



**Bhujbal Knowledge City
MET's Institute Of Engineering**

Adgaon, Nashik-422003.

ACADEMIC YEAR 2010-2011.

**A
PROJECT
ON**

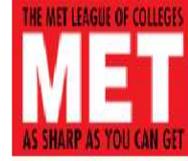
”LIBRARY MANAGEMENT SYSTEM”

**SUBMITTED IN
DEPARTMENT OF MCA**

**GUIDED BY
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SYMCA



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MET's Institute Of Engineering**

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Affiliated to
University Of Pune

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CERTIFICATE

This is to certify that project entitled

”LIBRARY MANAGEMENT SYSTEM”

Has satisfactorily completed by

Mr. Jagdish P. Chopde

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In partial fulfillment of term work for

Degree in Master of Computer Application

For the academic year 2010-2011

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H.O.D. (MCA)

Acknowledgements

Every work is source which requires support from many people and areas. It gives me proud privilege to complete the project on "*LIBRARY MANAGEMENT SYSTEM*" under valuable guidance and encouragement of my guide **Prof. Aruna Deogire**.

I am also extremely grateful to our respected H.O.D. (MCA Dept.) **Prof. Aruna Deogire** and **Prof. Swapnil Kulkarni** for providing all facilities and every help for smooth progress of project.

I would also like to thank all the Staff Members of MCA Department for timely help and inspiration for completion of the project.

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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 equipment, system software and hardware in the organisation need to be technically feasible for fulfilling market requirements. So we have to develop our system equipment 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.

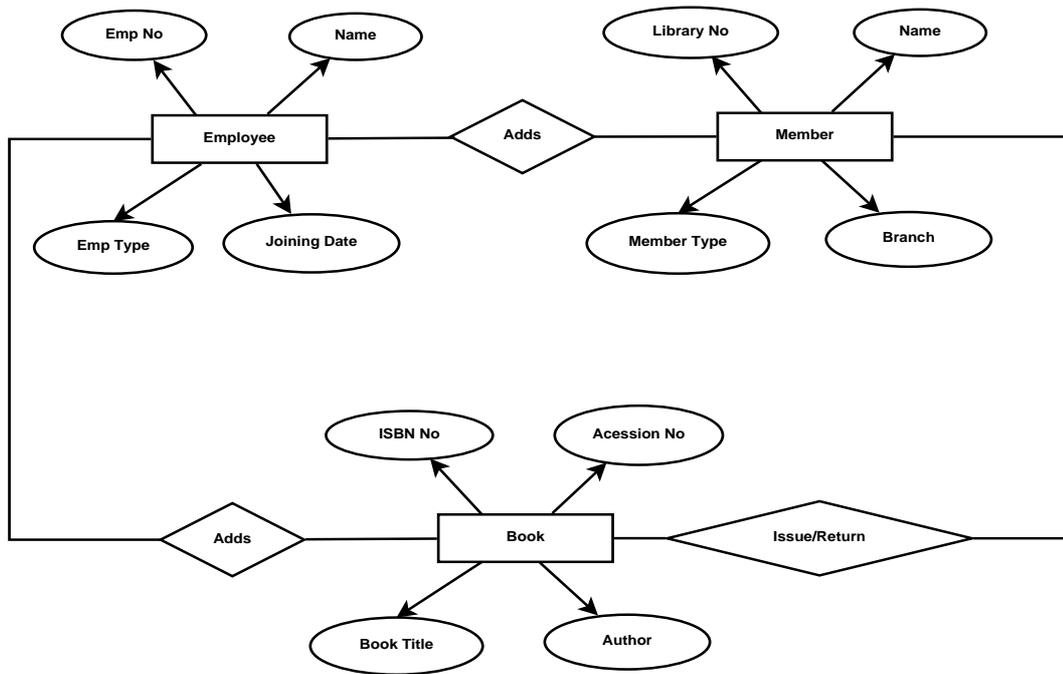


Figure 5.1: E-R Diagram of Library Management System

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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)

MET Library - [Update Employees]

Options Master Processing Circulation Reports Search Help

Exit Logout Search Book Member Account

1 of 8 Add new Delete Save

Personal Information College Information

First Name: Jagdish Date Of Birth: 10/20/1988

Middle Name: Pandurang Blood Group: O

Last Name: Chopde Mobile No.: 8087615528

City: Jalgaon Phone No.: 2572270169

State: Maharashtra Email ID: jagdishchopde20@gmail.com

Country: India Password: ****

Address: 36, Jagdish Banglow, MIDC Area Confirm Password: ****

Photo: Browse...



