

LIBRARY MANAEMENT SYSTEM

```

class Library {
    String name;
    Address location;
    List<BookItem> books;
}

class Book {
    String uniqueIdNumber;
    String title;
    List<Author> authors;
    BookType bookType;
}

class BookItem extends Book {
    String barcode;
    Date publicationDate;
    Rack rackLocation;
    BookStatus bookStatus;
    BookFormat bookFormat;
    Date issueDate;
}

class Address {
    int pinCode //ZipCode
    String street;
    String city;
    String state;
    String country;
}

public enum BookType {
    SCI_FI, ROMANTIC, FANTASY, DRAMA;
}

public enum BookFormat {
    HARDCOVER, PAPERBACK, NEWSPAPER, JOURNAL;
}

public enum BookStatus {
    ISSUED, AVAILABLE, RESERVED, LOST;
}

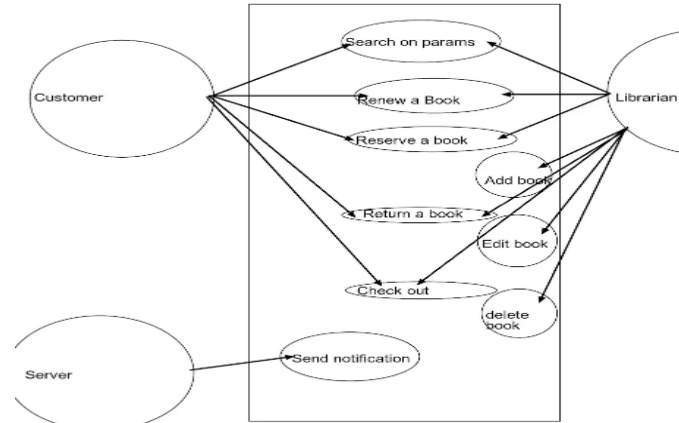
class Rack {
    int number;
    String locationId;
}

class Person {
    String firstName;
    String lastName;
}

class Author extends Person {
    List<Book> booksPublished;
}

class SystemUser extends Person {
    String Email;
    String phoneNumber;
    Account account;
}

class Member extends SystemUsers {
    int totalBookCheckedOut;
    Search searchObj;
    BookIssueService issueService;
}
    
```



```

class Librarian extends SystemUsers {
    Search searchObj;
    BookIssueService issueService;

    public void addBookItem(BookItem bookItem);
    public BookItem deleteBookItem(String barcode);
    public BookItem editBookItem(BookItem bookItem);
}

class Account {
    String userName;
    String password;
    int accountId;
}

class Search {
    public List<BookItem> geBookByTitle(String title);
    public List<BookItem> geBookByAuthor(Author author);
    public List<BookItem> geBookByType(BookType bookType);
    public List<BookItem> geBookByPublicationDate(Date publicationDate);
}

class BookIssueService {
    Fine fine;

    public BookReservationDetail getReservationDetail(BookItem book);
    public void updateReservationDetail(BookReservationDetail bookReservationDetail);
    public BookReservationDetail reserveBook(BookItem book, SystemUser user);
    public BookIssueDetail issueBook(BookItem book, SystemUser user);
    // it will internally call the issueBook function after basic validations
    public BookIssueDetail renewBook(BookItem book, SystemUser user);
    public void returnBook(BookItem book, SystemUser user);
}

class BookLending {
    BookItem book;
    Date startDate;
    SystemUser user;
}

class BookReservationDetail extends BookLending {
    ReservationStatus reservationStatus;
}

class BookIssueDetail extends BookLending {
    Date dueDate;
}

class Fine {
    Date fineDate;
    BookItem book;
    SystemUser user;

    public double calculateFine(int days);
}
    
```