Experiment 1.2

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Subject: Java **Subject Code: 22CSH-359**

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

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.

Algorithm:

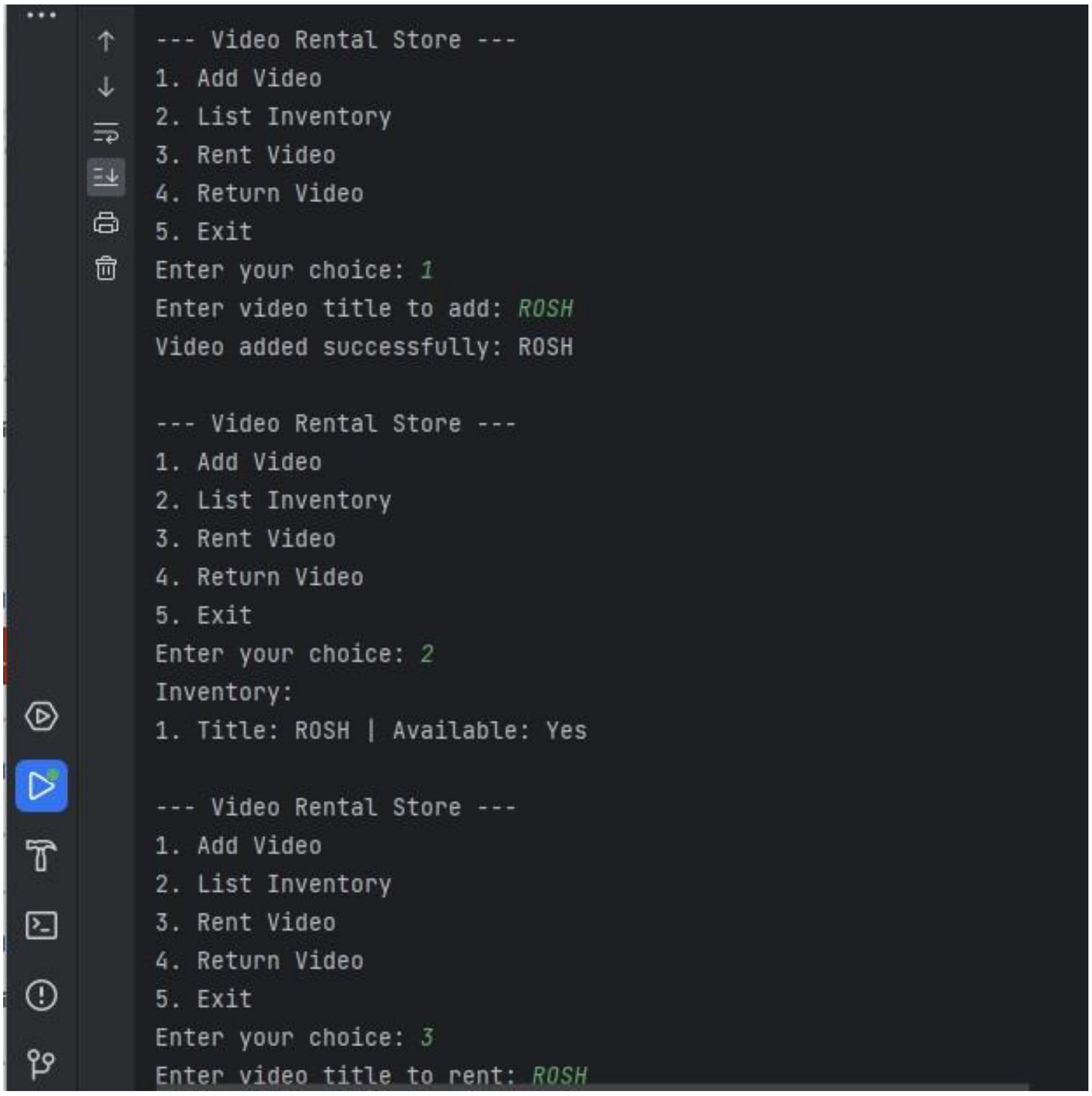
- **Define Classes:**
    - **Video**: To represent each video, with attributes such as video ID, title, genre, and availability status.
    - **Inventory**: To manage the list of videos, including adding and removing videos from the inventory.
    - **Customer**: To represent customers, with attributes such as customer ID, name, and rented videos.
    - **RentalSystem**: To control the process of renting and returning videos.
- **Video Class:**
    - Define the video with attributes such as `videoID`, `title`, `genre`, and `isAvailable`.
    - Define methods to mark the video as rented and returned.
- **Inventory Class:**
    - Maintain a list of videos (`ArrayList<Video>`).
    - Implement methods to add new videos, display available videos, and check if a video is available.
- **Customer Class:**
    - Define a list to store rented videos.
    - Implement methods to rent a video (if available) and return it.
- **RentalSystem Class:**
    - Handle the main functionality: list available videos, allow customers to rent and return videos, and display the inventory status.

