National Textile University, Faisalabad

Department of Computer Science

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Class:	BSCS-B
Registration No:	23-NTU-CS-1074
Lab Report:	IOT
Course Code:	
Course Name:	IOT
Submitted To:	SIR NASIR
Submission Date:	06-10-2024

CODE:

```
// 23 ntu cs 1074
// Muhammad talal shariq
// Embedded iot systems
// esp32 dual led toggle
#include <Arduino.h>
const int LED1 = 19;
const int LED2 = 2;
const int SW1  = 32;
const int SW2  = 26;
volatile bool led1State = LOW;
volatile bool led2State = LOW;
 volatile unsigned long lastDebounceTime1 = 0;
 volatile unsigned long lastDebounceTime2 = 0;
 const unsigned long debounceDelay = 50;

void IRAM_ATTR handleSwitch1() {
  unsigned long currentTime = millis();
  if (currentTime - lastDebounceTime1 > debounceDelay) {
  led1State = !led1State;
  digitalWrite(LED1, led1State);
  lastDebounceTime1 = currentTime;
  }
}

void IRAM_ATTR handleSwitch2() {
  unsigned long currentTime = millis();
  if (currentTime - lastDebounceTime2 > debounceDelay) {
```

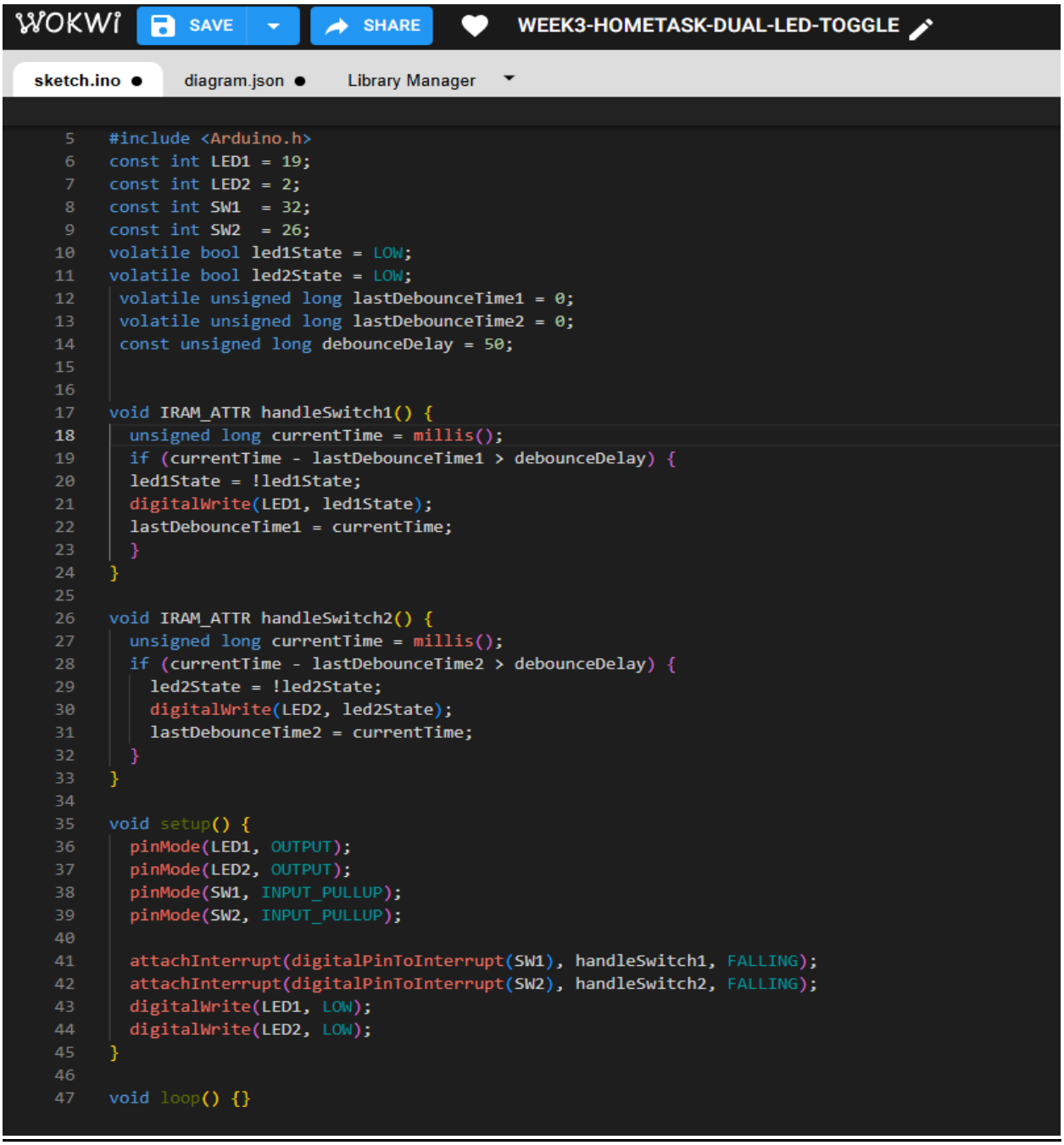
```
    led2State = !led2State;
    digitalWrite(LED2, led2State);
    lastDebounceTime2 = currentTime;
  }
}

void setup() {
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  pinMode(SW1, INPUT_PULLUP);
  pinMode(SW2, INPUT_PULLUP);

  attachInterrupt(digitalPinToInterrupt(SW1), handleSwitch1, FALLING);
  attachInterrupt(digitalPinToInterrupt(SW2), handleSwitch2, FALLING);
  digitalWrite(LED1, LOW);
  digitalWrite(LED2, LOW);
}

void loop() {}
```

