

Assignment -4

Assignment Date	27 October 2022
Student Name	Pavithra Devi V R
Team ID	PNT2022TMID44390
Project Name	Project-Smart Farmer-IoT Enabled Smart Farming Application
Maximum Marks	2 Marks

Question-1:

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

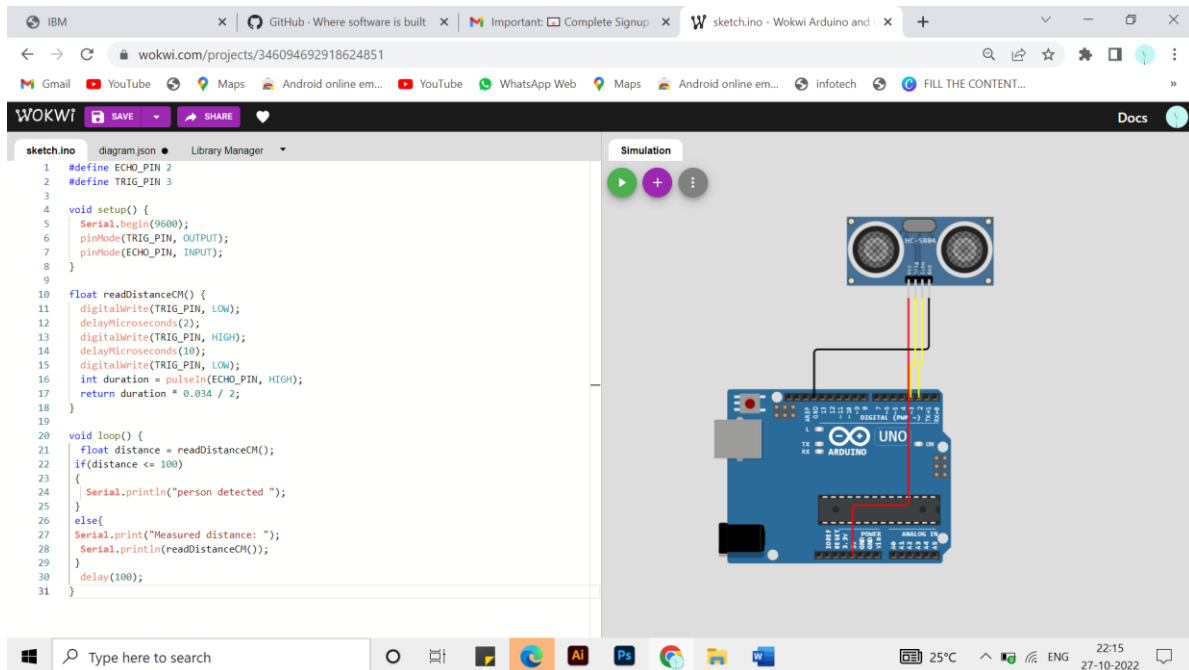
```
#define ECHO_PIN 2
#define TRIG_PIN 3

void setup() {
  Serial.begin(9600);
  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("person detected ");
  }
  else{
    Serial.print("Measured distance: ");
    Serial.println(readDistanceCM());
  }
  delay(100);
}
```

