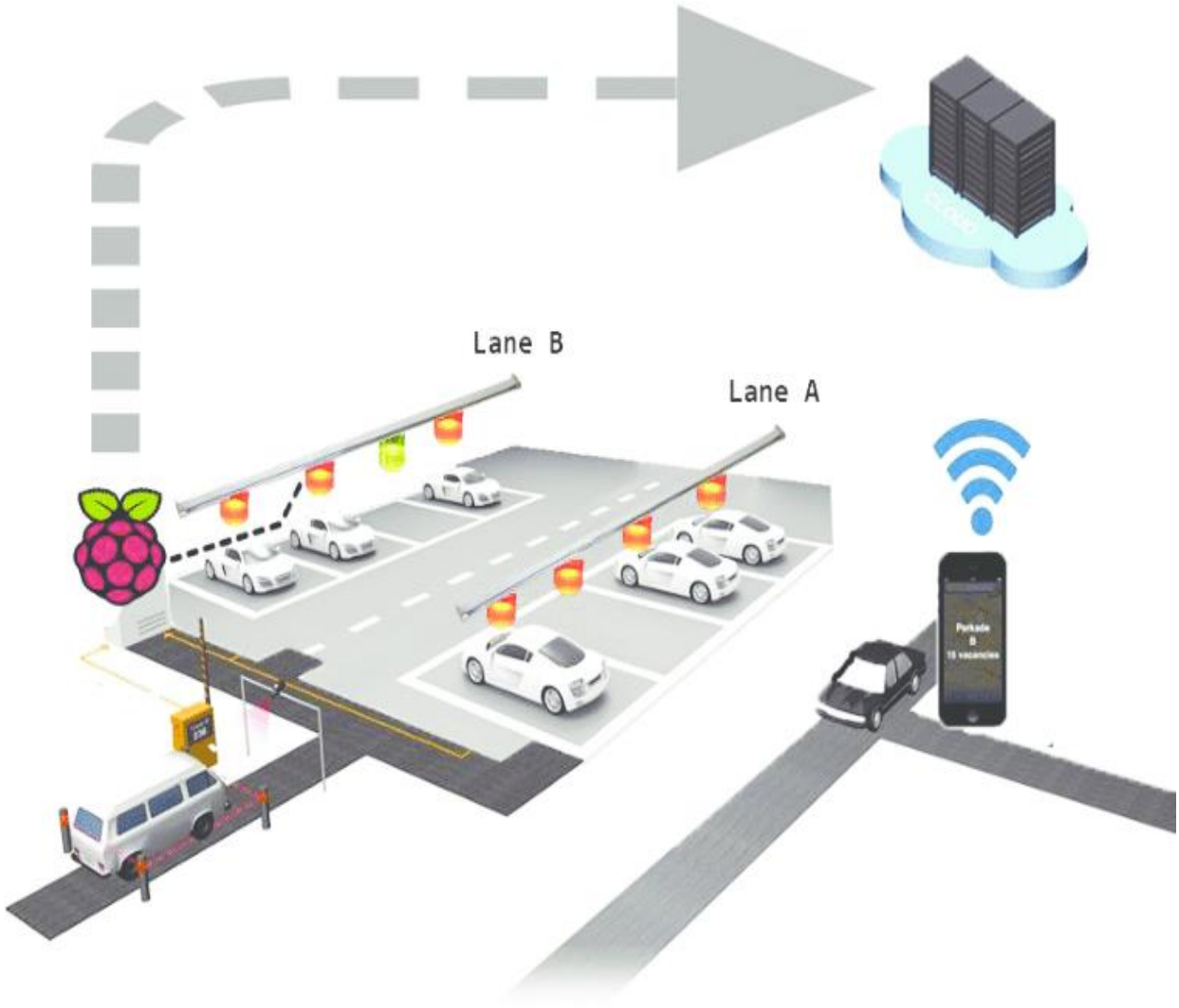
DEVELOPMENT PART 1

SMART PARKING



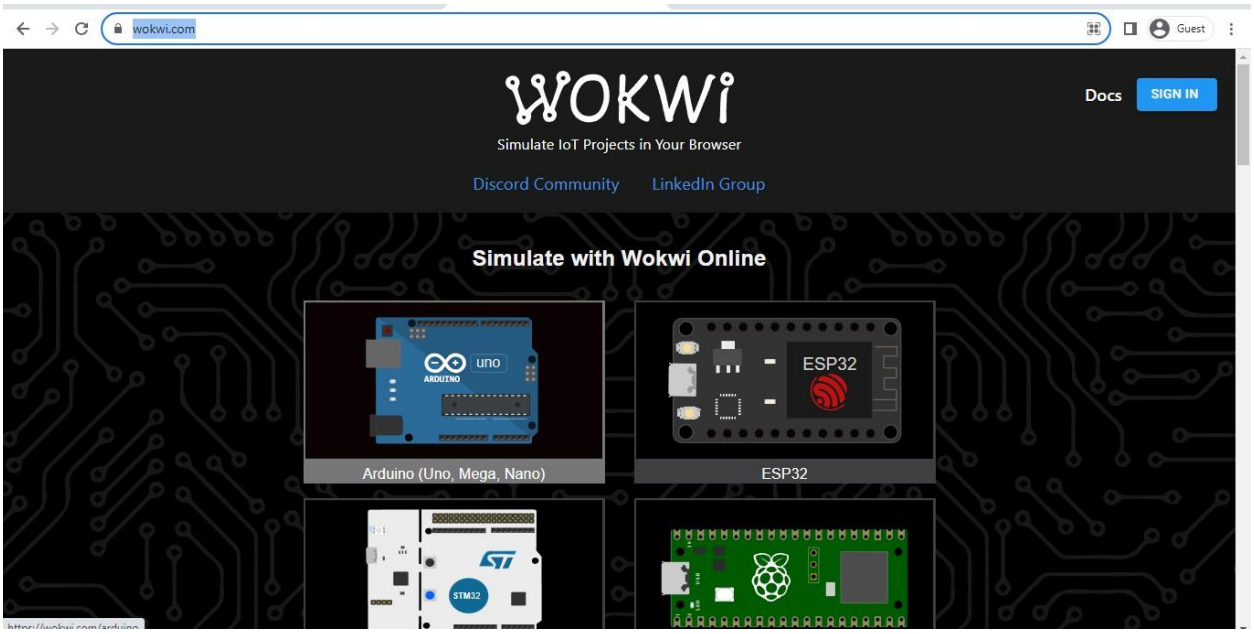
TEAM DETAILS

Mentor	Mrs.M.Maheswari
Leader	Monika M
Members	Anupriya R Bhavani G Divyabharathi C L Kanimozhi S
Problem Description	We will start building the IOT sensors to detect parking space occupancy. We will simulate in a Wokwi platform.

STEPS TO SIMULATE:

