Exercise10

Draw a use case diagram for Library Management System is an automation system used to manage a library and the different resource management required in it like cataloguing of books, allowing check out and return of books, invoicing, user management, etc. The user can search for books details using few book properties (Book ID, Title, Author, and Publisher). Searching should return details about all the book copies that match the search query.

Aim

To design a **Use Case Diagram** for a **Library Management System (LMS)** that automates library operations such as cataloging, book checkouts and returns, invoicing, and user management, ensuring efficient resource handling.

Procedure

1. **Identify Actors**

   o **Librarian** – Manages books, users, and transactions.

   o **Member/User** – Searches, borrows, and returns books.

   o **System** – Handles book records, invoices, and notifications.

2. **Define Use Cases**

   o **Search Books** – Search by Book ID, Title, Author, or Publisher.

   o **View Book Details** – Display available copies.

   o **Issue Book** – Allow users to check out books.

   o **Return Book** – Process book returns.

   o **Manage Books** – Add, update, or delete books.

   o **Manage Users** – Register and update user details.

   o **Generate Invoice** – Calculate overdue fines and generate invoices.
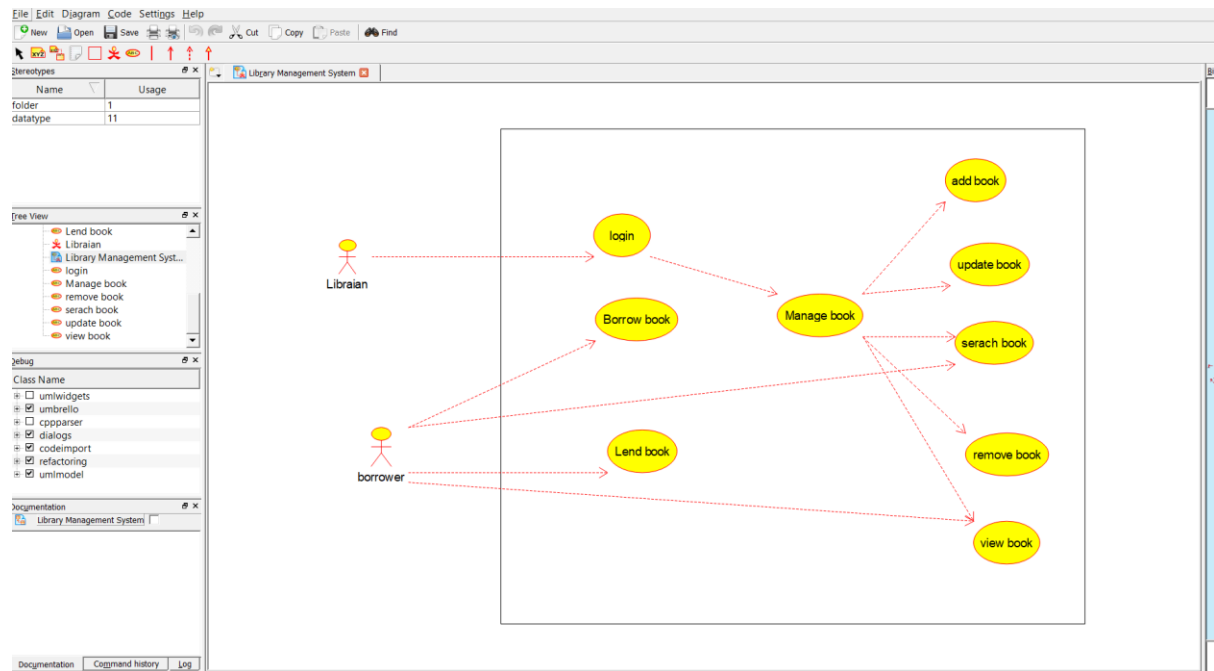
3. **Establish Relationships**

   o **Librarian** manages books, users, and transactions.

   o **Member** interacts with book search, checkout, and return processes.

4. **Draw the Use Case Diagram**

   o Represent actors as **stick figures**.

   o Use **ovals** for use cases.

   o Connect actors to relevant use cases using **lines**.

Output

Result

Thus the UML diagram for the Library Management System has been implemented successfully.