Assignment – 4

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to ibm cloud and display in device recent events

Date	22 October 2022
Team ID	PNT2022TMID02250
Project Name	IOT-based Smart Crop Protection System for Agriculture
Maximum Marks	4 Marks

PROGRAM :

```
// ARDUINO PINS (TRIGGER PIN, ECHO
PIN) const int TRIG_PIN = 7; const int
ECHO_PIN = 8;

// Anything over 400 cm (23200 us pulse) is "out of range"
const unsigned int max_dist = 23200;
void setup()
{

  // The Trigger pin will tell the sensor to range find
  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);
  //Set Echo pin as input to measure the time duration of pulse returning back from the distance sensor
  pinMode(ECHO_PIN, INPUT);
```

```
  // We'll use the serial monitor to view the sensor output
  Serial.begin(9600);

}

void loop() {

  unsigned long t1; unsigned
  long t2; unsigned long
  pulse_width; float cm;
  float inches;
  // Hold the trigger pin high for at least 10 us
  digitalWrite(TRIG_PIN,                    HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  // Wait for pulse on echo pin
  while ( digitalRead(ECHO_PIN) == 0 );
  // Measure how long the echo pin was held high (pulse
  width) // Note: the micros() counter will overflow after
  ~70 min t1 = micros(); while ( digitalRead(ECHO_PIN) == 1);
  t2 = micros();
  pulse_width = t2 - t1;
  // Calculate distance in centimeters and inches. The constants //
  are found in the datasheet, and calculated from the assumed speed
  //of sound in air at sea level (~340 m/s).
  cm = pulse_width / 58.0;
  inches = pulse_width / 148.0;
  // Print out results

  if ( pulse_width > max_dist ) {
    Serial.println("Out of range");
  } else {
    Serial.println("******************************");
    Serial.print("Distance Measured in cm : ");
```

```
    Serial.println(cm);
if(cm<100){
      // while(true){
      Serial.println("Alert !!");
      // }
    }

    Serial.print("******************************");
  }

  // Wait at least 1000ms before next measurement delay(1000);
}
```

OUTPUT :

