



DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

Experiment 1.2

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Branch: CSE

Semester: 6th

Subject: Java

UID: 22BCS13734

Section: 631-A

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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:



The screenshot shows an IDE with a Java file named 'Main.java'. The code defines a 'VideoStore' class with methods for adding, listing, renting, and returning videos, and a 'Main' class with a 'main' method that uses a 'Scanner' to interact with the user. The output window shows the program's execution: it prompts the user to choose an option, and when option 3 (Rent Video) is selected, it prompts for a video title. Since 'Gaurav' is not in the inventory, it prints 'Error: Video not found in inventory.' and then shows the menu again.

```

Main.java
94         scanner.nextLine().trim();
95         store.addVideo(titleToAdd); break;
96     case 2: store.listInventory();
97         break;
98     case 3:
99         System.out.print("Enter video title to rent: ");
100         String titleToRent =
101             scanner.nextLine().trim();
102         store.rentVideo(titleToRent); break;
103     case 4:
104         System.out.print("Enter video title to return: ");
105         String titleToReturn =
106             scanner.nextLine().trim();
107         store.returnVideo(titleToReturn); break;
108     case 5: System.out.println("Exiting the
109         system.
110         Goodbye!"); scanner.close(); return; default:
111         System.out.println("Invalid choice. Please try again.");
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DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

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.