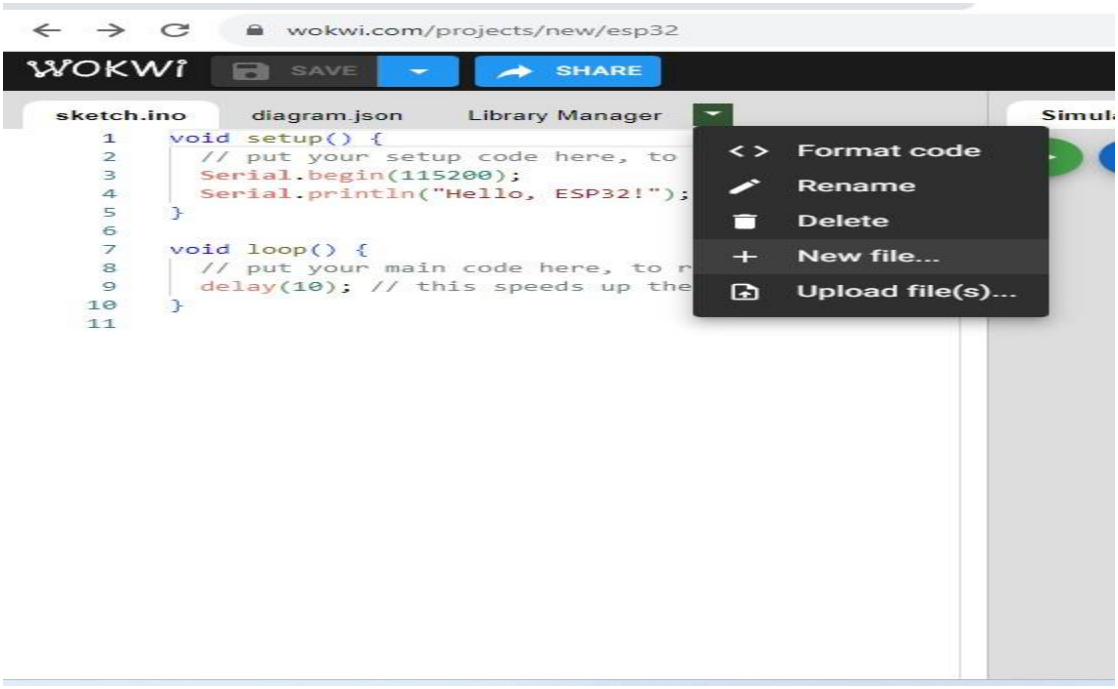
Step 1:Access wokwi

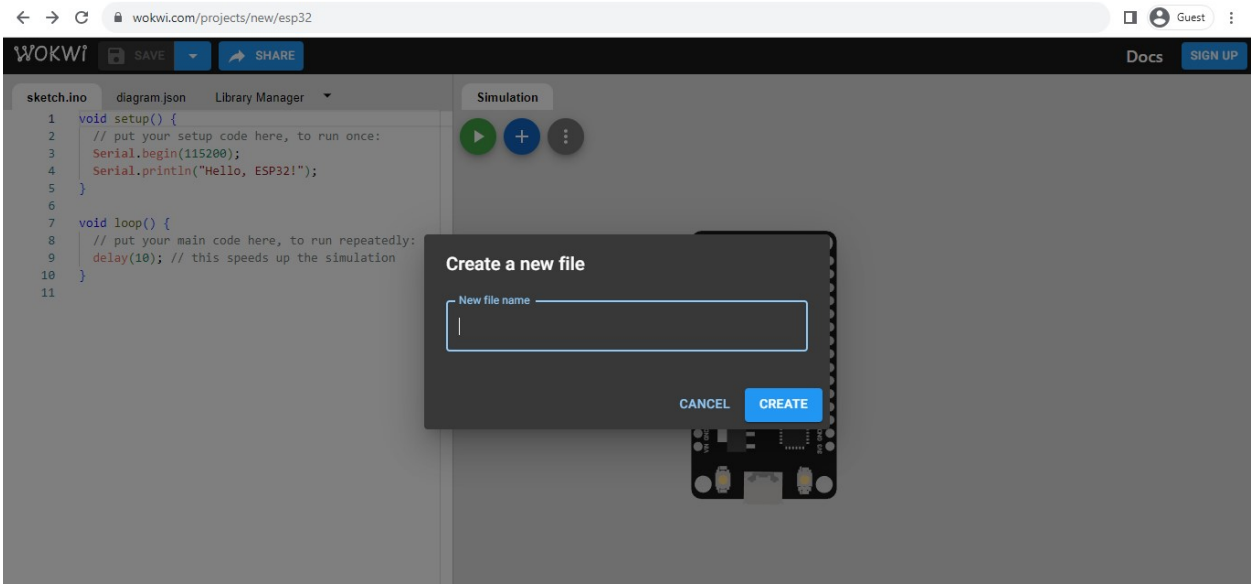
- Go to the wokwi website(https://wokwi.com/)



Step 2: Create a New Project

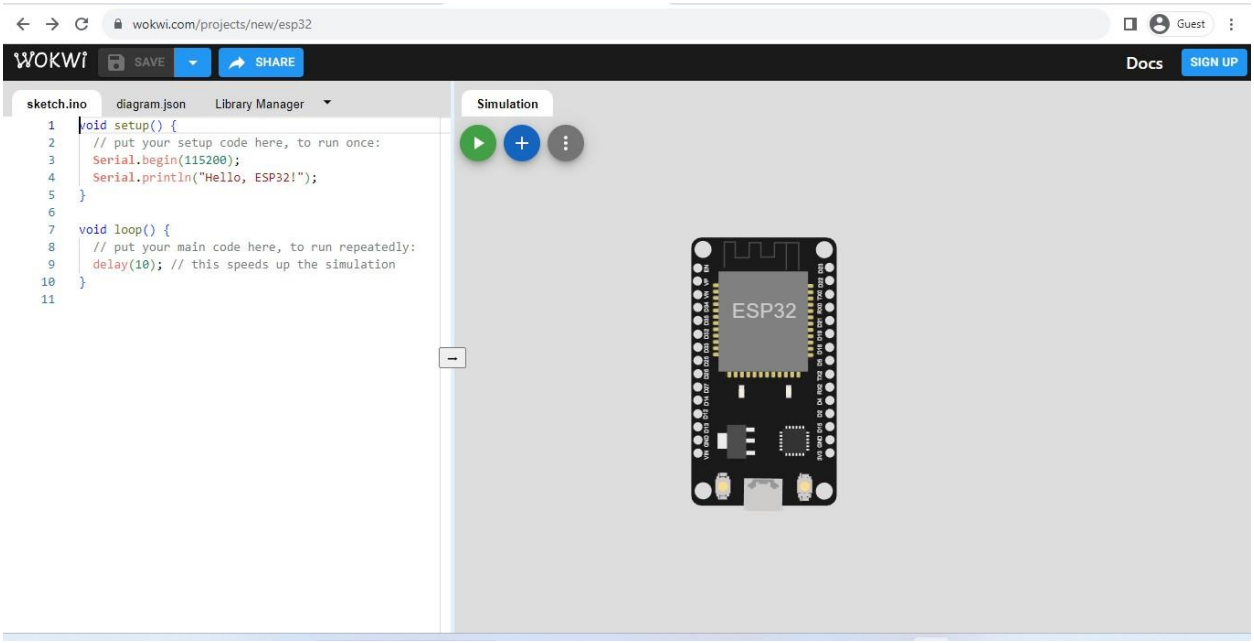
- Click on “create a new project”



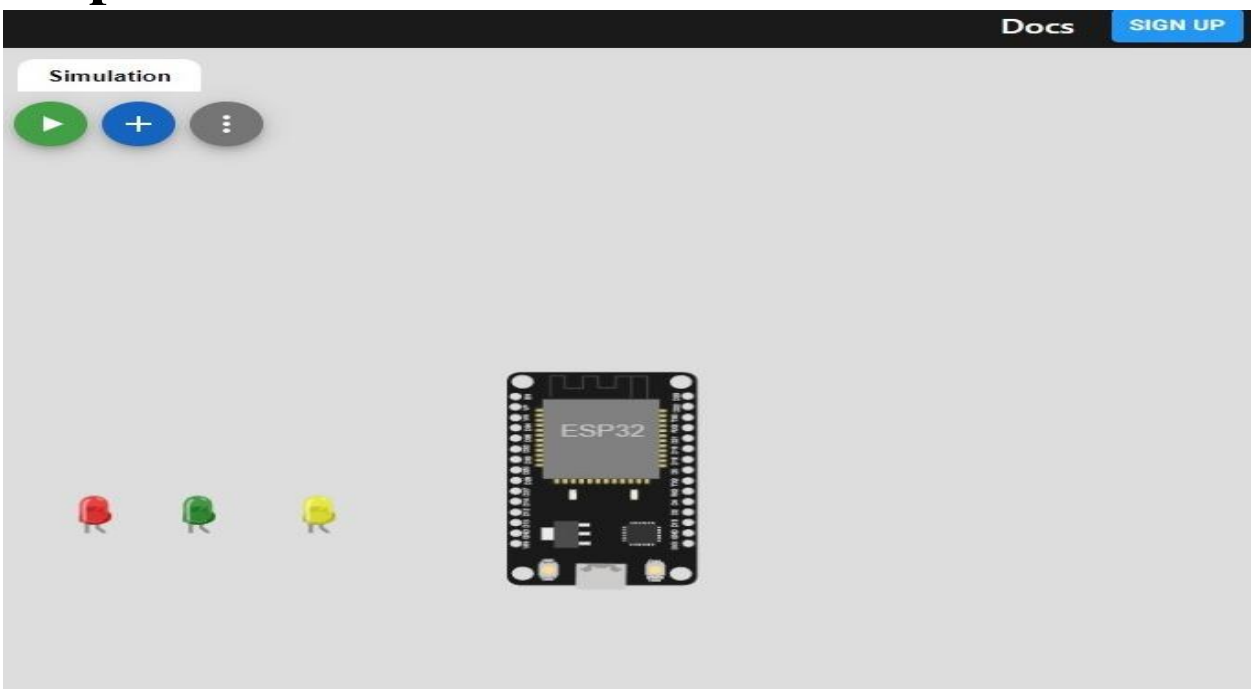


Step 3: Add components

- In the components panel,search for “ESP32” and drag it onto the virtual breadboard.

