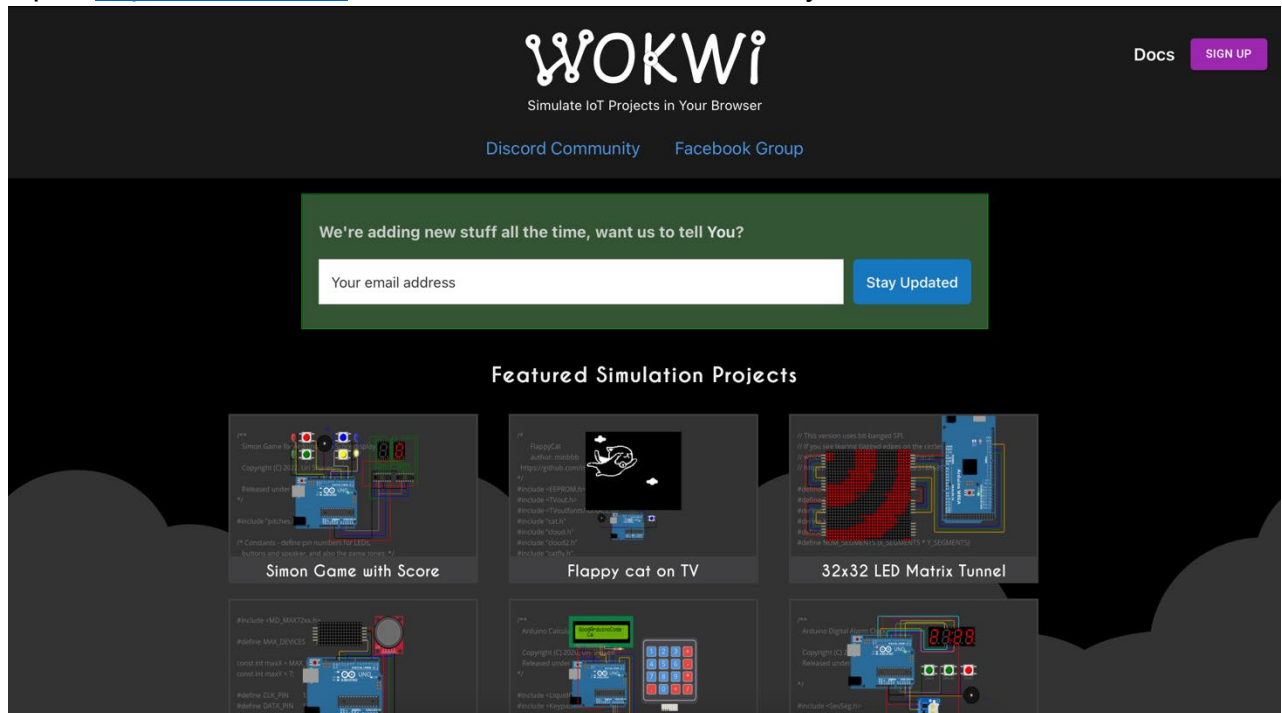


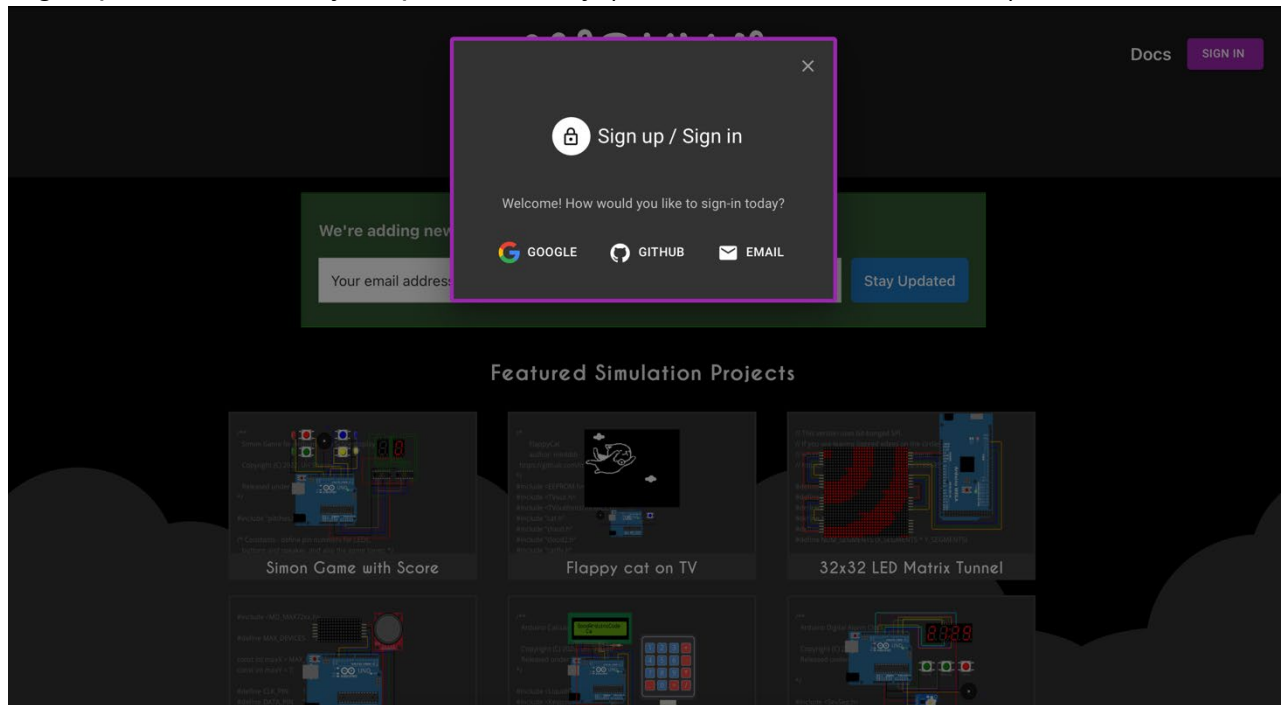
Name Chancheep Mahacharoensuk ID 6288092 [P1]

Sign Up

Open <https://wokwi.com> “Wokwi”, an online embedded systems simulator.

