

ASSIGNMENT 04:

1. Write Code and connections in wokwi for ultrasonic sensor.
Whenever the distance is less than 100 cms 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;

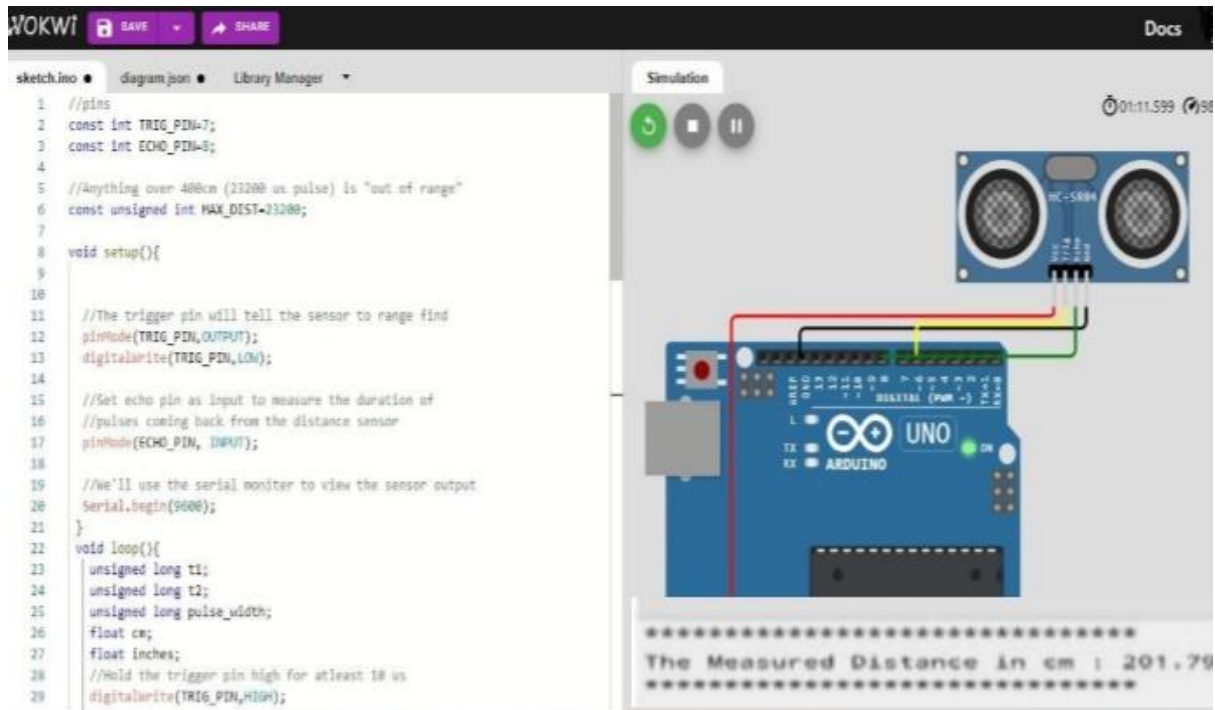
// Print out results
if (pulse_width >MAX _ DIST ){
Serial.println("Out of range");
} else {
Serial.println("*****");
Serial.print("The Measured Distance in cm: ");
Serial.println(cm);

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 cms ,it alerts.



2.Simulation and code execution.



