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**LARGE SCALE PROGRAMMING MIDTERM SPRING 2025**

1.

**CRC Cards for Library System**

### **Classes**

**Book**

* **Reason:** Represents the books in the library. Each book has attributes like title, author, ISBN, and availability status.

**Member**

* **Reason:** Represents the library members who can borrow books. Each member has a limit on the number of books they can borrow.

**Librarian**

* **Reason:** Represents the librarian who manages the library's collection, including adding and removing books.

**Library**

* **Reason:** Acts as the central system that manages the collection of books, members, and interactions between them.

### **Responsibilities**

**Book**

* **Responsibilities:**
  + Store and provide access to book details (title, author, ISBN, availability).
  + Update the availability status when borrowed or returned.

**Member**

* **Responsibilities:**
  + Borrow books if they are available and the member has not reached the borrowing limit.
  + Return books, making them available again.

**Librarian**

* **Responsibilities:**
  + Add new books to the library collection.
  + Remove outdated or lost books from the collection.

**Library**

* **Responsibilities:**
  + Maintain a list of all books and their availability status.
  + Track which books are borrowed by which members.

### **Collaborators**

**Book**

* **Collaborators:** Library, Member
* **Reason:** The Book class interacts with the Library to update its availability status and with the Member when it is borrowed or returned.

**Member**

* **Collaborators:** Book, Library
* **Reason:** The Member class interacts with the Book class to borrow and return books and with the Library to check availability and borrowing limits.

**Librarian**

* **Collaborators:** Library, Book
* **Reason:** The Librarian class interacts with the Library to add or remove books and with the Book class to update the collection.

**Library**

* **Collaborators:** Book, Member, Librarian
* **Reason:** The Library class interacts with the Book class to manage the collection, with the Member class to track borrowed books, and with the Librarian class to update the collection.