

Assignment -4

Assignment Date	08 November 2022
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Maximum Marks	2 Marks

Question:

Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Code:

```
#define trigPin 12
#define echoPin 13
int Buzzer = 8; // Connect buzzer pin to
8int ledPin= 6; //Connect LEd pin to 6
int duration, distance; //to measure the distance and time taken

void setup() {
    Serial.begin (9600);
    //Define the output and input
    objects(devices)pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
    pinMode(Buzzer, OUTPUT);
    pinMode(ledPin, OUTPUT);
}

void loop() {

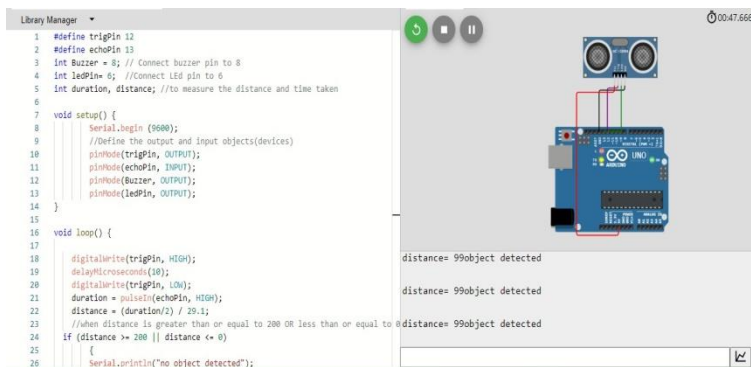
    digitalWrite(trigPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigPin, LOW);
    duration = pulseIn(echoPin,
    HIGH);distance = (duration/2) /
    29.1;
    //when distance is greater than or equal to 200 OR less than or equal to 0,the
    buzzerand LED are off
    if (distance >= 200 || distance <= 0)
    {
        Serial.println("no object detected");
        digitalWrite(Buzzer,LOW);
```

```

        digitalWrite(ledPin,LOW);
    }
    else {
        Serial.println("object detected \n");
        Serial.print("distance= ");
        Serial.print(distance);    //prints the distance if it is between the range 0 to
        200tone(Buzzer,400);    // play tone of 400Hz for 500 ms
        digitalWrite(ledPin,HIGH);
    }
}
}

```

Output:



The screenshot shows the Arduino IDE interface. On the left, the code is displayed with line numbers 1 through 26. The code defines pins for trigPin (12), echoPin (13), Buzzer (8), and ledPin (6). It sets up a serial connection at 9600 baud and configures the pins as output or input. The loop function sends a HIGH pulse to the trigPin, waits 10 microseconds, sends a LOW pulse, and then reads the echoPin. It calculates the distance based on the pulse duration and prints the result to the serial monitor. If the distance is greater than or equal to 200 cm, it prints "no object detected".

```

1  #define trigPin 12
2  #define echoPin 13
3  int Buzzer = 8; // Connect buzzer pin to 8
4  int ledPin= 6; //Connect LED pin to 6
5  int duration, distance; //to measure the distance and time taken
6
7  void setup() {
8      Serial.begin (9600);
9      //Define the output and input objects(devices)
10     pinMode(trigPin, OUTPUT);
11     pinMode(echoPin, INPUT);
12     pinMode(Buzzer, OUTPUT);
13     pinMode(ledPin, OUTPUT);
14 }
15
16 void loop() {
17     digitalWrite(trigPin, HIGH);
18     delayMicroseconds(10);
19     digitalWrite(trigPin, LOW);
20     duration = pulseIn(echoPin, HIGH);
21     distance = (duration/2) / 29.1;
22     //when distance is greater than or equal to 200 OR less than or equal to 0
23     if (distance >= 200 || distance <= 0)
24     {
25         Serial.println("no object detected");
26     }
27 }

```

On the right, the serial monitor shows the output of the program. It displays "distance= 99object detected" three times, indicating that the distance measured is 99 cm, which is less than 200 cm, so the buzzer sounds and the LED turns on.