Introduction

Library management system is a project which aims in developing a computerized system to maintain all the daily work of library. This project has many ~~feat~~ features which are generally not available in normal library management systems like facility of user login and a facility of admin login through which ~~the d~~ the admin ~~login~~ can monitor the whole system.
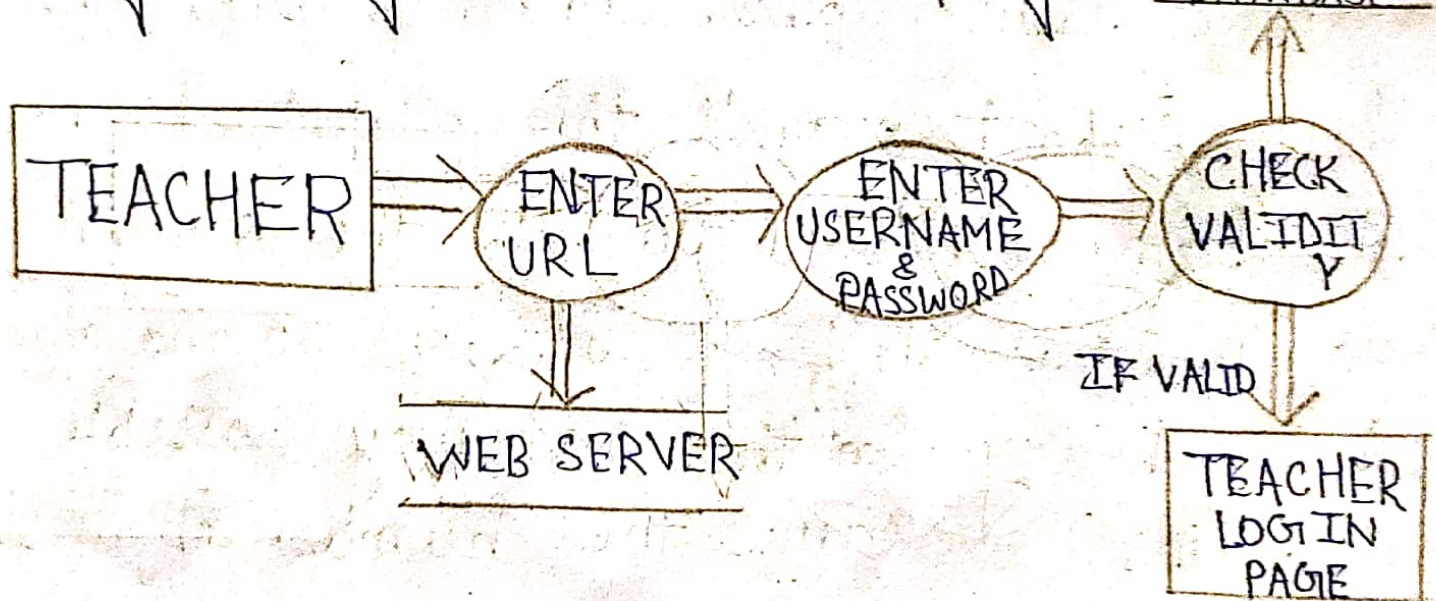
It also has facility of an online notice board where teachers can student can put up information about workshops or seminars being held in our colleges, or nearby colleges and librarian after proper verification from the concerned institution organizing the seminar can add it to the notice board.

