1. **Library Management Application**

**Question Scenario**

The ***Library Management Application*** is built using Spring Boot*.* The application is used to maintain the relationship between books and recipients. The application consists of 4 entities; Book, User, Publisher and Notification.

**Objective**

***Database*** layer with required code exists in the application. Complete the logic of methods present in ***Presentation*** and ***Business*** layers. You are allowed to create the ***Persistence*** *layer* according to the requirement. You are not allowed to change the method signature of ***Presentation*** and ***Business*** layers and response should be as mentioned in json format.

**Requirement 1**

The ***User*** wants to borrow books present in the library. The result should contain only those books whose name starts with substring containing ***‘M’*** digits and who are published on any of the dates mentioned. Paginate the records between ***‘X’*** and ***‘Y’***, where ‘***X’*** is ***pageStartNumber*** and ***‘Y’*** is ***pageEndNumber.***

**Instructions**

We have defined below method in ***Presentation*** Layer.

@GetMapping (“get/all/{***pageStartNumber***}/{***pageEndNumber***}”)

public ResponseEntity<ResponseMaster> getBooks (@Pathvariable int ***pageStartNumber***, @PathVariable int ***pageEndNumber,*** @RequestBody ***GetDto dto***)

**Output:**

The required JSON format is,

{

    "error": **false**,

    "message": "Books starts with He have been fetched successfully.",

    "data": [

        {

            "bookId": 1,

            "bookName": "Head First Java",

            "authorName": "Kathy Sierra",

            "available": **true**,

            "edition": 2,

            "durationToRead": 120,

            "publishers": [

                {

                    "publisherId": 1,

                    "publisherName": "O'Reilly Media",

                    "creditedAmount": 1000,

                    "countOfReaders": 200

                }

            ]

        },

        {

            "bookId": 2,

            "bookName": "HeadLong",

            "authorName": "Emlyn Williams",

            "available": **true**,

            "edition": 2,

            "durationToRead": 130,

            "publishers": [

                {

                    "publisherId": 1,

                    "publisherName": "Faber",

                    "creditedAmount": 9870,

                    "countOfReaders": 670

                }

            ]

        }

    ]

}

We have defined below method in *Business* Layer.

public List<BookDTO> getBooks (int ***pageStartNumber***, int ***pageEndNumber, GetDto dto***)

**Note**

You are not allowed to make any changes in below files.

1. application.properties
2. pom.xml

You are not allowed to make any changes in the files present in below packages.

1. com.tyss.library.pojo
2. com.tyss.library.dto

Also, you are not allowed to perform any action which manipulates the existing data present in the database and insert new data to the database.

You can only work upon below files.

1. BookController.java
2. BookService.java
3. BookRepository.java
4. UserRepository.java
5. PublisherRepository.java

**Requirement 2**

***User*** wants to read a book ***‘Y’***. He will be allowed to rent it only if his previous ***due date*** is greater than the duration required to read the current book (***due date*** will be null if it is his first borrowing). Credit the money to ***Publisher*** along with extra money if count of readers is greater than ***‘X’***. Value of ***‘X’*** is specified in application.properties file. If you find multiple ***Publishers*** for same book, divide the money equally among them. Also, send the notification to ***User*** as well ***Publisher*** to their registered number***.***

**Instructions**

We have defined below method in ***Presentation*** Layer.

@PutMapping(“rent/{userId}/{bookName}”)

public ResponseEntity<ResponseMaster> rentBook (@Pathvariable int ***userId***, @PathVariable String ***bookName***)

***Duration*** required to read the book will be in ***minutes***.

***RentAmount*** will be supplied in application.properties file. It represents hourly rate.

**Output:**

The required JSON format is,

{

    "error": **false**,

    "message": "Varun has borrowed the book: Head First Java successfully.",

    "data": {

        "user": {

            "userId": 1,

            "userName": "Varun",

            "dueDate": "21-07-2022"

        },

        "books": {

            "bookId": 1,

            "bookName": "Head First Java",

            "authorName": "Kathy Sierra",

            "available": **true**,

            "edition": 2,

            "durationToRead": 120,

            "publishers": [

                {

                    "publisherId": 1,

                    "publisherName": "O'Reilly Media",

                    "creditedAmount": 1000,

                    "countOfReaders": 200

                }

            ]

        }

    }

}

We have defined below method in *Business* Layer.

public List<BorrowDTO > rentBook (int ***userId,*** String ***bookName***)

**Note**

You are not allowed to make any changes in below files.

1. application. properties
2. pom.xml

You are not allowed to make any changes in the files present in below packages.

1. com.tyss.library.pojo
2. com.tyss.library.dto

You are not allowed insert new data to the database.

You can only work upon below files.

1. BookController.java
2. BookService.java
3. BookRepository.java
4. UserRepository.java
5. PublisherRepository.java