



Software Engineering and Methodology

# **Assignment-2:**

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## **Unified Modeling Language (UML) Diagrams**

UML diagrams for the Library Management System, covering use cases, sequence interactions, activities, and class structures.

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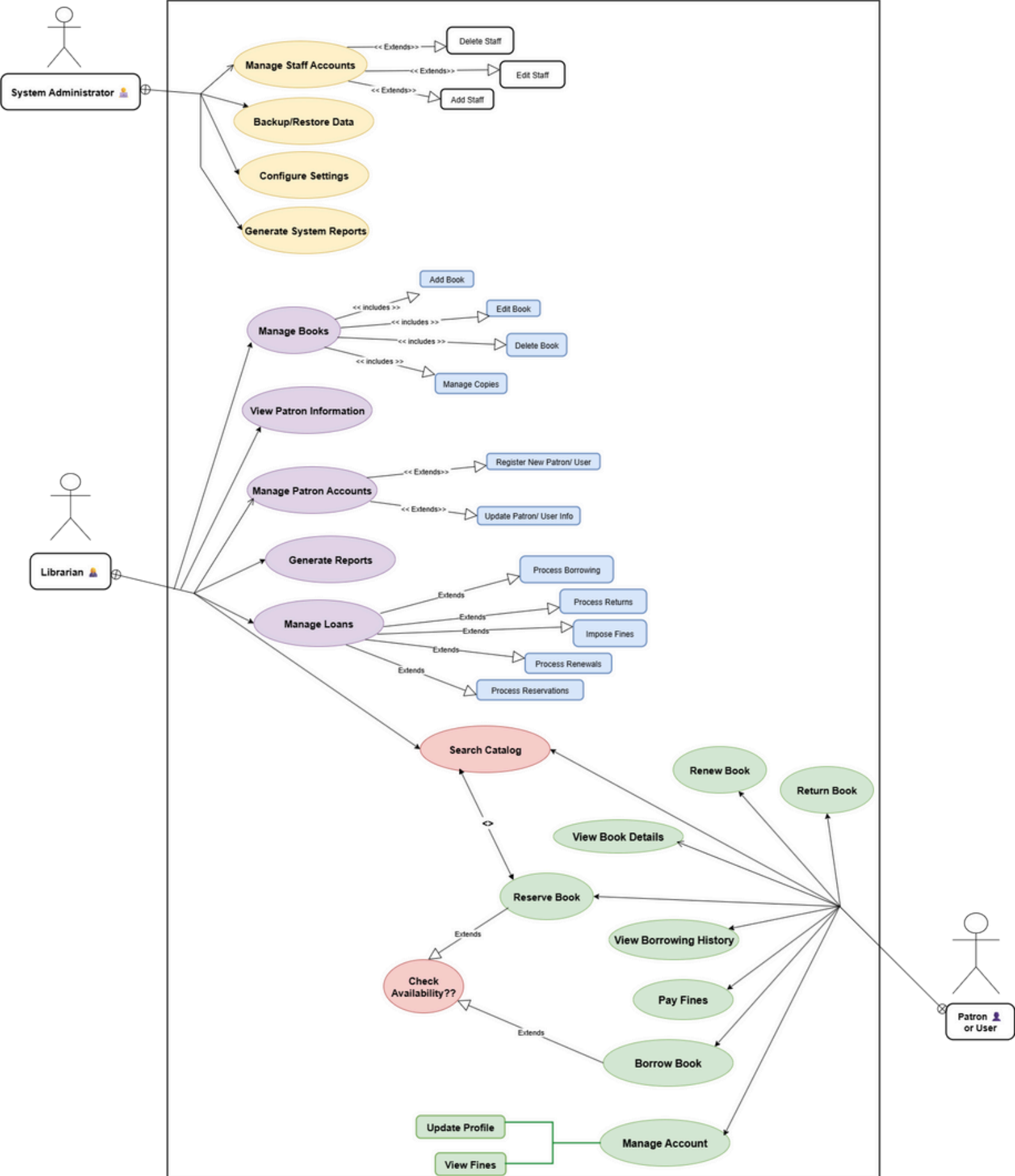
### **A. Use Case Diagram**

#### **Description**

The use case diagram illustrates the major functions of the system and the different actors (Patron, Librarian, System Administrator) who interact with them. It also includes the relationships between use cases such as <<include>> and <<extend>>.