It has also a facility where student after logging in their accounts can see list of books issued and its issue date and return date and also the students can request the librarian to add new books by filling the book request form. The librarian after logging into his account ie admin account can generate various reports such as student report, issue report, teacher report and book report overall this project of ours is being developed to help the students as well as staff of library to maintain the library in the best way possible and also reduce the human efforts.
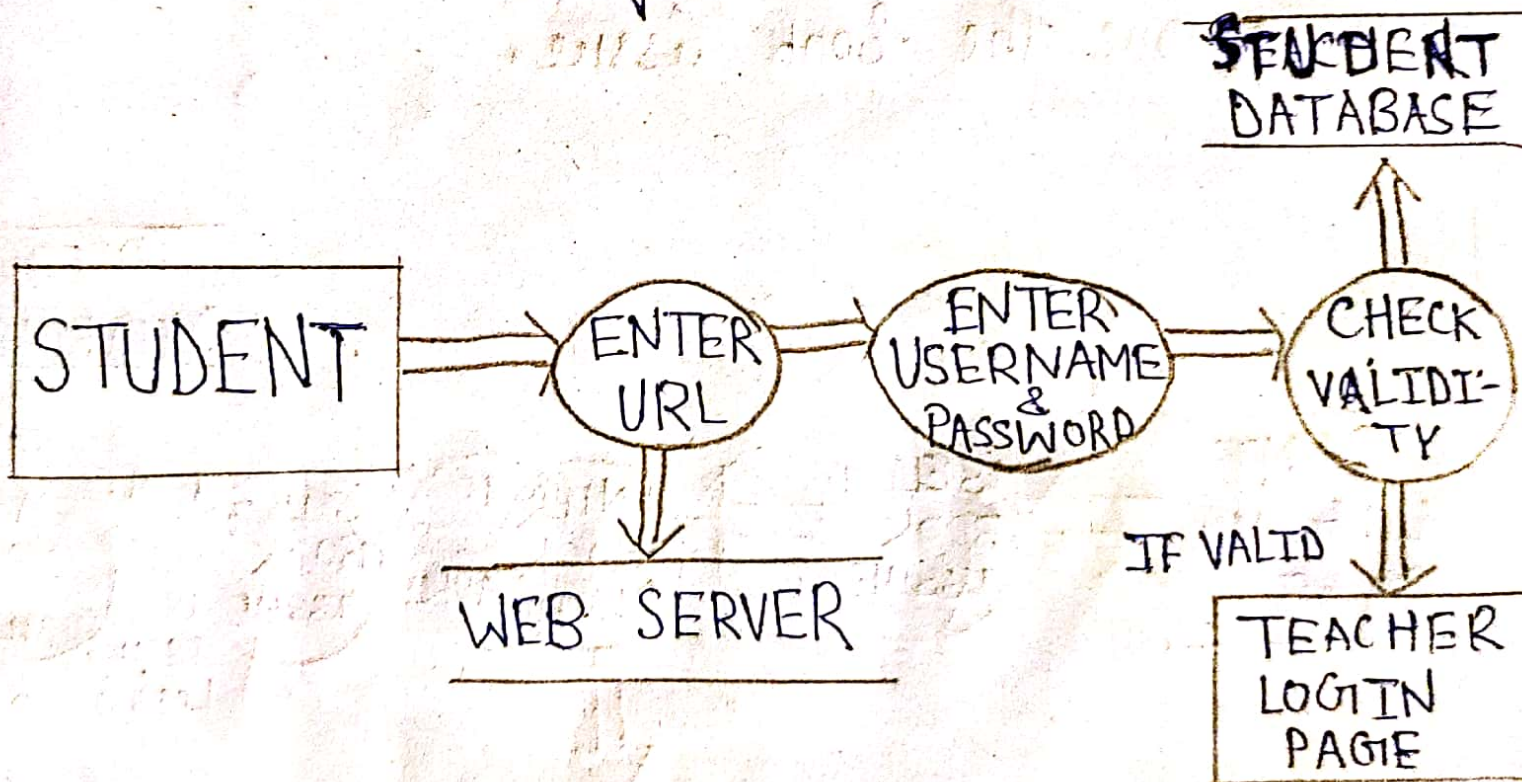
Flowchart

