Experiment-2

Student Name: Prateek Pratap Singh **UID: 22BCS10036**
Branch: BE-CSE **Section/Group: IOT_631-A**
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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;
   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:**

```
class Video {
    private String title;
    private boolean checkedOut;
    private double averageRating;
    private int ratingCount;
    private double totalRating;

    public Video(String title) {
        this.title = title;
        this.checkedOut = false;
        this.averageRating = 0.0;
        this.ratingCount = 0;
        this.totalRating = 0.0;
    }

    public void checkOut() {
        checkedOut = true;
    }

    public void returnVideo() {
        checkedOut = false;
    }
```

```
    public void receiveRating(int rating) {
        totalRating += rating;
        ratingCount++;
        averageRating = totalRating / ratingCount;
    }

    public String toString() {
        return "Title: " + title + ", Checked Out: " + checkedOut + ", Average
Rating: " + averageRating;
    }
}

class VideoStore {
    private Video[] inventory;
    private int count;

    public VideoStore() {
        inventory = new Video[10];
        count = 0;
    }

    public void addVideo(String title) {
        if (count < inventory.length) {
            inventory[count++] = new Video(title);
        }
    }

    public void checkOut(String title) {
        for (Video video : inventory) {
            if (video != null && video.toString().contains(title)) {
                video.checkOut();
                break;
            }
        }
    }
```

```
    public void returnVideo(String title) {
        for (Video video : inventory) {
            if (video != null && video.toString().contains(title)) {
                video.returnVideo();
                break;
            }
        }
    }

    public void receiveRating(String title, int rating) {
        for (Video video : inventory) {
            if (video != null && video.toString().contains(title)) {
                video.receiveRating(rating);
                break;
            }
        }
    }

    public void listInventory() {
        for (Video video : inventory) {
            if (video != null) {
                System.out.println(video);
            }
        }
    }
}

class Main {
    public static void main(String[] args) {
        VideoStore store = new VideoStore();
        store.addVideo("The Matrix");
        store.addVideo("Godfather II");
        store.addVideo("Star Wars Episode IV: A New Hope");

        store.receiveRating("The Matrix", 5);
        store.receiveRating("The Matrix", 4);
```

```
        store.receiveRating("Godfather II", 5);

        store.receiveRating("Godfather II", 4);
        store.receiveRating("Star Wars Episode IV: A New Hope", 5);
        store.receiveRating("Star Wars Episode IV: A New Hope", 3);

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

        store.checkOut("Godfather II");
        store.listInventory();
    }
}
```

4. **Output:**

```
Title: The Matrix, Checked Out: false, Average Rating: 4.5
Title: Godfather II, Checked Out: true, Average Rating: 4.5
Title: Star Wars Episode IV: A New Hope, Checked Out: false, Average
    Rating: 4.0

=== Code Execution Successful ===
```

5. Learning Outcomes:

1. Designed a functional system to manage video rentals, demonstrating the use of classes and objects in Java.
2. Implemented methods for operations like adding videos, renting out, returning, and recording user ratings.
3. Applied arrays to store and efficiently manage the video inventory within the store.
4. Learned to integrate multiple classes and enable seamless interaction among them in a structured program.
5. Strengthened understanding of object-oriented programming concepts like encapsulation and method abstraction.