IBM ASSIGNMENT- 4

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Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send an “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
```

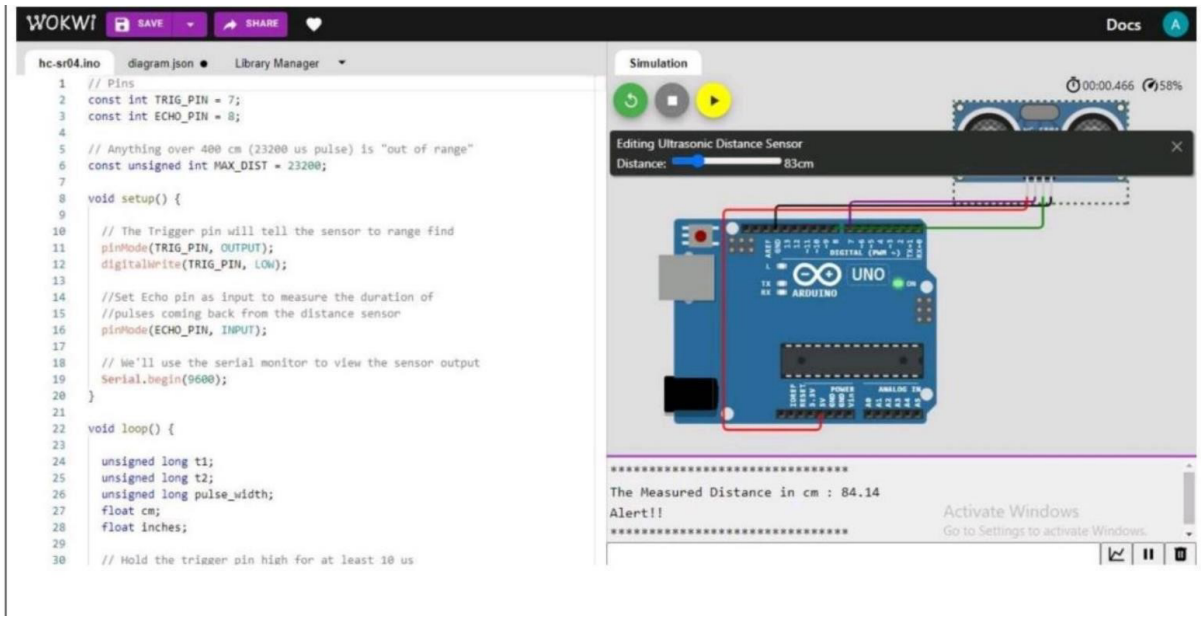
```
distance sensor pinMode(ECHO_PIN,
INPUT ) ;

// 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);
```

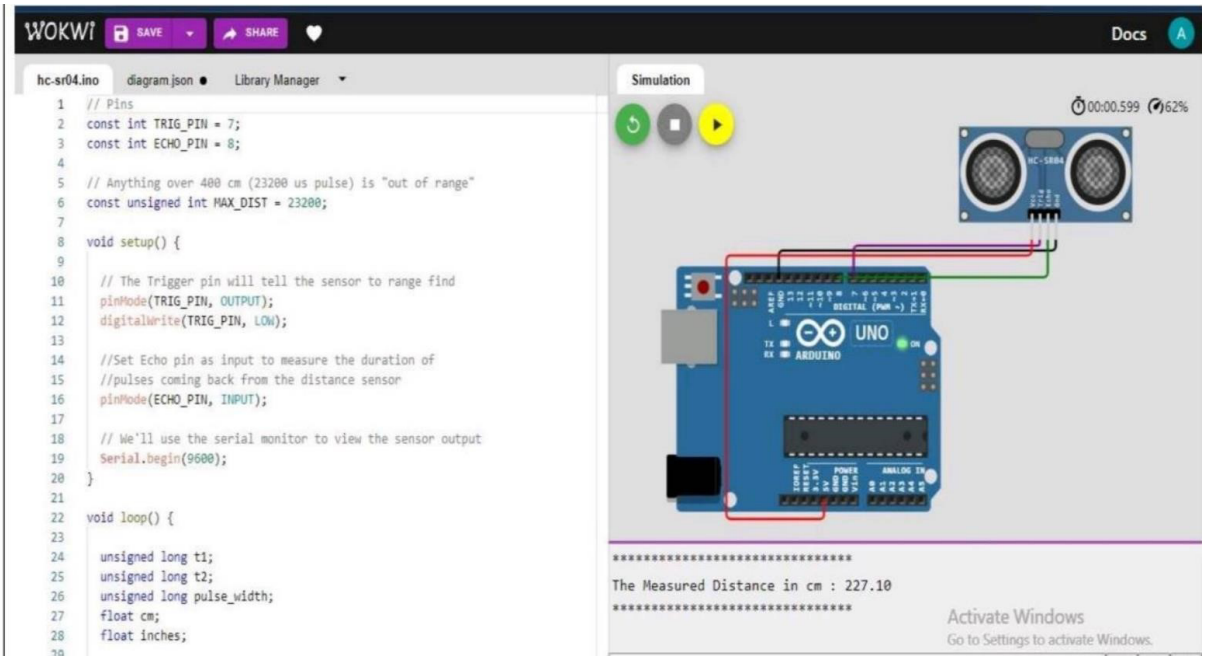
}

Output:

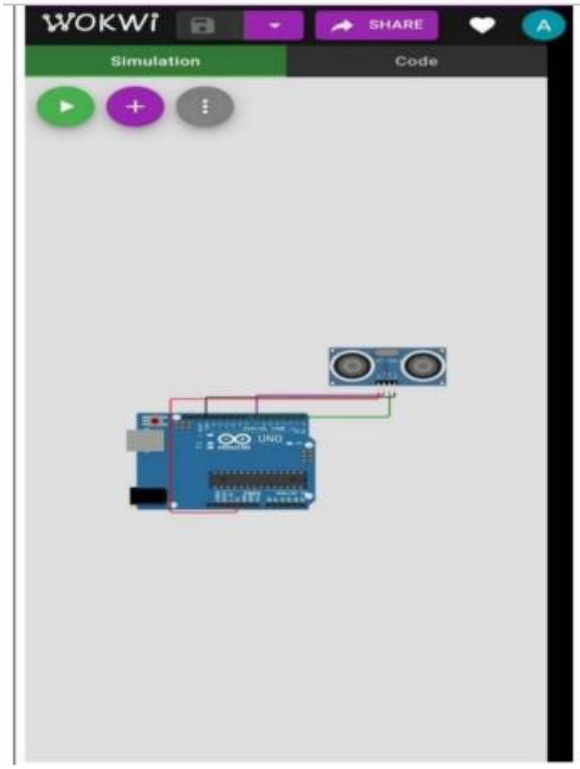