SCREENSHOTS OF DIAGRAM AND CODE ON WOKWI:

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void IRAM_ATTR handleSwitch1() {
  unsigned long currentTime = millis();
  if (currentTime - lastDebounceTime1 > debounceDelay) {
  led1State = !led1State;
  digitalWrite(LED1, led1State);
  lastDebounceTime1 = currentTime;
  }
}

void IRAM_ATTR handleSwitch2() {
  unsigned long currentTime = millis();
  if (currentTime - lastDebounceTime2 > debounceDelay) {
    led2State = !led2State;
    digitalWrite(LED2, led2State);
    lastDebounceTime2 = currentTime;
  }
}

void setup() {
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  pinMode(SW1, INPUT_PULLUP);
  pinMode(SW2, INPUT_PULLUP);

  attachInterrupt(digitalPinToInterrupt(SW1), handleSwitch1, FALLING);
  attachInterrupt(digitalPinToInterrupt(SW2), handleSwitch2, FALLING);
  digitalWrite(LED1, LOW);
  digitalWrite(LED2, LOW);
}

void loop() {}
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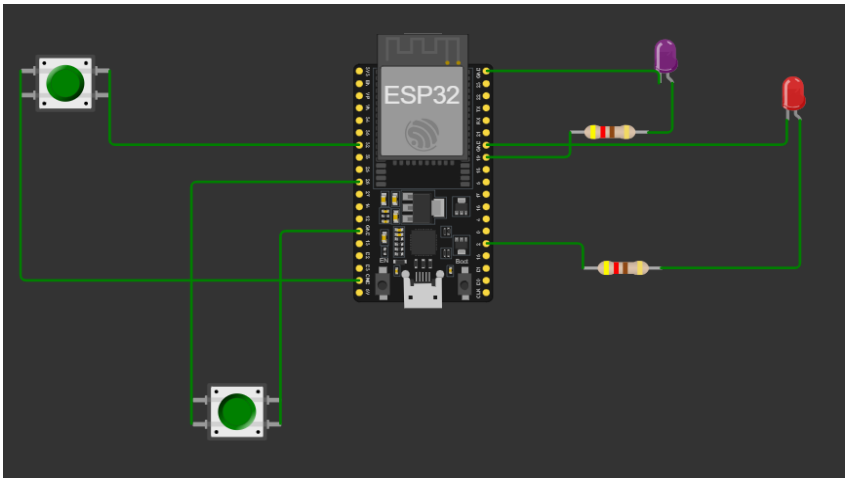
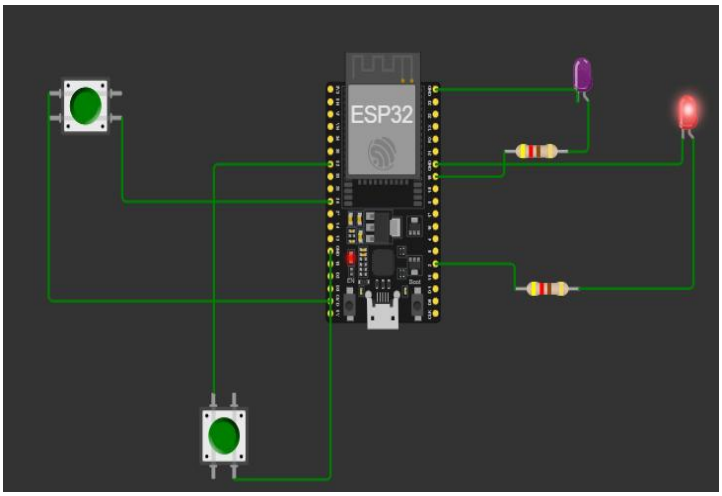
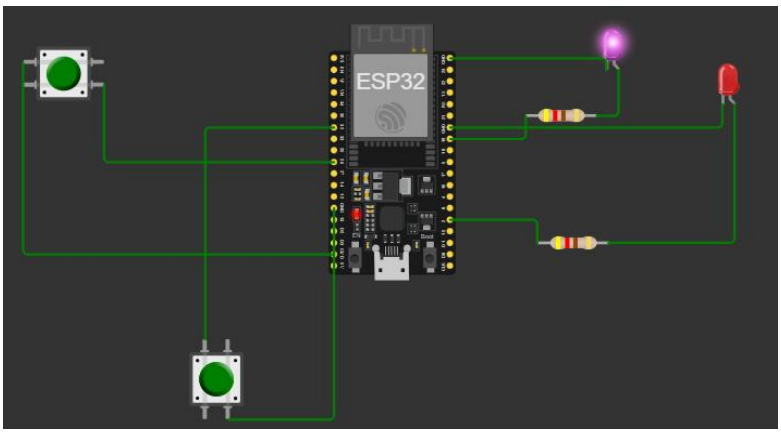

ESP32


ESP32


ESP32

LINK:

https://wokwi.com/projects/444074584480646145