A
Project Report On

"LIBRARY MANAGEMENT SYSTEM"

At

Submitted in the partial Fulfillment of the Requirements

Of

BACHALOR OF COMPUTER APPLICATION

Submitted By

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NAAC Accredited 'A' Grade (with CGPA 3.63**)**
UGC honored 'College of Excellence'

Academic Year - 2020-21

Guided By

Miss. YOGESHWARI YAWALKAR

CERTIFICATE

This is to certify the **BHAVSAR HARSHALI VIRENDRA** student of T.Y.B.C.A. SEM-VI [Project work] has details information on '**Library Management System'**. She is Hard Working and sincere, and we wish him every success in future.

He has developed the project in partial fulfillment of the requirement for the TYBCA [Computer Application] under our supervision and guidance during the year 2020-2021.

Date: / /2020-21

Place: Jalgaon

Manager

K.C.E. Society's

MOOLJI JAITHA COLLEGE, JALGAON

NAAC Reaccredited "A" Grade (with CGPA 3.63)

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ISO 9001:2008 Certified

Faculty of Science

Professional Management

~~~Certificate~~~

This is to certify that **BHAVSAR HARSHALI VIRENDRA** is a confide student of M. J. College, Jalgaon and she has completed the Project, titled **Library Management System** guidance in partial fulfillment of the requirement for the degree of "**Bachelor of Computer Application**" for the year 2021-2022 of North Maharashtra University, Jalgaon.

Project Guide **Vice Principal**

Examiner **Examiner**

Acknowledgement

The satisfaction that accompanies that the successful completion of any task would be incomplete without the mention of people whose ceaseless cooperation made it possible, whose constant guidance and encouragement crown all efforts with success.

We are grateful to our project guide Miss. Yogeshwari Yawalkar for the guidance, inspiration and constructive suggestions that helpful to us in the preparation of this project.

I acknowledge most sincerely and respectfully **Dr.A.P.Sarode**, Vice Principal of Management and Commerce Faculty, **Moolji Jaitha College, Jalgaon.**

Finally, I appreciate my colleagues and friends who kindly offered their suggestions, comments and criticism for improvement of this report.

BHAVSAR HARSHALI VIRENDRA

(T.Y.B.C.A.)

Index

1. INTRODUCATION

" Library Management System" consists of list of records about the management of the details of the students and the issues going on and also about some books and all. This is a web-based application. The project has three modules namely- User, Registration, Librarian. According to the Modules the Distributor and Sub Distributors can manage and do their activities in easy Manner

As the modern organizations are automated and computers are working as per the instructions, it becomes essential for the coordination of human beings, commodity and computers in a modern organization. This information helps the distributors to purchase or sale the products very efficiently.

The administrators and all the others can communicate with the system through this project, thus facilitating effective implementation and monitoring of various activities of the distributor of a supermarket.

2. NEEDS

Needs:

