**Assignment 1**

**Main Class :** LibraryManagementSystem

**Book Class :** Define Attributes od Books

**Functional Class:** library Class

**Information Class:** User Class

**LibraryManagementSystem**

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| --- |
| import java.util.Scanner;  import java.util.InputMismatchException;  public class LibraryManagementSystem {      public static void main(String[] args) {          Scanner input = new Scanner(System.in);          Library l1= new Library();          Book book1 = new Book();          User user1= new User();          String inputTitle;            while (true) {              System.out.println("-----------------------------------------------------");                System.out.println("Wellcome to Library Management Ststem");              System.out.println("Chose between 1 to 6\n1 Add Books\n2 Add User\n3 Borrow Book\n4 Return Book\n5 Search Book by Title");              int userInput=0;              while (true){             try {              userInput = input.nextInt();          } catch (InputMismatchException e) {              System.out.println("Invalid Input Please Enter the between 1 to 6.");              input.next();              continue;          }          break;           }      switch (userInput)      {          case 1:          l1.addBook(book1.bookID, book1.title, book1.aurther, book1.genre, book1.availablity);          break;          case 2:          l1.addUser(user1.userID, user1.userName,user1.contact, user1.borrowedbooks);          break;          case 3:          System.out.println("Enter the title of the Book");          input.nextLine();          inputTitle=input.nextLine();          l1.checkingOutBooks(inputTitle);          break;          case 4:          System.out.println("Enter the Book Title You Want to Return");          input.nextLine();          inputTitle=input.nextLine();          l1.returning(inputTitle);          break;          case 5:          System.out.println("Enter the title of the Book");          input.nextLine();          inputTitle = input.nextLine();          l1.searchingBook(inputTitle);          break;          default :          System.out.println("Invalid Input Please Enter between 1 to 6");      }      System.out.println("Enter Between Y or N to If you want the Menu Again");      char answer = input.next().charAt(0);      if (answer == 'Y' || answer == 'y') {          continue;        }      else  if(answer== 'N' || answer == 'n'){          break;      }         }      }  } |

**Book Class**

|  |
| --- |
| class Book {        int bookID;      String title;      String aurther;      String genre;      boolean availablity;    } |

**User Class**

|  |
| --- |
| public class User{        int userID;      String userName;      String contact;      String borrowedbooks;    } |

**library Class**

|  |
| --- |
| import java.io.\*;  import java.util.\*;  import javax.management.RuntimeErrorException;  public class Library {      Scanner input = new Scanner(System.in);      public void addBook(int bookID, String title, String aurther, String genre, boolean availablity){            System.out.println("Enter the Book ID: ");          while(true){          try{                 bookID=input.nextInt();                 input.nextLine();             }catch(InputMismatchException e){                 System.out.println("Please Enter The vald input");                 input.next();                 continue;             }break;         }          System.out.println("Enter the Book Title: ");          title = input.nextLine();          System.out.println("Enter the Aurther Name: ");          aurther = input.nextLine();          System.out.println("Enter The Genere: ");          genre = input.nextLine();         availablity= true;         try { FileWriter filestore = new FileWriter("BookBank.txt",true);         filestore.write("BookID: "+ bookID + " Book Title: "+ title + " Auther Name: " + aurther + " Genere: " + genre + " Status: " + availablity +"\n");         filestore.close();       } catch (IOException e)       {e.printStackTrace();}      }        public void addUser(int userID, String userName, String contact, String borrowedbooks){          System.out.println("Enter User ID: ");          while(true){              try{                  userID = input.nextInt();                  input.nextLine();              }catch(InputMismatchException e){              System.out.println("Please Enter The vald input");              input.next();              continue;          }break;          }          System.out.println("Enter User Name: ");          userName= input.nextLine();          System.out.println("Enter User Contact: ");          contact = input.nextLine();          System.out.println("Enter Borrwoed Books: ");          borrowedbooks = input.nextLine();          while(true){              try{                  FileWriter userDetails= new FileWriter("UserBank.txt",true);                  userDetails.write("User ID: "+userID+" User Name: "+ userName +" Contact: " + contact+"Borowed Books: "+borrowedbooks+ "\n");                  userDetails.close();              }catch(IOException e)              {e.printStackTrace();}          }      }      void checkingOutBooks(String name) {          try{              FileReader myFileReader = new FileReader("BookBank.txt");              FileWriter fj = new FileWriter("BorrowedBooks.txt", true);              FileReader fk = new FileReader("BorrowedBooks.txt");              Scanner sc = new Scanner(myFileReader);              Scanner scanner = new Scanner(fk);              ArrayList<String> Books = new ArrayList<>();             ArrayList<String> bb = new ArrayList<>();             if (!sc.hasNextLine()) {                 System.out.println("There are no books available in the library");                 return;             }             while (sc.hasNextLine()) {                 Books.add(sc.nextLine());             }             while (scanner.hasNextLine()) {                 bb.add(scanner.nextLine());             }             boolean alreadyBorrowed = false;             for (String borrowedBook : bb) {                 if (borrowedBook.contains(name)) {                     alreadyBorrowed = true;                     break;                 }             }             for (String book : Books) {                   if (book.contains(name) && !alreadyBorrowed) {                     System.out.println("The Book is Available");                     fj.write(book + "\n");                     System.out.println("You have successfully Borrowed this Book");                     try { FileWriter filestore = new FileWriter("BorrowedBooks.txt",true);         filestore.write(" Book Title: "+ name +"\n");         filestore.close();       } catch (IOException e)       {e.printStackTrace();}                     return;                 } else if (alreadyBorrowed) {                     System.out.println("Book is Not Available");                     return;                 }             }             System.out.println("The book is not available in the library");         } catch (IOException e) {             e.printStackTrace();         }     }            public void searchingBook(String inputTitle){            try{              FileReader bookbanksearch = new FileReader("BookBank.txt");              Scanner searchBook = new Scanner(bookbanksearch);              int value = 0;              while(searchBook.hasNextLine()){                  if(searchBook.nextLine().contains(inputTitle)){                      System.out.println("The Book is Available.");                      value++;                      break;                  }              }              if (value == 0){                  System.out.println("The Book is not Available.");              }              bookbanksearch.close();              searchBook.close();            }catch(IOException e){              throw new RuntimeException(e);          }      }      void returning(String name) {          try {              FileReader myFile = new FileReader("BorrowedBooks.txt");              Scanner scanner = new Scanner(myFile);              ArrayList<String> Books = new ArrayList<>();              while (scanner.hasNextLine()) {                  Books.add(scanner.nextLine());              }              myFile.close();                Iterator<String> iterator = Books.iterator();              while (iterator.hasNext()) {                  String book = iterator.next();                  if (book.contains(name)) {                      iterator.remove();                      System.out.println("Book Returned Successfully");                      break; // Assuming you want to remove only the first occurrence                  }              }                FileWriter myfile = new FileWriter("BorrowedBooks.txt");              for (String book : Books) {                  myfile.write(book + "\n");              }              myfile.close();          } catch (IOException e) {              e.printStackTrace();          }      }        } |

**Ouput:**