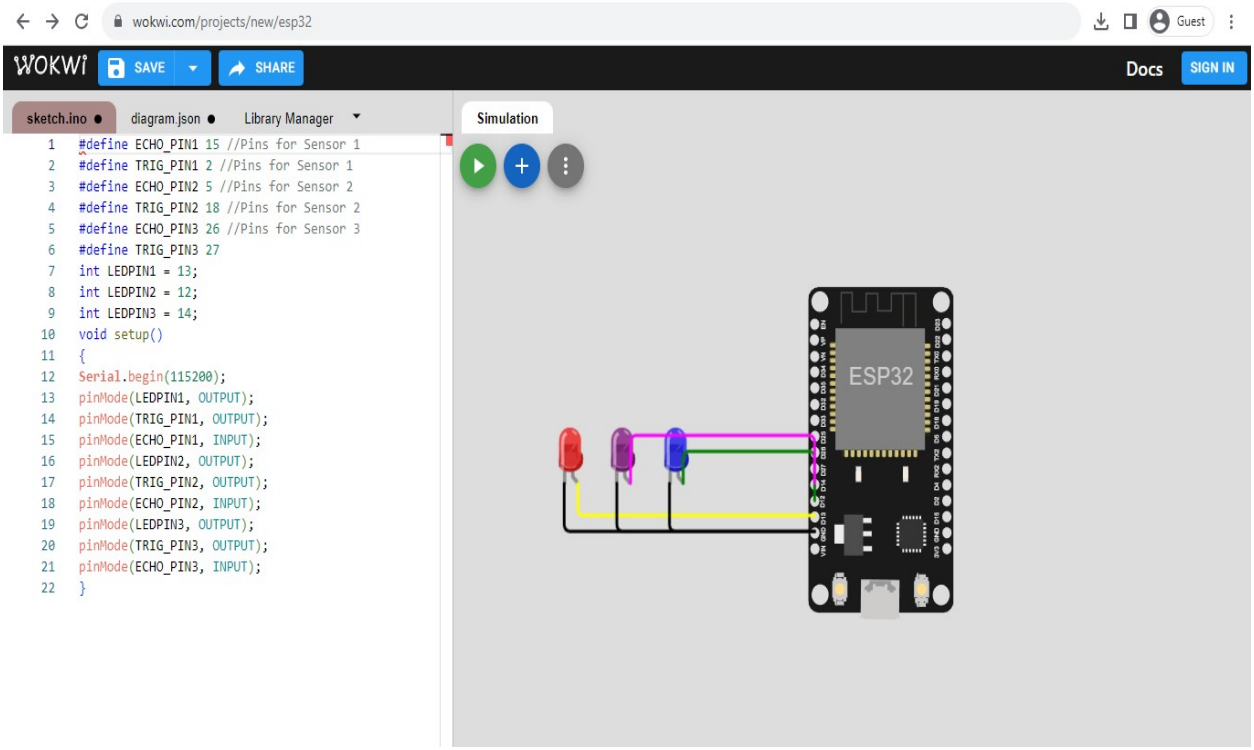


Step 4: Add a LED

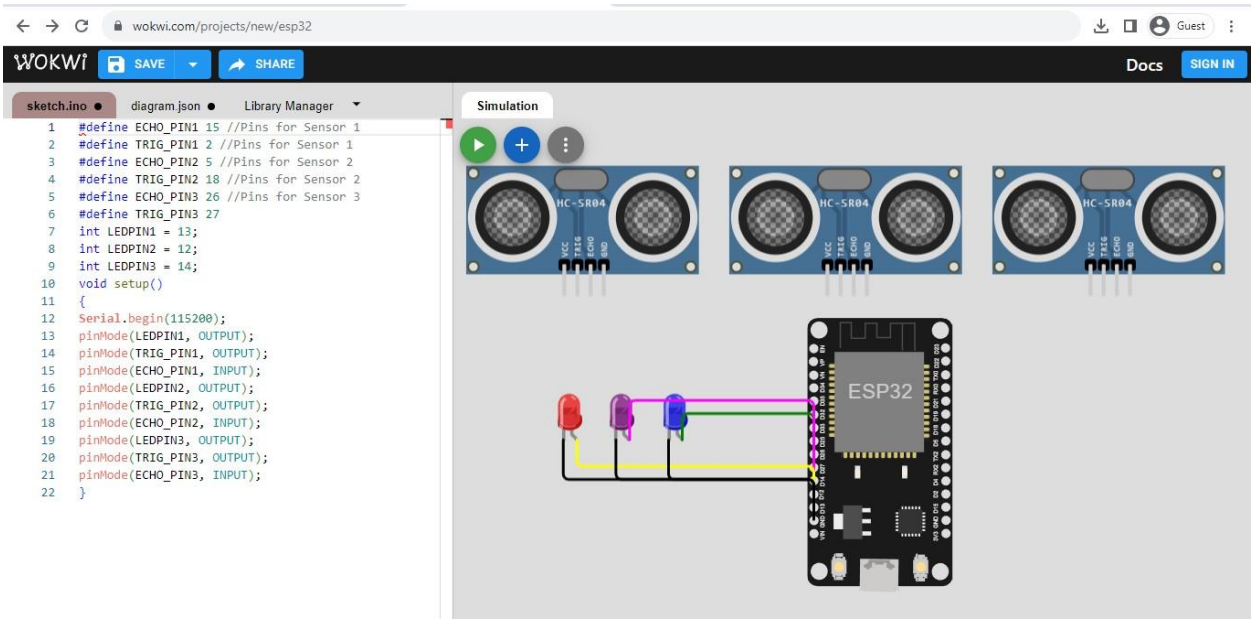


CONNECTIONS TO LED:

- Connect led1 cathode to GND2 pin of ESP32
- Connect led1 anode to D13 pin of ESP32
- Connect led2 cathode to GND2 pin of ESP32
- Connect led2 anode to D14 pin of ESP32
- Connect led3 cathode to GND2 pin of ESP32
- Connect led3 anode to D12 pin of ESP32

