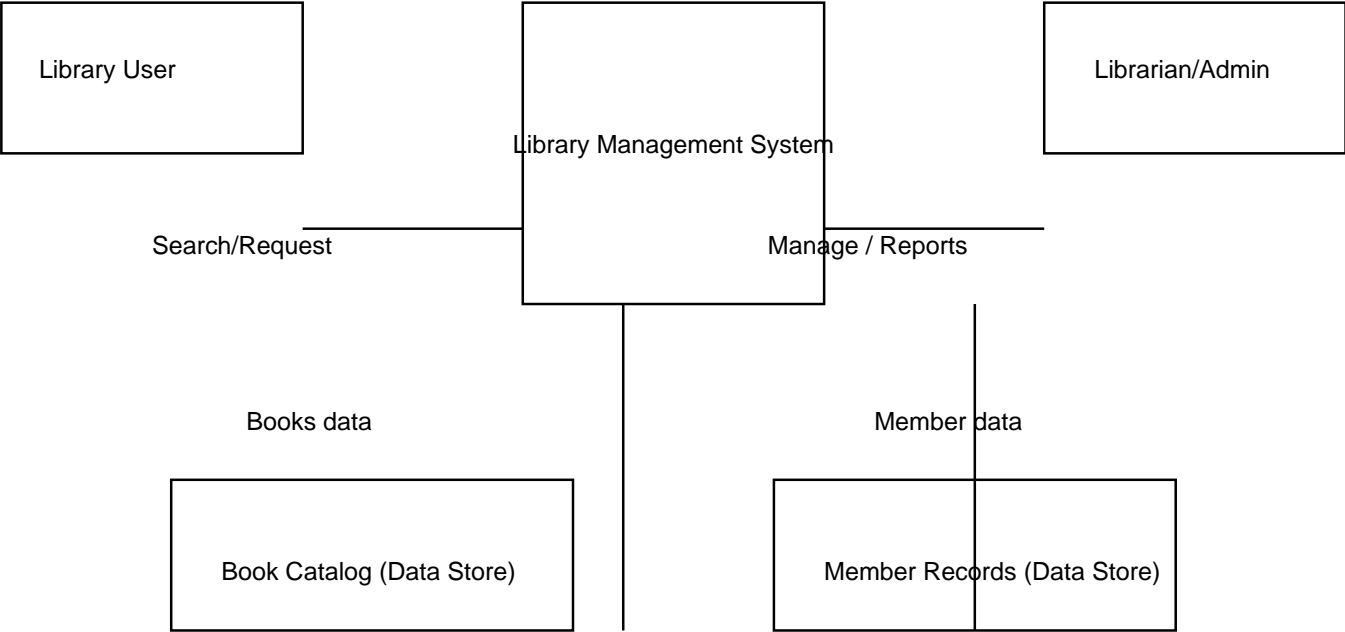


Library Management System

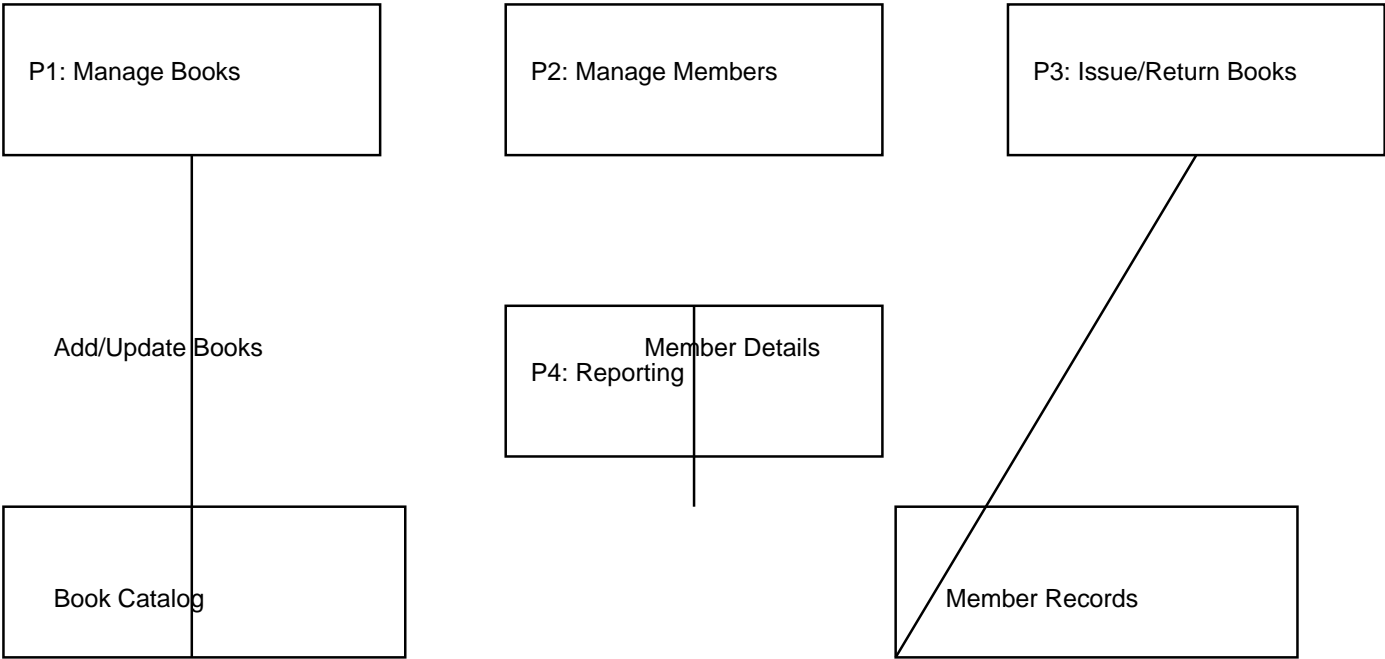
DFD, ER Diagram, and UML Diagrams

Prepared by ChatGPT

DFD Level 0 (Context Diagram)



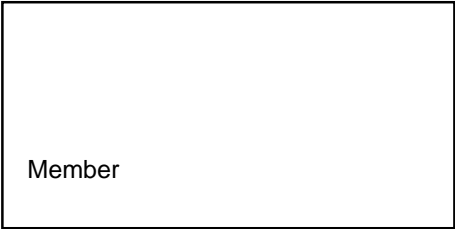
DFD Level 1 (Processes)



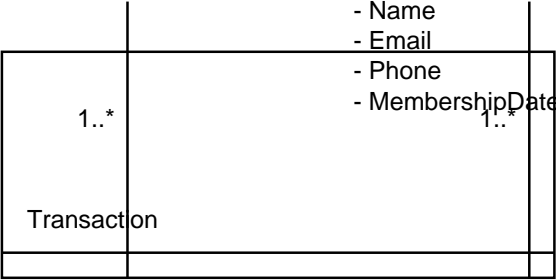
ER Diagram (Logical)



- BookID (PK)
- Title
- Author
- ISBN
- Category
- AvailableCopies



- MemberID (PK)
- Name
- Email
- Phone
- MembershipDate



- TransID (PK)
- BookID (FK)
- MemberID (FK)
- IssueDate
- DueDate
- ReturnDate
- Fine

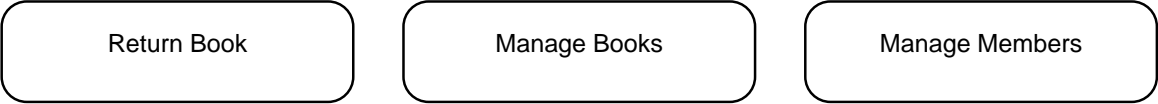
Use Case Diagram (Textual Layout)

Actors:

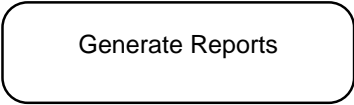
- Library User (Borrower)
- Librarian / Admin



