DFD - Level 0 (Context Diagram)

External Entities: Student, Librarian
System: Library Management System
Data Flows: Search, Issue, Return, Manage Books

DFD - Level 1

Processes: Search Books, Issue Books, Return Books, Manage Users
Data Stores: Books DB, Users DB
External Entities: Student, Librarian

ER Diagram

Entities: Student, Book, Librarian, Issue, Return
Relationships:
- Student issues Book
- Student returns Book
- Librarian manages Books

UML Use Case Diagram

Actors: Student, Librarian
Use Cases: Search Book, Issue Book, Return Book, Pay Fine, Manage Books

UML Class Diagram

Classes:
- Book (title, author, ISBN)
- Student (id, name, contact)
- Librarian (id, name)
- Transaction (issueDate, returnDate)
Relationships: Student -- Transaction -- Book

UML Sequence Diagram

Scenario: Issue Book
1. Student -> System: Search Book
2. Student -> Librarian: Request Issue
3. Librarian -> System: Confirm Issue
4. System -> Student: Book Issued

UML Activity Diagram

Activity: Issue Book
Start -> Search Book -> Request Book -> Verify Availability -> Issue Book -> Update Records -> E