Assignment - 4

Assignment Date	22 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 cmssend "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!!");
    // }
```

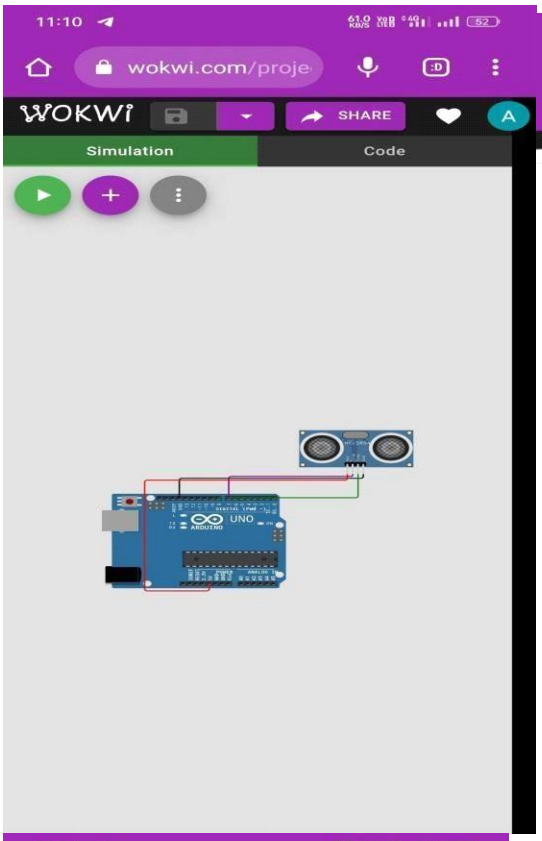
```
    }

    Serial.print("**********************************");
  }

  // Wait at least 1000ms before next measurement
  delay(1000);
}
```

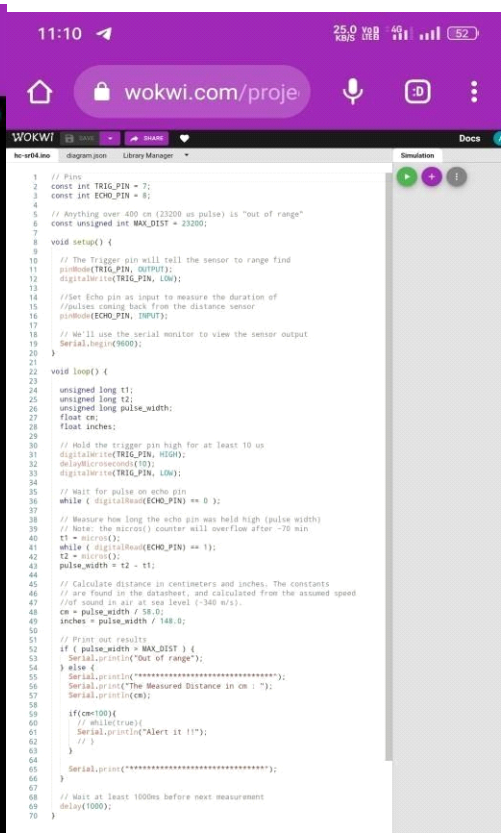
Output:

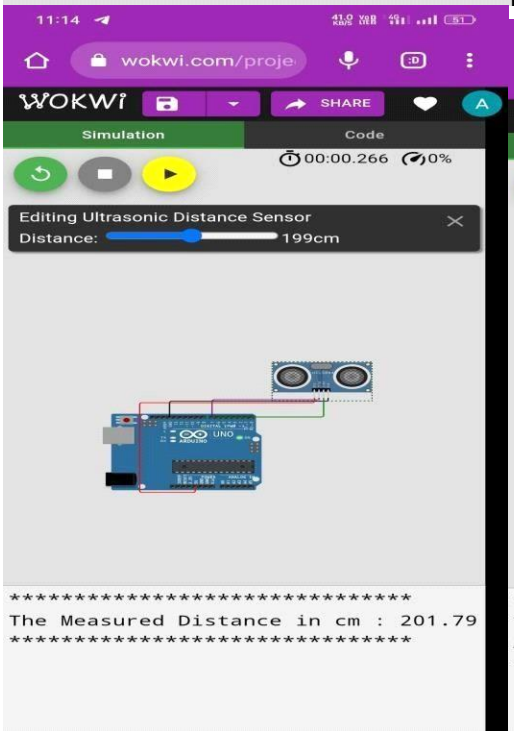
- **If the distance is less than 100 cms , it alerts.**

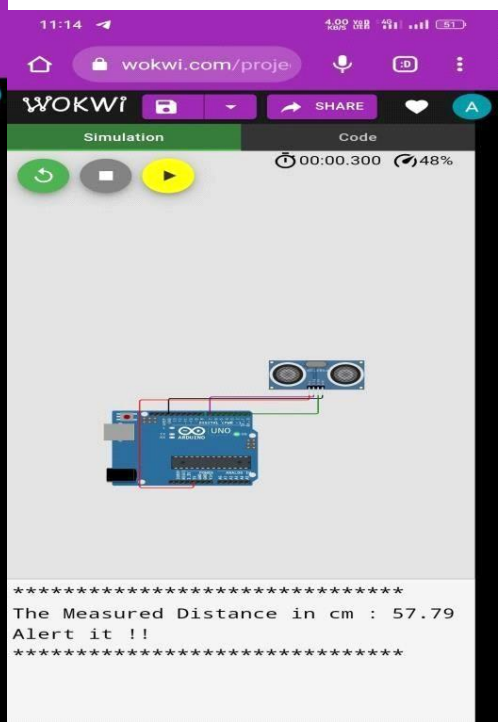
- **If the distance is more than 100 cms, it won't alert.**

- **Simulation and code execution**









Project Link:

https://wokwi.com/projects/346136429340918356