Assignment – 4

Assignment Date	31 October 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:

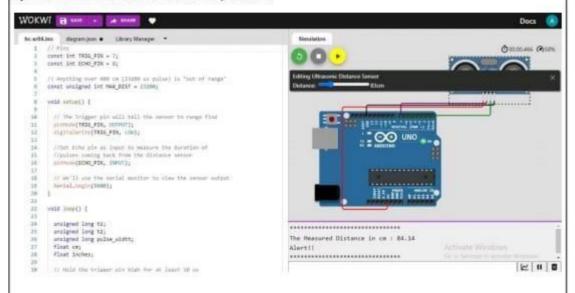
```
// Pins
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;
// Anything over 400 cm (23200 us pulse) is "out of range"
const unsigned int MAX_DIST = 23200;
void setup() {
 // The Trigger pin will tell the sensor to range find
pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);
//Set Echo pin as input 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
```

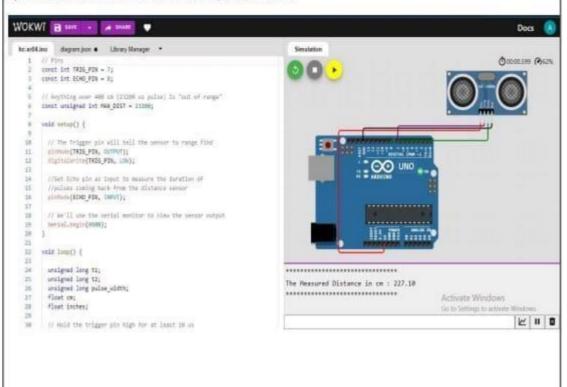
```
// are found in the datasheet, and calculated from the assumed speed
//of sound in air at sea level (~340 m/s).
cm = pulse width / 58.0;
inches = pulse width / 148.0;
// Print out results
if ( pulse width > MAX DIST ) {
Serial.println("Out of range");
} else {
Serial.println("******************************);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

