Asignment – 4

Assignment Date	28 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:

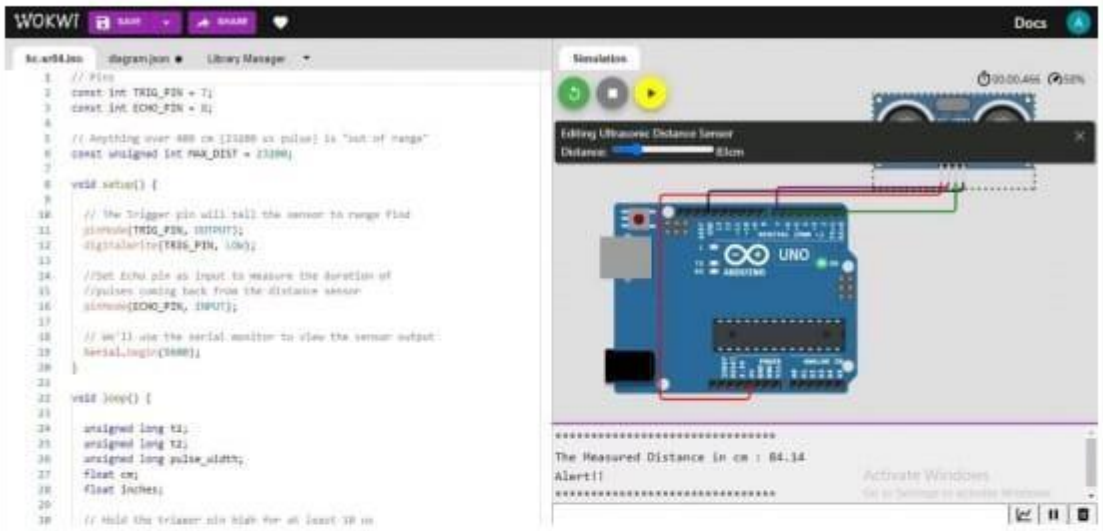
```
// Pins
const int TRIG_PIN = 7;
 const int ECHO_PIN = 8;


// 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
```

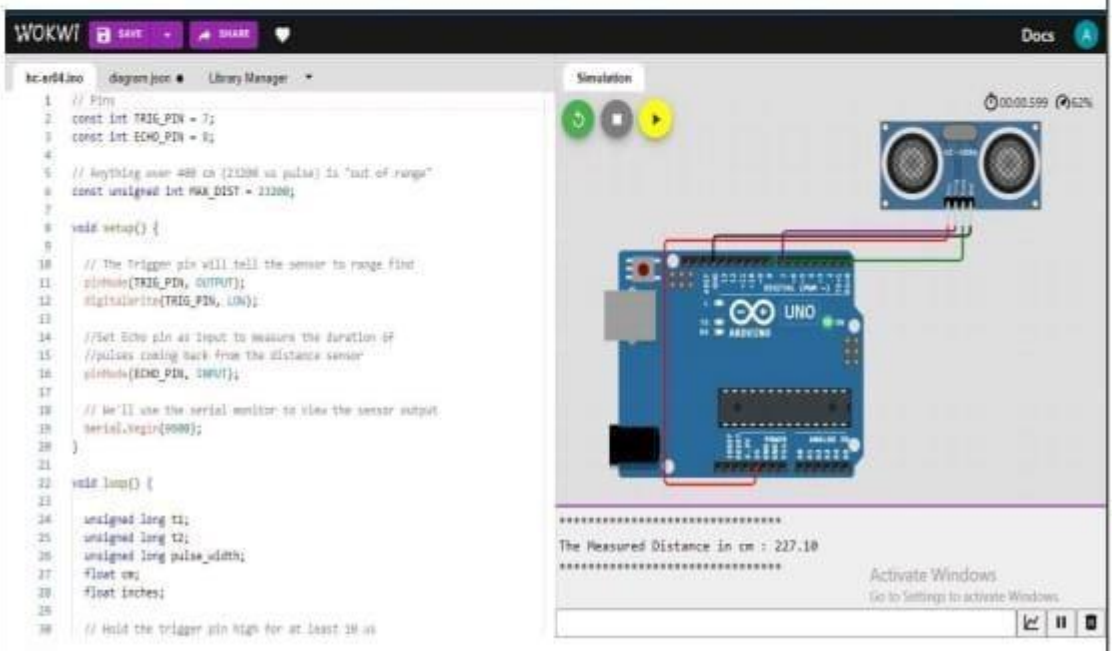
```
 // are found in the datasheet, and calculated from the assumed speed
 //of sound in air at sea level (~340 m/s).
 cm = pulse_width / 58.0;
 inches = pulse_width / 148.0;
 // Print out results
if ( pulse_width > MAX_DIST ) {
Serial.println("Out of range");
 } else {
Serial.println("******************************");
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