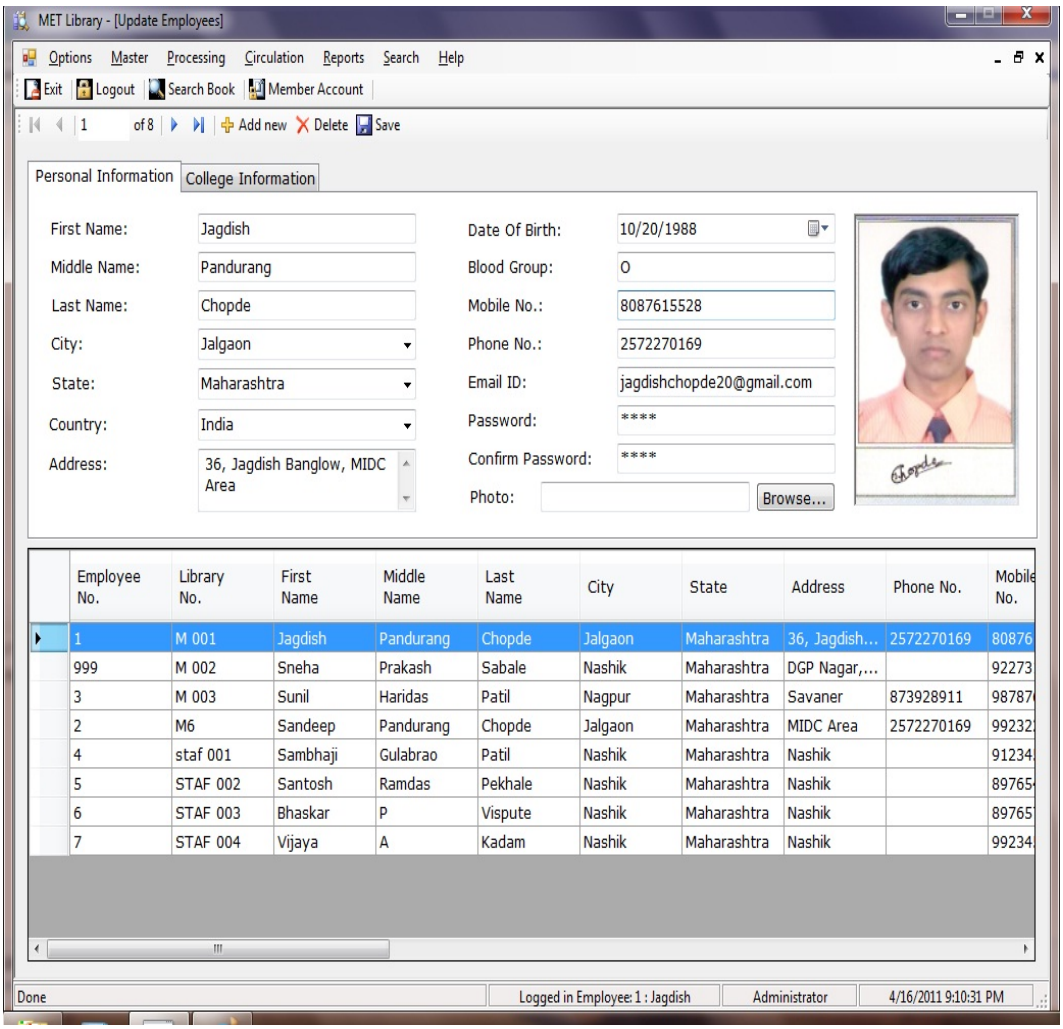

Figure 7.2: Employee (Add/Update)

