Assignment - 4

Assignment Date	5 NOVEMBER 2022
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Student Roll Number	95071914036
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.

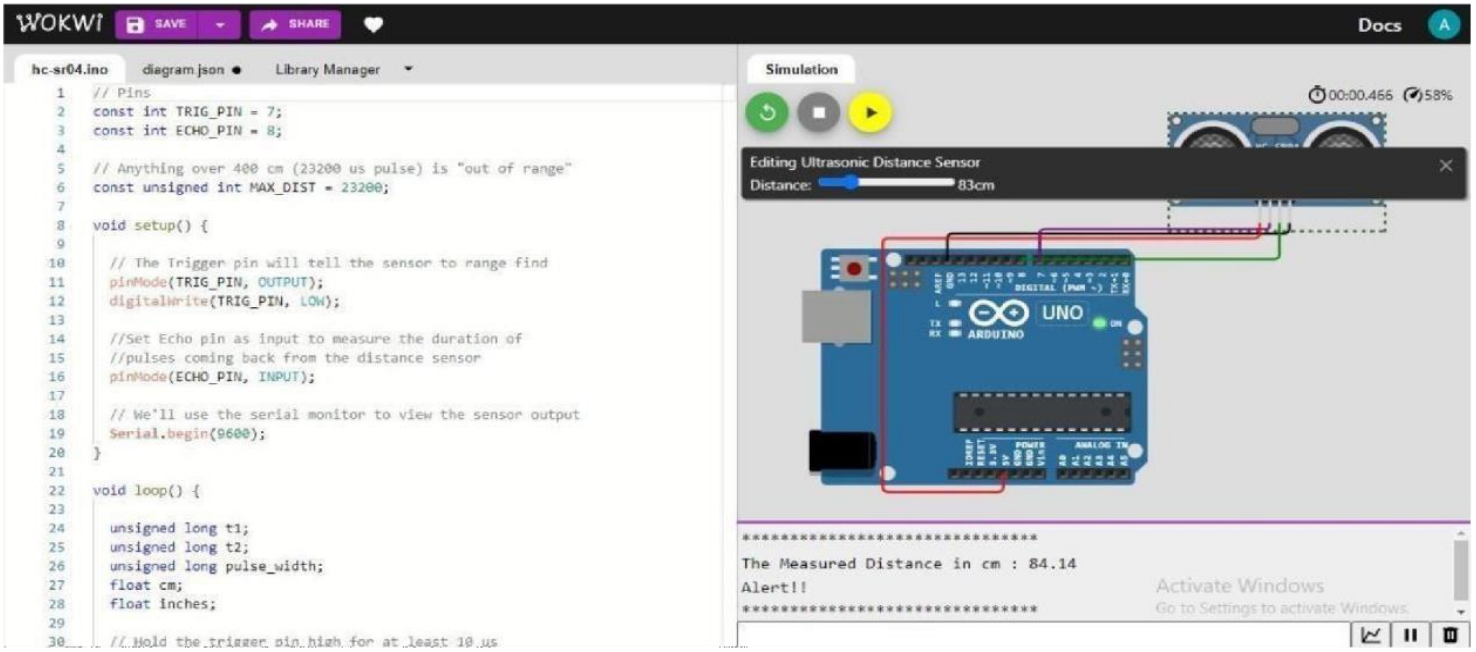
Solution:

```
// 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);
```

