COMPUTER ENGINEERING WORKSHOP

S.E. (CIS) OEL REPORT

Project Group ID:

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BATCH: 2023

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DEPARTMENT OF COMPUTER & INFORMATION SYSTEMS ENGINEERING
BACHELORS IN COMPUTER SYSTEMS ENGINEERING
Course Code: CS-219
Course Title: Computer Engineering Workshop
Open Ended Lab
SE Batch 2023, Fall Semester 2024
Grading Rubric
TERM PROJECT

Group Members:

Student No.	Name	Roll No.
S1	Azka Fatima	CS-23083
S2	Manaal Wasim	CS-23081
S3		

CRITERIA AND SCALES				Marks Obtained		
				S1	S2	S3
Criterion1: Has the student implemented an efficient and scalable solution for data retrieval, processing, and reporting?						
0	1	2	3			
The student has not even implemented a basic solution that meets the project's requirements.	The student has implemented a basic solution that meets the project's requirements but may lack optimization in certain aspects.	The student has implemented a proficient and well-optimized solution.	The student has implemented an exceptionally efficient and scalable solution.			
Criterion 2: Has student demonstrated a strong understanding of C programming fundamentals?						
0	1	2	3			
The student doesn't have basic understanding of C programming fundamentals.	The student exhibits a basic understanding of C programming fundamentals.	The student demonstrates a strong understanding of C programming fundamentals.	The student demonstrates an exceptional understanding of C programming fundamentals.			
Criterion 3: How well written is the report?						
0	1	2	3			
The submitted report is unfit to be graded.	The report is partially acceptable.	The report is complete and concise.	The report is exceptionally written.			
			Total Marks:			

Problem Description

Construct an integrated environmental monitoring system in C, covering a range of fundamental concepts and practical applications. The project involves interacting with a free API that provides real-time environmental data. The system's core functionalities include data retrieval, processing and reporting. The software will be graded for CLO-1: Attain hands on experience with contemporary technologies of computer engineering, C3, PLO5 using the rubric sheet.

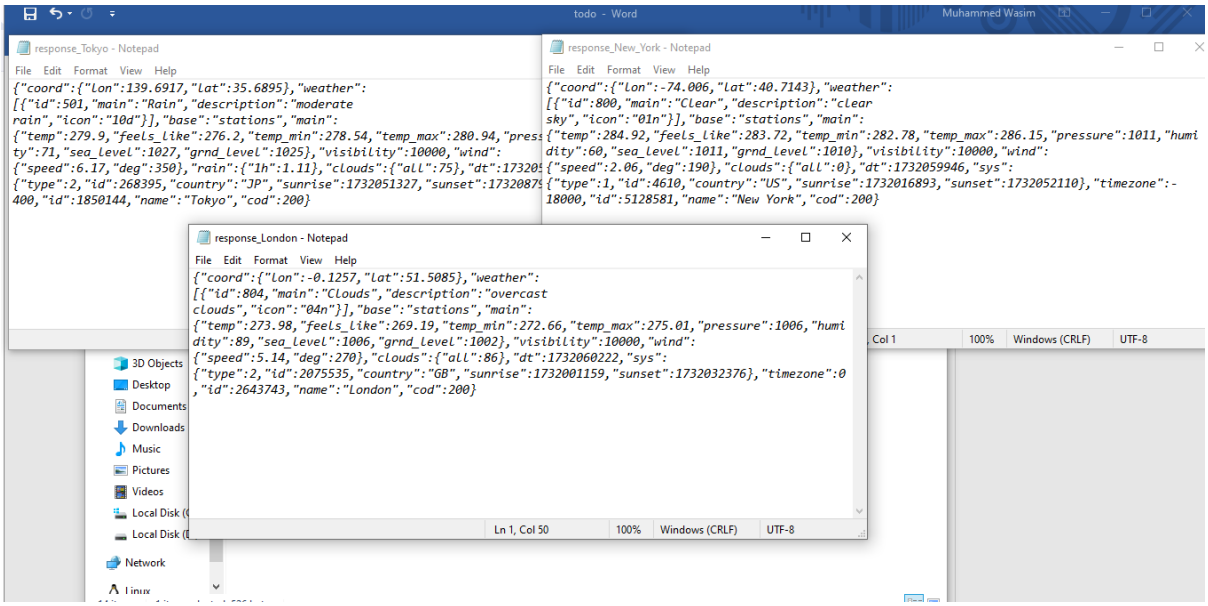
Methodology and Results

This program is designed to fetch current temperature data for multiple cities using the OpenWeatherMap API, process the data to check for critical temperature thresholds, and save the results to a log file. The program alerts the user with a beep sound if any temperature exceeds the defined critical threshold.

Steps Involved

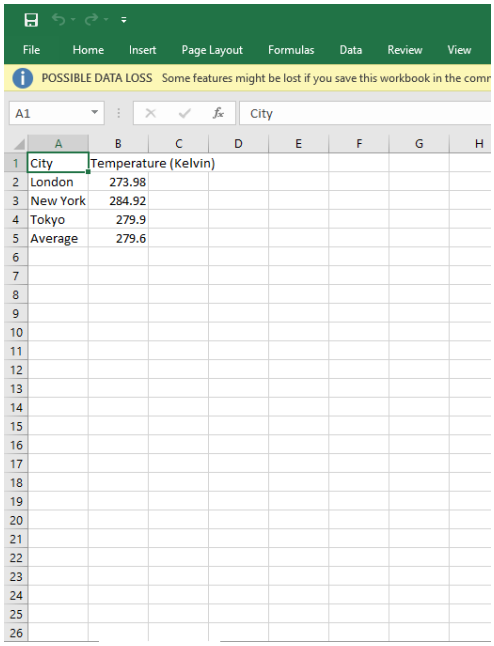
1. **Initialize CURL**
    - The program starts by initializing a CURL session to perform HTTP requests to the OpenWeatherMap API.
2. **Prepare API Request**
    - The program prepares the API request URL for each city by encoding spaces in the city names and setting the appropriate API endpoint.

3. **Fetch Data**
    - The program performs a CURL request to fetch the weather data for each city. The data is saved to individual files for further processing.



4. **Read and Parse JSON Data**
    - The program reads the saved JSON data files and parses the temperature values manually by locating the "temp" key in the JSON response.
5. **Check Critical Threshold**
    - For each city, the program checks if the extracted temperature exceeds the defined critical threshold (300K). If it does, the program sounds a system alert (beep).
6. **Calculate Average Temperature**
    - The program calculates the average temperature of all the cities included in the request.

7. **Write Results to CSV**
    - The processed temperature data, including the city name, temperature in Kelvin, and the calculated average temperature, is written to a CSV file for easy viewing and analysis.



8. **Automate with Task Scheduler on MSYS2**
    - To ensure that the program runs daily at 3 PM, it is automated using the Task Scheduler on MSYS2. This setup allows for the consistent and timely execution of the program without manual intervention.