The LIBRARY MANAGEMENT SYSTEM is a software application which avoids more manual hours in taking the book, that need to spend in record keeping and generating reports. Maintaining of user details is complex in manual system in terms of agreements, royalty and activities. This all have to be maintained in ledgers or books. Co-coordinators needs to verify each record for small information also.

- Avoid the manual work
- Add, modify and delete book details into the database.
- Add student records upon issue of a book.
- Record issue date, return date, and fine (penalty).

3. OBJECTIVES

Objectives of project:

The main benefits of this software will be paper saving and most important one: **Time saving**. Earlier these records were maintained on a paper on daily basis but now these can be easily done using this software.

All the Record in library can carried out (with details) in this software. This software can be installed on any Operating System. This software does not require special templates, frames, coding, or server-side technology.

1) Previously we keep the Student and Book Details also Issue and Return book records on papers but since keeping details are daily work it will requires too large bundle of papers which needs large storage area & than also the papers get older soon as the time pass.
2) To keep the data is saved one can add, modify & delete data as & when required.
3) To eliminate the paper work in library.
4) To record every transaction in computerized system so that problem such as record file missing won't happened again.
5) To design a user friendly graphical user interface which suit the user.
6) Save cost After computerized system is implemented less human force will be required to maintain the library thus reducing the over all cost.
7) Save time Librarian is able to search record by using few clicks of mouse and few search keywords thus saving his valuable time

4. SCOPE OF PROJECT

The scope of the “Library Management System” is as follows

For Library Management System” it is divided into two parts that is online web site and library software system. In my part I am responsible for library software system, I will describe scope of my own part of library system.

1) To assist the staff in capturing the effort spent on their respective working areas.
2) Library transaction like issue return and renewal of members .in an education institute college giving description about content and auther.
3) Authenticate users at their login
4) Facility to reserve books that are available.
5) A status page for all users to view books reserved by them.
6) An interface to view and edit their own details.
7) Provide method for adjusting account setting such as passwords.
8) Mechanism to reset the password in case user forget it.
9) Providing to add and delete books to staff.

5. TECHNOLOGY PROPOSED FOR PROJECT

HARDWARE AND SOFTWARE REQUIREMENT

A major element in building system is selection of compatible hardware & software. Hardware selection they begin with requirements analysis following by a request for proposal, evaluation & validation, post installation review.

