

Assignment - 4

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 TRIGpPIN = 7;
const int ECHOpPIN = 8;

// Anything over 400 cm (23200 us pulse) is "out of range"
const unsigned int MAXpDIST = 23200;

void setup() (

  // The Trigger pin will tell the sensor to range find
  pinMode(TRIGpPIN, OUTPUT);
  digitalWrite (TRIGpPIN, 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 pulsepwidth;
  float cm;
  float inches;

  // Hold the trigger pin high for at least 10 us
```

```

digitalWrite(TRIGpPIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIGpPIN, 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();
pulsewidth = 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 = pulsewidth / 58.0;
inches = pulsewidth / 148.0;

// Print out results
if ( pulsewidth > 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!!");

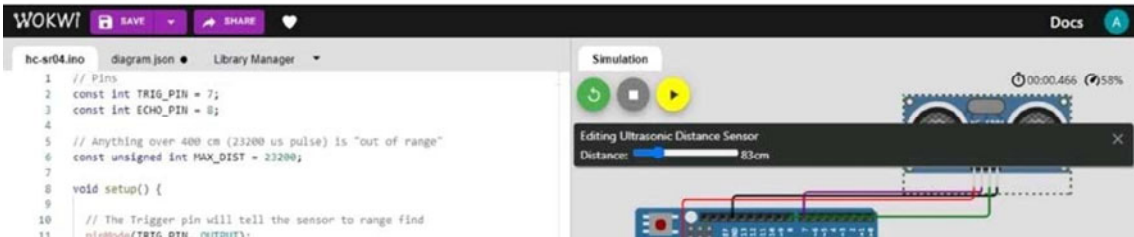
  Serial.print("*****");

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

```

Output

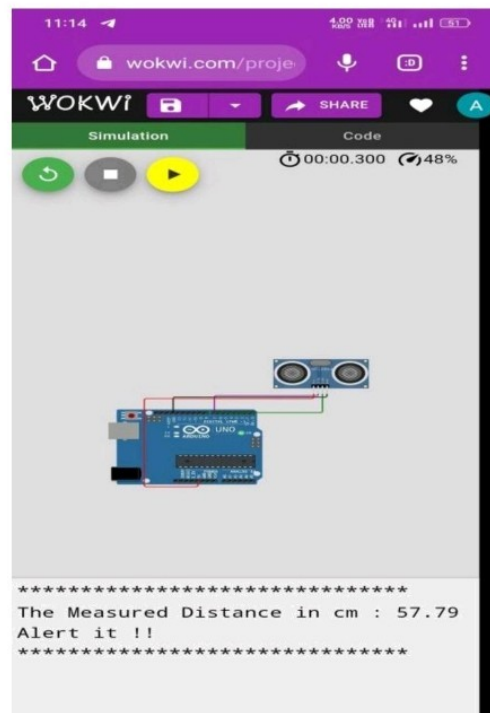
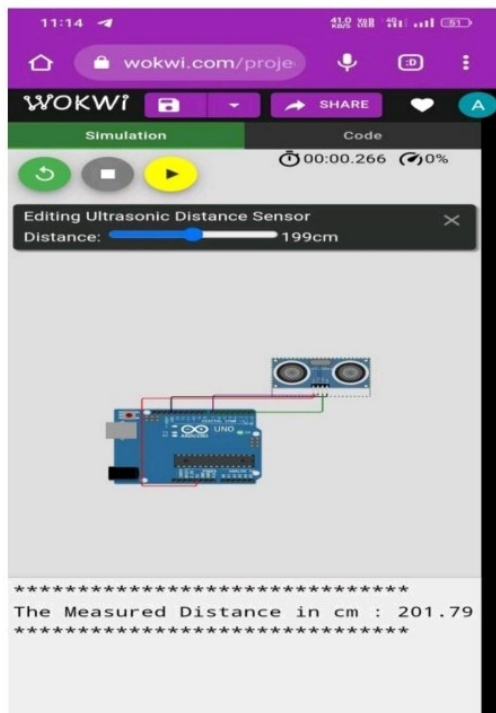
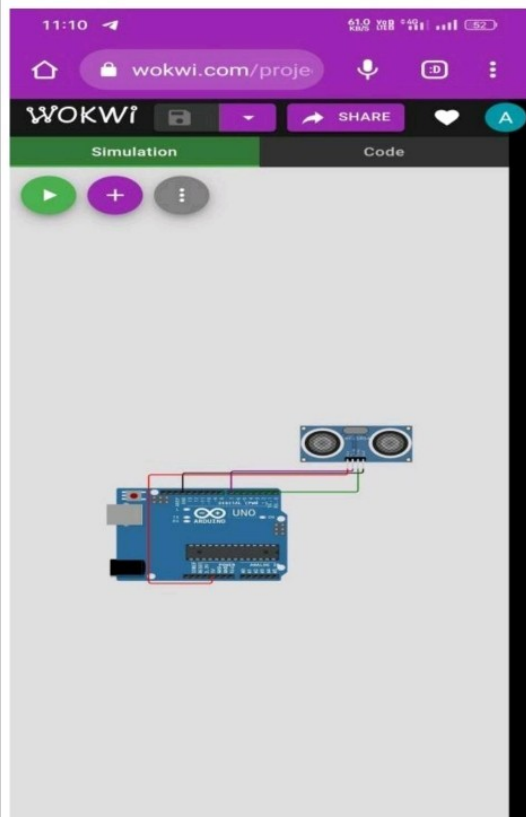
1) If the distance is less than 100 cms , it alerts.



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



3) Simulation and code execution



Service Details - IBM Cloud x IBM Watson IoT Platform x IBM Watson IoT Platform x +

460c95.internetofthings.ibmcloud.com/dashboard/devices/drilldown/A2D2:Divyasri?returnTo=/devices/browse

divyasri.19ec026@nandhaengg.org
ID: 460c95

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Device Drilldown - Divyasri

- Device Credentials
- Connection Information
- Recent Events
- State
- Device Information
- Metadata
- Diagnostics
- Connection Logs
- Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	460c95
Device Type	A2D2
Device ID	Divyasri
Authentication Method	use-token-auth
Authentication Token	fPo8B_F_MCVOHOfg_J

! Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

[Find out how to add these credentials to your device.](#)

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Service Details - IBM Cloud x IBM Watson IoT Platform x IBM Watson IoT Platform x +

agybzi.internetofthings.ibmcloud.com/dashboard/devices/drilldown/A2D2:abirami?returnTo=/devices/browse

abirami.19ec002@nandhaengg.org
ID: agybzi

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Device Drilldown - abirami

- Device Credentials
- Connection Information
- Recent Events
- State
- Device Information
- Metadata
- Diagnostics
- Connection Logs
- Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	agybzi
Device Type	A2D2
Device ID	abirami
Authentication Method	use-token-auth
Authentication Token	6VRG+qWv@Fib6h6?9

! Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

[Find out how to add these credentials to your device.](#)

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