**Library Management System**

**User Case Diagram :**

Admin User

// Save this class as LoginMainTest

**import** java.io.File;

**import** java.io.FileInputStream;

**import** java.io.FileNotFoundException;

**import** java.io.FileOutputStream;

**import** java.io.IOException;

**import** java.io.ObjectInputStream;

**import** java.io.ObjectOutputStream;

**import** java.util.ArrayList;

**import** java.util.ListIterator;

**import** java.util.Scanner;

**public** **class** LoginMainTest

{

**public** **static** **void** main(String[] args) **throws** FileNotFoundException, ClassNotFoundException, IOException {

**char** aaoption, bboption, opion;

Admin\_Verification admin\_verification = **new** Admin\_Verification();

User\_Verification user\_verification = **new** User\_Verification();

LoginMainTest loginmaintest = **new** LoginMainTest();

**do** {

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("\*\*\*\*\*Library management system\*\*\*\*\*");

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("A:Admin");

System.***out***.println("B:User");

System.***out***.println("Enter the option");

Scanner scanner = **new** Scanner(System.***in***);

**char** option = scanner.next().charAt(0);

**switch** (option)

{

**case** 'A':

**do**

{

System.***out***.println("---1.SIGNUP----");

System.***out***.println("---2.LOGIN----");

**int** choice = scanner.nextInt();

File file = **new** File("User.txt");

ArrayList<Admin\_Verification> list = **new** ArrayList<Admin\_Verification>();

ObjectOutputStream out = **null**;

ListIterator<Admin\_Verification> iterator = **null**;

**switch** (choice)

{

**case** 1:

System.***out***.println("----------signup------------");

System.***out***.println("Enter the Details");

System.***out***.println("Enter the Mobile number");

String mobilenumber = scanner.next();

System.***out***.println("Enter the username");

String username = scanner.next();

**if** (Username\_Validation.*userNameValidation*(username))

{

System.***out***.println("valid username");

System.***out***.println("Enter the Password");

String password = scanner.next();

**if** (Password\_Validation.*passWordValidation*(password))

{

System.***out***.println("valid password");

System.***out***.println("Enter the confirmpassword");

String confirmpassword = scanner.next();

**if** (password.equals(confirmpassword)) {

list.add(**new** Admin\_Verification(username, password, confirmpassword, mobilenumber));

out = **new** ObjectOutputStream(**new** FileOutputStream(file));

out.writeObject(list);

out.close();

System.***out***.println("Access Granted!you can login and go ahead");

}

**else**

System.***out***.println("password does not match");

} **else**

System.***out***.println("password should be strong");

} **else**

System.***out***.println("enter the username again");

**break**;

**case** 2:

System.***out***.println("------Login---------");

System.***out***.println("enter the username");

String username1 = scanner.next();

System.***out***.println("enter the password");

String Password1 = scanner.next();

**do**

{

ObjectInputStream in = **null**;

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<Admin\_Verification>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext())

{

admin\_verification = (Admin\_Verification) iterator.next();

}

**if** (username1.equals(admin\_verification.username)

&& Password1.equals(admin\_verification.password))

{

System.***out***.println("Login Success");

**if** (admin\_verification.equals(admin\_verification))

{

AdminManager.*operations*();

}

}

**break**;

} **while** (admin\_verification != **null**);

}

System.***out***.println("do you wish to continue then press y if not press n");

aaoption = scanner.next().charAt(0);

} **while** (aaoption == 'Y' || aaoption == 'y');

**break**;

**case** 'B':

**do**

{

System.***out***.println("---1.SIGNUP----");

System.***out***.println("---2.LOGIN----");

**int** choice = scanner.nextInt();

File file = **new** File("User1.txt");

ArrayList<User\_Verification> list = **new** ArrayList<User\_Verification>();

ObjectOutputStream out = **null**;

ListIterator<User\_Verification> iterator = **null**;

**switch** (choice)

{

**case** 1:

System.***out***.println("----------signup------------");

System.***out***.println("Enter the Details");

System.***out***.println("Enter the Mobile number");

String mobilenumber = scanner.next();

System.***out***.println("Enter the username");

String username = scanner.next();

**if** (Username\_Validation.*userNameValidation*(username))

{

System.***out***.println("valid username");

System.***out***.println("Enter the Password");

String password = scanner.next();

**if** (Password\_Validation.*passWordValidation*(password))

{

System.***out***.println("valid password");

System.***out***.println("Enter the confirmpassword");

String confirmpassword = scanner.next();

