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Online Library Project

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Table of Contents

1 Project Description

1.1 Project Abstract

The main objective of this project is to provide the hand free access to the library portal through web interface. This project of "ONLINE LIBRARY" gives us the complete information about the library. We can enter the record of new books and retrieve the details of books available in the library. We can issue the books to the students and maintain their records and can also check how many books are issued and stock available in the library. In this project we can maintain the late fine of students who returns the issued books after the due date. Throughout the project the focus has been on making the students to grab the books of which they are in need with an exact details of the versions and editions of their respected volumes in an easy and intelligible manner. The project is very useful for those who want to know about online Library System.

1.2 Competitive Information

As we are not competing with any other competitive resources. Hence we are disclosing as empty

1.3 Relationship to Other Applications/Projects

As we don't have any relationships with other resources. Hence we are disclosing as empty

1.4 Assumptions and Dependencies

- The users should have sufficient knowledge of computers & of English language, as the user interface will be provided in English.
- The members should be either the student or faculty of the institute, where this s/w will be implemented.

1.5 Future Enhancements

We are going to develop a secured database for the university.
There are different categories of users namely administrator, students . Depending upon the category of user the access rights are decided. It means if the user is an administrator then he can be able to modify the data, delete, append etc. All the other users other than administrator only have the rights to retrieve the information about database.

1.6 Definitions and Acronyms

- SQL -> Structured query Language
- DFD -> Data Flow Diagram
- CFD -> Context Flow Diagram
- ER -> Entity Relationship
- IDE -> Integrated Development Environment
- SRS -> Software Requirement Specification

2 Technical Description

The project“ Online Library Management System” is developed in ASP.NET, which mainly focuses on basic operations in a library like adding new member, new books, and updating new information, searching books and members and facility to issue and return books. Using this web application user can make the booking of books online and can look for the book either it is available in library or not.

2.1 Project/Application Architecture

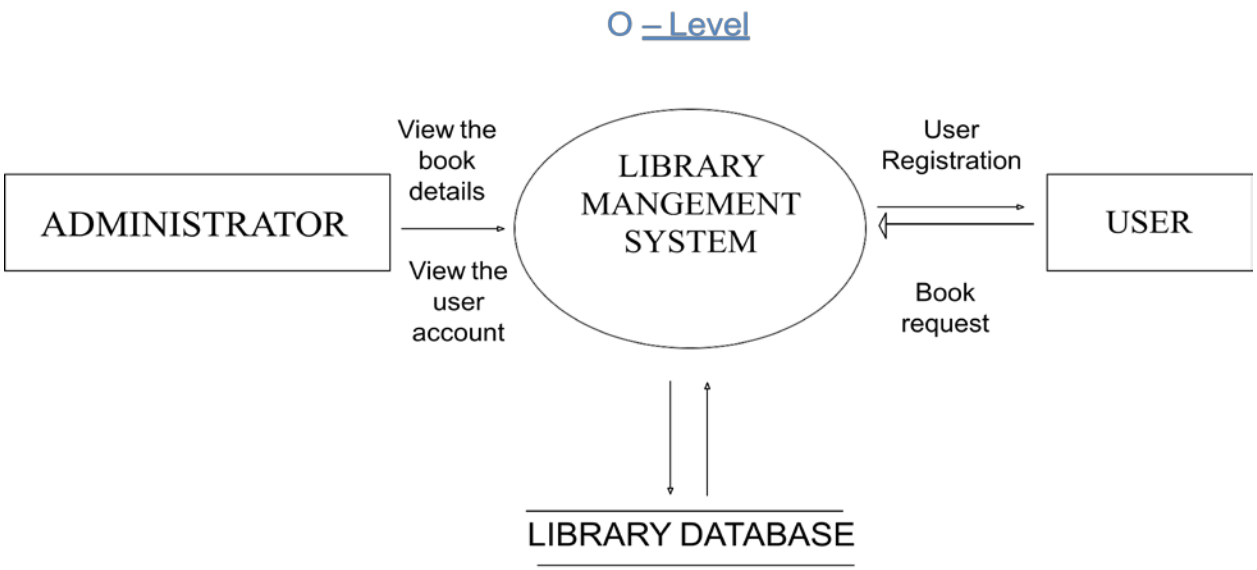


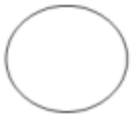
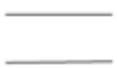
Fig:1

Data Flow Diagram:

A Data Flow Diagram is a graph showing the flow of data values from their source in objects through process that transform them to their destination in other objects.

