

#### Assignment - 4

Assignment Date	22 October 2022
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Maximum Marks	2 Marks

##### **Question-1:**

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

##### **Solution:**

// Pins

```
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 duration of  
    //pulses coming 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("The Measured Distance in cm : ");
  Serial.println(cm);

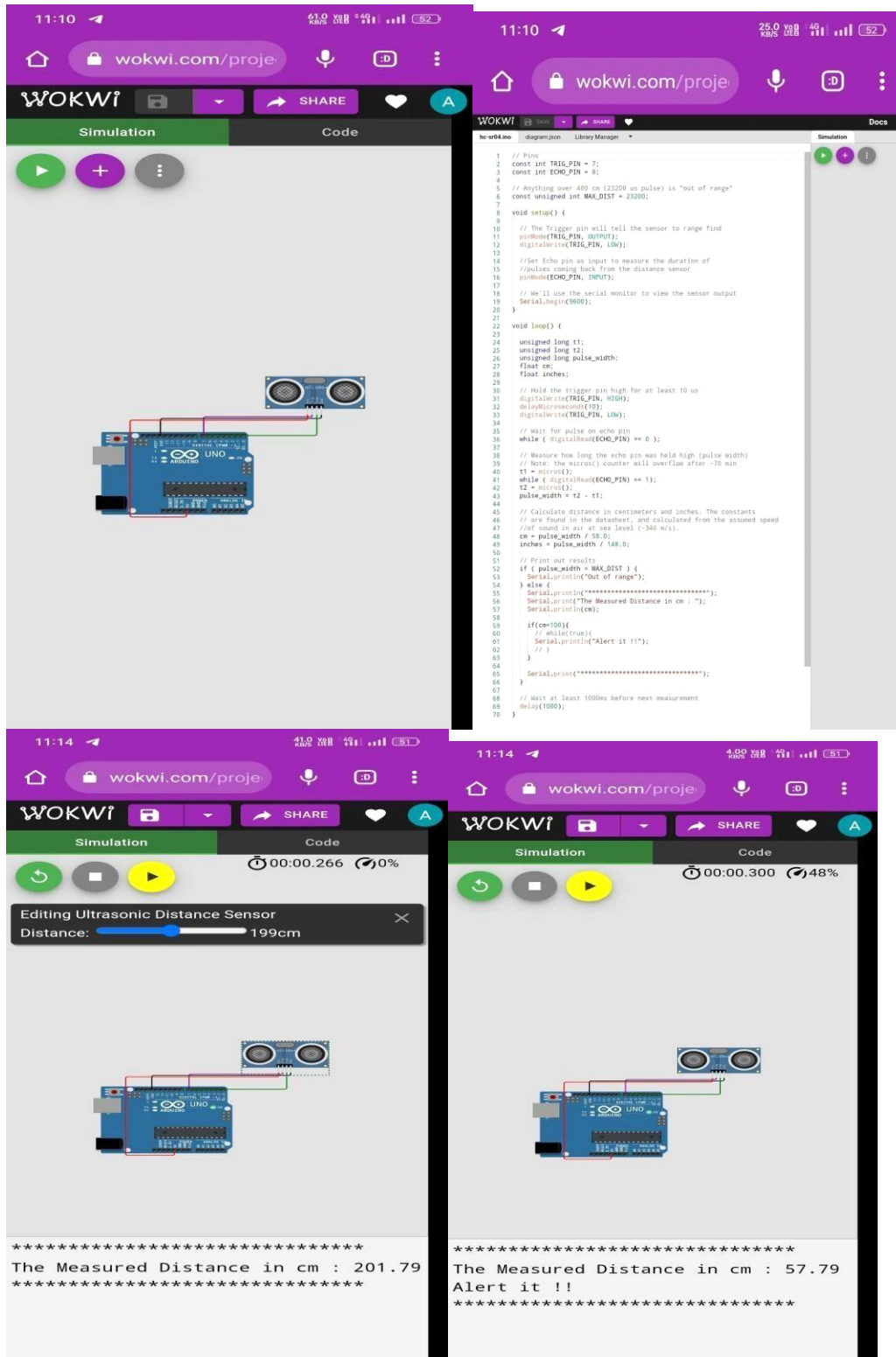
  if(cm<100){
    // while(true){
    Serial.println("Alert!!");
    // }
  }
}

```

```
}  
  
Serial.print("*****");  
}  
  
// Wait at least 1000ms before next measurement  
delay(1000);  
}
```

**Output:**

- If the distance is less than 100 cms , it alerts.
- If the distance is more than 100 cms, it won't alert.
- Simulation and code execution



**Project Link:**

<https://wokwi.com/projects/346136429340918356>