**if** (password.equals(confirmpassword))

{

list.add(**new** User\_Verification(username, password, confirmpassword, mobilenumber));

out = **new** ObjectOutputStream(**new** FileOutputStream(file));

out.writeObject(list);

out.close();

System.***out***.println("Access Granted! you can login and go ahead");

}

**else**

System.***out***.println("password does not match");

}

**else**

System.***out***.println("password should be strong");

}

**else**

System.***out***.println("enter the username again");

**break**;

**case** 2:

System.***out***.println("------Login---------");

System.***out***.println("enter the username");

String username1 = scanner.next();

System.***out***.println("enter the password");

String Password1 = scanner.next();

**do**

{

ObjectInputStream in = **null**;

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<User\_Verification>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext()) {

user\_verification = (User\_Verification) iterator.next();

}

**if** (username1.equals(user\_verification.username)

&& Password1.equals(user\_verification.password))

{

System.***out***.println("Login Success");

**if** (user\_verification.equals(user\_verification))

{

UserManager.*operations*();

}

}

**break**;

}

**while** (user\_verification != **null**);

}

System.***out***.println("do you wish to continue then press y if not press n");

bboption = scanner.next().charAt(0);

} **while** (bboption == 'Y' || bboption == 'y');

}

System.***out***.println("do you wish to continue then press y if not press n");

opion = scanner.next().charAt(0);

} **while** (opion == 'Y' || opion == 'y');

}

}

// Save this class Admin\_Verification

**import** java.io.Serializable;

**public** **class** Admin\_Verification **implements** Serializable{

String username;

String password;

String confirmpassword;

String mobilenumber;

**public** Admin\_Verification(String username, String password, String confirmpassword, String role) {

**super**();

**this**.username = username;

**this**.password = password;

**this**.confirmpassword = confirmpassword;

**this**.mobilenumber = mobilenumber;

}

**public** Admin\_Verification() {

// **TODO** Auto-generated constructor stub

}

@Override

**public** String toString() {

**return** "Admin\_Verification [username=" + username + ", password=" + password + ", confirmpassword="+ confirmpassword + ", mobilenumber=" + mobilenumber + "]";

}

}

// Save this class as AdminManager

**import** java.io.File;

**import** java.io.FileInputStream;

**import** java.io.FileNotFoundException;

**import** java.io.FileOutputStream;

**import** java.io.IOException;

**import** java.io.ObjectInputStream;

**import** java.io.ObjectOutputStream;

**import** java.util.ArrayList;

**import** java.util.Iterator;

**import** java.util.ListIterator;

**import** java.util.Scanner;

**public** **class** AdminManager

{

**public** **static** **void** operations() **throws** FileNotFoundException, ClassNotFoundException, IOException

{

String bookName;

String author;

String publicationDate;

String totalPages;

Scanner scanner = **new** Scanner(System.***in***);

Scanner scanner1 = **new** Scanner(System.***in***);

ArrayList<BookData> list = **new** ArrayList<BookData>();

File file = **new** File("BooksData.txt");// initialising file object and passing filename as argument

ObjectOutputStream out = **null**;// initially writing the object as null

ObjectInputStream in = **null**;

ListIterator<BookData> iterator = **null**;

File file1 = **new** File("User1.txt");

User\_Verification user\_verification = **new** User\_Verification();

ArrayList<User\_Verification> list1 = **new** ArrayList<User\_Verification>();

ObjectOutputStream out1 = **null**;

ObjectInputStream in1 = **null**;

ListIterator<User\_Verification> iterator1 = **null**;

**char** ch;

**do**

{

System.***out***.println("Welcome to the admin page");

System.***out***.println("0:View Book Details");

System.***out***.println("1:Add books");

System.***out***.println("2:Delete books");

System.***out***.println("3:Search/Get book by bookname");

System.***out***.println("4:View users information");

System.***out***.println("Enter the option");

**int** adminOption = scanner.nextInt();

**switch** (adminOption)

{

**case** 0:

System.***out***.println("View Book Details");

System.***out***.println("\*\*\*\*\*\*\*Hi Admin! Welcome to the Library..\*\*\*\*\*\*\*\*");

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext())

{

System.***out***.println(iterator.next());

}

**break**;

**case** 1:

System.***out***.println("add books");

System.***out***.println("Please Enter the no of books that you are going to add");

**int** no\_of\_books = scanner.nextInt();

**for** (**int** i = 0; i < no\_of\_books; i++)

{

System.***out***.println("Enter the name of the book");

bookName = scanner1.nextLine();