Employee No.	Library No.	First Name	Middle Name	Last Name	City	State	Address	Phone No.	Mobile No.
1	M 001	Jagdish	Pandurang	Chopde	Jalgaon	Maharashtra	36, Jagdish...	2572270169	80876
999	M 002	Sneha	Prakash	Sabale	Nashik	Maharashtra	DGP Nagar,...		92273
3	M 003	Sunil	Haridas	Patil	Nagpur	Maharashtra	Savner	873928911	98787
2	M6	Sandeep	Pandurang	Chopde	Jalgaon	Maharashtra	MIDC Area	2572270169	99232
4	staf 001	Sambhaji	Gulabrao	Patil	Nashik	Maharashtra	Nashik		91234
5	STAF 002	Santosh	Ramdas	Pekhale	Nashik	Maharashtra	Nashik		89765
6	STAF 003	Bhaskar	P	Vispute	Nashik	Maharashtra	Nashik		89765
7	STAF 004	Vijaya	A	Kadam	Nashik	Maharashtra	Nashik		99234

Done Logged in Employee: 1 : Jagdish Administrator 4/16/2011 9:10:31 PM

Figure 7.2: Employee (Add/Update)

7.3 Member (Add/Update)

MET Library - [Add/Update Members]

Options Master Processing Circulation Reports Search Help

Exit Logout Search Book Member Account

6 of 12 Add new Delete Save

Personal Information College Information

First Name: Sneha Date Of Birth: 12/15/1987

Middle Name: Prakash Blood Group: B+ve

Last Name: Sabale Mobile No.: 9227314266

City: Nashik Phone No.:

State: Maharashtra Email ID: snehasabale15@gmail.com

Country: India

Address: DGP Nagar, Nashik

Photo: F:\wwImages\vv\wals_JS\Pho Browse...



Library No.	First Name	Middle Name	Last Name	City	State	Address	PhoneNo	Mobile No.	EM
4	Jagruti	J	Jadhav	Nashik	Maharashtra	Rd	837493	9828473219	jagr
5	Sneha	Prakash	Sabale	Jalgaon	Gujrat	DGP Nagar,...	2342432	3242	snel
8879	Rohan	Nandkishor	Bhavsar	Jalgaon	Maharashtra	Home Swe...		8374662189	roha
90	ganesh	dhondiram	kangane	Nashik	Maharashtra	jailroad nas...		9271686153	gan
M 001	Jagdish	Pandurang	Chopde	Jalgaon	Maharashtra	36, Jagdish...	2572270169	8087615528	jagc
M 002	Sneha	Prakash	Sabale	Nashik	Maharashtra	DGP Nagar,...		9227314266	snel
M 003	Sunil	Haridas	Patil	Nagpur	Maharashtra	Savner	873928911	9878762309	sunj
M6	Sandeep	Pandurang	Chopde	Jalgaon	Maharashtra	MIDC Area	2572270169	9923223111	sand
staf 001	Sambhaji	Gulabrao	Patil	Nashik	Maharashtra	Nashik		9123456789	pati
STAF 002	Santosh	Ramdass	Pekhale	Nashik	Maharashtra	Nashik		8976543256	sant
STAF 003	Bhaskar	D	Vignate	Nashik	Maharashtra	Nashik		8876578967	bha

Done Logged in Employee: 1 : Jagdish Administrator 4/17/2011 9:51:23 AM

Figure 7.3: Member (Add/Update)