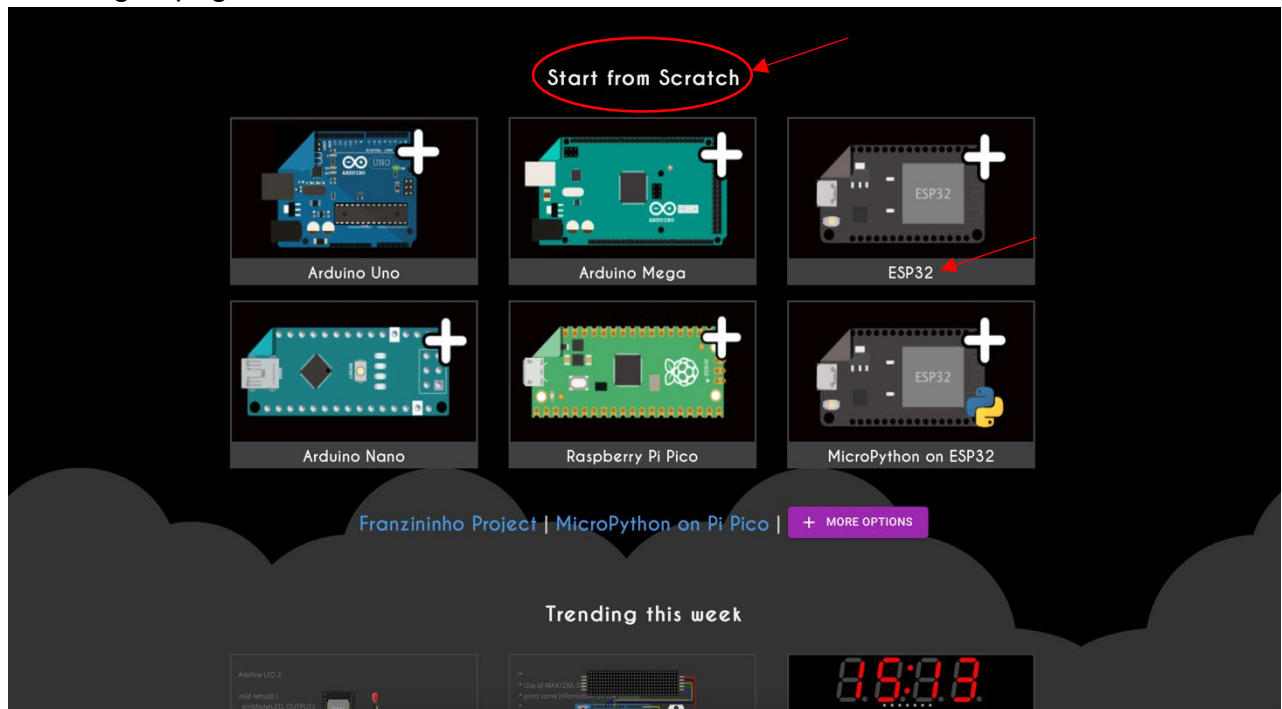


Sign up to Wokwi with your preferred way (GOOGLE, GITHUB, EMAIL).

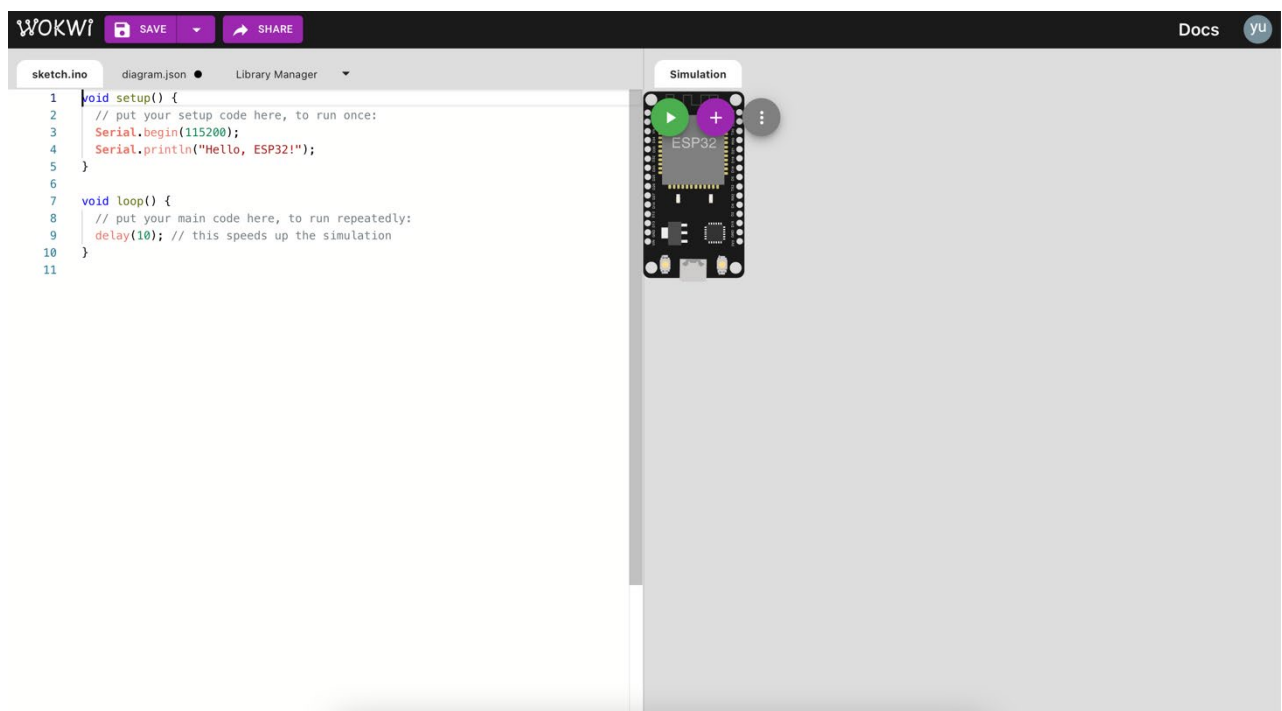


Name Chancheep Mahacharoensuk ID 6288092 [P2]

After Sign up, go to “Start from Scratch” section and choose “ESP32” board.