#### **Diagram**

## LIBRARY MANAGEMENT SYSTEM USE- CASE DIAGRAM

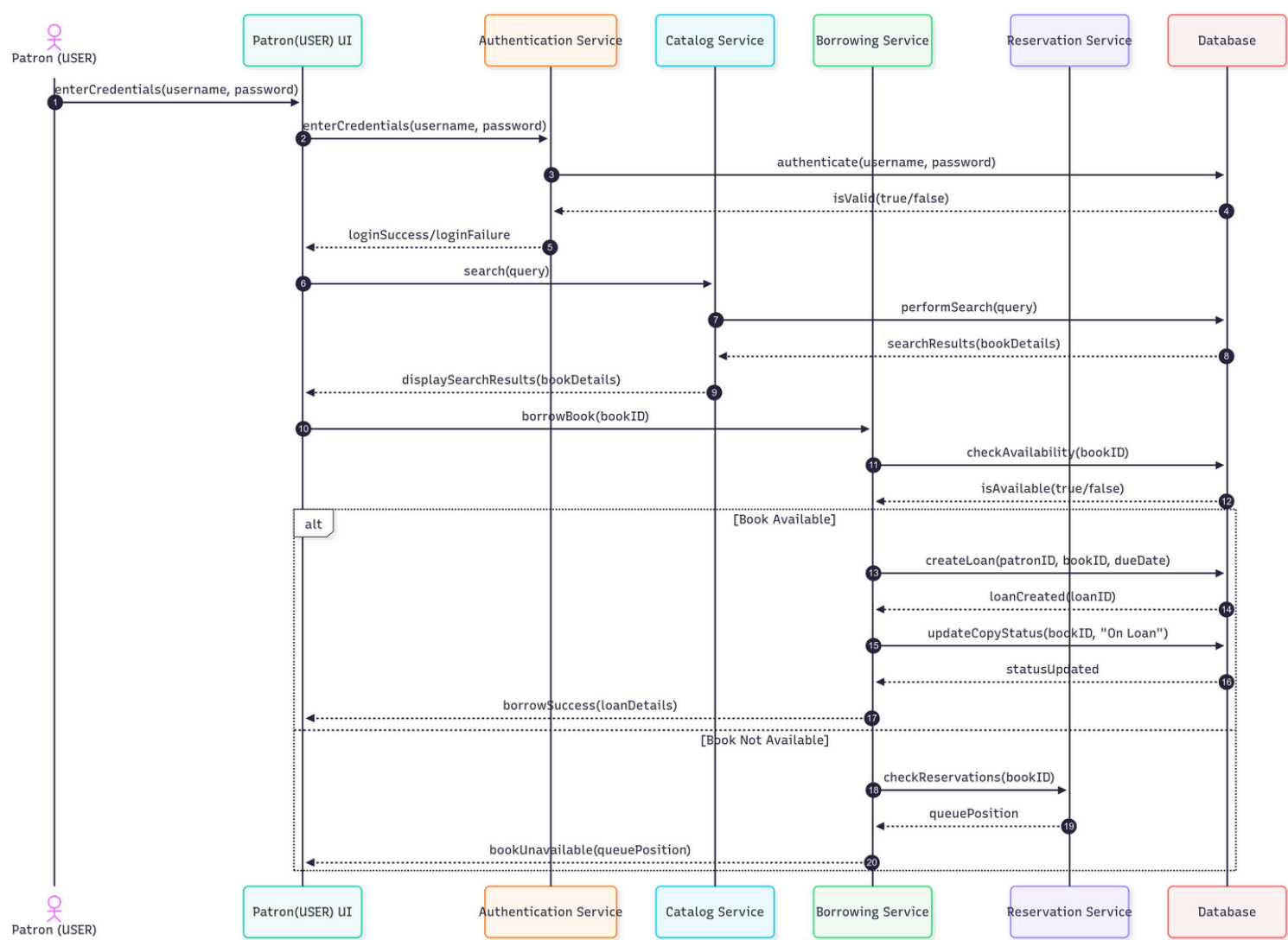


## B. Sequence Diagram: Borrowing a Book

### Description

This diagram models the interaction between components when a Patron borrows a book. It shows authentication, catalog search, borrowing, availability checks, reservation handling, and loan creation.