7.4 Books (Add/Update)

MET Library - [frmAllBooks]

Options Master Processing Circulation Reports Search Help

Exit Logout Search Book Member Account

5 of 8 Add new Delete Save

ISBN No.: 9780201649406

Book Title: THE UNIFIED MODELING LANGUAGE USER GUIDE

Author: BOOCH, GRADY

Publication: Addison Wesley Longman

Publication Year: 1999

Edition: Internation Student

Volume:

Total Pages: 482

Media: Book

Subject: Information Technology

Branch: MCA

Language: English

Accession No.: 19100

ISBN No.: 9780201649406

Book Status: On Shelf

Bill ID: 234

Price: 550.00

Rack No.: 1

Attachment 1:

Attachment 2:

Employee No.: 1

Adding Date/Time: 4/11/2011 10:36:06 PM

ISBN No.	Book Title	Accession No.	ISBN No.	Book Status	Bill No.	Price
81-7409-195-5	HIGHER ENGINEERING MATHEMATICS	19079	9780201649406	1	1	550.00
81-7758-965-2	HTML and CSS	19100	9780201649406	2	1	550.00
9780070593626	OBJECT ORIENTED PROGRAMMING WITH C++	19101	9780201649406	1	2	550.00
9780071240833	SOFTWARE ENGINEERING					
9780201649406	THE UNIFIED MODELING LANGUAGE USER GUIDE					
9788173661556	.Net Enterprise					
9788176567527	COMPUTER FUNDAMENTALS					
978-81-7722-831-1	ASP.NET 3.5					

Done Logged in Employee: 999 : Sneha Processing 4/16/2011 9:13:20 PM

Figure 7.4: Books (Add/Update)

7.5 Member Account (Circulation)

The screenshot displays the 'MET Library - [Member Account]' window. The interface includes a menu bar (Options, Master, Processing, Circulation, Reports, Search, Help) and a toolbar (Exit, Logout, Search Book, Member Account). A member profile is shown with a photo and signature of Jagdish Pandurang Chopde. The 'Member Details' section includes fields for Library No. (M 001), Member Name (Jagdish Pandurang Chopde), Branch, Member Type (Teaching Staff), Contact (8087615528), Class/Post (Librarian), and Year. The 'Book Details' section has radio buttons for Issued (selected), Returned, and All, and a field for Accession No. (567). Below this is a table of transactions:

Transaction ID	Library No.	Accession No.	Issue Date/Time	Expected Date/Time	Return Date/Time	Issue Emp No.	Return Emp No.
65	M 001	19100	4/13/2011 11:30 AM	10/10/2011 11:30 AM		1	
66	M 001	9588	4/16/2011 9:33 PM	10/13/2011 9:33 PM		1	

A 'Confirmation of Issuing the Book' dialog box is open, displaying the following information:

The Information of Selected Book:

Accession No.: 567
 Book Title: .Net Enterprise
 Book Author: Matthew Reynolds, Karli Watson with Bill Forgey, Patterson
 Publication: SPD
 Edition: 1
 Volume: 2

Do you really want to issue this Book?

The dialog box has 'Yes' and 'No' buttons.

The status bar at the bottom shows 'Done', 'Logged in Employee: 1 : Jagdish', 'Administrator', and '4/17/2011 9:54:30 AM'.

Figure 7.5: Member Account (Circulation)

