Assignment-4

Assignment Date	26.10.2022
Student Name	Lavanya S
Student Roll Number	611819106022
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);

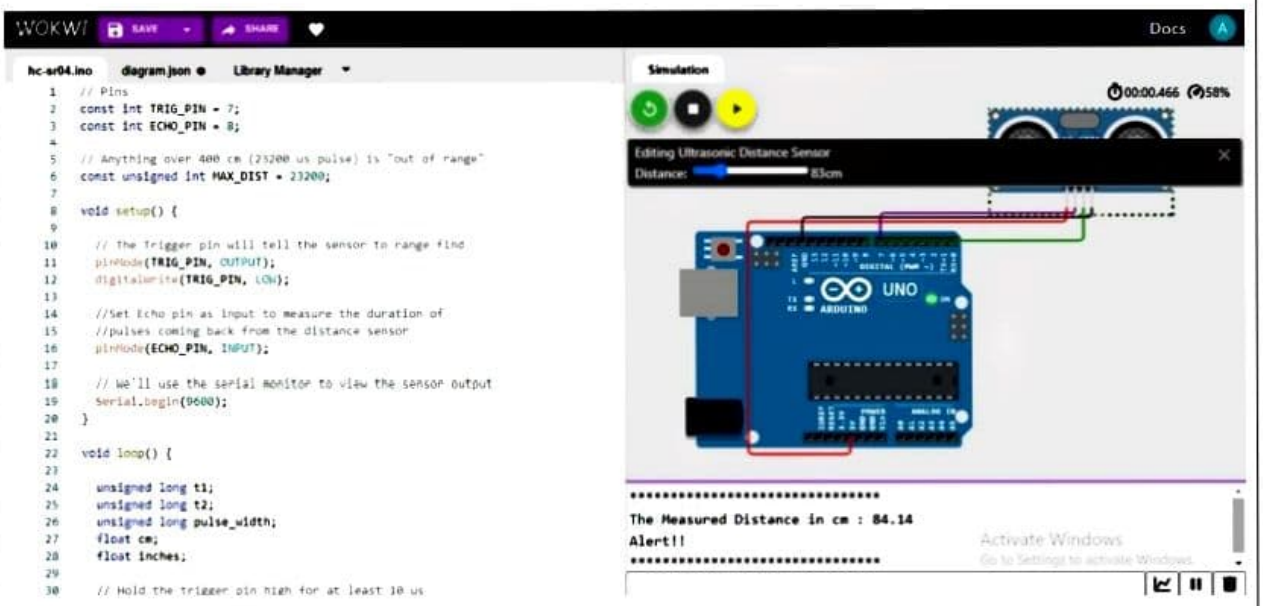
  if(cm<100){
   // while(true){
   Serial.println("Alert!!");
   // }
  }

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

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

Output:

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

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void loop() {

  unsigned long t1;
  unsigned long t2;
  unsigned long pulse_width;
  float cm;
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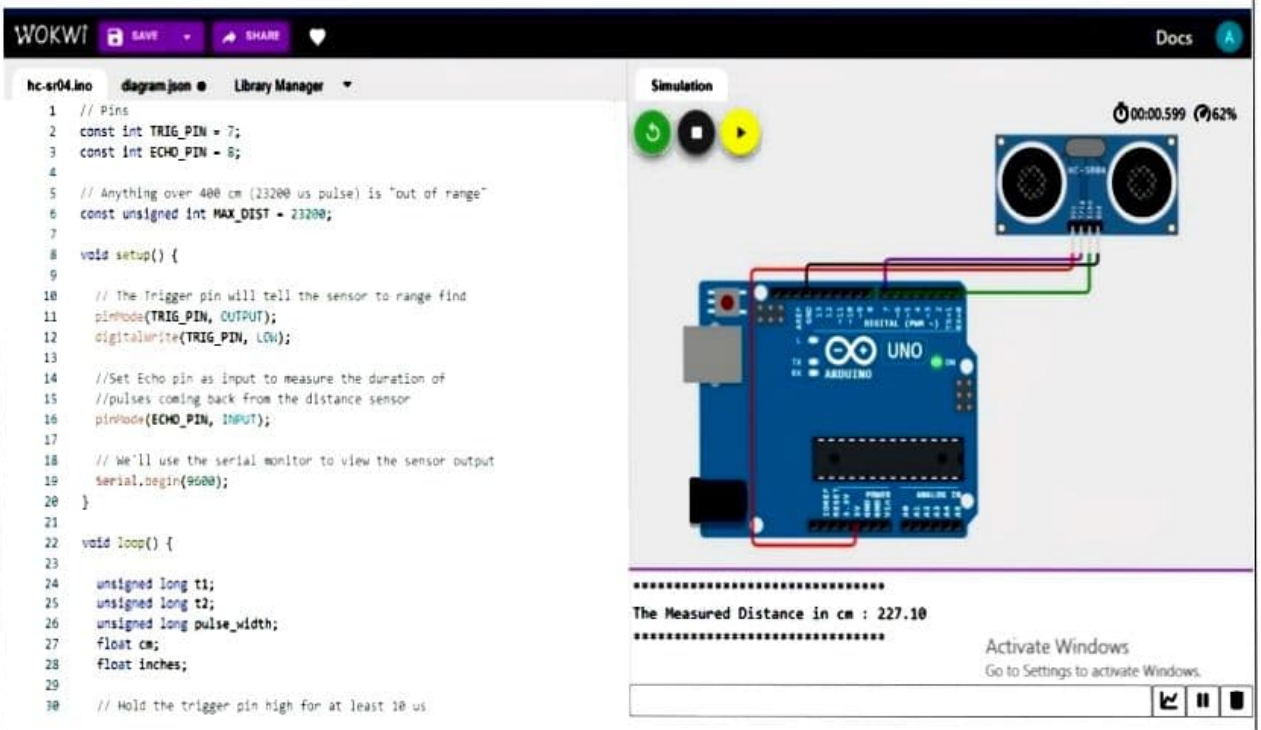
  // Hold the trigger pin high for at least 10 us
```

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

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3) Simulation and code execution