DFD also knows as “Bubble charts” has the purpose of clarifying the system requirements and identifying major transformations that will become programs in system design. So it is the starting point of the design phase that functionally decomposes the requirements specifications down to the lowest level of details. A DFD consist s of a series of bubbles joined by lines.

DFD use a number of symbols to represent system. Most data flow modeling methods use 4 kinds of symbols to represent 4 kinds of system components: processes, data stores and external entities

Symbols	Descriptions
Process 	A process shows a transformation or manipulation of data flow within the system. A process transforms incoming data flow into outgoing data flow.
External entity 	External entity is outside the system, but they either supply input into the system or use system output. External entity is representing by a rectangle.
Data flows	A data flow shows flow of information from source to destination. A data flow is represented by a line with arrow head showing the direction of flow.
Database 	Database is huge collection of data. It is used for storage purpose.

2.2 Project/Application Information flows

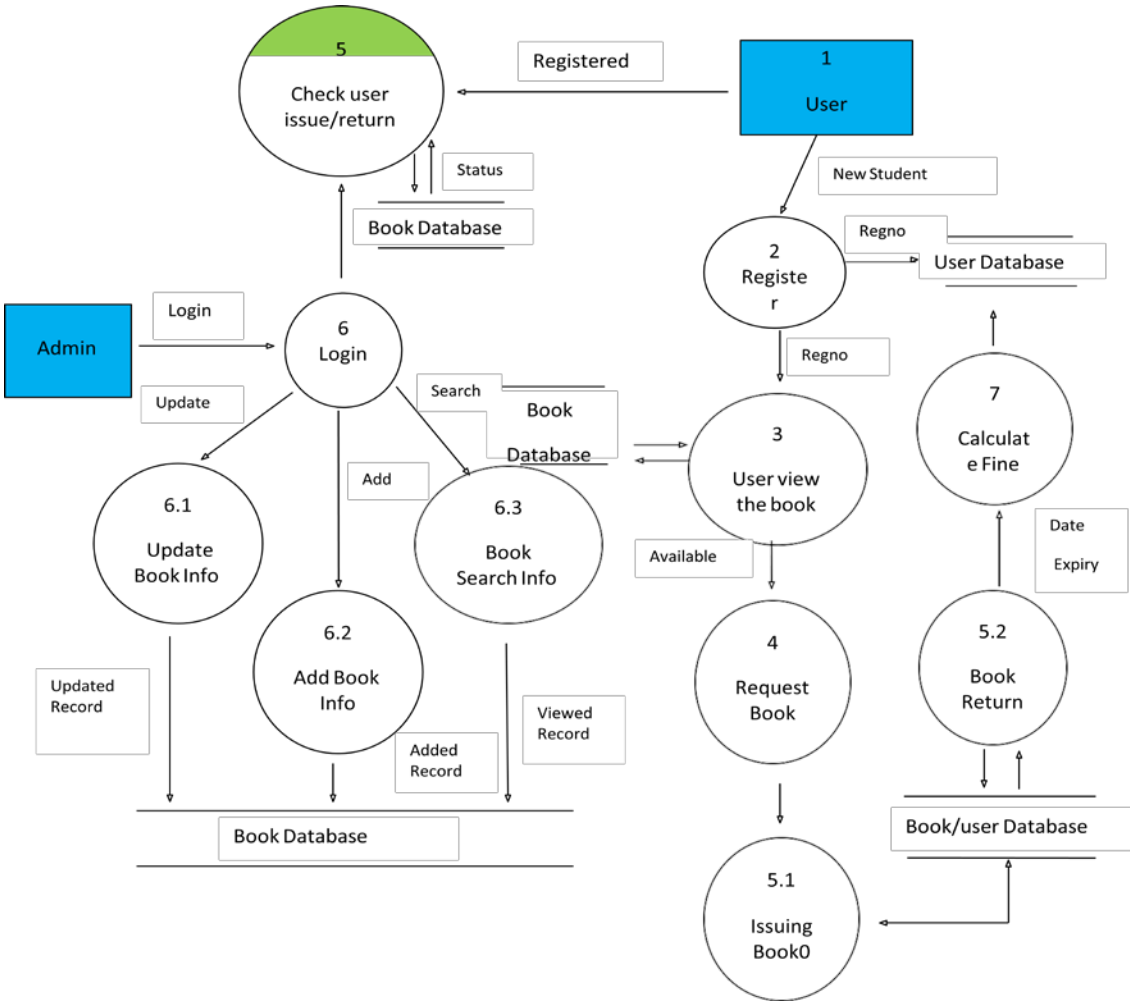


Fig:2

2.3 Interactions with other Projects (if Any)

As we are not interacting with any other applications. Hence I'm keeping this section empty

2.4 Capabilities

The proposed system that we are going to develop will be used
as the Chief performance system within the library of the institute which interact with the institute's staff and students. Therefore, it is expected that the database would perform functionally all the requirements that are specified by the institute. The system shall accommodate high number of books and users without any fault.

Provide a list of the capabilities need to support this Project. Example: a database application must provide capabilities to support business application such as retrieving/adding/deleting/updating user data.

2.5 Risk Assessment and Management

As of now we don't find any risks . Hence enclosing the section as empty .

3 Project Requirements

3.1 Identification of Requirements

1	<GSU-GS_FA2015-1 User-Capability-000100>	**Requirement**
2	<GSU-GS_FA2015-1 User-Capability-000101>	Student should have login credentials and enabled as varchar
3	<GSU-GS_FA2015-1 User-Capability-000102>	Student should have password to login his account and enable as varchar
4	<GSU-GS_FA2015-1 User-Capability-000103>	Student should have registration option to get register in the account and enabled as varchar
