United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

CSE 1112: Structure Programming Language Laboratory

Section: K

Assignment 1

Question: 01 **Marks: 10**

You are planning to develop a weather monitoring system that records daily temperatures (in °C) for 7 consecutive days across 5 different cities in Bangladesh. Your task is to develop a C program that processes this data. The program should calculate city-wise average temperatures, classify weather conditions (Hot, Moderate, Cold), count extreme weather alert days, and determine the highest and lowest temperatures recorded. Additionally, the program should compute day-wise average temperatures across all cities and report the hottest and coldest days based on those averages.

Input:

The program should first take temperature inputs and store them in a 2D array, where each row represents a city and each column represents a day. You must ensure that each temperature value entered lies within the valid range of 5°C to 60°C. If an invalid temperature is entered, the program should display a warning and prompt the user to re-enter the value.

Output:

For each city, the program should calculate the average temperature of the week and classify the weather condition as "Hot", "Moderate", or "Cold". A city is considered "Hot" if the average temperature is 30°C or above, "Moderate" if it is between 20°C and 29.9°C, and "Cold" if it is below 20°C. Additionally, the program should count how many days in the week had extreme weather conditions for each city: specifically, days where the temperature exceeded 40°C (counted as Heat Alert days) and days where it fell below 10°C (counted as Cold Alert days). This summary should be displayed city-wise, including the average temperature, weather type, and alert counts.

After processing all cities, the program should identify and display the city that recorded the highest single-day temperature and the city that recorded the lowest single-day temperature.

Finally, the program should compute and display the average temperature for each of the 7 days across all cities, and determine which day had the highest and lowest average temperature.

Input	Output
38 42 41 39 43 44 45 32 33 34 35 36 37 35 8 9 7 10 6 5 8 24 25 23 22 24 23 24 16 18 19 17 20 21 18	City 1: Average Temp: 41.7°C Weather: Hot Heat Alert Days: 5 Cold Alert Days: 0 City 2: Average Temp: 34.6°C Weather: Hot Heat Alert Days: 0 Cold Alert Days: 0 City 3: Average Temp: 7.6°C Weather: Cold Heat Alert Days: 0 Cold Alert Days: 6 City 4: Average Temp: 23.6°C Weather: Moderate Heat Alert Days: 0 Cold Alert Days: 0 City 5: Average Temp: 18.4°C Weather: Cold Heat Alert Days: 0 Cold Alert Days: 0 Highest Temperature: 45°C in City 1 Lowest Temperature: 5°C in City 3 Average Temperature per Day: Day 1: 21.6°C Day 2: 21.4°C Day 3: 22.4°C Day 4: 22.0°C Day 5: 21.8°C Day 6: 21.8°C Day 7: 22.0°C Hottest Day: Day 1 (21.6°C) Coldest Day: Day 3 (22.4°C)

Instructions

● Name the code files as **`Q1`**, and place both **`.c`** files inside a folder named **`<YourID>`**

● **Zip** the folder and submit it.

● If you are found guilty of copying from **ChatGPT** or your **friend(s)**, you will receive a **-100% mark** on the assignment as a penalty.