

#### 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() {

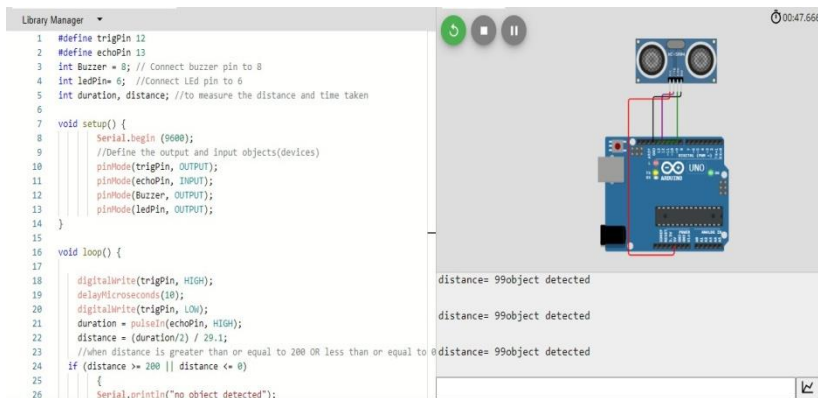
    digitalWrite(trigPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigPin, LOW);
    duration = pulseIn(echoPin,
    HIGH);distance = (duration/2) /
    29.1;
    //when distance is greater than or equal to 200 OR less than or equal to 0,the
    buzzerand LED are off
    if (distance >= 200 || 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 200 tone(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 a trigPin (12), echoPin (13), a buzzer (8), and an LED (6). It sets up serial communication at 9600 baud and configures the pins as outputs. The loop function sends a pulse to the echoPin, calculates the distance, and checks if an object is detected (distance <= 200 cm). If detected, it prints the distance and plays a 400Hz tone for 500ms while the LED is on. If no object is detected, it prints "no object detected".

On the right, the serial monitor shows the output of the program. It displays "distance= 99object detected" three times, indicating that an object was detected at a distance of 99 cm. The top of the IDE shows a breadboard simulation with an Arduino Uno, a buzzer, and an LED connected to the specified pins.

```

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
18     digitalWrite(trigPin, HIGH);
19     delayMicroseconds(10);
20     digitalWrite(trigPin, LOW);
21     duration = pulseIn(echoPin, HIGH);
22     distance = (duration/2) / 29.1;
23     //when distance is greater than or equal to 200 OR less than or equal to 0
24     if (distance >= 200 || distance <= 0)
25     {
26         Serial.println("no object detected");

```

distance= 99object detected

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distance= 99object detected