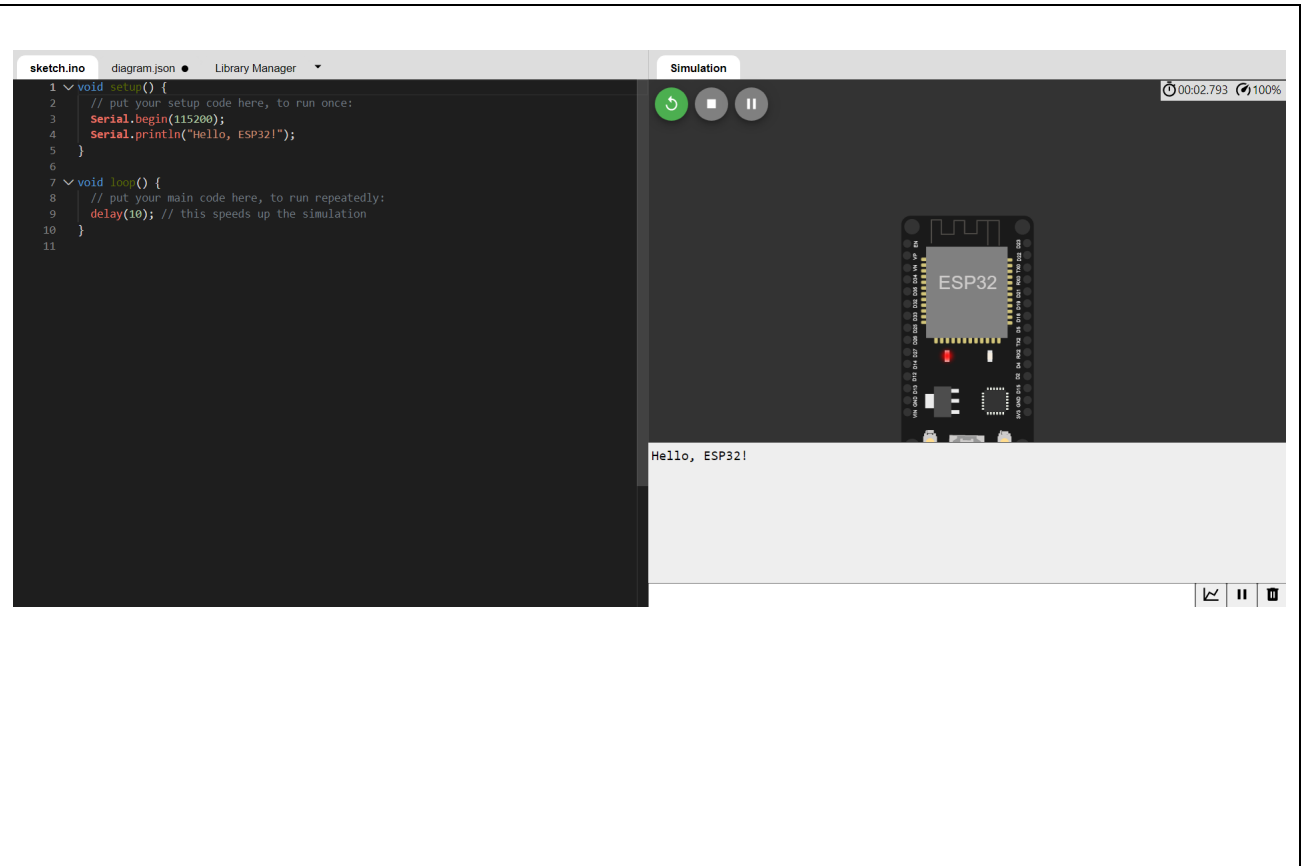
You will see as follow.



Name Chancheep Mahacharoensuk ID 6288092 [P3]

Exercise 1

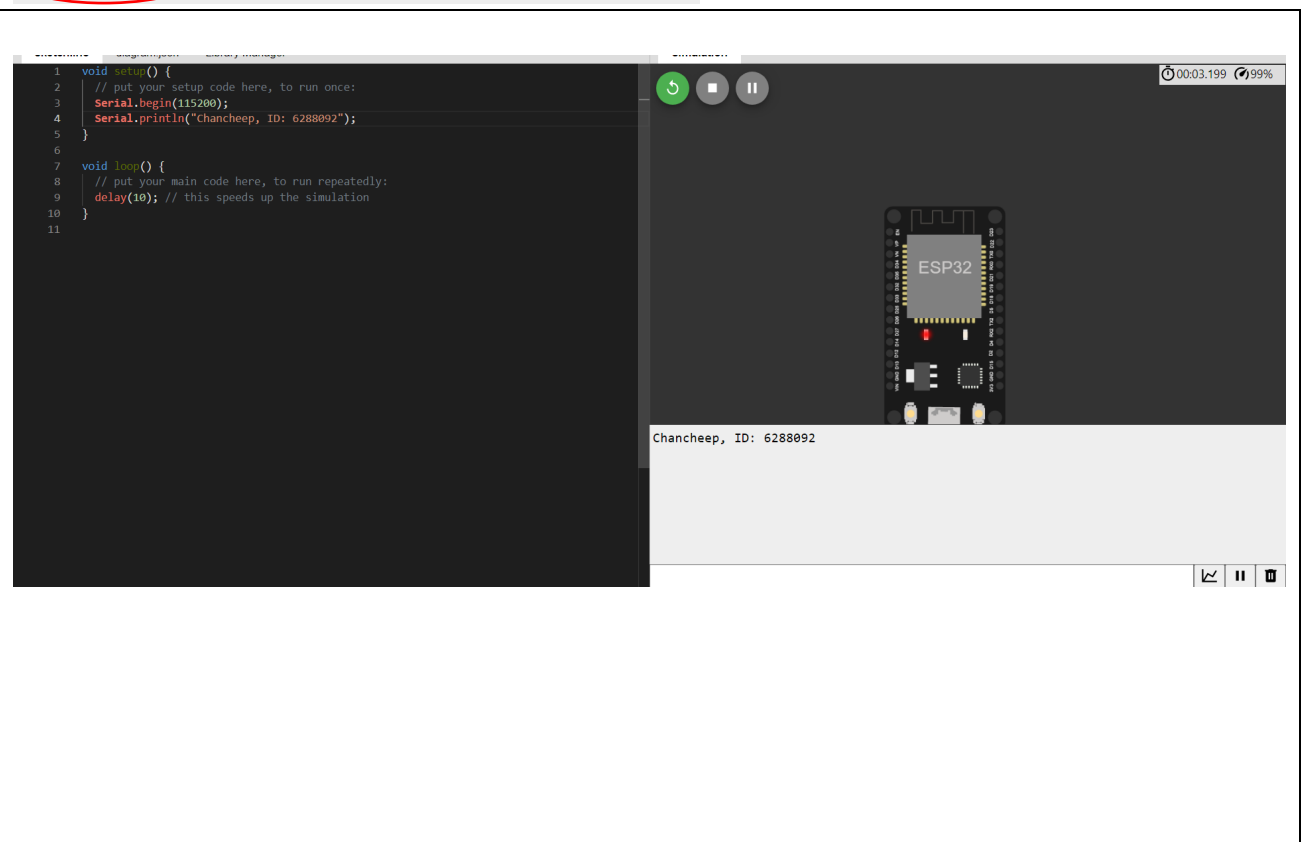
Click on the run button , what will happen? Show your screenshot result.



