**ASSIGNMENT 4**

**ULTRASONIC SENSOR SIMULATION IN WOKWI**

| TEAM ID | PNT2022TMID48307 |
|---|---|
| TITTLE | INDUSTRY SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM |
| MINIMUM MARKS | 2Marks |

**1.Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send "Alert" to ibm cloud aand 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("*******************************");
```
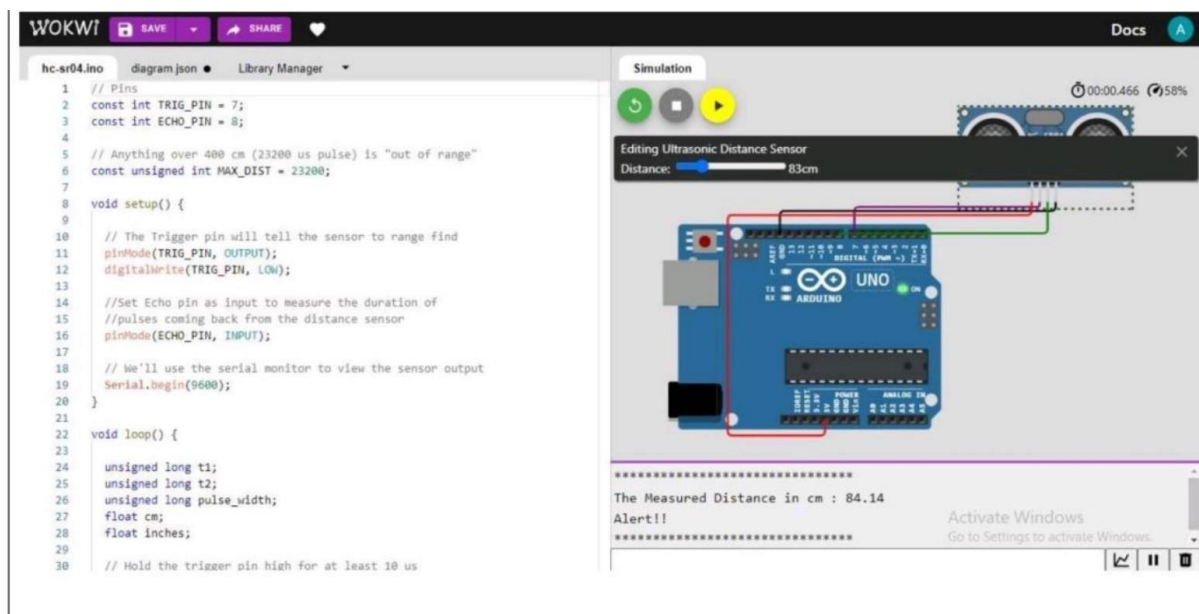
```
}
```

//wait at least 1000ms before next measurement

Delay(1000);

```
}
```

# Output:

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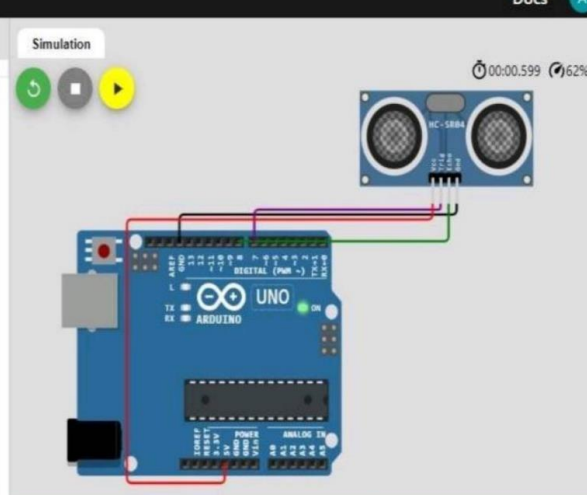


**2.If the distance is more than 100 cms,it won't alert**

```
1   // Pins
2   const int TRIG_PIN = 7;
3   const int ECHO_PIN = 8;
4
5   // Anything over 400 cm (23200 us pulse) is "out of range"
6   const unsigned int MAX_DIST = 23200;
7
8   void setup() {
9
10      // The Trigger pin will tell the sensor to range find
11      pinMode(TRIG_PIN, OUTPUT);
12      digitalWrite(TRIG_PIN, LOW);
13
14      //Set Echo pin as input to measure the duration of
15      //pulses coming back from the distance sensor
16      pinMode(ECHO_PIN, INPUT);
17
18      // We'll use the serial monitor to view the sensor output
19      Serial.begin(9600);
20  }
21
22  void loop() {
23
24      unsigned long t1;
25      unsigned long t2;
26      unsigned long pulse_width;
27      float cm;
28      float inches;
```

```
********************************
The Measured Distance in cm : 227.10
********************************
```

**3.Simulation and code execution**

The Wokwi simulation screens show:

**Editing Ultrasonic Distance Sensor**
Distance: 199cm

```
**********************************
The Measured Distance in cm : 201.79
**********************************
```

```
**********************************
The Measured Distance in cm : 57.79
Alert it !!
**********************************
```