7.3 Member (Add/Update)

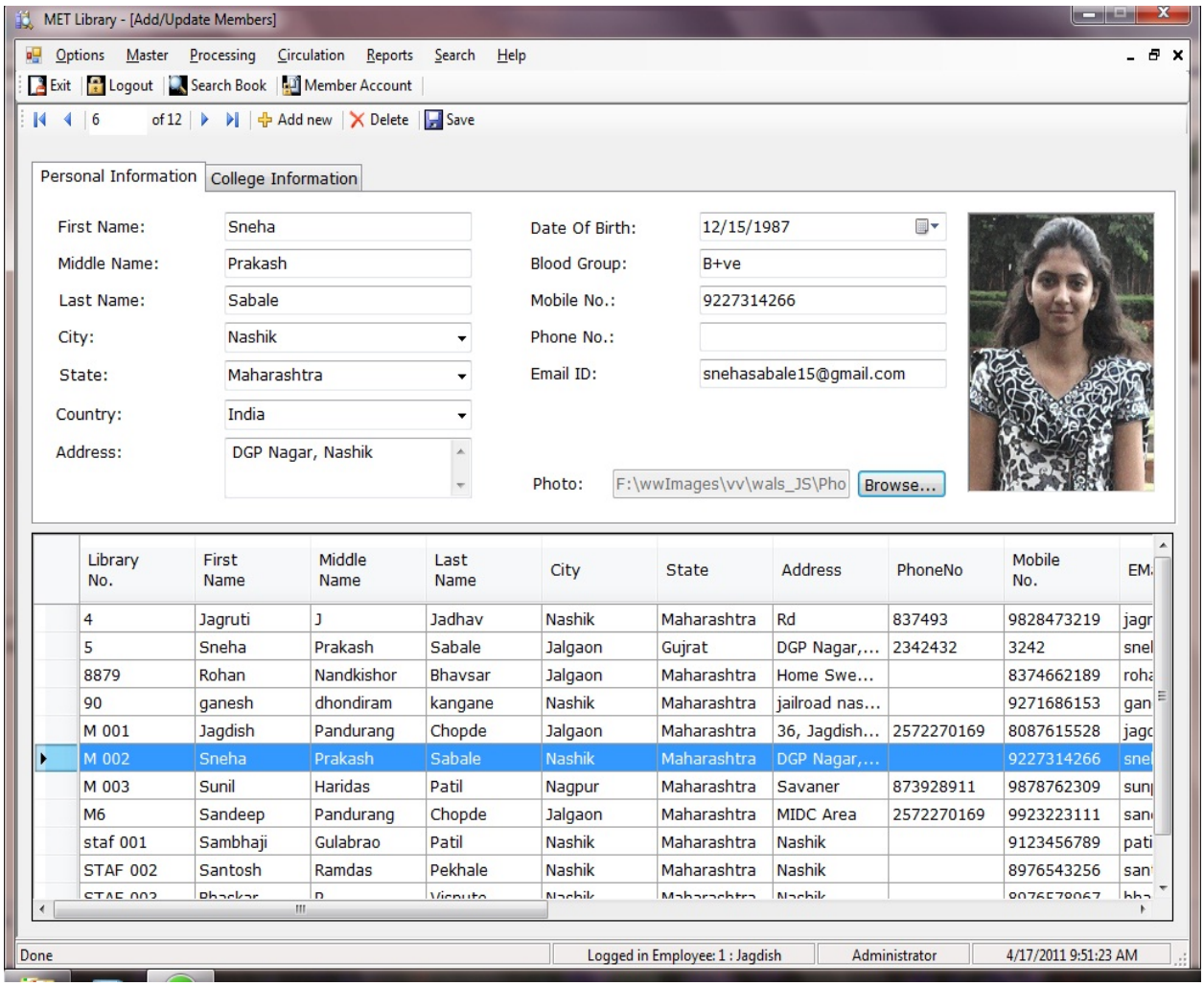

Figure 7.3: Member (Add/Update)

