Assignment -4

Assignment Date	30 October 2022
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Student Roll Number	GCTC194111
Maximum Marks	2 Marks

Question-1:
Write code and connections in wokwi for the ultrasonic sensor.
Whenever the distance is less than 100cms send an alert to the ibm cloud and display in the device recent events.

Code:

```cpp
#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); intduration =
  pulseIn(ECHO_PIN, HIGH); return duration *
  0.034 / 2;
}

void loop() {
```

```
  float distance = readDistanceCM(); bool

  isNearby = distance <100;

  digitalWrite(LED_BUILTIN, isNearby);


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

  delay(100);
}
```

DIAGRAM.JSON:

```
{

  "version": 1,
  "author": "sindhuja",
  "editor": "wokwi",
  "parts": [
    {
      "type": "wokwi-arduino-uno",
      "id": "uno",
      "top": 275.99,
      "left": 47.73, "rotate": 0,
      "hide": false,
      "attrs": {}
    },
    {
      "type": "wokwi-resistor",
      "id": "r1",
      "top": 165.87,
      "left": 142.81,
      "rotate": 90,
      "hide": false,
      "attrs": { "value": "220" }
    },
    {
      "type": "wokwi-led",
      "id": "led",
      "top": 87.29,
```
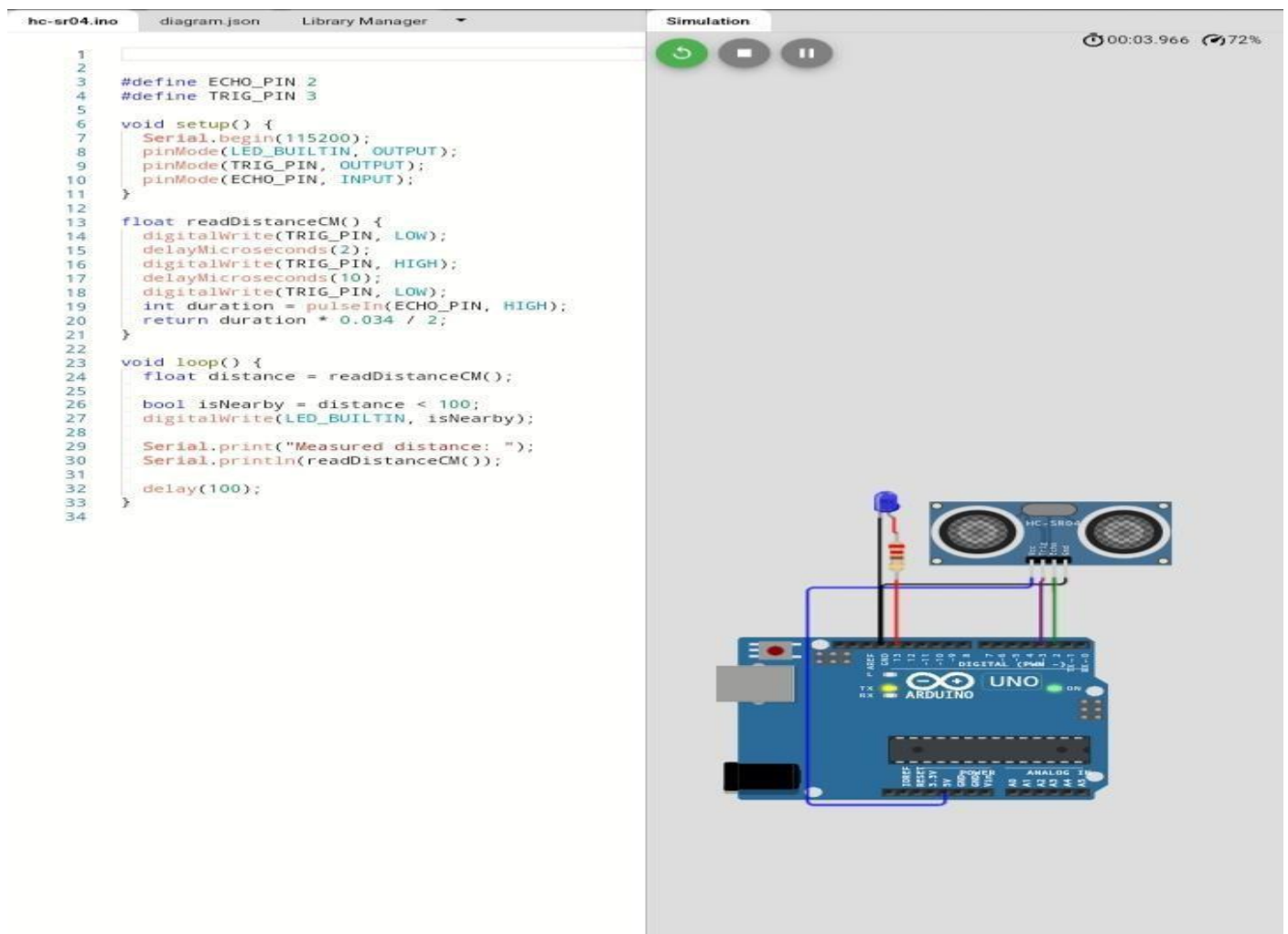
```
      "left": 147.05,
      "rotate": 0,
      "hide": false,
      "attrs": { "color": "blue" }
    },
    {
      "type": "wokwi-hc-sr04",
      "id": "ultrasonic",
      "top": 108.43,
      "left": 196.5, "rotate": 0,
      "hide": false,
      "attrs": { "distance": "180" }
    }
  ],
  "connections": [
    [ "uno:GND.1", "ultrasonic:GND", "black", [ "v-8", "*", "v8" ] ],
    [ "uno:2", "ultrasonic:ECHO", "green", [] ],
    [ "uno:3", "ultrasonic:TRIG", "purple", [ "*", "v4" ] ],
    [ "uno:5V", "ultrasonic:VCC", "blue", [ "v16", "h-96", "*", "v12" ] ],
    [ "uno:GND.1", "led:C", "black", [] ],
    [ "r1:1", "led:A", "red", [] ],
    [ "uno:13", "r1:2", "red", [] ]
  ]
}
```

