

## Library System

### Situation:

In today's modern era of technology, libraries have adapted and changed to meet the needs of our society. And now, we come out an idea of creating a code for library systems. We try to create a code that will assist library users in planning their borrowing and making good use of their time and resources. This code not only allows users to choose books from a list, but it also offers a range of functions such as login and registration, borrowing and returning resources, displaying borrowed items, exploring the library's offerings, and logging out when finished. With the help of this application, users can effortlessly and smoothly pick out books from the library and customize their plan for visiting based on their individual preferences. Users have the option to log in and enjoy a personalized service, or they can create their own user accounts through registration. The application also facilitates borrowing and returning resources. When needed, users can easily manage their borrowing list and return resources.

|   |   |  |
|---|---|--|
| <b>Resource</b>   | <b>Journal</b>                            | <b>User</b>  |
| String:title<br>String:author<br>int:year<br>int:period                     | String:genre<br>int:issueNumber           | String: username<br>String:password<br>List <Resource> :<br>borrowing list   |
| getTitle():String<br>getAuthor():String<br>getYear():int<br>getPeriod():int | getGenre():String<br>getIssueNumber():int | getUserName: String<br>login:<br>borrowResource(Resource resource): void<br>returnResource(Resource resource): void<br>displayBorrowingList():<br>void<br>getBorrowingList():<br>List <Resource> |
| <b>Book</b>   |   |  |
| String:genre<br>String:ISBN   |   |  |
| getGenre():String<br>getISBN():String                                       |   |  |
| <b>Multimedia</b>   |   |  |
| String:format<br>String:quality<br>String:length                            |   |  |
| getFormat():String<br>getQuality():String<br>getLength():String             |   |  |

| <b>LibrarySystem</b>   |
|--|
| String: username<br>String: password<br>List <Resource> :<br>borrowing list  |
| getUserName: String<br>login:<br>borrowResource(Resource resource): void<br>returnResource(Resource resource): void<br>displayBorrowingList(): void<br>getBorrowingList(): List <Resource> |

1. Create **Resource** class

| <b>Resource</b>  |   |
|--|---|
| <b>Modifier and type</b>   | <b>Method(or Variable) and description</b>                                  |
| <b>Instance variable</b>   |   |
| <b>String</b>  | title   |
| <b>String</b>  | author  |
| <b>int</b>   | year  |
| <b>Int</b>   | period  |
| <b>Constructor</b>   |   |
| <b>Resource(String title, String author, int year, int period)</b><br>Enable to instantiate a Resource object with given title, author, year and period. |   |
| <b>Instance Methods</b>  |   |
| -  | 4 getter for 4 attributes(getTitle(), getAuthor(), getYear(), getPeriod()). |
| <b>void</b>  | displayInfo()<br>Return the information of the resource.                    |

## 2. Create **Journal** class

| <b>Journal</b>   |  |
|--|--|
| <b>Modifier and type</b>   | <b>Method(or Variable) and description</b>               |
| <b>Int</b>   | issueNumber  |
| <b>String</b>  | Genre  |
| <b>Constructor</b>   |  |
| <b>Journal(String title, String author, int year, int issueNumber, int period, String genre)</b><br>Enable to instantiate a Journal object with given genre and issueNumber and use super(...) keyword to instantiate the object of superclass by title, author, year, period. |  |
| <b>Instance Methods</b>  |  |
| -  | 2 getter for 2 attributes(getIssueNumber(), getGenre()). |
| <b>void</b>  | displayInfo()<br>Return the information of the journal.  |

## 3. Create **Book** class

| <b>Book</b>   |  |
|---|--|
| <b>Modifier and type</b>  | <b>Method(or Variable) and description</b>           |
| <b>String</b>   | genre  |
| <b>String</b>   | ISBN   |
| <b>Constructor</b>  |  |
| <b>Book(String title, String author, int year, String genre, int period, String ISBN)</b><br>Enable to instantiate a Book object with given genre and ISBN and use super(...) keyword to instantiate the object of superclass by title, author, year, period. |  |
| <b>Instance Methods</b>   |  |
| -   | 2 getter for 2 attributes(getISBN(), getGenre()).    |
| <b>void</b>   | displayInfo()<br>Return the information of the book. |

## 4. Create Multimedia class

| <b>Multimedia</b>        |  |
|--------------------------|--|
| <b>Modifier and type</b> | <b>Method(or Variable) and description</b> |

|   |  |
|---|--|
| <b>String</b>   | format   |
| <b>String</b>   | quality  |
| <b>String</b>   | length   |
| <b>Constructor</b>  |  |
| <b>Multimedia(String title, String author, int year, String format, int period, String quality, String length)</b><br>Enable to instantiate a Multimedia object with given length, format and quality and use super(...) keyword to instantiate the object of superclass by title, author, year, period.. |  |
| <b>Instance Methods</b>   |  |
| -   | 3 getter for 3 attributes(getFormat(), getQuality(), getLength()). |
| <b>void</b>   | displayInfo()<br>Return the information of the multimedia.         |

## 5. Create User Class