7.4 Books (Add/Update)

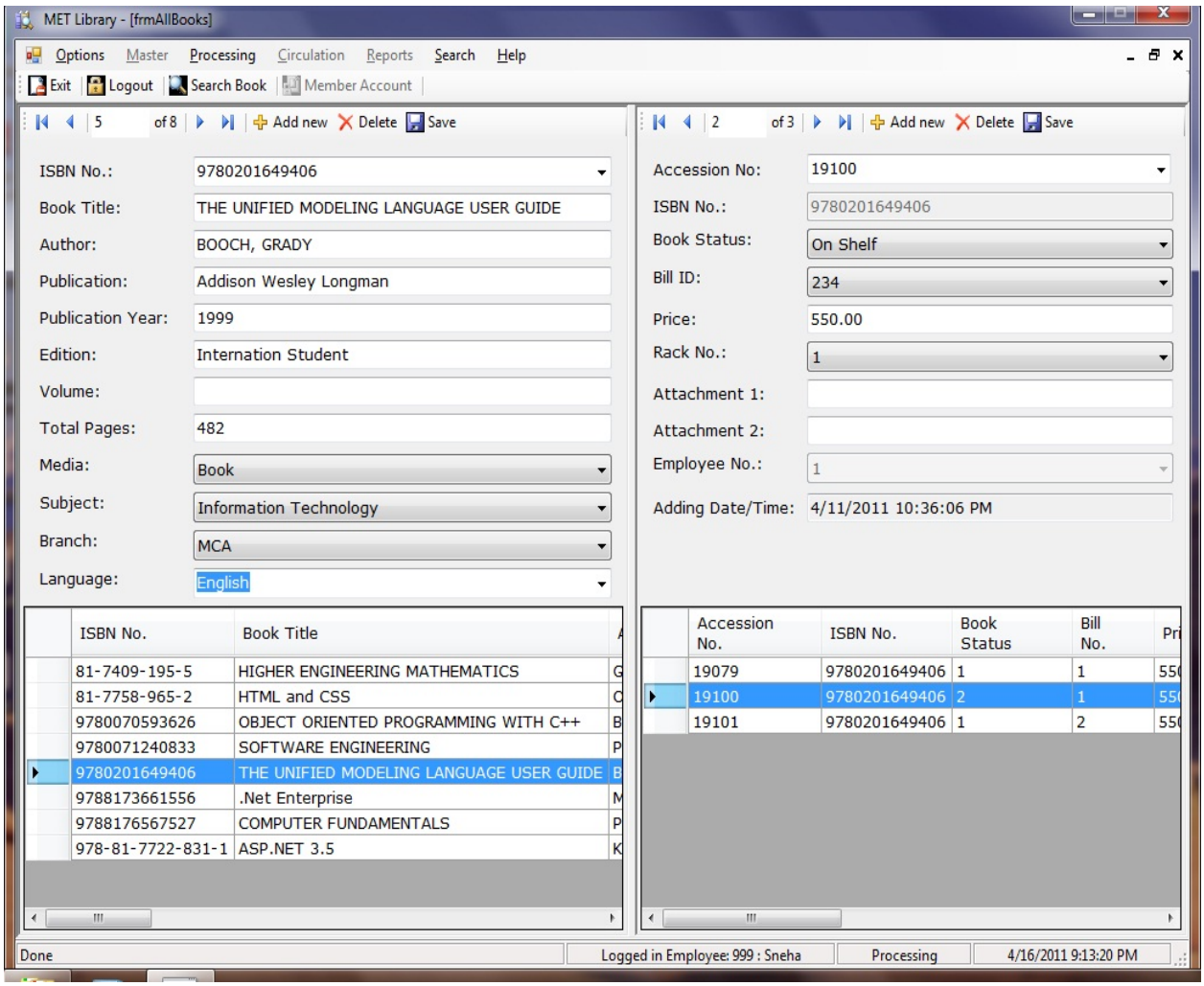

Figure 7.4: Books (Add/Update)

