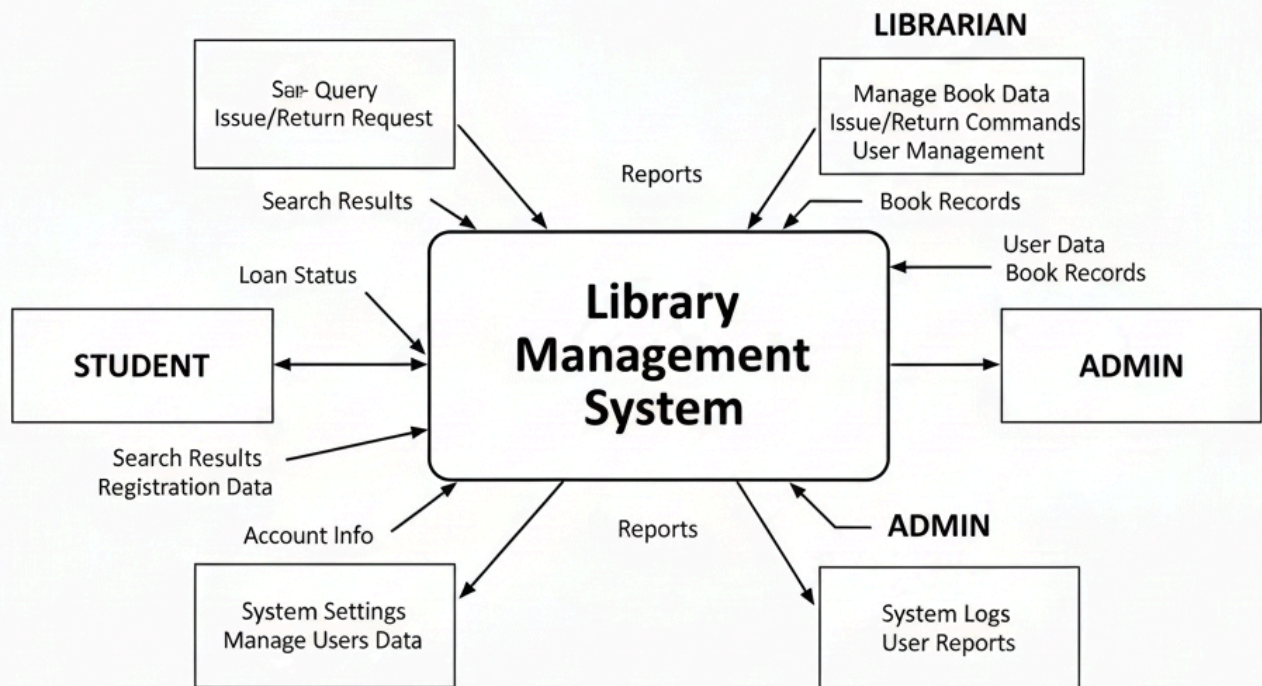
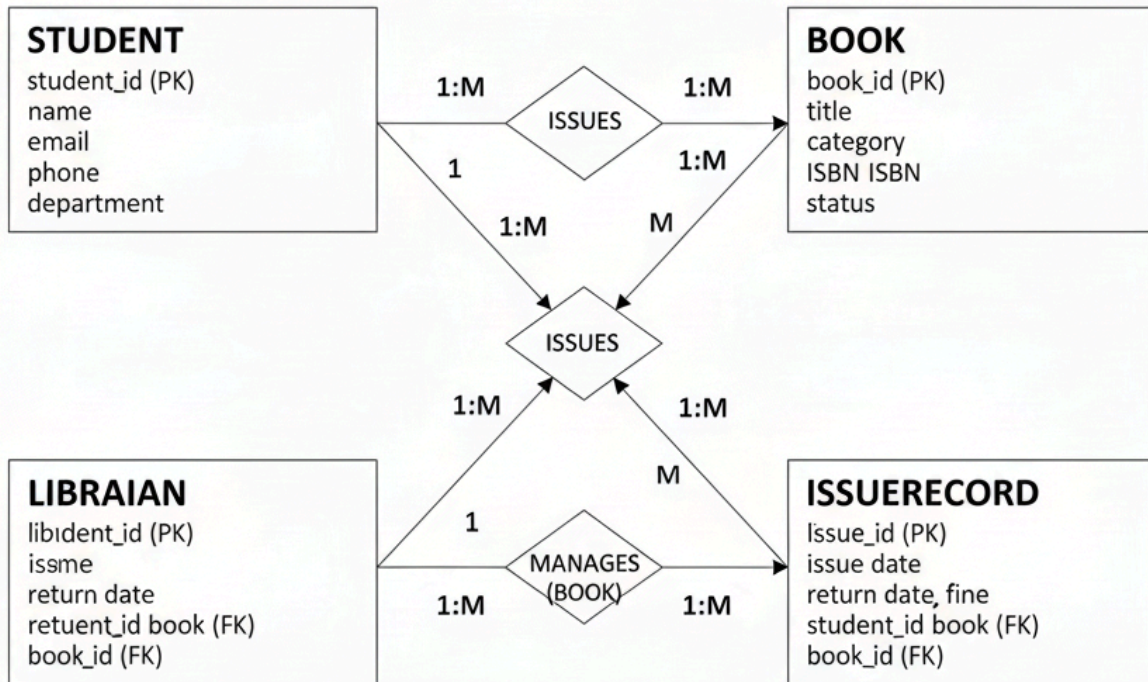


