Experiment 2

Student Name:Sukhleen Kaur **UID: 22BCS14011**
Branch: CSE **Section: 22BCS_KRG_IOT_3B**
Semester: 6th **DOP:14/01/25**
Subject: Java **Subject Code: 22CSH-359**

1. **Aim:** Design and implement a simple inventory control system for a small video rental store

2. **Objective:** To design and implement a user-friendly inventory control system for a small video rental store, enabling efficient management of video inventory, including functionalities for adding, renting, and returning videos.

3. **Code:**

```
package exp2;
class Video {
private String title;
private boolean checkedOut;
private double averageRating;
private int ratingCount;
public Video(String title) {
this.title = title;
this.checkedOut = false;
this.averageRating = 0.0;
this.ratingCount = 0;
}
public String getTitle() {
return title;
}
public boolean isCheckedOut() {
return checkedOut;
}
public double getAverageRating() {
return averageRating;
}
public void checkOut() {
if (!checkedOut) {
checkedOut = true;
System.out.println(title + " has been checked out.");
} else {
System.out.println(title + " is already checked out.");
```

```
 }
 }
 public void returnVideo() {
 if (checkedOut) {
 checkedOut = false;
 System.out.println(title + " has been returned.");
 } else {
 System.out.println(title + " was not checked out.");
 }
 }
 public void receiveRating(int rating) {
 if (rating < 1 || rating > 5) {
System.out.println("Invalid rating. Please give a rating between 1 and 5.");
return;
}
averageRating = ((averageRating * ratingCount) + rating) / (++ratingCount);
System.out.println("Rating received for " + title + ": " + rating);
}
@Override
public String toString() {
return "Title: " + title + ", Checked Out: " + checkedOut + ", Average Rating: " +
String.format("%.2f", averageRating);
}
}
class VideoStore {
private Video[] inventory;
private int count;
public VideoStore() {
inventory = new Video[10]; // Initialize the inventory array
count = 0;
}
public void addVideo(String title) {
System.out.println("Attempting to add video: " + title);
if (count < inventory.length) {
inventory[count++] = new Video(title);
System.out.println(title + " has been added to the inventory.");
} else {
System.out.println("Inventory is full. Cannot add more videos.");
}
}
```

```
public void checkOut(String title) {
Video video = findVideo(title);
 if (video != null) {
 video.checkOut();
 } else {
 System.out.println("Video not found in inventory.");
 }
 }
 public void returnVideo(String title) {
 Video video = findVideo(title);
 if (video != null) {
 video.returnVideo();
 } else {
 System.out.println("Video not found in inventory.");
 }
 }
 public void receiveRating(String title, int rating) {
 Video video = findVideo(title);
 if (video != null) {
 video.receiveRating(rating);
 } else {
 System.out.println("Video not found in inventory.");
 }
 }
 public void listInventory() {
 System.out.println("Video Store Inventory:");
 for (int i = 0; i < count; i++) {
 System.out.println(inventory[i]);
 }
 }
 private Video findVideo(String title) {
 for (int i = 0; i < count; i++) {
 if (inventory[i].getTitle().equalsIgnoreCase(title)) {
 return inventory[i];
 }
 }
  return null;
 }
 }
 public class VideoStoreLauncher {
 public static void main(String[] args) {
```

```
VideoStore store = new VideoStore();
System.out.println("Adding videos...");
store.addVideo("The Matrix");
store.addVideo("Godfather II");
store.addVideo("Star Wars Episode IV: A New Hope");
System.out.println("\nReceiving ratings...");
store.receiveRating("The Matrix", 5);
store.receiveRating("The Matrix", 4);
store.receiveRating("Godfather II", 5);
store.receiveRating("Star Wars Episode IV: A New Hope", 3);
store.receiveRating("Star Wars Episode IV: A New Hope", 4);
System.out.println("\nChecking out and returning videos...");
store.checkOut("The Matrix");
store.returnVideo("The Matrix");
store.checkOut("Godfather II");
// List inventory
System.out.println("\nListing inventory...");
store.listInventory();
}
}
```

4. Output:

```
PS C:\Users\22BCS\Downloads\PBLJ\com.student1>  & 'C:\Program Files\Java\jdk-22\bin\java.exe' '-XX:+ShowCodeDetailsI
J\com.student1\bin' 'exp2.VideoStoreLauncher'
Adding videos...
Attempting to add video: The Matrix
The Matrix has been added to the inventory.
Attempting to add video: Godfather II
Godfather II has been added to the inventory.
Attempting to add video: Star Wars Episode IV: A New Hope
Star Wars Episode IV: A New Hope has been added to the inventory.

Receiving ratings...
Rating received for The Matrix: 5
Rating received for The Matrix: 4
Rating received for Godfather II: 5
Rating received for Star Wars Episode IV: A New Hope: 3
Rating received for Star Wars Episode IV: A New Hope: 4

Checking out and returning videos...
The Matrix has been checked out.
The Matrix has been returned.
Godfather II has been checked out.

Listing inventory...
Video Store Inventory:
Title: The Matrix, Checked Out: false, Average Rating: 4.50
Title: Godfather II, Checked Out: true, Average Rating: 5.00
Title: Star Wars Episode IV: A New Hope, Checked Out: false, Average Rating: 3.50
PS C:\Users\22BCS\Downloads\PBLJ\com.student1>
```

5. Learning Outcomes:

- **OOP Concepts:** Learn encapsulation, abstraction, and modularity in class design.
- **Array Management:** Manage object collections using arrays with basic operations.
- **Method Design:** Implement and validate methods for functionality and error handling.
- **Class Relationships:** Build cohesive programs by linking and managing classes effectively.
- **Debugging Skills:** Develop problem-solving abilities by analyzing and fixing runtime errors.