7.5 Member Account (Circulation)

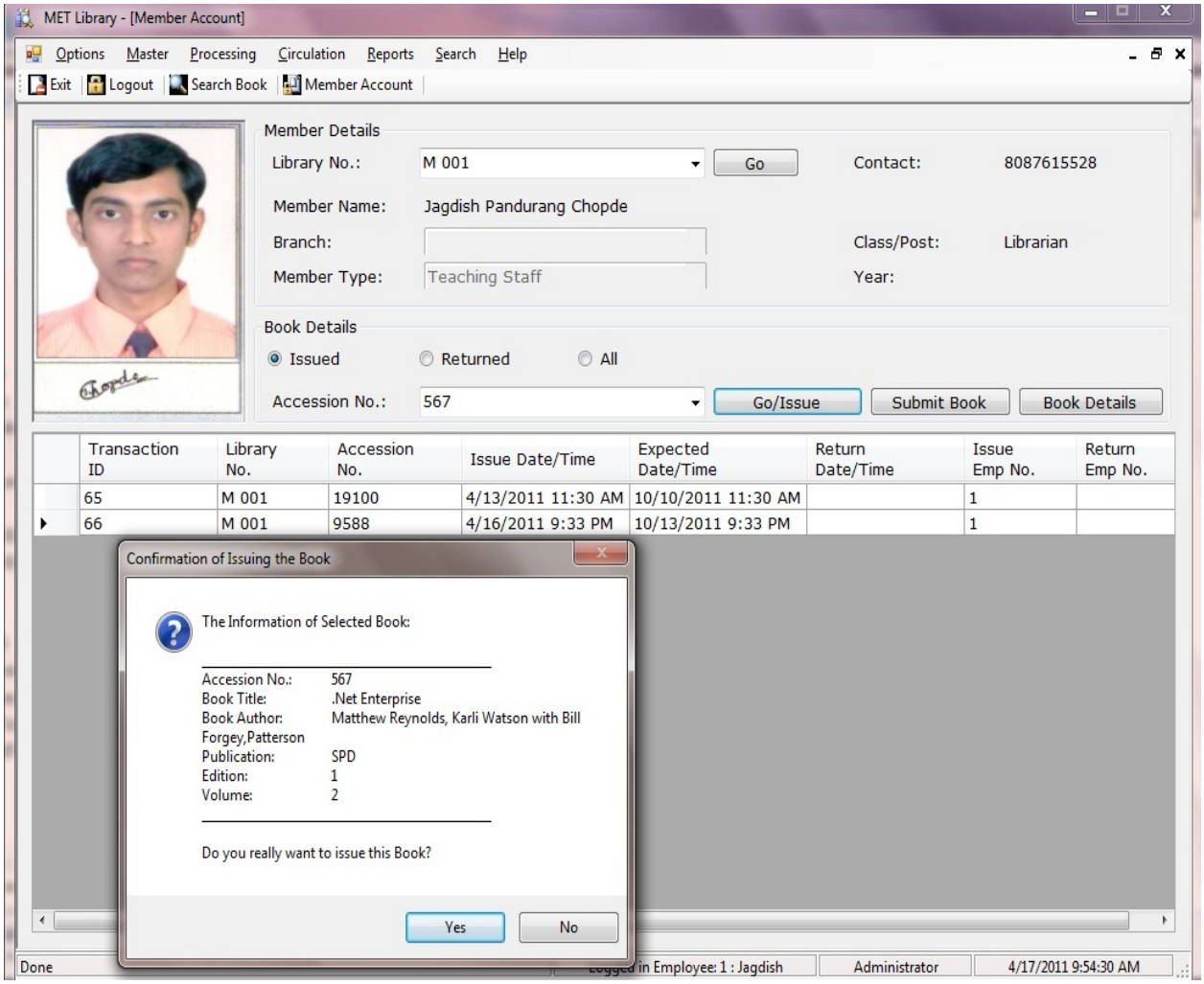

Figure 7.5: Member Account (Circulation)