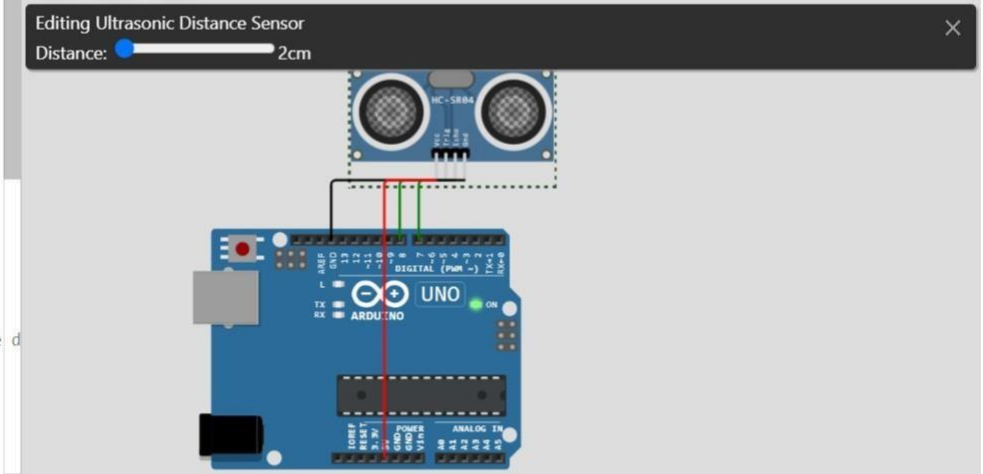
WOKWi SAVE SHARE Docs SIGN IN

sketch.ino ● diagram.json ● Library Manager

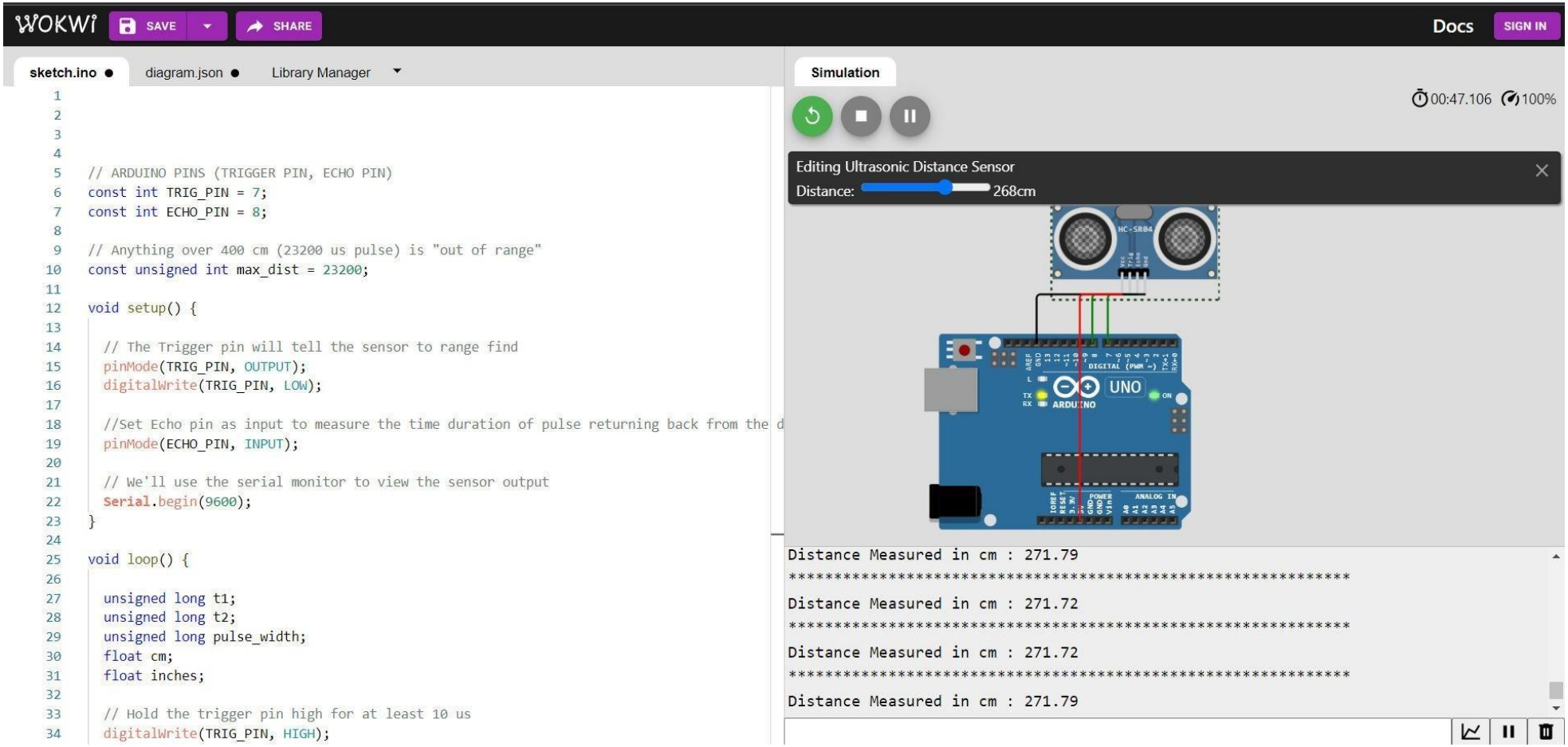
```
1
2
3
4
5   // ARDUINO PINS (TRIGGER PIN, ECHO PIN)
6   const int TRIG_PIN = 7;
7   const int ECHO_PIN = 8;
8
9   // Anything over 400 cm (23200 us pulse) is "out of range"
10  const unsigned int max_dist = 23200;
11
12  void setup() {
13
14    // The Trigger pin will tell the sensor to range find
15    pinMode(TRIG_PIN, OUTPUT);
16    digitalWrite(TRIG_PIN, LOW);
17
18    //Set Echo pin as input to measure the time duration of pulse returning back from the d
19    pinMode(ECHO_PIN, INPUT);
20
21    // We'll use the serial monitor to view the sensor output
22    Serial.begin(9600);
23  }
24
25  void loop() {
26
27    unsigned long t1;
28    unsigned long t2;
29    unsigned long pulse_width;
30    float cm;
31    float inches;
32
33    // Hold the trigger pin high for at least 10 us
34    digitalWrite(TRIG_PIN, HIGH);
```

Simulation

01:27.258 99%




```
**************************************************************
Distance Measured in cm : 2.07
Alert !!
**************************************************************
Distance Measured in cm : 2.00
Alert !!
******************************
```



Project Link : https://wokwi.com/projects/346290927428436563