1.If the distance is less than 100 cms ,it alerts.



2.If the distance is more than 100 cms,it won’t alert

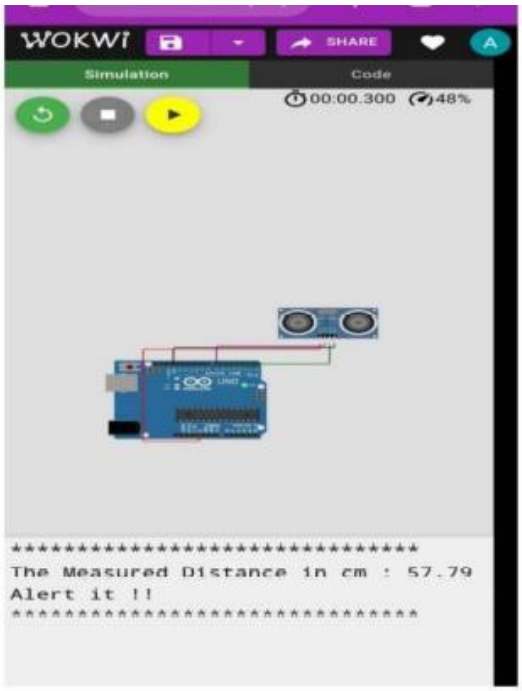


3.Simulation and code execution


WOKWi
SHARE
Simulation
Code


WOKWi
Docs


WOKWi
SHARE
Simulation
Code
00:00.266
0%
Editing Ultrasonic Distance Sensor
Distance:
199cm
****
The Measured Distance in cm : 201.79
****


WOKWi
SHARE
Simulation
Code
00:00.300
48%
****
The Measured Distance in cm : 57.79
Alert it !!
****