



LAB MST-1

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Subject Name: Project Based Learning in Java

UID: 22BCS13370

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Aim: The goal 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; and 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; and 3. receiving a rating.

Objective: The objective of this project is to design and implement an inventory control system for a video rental store using object-oriented programming. It involves defining a Video class to model videos and a VideoStore class to manage video inventory and rental operations. The system allows adding videos, managing checkouts and returns, recording ratings, and listing the inventory.

Implementation/Code:

```
import java.util.Scanner;

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.");
```



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```
        } else {  
            System.out.println(title + " is not currently checked out.");  
        }  
    }  
  
    public void receiveRating(int rating)  
    { if (rating < 1 || rating > 5) {  
        System.out.println("Please provide a rating between 1 and 5.");  
        return;  
    }  
    averageRating = ((averageRating * ratingCount) + rating) / (ratingCount + 1);  
    ratingCount++;  
    System.out.println("Rating added for " + title + ". New average rating: " + averageRating);  
}  
  
@Override  
public String toString() {  
    return "Title: " + title + ", Checked Out: " + checkedOut + ", Average Rating: " +  
String.format("%.2f", averageRating);  
}  
}  
  
class VideoStore  
{ private Video[]  
    videos; private int  
    count; public  
    VideoStore() {  
        videos = new Video[10];  
        count = 0;  
    }  
    public void addVideo(String title) {
```

```
        if (count < videos.length)
        {
            videos[count] = new
            Video(title); count++;
            System.out.println("Video " + title + " added to the store.");
        } 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.");
        }
    }

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

    public void receiveRating(String title, int rating)
    {
        Video video = findVideo(title);
```



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```
        if (video != null)
            { video.receiveRating(rating);
        } else {
            System.out.println("Video not found.");
        }
    }
}

public void listInventory()
    { System.out.println("Current
Inventory:"); for (int i = 0; i < count; i++)
        {
            System.out.println(videos[i]);
        }
    }

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

public class VideoStoreLauncher
    { public static void main(String[] args)
        {
            Scanner scanner = new Scanner(System.in);
            VideoStore store = new VideoStore();
            store.addVideo("The Matrix");
```



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```
store.addVideo("Godfather II");
store.addVideo("Star Wars Episode IV: A New Hope");
while (true) {
    System.out.println("\nVideo Store Menu:");
    System.out.println("1. Add Video");
    System.out.println("2. Check Out Video");
    System.out.println("3. Return Video");
    System.out.println("4. Rate Video");
    System.out.println("5. List Inventory");
    System.out.println("6. Exit");
    System.out.print("Choose an option: ");
    int choice = scanner.nextInt();
    scanner.nextLine();
    switch (choice)
    { case 1:
        System.out.print("Enter video title: ");
        String title = scanner.nextLine();
        store.addVideo(title);
        break;
      case 2:
        System.out.print("Enter video title to check out: ");
        title = scanner.nextLine();
        store.checkOut(title);
        break;
      case 3:
        System.out.print("Enter video title to return: ");
```



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```
        title = scanner.nextLine();
        store.returnVideo(title);
        break;
    case 4:
        System.out.print("Enter video title to rate: ");
        title = scanner.nextLine();
        System.out.print("Enter rating (1-5): ");
        int rating = scanner.nextInt();
        store.receiveRating(title, rating);
        break;
    case 5:
        store.listInventory();
        break;
    case 6:
        System.out.println("Exiting Video Store. Goodbye!");
        scanner.close();
        return;
    default:
        System.out.println("Invalid choice. Please try again.");
    }
}
}
```



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Output

```
Video The Matrix added to the store.  
Video Godfather II added to the store.  
Video Star Wars Episode IV: A New Hope added to the store.
```

```
Video Store Menu:  
1. Add Video  
2. Check Out Video  
3. Return Video  
4. Rate Video  
5. List Inventory  
6. Exit  
Choose an option: 1  
Enter video title: The Vampire Dairies  
Video The Vampire Dairies added to the store.
```

```
Video Store Menu:  
1. Add Video  
2. Check Out Video  
3. Return Video  
4. Rate Video  
5. List Inventory  
6. Exit  
Choose an option: 2  
Enter video title to check out: The Matrix  
The Matrix has been checked out.
```

```
Video Store Menu:  
1. Add Video  
2. Check Out Video  
3. Return Video  
4. Rate Video  
5. List Inventory  
6. Exit  
Choose an option: 3  
Enter video title to return: The Matrix  
The Matrix has been returned.
```

```
Video Store Menu:  
1. Add Video  
2. Check Out Video  
3. Return Video  
4. Rate Video  
5. List Inventory  
6. Exit  
Choose an option: 4  
Enter video title to rate: The Matrix  
Enter rating (1-5): 4  
Rating added for The Matrix. New average rating: 4.0
```

```
Video Store Menu:  
1. Add Video  
2. Check Out Video  
3. Return Video  
4. Rate Video  
5. List Inventory  
6. Exit  
Choose an option: 4  
Enter video title to rate: The Matrix  
Enter rating (1-5): 2  
Rating added for The Matrix. New average rating: 3.0
```




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```
Video Store Menu:
1. Add Video
2. Check Out Video
3. Return Video
4. Rate Video
5. List Inventory
6. Exit
Choose an option: 5
Current Inventory:
Title: The Matrix, Checked Out: false, Average Rating: 3.00
Title: Godfather II, Checked Out: false, Average Rating: 4.00
Title: Star Wars Episode IV: A New Hope, Checked Out: false, Average Rating: 3.00
Title: The Vampire Dairies, Checked Out: false, Average Rating: 5.00
```

Learning Outcome:

- 1) We learnt about the concept of methods.
- 2) We understood the switch-case and its implementation.
- 3) We learnt about basic concepts of variables and objects.