While selecting the software various criteria is considered such as reliability (gives consistent results), functionality (function to standards), capacity (satisfies volume requirements), flexibility (adapts to changing needs), usability (user friendly), security (to prevent unauthorized access), performance (capacity to deliver as expected), serviceability (good documentation), minimal cost (affordable for intended application).

- **Software Requirement:**
  1. Operating System : : Microsoft windows 10
  2. Application server : Ellipse IDE.
  3. Front end : JAVA, Ellipse IDE
  4. Back end : Xamp server

- **Hardware Requirement:**
  1. Computer processor : intel Core i3.
  2. Processer Speed : 2.30GHz.
  3. Processer Hard Disk : 400 GB.
  4. RAM Min : 2GB.

6. FEASIBILITY STUDY

At the time of the development we have gone through the following phases:

Recognition of need (Requirement specification):

It refers to the organization's needs, requirements and expectations from the project to be developed. After recognizing the organization's need, it has been taken in writing and then a rough idea of the system/project has been given to the firm.

1. **Feasibility Study:**

   It is always essential to evaluate the various aspects before we develop the project. Evaluation should always justify the cost and benefits ratio. Economic, social and technical feasibility of project is analyzed.

2. **Data Collection:**

   Here comes an important aspect of project development i.e. data collection. For this to accomplish, we observe registers, bills, invoices and order forms at client's firm.

3. **Data Normalization:**

   Normalization means allowing only a single value in a table's row and column intersection. For this, entities are identified from the data collected and normalized tables with appropriate relationship and minimized redundancy are designed.

4. **System Design:**

   This step includes drawing of different diagrams such as DFD and ERD. It includes database design, form design etc.

5. **Coding:**

   It is the most critical stage among all the stages of development. It has taken approximately seven days to complete. It involves giving functioning to data entry forms with the help of action, validation, calculations and linking of different data entry forms.

6. **Testing:** It involves testing of the working of the project.

7. **Implementation:**

   This involves deployment of project to client side.

8. **User training:**

   It is one day activity involving training to the user to operate the project

7. CASE TOOLS

It is always essential to evaluate the various aspects before we develop a system. Evaluation should always justify the cost and benefits ratio. If it is found that benefits are less as compare to the cost of project, then it is better to avoid going in for computerization.

The key consideration involved in the Feasibility analysis is:

1. Technical Feasibility.

2. Economical Feasibility.

3. Social Feasibility.

1. Technical Feasibility:

For this project technical feasibility should be studied in two aspects i.e. Hardware feasibility and software feasibility. The system should be easy to update i.e. if the user wants to made some changes in the system then it should be easy for him to change without disturbing the initial system. It should be develop in such a way that it will easy to operate.