Data Flow Diagram for Teacher Login

After entering to the home page of the website, teacher can choose the Teacher Login option where they are asked to enter username & Password, and if he/she is a valid user then a teacher login page will be displayed.

```
                                                    TEACHER
                                                    DATABASE
                                                       ↑
                                                       |
┌─────────┐     ⟨ENTER⟩      ⟨ ENTER  ⟩      ⟨ CHECK  ⟩
│ TEACHER │ →   ⟨ URL ⟩  →   ⟨USERNAME⟩  →   ⟨VALIDIT⟩
└─────────┘                  ⟨   &    ⟩      ⟨   Y    ⟩
                 |           ⟨PASSWORD⟩          |
                 ↓                          IF VALID ↓
            ─────────                       ┌─────────┐
            WEB SERVER                      │ TEACHER │
            ─────────                       │ LOGIN   │
                                            │ PAGE    │
                                            └─────────┘
```
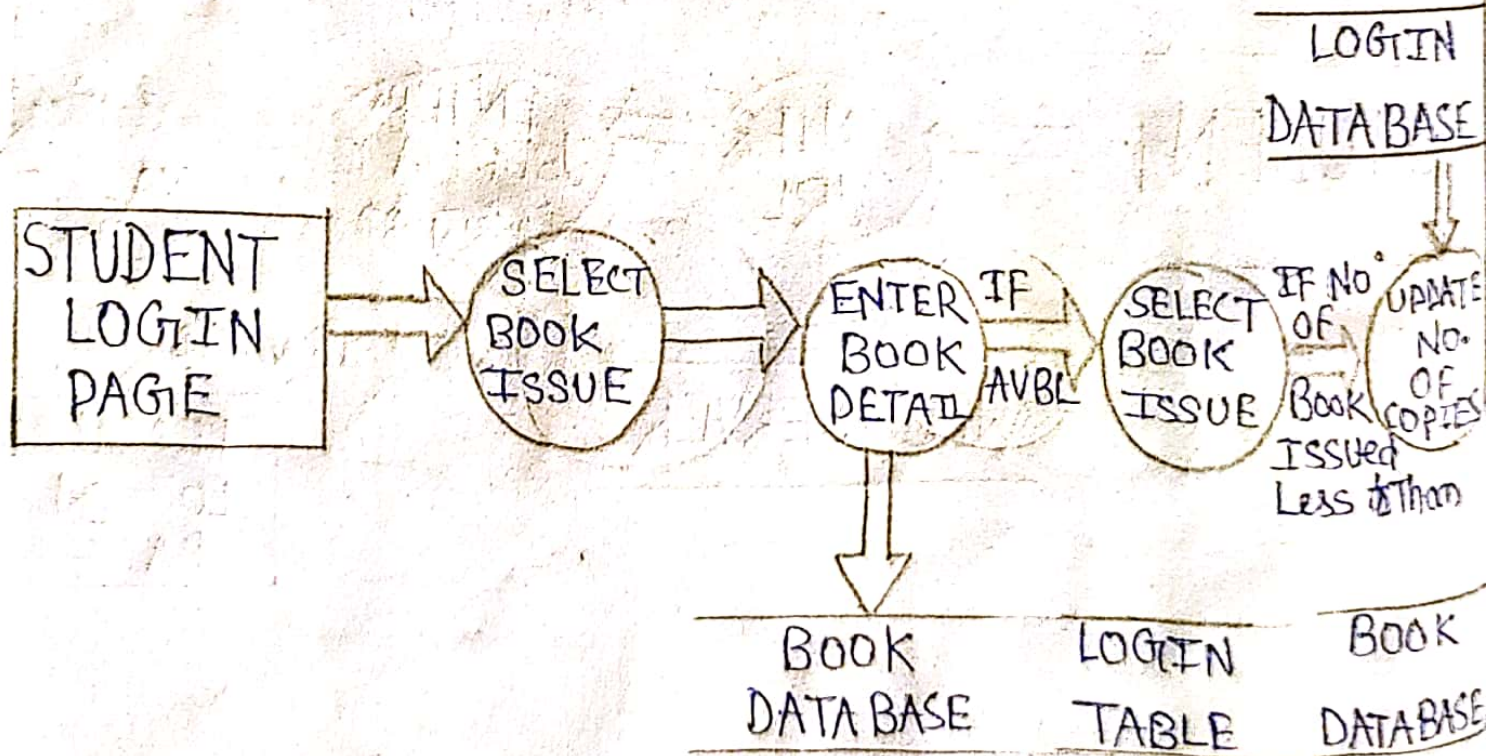
Data Flow Diagram for student Login

