FALL SEMESTER 2024-2025

PMCA502P - JAVA PROGRAMMING LAB

DATE: 02-AUG-2024

ASSESSMENT

Submitted By-

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LAB-3: AIRLINE RESERVATION SYSTEM

QUESTION:

Write the program for the following in Java: "A small airline has just purchased the computer for its new automated reservations system. You have been asked to program the new system in Java to assign seats on each flight of the airline's two planes, each of capacity: 10.

Define a user defined class to represent the reservation details like passenger name, mobile number, flight number and reserved seat number.

Keep the flight details in two static String arrays for each flight. The first five seats (index 0 to 4) represent the First Class whereas the next five seats (index 5 to 9) represent the Economy Class. Initially, both the arrays should be assigned with the value Available through static block so, no booking has done. It should be updated as Reserved for each corresponding booking.

Define a static method to display the flight details. Sample is here:

Flight-1 Flight-2

1-Reserved 1-Available

2-Reserved 2-Reserved

3-Available 3-Available

4-Available 4-Reserved

5-Reserved 5-Available

6-Reserved 6-Available

7-Available 7-Available

8-Reserved 8-Reserved

9-Available 9-Available

10-Available 10-Available

Define a constructor with the parameters passenger name, mobile number, flight number and reserved seat number. Create a static method booking for every reservation. It should get the flight number and travel class (First or Economy) as parameters. If the seat is available in the corresponding flight it should return the seat number, otherwise -1. Also, the status of the corresponding flight seat should be updated as "Reserved" when it is available.

Create a non-static method to display the reservation details.

Create a demo class which contains main method. Declare array of objects with the size 20 to store the reservation details. Create a menu driven loop to do the following with the choices from 1 to 4.

1. Display Flight Details

2. Display Reserved Passenger Details

3. Reserve a seat

4. Stop

The flight details should be displayed when the user press 1. The reservation details should be displayed when the user press 2. If the user press 3, the system should get the flight number and travel class as input. Then it should check the availability of the seat. If it is available, then the system collects the user name and mobile number. Now, it should create an object belonging to reservation class with complete details. Suppose the seat is not available, print the message "Next Flight leaves in 3 hours".

Stop this iteration when user press 4. Display 'choice is wrong, try again' when user didn't press the correct choice."

CODE:

```
import java.util.Scanner;


class Reservation {
    private String passengerName;
    private String mobileNumber;
    private int flightNumber;
    private int reservedSeatNumber;



    static String[] flight1Seats = new String[10];
    static String[] flight2Seats = new String[10];



    static {
        for (int i = 0; i < 10; i++) {
            flight1Seats[i] = "Available";
            flight2Seats[i] = "Available";
        }
    }
```