It should be menu driven and provide help features and give message on each option so it should be easy to even novice to operate the package. Few hours training is sufficient to train the operator.

2. Economical feasibility:

Cost benefit analysis gives justification for the computerization. In this the benefits and savings that are expected are comparing with costs. If benefits overweigh cost then only the decision is made to design and implement the system. In our case, computerization results reduction of cost, reduction of staff and reduction and of non-reusable stationary. The computer stationary will replace various types of bills and registers. However the overall effect on the operating cost is that we get substantial reduction in monthly running cost. Cost will reduce also in terms of reduction in expenses for space and computers required.

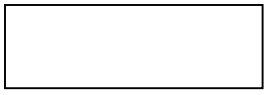
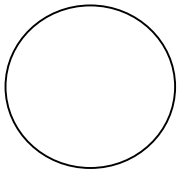
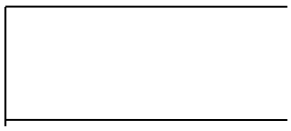
3. Social Feasibility:

Operating with records in both situations i.e. in manual system and computerized system is quite different. Manual system is always disliked because of the complications and other hustle involved in maintaining the records. Computerization will be welcomed because of the simplicity in the data entry and fastest and easy way of getting outputs. After computerization it will become the job of single operator with no risk involved in posting and report generation. Speed of the operation will also increase substantially and hence reporting service to patient will be faster. Hence all welcomes computerization.

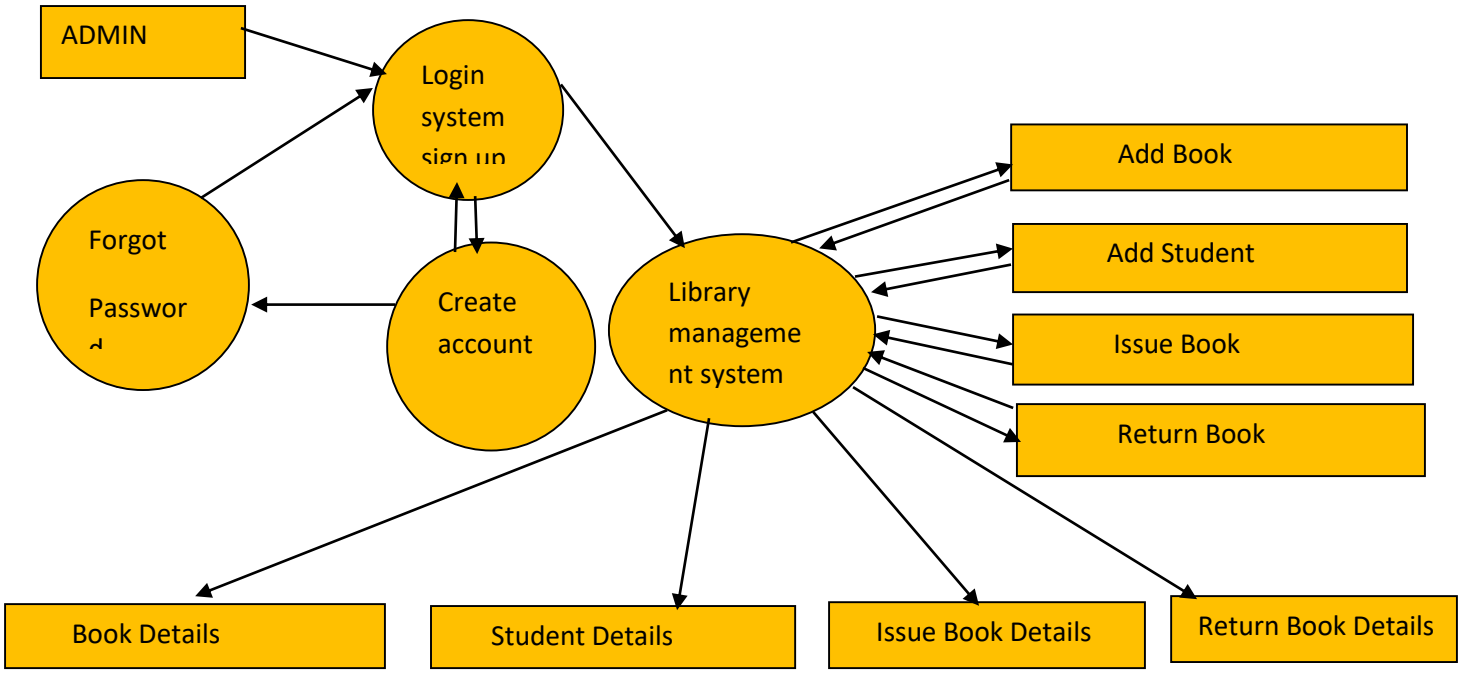
Data Flow Diagram (DFD)

- Data flow diagram is graphical tool which is used to describe and analyze the movement of data through a system. They focus on the data flowing into the system, between processes and in & out of data stores.
- DFD is a graphical technique that detects information flow and transformation that are applied as data move from input and output.
- DFD is a central tool and the basis from which other components are developed.
- DFD provides mechanism for a final modeling as well as information flow modeling.
- DFD has very simple notation which are easily understood by the users & those who involved in the system.

Symbol used for DFD

Symbol	Meaning
	External Entity as source Destination.
	Process or Function.
	Indicates the direction of data flow
	File Storage i.e. data is Stored for use by one or more.

Data Flow Diagram



Entity Relationship Diagram

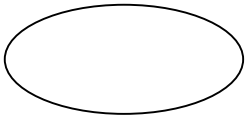
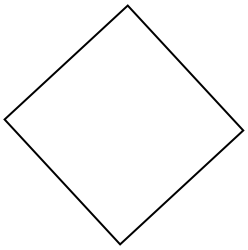
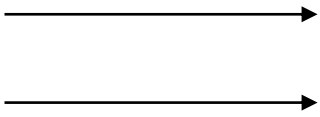
An ER-Diagram can express the overall logical structure of a database graphically. The Entity Relationship Diagram enable a software engineer to fully specify the data objects that are input from a system, the attributes that define the properties of these objects and the relationship between the objects.

- The ER model is one of the several semantic data models; the semantic aspect of the model lies in the attempt to represent meaning of the data.
