

Internet of Things Lab

Digital Assignment 3

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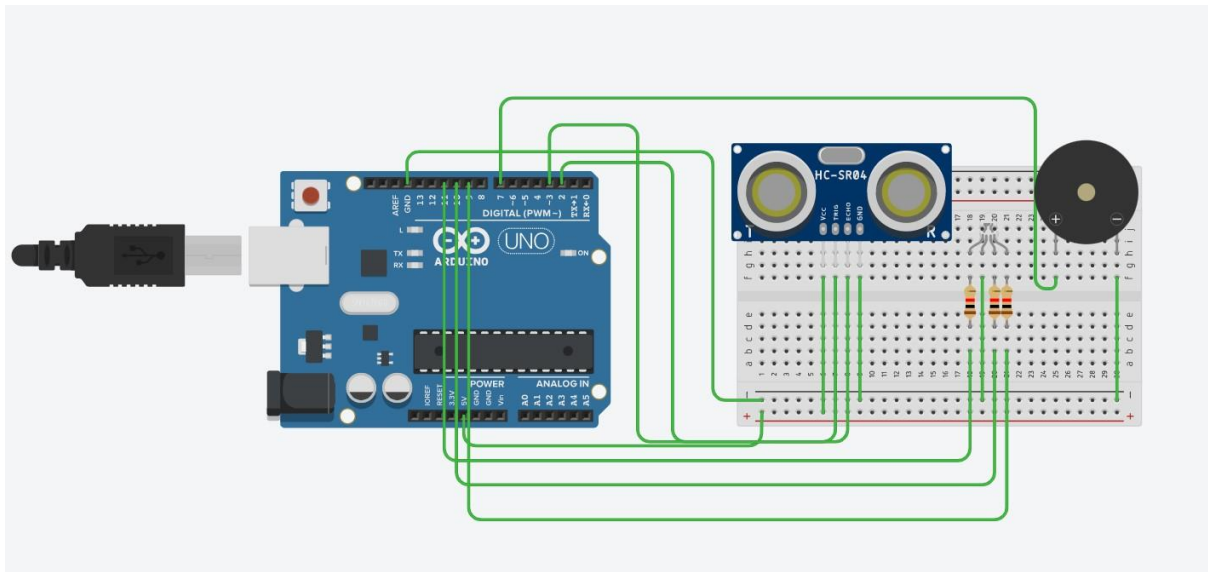
REG NO: 21BEC0256

Experiment 1:

Aim:

To measure the distance using ultrasonic sensor and beep the buzzer if it gets too close.

Circuit:



Code:

```
int const trigPin=2; int
const echoPin=3; int
const buzzPin=7; int
const redPin=11; int
const bluePin=10; int
const greenPin=9;
```

```

void setup()
{
  pinMode(trigPin,
  OUTPUT); pinMode(echoPin,
  INPUT); pinMode(buzzPin,
  OUTPUT); pinMode(redPin,
  OUTPUT);

  pinMode(greenPin, OUTPUT);
  pinMode(bluePin, OUTPUT);
  Serial.begin(9600);
}

void loop() {
  int
  duration,distance;
  digitalWrite(trigPin,HIGH);
  delay(10);
  digitalWrite(trigPin,LOW);
  duration=pulseIn(echoPin,HIGH);
  distance=(duration/2)/29.1;
  Serial.println(distance);

  if (distance>200)
  {
    digitalWrite(buzzPin,LOW);
    digitalWrite(greenPin,HIGH);
    digitalWrite(bluePin,LOW);    digitalWrite(redPin,LOW);
  }

  if (distance>100 && distance<200)

