CS3080 Python Programming - Task 3

1 Instructions

1.1 Task Teams

- Students will be divided into teams.

- The team can be 1, 2, or 3 students.

- It is not allowed for a team to contain more than 3 students. A team of 4 or more students will get a score of zero.

- Once you form a team, you will continue with that team to implement all the tasks of the semester.

- It is not allowed to change the team members for each task.

- It is your own responsibility to use the modules and modules versions you want.

1.2 What to Submit?

- A single ZIP file that contains the whole task folder.

- The whole task folder contains all the files (.py, .xlsx, report, etc.).

- A report contains the following:

    - Introduction
    - Table of functions

Function Prototype	Description of its purpose

    - Snapshots of the program execution
    - Name of group members including the role of each one.
    - Steps showing how to run the task.
    - Difficulties (if any) that you faced during implementing this task.

2   Tasks

Task 3: A Weather Website

A. Introduction

- It is an online platform that provides information about weather conditions, forecasts, and related meteorological data.

- These websites pull real-time data from weather stations, satellites, radars, and meteorological agencies (like the National Weather Service (NWS) through an Application Programming Interface (API)) to inform users about the weather in specific regions.

- These websites are crucial for planning activities, especially for travel, agriculture, outdoor events, and emergency preparedness.

B. Key Features of Weather Websites:

- **Current Conditions:**

  - Temperature, humidity, wind speed, and direction.
  - Air pressure, precipitation (rain, snow, hail), and visibility.

- **Forecasts:**

  - Hourly Forecasts: Weather changes within the next 24 hours.
  - Daily Forecasts: 7 to 14 days predictions.
  - Long-term Forecasts: Monthly or seasonal outlooks.

- **Weather Maps and Radar:**

  - Live radar showing precipitation movement.
  - Satellite imagery displaying cloud cover.
  - Heat maps for temperature or precipitation levels.

- **Alerts and Warnings:**

  - Weather warnings (e.g., storms, floods, hurricanes).
  - Severe weather notifications based on user location.

- **Specialized Data:**

  - Air Quality Index (AQI): Information on pollution levels.
  - UV Index: Indicator of sun exposure risks.

– Allergen Data: Pollen levels for allergy sufferers.

- **Interactive Tools:**

    – Graphs and charts showing temperature trends or rainfall over time.
    – Widgets allowing users to track multiple locations.
    – Mobile apps or browser plugins for live updates.

- **Popular Weather Websites:**

    – Weather.com (The Weather Channel)
    – AccuWeather
    – NOAA (National Oceanic and Atmospheric Administration)
    – MeteoGroup / Weather Underground
    – BBC Weather

C. Requirements

- Create a web page with a form to allow the user to enter the following information:

    – the user first name
    – the user last name

    – City
    – State/Governorate
    – Country

- Create another web page that shows the following:

    – Welcome <user_first_name> <user_last_name>.
    – For <City>, <State>, <Country>
        * The temperature in Fahrenheit and Celsius.
        * Precipitation, Humidity, and Wind.

- You can get all these pieces of information by web scraping the Google web page.

- Show your results for the following cities and other cities that you prefer:

    1. **Colorado Springs, Colorado, USA**
       `https://www.google.com/search?q=Colorado+Springs+Colorado+USA+weather`

2. **Winter Park, Colorado, USA**
   https://www.google.com/search?q=Winter+Park+Colorado+USA+
   weather
3. **Winter Park, Florida, USA**
   https://www.google.com/search?q=Winter+Park+Florida+USA+weather
4. **Alexandria, Virginia, USA**
   https://www.google.com/search?q=Alexandria+Virginia+USA+weather
5. **Alexandria, Ontario, Canada**
   https://www.google.com/search?q=Alexandria+Ontario+Canada+
   weather
6. **Melbourne, Florida, USA**
   https://www.google.com/search?q=Melbourne+Florida+USA+weather
7. **Melbourne, Victoria, Australia**
   https://www.google.com/search?q=Melbourne+Victoria+Australia+
   weather

- You have to provide a PrintScreen for each city of the above list (and the additional cities you have chosen) as evidence that the web site is working correctly.