Assignment – 4

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Maximum Marks	2 Marks

Question-1:

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, OUTPUT); digitalWrite(TRIG_PIN, LOW); //Set Echo pin as input to measure the duration of //pulses coming back from the distance sensor pinMode(ECHO_PIN, INPUT);

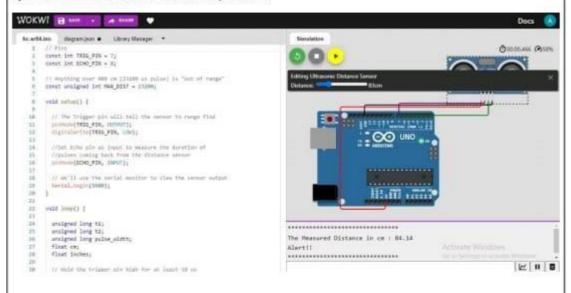
// We'll use the serial monitor to view the sensor output

```
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 (~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:

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



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

```
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          // First
const int TRIG_PIN = 7;
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          const int ECHO_PIN - Ni
          // Anything over 480 on (20200 vs pulse) is "out of range"
          const unsigned but MAN DIST - 21200;
          // The Trigger pin will tell the sensor to range find
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signalwrite(TRIG_FIM, LOW);
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          //Set Ects pln as Input to measure the duration of
//pulses coming back from the distance sensor
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           // He II was the serial meditor to sies the sense subput
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          year law() (
    23
           unsigned long ti;
            unsigned long t2;
unsigned long pulse width;
float cm;
                                                                                                 The Measured Distance in cm : 227.18
                                                                                                                                                        Activate Windows
                                                                                                                                                        Go to Sattings to activate
                                                                                                                                                                                  M II B
     JM // Hold the trigger pin high for at least 10 on
```

3) Simulation and code execution