System.***out***.println("Enter the author of the book");

author = scanner1.nextLine();

System.***out***.println("Enter the publication date like yy-mm-dd");

publicationDate = scanner1.nextLine();

System.***out***.println("Enter the total pages of the book");

totalPages = scanner1.nextLine();

// adding book object to list

list.add(**new** BookData(bookName, author, totalPages, publicationDate));

out = **new** ObjectOutputStream(**new** FileOutputStream(file));

out.writeObject(list);// writes the object available in list into the file.

out.close();

}

**break**;

**case** 2:

System.***out***.println("delete books");

**boolean** found1 = **false**;

System.***out***.println("Enter the Bookname to be removed");

String book\_delete = scanner1.nextLine();

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext())

{

BookData bookData = (BookData) iterator.next();

**if** (bookData.bookName.equals(book\_delete))

{

iterator.remove();

found1 = **true**;

}

}

**if** (found1) {

out = **new** ObjectOutputStream(**new** FileOutputStream(file));

out.writeObject(list);

out.close();

System.***out***.println(book\_delete + " is removed sucessfully");

}

**else**

{

System.***out***.println(book\_delete + " is not in a list");

}

**break**;

**case** 3:

System.***out***.println("3:Search/Get book by bookname");

**boolean** found = **false**;

System.***out***.println("Enter the item to be searched");

String book = scanner1.nextLine();

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext())

{

BookData bookData = (BookData) iterator.next();

**if** (bookData.bookName.equals(book))

{

System.***out***.println(bookData);

found = **true**;

}

}

**if** (found)

{

System.***out***.println(book + " is in library");

}

**else**

{

System.***out***.println(book + " is not in library");

}

**break**;

**case** 4:

System.***out***.println("view users information");

in1 = **new** ObjectInputStream(**new** FileInputStream(file1));

list1 = (ArrayList<User\_Verification>) in1.readObject();

in1.close();

iterator1 = list1.listIterator();

**while** (iterator1.hasNext())

{

System.***out***.println(iterator1.next());

}

**break**;

**default**:

System.***out***.println("Enter the valid number");

}

System.***out***.println("do you wish to continue then press y if not press n");

ch = scanner.next().charAt(0);

} **while** (ch == 'Y' || ch == 'y');

}

// Save this class as BookData

**import** java.io.Serializable;

**public** **class** BookData **implements** Serializable {// using serializable here for writing an object to file

String bookName;

String author;

String publicationDate;

String totalPages;

**public** BookData(String bookName, String author, String publicationDate, String totalPages)

{

// super();

**this**.bookName = bookName;

**this**.author = author;

**this**.publicationDate = publicationDate;

**this**.totalPages = totalPages;

}

@Override

**public** String toString() {

**return** "BookData [bookName=" + bookName + ", author=" + author + ", publicationDate=" + publicationDate

+ ", totalPages=" + totalPages + "]";

}

}

// Save this class as Password\_Validation

import java.util.regex.Matcher;

import java.util.regex.Pattern;

public class Password\_Validation

{

/\*Password must contain at least one digit [0-9].

Password must contain at least one lowercase Latin character [a-z].

Password must contain at least one uppercase Latin character [A-Z].

Password must contain at least one special character like ! @ # & ( ).

Password must contain a length of at least 8 characters and a maximum of 20 characters.\*/

private static final String PASSWORD\_PATTERN =

"^(?=.\*[0-9])(?=.\*[a-z])(?=.\*[A-Z])(?=.\*[!@#&()–[{}]:;',?/\*~$^+=<>]).{8,20}$";

private static final Pattern pattern = Pattern.compile(PASSWORD\_PATTERN);

public static boolean passWordValidation(final String password)

{

Matcher matcher = pattern.matcher(password);

return matcher.matches();

}

}

// Save this class as User\_Verification

**import** java.io.Serializable;

**public** **class** User\_Verification **implements** Serializable

{

String username;

String password;

String confirmpassword;

String mobilenumber;

**public** User\_Verification(String username, String password, String confirmpassword, String mobilenumber)

{

**super**();

**this**.username = username;

**this**.password = password;

**this**.confirmpassword = confirmpassword;

**this**.mobilenumber = mobilenumber;

}

**public** User\_Verification()

{

// **TODO** Auto-generated constructor stub

}

@Override

**public** String toString()

{

**return** "User\_Verification [username=" + username + ", password=" + password + ", confirmpassword="

+ confirmpassword + ", mobilenumber=" + mobilenumber + "]";