Name _____ Chanceep Mahacharoensuk _____ ID 6288092 _____ [P4]


Exercise 2

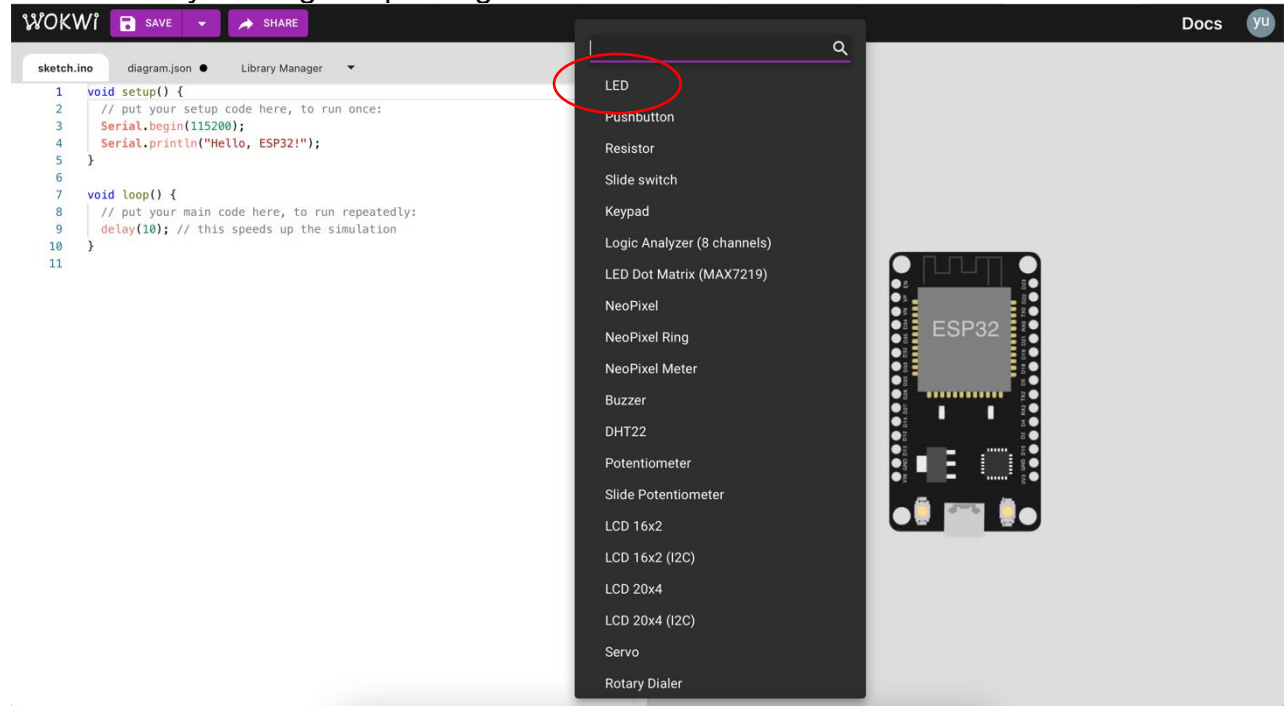
How to do in order to get “Your Name and Your student ID” as followed output? Show your screenshot result.



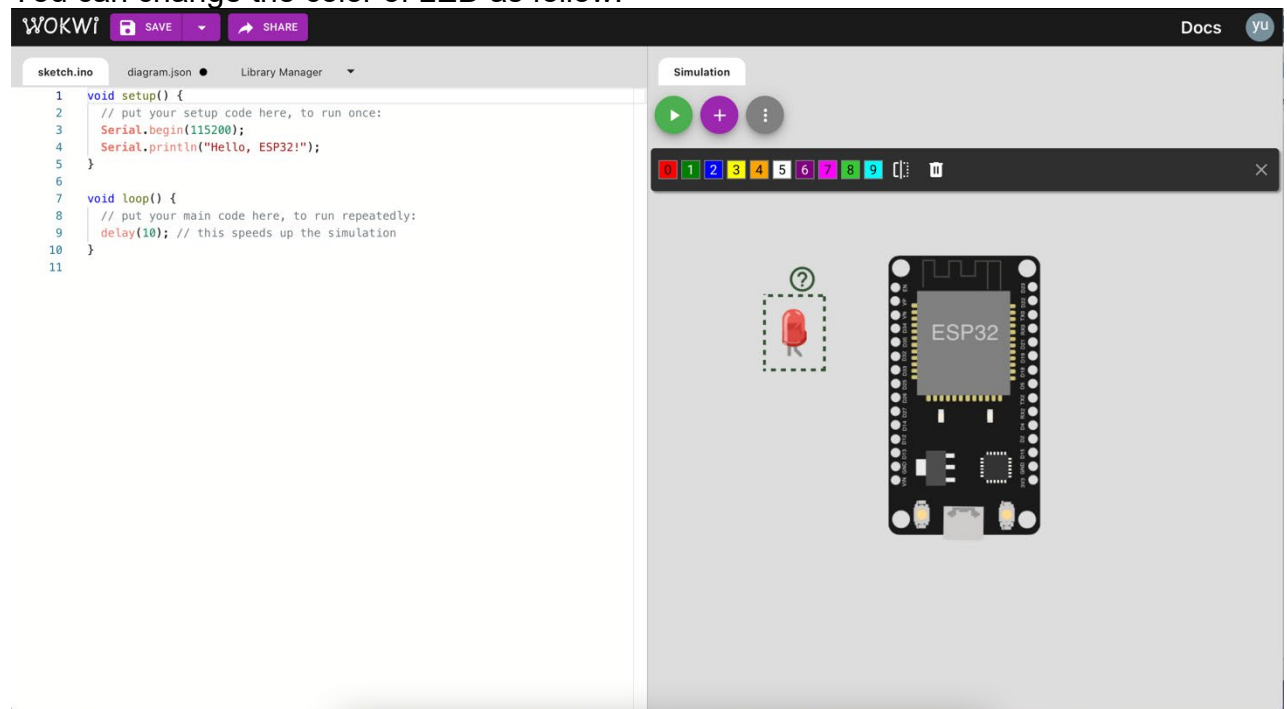
Name Chancheep Mahacharoensuk ID 6288092 [P5]

LED blinking

Add “LED” by clicking this plus sign  and choose LED.

