

Assignment-4

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to ibm cloud and display in device recent events ?

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Maximum Marks	2 marks

Program Code:

```
// ARDUINO PINS (TRIGGER PIN, ECHO PIN)

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 time duration of pulse
returning 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;
```

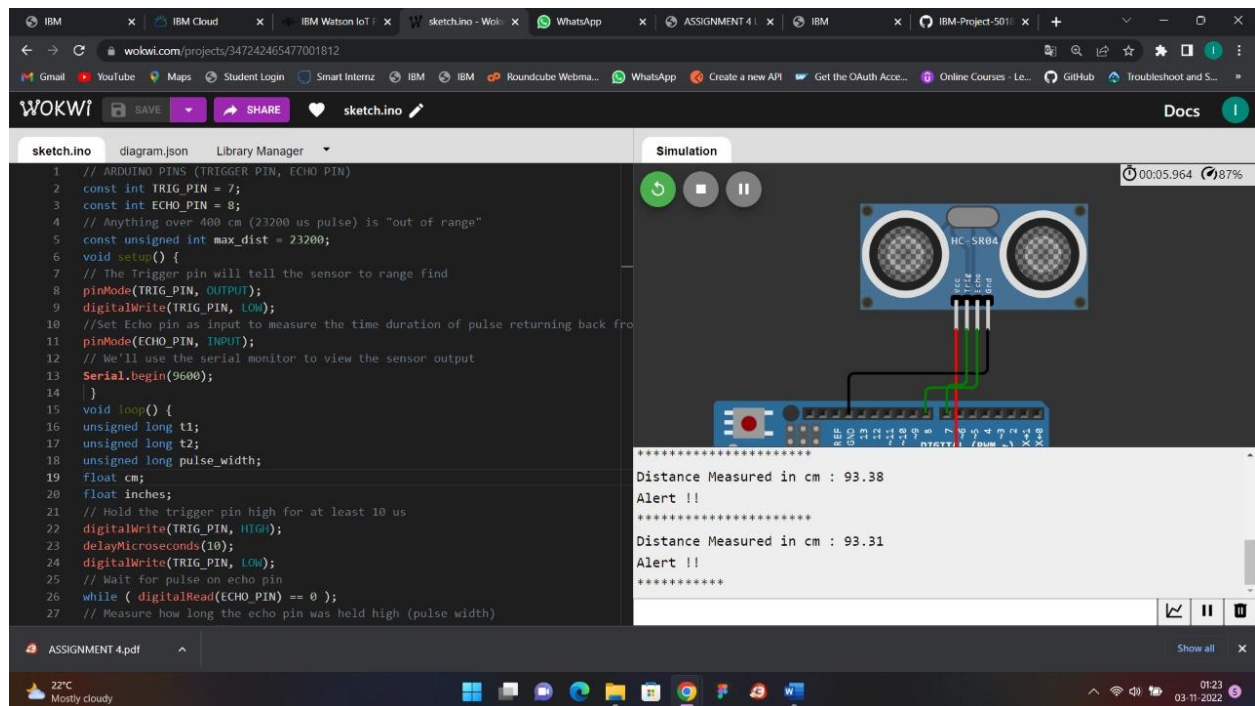
```

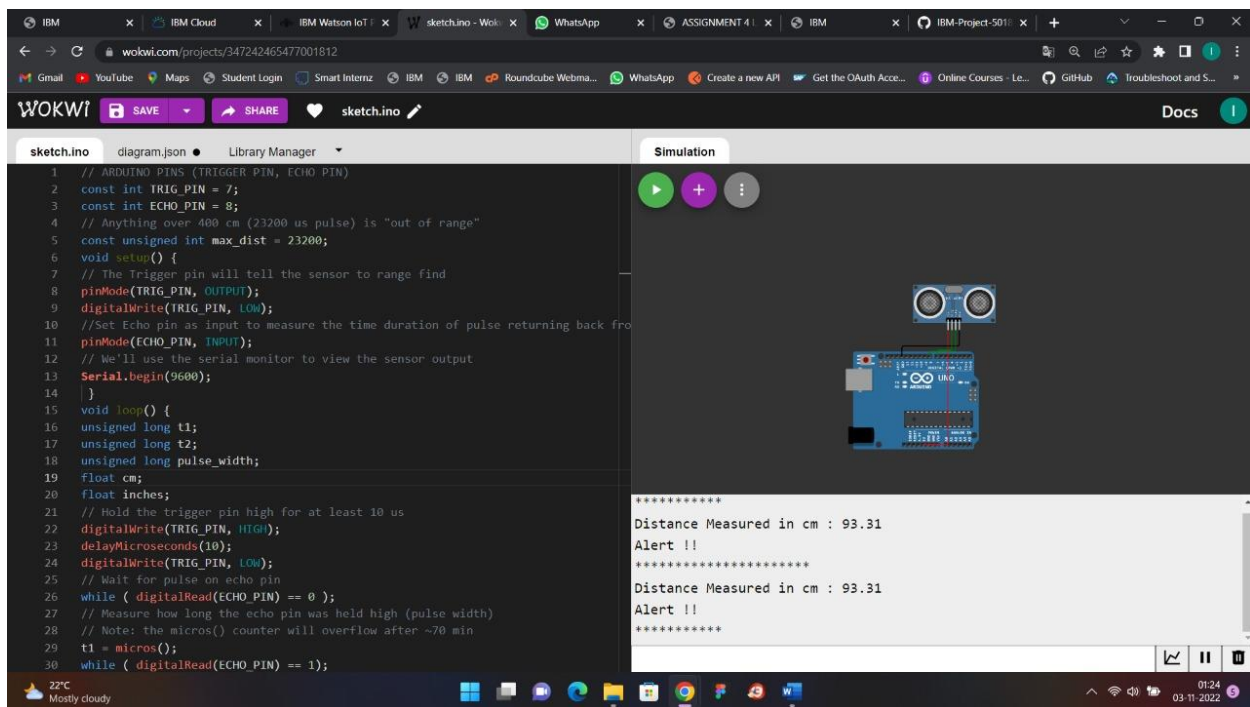
// Calculate distance in centimeters and inches. The constants
// are found in the datasheet, and calculated from the assumed
// speed
// of sound in air at sea level (~340 m/s).
cm = pulse_width / 58.0;
inches = pulse_width / 148.0;
// Print out results
if ( pulse_width > max_dist ) {
  Serial.println("Out of range");
} else
{ Serial.println("*****")
; Serial.print("Distance Measured 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:





IBM Cloud (NEAR) :

The screenshot shows the IBM Cloud (NEAR) dashboard. The top navigation bar includes links for Browse, Action, Device Types, and Interfaces. The main content area displays a table of devices, with the selected device (ASSIGN4) shown in detail. The detailed view includes a tabbed interface with sections for Identity, Device Information, Recent Events, State, and Logs. The Recent Events section shows a list of events with columns for Event, Value, Format, and Last Received.

Event	Value	Format	Last Received