5	<GSU-GS_FA2015-1 User-Capability-000104>	Student should have username enabled as varchar
6	<GSU GS_FA2015 1 User Capability 000105>	Student shoud have first name enabled as varchar
7	<GSU-GS_FA2015-1 User-Capability-000106>	Student should have middle name enabled as varchar
8	<GSU-GS_FA2015-1 User-Capability-000107>	Student should have last name enable as varchar
9	<GSU-GS_FA2015-1 User-Capability-000108>	Student should have address to register his address and enabled as varchar
10	<GSU GS_FA2015 1 User Capability 000109>	Student should have email option to give mails and enabled as varchar
11	<GSU-GS_FA2015-1 User-Capability-000110>	Student should have mobile number enabled as Integer
12	<GSU-GS_FA2015-1 User-Capability-000111>	Student should have gender preference enabled as varchar
13	<GSU-GS_FA2015-1 User-Capability-000112>	Student should have forgot password and enabled as varchar
14	<GSU GS_FA2015 1 User Capability 000113>	Student should have Security Question for the forgot password option and enabled as varchar
15	<GSU-GS_FA2015-1 User-Capability-000114>	Admin can able to modify the changes required
16	<GSU-GS_FA2015-1 User-Capability-000115>	Admin can edit the profile of the student enabled as varchar
17	<GSU-GS_FA2015-1 User-Capability-000116>	Admin can change the category of the book
18	<GSU GS_FA2015 1 User Capability 000117>	Admin can assign the author of the book
19	<GSU-GS_FA2015-1 User-Capability-000118>	Admin can change the issue date of the book
20	<GSU-GS_FA2015-1 User-Capability-000119>	Admin can assign the book number enabled as integer
21	<GSU-GS_FA2015-1 User-Capability-000120>	Admin can change the publishing ID and enabled as integer
22	<GSU GS_FA2015 1 User Capability 000121>	Admin can change the Publisher name of the Book and enabled as varchar
23	<GSU-GS_FA2015-1 User-Capability-000122>	Admin can assign the Publishing year of the book and enabled as varchar
24	<GSU-GS_FA2015-1 User-Capability-000123>	Admin can change the Edition of the book and enabled as varchar
25	<GSU-GS_FA2015-1 User-Capability-000124>	Admin can maintain the status of the books and enabled as Integer
26	<GSU GS_FA2015 1 User Capability 000125>	Admin can modify the changes that are required to be changed
27	<GSU-GS_FA2015-1 User-Capability-000126>	Admin can have the address of the Supplier and enabled as varchar
28	<GSU-GS_FA2015-1 User-Capability-000127>	Admin will have the Details of the books which are returned by the students
29	<GSU-GS_FA2015-1 User-Capability-000128>	Admin will have his own login credential to login to the account