7.6 About Library

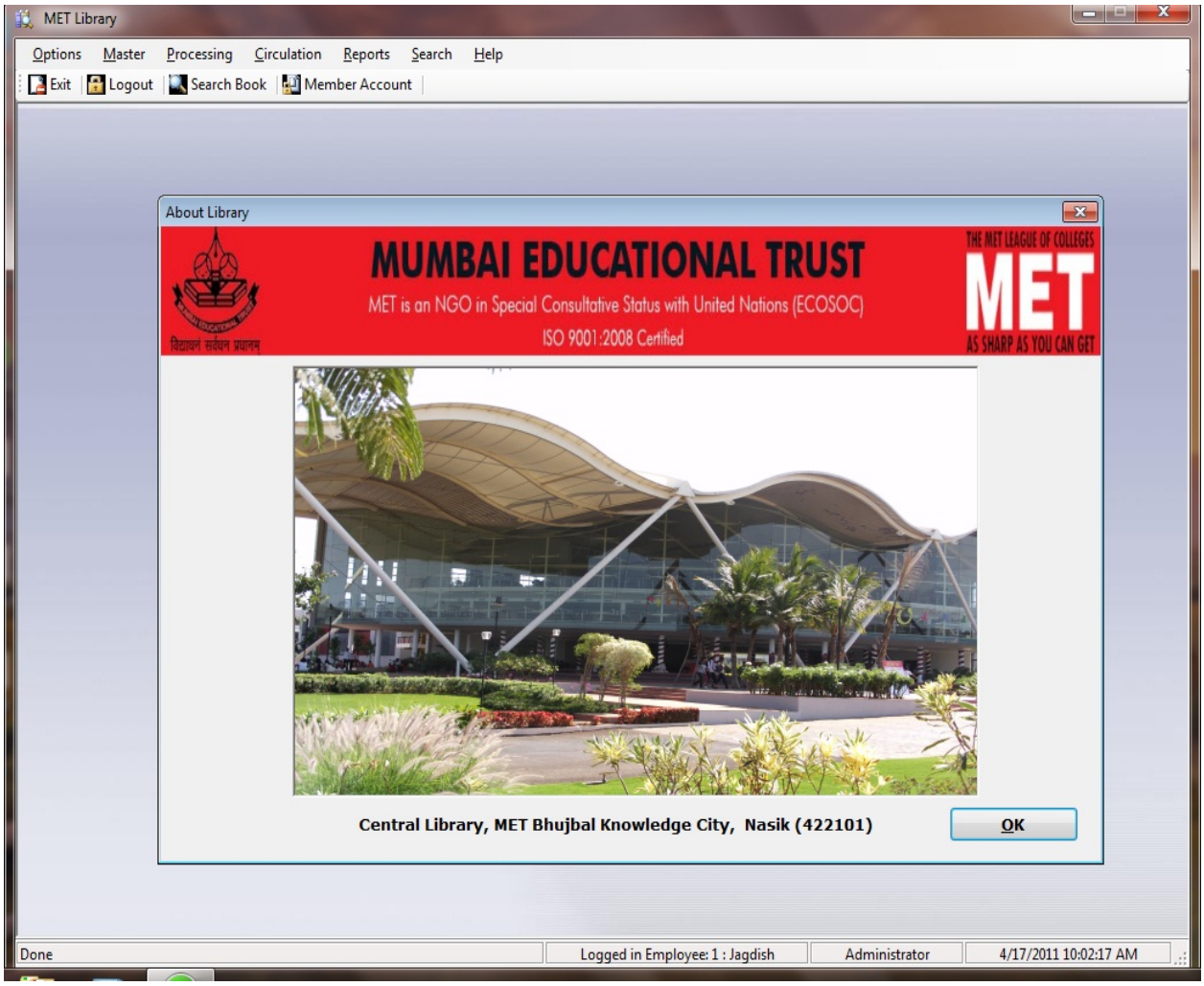

Figure 7.6: About Library

Chapter 8

Reports

Software generates all the reports required by the administrator of Library like

1. Employees Report
2. Members Report
3. Books Report
4. Transactions Reports

It generates the updated reports by using the Crystal Report control of .Net which provides the ready made facilities like Printing the report, Exporting the report, Searching and Zooming, etc.

