Assignment – 4

Assignment Date	01 November 2022
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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);

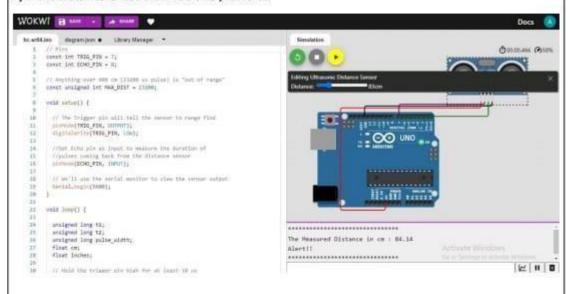
//Set Echo pin as input to measure the duration of //pulses coming back from the distance sensor pinMode(ECHO_PIN, INPUT);
```

```
// 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;
```

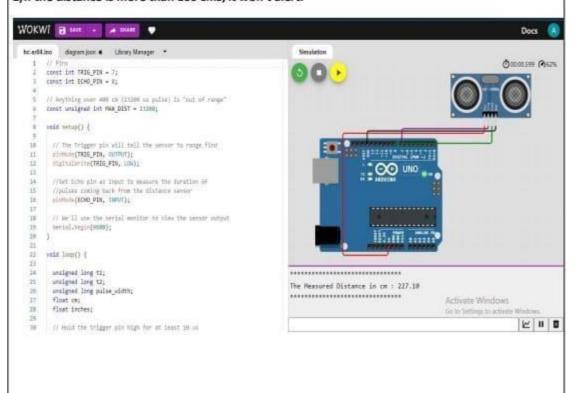
```
// Calculate distance in centimeters and inches. The constants // are found in
the datasheet, and calculated from the assumed speed //of sound in air at sea
level (~340 m/s). cm = pulse_width / 58.0; inches = pulse_width / 148.0;
// Print out results if (
pulse width > MAX DIST ) {
Serial.println("Out of range");
} else {
Serial.println("**************************);
Serial.print("The Measured Distance in cm : ");
Serial.println(cm); if(cm<100){</pre>
 // 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