3.2 Operations, Administration, Maintenance and Provisioning (OAM&P)

These are the following screen shots to explain the operations of administration, Maintenance and provisioning

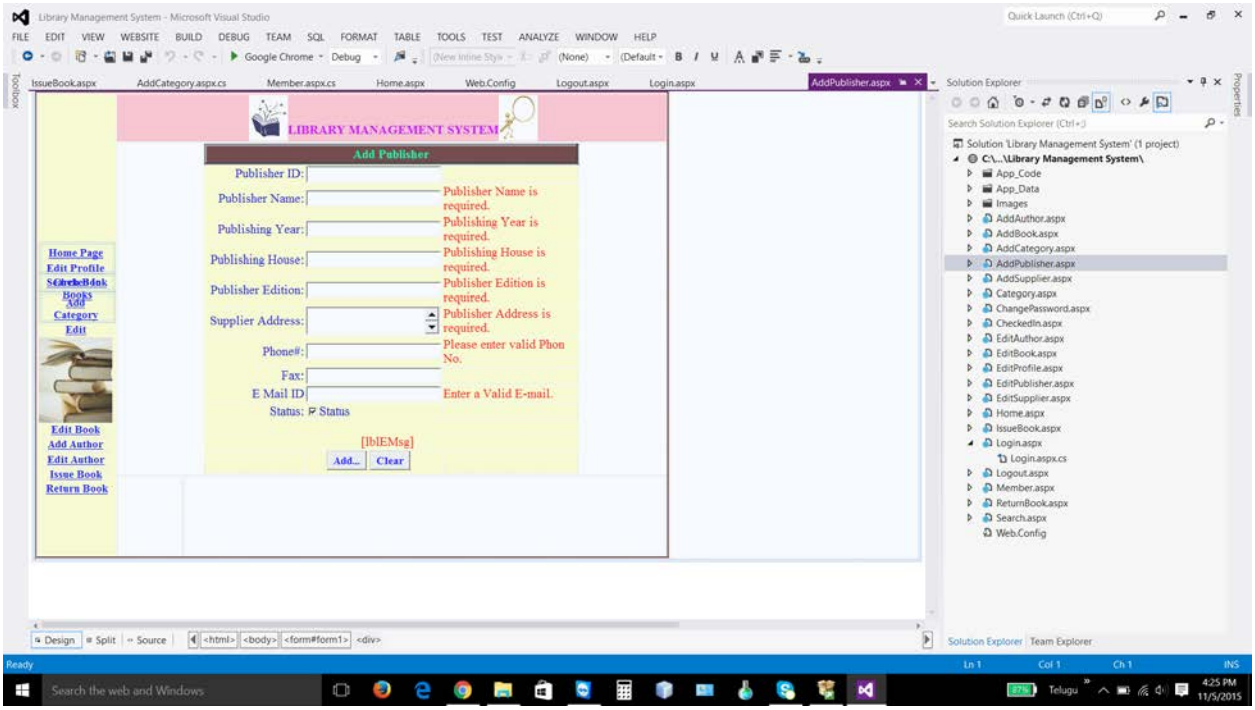


Fig:3

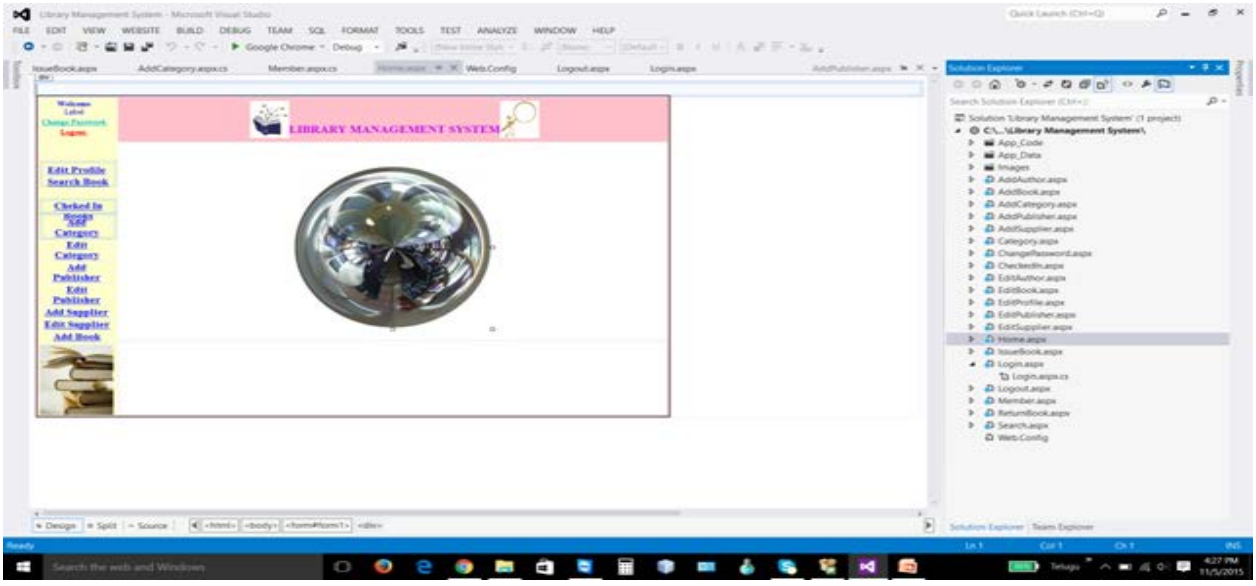


Fig:4

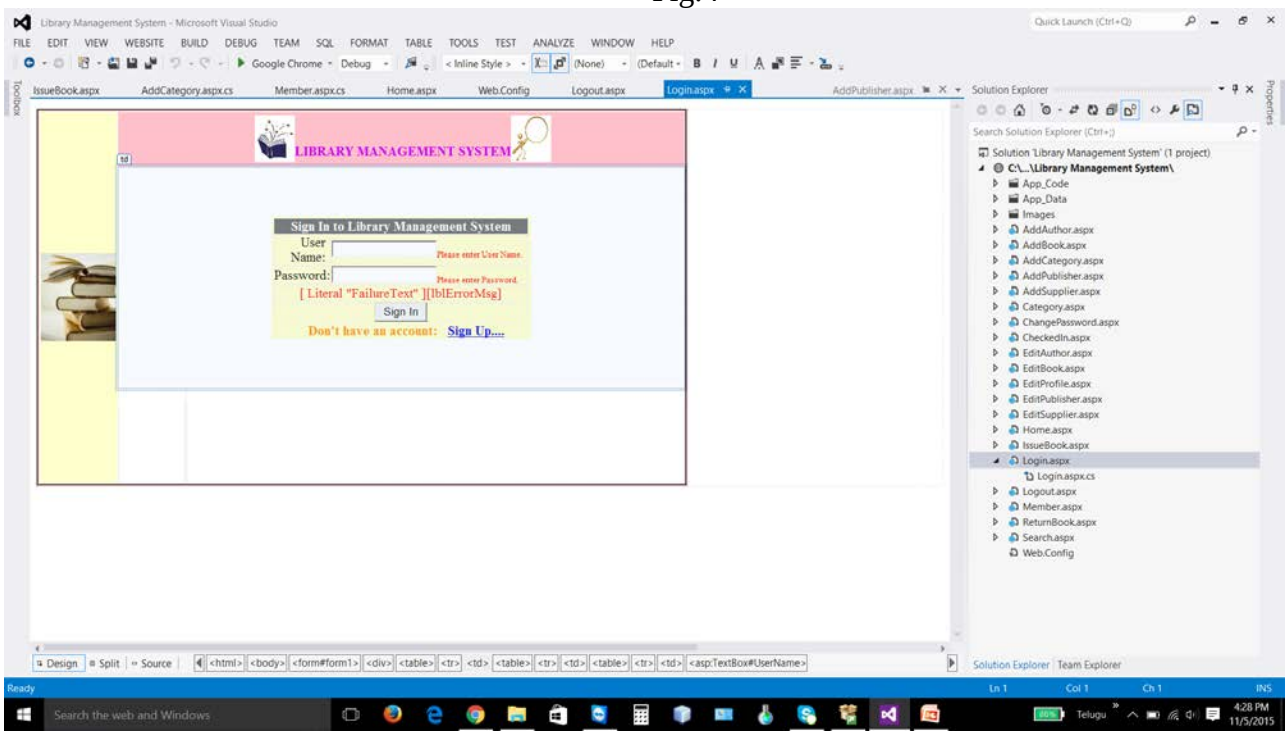


Fig:5

3.3 Security and Fraud Prevention

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup

3.4 Release and Transition Plan

We can consider much future scope to this application. The following are some of there.

- Online use of the library can be good feature for the Library Management system.
- Advanced fine payment system can be added.
- Inventory system can be used to maintain the books of the library.

4 Project Design Description

Detailed design starts after the system phase and system has been certified through the review. The goal of this phase is to develop internal logic of each of the modules identified during system design
In the system design, the focus is an identifying the modules, whereas during the detailed design the focus is on designing the logic for the modules. In other words in system design attention is on what components are needed, while in the detailed design how the component can be implemented in the software is the issue.