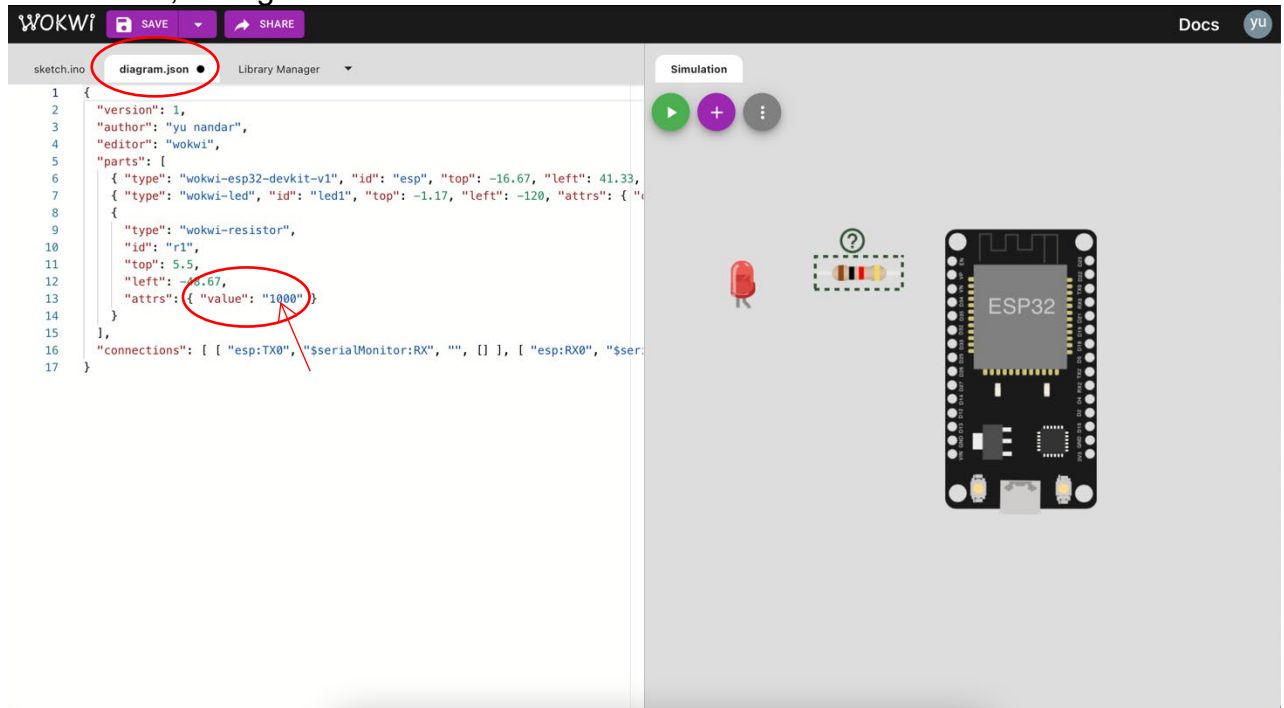


You can change the color of LED as follow.

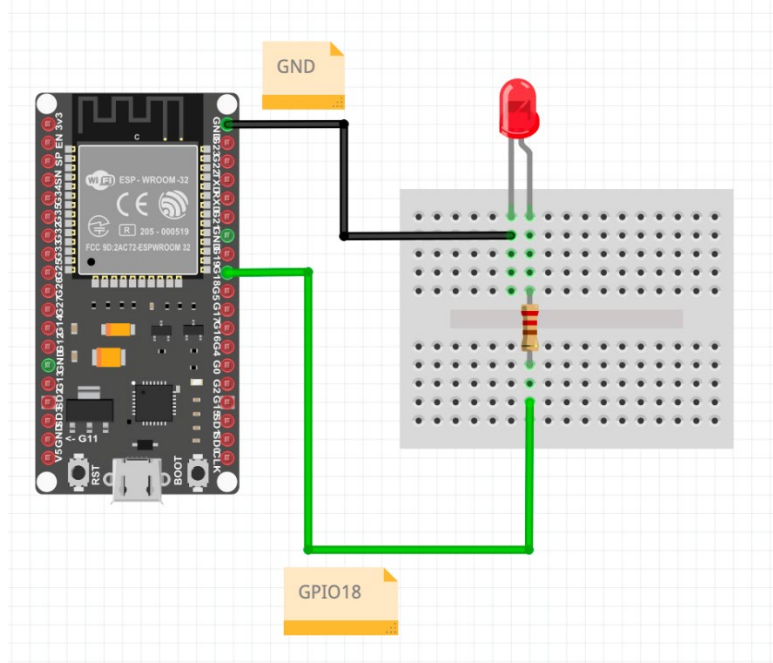


Name Chancheep Mahacharoensuk ID 6288092 [P6]

Add "Resistor" also. To modify the value of resistance, go to "diagram.json" tab. The default value of resistance is in "Ohms". For LED blinking exercise, we need 220 Ohms resistor. So, change its value to 220.





Connect ESP32, LED and resistor according to the following schematic.

