10.) 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.
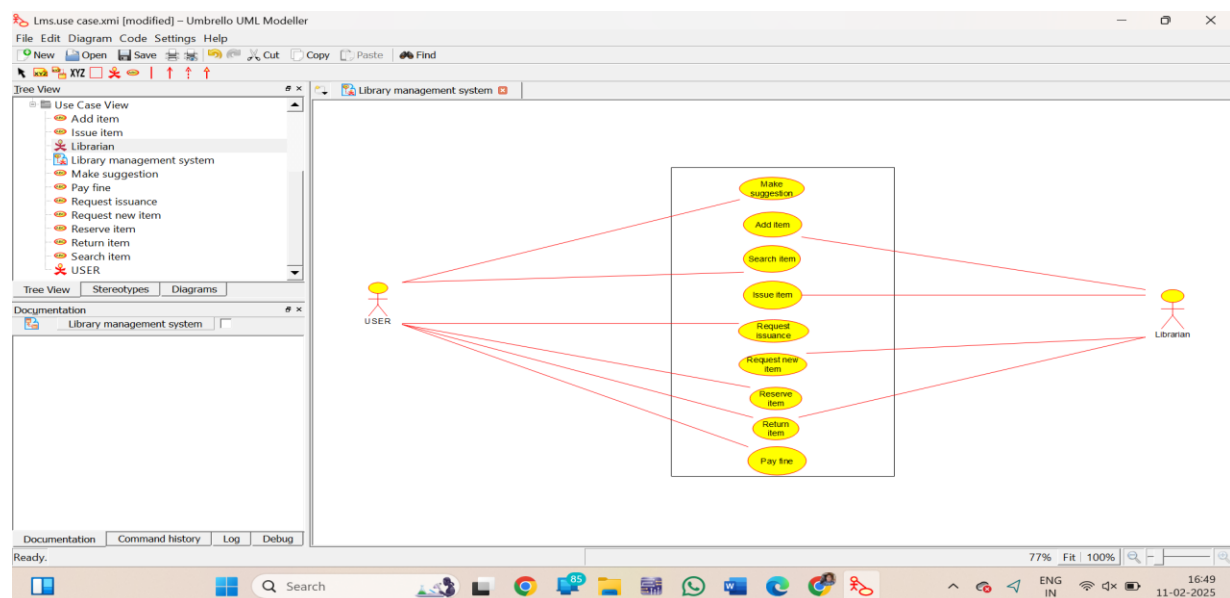
Aim:

To design a Use Case Diagram for a Library Management System that automates library operations like cataloging, book checkout/return, invoicing, and user management.
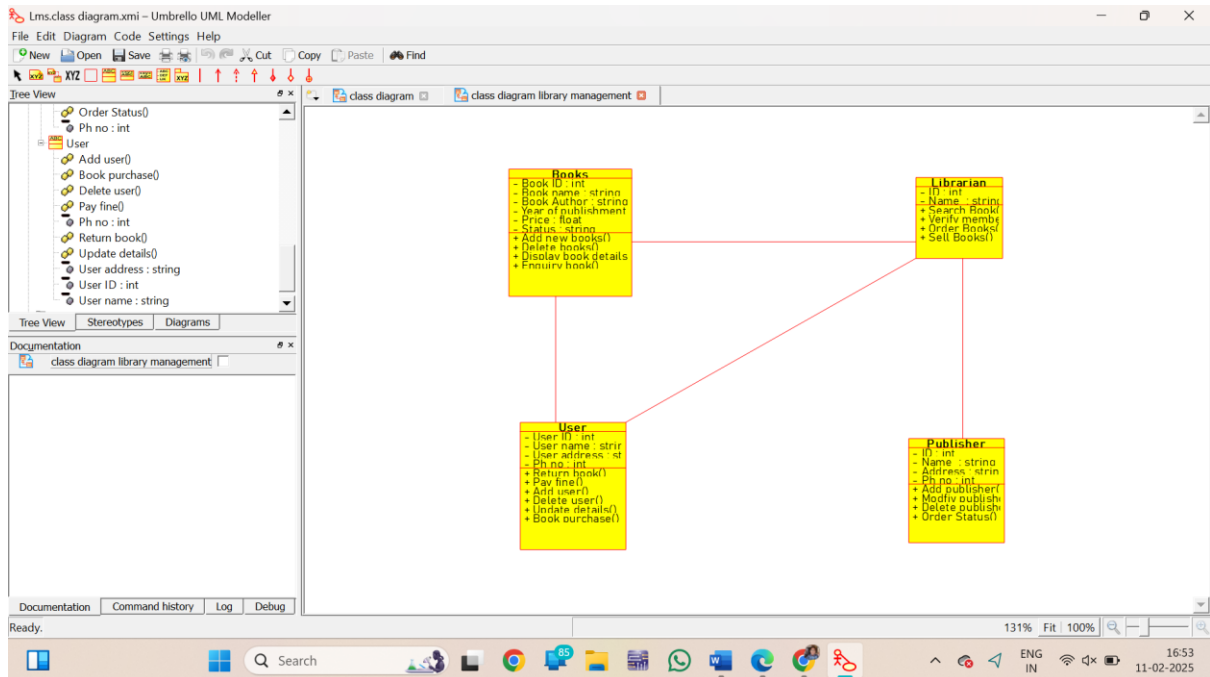
Procedure:

1. Identify Actors: Define users like Librarian and Member who interact with the system.

2. Identify Use Cases: List functionalities like Search Books, Checkout Book, Return Book, Manage Users, etc.

3. Define Relationships: Establish interactions between actors and use cases using association lines.

4. Use Generalization: Identify common functionalities among use cases and create inheritance where required.

5. Include System Boundaries: Define the system's scope using a rectangle around the use cases.

6. Apply Notations: Represent actors with stick figures and use cases with ovals in the diagram.

7. Finalize and Validate: Ensure all interactions and functionalities are correctly represented.
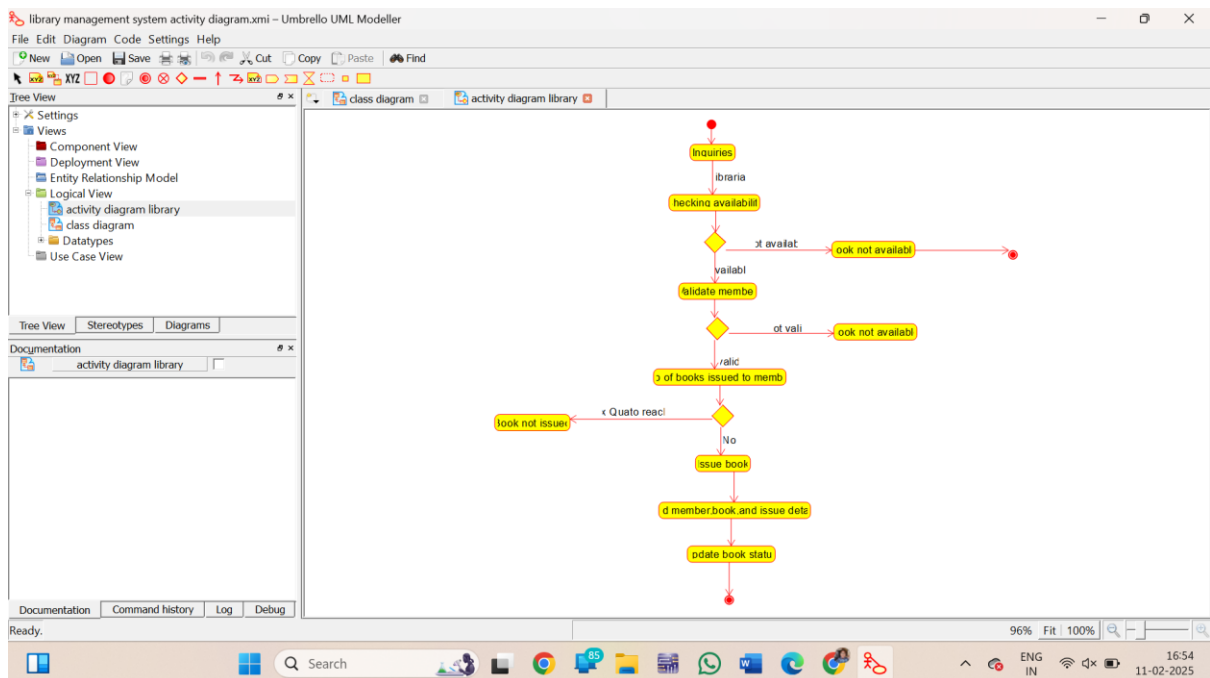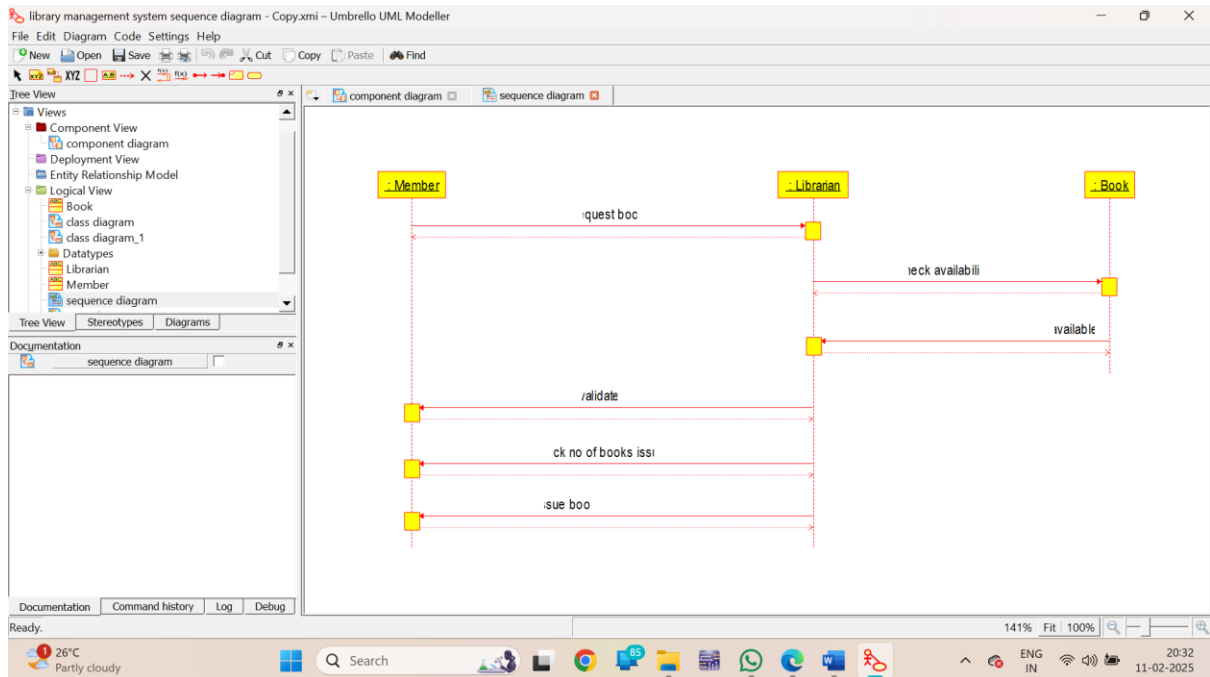
Use Case Diagram:

Class Diagram:

Activity Diagram:

Sequence Diagram:

Result:

A well-structured Use Case Diagram illustrating the functionalities of a Library Management System, showing interactions between users and system features.