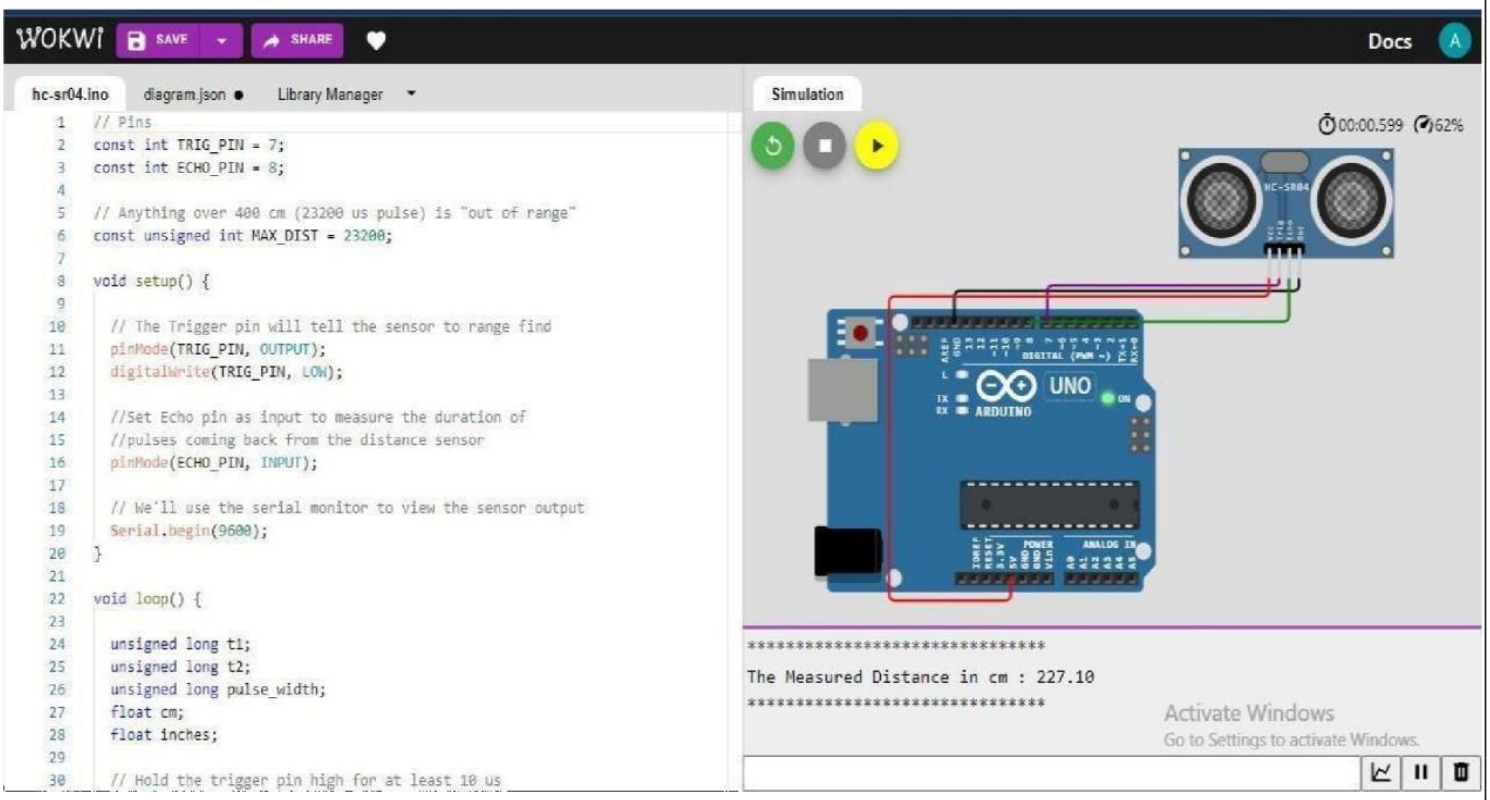
```
  // Wait for pulse on echo pin
  while ( digitalRead(ECHO_PIN) == 0 );

  // 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 it !!");
      // }
    }

    Serial.print("**********************************");
  }
  // Wait at least 1000ms before next measurement
  delay(1000);
}
```

Output:

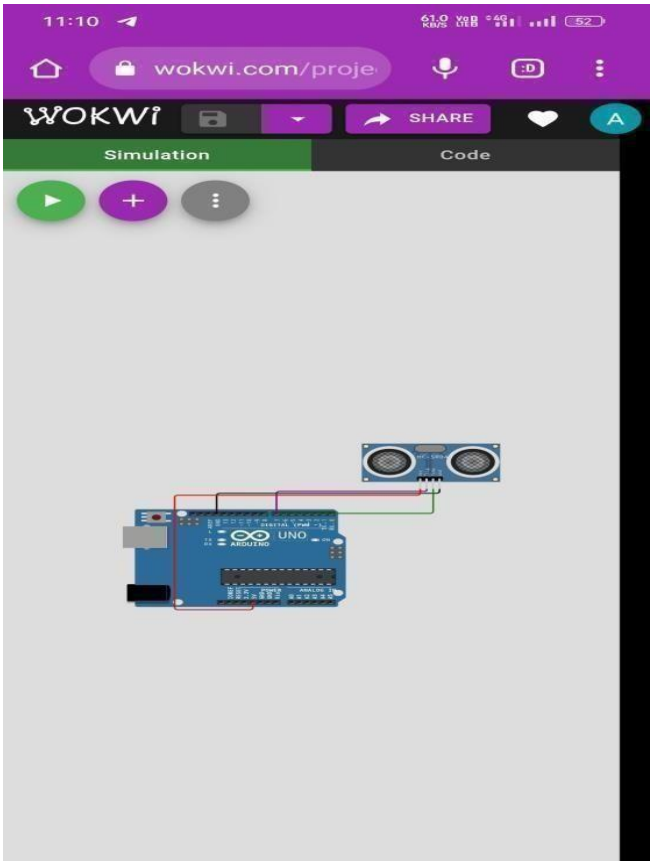
1) If the distance is less than 100 cms , it alerts.