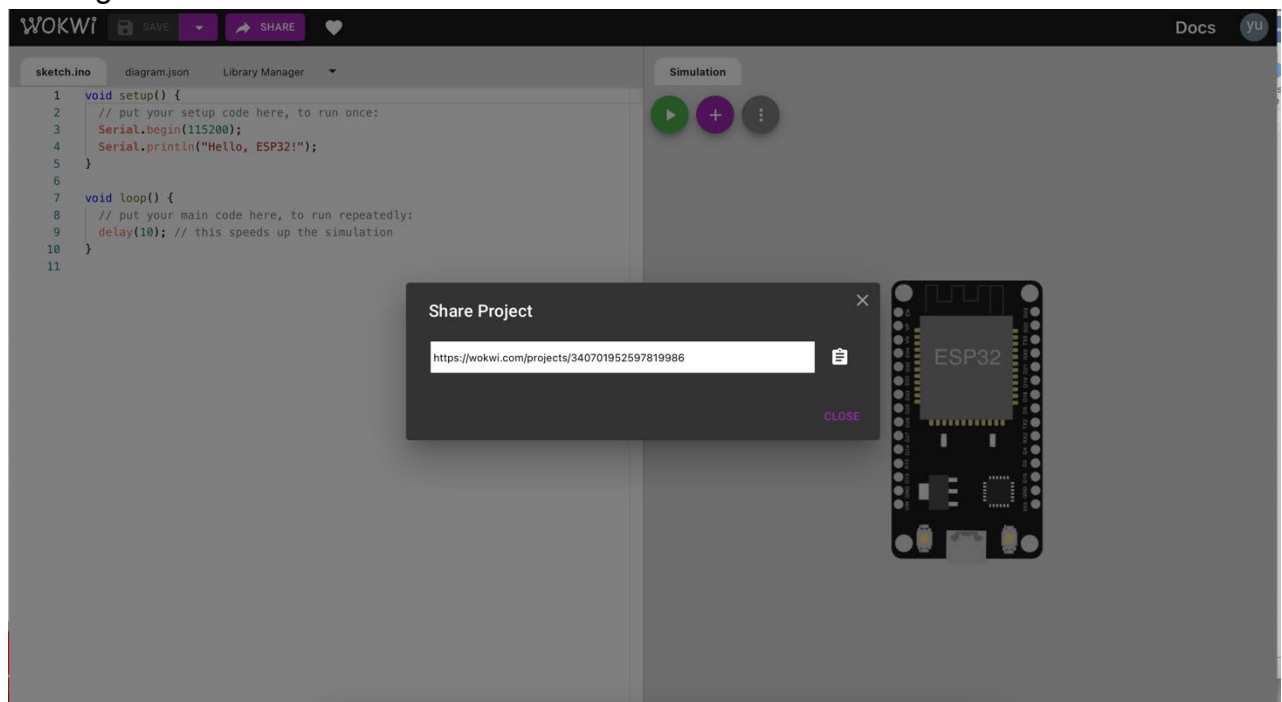


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Here is the code for LED blinking exercise.

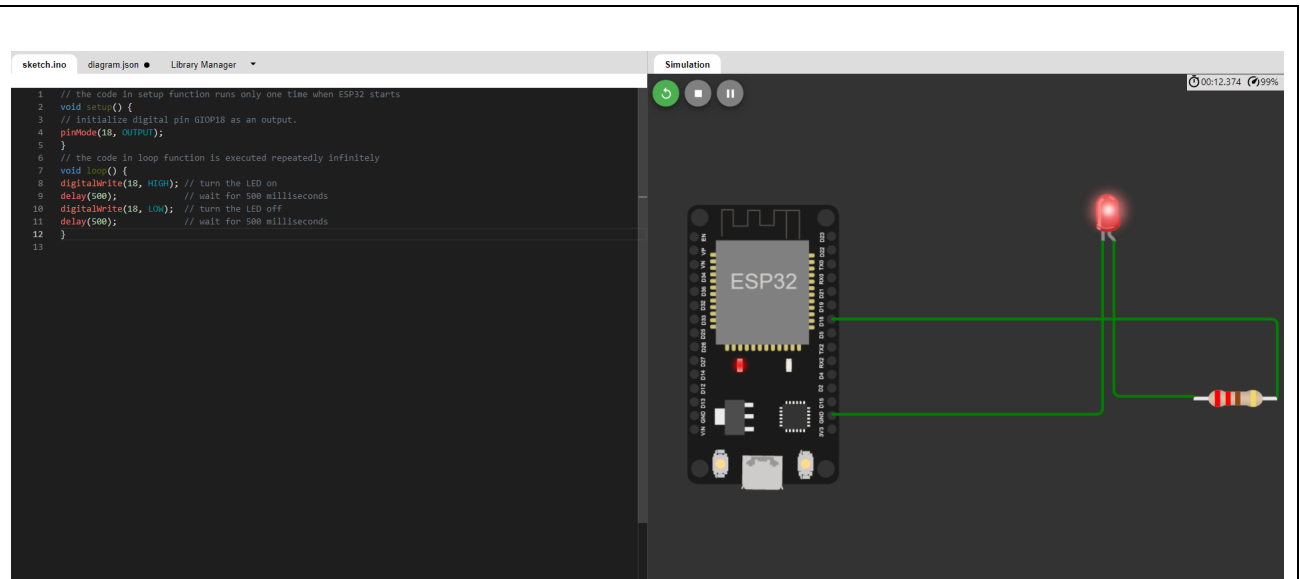
```
1. // the code in setup function runs only one time when ESP32 starts
2. void setup() {
3. // initialize digital pin GPIO18 as an output.
4. pinMode(18, OUTPUT);
5. }
6. // the code in loop function is executed repeatedly infinitely
7. void loop() {
8. digitalWrite(18, HIGH); // turn the LED on
9. delay(500);             // wait for 500 milliseconds
10. digitalWrite(18, LOW);  // turn the LED off
11. delay(500);            // wait for 500 milliseconds
12. }
```

To share your Wokwi project, save  your project first and then you can share by clicking this share button .