The design process for software system has two events. At the first level focus is on deciding which modules are needed for the system, the specification of these modules and how the modules should be interconnected. This is called system design or top level design. In the specification of the module can be satisfied is decided. This design level is often called detailed design or logic design, because the detailed design is extension of

system design, system design controls the major structural characteristics of the system. The system design has a major impact testability and modifiability of a system and impacts its efficiency much of the design efforts for the designing software are spent creating the system design

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5 Project Internal/external Interface Impacts and Specification

External Interface Requirement:

The user should be simple and easy to understand and use. Also be an interactive interface .The system should prompt for the user and administrator to login to the application and for proper input criteria

User Interface:

The software provides good graphical interface for the user any administrator can operate on the system, performing the required task such as create, update, viewing the details of the book.

- Allows user to view quick reports like Book Issues/Returned etc in between particular time.

Stock verification and search facility based on different criteria

6 Project Design Units Impacts

The purpose of design phase is to plan a solution for problem specified by the requirements. System design aims is to identify the modules that should be in the system the specification of these modules and how they interact with each other to produce the desired result. The goal of the design process is to produce a module or representation of a system which can be used later to build that system. The produced model is called design of the system.

The most important phase of the software of the system is designing the different modules. The accurate planning and proper interconnections with the modules will give a good output in the implementation part.

6.1 Functional Area/Design UnitA

6.1.1 Functional Overview

Function component 1:

Registration: New user can register.

Input: user details.

Process definition: Processing information and stored in the database.

Output: User details updated in the database.

Function component 2:

Book issue: Here the books will issue to the user.
Input: Book ID.

Process definition: Searching books.

Output: Search and retrieving book information.

Function component 3:
Book return: Here the books will return.
Input: Book ID.

Process definition: Checking book details.

Output: Book is returned.

Function component 4:
Search/view book details: It is used to search and view the details of the book.
Input: Book ID.

Process definition: Searching books.