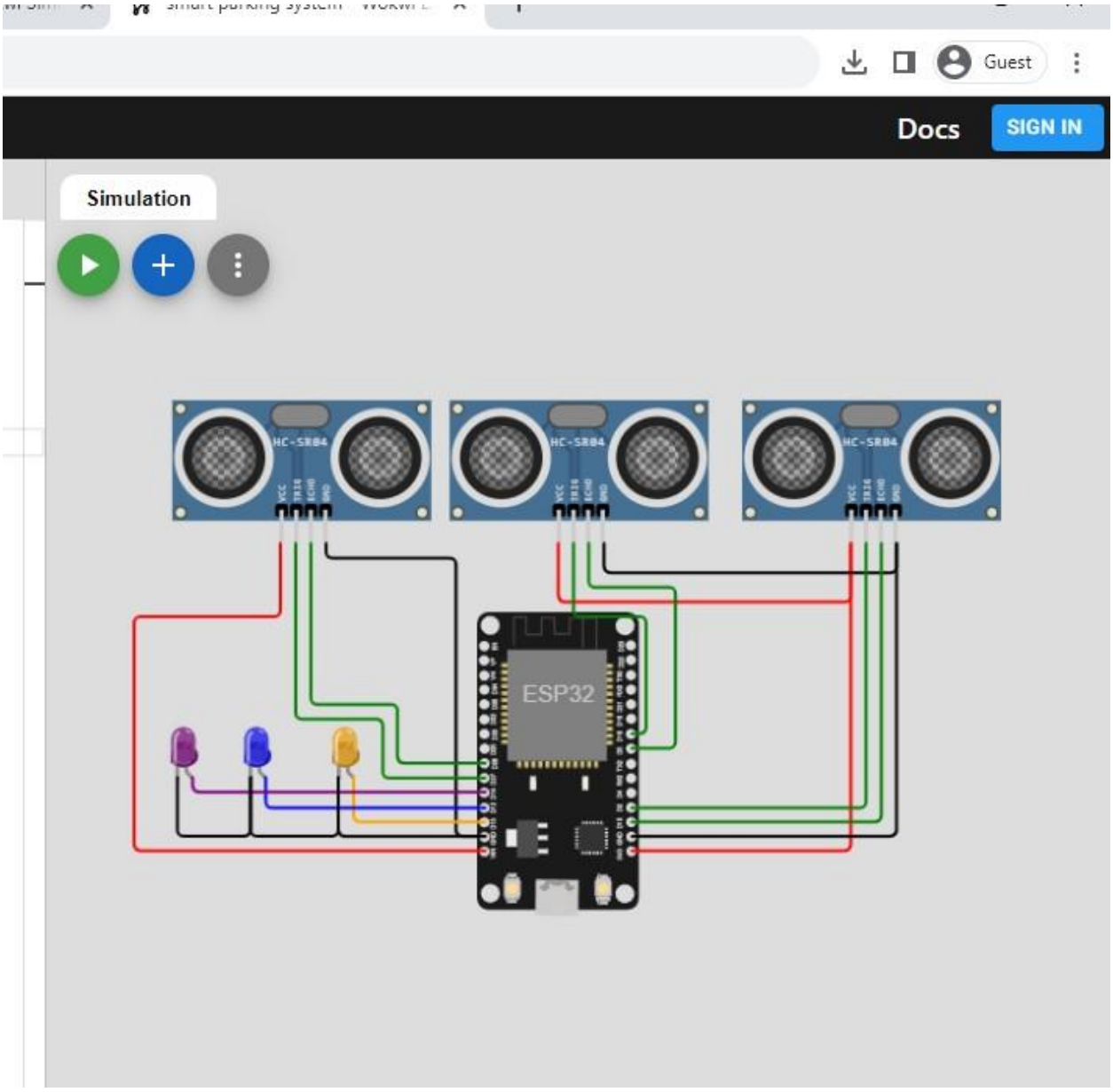


Step 5: Add a HC-S04 Ultrasonic sensor



CONNECTIONS TO HC-S04 ULTRASONIC SENSOR

- Connect ultrasonic1 VCC pin to ESP32 VIN
- Connect ultrasonic1 TRIG pin to ESP32 D27
- Connect ultrasonic1 ECHO pin to ESP32 D26
- Connect ultrasonic1 GND pin to ESP32 GND2
- Connect ultrasonic2 VCC pin to ESP32 3V3
- Connect ultrasonic2 TRIG pin to ESP32 D18
- Connect ultrasonic2 ECHO pin to ESP32 D5
- Connect ultrasonic2 GND pin to ESP32 GND1
- Connect ultrasonic3 VCC pin to ESP32 3V3
- Connect ultrasonic3 TRIG pin to ESP32 D2
- Connect ultrasonic3 ECHO pin to ESP32 D15
- Connect ultrasonic3 GND pin to ESP32 GND1


Guest
Docs
SIGN IN
Simulation
HC-SR04
HC-SR04
HC-SR04
ESP32

Step 6: code

- Click on the “code” tab in wokwi to access the code editor.

```
#define ECHO_PIN1 15 //Pins for Sensor 1
#define TRIG_PIN1 2 //Pins for Sensor 1
#define ECHO_PIN2 5 //Pins for Sensor 2
#define TRIG_PIN2 18 //Pins for Sensor 2
#define ECHO_PIN3 26 //Pins for Sensor 3
#define TRIG_PIN3 27 //Pins for Sensor 3
int LEDPIN1 = 13;
int LEDPIN2 = 12;
int LEDPIN3 = 14;
void setup()
{
Serial.begin(115200);
pinMode(LEDPIN1, OUTPUT);
pinMode(TRIG_PIN1, OUTPUT);
pinMode(ECHO_PIN1, INPUT);
pinMode(LEDPIN2, OUTPUT);
pinMode(TRIG_PIN2, OUTPUT);
pinMode(ECHO_PIN2, INPUT);
pinMode(LEDPIN3, OUTPUT);
pinMode(TRIG_PIN3, OUTPUT);
pinMode(ECHO_PIN3, INPUT);
}
float readDistance1CM()
{
digitalWrite(TRIG_PIN1, LOW);
delayMicroseconds(2);
digitalWrite(TRIG_PIN1, HIGH);
delayMicroseconds(10);
```

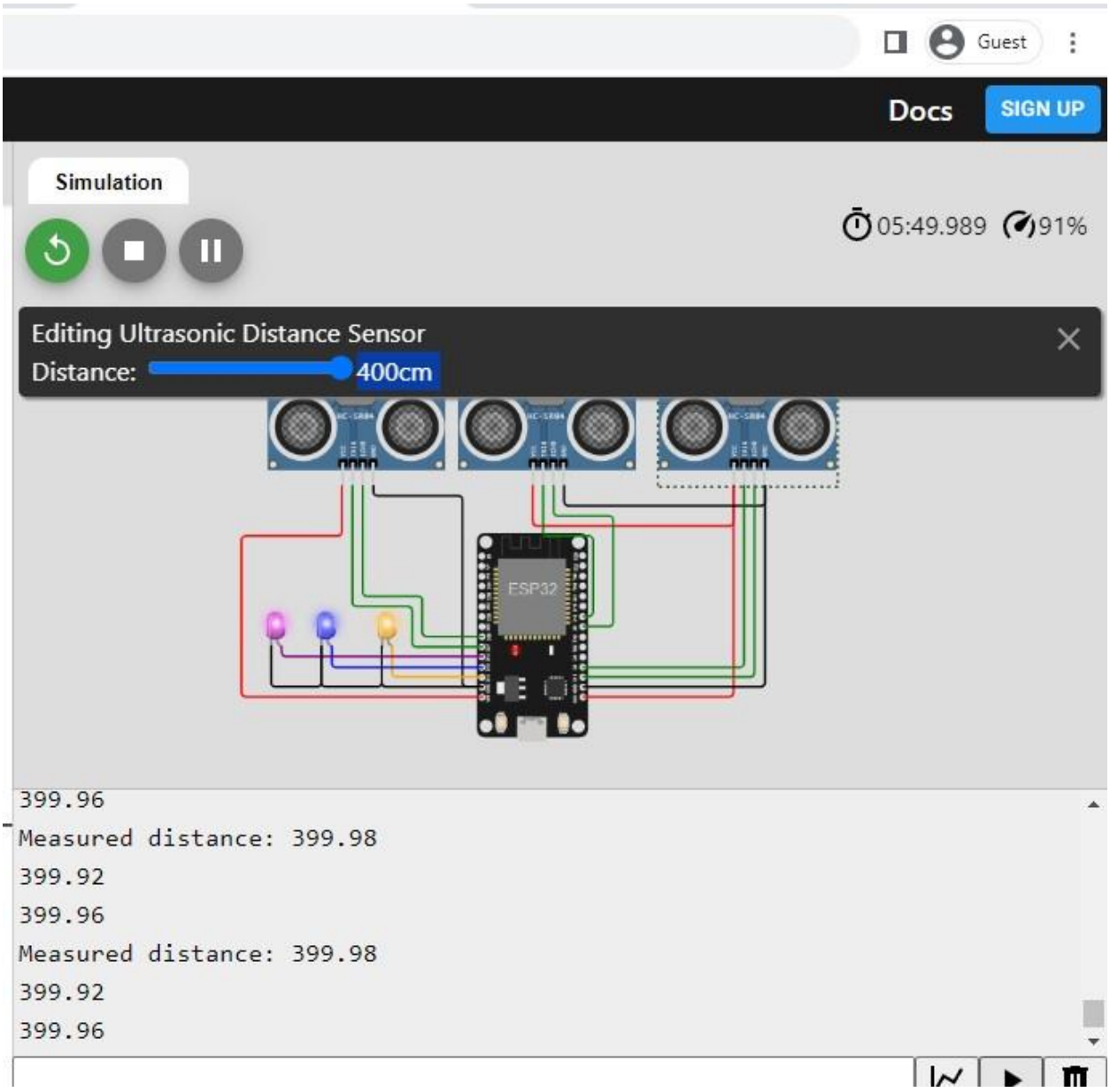
```
digitalWrite(TRIG_PIN1, LOW);
int duration = pulseIn(ECHO_PIN1, HIGH);
return duration * 0.034 /2 ;
}
float readDistance2CM()
{
digitalWrite(TRIG_PIN2, LOW);
delayMicroseconds(2);
digitalWrite(TRIG_PIN2, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN2, LOW);
int duration = pulseIn(ECHO_PIN2, HIGH);
return duration * 0.034 / 2;
}
float readDistance3CM() {
digitalWrite(TRIG_PIN3, LOW);
delayMicroseconds(2);
digitalWrite(TRIG_PIN3, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN3, LOW);
int duration = pulseIn(ECHO_PIN3, HIGH);
return duration * 0.034 / 2;
}
void loop()
{
float distance1 = readDistance1CM();
float distance2 = readDistance2CM();
float distance3 = readDistance3CM();
bool isNearby1 = distance1 > 200;
digitalWrite(LEDPIN1, isNearby1);
bool isNearby2 = distance2 > 200;
digitalWrite(LEDPIN2, isNearby2);
bool isNearby3 = distance3 > 200;
digitalWrite(LEDPIN3, isNearby3);
Serial.print("Measured distance: ");
```

```
Serial.println(readDistance1CM());
Serial.println(readDistance2CM());
Serial.println(readDistance3CM());
delay(100);
}
```