After entering to the home page website, student can choose the STUDENT LOGIN option where they are asked to enter username & password, and if he/she is a valid user then a student login page will be displayed.
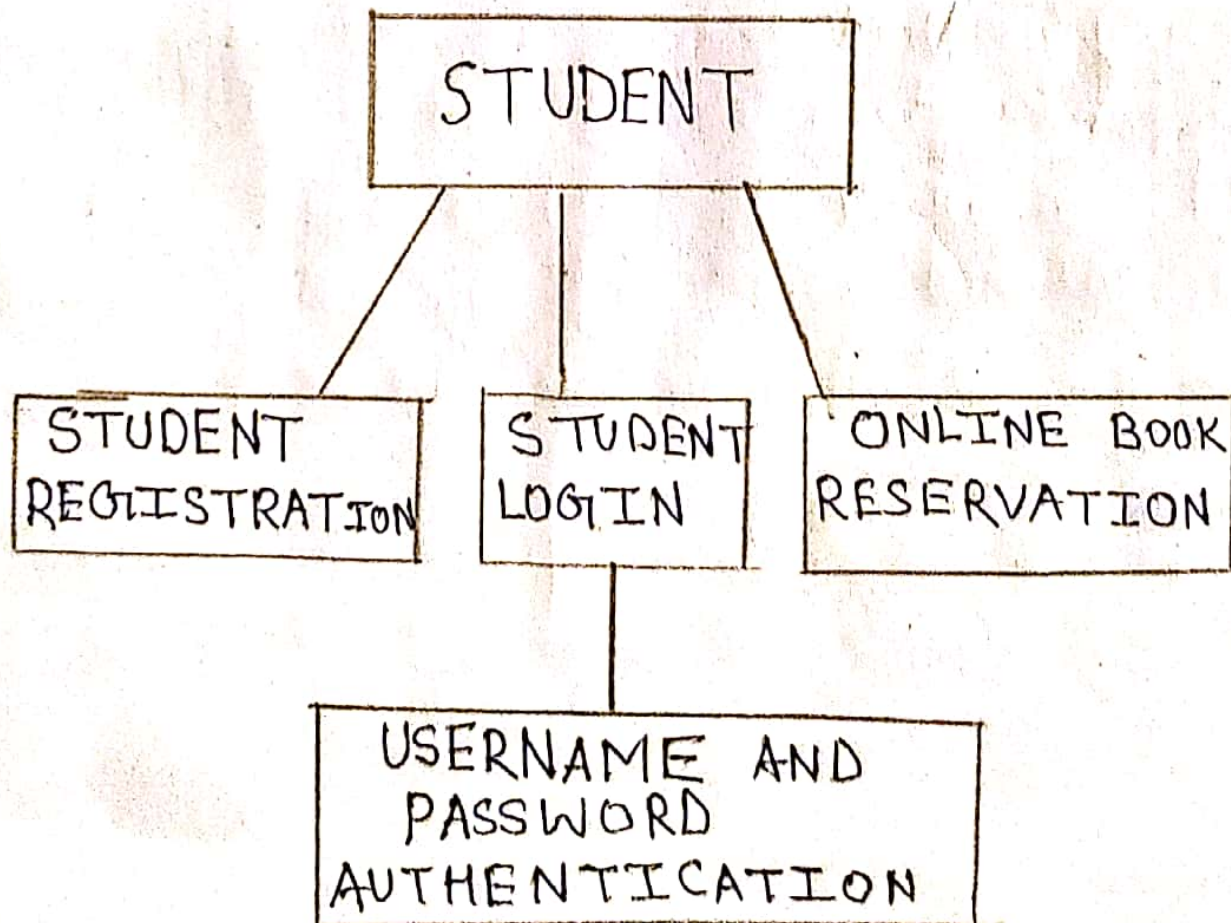
Data Flow Diagram for Book Issue

It is a 2nd level, Data Flow Diagram where after entering STUDENT LOGIN Page he/she can Select a book issue option where after entering the book detail, he/she can select the book issue option and if the maximum no of books issued limit is not crossed then a request will be sent to the librarian who will approve the book issue.
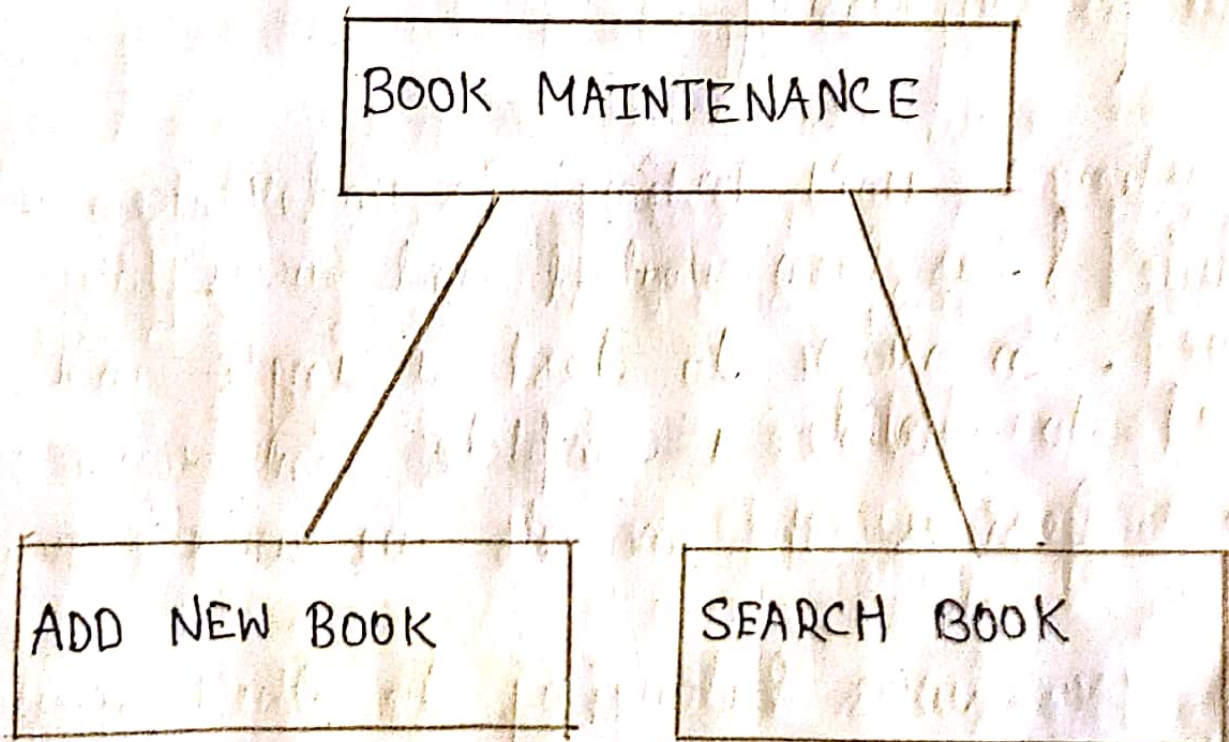
LOGIN
DATA BASE