8.1 Employee Report

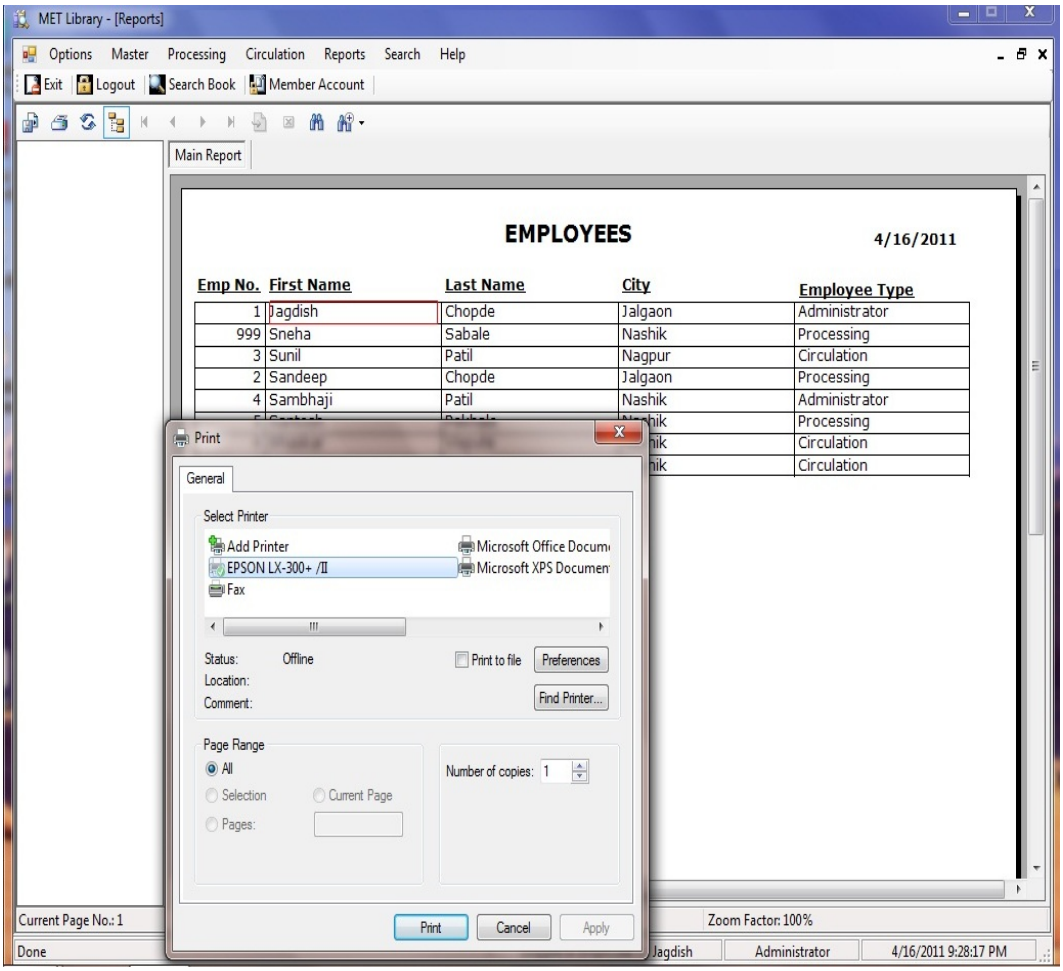

Figure 8.1: Employee Report

8.2 Member Report

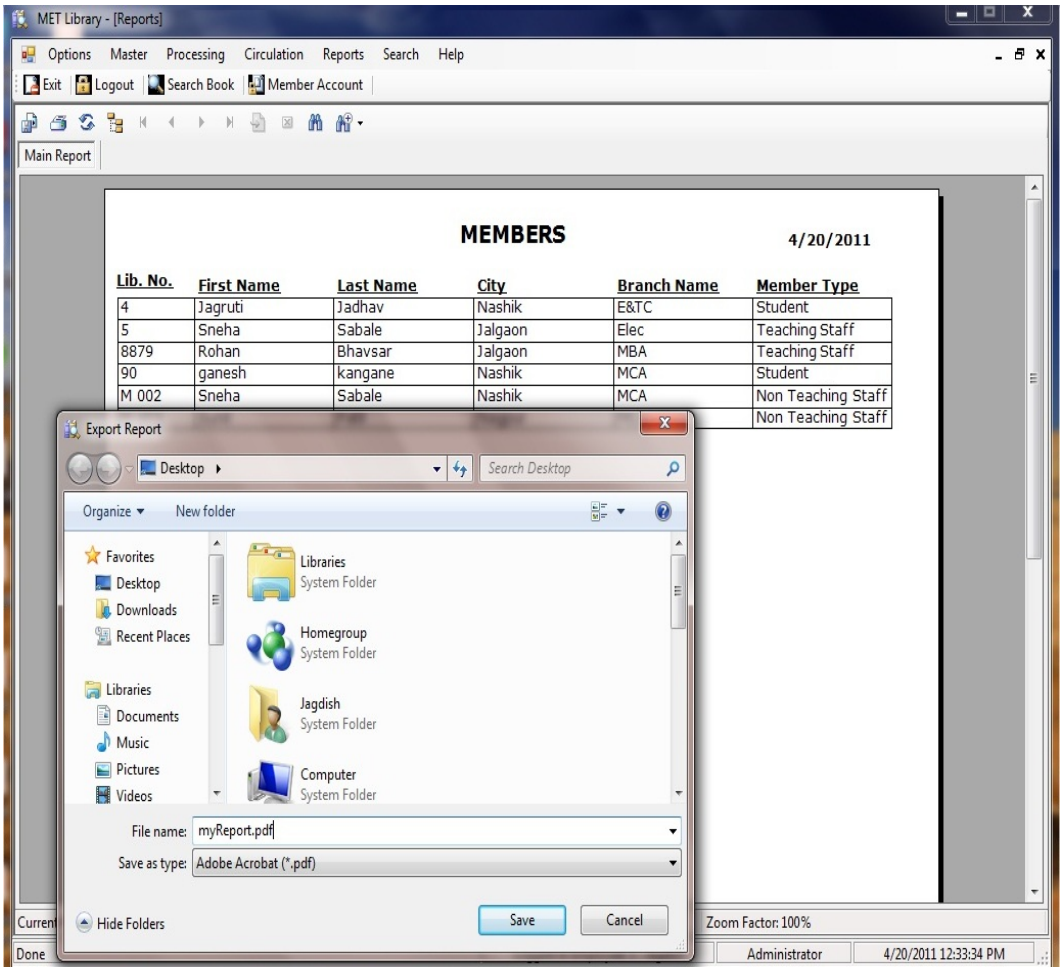

Figure 8.2: Member Report

8.3 Book Report

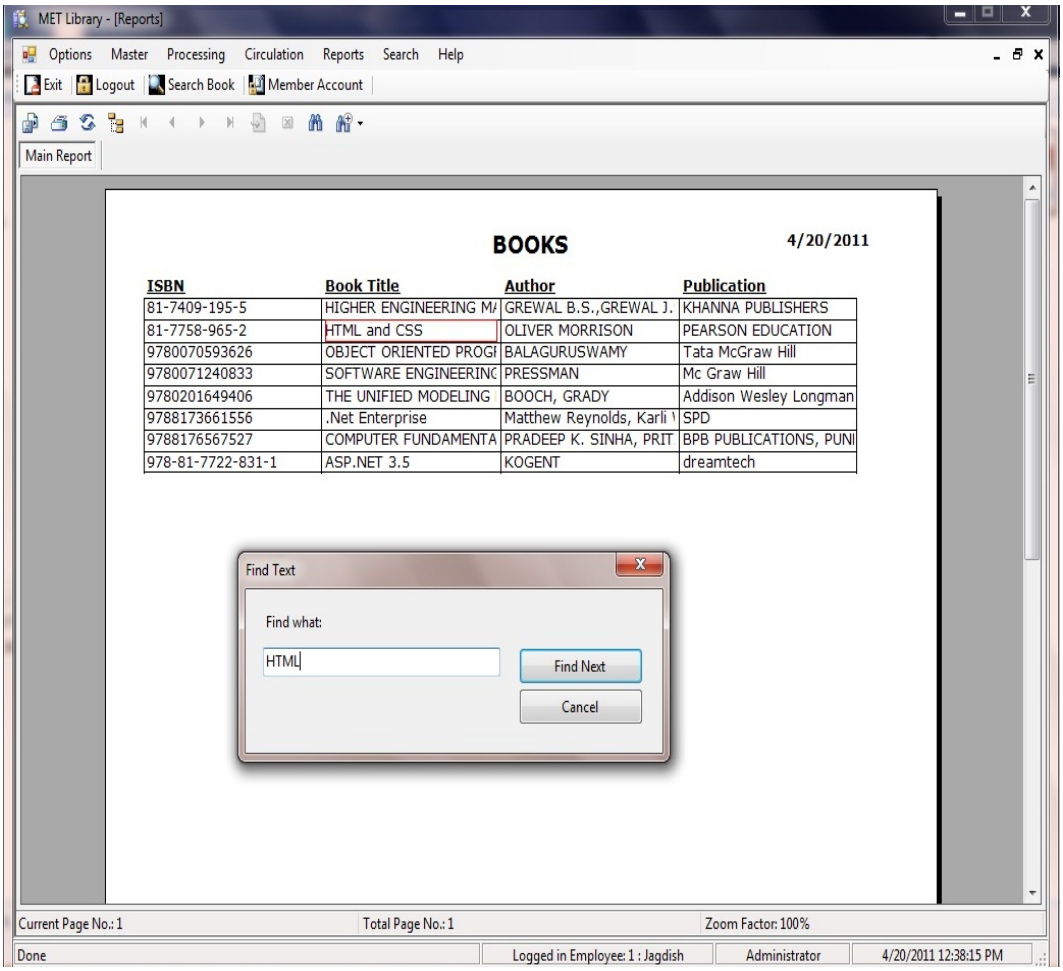

Figure 8.3: Book Report

8.4 Transaction Report

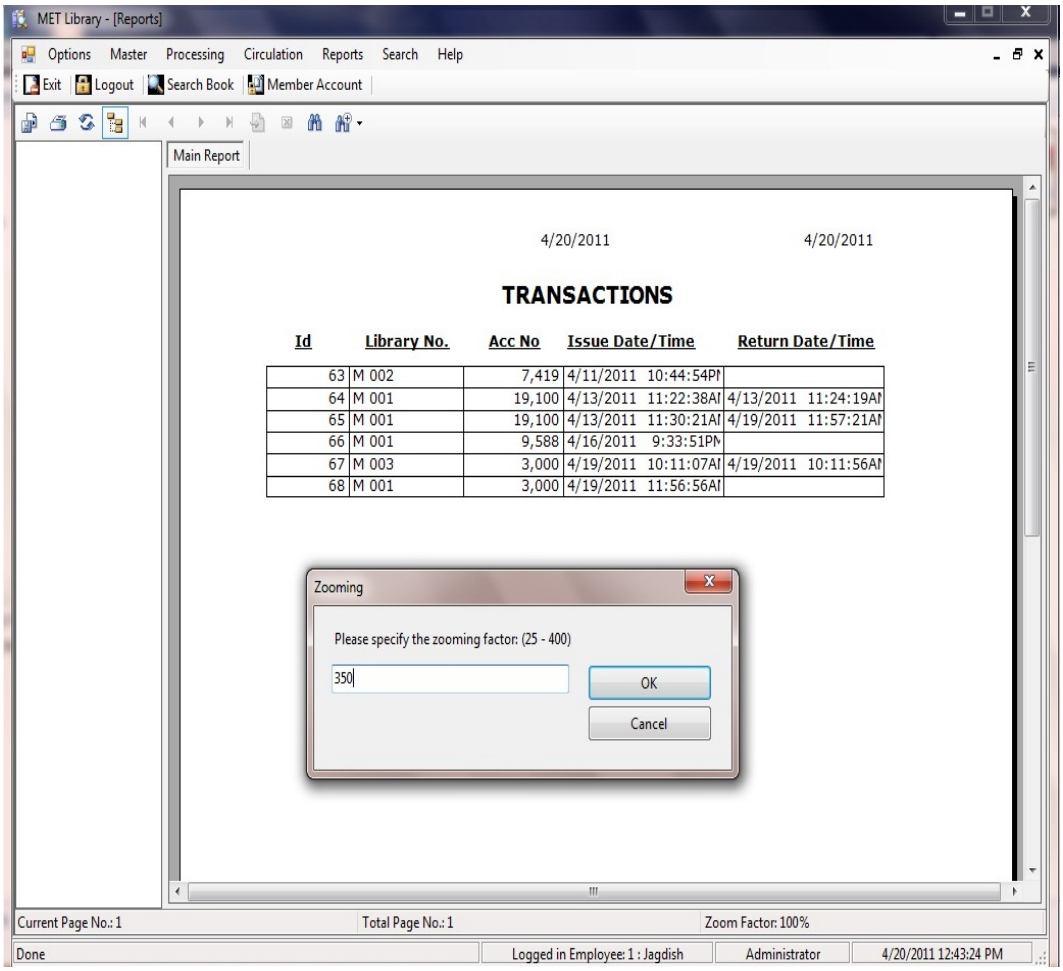

Figure 8.4: Transaction Report

Chapter 9

Testing

9.1 Software Testing

Software Testing is any activity aimed at evaluating an attribute or capability of a program or system and determining that it meets it required results. Testing is more than just debugging. The purpose of testing can be quality assurance, verification and validation, or reliability estimation. Testing can by used as a generic metric as well. Correctness testing and reliability testing are two major areas of testing. Software testing is a trade-off between budget, time and quality.

9.2 Testing Methods

1. Black Box Testing
2. White Box Testing

9.2.1 Black Box Testing

The Black Box approach is a testing method in which test data are derived from the specified functional requirements without regard to the final program structure. It is also termed data driven, input/output driven or requirement based testing.