- The ER model is extremely useful in mapping the meaning and interaction of real world enterprise into a conceptual schema.
- It is notable point that concept of ERD is totally different from DFD. The ER-Diagram is used to describe the logical organization of data.

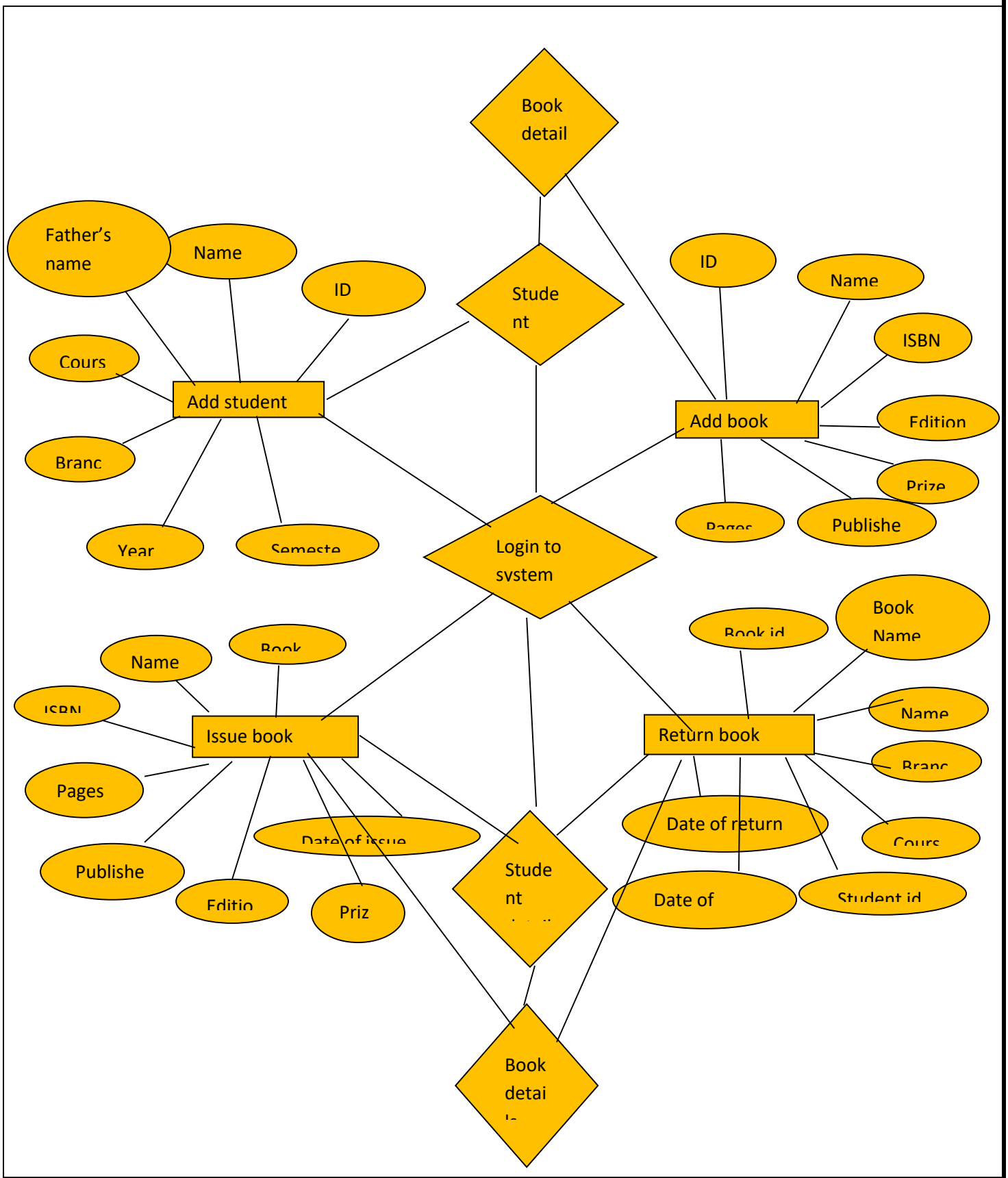
There are following four type of relationships diagram between entities given as follows:

1. One to One
2. One to Many
3. Many to One
4. Many to Many

Symbol used for ERD

Symbol	Meaning
	Entity
	Attribute
	Relationship
	Links

Entity Relationship Diagram



8. TESTING TOOLS

Testing is important from the point of view of accurate functioning of the project. There are many testing measures and tools available to test a project.

Basic tools used to test this project are:

1) Black Box Testing.
2) White Box Testing
3) GUI Testing

1. Black Box Testing:

It is a method of software testing that tests the functionality of an application as opposed to its internal structures or workings. Specific knowledge of the application's code/internal structure and programming language in general is not required. The tester is only aware of what the software is supposed to do, but not how i.e. when he enters a certain input, he gets certain output; without being aware of how the output was produced. Tests cases are build around specifications and requirements, i.e., what the application is supposed to do. It uses external descriptions of the software, including specifications, requirements and designs to derive test cases. These test designer select valid and invalid inputs and determine the correct output. There is knowledge of the test object's internal structure.

This method of test can be applied to all levels of software testing: Unit, Integration, System and Acceptance. It typically comprises most if not all testing at higher levels, but can also dominate unit testing as well.

The advantages of this type of testing include:

- The test is unbiased because the designer and the tester are independent of each other.
- The tester does not need knowledge of any specific programming languages.
- The test is done from the point of view of the user, not designer.

The disadvantages of this type of testing include:

- The case can be redundant if the software designer has already run a test case.
- The test cases are difficult to design.

2. White Box Testing:

White box testing is a method of testing software that tests internal structures or workings of an application, as opposed to its functionality. In white-box testing an internal perspective of the system, as well as programming skills, are required and used to design the test cases. The tester chooses input to exercise paths through the code and determine the appropriate outputs. While white-box testing can be applied at the unit, integration and system levels of the software testing process, it is usually done at unit level. It can test paths within a unit, paths between units during integration, and between subsystems during a system level test. Though this method of test design can uncover many errors or problems, it might not detect unimplemented parts of the specification or missing requirements.

White-Box test design techniques include:

