**Library Management System**

Software has to be developed for automating the manual library system of DTU. The system should be stand alone in nature. It should be designed to provide functionalities as explained below:

**Issue of Books**

1. A student of any course should be able to get books issued.

2. Books from general section are issued to all but book bank books are issued only for their respective courses.

3. A limitation is imposed on the number of books a student can issue.

4. A maximum of 4 books from book bank and 3 books from general section per student is allowed.

5. The software takes the current system date as the date of issue and calculates the corresponding date of return.

6. A bar code detector is used to save the student as well as the book information.

7. The due date for return of the book is stamped on the book.

**Return of Books**

1. Any person can return the issued books.

2. The student information is displayed using the barcode reader.

3. The system displays the student details on whose name the books were issued as well as the date of issue and return of the book.

4. The system operator verifies the duration for the issue and if the book is being returned after the specified due date, a fine of Re.1 is charged for each day.

5. The information is saved and the corresponding updation takes place in the database.

**Query Processing**

The system should be able to provide information like:

1. Availability of a particular book

2. Number of copies available of the desired book

3. The system should be able to reserve a book for a particular student for 24hrs, if that book is not currently available

4. A system should also be able to generate reports regarding the details of the book available in the library at any given time

5. The corresponding print outs for each entry (issue/return) made in the system should be generated

6. Security provisions like the login authenticity should be provided. Each user should have a user id and password, Record of the user of the system should be kept in the log file

7. Provision should be made for the full backup of the system

Sequence Diagram

Class Diagram



Use Case Diagram



Activity Diagram



Data Flow Diagram

User

Librarian

Maintain and Add Books

Maintain registered Users

User Registration and Login

Search Book

Issue and Return Book

Pay Fine for late return

Accept Fine

User Deposited

Deposit Fine

Book Details

Librarian

Login Details

Student

Enter Username Password

Enter Username Password

Fine Deposited

Book Details

Book Information

Add/Delete User

ER Diagram

Book Bank

General

Student

Librarian

Book

registers

search

Is A

return

issue

Payment

fine