OPEN ENDED LAB
CS-219
COMPUTERENGINEERINGWORKSHOP
SE CS BATCH 2022
FALL SEMESTER 2023

PROBLEM DEFINITION:

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, analysis, and reporting.

The software will be graded for CLO-1: **Attain hands on experience with contemporary technologies of computer engineering**, C3, PLO5 usingthe rubric at the end of this file.

Problem Outline:

Data Retrieval:
- Interact with a free API to retrieve real-time environmental data (e.g., temperature, humidity).

Data Processing and Analysis:
- Process the retrieved data using C programming concepts.
- Implement algorithms to analyze environmental data for anomalies or trends.

Data Storage:
- Store both raw and processed environmental data in files.

Reporting System:
- Develop a reporting system that generates reports based on the analyzed environmental data.

Automation and Integration:
- Create shell scripts to automate tasks such as data retrieval, processing, and report generation.
- Integrate shell scripts with the C program to enhance automation.

Optimization and Efficiency:
- Utilize pointers and dynamic memory allocation in the C program to optimize data manipulation and enhance efficiency.

Real-time Alerts:
- Implement real-time alerts using Linux system calls to notify relevant personnel of critical environmental readings.

Documentation and Code Organization:
- Develop comprehensive documentation for the monitoring system.
- Use header files to modularize the C code and enhance code readability.

INSTRUCTIONS:

1. Students can make groups of at most three students for this assignment.
2. Students are required to deliver the C project, a demonstration video (of not more than 5 minutes) of the running project and a project report (of not more than 4 pages) discussing the project.
3. Submission must be made before 5th Jan 2024.
4. The video and report will be submitted in Google Classroom.
5. The student making the submission will mention his/her groupmates (names and roll numbers) in private comments along with the link to the github repository in which all the group members should be added as collaborators. The changes made to the repository will also be tracked. For example, who committed what in the repository?

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 2022, Fall Semester 2023
Grading Rubric
TERM PROJECT

Group Members:

Student No.	Name	Roll No.
S1		
S2		
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:			