- Control flow Testing
- Data flow Testing
- Branch Testing
- Path Testing

For a complete software examination, both white box and black box tests are required.

3. Graphical User Interface Testing:

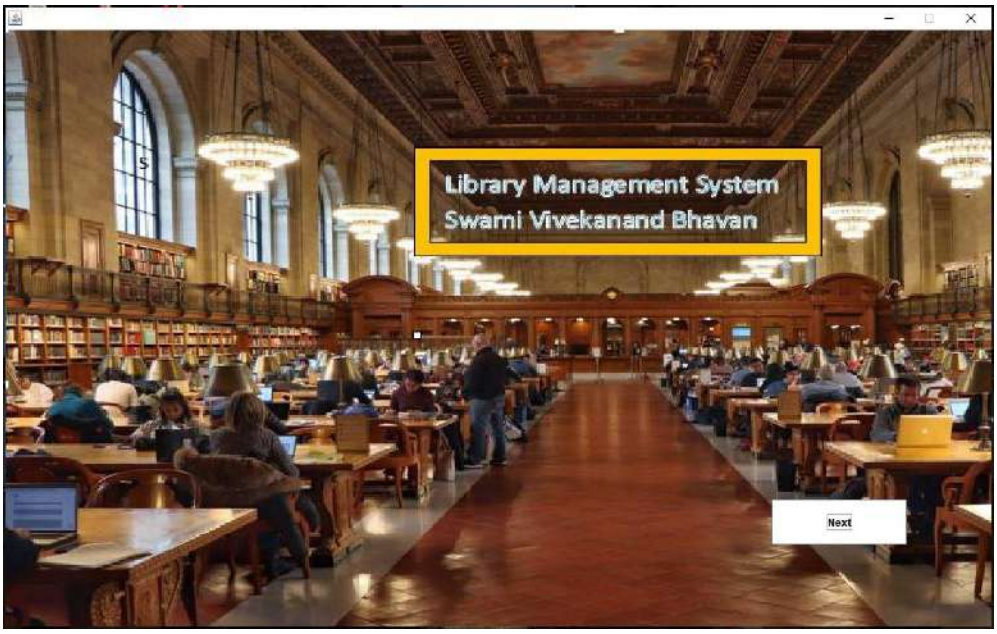
It is the process of testing a product's graphical user interface to ensure it meets its written specifications. This is normally done through the use of a variety of test cases. It checks only the user friendliness. The creation of the user interface is less time consuming for the user but more complex for the programmer. It must be tested for its sole purpose.

This test must be carried out to ensure:

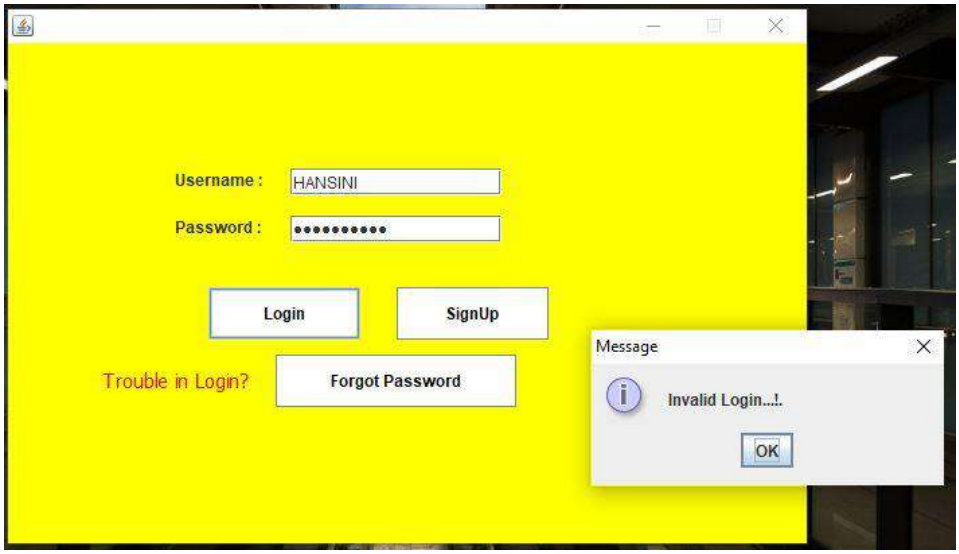
- Windows open properly.
- All data contents are properly addressable.
- All the graphical elements are available and displayed.

Multiple or incorrect mouse click do not produce side effects

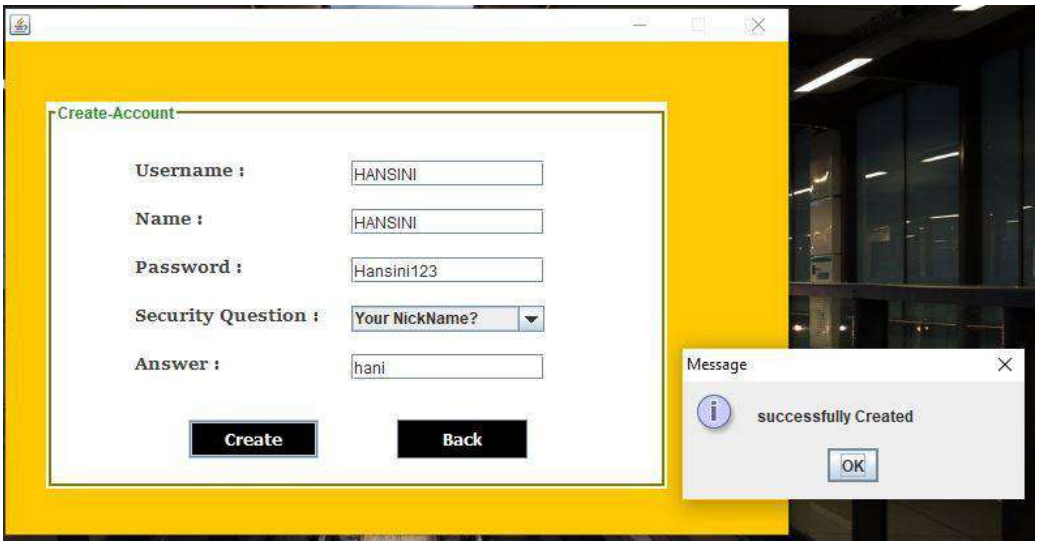
9. Onscreen Views



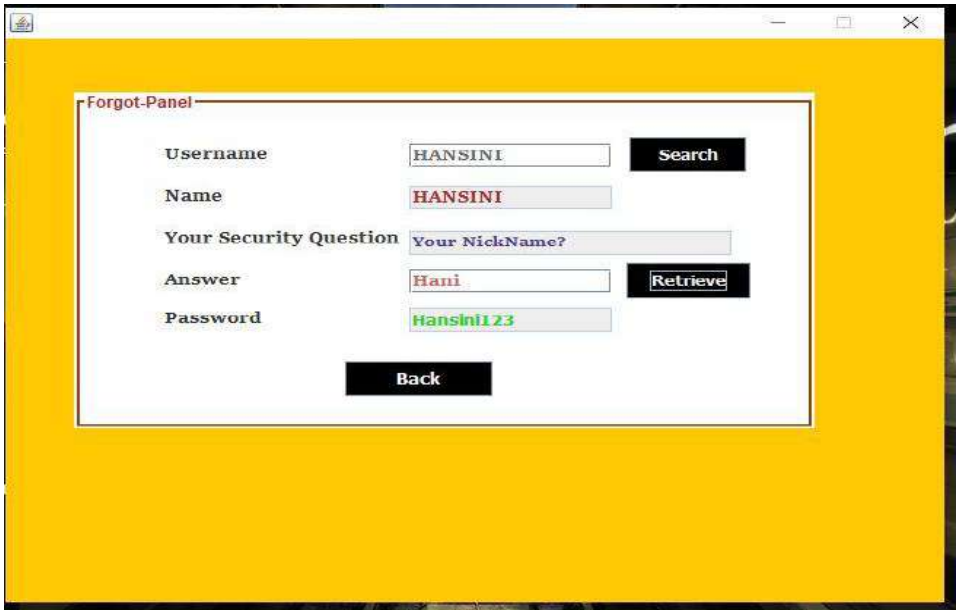
This is the First home page of the software of LIBRARY MANAGEMENT SYSTEM.



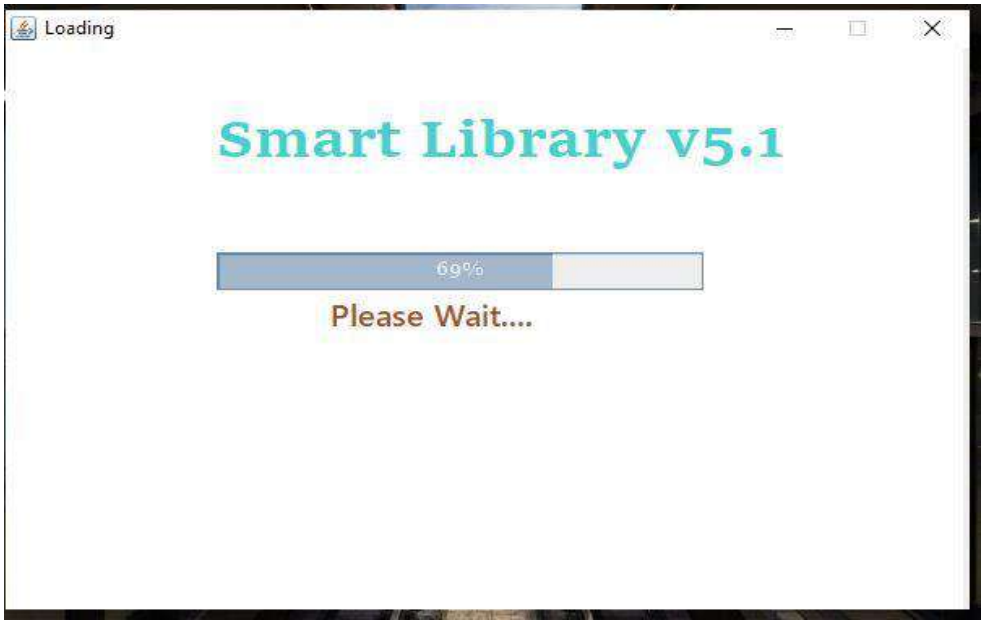
This is the login page where we add the username and password. If it show invalid then sign up and create account then again login.



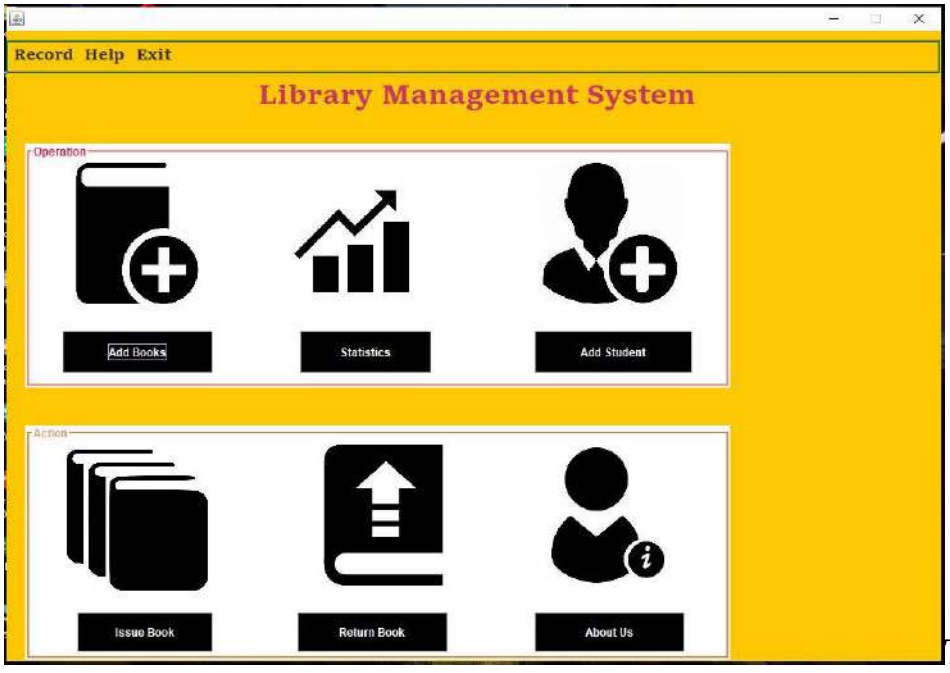
After creating successfully account then go back and again login we can login successfully.



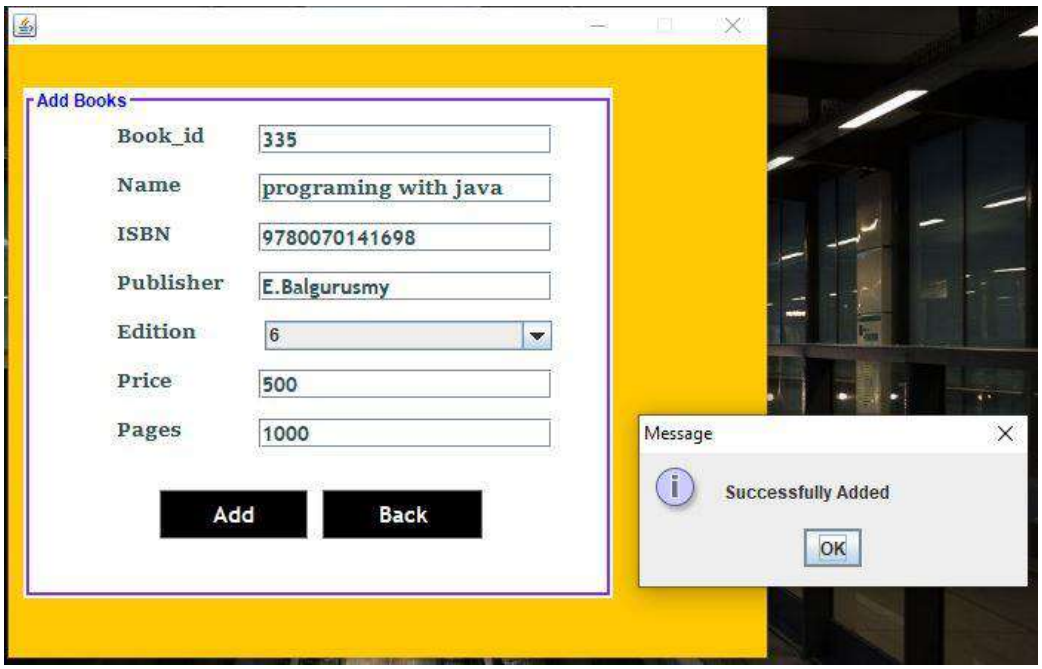
If we forget the password then enter the user name click on search. wright the answer of our security question the click on retrieve we get the password.



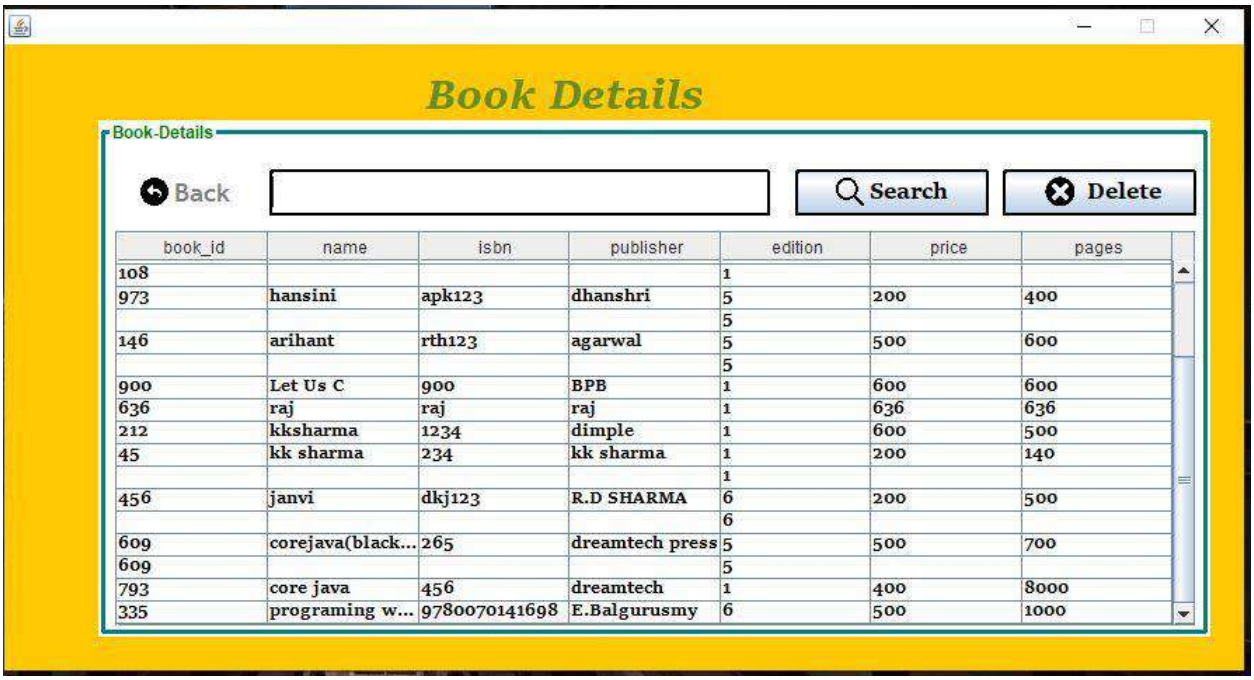
It will display when the account is successfully created and the record is stored in the database.



This is the main page of the whole syatem we can add book ,student,issue book ,return book also find the staristics and the book details and student details from record section.

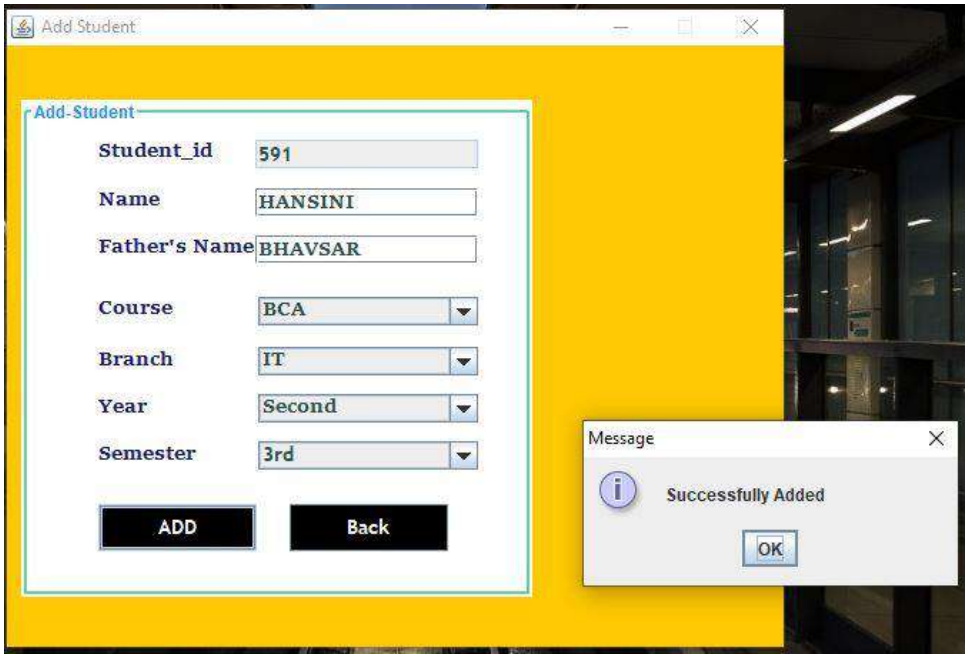


Here we can add the book successfully.

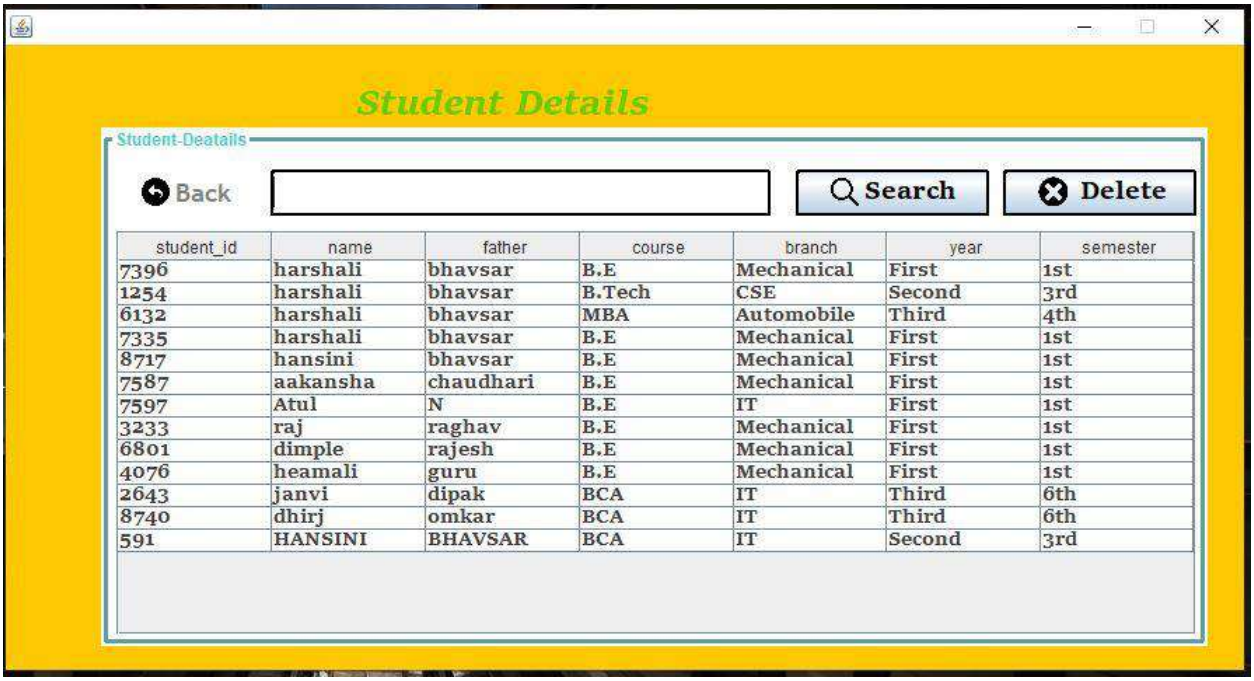


book_id	name	isbn	publisher	edition	price	pages
108				1		
973	hansini	apk123	dhanshri	5	200	400
				5		
146	arihant	rth123	agarwal	5	500	600
				5		
900	Let Us C	900	BPB	1	600	600
636	raj	raj	raj	1	636	636
212	kksharma	1234	dimple	1	600	500
45	kk sharma	234	kk sharma	1	200	140
				1		
456	janvi	dkj123	R.D SHARMA	6	200	500
				6		
609	corejava(black...	265	dreamtech press	5	500	700
609				5		
793	core java	456	dreamtech	1	400	8000
335	programing w...	9780070141698	E.Balgurusmy	6	500	1000

Here we see all the details of book that can be added.

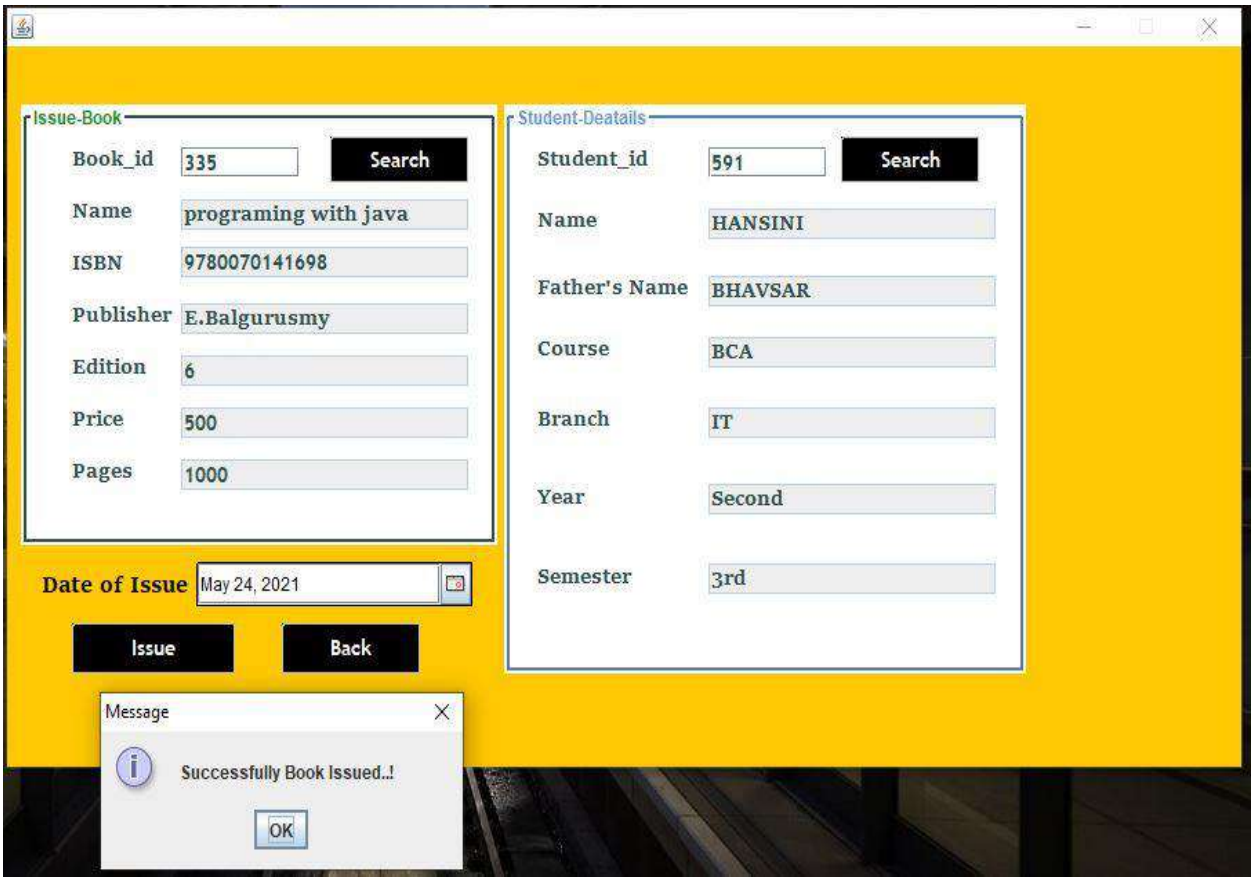


This show we can add all the student details successfully.

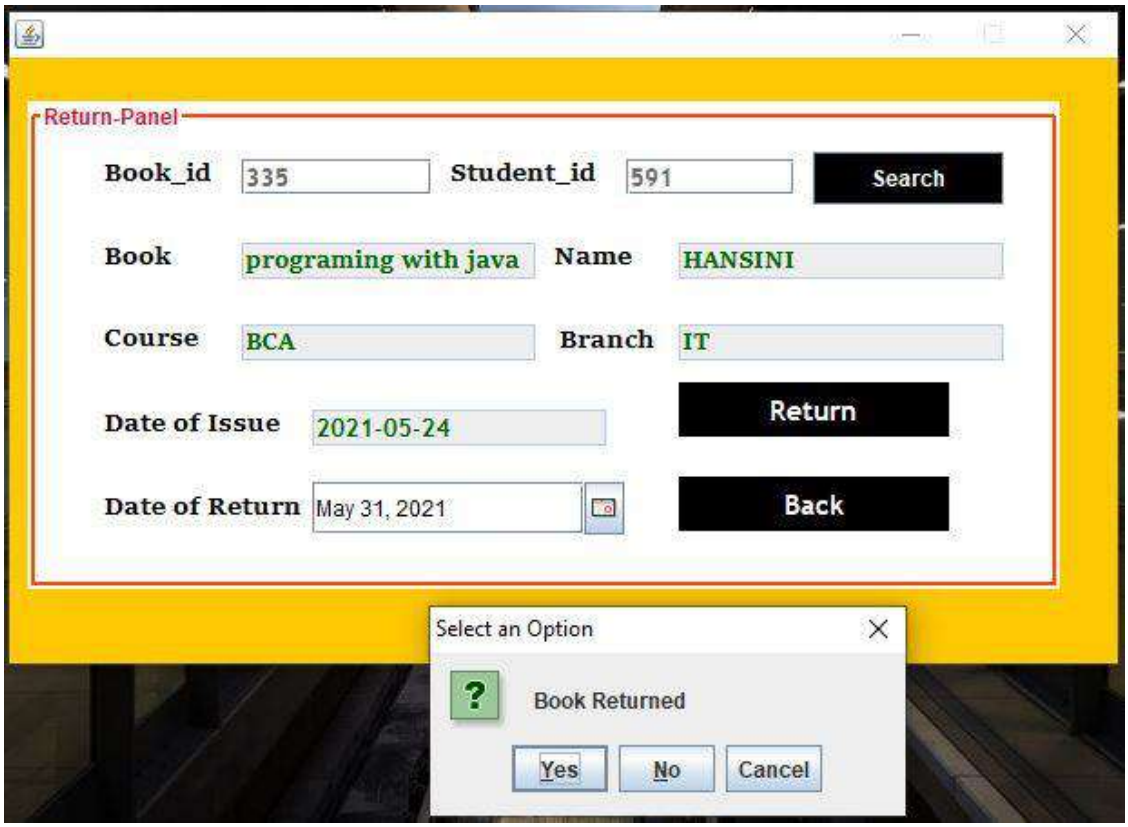


student_id	name	father	course	branch	year	semester
7396	harshali	bhavsar	B.E	Mechanical	First	1st
1254	harshali	bhavsar	B.Tech	CSE	Second	3rd
6132	harshali	bhavsar	MBA	Automobile	Third	4th
7335	harshali	bhavsar	B.E	Mechanical	First	1st
8717	hansini	bhavsar	B.E	Mechanical	First	1st
7587	aakansha	chaudhari	B.E	Mechanical	First	1st
7597	Atul	N	B.E	IT	First	1st
3233	raj	raghav	B.E	Mechanical	First	1st
6801	dimple	rajesh	B.E	Mechanical	First	1st
4076	heamali	guru	B.E	Mechanical	First	1st