}

}

// Save this class as UserManager

**import** java.io.File;

**import** java.io.FileInputStream;

**import** java.io.FileNotFoundException;

**import** java.io.FileOutputStream;

**import** java.io.IOException;

**import** java.io.ObjectInputStream;

**import** java.io.ObjectOutputStream;

**import** java.util.ArrayList;

**import** java.util.ListIterator;

**import** java.util.Scanner;

**public** **class** UserManager

{

**public** **static** **void** operations() **throws** FileNotFoundException, IOException, ClassNotFoundException

{

Scanner scanner = **new** Scanner(System.***in***);

// Verification verification = new Verification();

Scanner scanner1 = **new** Scanner(System.***in***);

ArrayList<BookData> list = **new** ArrayList<BookData>();

File file = **new** File("BooksData.txt");

ObjectOutputStream out = **null**;// initially writing the object as null

ObjectInputStream in = **null**;

ListIterator<BookData> iterator = **null**;

File file1 = **new** File("User1.txt");

User\_Verification user\_verification = **new** User\_Verification();

ArrayList<User\_Verification> list1 = **new** ArrayList<User\_Verification>();

ObjectOutputStream out1 = **null**;

ObjectInputStream in1 = **null**;

ListIterator<User\_Verification> iterator1 = **null**;

**char** ch;

**do**

{

System.***out***.println("Welcome to User page");

System.***out***.println("1:View books Details");

System.***out***.println("2:Search books");

System.***out***.println("3:Borrow books");

System.***out***.println("4:Return books");

System.***out***.println("Enter the option");

**int** userOption = scanner.nextInt();

**switch** (userOption) {

**case** 1:

System.***out***.println("1:View Book Details");

System.***out***.println("\*\*\*\*\*\*\*Hi User! Welcome to the Library\*\*\*\*\*\*\*\*");

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext())

{

System.***out***.println(iterator.next());

}

**break**;

**case** 2:

System.***out***.println("2:Search books");

**boolean** found = **false**;

System.***out***.println("Enter the book to be searched");

String book = scanner1.nextLine();

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext())

{

BookData bookData = (BookData) iterator.next();

**if** (bookData.bookName.equals(book))

{

System.***out***.println(bookData);

found = **true**;

}

}

**if** (found)

{

System.***out***.println(book + " is in library");

}

**else**

{

System.***out***.println(book + " is not in library");

}

**break**;

**case** 3:

System.***out***.println("3:Borrow books");

**boolean** found1 = **false**;

System.***out***.println("Enter the book to be borrowed");

String book1 = scanner1.nextLine();

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext()) {

BookData bookData = (BookData) iterator.next();

**if** (bookData.bookName.equals(book1))

{

System.***out***.println(bookData);

found1 = **true**;

}

}

**if** (found1)

{

System.***out***.println(book1 + " is borrowed successfully");

}

**else**

{

System.***out***.println(book1 + " is not in library");

}

**break**;

**case** 4:

System.***out***.println("4:Return books");

**boolean** found2 = **false**;

System.***out***.println("Enter the Bookname to be returned");

String return\_book = scanner1.nextLine();

in = **new** ObjectInputStream(**new** FileInputStream(file));

list = (ArrayList<BookData>) in.readObject();

in.close();

iterator = list.listIterator();

**while** (iterator.hasNext()) {

BookData bookData = (BookData) iterator.next();

**if** (bookData.bookName.equals(return\_book))

{

found2 = **true**;

}

}

**if** (found2)

{

out = **new** ObjectOutputStream(**new** FileOutputStream(file));

out.writeObject(list);

out.close();

System.***out***.println(return\_book + " is returned sucessfully");

}

**else**

{

System.***out***.println(return\_book + " is not in your list");

}

**break**;

**default**:

System.***out***.println("Enter the valid number");

}

System.***out***.println("do you wish to continue then press y if not press n");

ch = scanner.next().charAt(0);

} **while** (ch == 'Y' || ch == 'y');

}

}

// Save this class as Username\_Validation

**import** java.util.regex.Matcher;

**import** java.util.regex.Pattern;

**public** **class** Username\_Validation

{

**public** **static** **boolean** userNameValidation(String username)

{

String regex="^[a-zA-Z][a-zA-z0-9\_]{6,19}$";

Pattern p=Pattern.*compile*(regex);

**if**(username==**null**)

System.***out***.println("enter username! it is empty");

Matcher m=p.matcher(username);

**return** m.matches();

}

}