Data	{"Distance Measured in cm":7,"Alert !!":0}	json	a few seconds ago
Data	{"Distance Measured in cm":79,"Alert !!":0}	json	a few seconds ago
Data	{"Distance Measured in cm":100,"Alert !!":0}	json	a few seconds ago
Data	{"Distance Measured in cm":4,"Alert !!":0}	json	a few seconds ago
Data	{"Distance Measured in cm":63,"Alert !!":0}	json	a few seconds ago

1 Simulation running

IBM Cloud (FAR) :

The screenshot shows the IBM Cloud IoT Platform interface. On the left is a dark sidebar with navigation icons. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar is present. In the top right corner, there is an 'Add Device' button. The main content area displays a table of devices. The selected device is 'ASSIGN4', which is 'Disconnected'. Below the device header, there are tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, showing a message: 'The recent events listed show the live stream of data that is coming and going from this device.' Below this message is a table of events.

Event	Value	Format	Last Received
Data	{"Distance Measured in cm":146}	json	a few seconds ago
Data	{"Distance Measured in cm":410}	json	a few seconds ago
Data	{"Distance Measured in cm":110}	json	a few seconds ago
Data	{"Distance Measured in cm":392}	json	a few seconds ago
Data	{"Distance Measured in cm":138}	json	a few seconds ago

At the bottom right of the interface, a status bar indicates '1 Simulation running'.

Reference Simulation Link :

<https://wokwi.com/projects/347242465477001812>