2643	janvi	dipak	BCA	IT	Third	6th
8740	dhirj	omkar	BCA	IT	Third	6th
591	HANSINI	BHAVSAR	BCA	IT	Second	3rd

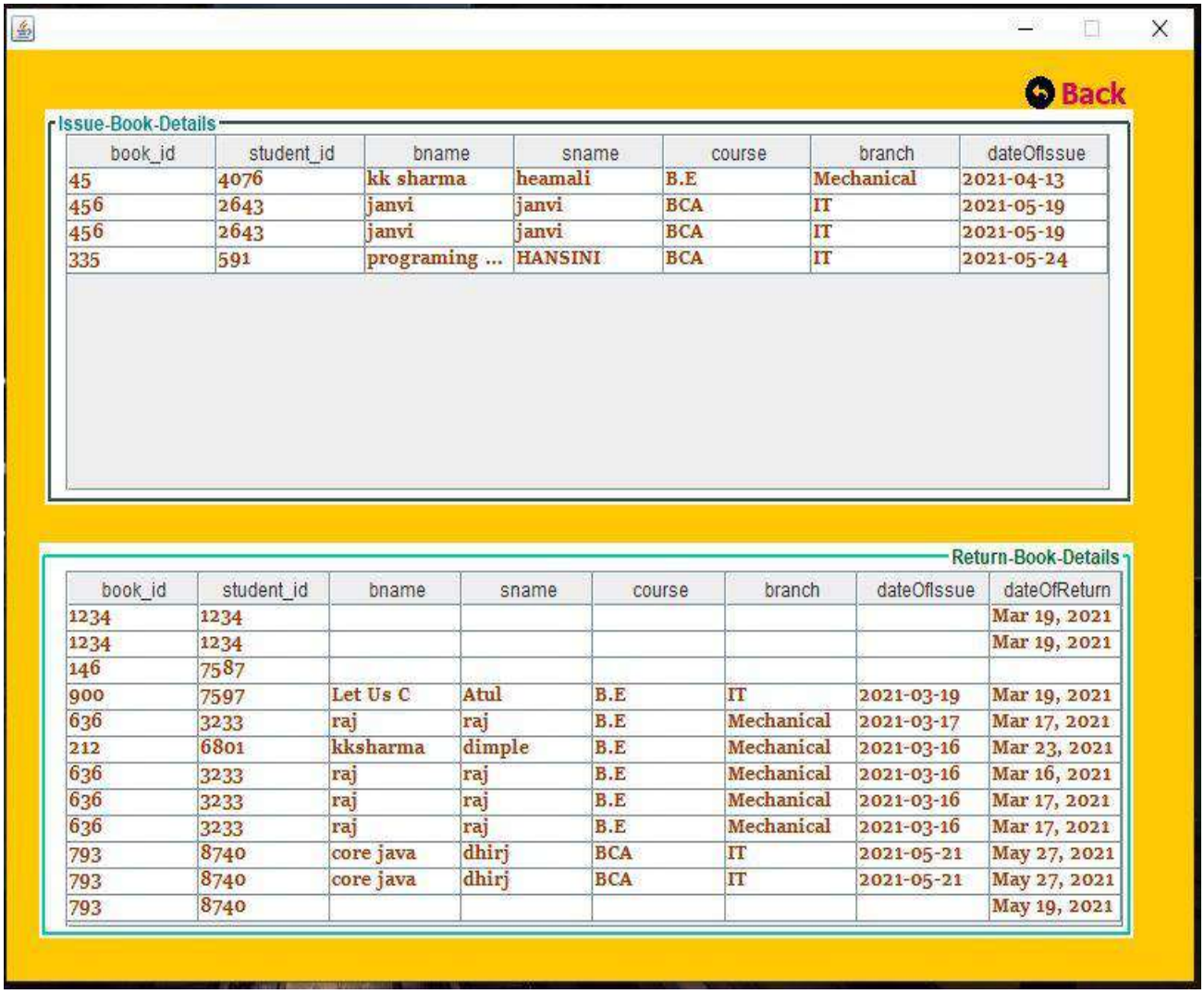
We can see all the details of student who want to issue the book.



To issue book enter book or student id and click on search and enter the date of issued the book successfully.



Here enter book id or student id and click on search we all information automatically then we have to enter the date of return and click on return and then on yes we can successfully return .



Here we can see all the details of book issued and the book return by the student.

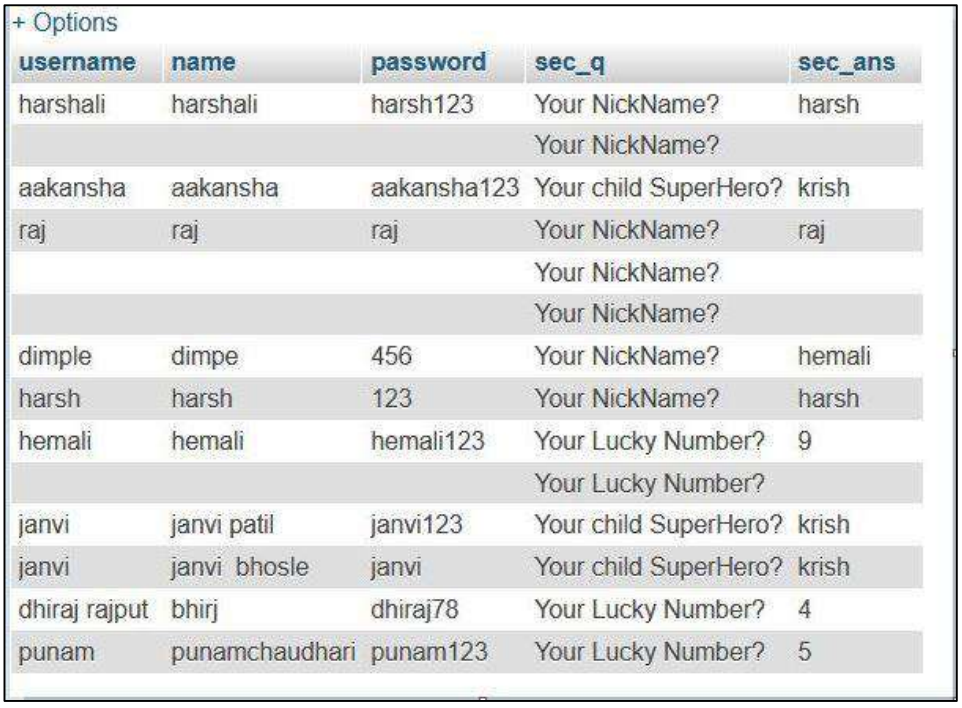
DATABASE

Table	Action	Rows	Type	Collation	Size	Overh
account	Browse Structure Search Insert Empty Drop	14	InnoDB	utf8mb4_general_ci	16.0 KiB	
book	Browse Structure Search Insert Empty Drop	20	InnoDB	utf8mb4_general_ci	16.0 KiB	
issuebook	Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_general_ci	16.0 KiB	
returnbook	Browse Structure Search Insert Empty Drop	12	InnoDB	utf8mb4_general_ci	16.0 KiB	
student	Browse Structure Search Insert Empty Drop	12	InnoDB	utf8mb4_general_ci	16.0 KiB	
5 tables	Sum	61	InnoDB	utf8mb4_general_ci	80.0 KiB	

Check all With selected:

Print Data dictionary

This is the database creat of account ,book,issuebook,return book,student all the details are recorded keep the data.



+ Options

username	name	password	sec_q	sec_ans
harshali	harshali	harsh123	Your NickName?	harsh
			Your NickName?	
aakansha	aakansha	aakansha123	Your child SuperHero?	krish
raj	raj	raj	Your NickName?	raj
			Your NickName?	
			Your NickName?	
dimple	dimpe	456	Your NickName?	hemali
harsh	harsh	123	Your NickName?	harsh
hemali	hemali	hemali123	Your Lucky Number?	9
			Your Lucky Number?	
janvi	janvi patil	janvi123	Your child SuperHero?	krish
janvi	janvi bhosle	janvi	Your child SuperHero?	krish
dhiraj rajput	bhirj	dhiraj78	Your Lucky Number?	4
punam	punamchaudhari	punam123	Your Lucky Number?	5

This is the account details created by the user.

+ Options

book_id	name	isbn	publisher	edition	price	pages
168	dhanshri		hansini	1	700	500
648	arihant	rbt234	ranchoddas	1	500	600
123	arihant	rdt123	ranchoddas	1	600	500
				1		
				1		
108				1		
973	hansini	apk123	dhanshri	5	200	400
				5		
146	arihant	rth123	agarwal	5	500	600
				5		
900	Let Us C	900	BPB	1	600	600
636	raj	raj	raj	1	636	636
212	kksharma	1234	dimple	1	600	500
45	kk sharma	234	kk sharma	1	200	140

This is the Add book details .

+ Options

student_id	name	father	course	branch	year	semester
7396	harshali	bhavsar	B.E	Mechanical	First	1st
1254	harshali	bhavsar	B.Tech	CSE	Second	3rd
6132	harshali	bhavsar	MBA	Automobile	Third	4th
7335	harshali	bhavsar	B.E	Mechanical	First	1st
8717	hansini	bhavsar	B.E	Mechanical	First	1st
7587	aakansha	chaudhari	B.E	Mechanical	First	1st
7597	Atul	N	B.E	IT	First	1st
3233	raj	raghav	B.E	Mechanical	First	1st
6801	dimple	rajesh	B.E	Mechanical	First	1st
4076	heamali	guru	B.E	Mechanical	First	1st
2643	janvi	dipak	BCA	IT	Third	6th
8740	dhirj	omkar	BCA	IT	Third	6th

This show the student details .

+ Options

book_id	student_id	bname	sname	course	branch	dateOfIssue
45	4076	kk sharma	heamali	B.E	Mechanical	2021-04-13
456	2643	janvi	janvi	BCA	IT	2021-05-19
