Task 3.3P - Arduino LED Control via Button

Summary

- For this assignment, I created an Arduino circuit where two push buttons control two LEDs. Circuit control buttons and LEDs, there was a different Arduino digital pin and it was created on the breadboard assemblage. Using the Arduino IDE, the code was created to label the LEDs as output and the buttons as inputs. I arrange the circuit like each button was independent and connected only one LED, then I used `digitalRead()` for detecting the pushes on the buttons. The specific LED light up whenever a button was activated and the LED was off when the button was deactivated. From this exercise also, I understood how to manage outputs (LEDs) on an Arduino with an input from outside the board (push buttons) which is one of the simplest concepts in the embedded systems. Also, I got to learn about pull down resistors as a solution to issues of floating inputs as well as the use of resistors to ensure that circuits are steady.

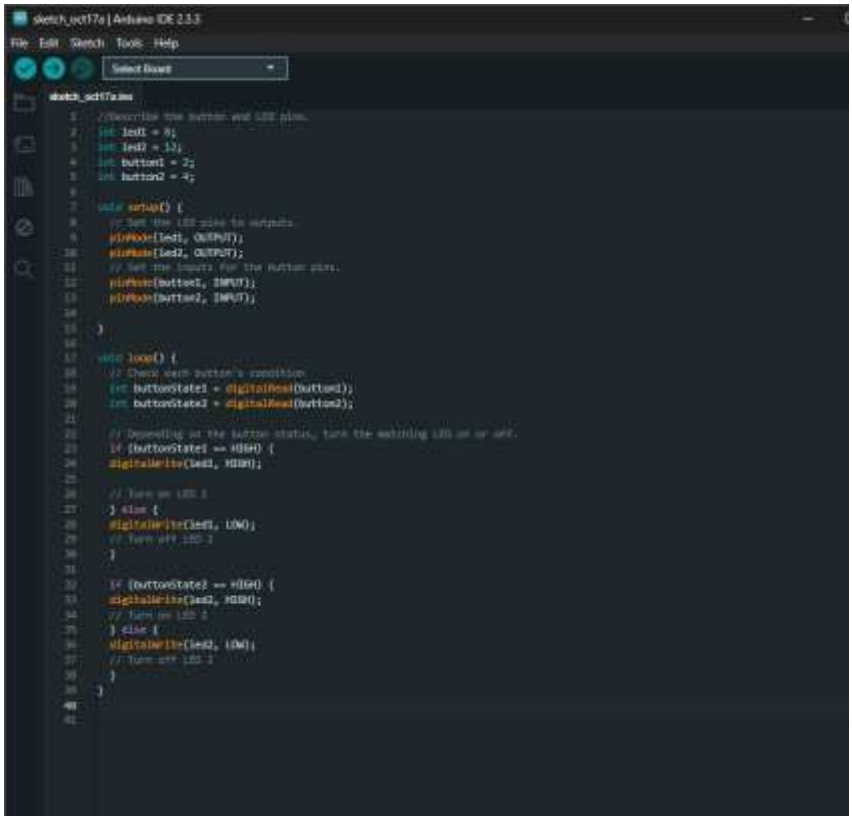
Reflection

- I was able to successfully build the circuit along with the uploading of the Arduino sketch as my accomplishment of the learning objectives. They flashed according to instructions when I pressed and released the button which in turn indicated that the circuit as well as the code in the microcontroller had functioned correctly.
- Amongst the most important things I learns was how the Arduing regulates outputs in actual time with buttons functioning as inputs. This is done to enable the required interactive embedded systems to be developed and forms the basis for the more complex structures.
- I knew what conditions and loops were and that they are basic for all kinds of programming languages. In using the Arduino kit I have gained more knowledge on how they operate and how it relates to an embedded system since it takes care of the hardware components such as the LEDs.
- This skill will be advantageous for other projects involving the use of sensors or human raw input for operation of equipment which include; Robotics, Home Automation or any IoT projects

Arduino Code

```
//Describe the button and LED pins.
int led1 = 8;
int led2 = 12;
int button1 = 2;
int button2 = 4;

void setup() {
  // Set the LED pins to outputs.
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
  // Set the inputs for the button pins.
  pinMode(button1, INPUT);
  pinMode(button2, INPUT);

}

void loop() {
  // Check each button's condition
  int buttonState1 = digitalRead(button1);
  int buttonState2 = digitalRead(button2);

  // Depending on the button status, turn the matching LED on or off.
  if (buttonState1 == HIGH) {
  digitalWrite(led1, HIGH);

  // Turn on LED 1
  } else {
```

```
  digitalWrite(led1, LOW);
  // Turn off LED 1
  }

  if (buttonState2 == HIGH) {
  digitalWrite(led2, HIGH);
  // Turn on LED 2
  } else {
  digitalWrite(led2, LOW);
  // Turn off LED 2
  }
}
```



Drive Link

https://drive.google.com/file/d/1F_5gw5SnCbXJkMPrj5DeEs1Ra2dVEjT2/view?usp=sharing

You Tube Link

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