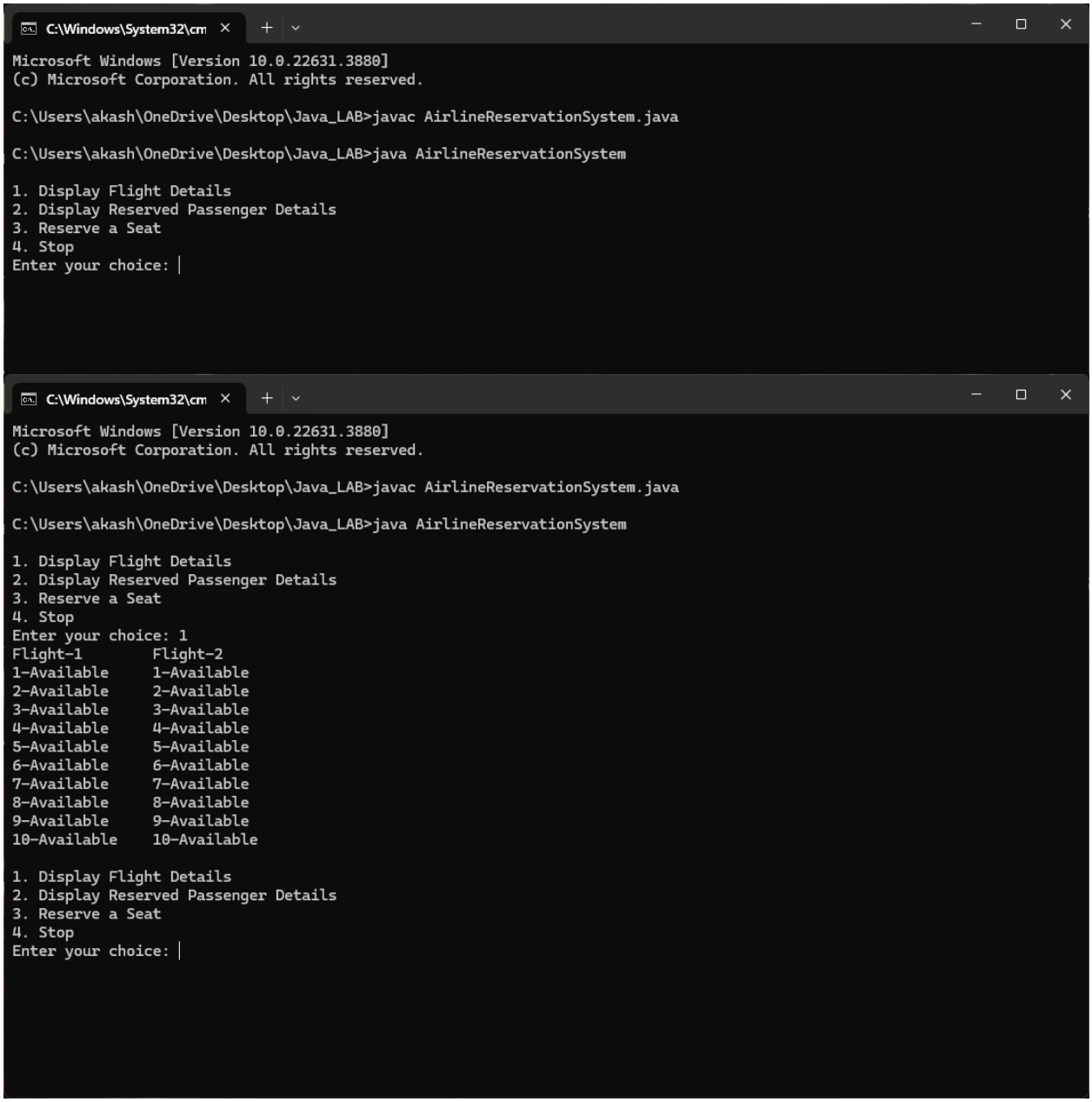
```
    public Reservation(String passengerName, String mobileNumber, int flightNumber, int reservedSeatNumber) {
        this.passengerName = passengerName;
        this.mobileNumber = mobileNumber;
        this.flightNumber = flightNumber;
        this.reservedSeatNumber = reservedSeatNumber;
    }



    public static void displayFlightDetails() {
        System.out.println("Flight-1\tFlight-2");
        for (int i = 0; i < 10; i++) {
            System.out.println((i + 1) + "-" + flight1Seats[i] + "\t" + (i + 1) + "-" + flight2Seats[i]);
        }
    }



    public static int booking(int flightNumber, String travelClass) {
        String[] selectedFlight = flightNumber == 1 ? flight1Seats : flight2Seats;
        int start = travelClass.equalsIgnoreCase("First") ? 0 : 5;
        int end = travelClass.equalsIgnoreCase("First") ? 5 : 10;

        for (int i = start; i < end; i++) {
            if (selectedFlight[i].equals("Available")) {
                selectedFlight[i] = "Reserved";
                return i + 1;
            }
        }
        return -1;
    }
```

```
    public void displayReservationDetails() {
        System.out.println("Passenger Name: " + passengerName);
        System.out.println("Mobile Number: " + mobileNumber);
        System.out.println("Flight Number: " + flightNumber);
        System.out.println("Reserved Seat Number: " + reservedSeatNumber);
    }
}

public class AirlineReservationSystem {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Reservation[] reservations = new Reservation[20];
        int reservationCount = 0;

        while (true) {
            System.out.println("\n1. Display Flight Details\n2. Display Reserved Passenger Details\n3. Reserve a Seat\n4. Stop");
            System.out.print("Enter your choice: ");
            int choice = sc.nextInt();

            switch (choice) {
                case 1:
                    Reservation.displayFlightDetails();
                    break;
                case 2:
                    if (reservationCount == 0) {
                        System.out.println("No reservations made yet.");
                    } else {
                        for (int i = 0; i < reservationCount; i++) {
                            reservations[i].displayReservationDetails();
```

```
                System.out.println();
            }
        }
        break;
    case 3:
        System.out.print("Enter Flight Number (1 or 2): ");
        int flightNumber = sc.nextInt();
        sc.nextLine();
        System.out.print("Enter Travel Class (First or Economy): ");
        String travelClass = sc.nextLine();
        int seatNumber = Reservation.booking(flightNumber, travelClass);
        if (seatNumber == -1) {
            System.out.println("Next Flight leaves in 3 hours");
        } else {
            System.out.print("Enter Passenger Name: ");
            String passengerName = sc.nextLine();
            System.out.print("Enter Mobile Number: ");
            String mobileNumber = sc.nextLine();
            reservations[reservationCount++] = new Reservation(passengerName, mobileNumber, flightNumber, seatNumber);
            System.out.println("Seat reserved successfully. Seat Number: " + seatNumber);
        }
        break;
    case 4:
        System.out.println("Stopping the system.");
        sc.close();
        return;
    default:
        System.out.println("Choice is wrong, try again.");
        break;
    }
  }
```