### Diagram



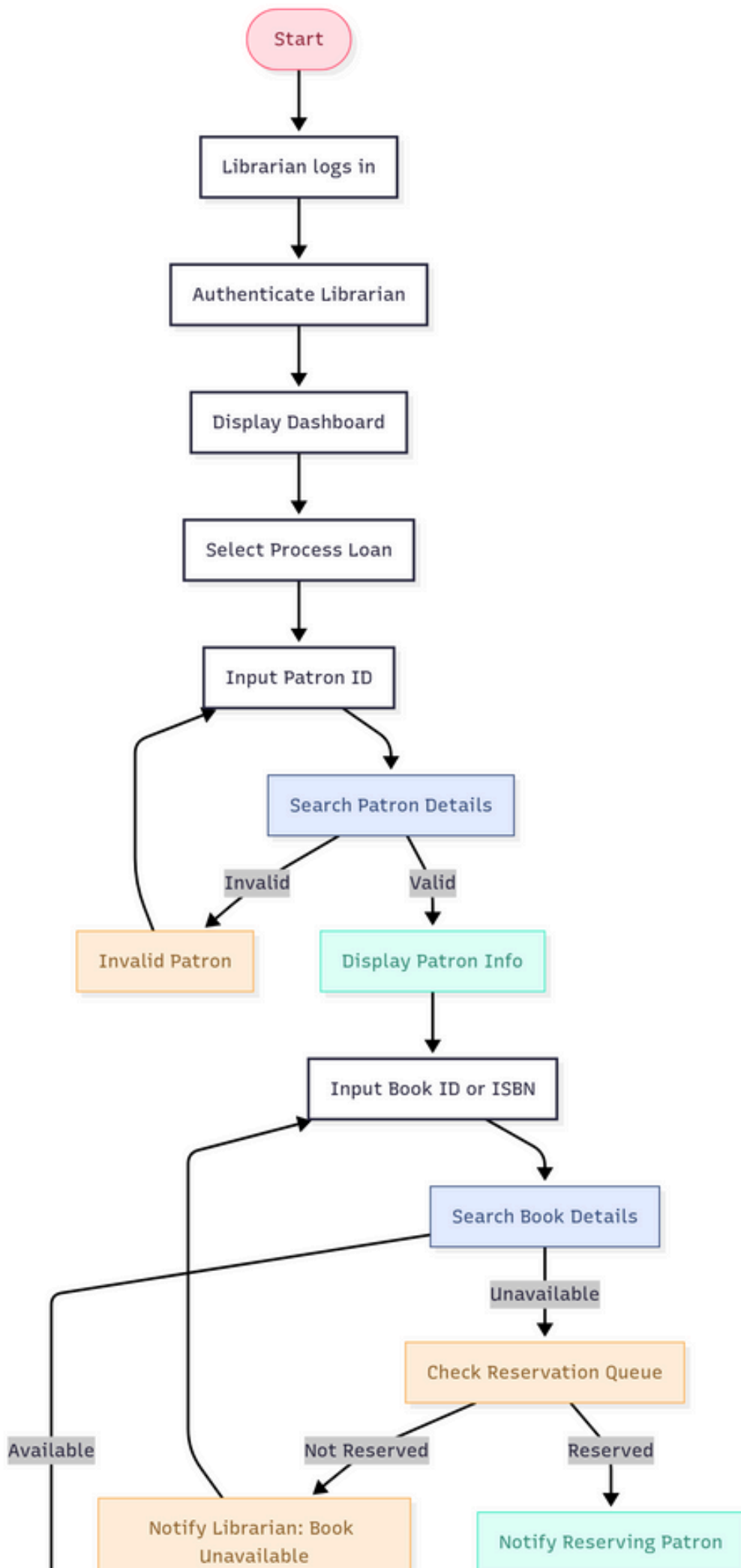
## C. Activity Diagram: Processing a Book Loan