7.6 About Library

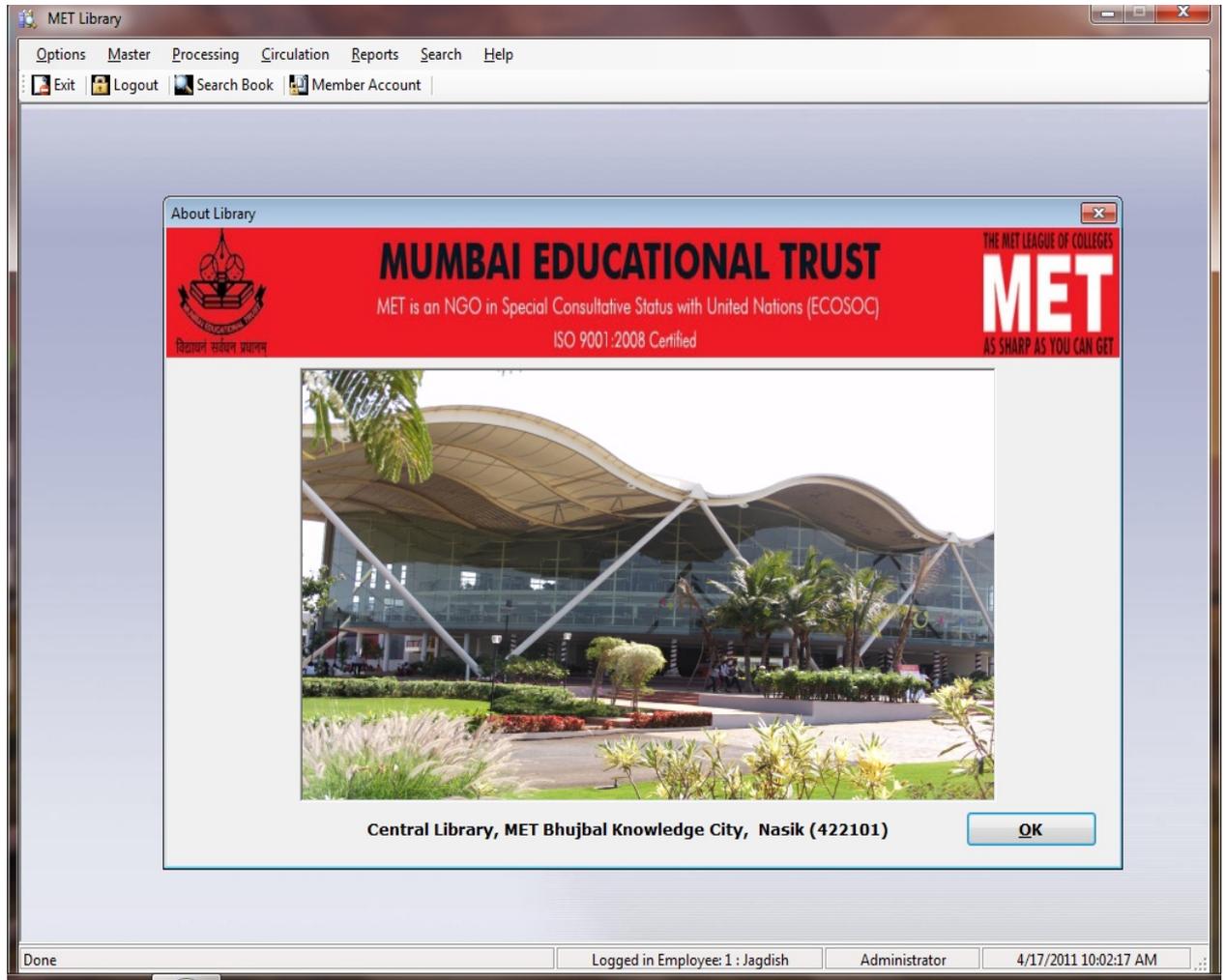


Figure 7.6: About Library

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

The screenshot shows the MET Library Reports application window. The main report is titled "EMPLOYEES" and is dated "4/16/2011". It contains a table with the following data:

Emp No.	First Name	Last Name	City	Employee Type
1	Jagdish	Chopde	Jalgaon	Administrator
999	Sneha	Sabale	Nashik	Processing
3	Sunil	Patil	Nagpur	Circulation
2	Sandeep	Chopde	Jalgaon	Processing
4	Sambhaji	Patil	Nashik	Administrator
			Nashik	Processing
			Nashik	Circulation
			Nashik	Circulation

A "Print" dialog box is open in the foreground, showing the "General" tab. The "Select Printer" section lists "EPSON LX-300+ /II" as the selected printer. The "Page Range" section has "All" selected. The "Number of copies" is set to 1. The "Print" button is highlighted.