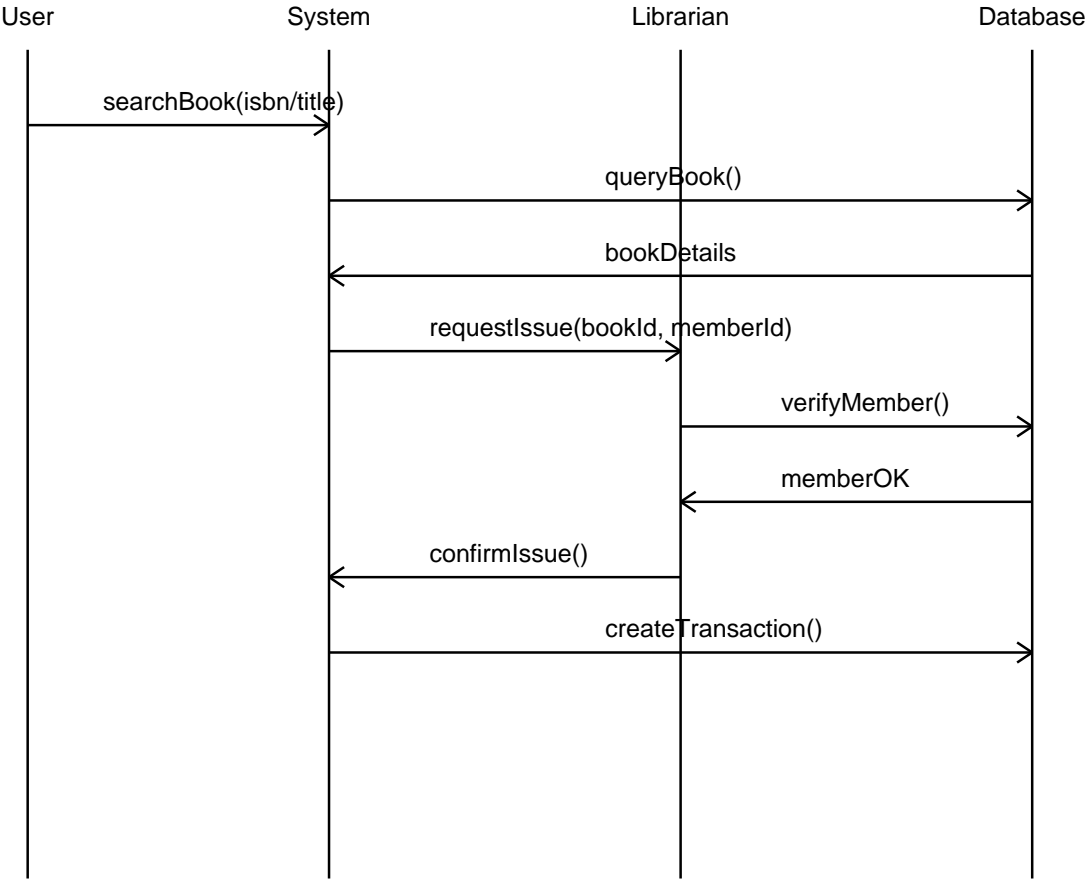
Library User



Librarian

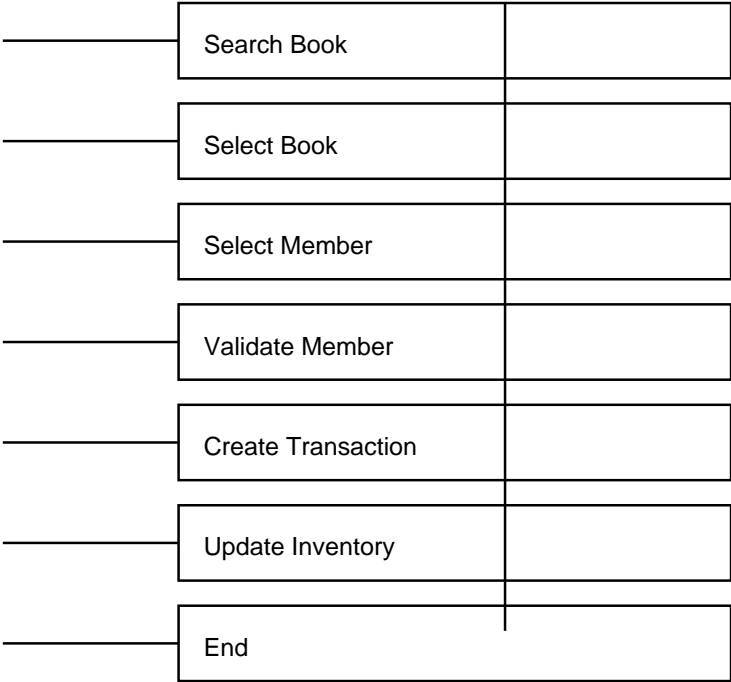


Sequence Diagram (Issue Book)



Activity Diagram (Issue Book)

● Start



Decision: Member valid?

Class Diagram (Core Classes)

Book

bookId: int
title: string
author: string
isbn: string
category: string

availableCopies: int

addCopy()
removeCopy()
isAvailable()

Transaction1..*

transId: int
bookId: int
memberId: int
issueDate: date
dueDate: date

returnDate: date
fine: float

calculateFine()
markReturned()

Member

memberId: int
name: string
email: string
phone: string
membershipDate: date

borrowBook()
returnBook()
payFine()

1..*Librarian

employeeId: int
name: string
role: string
addBook()
removeBook()

manageMember()