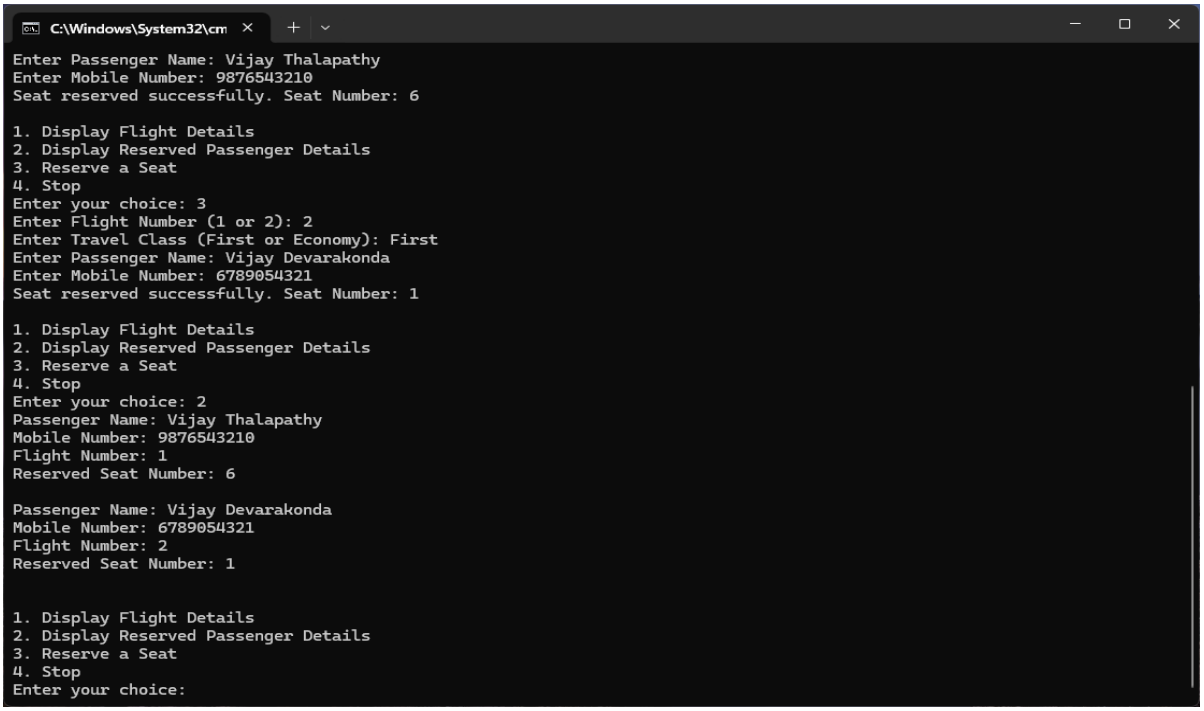
```
    }
}
```

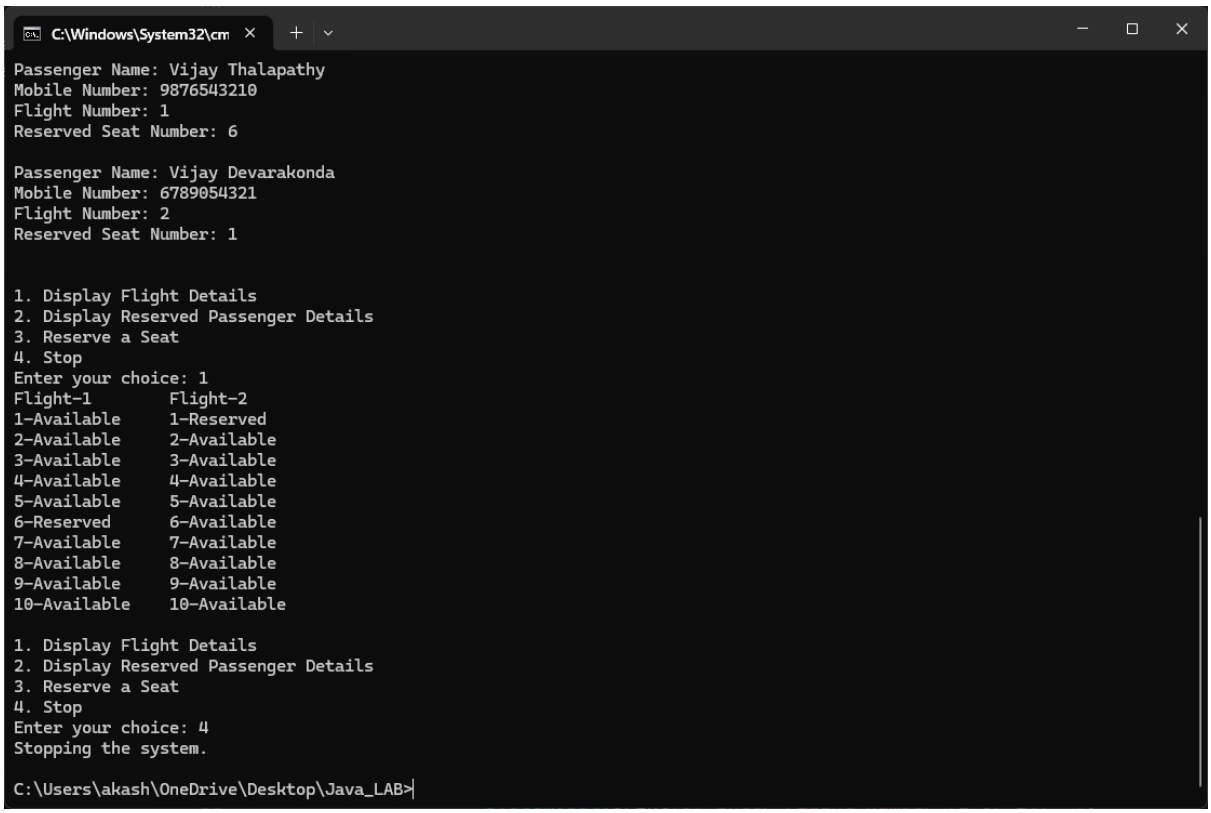
SCREENSHOTS:



```
C:\Windows\System32\cm
Microsoft Windows [Version 10.0.22631.3880]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akash\OneDrive\Desktop\Java_LAB>javac AirlineReservationSystem.java

C:\Users\akash\OneDrive\Desktop\Java_LAB>java AirlineReservationSystem

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 1
Flight-1        Flight-2
1-Available     1-Available
2-Available     2-Available
3-Available     3-Available
4-Available     4-Available
5-Available     5-Available
6-Available     6-Available
7-Available     7-Available
8-Available     8-Available
9-Available     9-Available
10-Available    10-Available

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 2
No reservations made yet.

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice:
```

```
C:\Windows\System32\cm
10-Available    10-Available

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 2
No reservations made yet.

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 3
Enter Flight Number (1 or 2): 1
Enter Travel Class (First or Economy): Economy
Enter Passenger Name: Vijay Thalapathy
Enter Mobile Number: 9876543210
Seat reserved successfully. Seat Number: 6

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 3
Enter Flight Number (1 or 2): 2
Enter Travel Class (First or Economy): First
Enter Passenger Name: Vijay Devarakonda
Enter Mobile Number: 6789054321