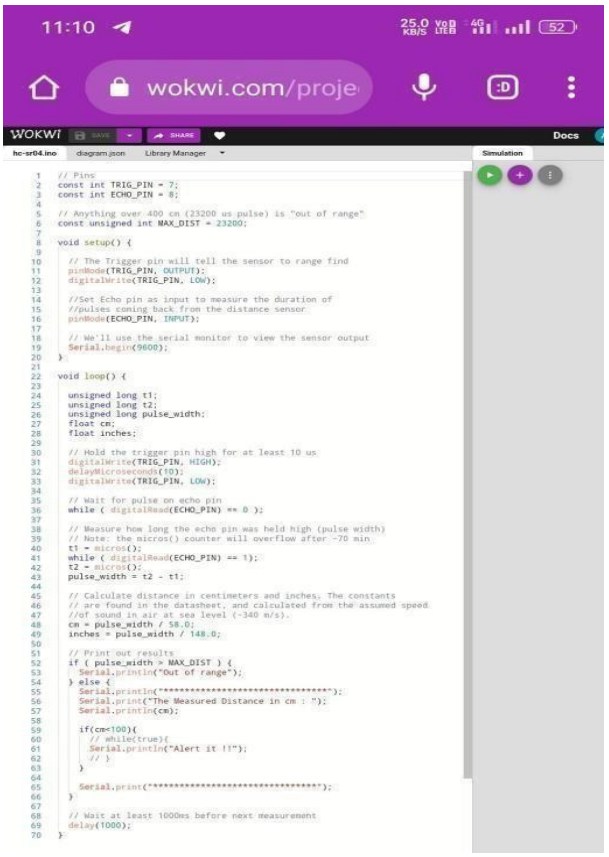


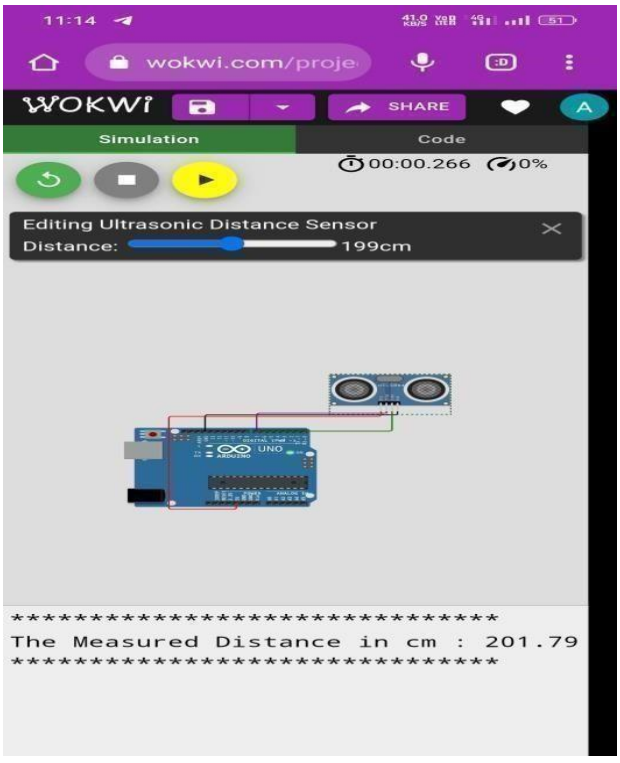
2) If the distance is more than 100 cms, it won't alert.

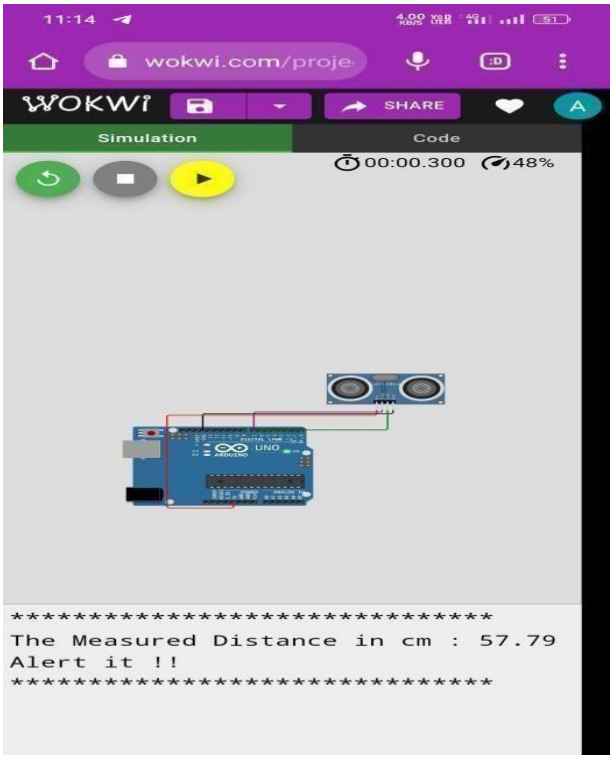


3) Simulation and code execution









Project Link:

https://wokwi.com/projects/346871471668200019