# DFD Diagram



## Library Management System - ER Diagram





# Library Management System - Use Case Diagram

```

    usecaseDiagram
        actor Student
        actor Librarian
        actor Admin

        usecase SearchBook as Search Book
        usecase IssueBook1 as Issue Book
        usecase IssueBook2 as Issue Book
        usecase ReturnBook as Return Book
        usecase RegisterStudent as Register Student
        usecase ViewReports as View Reports
        usecase ManageLibrarians as Manage Librarians

        Student --> SearchBook
        Librarian --> IssueBook1
        Librarian --> IssueBook2
        Admin --> ReturnBook

        SearchBook --> IssueBook1
        SearchBook --> IssueBook2
        IssueBook1 --> IssueBook2
        IssueBook1 --> ReturnBook
        IssueBook2 --> RegisterStudent
        IssueBook2 --> ManageLibrarians
        RegisterStudent --> ViewReports
        ViewReports --> ManageLibrarians
        ManageLibrarians --> IssueBook2
        ManageLibrarians --> ReturnBook

        Note over IssueBook1, IssueBook2: <<include>>
        Note over ReturnBook: <<extend>>
        Note over RegisterStudent, ViewReports: <<extend>>
        Note over IssueBook2, ManageLibrarians: Login
        Note over IssueBook2, ReturnBook: Add/Remove Book
  
```

The diagram illustrates the interactions between three actors (Student, Librarian, Admin) and the use cases of a Library Management System. The system is enclosed in a boundary box labeled "Library Management System".

- Actors:** Student, Librarian, and Admin are represented by stick figures on the left.
- Use Cases:** Search Book, Issue Book (two instances), Return Book, Register Student, View Reports, and Manage Librarians are represented by ovals.
- Relationships:**
  - Student** is associated with **Search Book**.
  - Librarian** is associated with both **Issue Book** instances via an **<<include>>** relationship.
  - Admin** is associated with **Return Book**.
  - Search Book** leads to both **Issue Book** instances.
  - The first **Issue Book** leads to the second **Issue Book** and **Return Book**.
  - The second **Issue Book** leads to **Register Student** and **Manage Librarians**.
  - Register Student** leads to **View Reports**.
  - View Reports** leads to **Manage Librarians**.
  - Manage Librarians** leads back to the second **Issue Book** and also to **Return Book**.
  - There is a **Login** relationship from the second **Issue Book** to **Manage Librarians**.
  - There is an **Add/Remove Book** relationship from **Manage Librarians** to the second **Issue Book**.
  - An **<<extend>>** relationship exists from **Return Book** to the second **Issue Book**.
  - An **<<extend>>** relationship exists from **Register Student** to **View Reports**.

