

SMART FARMER – IoT ENABLED SMART FARMER APPLICATION

ASSIGNMENT – 4

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1. Write Code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 centimetres send an '*alert*' to the ibm cloud and display in device recent events.

Program:

```
#define ECHO_PIN 2

#define TRIG_PIN 3

void setup() {
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
}

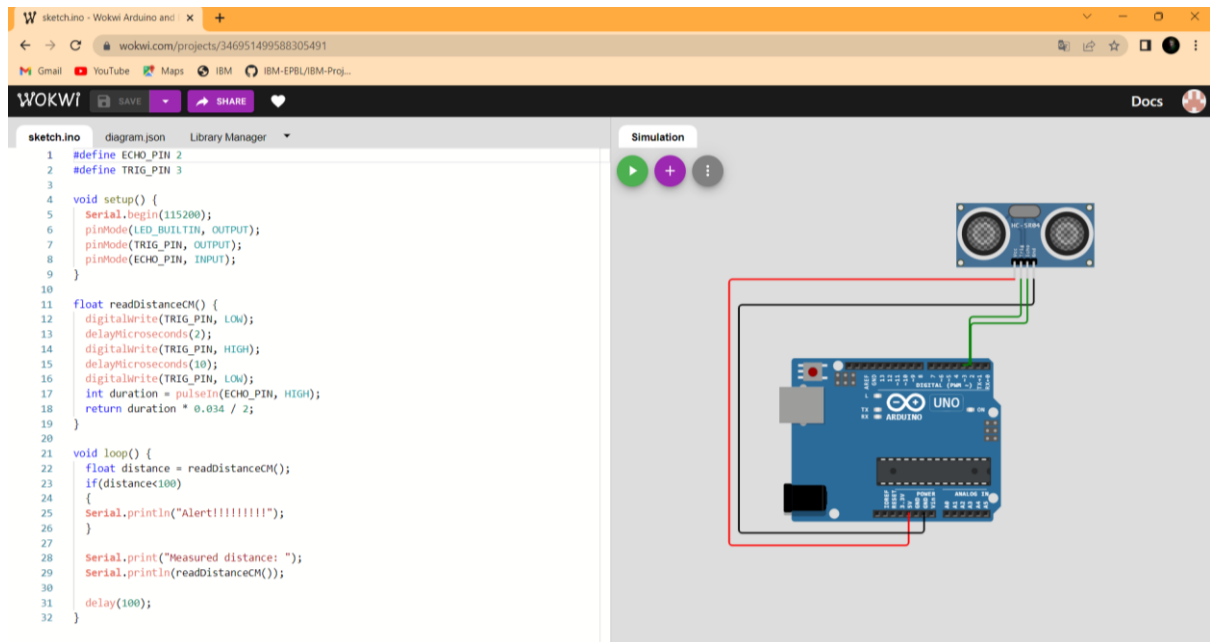
float readDistanceCM() {
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  int duration = pulseIn(ECHO_PIN, HIGH);
  return duration * 0.034 / 2;
}

void loop() {
  float distance = readDistanceCM();
  if(distance<100)
  {
    Serial.println("Alert!!!!!!!!!!");
  }

  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());

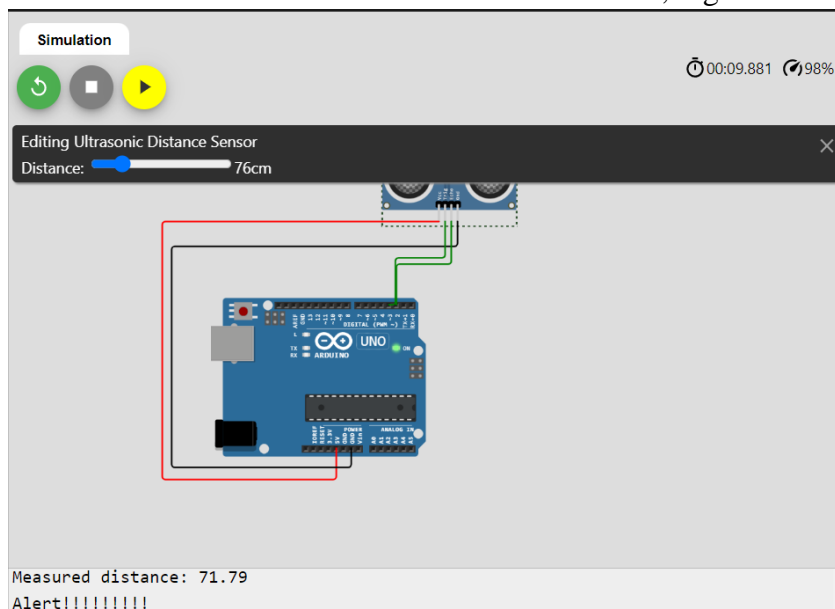
  delay(100);
}
```

Wokwi Editor window:



Results:

1. The measured distance is less than 100 centimetres, it gives alert message



2. The measured distance is more than 100 centimetres, it will not give alert message

The screenshot shows the Wokwi online Arduino IDE interface. On the left, the sketch editor displays the following code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3
4 void setup() {
5   Serial.begin(115200);
6   pinMode(LED_BUILTIN, OUTPUT);
7   pinMode(TRIG_PIN, OUTPUT);
8   pinMode(ECHO_PIN, INPUT);
9 }
10
11 float readDistanceCM() {
12   digitalWrite(TRIG_PIN, LOW);
13   delayMicroseconds(2);
14   digitalWrite(TRIG_PIN, HIGH);
15   delayMicroseconds(10);
16   digitalWrite(TRIG_PIN, LOW);
17   int duration = pulseIn(ECHO_PIN, HIGH);
18   return duration * 0.034 / 2;
19 }
20
21 void loop() {
22   float distance = readDistanceCM();
23   if(distance < 100)
24   {
25     Serial.println("Alert!!!!!!!!!!!!");
26   }
27
28   Serial.print("Measured distance: ");
29   Serial.println(readDistanceCM());
30
31   delay(100);
32 }
```

On the right, the simulation window shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. Below the simulation, the serial monitor displays the following output:

```
Measured distance: 177.24
Measured distance: 177.16
Measured distance: 177.26
Measured distance: 177.16
Measured distance: 177.24
```

Since all measured distances are greater than 100 cm, the condition in the code is not met, and no alert message is printed.