Assignment 4 :

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in thedevice recent events.
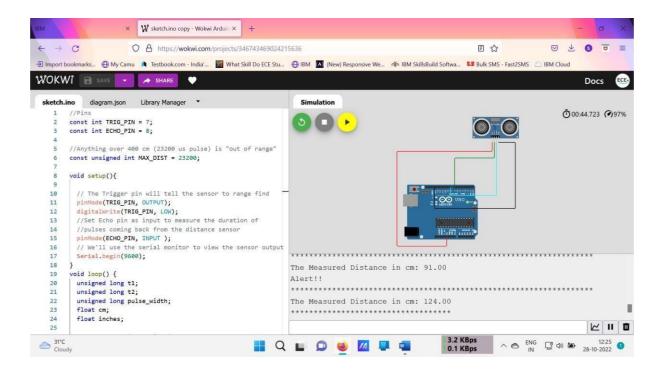
Program :

```
//Pins
constintTRIG_PIN=7;
constintECHO_PIN=8;

//Anything over 400 cm (23200 us pulse) is "out of range"constunsignedintMAX_DIST=23200;

void setup(){

  // The Trigger pin will tell the sensor to range findpinMode(TRIG_PIN,OUTPUT);
  digitalWrite(TRIG_PIN,LOW);
  //SetEchopinasinputtomeasurethedurationof
  //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() {
  unsignedlongt1;
  unsignedlongt2;
  unsignedlongpulse_width; float cm;
  floatinches;

  // Hold the trigger pin high for at least 10 us
  digitalWrite(TRIG_PIN,HIGH); delayMicroseconds(10);
  digitalWrite(TRIG_PIN,LOW);

  //Waitforpulseonechopin while(digitalRead(ECHO_PIN)==0);

  // Measurehow longthe echo pinwas held high (pulsewidth)
  //Note:themicros()counterwilloverflowafter-70min 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
    //ofsoundinairatsealevel(-340m/s) cm=pulse_width/ 58 ;
    inches=pulse_width/148.0;
    //Printoutresults
    if (pulse_width>MAX_DIST){
      Serial.println("Outofrange");
      }
    else{
        Serial.println("***************************
        ****"); Serial.print("TheMeasuredDistanceincm:");
        Serial.println(cm);

        if( cm < 100 ){
          //while(true){
            Serial.println("Alert!!");
            //}
      }
      Serial.print("***********************************");
      }
//wait at least 1000ms before next measurementdelay(1000);
 }
```

Output:

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

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```
10   | // The Trigger pin will tell the sensor to range find

14   | //pulses coming back from the distance sensor
15   | pinMode(ECHO_PIN, INPUT );

18   }
19   void loop() {
20     unsigned long t1;
21     unsigned long t2;
22     unsigned long pulse_width;
23     float cm;
```

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*************************************Out of range

TneMeasuredDistanceincm:197.00

TheMeasuredDistanceincm:2.00Alert!!

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```
10   | // The Trigger pin will tell the sensor to range find
12   | digitalWrite(TRIG_PIN, LOW);

15   | pinMode(ECHO_PIN, INPUT );

21   | unsigned long t2;
22   | unsigned long pulse_width;
```

ee

TheMeasuredDistanceincm:Z.00 Alert!!

Link: https://wokwi.com/projects/346743469024215636