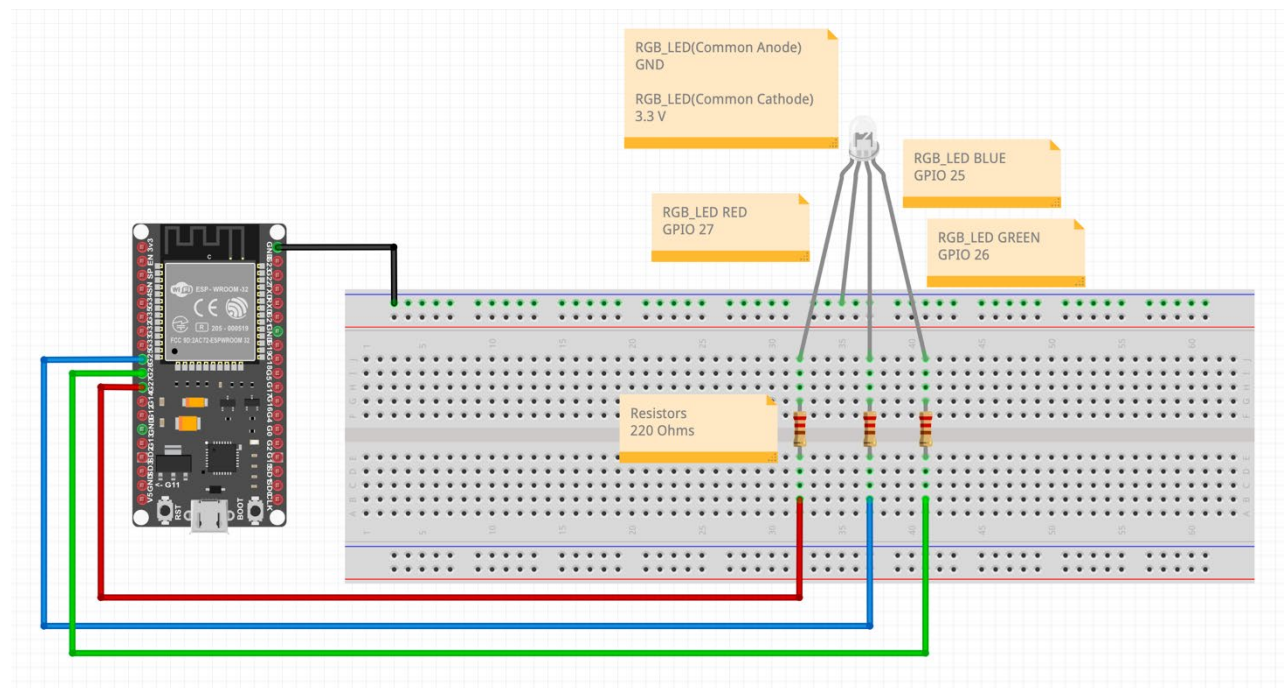


Name Chancheep Mahacharoensuk ID 6288092 [P8]**Exercise 3**

Your Wokwi project link for “LED blinking”.

<https://wokwi.com/projects/340784110368719444>**RGB-LED blinking**

Circuit schematic



Name Chancheep Mahacharoensuk ID 6288092 [P9]

Code

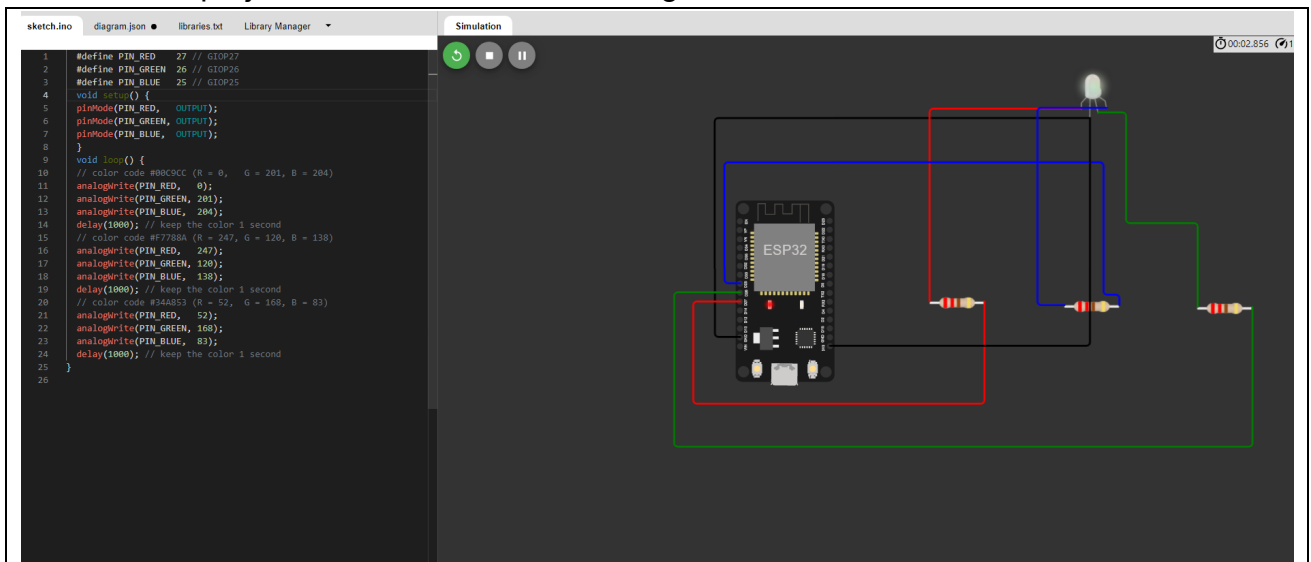
```

1. #define PIN_RED    27 // GPIO27
2. #define PIN_GREEN  26 // GPIO26
3. #define PIN_BLUE   25 // GPIO25
4. void setup() {
5.   pinMode(PIN_RED,   OUTPUT);
6.   pinMode(PIN_GREEN, OUTPUT);
7.   pinMode(PIN_BLUE,  OUTPUT);
8. }
9. void loop() {
10. // color code #00C9CC (R = 0,   G = 201, B = 204)
11. analogWrite(PIN_RED,   0);
12. analogWrite(PIN_GREEN, 201);
13. analogWrite(PIN_BLUE,  204);
14. delay(1000); // keep the color 1 second
15. // color code #F7788A (R = 247, G = 120, B = 138)
16. analogWrite(PIN_RED,   247);
17. analogWrite(PIN_GREEN, 120);
18. analogWrite(PIN_BLUE,  138);
19. delay(1000); // keep the color 1 second
20. // color code #34A853 (R = 52,   G = 168, B = 83)
21. analogWrite(PIN_RED,   52);
22. analogWrite(PIN_GREEN, 168);
23. analogWrite(PIN_BLUE,  83);
24. delay(1000); // keep the color 1 second
25. }