Output: Details of the book will be shown

Function component 5:
Update book details: New book entry can be added.
Input: Book ID.

Process definition: Processing the information.

Output: Update in database

6.1.1 Impacts

Impacts will be decrypted at the output stage and results will be shown as impacts

6.1.2 Requirements

1. External Interface Requirement:

The user should be simple and easy to understand and use. Also be an interactive interface .The system should prompt for the user and administrator to login to the application and for proper input criteria

1.1 User Interface:

The software provides good graphical interface for the user any administrator can operate on the

system, performing the required task such as create, update, viewing the details of the book.

- Allows user to view quick reports like Book Issues/Returned etc in between particular time.
- Stock verification and search facility based on different criteria.

1.2 Hardware interface:

- Operating system : windows 10
- Hard disk :500GB
- RAM : 4GB
- Processor : Intel Core I5

1. **Software interface :**
   - VISUAL STUDIO 2012
   - SQL SERVER MANAGEMENT STUDIO 2012

1. Communication interface:

Window

2. Functional requirements:

- Book entry: In this module we can store the details of the books.
- Register student: in this module we can keep the details of the new student.
- Book issue: This module is used to keep a track of book issue details.
- Book return: This module enables to keep a track of return the books.

3. Performance requirements:

The capability of the computer depends on the performance of the software. The software can take any number of inputs provided the database size is larger enough. This would depend on the available memory space.

6.2 Functional Area/Design

Function decomposition:

Functional decomposition refers broadly to the process of resolving the functional relationship into constituent parts in such a way that original function can be reconstructed (i.e. recomposed) from those parts by function composition. In general, this process of decomposition is undertaken either for the purpose of gaining insight into the identity of constituent components (which may reflect individual physical processes of interest, for example) or for the purpose of obtaining a compressed representation of global function, a task which is feasible only when the constituent processes possess a certain level of modularity (i.e. independence or non-interaction).

Functional component and assumption :

- Register user: New user can register.

- Book issue: Here the books will issue to the user.
- Book return: Here the books are returned.
- Search/view book details: It is used to search and view the books.
- Update book details: Here the details of the books will be updated.

6.2.1 Functional Overview

Software testing is a critical element of software quality assurance and represents the ultimate review of specifications, design and coding. The testing phase involves the testing of system using various test data; Preparation of test data plays a vital role in the system testing. After preparation the test data, the system under study is tested.

Those test data, errors were found and corrected by following testing steps and corrections are recorded for future references. Thus a series testing is performed on the system before it is ready for implementation.

The various types of testing on the system are:

- Unit testing
- Integrated testing
- Validation testing
- Output testing
- User acceptance testing

6.2.2 Impacts

TEST RESULT: UNIT TESTING

LOGIN FORM:

SL.No	Test Case	Excepted Result	Test Result
1	Enter valid name and password & click on login button	Software should display main window	Successful
2	Enter invalid	Software should not display	successful

		main window	

BOOK ENTRY FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database	successful
2.	On the Click of DELETE Button	This deletes the details of book by using Accession no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of book for entered Accession no. Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

USER ACCOUNT FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering	

		number instead of text..is found then it gives proper message otherwise Adds Record To the Database	successful
2.	On the Click of DELETE Button	This deletes the details of student by using Register no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of book for entered Register no. Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

BOOK ISSUE FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data ,if the accession number book is already issued then it will giving proper msg.	successful
2.	On the Click of DELETE Button	This deletes the details of book by using Register no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of issued book..Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT	Exit the current book details form	successful

	button		
7.	On the Click of NEXT button	Display the next form	successful

BOOK RETURN FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database	successful
2.	On the Click of DELETE Button	Which deletes the details of book by using Register no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of returned book ... Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

7 Open Issues

As of now it's very clear. In future enhancements there may be chances of getting some issues while developing the project.

8 Acknowledgements

We would like to express our sincere gratitude to Professor Nelson Chen for trusting us with this project idea. We thank him for his guidance, encouragement, and support throughout the duration of the project. A special thanks Advisor Dr. Soon OK Park for trusting us on our project.

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