Test Question 5(24.7.24)

SET 2

1.Create a student attendance system to record and manage student attendance. Implement methods to mark attendance, generate attendance reports, and calculate attendance percentages.

Methods:

- markAttendance(int studentId, String date, boolean isPresent)
- generateAttendanceReport(int studentId)
- calculateAttendancePercentage(int studentId)

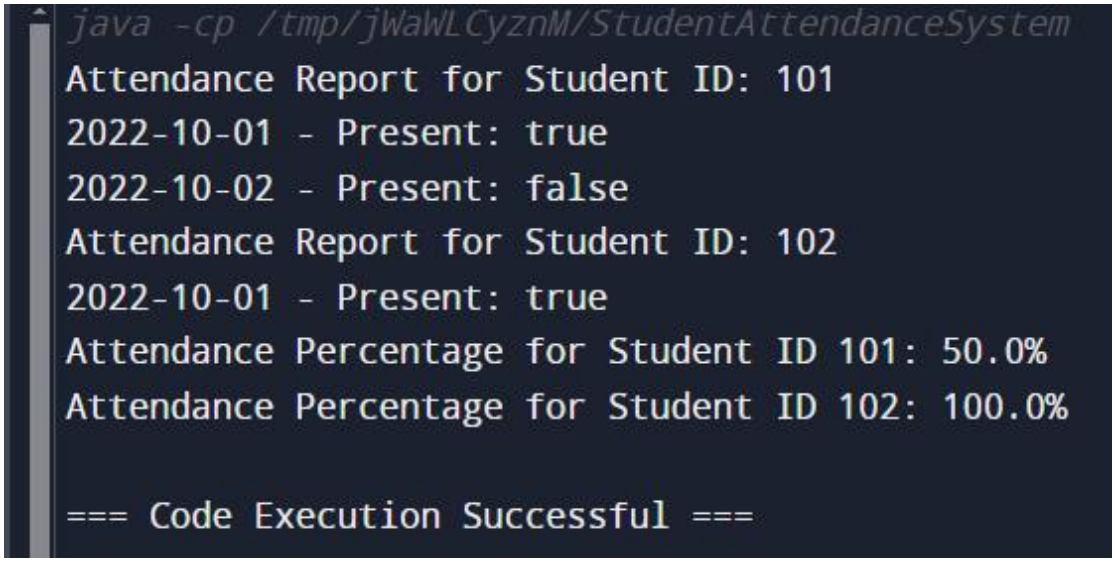
Program:

```
import java.util.HashMap;
class StudentAttendanceSystem {
  private HashMap<Integer, HashMap<String, Boolean>> attendanceRecords;
  public StudentAttendanceSystem() {
    this.attendanceRecords = new HashMap<>();
  }
  public void markAttendance(int studentId, String date, boolean isPresent) {
    if (!attendanceRecords.containsKey(studentId)) {
      attendanceRecords.put(studentId, new HashMap<>());
    }
    attendanceRecords.get(studentId).put(date, isPresent);}
  public void generateAttendanceReport(int studentId) {
    System.out.println("Attendance Report for Student ID: " + studentId);
    if (attendanceRecords.containsKey(studentId)) {
      for (String date : attendanceRecords.get(studentId).keySet()) {
        System.out.println(date + " - Present: " +
attendanceRecords.get(studentId).get(date));
      }
    } else {
```

```
            System.out.println("No attendance records found for Student ID: " + studentId);
        }
    }
  public double calculateAttendancePercentage(int studentId) {
        if (attendanceRecords.containsKey(studentId)) {
            HashMap<String, Boolean> records = attendanceRecords.get(studentId);
            long totalDays = records.size();
            long presentDays = records.values().stream().filter(Boolean::booleanValue).count();
            return (double) presentDays / totalDays * 100;
        } else {
            return 0.0;
        }}
    public static void main(String[] args) {
        StudentAttendanceSystem attendanceSystem = new StudentAttendanceSystem();
        attendanceSystem.markAttendance(101, "2022-10-01", true);
        attendanceSystem.markAttendance(101, "2022-10-02", false);
        attendanceSystem.markAttendance(102, "2022-10-01", true);


        attendanceSystem.generateAttendanceReport(101);
        attendanceSystem.generateAttendanceReport(102);
        System.out.println("Attendance Percentage for Student ID 101: " +
attendanceSystem.calculateAttendancePercentage(101) + "%");
        System.out.println("Attendance Percentage for Student ID 102: " +
attendanceSystem.calculateAttendancePercentage(102) + "%");
    }
}
```

Output:



2. Develop a weather forecast application that fetches and displays weather information. Implement methods to get current weather, forecast for the week, and display weather details.

Methods:

- getCurrentWeather(String location)
- getWeeklyForecast(String location)
- displayWeatherDetails(String location)

Program:

```
public class WeatherForecastApplication {
  public static void main(String[] args) {
    WeatherForecastApplication app = new WeatherForecastApplication();
    String location = "chennai";
    app.getCurrentWeather(location);
    app.getWeeklyForecast(location);
    app.displayWeatherDetails(location);
  }
  public void getCurrentWeather(String location) {
    System.out.println("Current weather for " + location + ": Sunny, 25C");
  }
```

```
    public void getWeeklyForecast(String location) {
        System.out.println("Weekly forecast for " + location + ": Sunny, Cloudy, Rainy, Sunny, Cloudy, Thunderstorms, Sunny");
    }

    public void displayWeatherDetails(String location) {
        System.out.println("Weather details for " + location + ": Temperature, Humidity, Wind Speed, Precipitation");
    }
}
```

Output: