

Assignment-4

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1. Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cm 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
  Pin Mode(TRIG_PIN, OUTPUT);
  digital Write(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 (- 340m/s)

cm=pulse_Width / 58 ;
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);

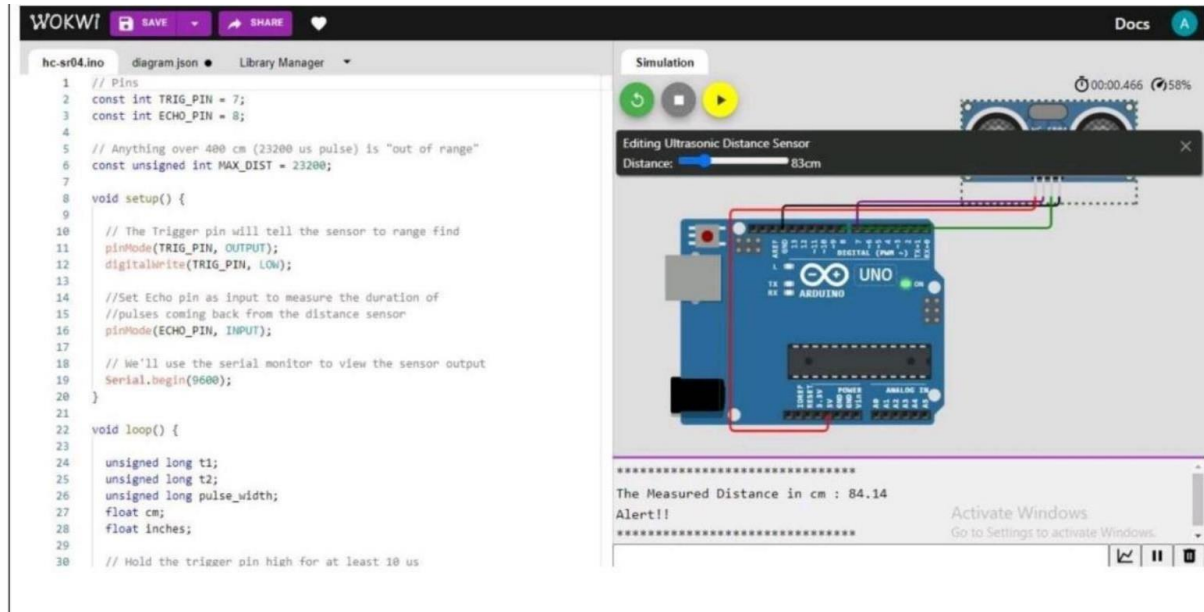
if( cm < 100 ){
    //while(true){
        Serial.println("Alert!!");
        //}
    }
Serial.print("*****");
}

//wait at least 1000ms before next measurement
Delay(1000);
}

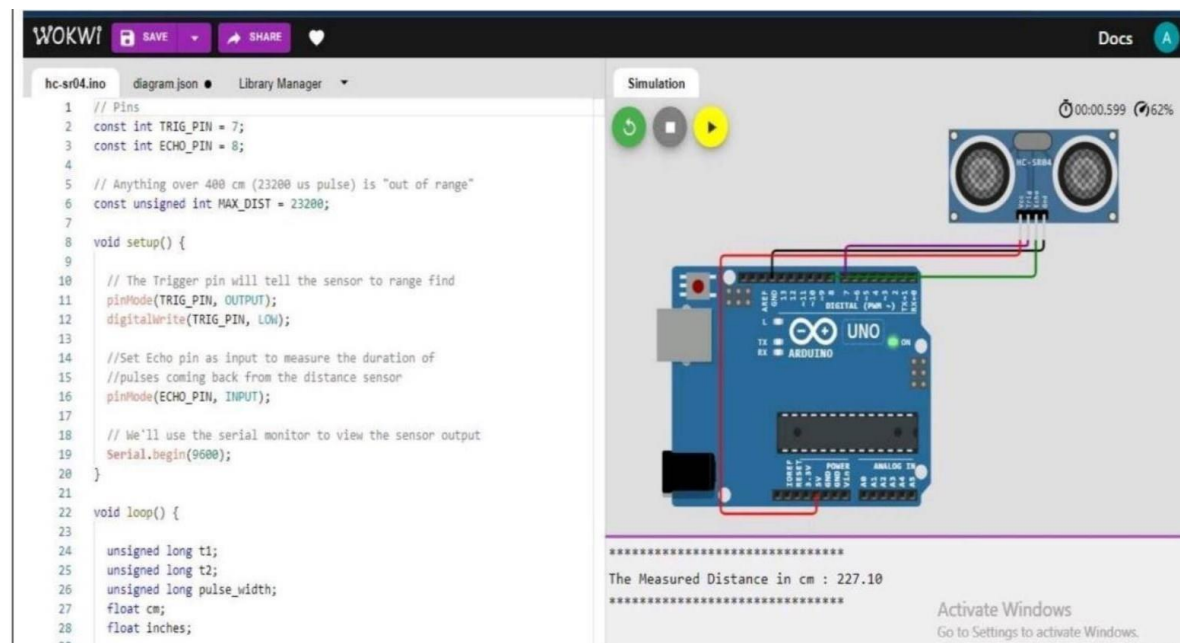
```

Output:

1. If the distance is less than 100 cm, it alerts.



2. If the distance is more than 100 cm, it won't alert



3. Simulation and code execution

