CASE STUDY 1

Sarasavi Library System

Sarasavi is a popular library with a large collection of books. It has a collection of nearly 500 books. These books are available for loan as well as for reference by registered members, free of charge and there is also a category called "Registered visitors" who are permitted reference facilities only.

The functions of the Sarasavi library can be categorised as below:
Loan Process, Return Process, Reservation process, Inquiry Process, Overdue Report Process, Book Registration Process and User Registration process.

Details about these functions are given below:

Loan Process:

The borrower collects from the racks and brings the copies he wants to borrow to the counter. Librarian will check whether the borrower has overdue books. The borrower is not allowed to borrow any copies until the overdue books are returned. The maximum number of copies allowed to be held after being borrowed is 5 per user at any one time. When issuing a copy, the Librarian will check the status of each copy. The status of each copy indicates whether it is referenced or borrowable. A two-week loan period is allowed per borrowable copy. The Librarian can choose to accept or cancel the request for a loan. The borrower is then informed of the expected return date of each of copies held, if the loan is accepted. The Librarian keeps all the loan details.

Return Process:

The copy to be returned is brought to the counter. The Librarian accepts the return and checks the status of the copy. If the copy is already reserved, the librarian takes steps to inform the member who has reserved the copy.

Reservation Process:

The member informs the Librarian about the books he wants to reserve. The Librarian accepts the reservation depending on the status of the copies. If the reservation is accepted, the Librarian keeps all the reservation details.

Inquiry Process:

The Librarian can also handle inquiries from the borrower about the availability of a book. A facility is also available for a borrower/registered visitor to check the availability of a book. The inquiries may be done by knowing the specific book accession number or knowing a part or whole of the title or author. If it is in the catalogue, Librarian will inform the borrower the status of the book. The status indicates whether the book is available, referenced or not, and in the case of availability of multiple copies, whether all/some/no copies are loaned out, or reserved.
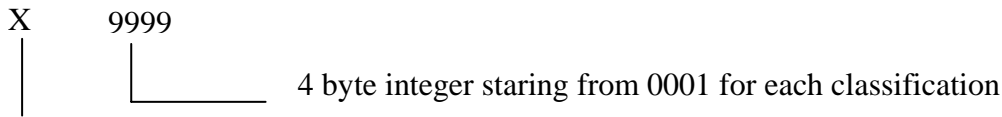
Overdue Report Process:

A report containing the following information is produced at the end of each week. Borrower code, name, address, sex, expected return date, accession number, book title and author/s.

Book Registration Process:

The Librarian also registers new books into the library. This registration may also be an addition of a new copy. However, a maximum of 10 copies are allowed to be registered per book number. The Librarian records the classification, book title, publisher, whether the copy is reference or borrowable.

The book number comprises

      X   9999

                             4 byte integer staring from 0001 for each classification

classification
(1 byte classification)

The copy number in case of multiple copies has the same structure with an extra number appended at the end.

User Registration Process:

New borrowers may also be registered. The following is captured for the user registration.

User Number, Name, Sex, National identity card number and Address.

Management Reports:

The following reports are needed for the management to support their decision-makings.

- A summary report of the total no of books borrowed, returned and reserved in each month.
- A bar chart to illustrate the above figures.
- Number of borrowings for each book in the library in the descending order of the number of borrowings.

Based on the case study given above, draw
1. **Use Case Diagram**
2. **Class diagram**
3. **one Sequence Diagram**
4. **one Activity Diagram**
5. **one State Diagram**