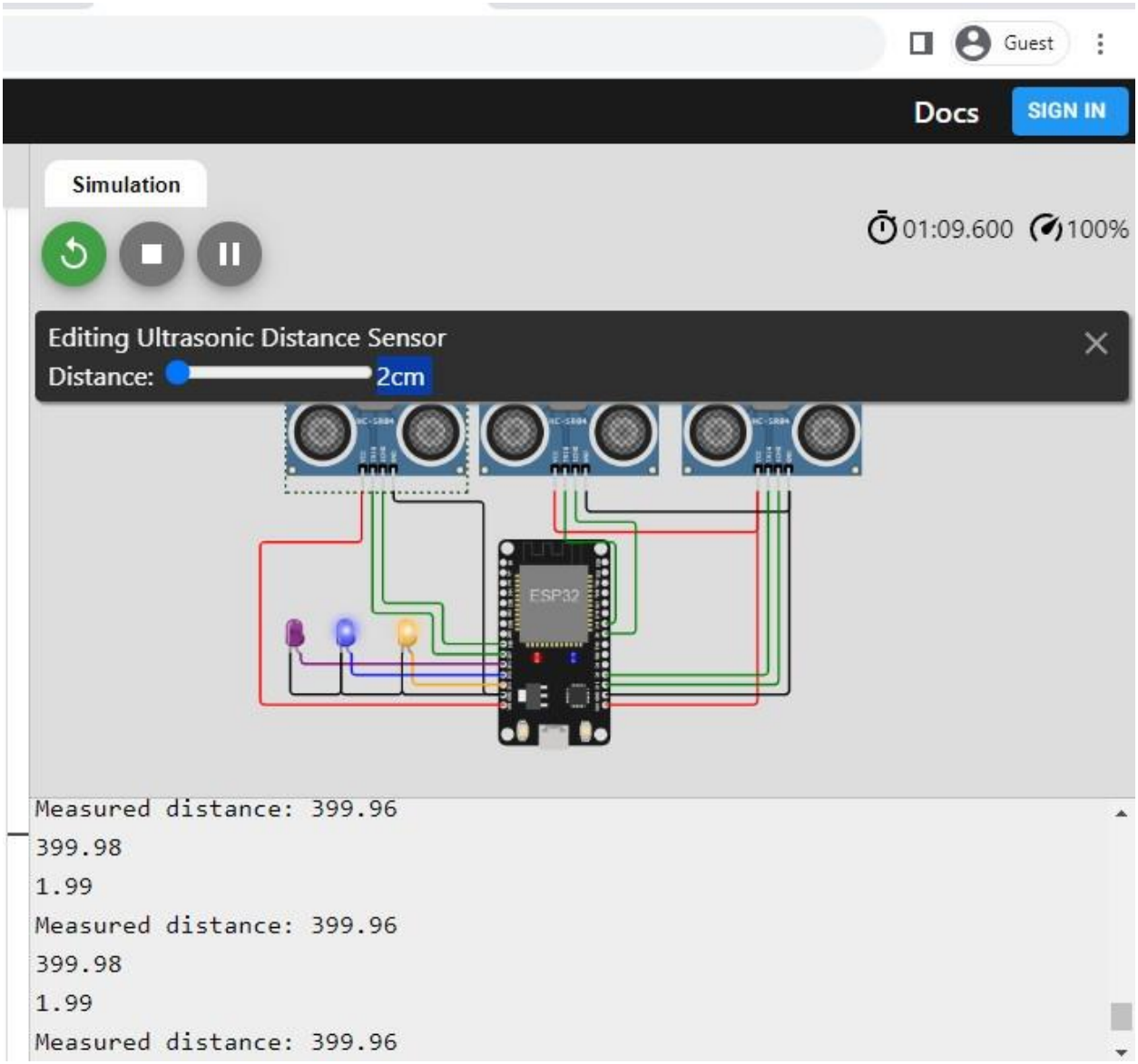
Step 7: Simulation

- Click on the “simulate” button to start the simulation
- The LED should start blinking according to the code
- The Ultrasonic sensor will echo the distance according to the code

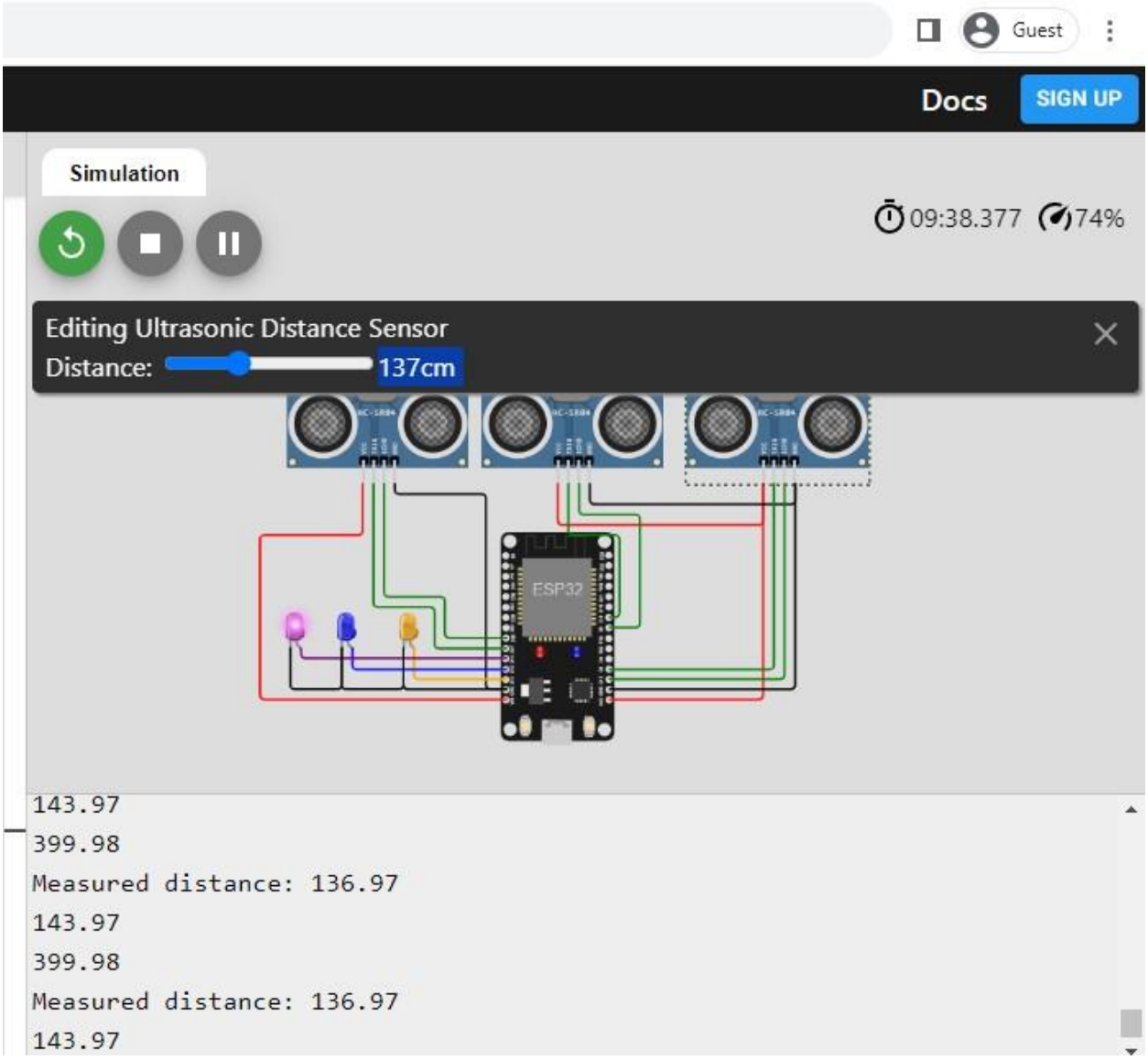
Step1: When the distance for all the ultrasonic sensors are same it will blink all the three LED’s



