College of Engineering and Technology (CEAT)

**Department of Computer Science and Engineering**

Assignment

Fall Semester 2024

**Program: Bachelor of Computer Science and Engineering (BCSE)**

**Course Instructor: Md. Alomgir Hossain**

Course No.: CSC 471

Course Title: Microprocessor Based Systems Design **Full Marks: 100**

**Section: A Submission Date: 15 – 05 - 2024**

**Target CO4, PO2,: Investigate/ Design/Problem Analysis**

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| **CO4** | **Investigate and analyze chronological structural changes of 8085, 8086, and 80186 Microprocessor.** |

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| **PO2: Problem Analysis** |  | **P1 (Must) with P2,P3and P9** |

**Note:1)**This assignment should be undertaken by the students individually.

**Introduction of the Assignment**:

* The assignment involves the design and implementation of Consider a daily life problem, design and implements its proposed solution by using microcontroller Techniques. This task requires a comprehensive understanding of microcontroller design and the strategic use of smaller components to achieve the desired functionality. (One example of real life problem: [Plant Soil Moisture & Ph Sensing Alarm Using 8051](https://nevonprojects.com/plant-soil-moisture-ph-sensing-alarm-using-8051/))

**Objectives:**  
Following are the objectives of this assignment:

* Clearly state the goal of designing and implementing a daily life problem, design and implements its proposed solution by using Microcontroller Techniques.

**Investigation:**

A thorough investigation into the principles of microcontroller design and investigations or experiments of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, tests and measurements and synthesis of information to provide valid conclusions or to improve solutions is essential.

**Evaluation:**

Justify the analysis of findings that involves assessing the suitability of using microcontroller to solve a real life problem. Considerations may include the efficiency of the design, potential challenges, and advantages gained through this hierarchical approach.

**Design:**

The solution involves implementing a cascading structure using microcontroller to achieve the desired output. This section should provide a step-by-step explanation of the design, addressing any challenges encountered and the rationale behind the chosen approach.

**Deliverables:**

The materials submitted for this assignment include:

(**i**) A detailed overview of the designed and implemented real life problem solution

(**ii**) Diagrams or schematics illustrating arrangement of microcontroller.

(**iii**) A report in the standard format encompassing Introduction, the problem analysis, requirement, documents, design, and implementation. Result analysis and conclusion.

**Assignment Presentation:**  
In this phase assignment is evaluated based on following assessment criteria:

Idea / initial study of assignment (WP2) 20%

Assignment Proposal (WP1, WP3)- 10%

Assignment Progress (WP3) -20%  
Implementation/ Demo of assignment (WP1, WP3) 30%  
Report 20%

**Following are the outcomes of CEP:**  
Brainstorming, a group creativity by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its members. This activity encourages the students to explore the problems and to solve them by using Microprocessor Based system. After the completion of second phase, they improve their ability to formulate the problem. After Implementation, they realize an application, or execution of a plan, idea, design, specification, or policy

# Justification on PO2 (Problem Analysis) Attainment:

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| Assignment Features | Knowledge Profile & Attributes of Complex Engineering Problem | |
| The solution required an understanding of Microcontroller functionalities. | K1 & K2 | P1- Depth of Knowledge Required |
| The solution required knowledge about the engineering fundamentals like basic structure of programming language arduino based. | K3 |
| The solution required specialized knowledge about the microcontroller and the implementation of that through python or any other program. | K4 |
| The solution needs to fulfill certain number of criteria like defining real life problem with minimum cost. | P2- Range of Conflicting Requirements | |
| The solution requires in-depth analysis about Microcontroller kit. | P3- Depth of Analysis Required | |
| The problem or task can be divided in multiple parts like identification of problem, analysis the problem, design the problem and then next part is implementing that design with different numbers of microcontroller kit.. | P7- Interdependence | |