

Assignment -4

Assignment Date	08 October 2022
	Sanjai Kumar PVM
Student Roll Number	411719106061
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 8 int
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() {

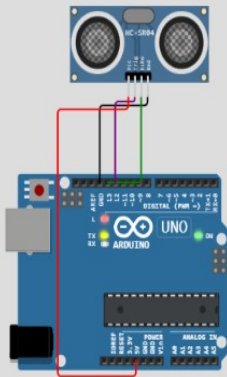
    digitalWrite(trigPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigPin, LOW);
    duration = pulseIn(echoPin, HIGH);
    distance = (duration/2) / 29.1;
    //when distance is greater than or equal to 200 OR less than or equal to 0,the buzzer and
    LED are off
    if (distance >= 200 || distance <= 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 displays the Arduino IDE interface. On the left, the code is shown with line numbers 1 through 26. The code defines pins for a buzzer (8), LED (6), and ultrasonic sensor (12 for trig, 13 for echo). The setup function initializes the serial port at 9600 baud and sets the pin modes. The loop function sends a high pulse to the trig pin, waits 10 microseconds, sends a low pulse, and then reads the echo pin. It calculates the distance and prints it. If the distance is greater than or equal to 200 or less than or equal to 0, it triggers the buzzer and turns the LED on. Otherwise, it prints "no object detected".

On the right, the hardware setup is shown. An Arduino Uno is connected to an HC-SR04 ultrasonic sensor, a buzzer, and an LED. The sensor's VCC is connected to 5V, GND to GND, trig to pin 12, and echo to pin 13. The buzzer's VCC is connected to 5V, GND to GND, and signal to pin 8. The LED's VCC is connected to 5V, GND to GND, and anode to pin 6.

The output window shows the following text:

```

distance= 99object detected
distance= 99object detected
distance= 99object detected

```