Seat reserved successfully. Seat Number: 1

1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice:
```


C:\Windows\System32\cm
Enter Passenger Name: Vijay Thalapathy
Enter Mobile Number: 9876543210
Seat reserved successfully. Seat Number: 6
1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 3
Enter Flight Number (1 or 2): 2
Enter Travel Class (First or Economy): First
Enter Passenger Name: Vijay Devarakonda
Enter Mobile Number: 6789054321
Seat reserved successfully. Seat Number: 1
1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 2
Passenger Name: Vijay Thalapathy
Mobile Number: 9876543210
Flight Number: 1
Reserved Seat Number: 6
Passenger Name: Vijay Devarakonda
Mobile Number: 6789054321
Flight Number: 2
Reserved Seat Number: 1
1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice:


C:\Windows\System32\cm
Passenger Name: Vijay Thalapathy
Mobile Number: 9876543210
Flight Number: 1
Reserved Seat Number: 6
Passenger Name: Vijay Devarakonda
Mobile Number: 6789054321
Flight Number: 2
Reserved Seat Number: 1
1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 1
Flight-1 Flight-2
1-Available 1-Reserved
2-Available 2-Available
3-Available 3-Available
4-Available 4-Available
5-Available 5-Available
6-Reserved 6-Available
7-Available 7-Available
8-Available 8-Available
9-Available 9-Available
10-Available 10-Available
1. Display Flight Details
2. Display Reserved Passenger Details
3. Reserve a Seat
4. Stop
Enter your choice: 4
Stopping the system.
C:\Users\akash\OneDrive\Desktop\Java_LAB>