At the bottom of the application window, the status bar shows "Current Page No.: 1", "Done", "Zoom Factor: 100%", and "Jagdish Administrator 4/16/2011 9:28:17 PM".

Figure 8.1: Employee Report

8.2 Member Report

The screenshot displays the MET Library software interface. The main window shows a report titled "MEMBERS" dated "4/20/2011". The report contains a table with the following data:

Lib. No.	First Name	Last Name	City	Branch Name	Member Type
4	Jagruti	Jadhav	Nashik	E&TC	Student
5	Sneha	Sabale	Jalgaon	Elec	Teaching Staff
8879	Rohan	Bhavsar	Jalgaon	MBA	Teaching Staff
90	ganesh	kangane	Nashik	MCA	Student
M 002	Sneha	Sabale	Nashik	MCA	Non Teaching Staff
					Non Teaching Staff

An "Export Report" dialog box is open in the foreground, showing the file name "myReport.pdf" and the save type "Adobe Acrobat (*.pdf)". The dialog box also displays a file explorer view of the Desktop folder.

Figure 8.2: Member Report

8.3 Book Report

The screenshot shows a web application window titled 'MET Library - [Reports]'. The main content area displays a report titled 'BOOKS' dated '4/20/2011'. The report contains a table with the following data:

ISBN	Book Title	Author	Publication
81-7409-195-5	HIGHER ENGINEERING M/	GREWAL B.S., GREWAL J.	KHANNA PUBLISHERS
81-7758-965-2	HTML and CSS	OLIVER MORRISON	PEARSON EDUCATION
9780070593626	OBJECT ORIENTED PROGI	BALAGURUSWAMY	Tata McGraw Hill
9780071240833	SOFTWARE ENGINEERING	PRESSMAN	Mc Graw Hill
9780201649406	THE UNIFIED MODELING	BOOCH, GRADY	Addison Wesley Longman
9788173661556	.Net Enterprise	Matthew Reynolds, Karli	SPD
9788176567527	COMPUTER FUNDAMENTA	PRADEEP K. SINHA, PRIT	BPB PUBLICATIONS, PUNI
978-81-7722-831-1	ASP.NET 3.5	KOGENT	dreamtech

A 'Find Text' dialog box is open in the foreground, with the text 'HTML' entered in the 'Find what:' field. The dialog box has 'Find Next' and 'Cancel' buttons.

At the bottom of the application window, the status bar shows: 'Current Page No.: 1', 'Total Page No.: 1', 'Zoom Factor: 100%', 'Done', 'Logged in Employee: 1: Jagdish', 'Administrator', and '4/20/2011 12:38:15 PM'.

Figure 8.3: Book Report

8.4 Transaction Report

4/20/2011 4/20/2011

TRANSACTIONS

<u>Id</u>	<u>Library No.</u>	<u>Acc No</u>	<u>Issue Date/Time</u>	<u>Return Date/Time</u>
63	M 002	7,419	4/11/2011 10:44:54PM	
64	M 001	19,100	4/13/2011 11:22:38AM	4/13/2011 11:24:19AM
65	M 001	19,100	4/13/2011 11:30:21AM	4/19/2011 11:57:21AM
66	M 001	9,588	4/16/2011 9:33:51PM	
67	M 003	3,000	4/19/2011 10:11:07AM	4/19/2011 10:11:56AM
68	M 001	3,000	4/19/2011 11:56:56AM	

Zooming

Please specify the zooming factor: (25 - 400)

350

OK

Cancel

Current Page No.: 1 Total Page No.: 1 Zoom Factor: 100%

Done Logged in Employee: 1: Jagdish Administrator 4/20/2011 12:43:24 PM

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 its required results. Testing is more than just debugging. The purpose of testing can be quality assurance, verification and validation, or reliability estimation. Testing can be 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 a lot of time. The proposed system performs the tasks automatically and therefore a 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 provide 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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