

National Textile University, Faisalabad



Department of Computer Science

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Registration No:	23-NTU-CS-1074
Lab Report:	IOT
Course Code:	
Course Name:	IOT
Submitted To:	SIR NASIR
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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) {
```

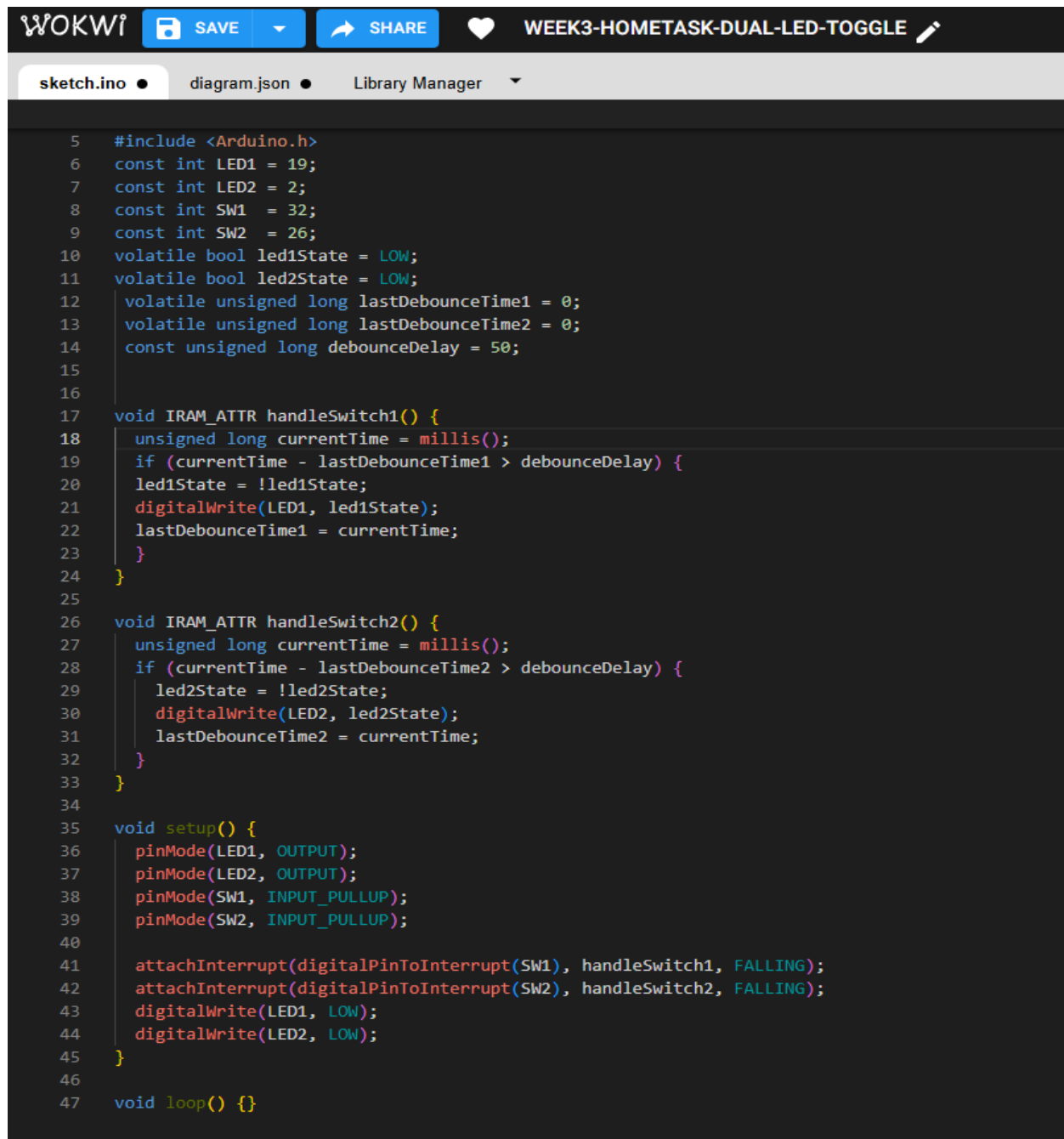
```
    led2State = !led2State;
    digitalWrite(LED2, led2State);
    lastDebounceTime2 = currentTime;
}
}