Because only the functionality of the software module is of concern, Black Box testing also mainly refers to functional testing. A testing method emphasized on executing the functions and examination of their inputs, outputs and specification of data.

The research in Black Box testing mainly focusses on how to maximize the effectiveness of testing with minimum cost, usually the number of test cases.

Good partitioning requires knowledge of the software structure.

A good testing plan will not only contain Black Box testing but also White Box approaches and combinations of the two.

9.2.2 White Box Testing

Contrary to Black Box testing, software is viewed as a White Box or Glass Box in white Box testing, as the structure and flow of the software under test are visible to the tester.

Testing plans are made according to the details of the software implementation, such as programming language, logic and styles.

Test cases are derived from the program structure. White Box testing is also called Glass Box testing, logic driven testing or design based testing.

There are many techniques available in White Box testing because the problem of intractability is eased by specific knowledge and attention on the structure of software under test.

Chapter 10

Conclusion

The Proposed system has overcome some of the drawbacks of existing. The existing system performs all its tasks manually and therefore requires it lot of time. The proposed system performs the tasks automatically and therefore lot of time is saved.

10.1 Limitations And Future Enhancement

10.1.1 Limitation

- Need skilled persons to handle it.
- This Software is Developed According to the Requirements of the Library of MET, Nashik.

10.1.2 Future Enhancements

In future, this project would have wide scope. We would provides facilities such as

1. Book Reservation facility

2. Automatic SMS and E-Mail Facility
3. Automatic Database Backup and Restore facility
4. Fine Management
5. Web Based Applications (Website) which will be used for account verification and book searching purpose. It also includes all static data regarding the library.
6. The Website would also have facility for downloading Question papers, Syllabus, E-Books and other study material which would help students.
7. It would generate variety of reports based on the various entities and transactions involved in the System.

As this project is developed for Library of MET's Institute, Nashik. we can also make it generalized for every Library by making certain structural changes.

Chapter 11

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