Code:

```
import java.util.ArrayList;
import java.util.Scanner;

// Class representing a Video
class Video {
    private String title;
    private boolean isAvailable;

    public Video(String title) {
        this.title = title;
        this.isAvailable = true;
    }

    public String getTitle() {
        return title;
    }

    public boolean isAvailable() {
        return isAvailable;
    }

    public void rent() {
        if (isAvailable) {
            isAvailable = false;
        } else {
            System.out.println("Error: Video is already rented out.");


    }
}

    public void returnVideo() {
        if (!isAvailable) {
            isAvailable = true;
        } else {
            System.out.println("Error: Video was not rented.");
        }
    }

    @Override
    public String toString() {
        return "Title: " + title + " | Available: " + (isAvailable ? "Yes" : "No");
    }
}

// Class representing the Video Store
class VideoStore {
    private ArrayList<Video> inventory;

    public VideoStore() {
        inventory = new ArrayList<>();
    }

    // Add a new video to the inventory
    public void addVideo(String title) {
        for (Video video : inventory) {
            if (video.getTitle().equalsIgnoreCase(title)) {
                System.out.println("Error: Video already exists in the inventory.");
                return;
            }
        }
        inventory.add(new Video(title));
        System.out.println("Video added successfully: " + title);
    }

    // List all videos in the inventory
    public void listInventory() {
        if (inventory.isEmpty()) {
            System.out.println("No videos in inventory.");
        } else {
            System.out.println("Inventory:");
            for (int i = 0; i < inventory.size(); i++) {
                System.out.println((i + 1) + ". " + inventory.get(i));
            }
        }
    }


 // Rent a video
```

```
public void rentVideo(String title) {
        for (Video video : inventory) {
            if (video.getTitle().equalsIgnoreCase(title)) {
                if (video.isAvailable()) {
                    video.rent();
                    System.out.println("You rented: " + title);
                } else {
                    System.out.println("Video is currently unavailable.");
                }
                return;
            }
        }
        System.out.println("Error: Video not found in inventory.");
    }

    // Return a video
    public void returnVideo(String title) {
        for (Video video : inventory) {
            if (video.getTitle().equalsIgnoreCase(title)) {
                if (!video.isAvailable()) {
                    video.returnVideo();
                    System.out.println("You returned: " + title);
                } else {
                    System.out.println("Error: Video was not rented.");
                }
                return;
            }
        }
        System.out.println("Error: Video not found in inventory.");
    }
}

// Main class to run the Video Rental System
public class VideoRentalSystem {
    public static void main(String[] args) {
        VideoStore store = new VideoStore();
        Scanner scanner = new Scanner(System.in);

        while (true) {
            System.out.println("\n--- Video Rental Store ---");
            System.out.println("1. Add Video");
            System.out.println("2. List Inventory");
            System.out.println("3. Rent Video");
            System.out.println("4. Return Video");
            System.out.println("5. Exit");


System.out.print("Enter your choice: ");

            // Handle invalid input for menu choices


            int choice = -1;
            if (scanner.hasNextInt()) {

                choice = scanner.nextInt();
            } else {
                System.out.println("Invalid choice. Please enter a number.");
                scanner.next(); // Consume invalid input
                continue;
            }

            scanner.nextLine();

            switch (choice) {
                case 1:
                    System.out.print("Enter video title to add: ");
                    String titleToAdd = scanner.nextLine().trim();
                    store.addVideo(titleToAdd);
                    break;
                case 2:
                    store.listInventory();
                    break;
                case 3:
                    System.out.print("Enter video title to rent: ");
                    String titleToRent = scanner.nextLine().trim();
                    store.rentVideo(titleToRent);
                    break;
                case 4:
                    System.out.print("Enter video title to return: ");
                    String titleToReturn = scanner.nextLine().trim();
                    store.returnVideo(titleToReturn);
                    break;
                case 5:
                    System.out.println("Exiting the system. Goodbye!");
                    scanner.close();
                    return;
                default:
                    System.out.println("Invalid choice. Please try again.");
            }
        }
    }
}
```

Output:



```
--- Video Rental Store ---
1. Add Video
2. List Inventory
3. Rent Video
4. Return Video
5. Exit
Enter your choice: 1
Enter video title to add: ROSH
Video added successfully: ROSH

--- Video Rental Store ---
1. Add Video
2. List Inventory
3. Rent Video
4. Return Video
5. Exit
Enter your choice: 2
Inventory:
1. Title: ROSH | Available: Yes

--- Video Rental Store ---
1. Add Video
2. List Inventory
3. Rent Video
4. Return Video
5. Exit
Enter your choice: 3
Enter video title to rent: ROSH
```

Learning Outcomes:

- **Object-Oriented Design:** Learn to create and use classes for real-world entities.
- **Core Programming Skills:** Practice loops, conditionals, and methods for inventory operations.
- **Data Structure Usage:** Use `ArrayList` to manage dynamic data effectively.
- **User-Friendly Systems:** Design intuitive interfaces and handle errors smoothly.