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);
}

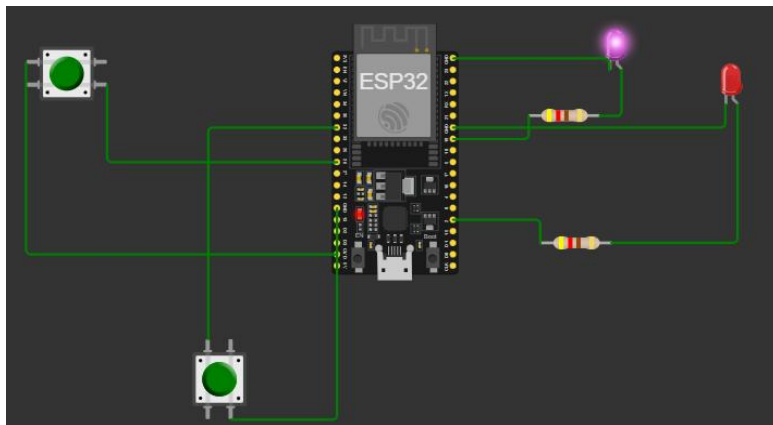
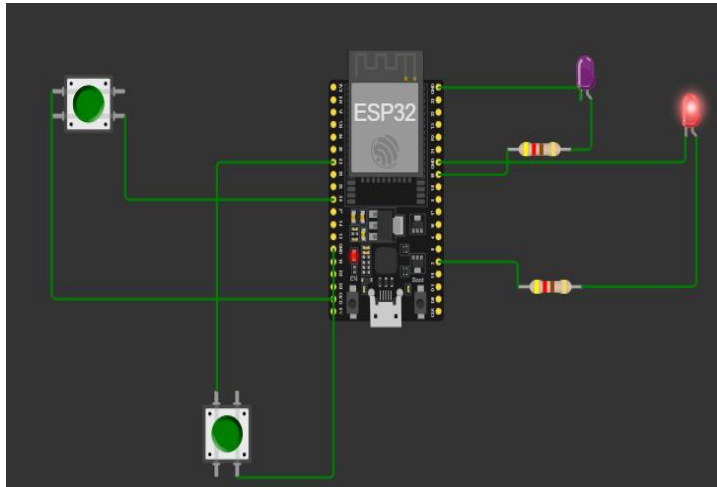
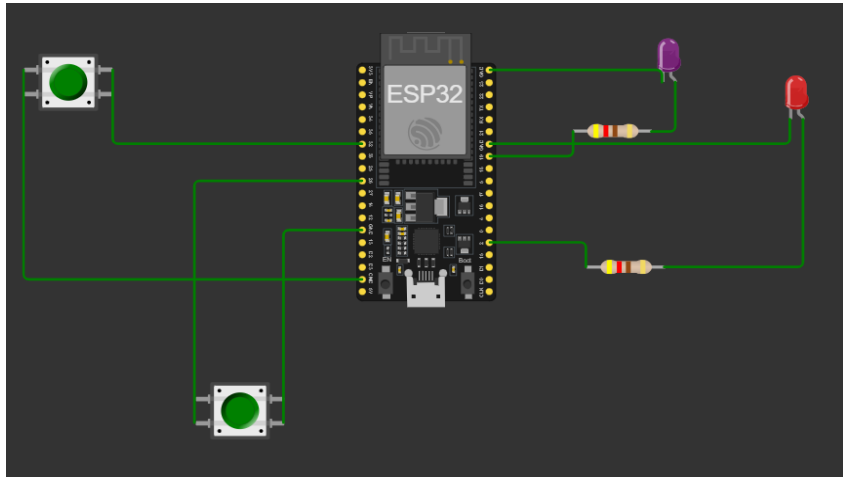
void loop() {}
```

SCREENSHOTS OF DIAGRAM AND CODE ON WOKWI:



The screenshot displays the Wokwi IDE interface. At the top, there's a header bar with the Wokwi logo, a 'SAVE' button, a 'SHARE' button, a heart icon, and the project name 'WEEK3-HOMETASK-DUAL-LED-TOGGLE'. Below the header, a tab bar shows 'sketch.ino' as the active file, with 'diagram.json' and 'Library Manager' also visible. The main area contains the Arduino C++ code for a dual-LED toggle project. The code includes headers, pin definitions, state variables, debounce timing, interrupt service routines for two switches, and setup/loop functions.

```
5  #include <Arduino.h>
6  const int LED1 = 19;
7  const int LED2 = 2;
8  const int SW1 = 32;
9  const int SW2 = 26;
10 volatile bool led1State = LOW;
11 volatile bool led2State = LOW;
12 volatile unsigned long lastDebounceTime1 = 0;
13 volatile unsigned long lastDebounceTime2 = 0;
14 const unsigned long debounceDelay = 50;
15
16
17 void IRAM_ATTR handleSwitch1() {
18     unsigned long currentTime = millis();
19     if (currentTime - lastDebounceTime1 > debounceDelay) {
20         led1State = !led1State;
21         digitalWrite(LED1, led1State);
22         lastDebounceTime1 = currentTime;
23     }
24 }
25
26 void IRAM_ATTR handleSwitch2() {
27     unsigned long currentTime = millis();
28     if (currentTime - lastDebounceTime2 > debounceDelay) {
29         led2State = !led2State;
30         digitalWrite(LED2, led2State);
31         lastDebounceTime2 = currentTime;
32     }
33 }
34
35 void setup() {
36     pinMode(LED1, OUTPUT);
37     pinMode(LED2, OUTPUT);
38     pinMode(SW1, INPUT_PULLUP);
39     pinMode(SW2, INPUT_PULLUP);
40
41     attachInterrupt(digitalPinToInterrupt(SW1), handleSwitch1, FALLING);
42     attachInterrupt(digitalPinToInterrupt(SW2), handleSwitch2, FALLING);
43     digitalWrite(LED1, LOW);
44     digitalWrite(LED2, LOW);
45 }
46
47 void loop() {}
```



LINK:

<https://wokwi.com/projects/444074584480646145>