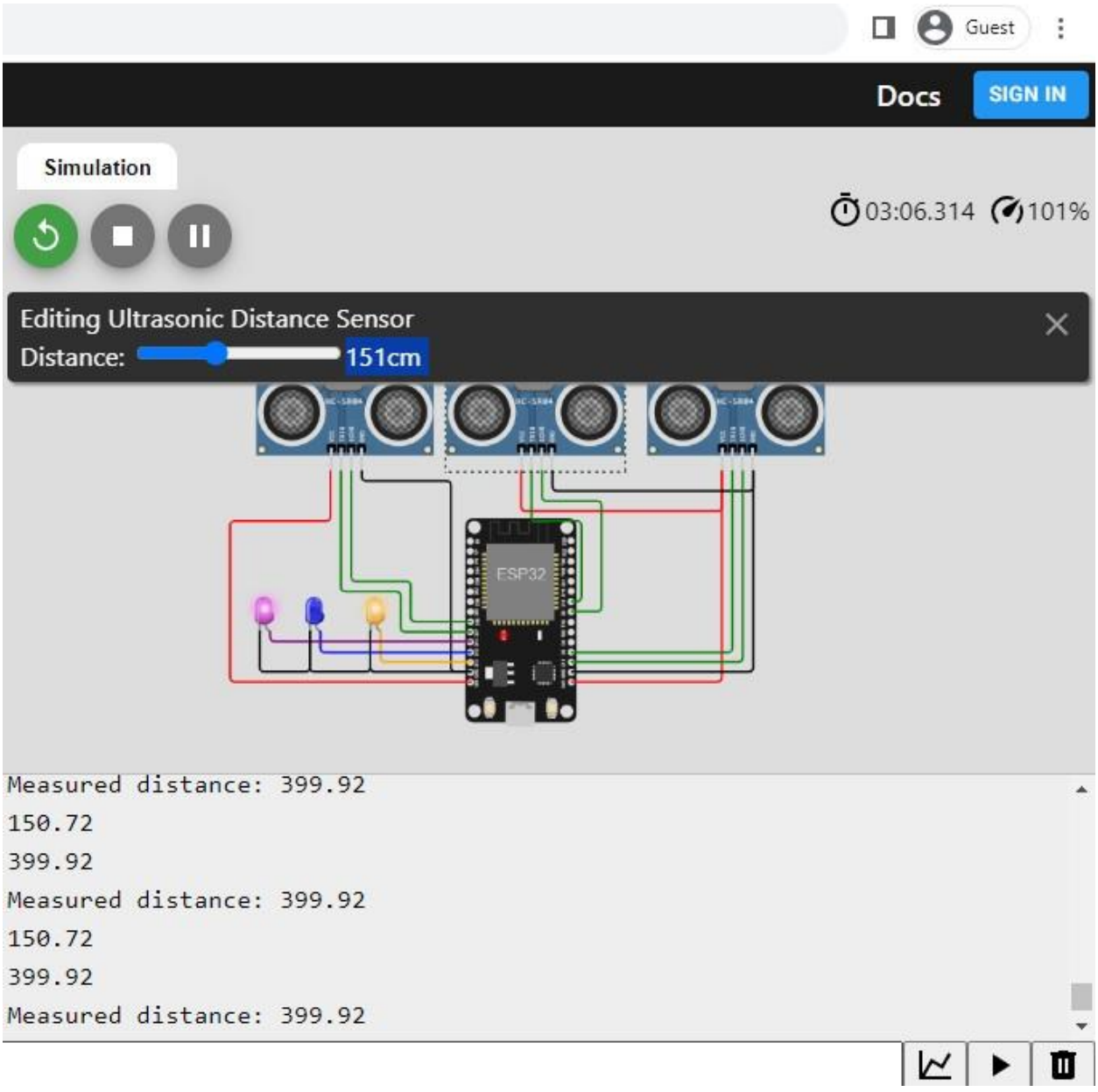
Step 2:when the distance of the ultrasonic sensor is below 200 cm then the led 1 will not blink



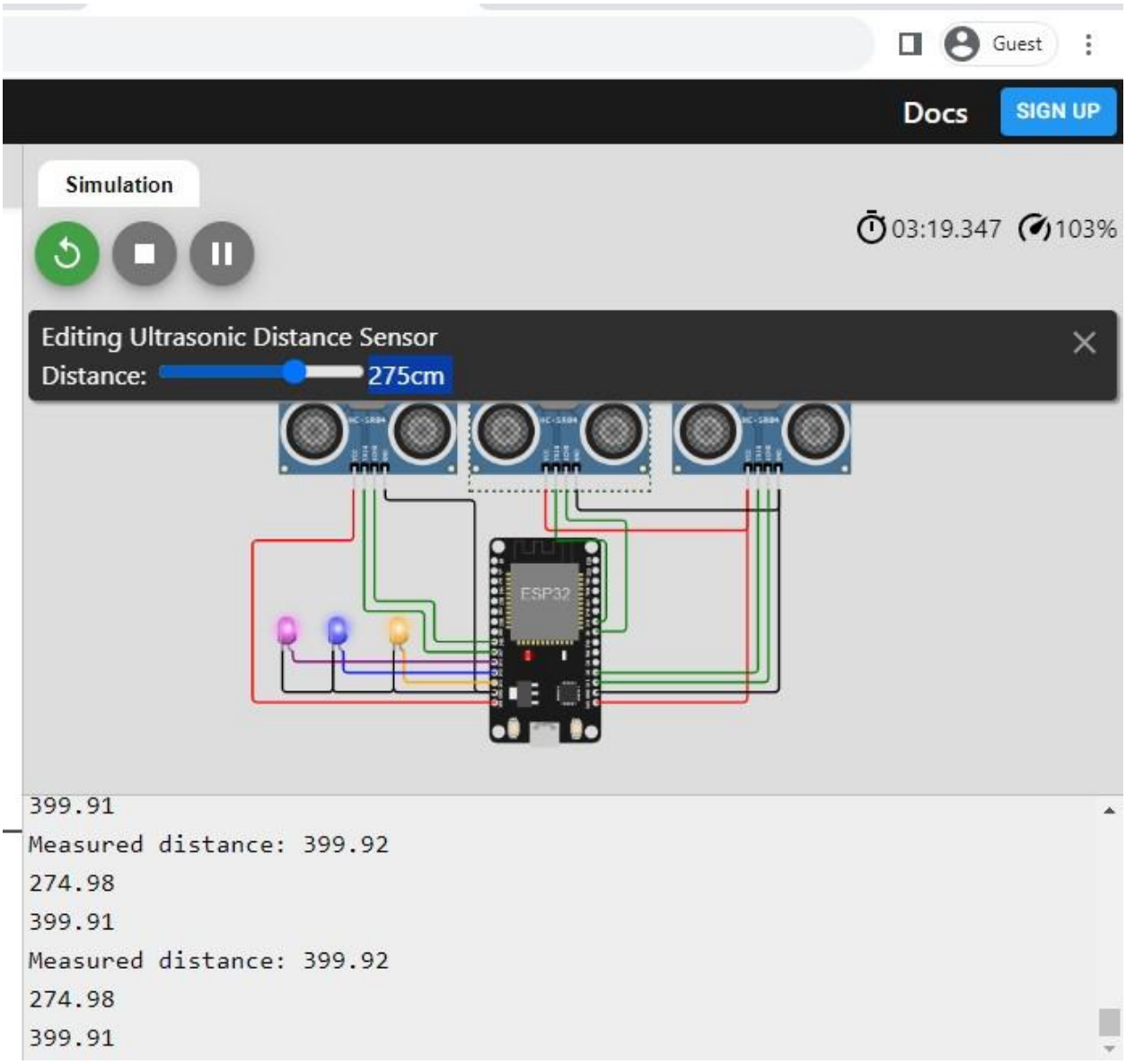
Step 3:when the distance is above 200cm LED 1 will blink whereas the distance of other ultrasonic sensor is below 200 cm then the led 2 and led 3 will not blink