456	2643	janvi	janvi	BCA	IT	2021-05-19

This show the book issued by the student.

+ Options

book_id	student_id	bname	sname	course	branch	dateOfIssue	dateOfReturn
1234	1234						Mar 19, 2021
1234	1234						Mar 19, 2021
146	7587						
900	7597	Let Us C	Atul	B.E	IT	2021-03-19	Mar 19, 2021
636	3233	raj	raj	B.E	Mechanical	2021-03-17	Mar 17, 2021
212	6801	kksharma	dimple	B.E	Mechanical	2021-03-16	Mar 23, 2021
636	3233	raj	raj	B.E	Mechanical	2021-03-16	Mar 16, 2021
636	3233	raj	raj	B.E	Mechanical	2021-03-16	Mar 17, 2021
636	3233	raj	raj	B.E	Mechanical	2021-03-16	Mar 17, 2021
793	8740	core java	dhirj	BCA	IT	2021-05-21	May 27, 2021
793	8740	core java	dhirj	BCA	IT	2021-05-21	May 27, 2021
793	8740						May 19, 2021

This show the date of return of book.

10.LIMITATION

Limitations in previous system

1) Majority of library depends on paper work which turn out to be very inefficient , and data backup is very difficult and tedious.

2) Also apart from book no new category can be added in the system.

3) Android support.

4) Copyright Problem of books.

5) Library members cannot book issue in advance if it is unavailable.

11. CONCLUSION

The following conclusions can be deduced from the development of the project.

1) Library Management System of the entire system improves the efficiency.
2) It provides a friendly graphical user interface which proves to be better when compared to the existing system.
3) It gives appropriate access to the authorized users depending on their permissions.
4) It effectively overcomes the delay in communications.
5) Updating of information becomes so easier.
6) System security, data security and reliability are the striking features.
7) The System has adequate scope for modification in future if it is necessary.

12. USER MANUAL

USER REQUIREMENTS:

Every user interacts with the system with some needs and requirement such as:-

1) Basic knowledge of computer should be required.
2) User should know basic knowledge about the computerized Courier Services i.e. which are the modules of the computerized system, what is the function of each module.
3) Comprehensive information accessing and retrieving so as to provide valuable report and figures.
4) Data security and priority is not to be ignored.
5) At the time of generating the reports, where the corresponding reports are to be set in the computerized system.
6) Every user must know the function of each Master entry, Transaction entry and Reports.
7) The format, field within a format, data types, what type of data is to be entered, what is the maximum size of each entry module. The user must know each thing.
8) In short, operating environment about the computerized "Bags Shop" must be familiar to the user.
9) Every Text Box should be filled with Data .If data is not available put at list '.'(DOT) for character, as well as for numeric data'0' (ZERO) should be placed.

13. REFERENCES

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2) Effective java
3) Java concurrency in practice
4) Test Driven :TDD and Acceptance TDD for java Developers
5) Clean code

Websites:

1) www.Stackoverflow.com
2) www.java.com
3) www.java Tutorial.com
4) www.javapedia.com
5) www.TutorialPoint.com
6) www.W3Resource.com