**CSE 101 ASSIGNMENT #1**

**DUE: Sun 13 OCT SUNDAY 23:50**

**MUST BE SUBMITTED TO TEAMS CLASS ONLINE**

1. **Code and explanation**
2. **Video link to your youtube video making demo (max 5 minutes).**

**CSE101 Homework - Week 1: Introduction to Arduino and C Programming**

**Objective:**  
The goal of this assignment is to familiarize students with basic programming concepts using the Arduino platform and the C programming language. This task introduces students to the fundamentals of coding by writing a simple "Hello World" program that interacts with the hardware using an Arduino kit.

**Assignment Instructions:**

**1. Setup and Installation:**

* Install the Arduino IDE from the official Arduino website.
* Connect the Arduino Uno (or equivalent model) from your kit to your computer using the provided USB cable.
* Verify that your system recognizes the Arduino board by checking under "Tools" > "Port" in the Arduino IDE.

**2. Writing Your First Program:**

In this assignment, you will write a program that displays "Hello, World!" by making use of the built-in LED on your Arduino board (usually on pin 13).

**Task 1: Writing the Code**

1. Open the Arduino IDE.
2. Create a new sketch (File > New).
3. Write a simple program in C that will blink the built-in LED in a pattern to represent "Hello, World!" using the following guide:
   * A short blink will represent a dot (.).
   * A long blink will represent a dash (-).

The sequence will mimic "Hello, World!" in Morse code for practice, but you can simplify the number of characters if desired.

void setup() {

pinMode(LED\_BUILTIN, OUTPUT); // Set pin mode for built-in LED

}

void loop() {

// Blink sequence for "H" (....)

for (int i = 0; i < 4; i++) {

digitalWrite(LED\_BUILTIN, HIGH); // Turn the LED on

delay(250); // Wait for 250 milliseconds

digitalWrite(LED\_BUILTIN, LOW); // Turn the LED off

delay(250); // Wait for 250 milliseconds

}

// Add more blinking sequences here to represent other characters of "Hello"

}

**3. Uploading the Code:**

* Verify your code by clicking the checkmark button in the Arduino IDE.
* Upload your code to the Arduino board using the arrow button.
* Ensure the LED blinks as per the pattern you've implemented.

**Bonus Task (+25 pts):**

For students who want to challenge themselves, modify the program to include user input through a serial monitor. The user should be able to type a message (e.g., "Hi") into the serial monitor, and the Arduino should blink the LED accordingly.

void setup() {

Serial.begin(9600); // Start serial communication at 9600 bps

pinMode(LED\_BUILTIN, OUTPUT);

}

void loop() {

if (Serial.available()) {

char letter = Serial.read(); // Read the incoming letter

// Blink LED based on the letter received

// You can use a switch-case to match letters to Morse code blinks

}

}

**Submission Requirements:**

* Submit a short written explanation (max 1 page) on the following:
  + What the code does and how it interacts with the hardware.
  + Challenges faced during the assignment and how you overcame them.
* Take a short video of your Arduino board running the program and submit the link or the youtube video file as part of your homework.