Experiment 2

Student Name: Yogendra Sharma **UID: 22BCS16705**
Branch: BE-CSE **Section/Group: 631/B**
Semester:6th **Date of Performance:23/01/25**
Subject Name: Project Based Learning in Java with Lab **Subject Code: 22CSH-359**

1. **Aim:** The aim of this project is to design and implement a simple inventory control system for a small video rental store. Define least two classes: a class Video to model a video and a class VideoStore to model the

   actual store.

   Assume that an object of class Video has the following attributes:

   1. A title;
   2. a flag to say whether it is checked out or not;
   3. An average user rating.

   Add instance variables for each of these attributes to the Video class.

   In addition, you will need to add methods corresponding to the following:

   1. being checked out;
   2. being returned;
   3. receiving a rating.

   The VideoStore class will contain at least an instance variable that references an array of videos (say of length 10). The VideoStore will contain the following methods:

   1. addVideo(String): add a new video (by title) to the inventory;
   2. checkOut(String): check out a video (by title);
   3. returnVideo(String): return a video to the store;
   4. receiveRating(String, int) : take a user's rating for a video; and 5. listInventory(): list the whole inventory of videos in the store.

2. **Objective:** Create a VideoStoreLauncher class with a main() method which will test the functionality of your other two classes. It should allow the following.

1. Add 3 videos: "The Matrix", "Godfather II", "Star Wars Episode IV: A New Hope".
2. Give several ratings to each video.
3. Rent each video out once and return it.

List the inventory after "Godfather II" has been rented out.

3. **Implementation/Code:**

1. **Video Class:-**

```
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 void checkOut() {
        if (!checkedOut) {
            checkedOut = true;
            System.out.println("Video \"" + title + "\" has been checked out.");
        } else {
            System.out.println("Video \"" + title + "\" is already checked out.");
        }
    }
```

```
    public void returnVideo() {
        if (checkedOut) {
            checkedOut = false;
            System.out.println("Video \"" + title + "\" has been returned.");
        } else {
            System.out.println("Video \"" + title + "\" was not checked out.");
        }
    }

    public void receiveRating(int rating) {
        if (rating < 1 || rating > 5) {
            System.out.println("Invalid rating. Please rate between 1 and 5.");
            return;
        }
        averageRating = (averageRating * ratingCount + rating) /
(++ratingCount);
        System.out.println("Received rating of " + rating + " for video \"" + title +
"\".");
    }

     public String getTitle() {
        return title;
    }

    public boolean isCheckedOut() {
        return checkedOut;
    }

    public double getAverageRating() {
        return averageRating;
    }
}
```

2. **VideoStore Class:-**

```
class VideoStore {
    private Video[] videos;
    private int count;

    public VideoStore(int capacity) {
        videos = new Video[capacity];
        count = 0;
    }

    public void addVideo(String title) {
        if (count < videos.length) {
            videos[count++] = new Video(title);
            System.out.println("Added video: " + title);
        } 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 \"" + title + "\" not found.");
        }
    }

    public void returnVideo(String title) {
        Video video = findVideo(title);
        if (video != null) {
            video.returnVideo();
        } else {
            System.out.println("Video \"" + title + "\" not found.");
        }
    }
```

```
    public void receiveRating(String title, int rating) {
        Video video = findVideo(title);
        if (video != null) {
            video.receiveRating(rating);
        } else {
            System.out.println("Video \"" + title + "\" not found.");
        }
    }

    public void listInventory() {
        System.out.println("\nInventory:");
        for (int i = 0; i < count; i++) {
            Video video = videos[i];
            System.out.println("Title: " + video.getTitle() + ", Checked Out: " +
video.isCheckedOut() +
                    ", Average Rating: " + video.getAverageRating());
        }
    }

    private Video findVideo(String title) {
        for (int i = 0; i < count; i++) {
            if (videos[i].getTitle().equalsIgnoreCase(title)) {
                return videos[i];
            }
        }
        return null;
    }
}
```

3. **VideoStoreLauncher Class:-**

```
public class VideoStoreLauncher {
    public static void main(String[] args) {
        VideoStore store = new VideoStore(10);

        store.addVideo("The Matrix");
        store.addVideo("Godfather II");
        store.addVideo("Star Wars Episode IV: A New Hope");

        store.receiveRating("The Matrix", 5);
        store.receiveRating("Godfather II", 4);
        store.receiveRating("Star Wars Episode IV: A New Hope", 5);

        store.checkOut("Godfather II");
        store.returnVideo("Godfather II");

        store.listInventory();
    }
}
```