| STUDENT LOGIN PAGE | → | SELECT BOOK ISSUE | → | ENTER BOOK DETAIL | IF AVBL | → | SELECT BOOK ISSUE | IF No of Book Issued Less Than | UPDATE No. OF COPIES |

BOOK DATA BASE   LOGIN TABLE   BOOK DATA BASE

Module Description

Student Module :- The following module contains various facilities like student registration, student login, online book reservation, and event addition. Any student if at any moment forgets his password he can retrieve it from forgot password option.

```
                    ┌─────────────────────┐
                    │      STUDENT        │
                    └─────────────────────┘
                    ╱          │          ╲
        ┌──────────────┐ ┌──────────┐ ┌──────────────────┐
        │  STUDENT     │ │ STUDENT  │ │ ONLINE BOOK      │
        │ REGISTRATION │ │ LOGIN    │ │ RESERVATION      │
        └──────────────┘ └──────────┘ └──────────────────┘
                              │
                    ┌──────────────────────┐
                    │  USERNAME AND        │
                    │  PASSWORD            │
                    │  AUTHENTICATION      │
                    └──────────────────────┘
```

Book Module

The following module contains various facilities like add new book and search book. In the 'add new book' section if any new book comes in the library then the library then the librarian can add its specifications. Similarly if the user wants to search for a specific book then he/she can use search book option to do it.

```
          ┌─────────────────────────┐
          │   BOOK MAINTENANCE      │
          └─────────────────────────┘
              /                 \
             /                   \
  ┌──────────────────┐    ┌──────────────────┐
  │  ADD NEW BOOK    │    │  SEARCH BOOK     │
  └──────────────────┘    └──────────────────┘
```

System Testing :-

The aim of the system testing process was to determine all defects in our project. The program was subjected to a set of test inputs and various observations were made and based on these observations, it will be decided whether the program behaves as expected or not. Our project went through two levels of testing.

(1.) Unit Testing

(2.) Intergration Testing

Unit Testing :-

unit testing is undertaken when a module has been created and sucessfully reviewed. In order to test a single module we need to provide a complete environment ie besides the module we would require

(i) The procedures belonging to other modules that the module under test calls

(ii) Non local data structures that module accesses

(iii) A procedures to call the functions of the module under test with appropriate parameters.

Integration Test :- In this type of testing we test various integration of the project module by providing the input. The primary objective is to test the module interfaces in order to ensure that no errors are occurring when one module invokes the other module.

Conclusion & Future Scope :- This website provides a computerized version of library management system which will benefit the students as well as the staff of the library.

It makes entire process online where student can search books, staff can generate reports and & do book transactio It has also has a facility for student login where student can login and can see status of books issued as well reque for book or given some suggestions.

It has a facility of teacher's login where teachers can add lectures notes and also give necessary suggestion to library and also add info about workshops or events happening in our college or nearby college in the online notice board.

There is a future scope of this facility that many more features such as online lectures, video tutorials can be added by teachers as well as online assign- ments submission facility, a feature of groups chat where students can discuss

various issues engineering can be added to this project thus making it more into active more user friendly and project which fulfills each users need in the best way possible.

Module - wise Credits

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