OUTPUT:


```
1
2
3    #define ECHO_PIN 2
4    #define TRIG_PIN 3
5
6    void setup() {
7      Serial.begin(115200);
8      pinMode(LED_BUILTIN, OUTPUT);
9      pinMode(TRIG_PIN, OUTPUT);
10     pinMode(ECHO_PIN, INPUT);
11   }
12
13   float readDistanceCM() {
14     digitalWrite(TRIG_PIN, LOW);
15     delayMicroseconds(2);
16     digitalWrite(TRIG_PIN, HIGH);
17     delayMicroseconds(10);
18     digitalWrite(TRIG_PIN, LOW);
19     int duration = pulseIn(ECHO_PIN, HIGH);
20     return duration * 0.034 / 2;
21   }
22
23   void loop() {
24     float distance = readDistanceCM();
25
26     bool isNearby = distance < 100;
27     digitalWrite(LED_BUILTIN, isNearby);
28
29     Serial.print("Measured distance: ");
30     Serial.println(readDistanceCM());
31
32     delay(100);
33   }
34
```
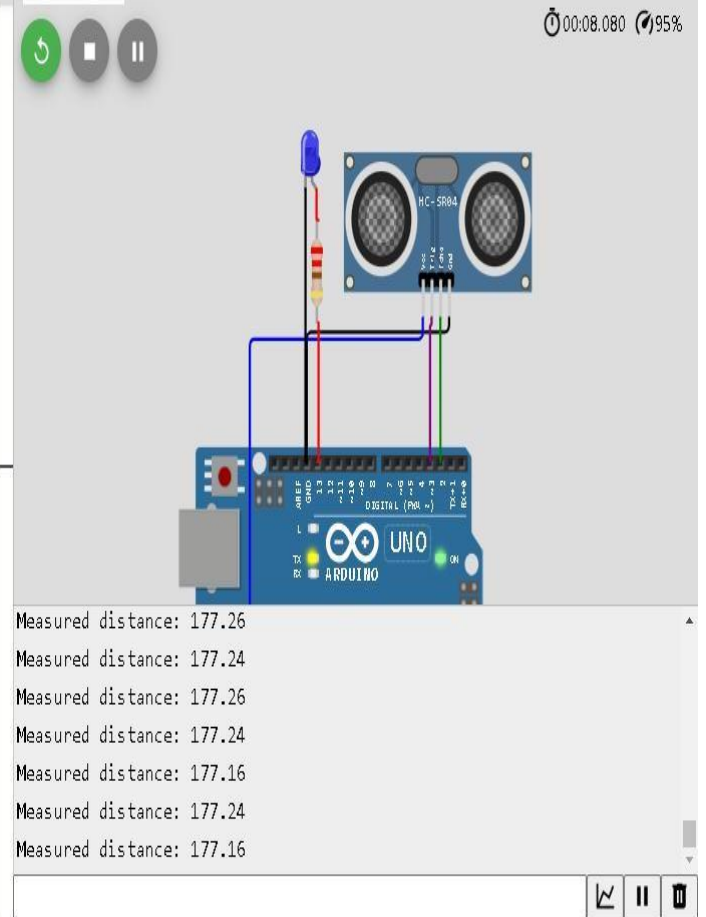
```arduino
4   void setup() {
5     Serial.begin(115200);
6     pinMode(LED_BUILTIN, OUTPUT);
7     pinMode(TRIG_PIN, OUTPUT);
8     pinMode(ECHO_PIN, INPUT);
9   }
10
11  float readDistanceCM() {
12    digitalWrite(TRIG_PIN, LOW);
13    delayMicroseconds(2);
14    digitalWrite(TRIG_PIN, HIGH);
15    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
24    bool isNearby = distance < 100;
25    digitalWrite(LED_BUILTIN, isNearby);
26
27    Serial.print("Measured distance: ");
28    Serial.println(readDistanceCM());
29
30    delay(100);
31  }
32
```

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