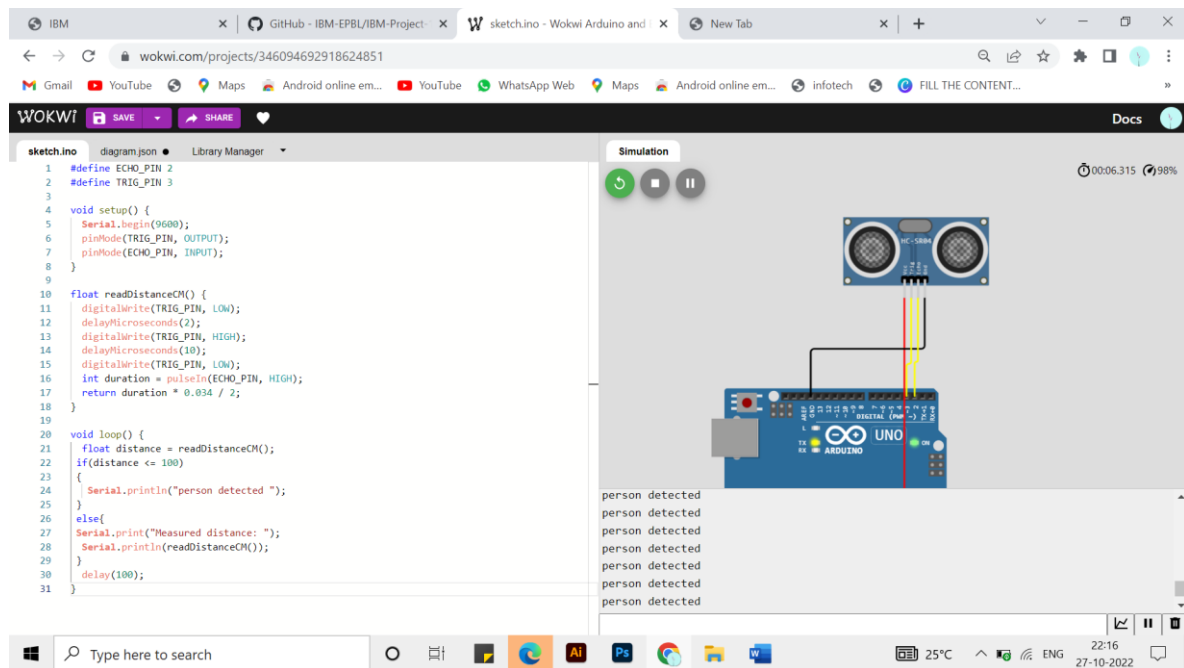
Solution:



Wokwi IDE interface showing the initial setup of an Arduino Uno project. The sketch.ino file contains the following code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3
4 void setup() {
5   Serial.begin(9600);
6   pinMode(TRIG_PIN, OUTPUT);
7   pinMode(ECHO_PIN, INPUT);
8 }
9
10 float readDistanceCM() {
11   digitalWrite(TRIG_PIN, LOW);
12   delayMicroseconds(2);
13   digitalWrite(TRIG_PIN, HIGH);
14   delayMicroseconds(10);
15   digitalWrite(TRIG_PIN, LOW);
16   int duration = pulseIn(ECHO_PIN, HIGH);
17   return duration * 0.034 / 2;
18 }
19
20 void loop() {
21   float distance = readDistanceCM();
22   if(distance <= 100)
23   {
24     Serial.println("person detected ");
25   }
26   else{
27     Serial.print("Measured distance: ");
28     Serial.println(readDistanceCM());
29   }
30   delay(100);
31 }
```

The simulation window shows the physical components connected: an Arduino Uno board and an HC-SR04 ultrasonic sensor. The sensor is connected to the Arduino via four wires: VCC (red) to 5V, GND (black) to GND, TRIG (yellow) to pin 2, and ECHO (blue) to pin 3.



Wokwi IDE interface showing the simulation running. The sketch.ino file is the same as in the first screenshot. The simulation window shows the physical components connected, and the serial monitor displays the output of the code, which is 'person detected' repeated six times. The simulation progress bar at the top right indicates 00:06.315 and 98% completion.

IBM GitHub - IBM-EPBL/IBM-Project sketchino - Wokwi Arduino and New Tab

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28     Serial.println(readDistanceCM());
29   }
30   delay(100);
31 }
```

Simulation 00:16.546 99%

Editing Ultrasonic Distance Sensor Distance: 141cm

Measured distance: 139.13
Measured distance: 139.13
Measured distance: 139.03
Measured distance: 139.03
Measured distance: 139.03
Measured distance: 139.03
Measured distance: 139.03

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27     Serial.print("Measured distance: ");
28     Serial.println(readDistanceCM());
29   }
30   delay(100);
31 }
```

Simulation 00:20.562 101%

Editing Ultrasonic Distance Sensor Distance: 227cm

Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96

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