Assignment-4

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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.

PROGRAM:

```
 //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
```

```arduino
  //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);
 }
```
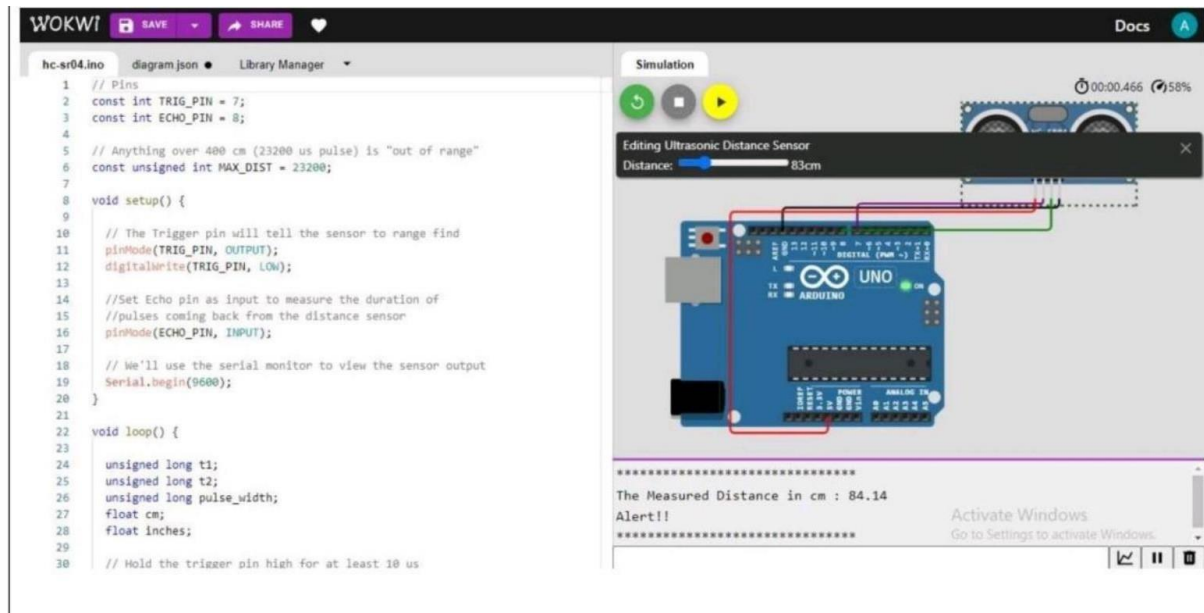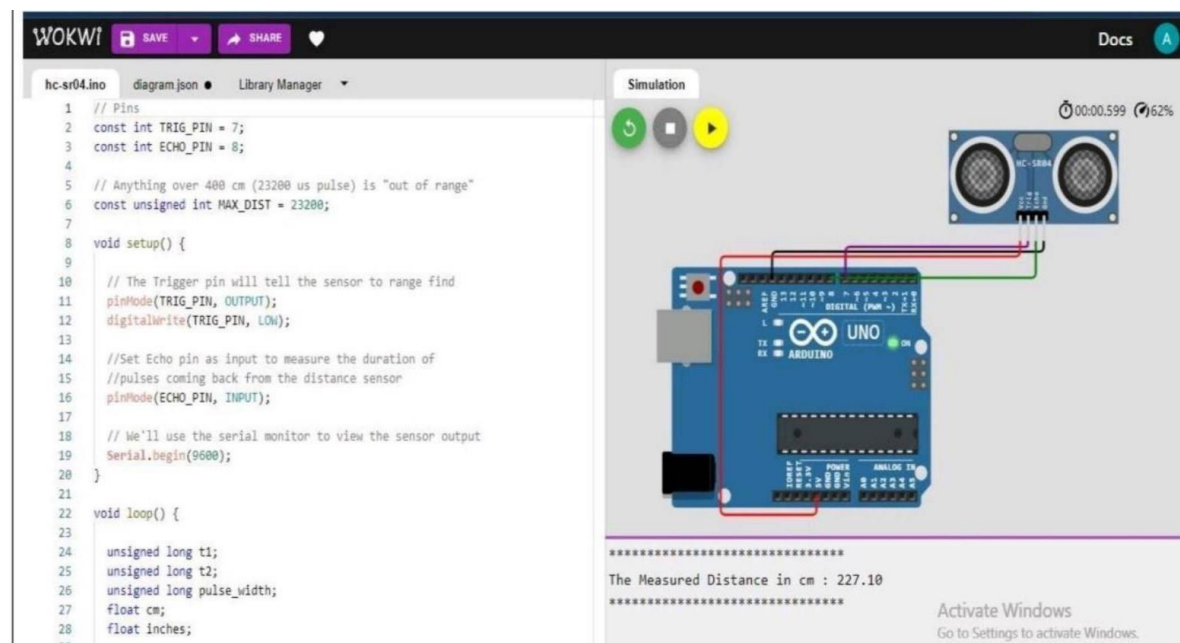
Output:

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

Sending payload: {"Alert distance":93.99}
Publish OK

Sending payload: {"Alert distance":93.96}
Publish OK

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