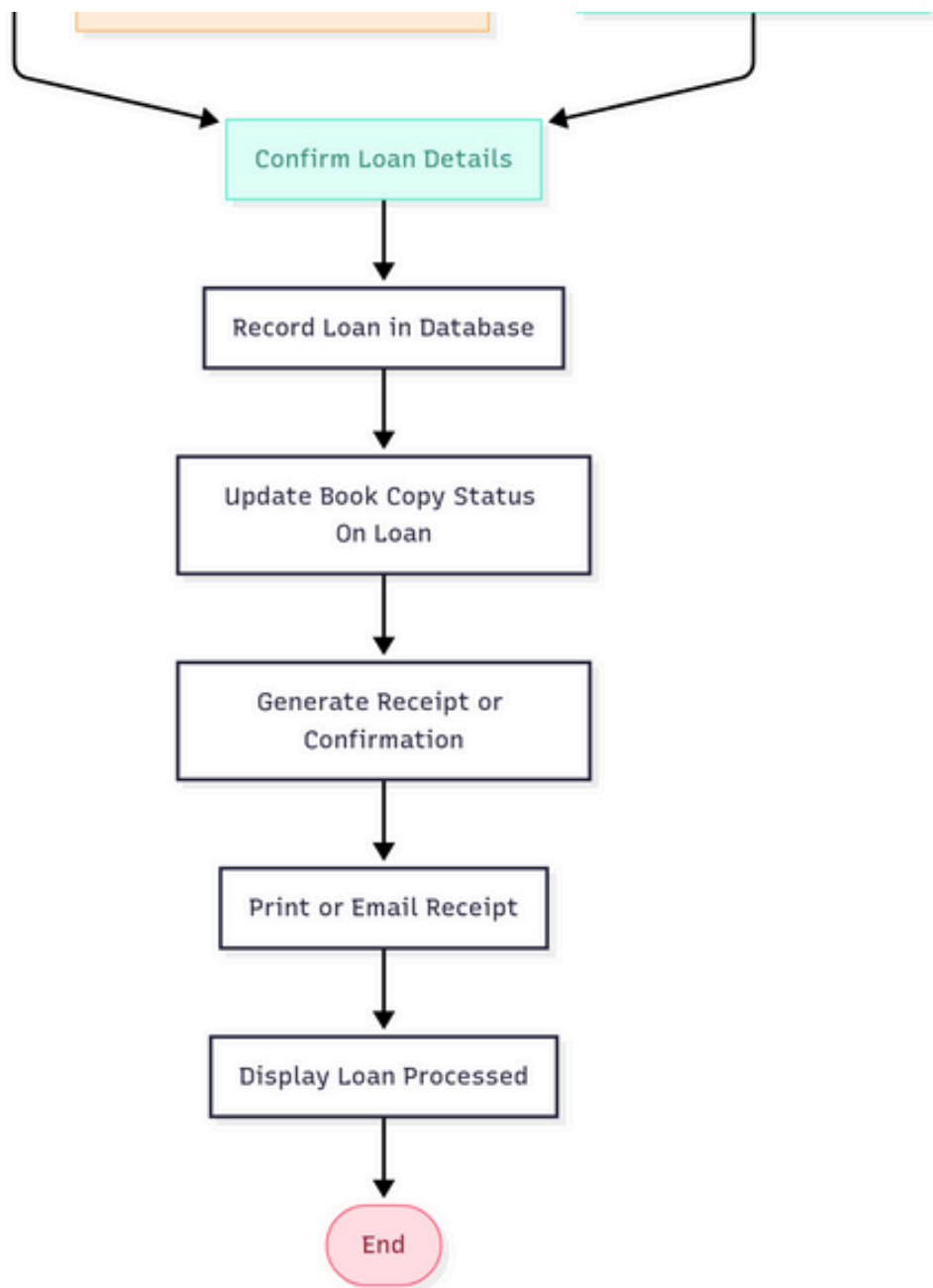
### Description

The activity diagram illustrates the workflow for a Librarian processing a book loan. It shows login, patron and book validation, decision points for availability and reservations, recording

the loan, and issuing a receipt.

## Diagram





## D. Class Diagram

### Description

The class diagram models the static structure of the Library Management System. It defines classes such as Patron, Book, Author, Copy, Loan, Reservation, and Staff, including their attributes, methods, enumerations, and relationships.

### Diagram