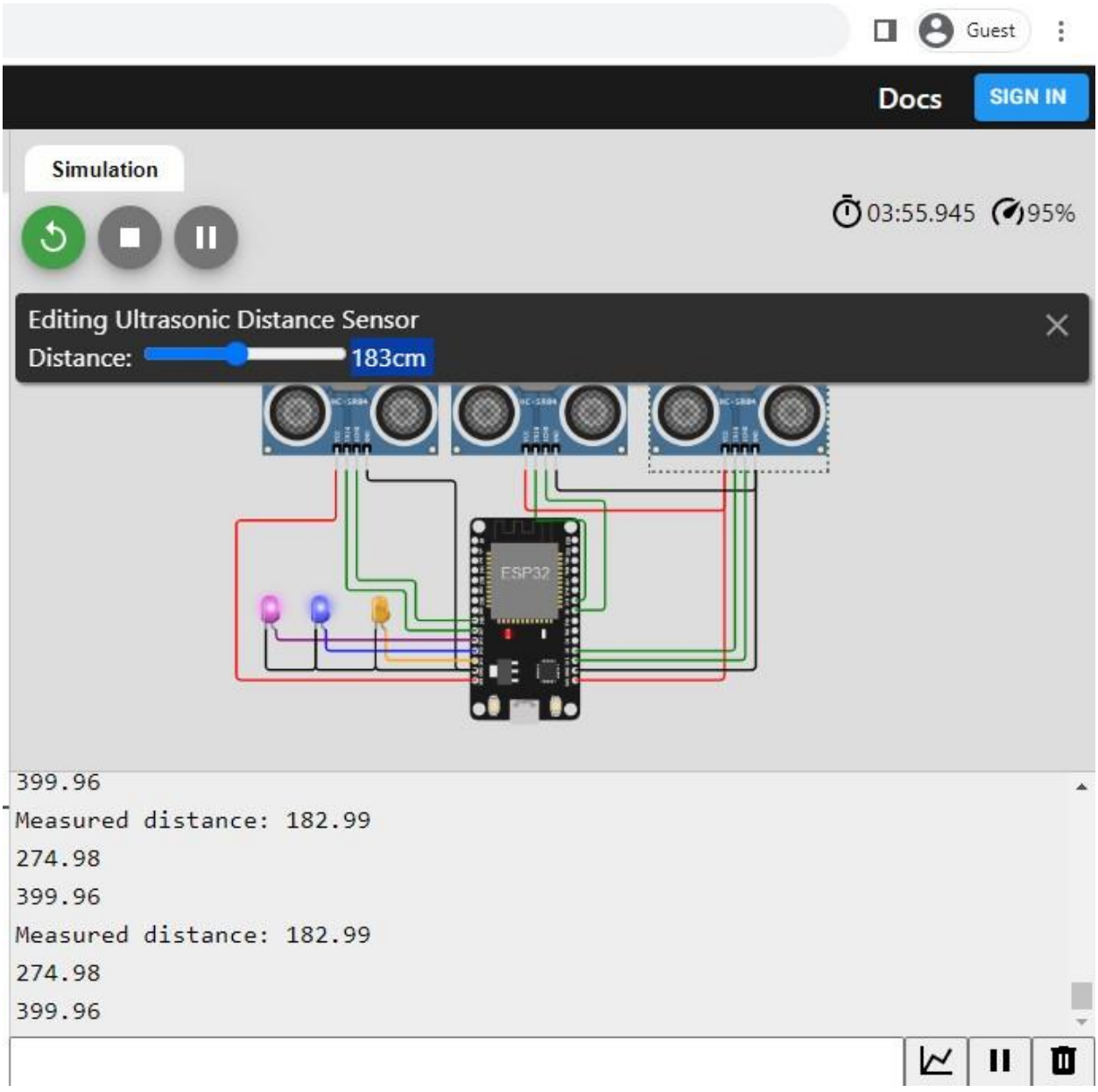
Step 4:when the distance of the ultrasonic sensor2 is below 200cm then led 2 will not blink whereas the other led 1 and led 3 will blink



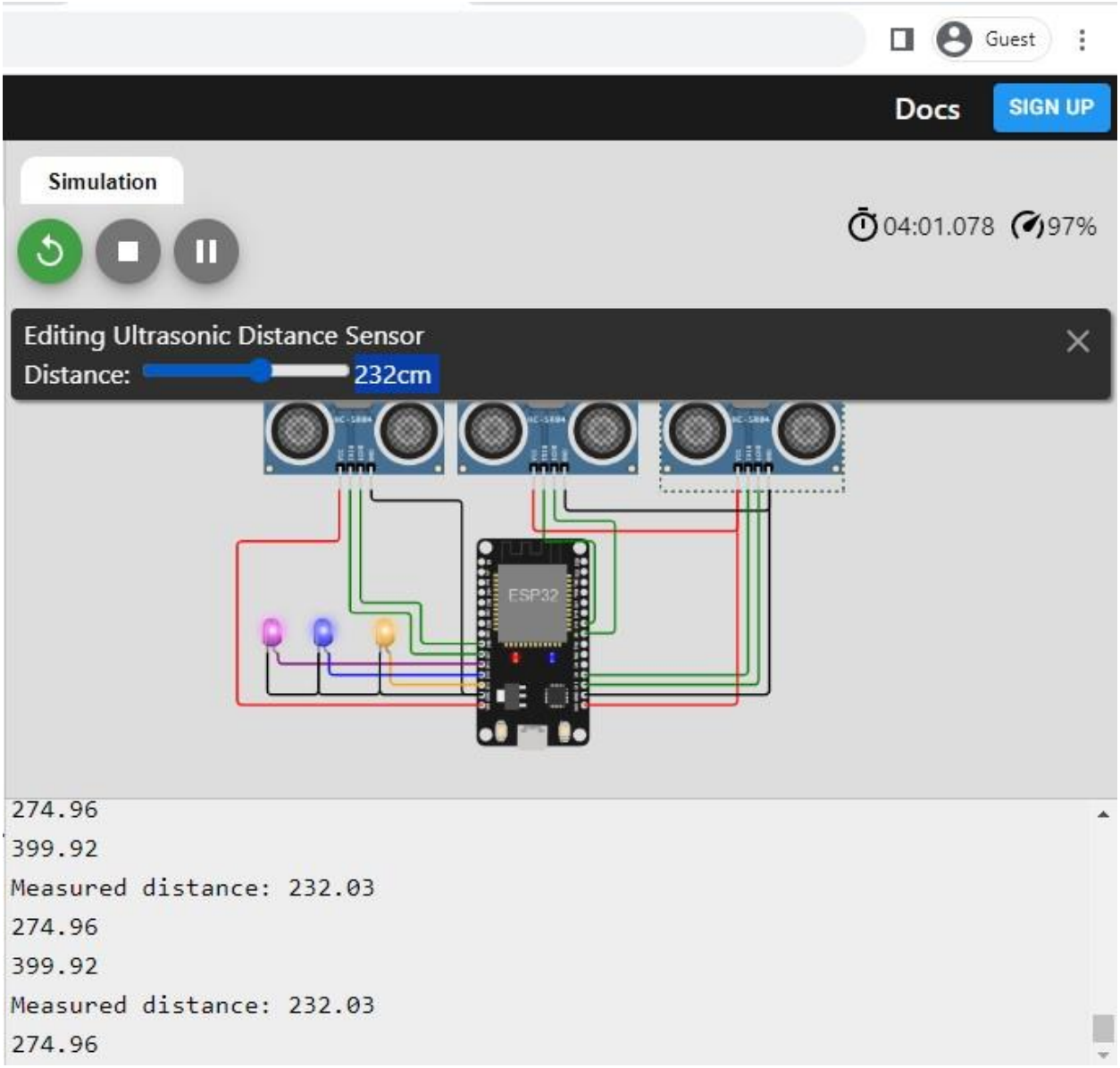
Step 5: when the distance of the ultrasonic sensor 2 is above 200cm then it will blink the LED 2 along with the LED 1 and LED 3



