| Assignment - 4 | |
|---|---|
| **Assignment Date** | **22 October 2022** |
| **Student Name** | **Abhishek** |
| **Student Roll Number** | **610819106001** |
| **Maximum Marks** | **2 Marks** |

Question-I:

Write code and connections in wokwi for ultrasonic sensor.Whenever 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
                        pinMode(TRIG_PIN, OU
                        digitalWrite(TRIG_PIN,OUTPUT);
  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 tl ; 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 40
min tl = micros(); while ( digitalRead(ECHO_PIN) ==
      1); t2 = micros(); pulse_width = t2 - tl;

// 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 (—340 m/s). cm = pulse_width /
58.0; 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:

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

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```
• // Pins  Öoo:00A66
• const int TRIG_PIN 7;        00 >
• const int EGO PIN 8;
4
   // Anything over cm (232eø us pulse) is "out of
range" Editing Uttrasoruc Distance 6 const unsigned
int PAX_DIST • 232ee•, Distance. 83an
7
8void setup() {
9
    // The Trigger pin will tell the sensor to range find
11        a-JTPUT);
12
                                                    UNO
13
14//Set Echo pin as input to measure the duration of    . AROUINO
    //pulses coning back fron the distance sensor
16          IWUT);
17
18  // we • Il use the serial
mnitor to view the sensor
output 19 Serial.begin(96ee);
20
21
22void loop() {
23
•   unsigned long t1
•   unsigned long t2;
•   unsigned long pulse_width The Measured Distance in cm : 84.14 27 float
cm; Alert ! !
28float inches;
```

29

// Hold the trieeer Din hieh for at least 10 us

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

| | | | | | |
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| WOKWt | | SHARE | | | |

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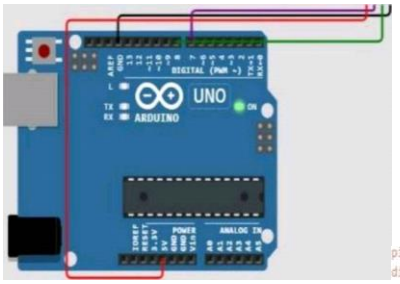
- // Pins Öoo:oo.599
- 
- const int TRIG PIN 00 >
- const int ECHO PIN 8;
- s // Anything over 40B cm (23200 us pulse) is "out of range6 const unsigned int PAX_DIST 2320e;

7

- 

pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);void setup() {
- le // The Trigger pin will tell the sensor to range find

11

12

13

14//Set Echo pin as input to measure the duration of

//pulses coning back from the distance sensor

16pinMode(ECHO_PIN, IIPUT);

17

18 // We'll use the serial mnitor to view the sensor output 19

Serial. begin(96ee);

21

22void loop() {

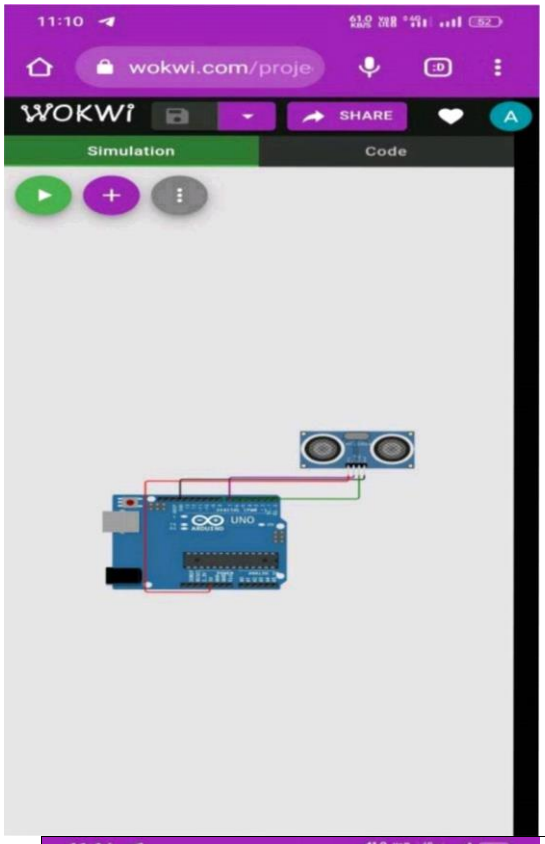
23

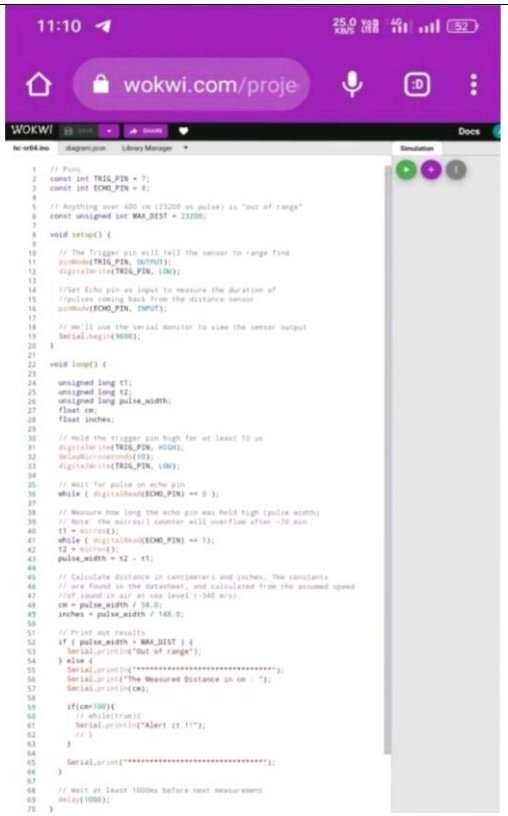
- unsigned long tl; ••••••••••••••••••••••••••••
- unsigned long t2; The Measured Distance in cm : 227.10
- ••••••••••••••••••••••••••••unsigned long pulse_width;

- float cm;Activate Windows
- float inches;  Go to Settings to activate Windows

| | | | | |
|---|---|---|---|---|
| 29<br>// Hold the trigger pin high for at least le us | | ld | 11 | |

3) Simulation and code execution



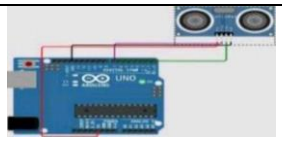


| Simulation | Code | |
|---|---|---|




Editing Ultrasonic Distance Sensor

Distance: 199cm



The Measured Distance in cm201
.79