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:

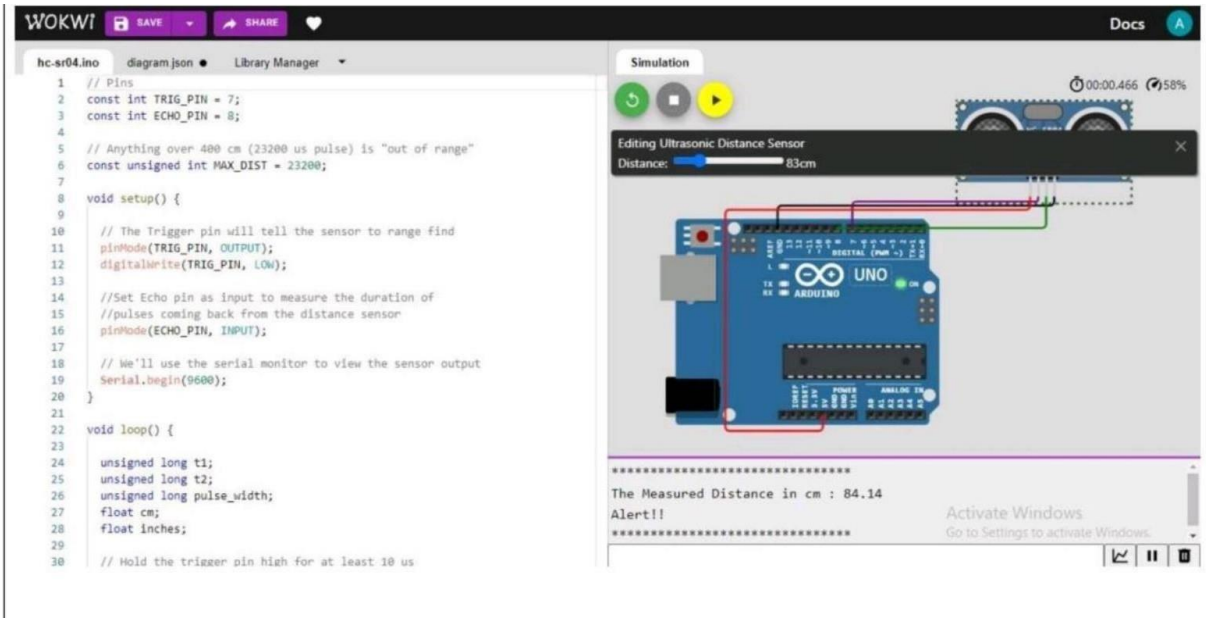
```
 //Pins
const int TRIG_PIN = 7 ;
const int ECHO_PIN = 8;

//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
```

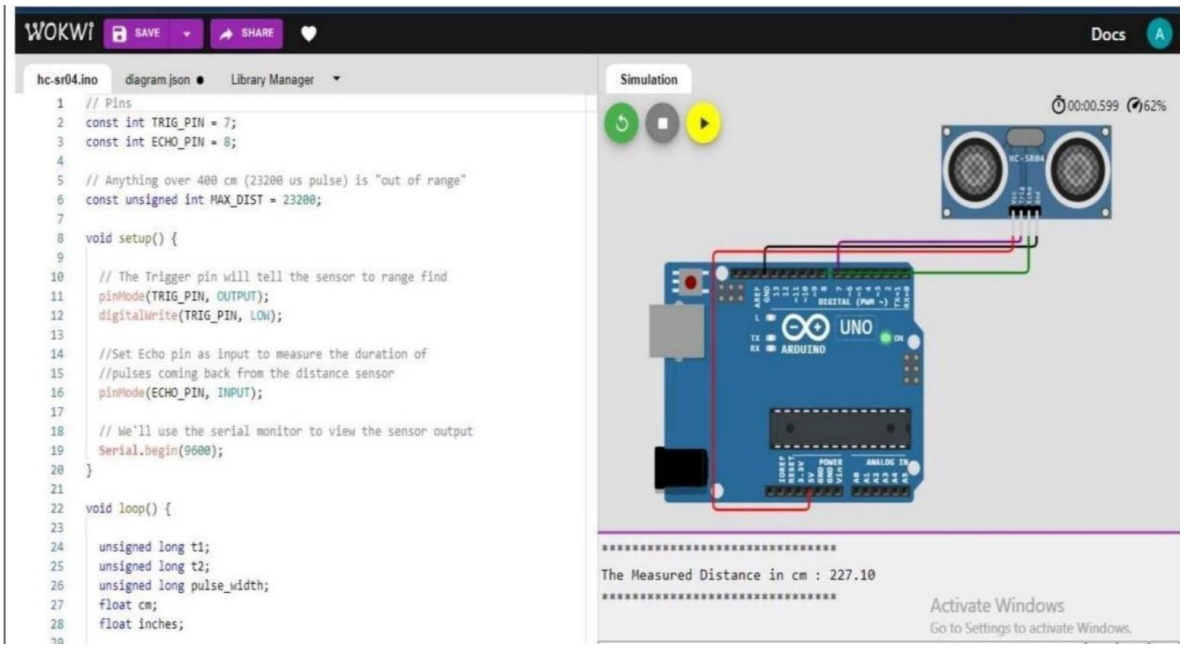
```
 //are found in the datasheet, and calculated from the assumed speed
 // of sound in air at sea level (- 340m/s)
 cm=pulse_Width / 58 ;
 inches = pulse_width/148.0;
// Print out results
if (pulse_width >MAX _ DIST ){
Serial.println("Out of range");
} else {
Serial.println("*******************************”);
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