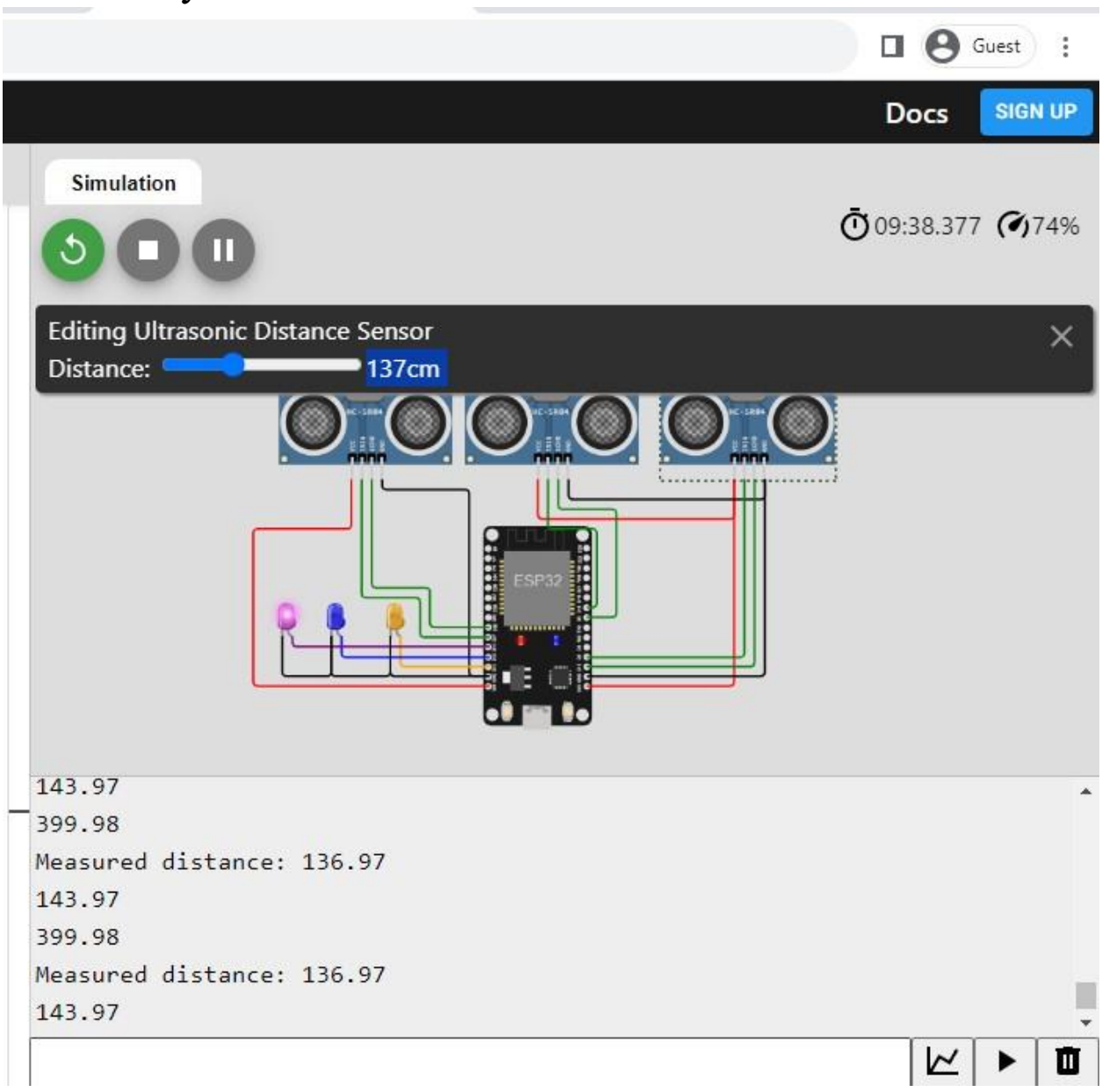
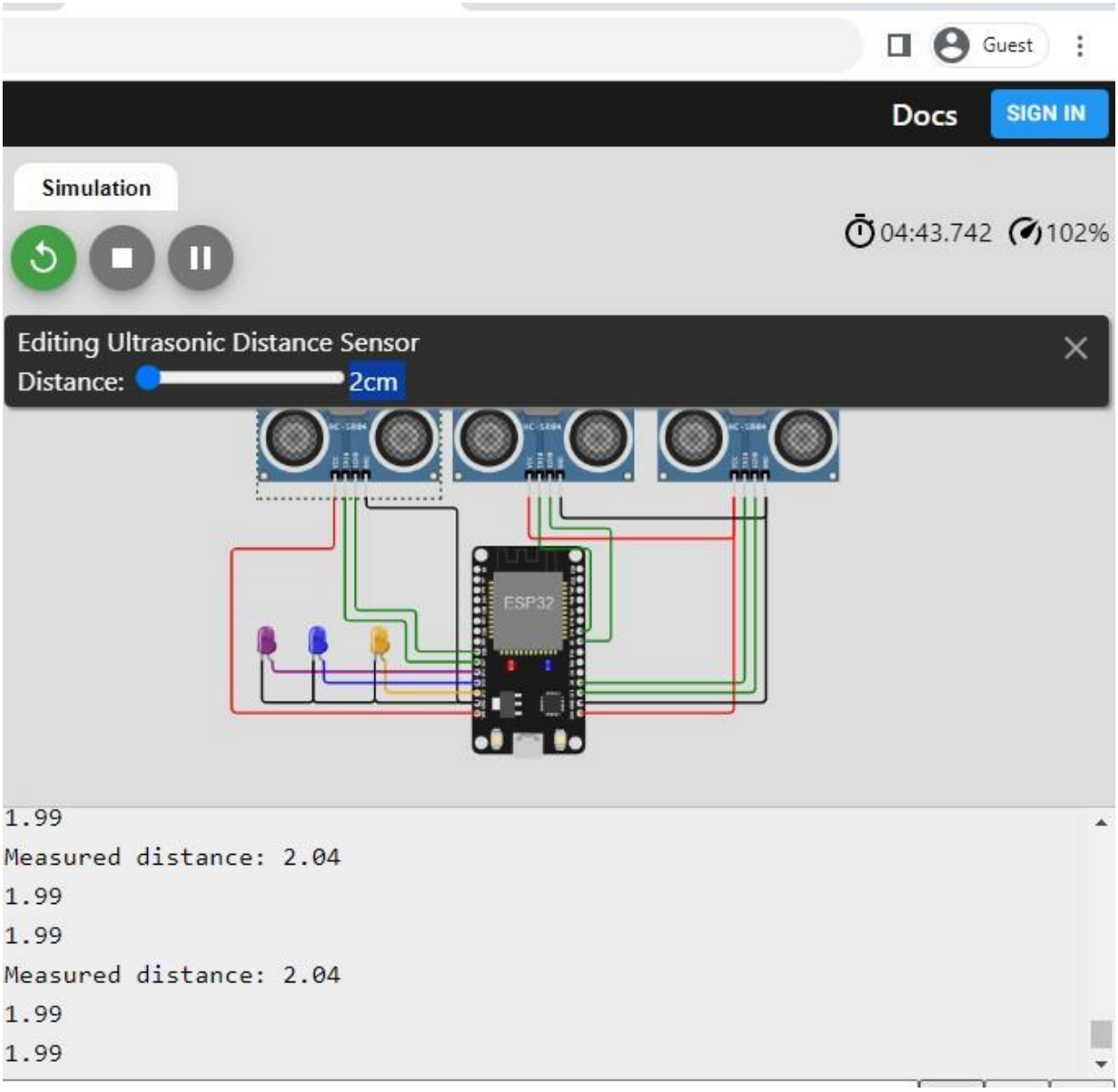
Step 6: when the distance of the ultrasonic sensor 3 is below 200 cm then it will not blink LED 3 whereas the LED 1 and LED 2 will blink



Step 7: when the distance of the ultrasonic sensor 3 is above 200cm it will blink the LED 3 along with LED 2 and LED 1



Step 8: when the distance of the ultrasonic sensor 1 is above 200cm whereas the distance of other ultrasonic sensor 2 and ultrasonic sensor 3 is below 200 cm then the LED 1 only blink other LED's will not blink



Step 9:when the distance of all the ultrasonic sensor of 1,2,3 is below 200 cm then no LED's will blink