```

Exercise 4

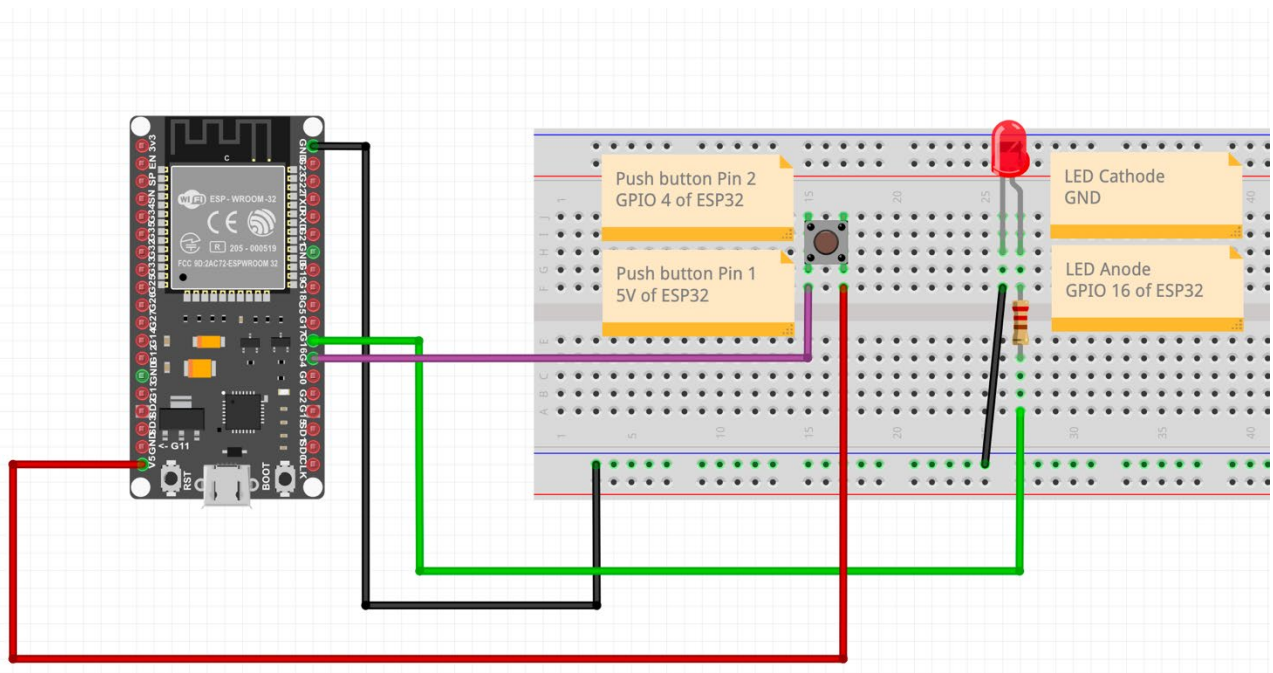
Your Wokwi project link for “RGB-LED blinking”.


<https://wokwi.com/projects/340786905469682260>
Remark: Color code R,G,B values are used from W3 school tutorial

Name Chancheep Mahacharoensuk ID 6288092 [P10]

https://www.w3schools.com/colors/colors_hexadecimal.asp. You can also change or add more colours.

Pull up/ Pull down Circuit schematic



Code

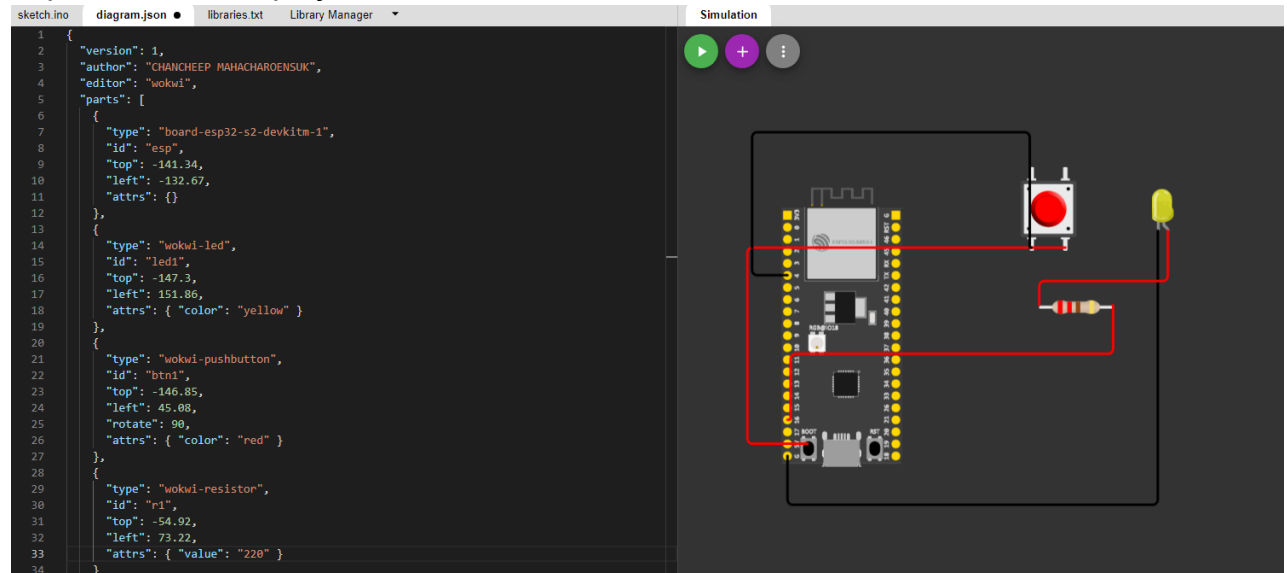
```
1. #include <Toggle.h>
2. const byte buttonPin = 4;
3. const byte ledPin = 16;
4. const unsigned int blinkMs = 100; // blink duration (ms)
5. const byte blinkMode = 1; // 0: on change, 1: on press (default), 2: on release
6. Toggle button(buttonPin);
7. void setup() {
8.   button.begin(buttonPin);
9.   button.setInputInvert(1);
10.  pinMode(buttonPin, INPUT_PULLDOWN);
11.  pinMode(ledPin, OUTPUT);
12. }
13. void loop() {
14.   button.poll();
15.   digitalWrite(ledPin, button.blink(blinkMs, blinkMode));
16.   delay(1);
17. }
```

Name Chancheep Mahacharoensuk ID 6288092 [P11]

Exercise 5

What will happen, if we change “INPUT_PULLDOWN” to “INPUT_PULLUP” at Line 10? How about if we change “INPUT_PULLDOWN” to “INPUT” at Line 10 also? Explain your findings. Your Wokwi project link for “Pull up/ Pull down”.

<https://wokwi.com/projects/340787276766249555>



Ans: When change to Pullup, nothing happens but if change to input it will light. Since, input must be on click as the standard.

Remark: Not all GPIOs on an ESP32 have pullup and pulldown resistors.

References

<https://www.hackster.io/Hack-star-Arduino/esp32-online-systems-simulator-you-were-looking-for-2022-327d42>

<https://docs.wokwi.com/guides/esp32>

<https://esp32io.com/tutorials/esp32-rgb-led>

<https://esp32io.com/tutorials/esp32-led-blink>

https://www.w3schools.com/colors/colors_hexadecimal.asp

<https://github.com/Dlloyddev/Toggle>