```

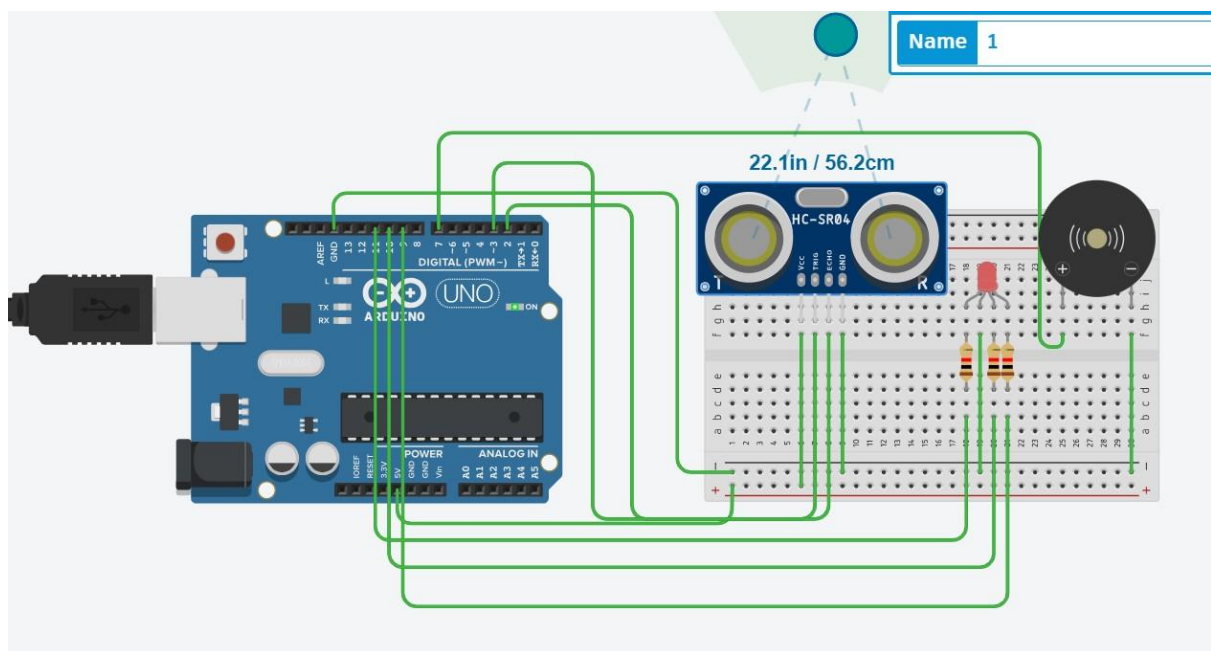
```

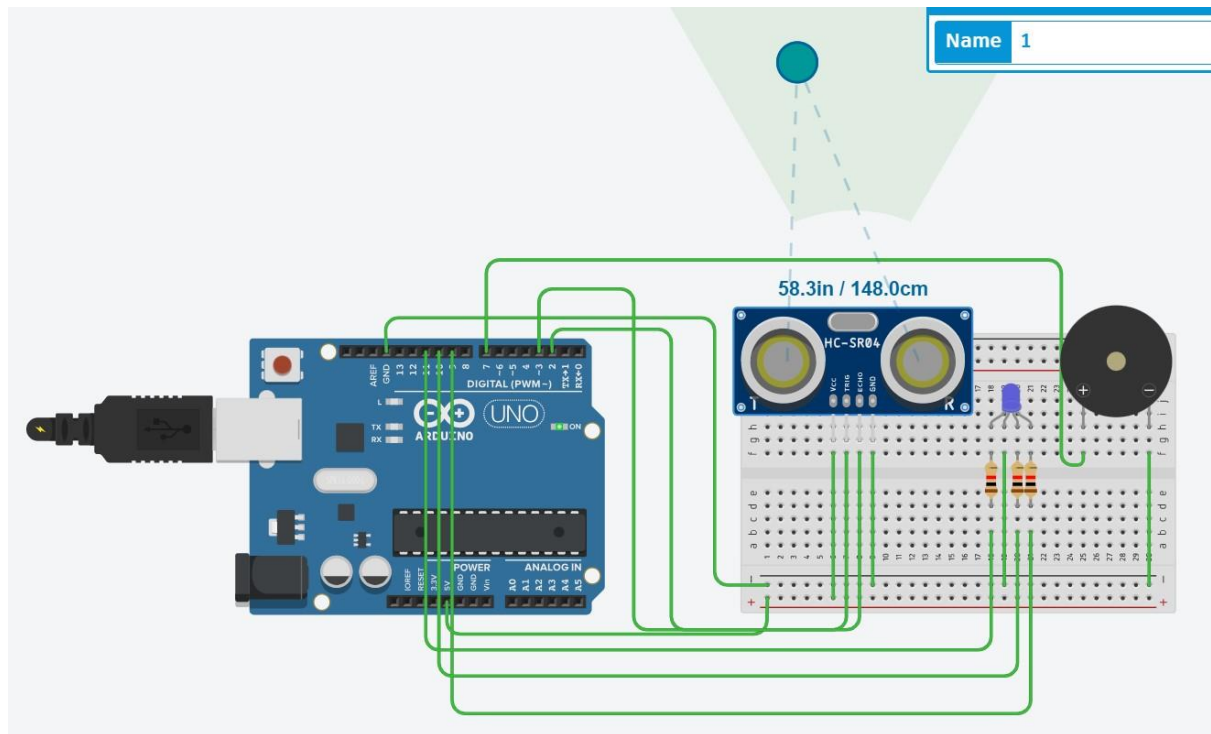
{
    digitalWrite(buzzPin,LOW);
digitalWrite(greenPin,LOW);
digitalWrite(bluePin,HIGH);    digitalWrite(redPin,LOW);
}  if
(distance<100) {

    digitalWrite(buzzPin,HIGH);
digitalWrite(greenPin,LOW);
digitalWrite(bluePin,LOW);    digitalWrite(redPin,HIGH);
}
else
{
    digitalWrite(buzzPin,LOW);
}
}

```

Output:





Result and inference:

The circuit was run and the code was run. The Distance was observed in the serial monitor and the buzzer beeped when the object got close to the ultrasonic sensor.

Experiment 2:

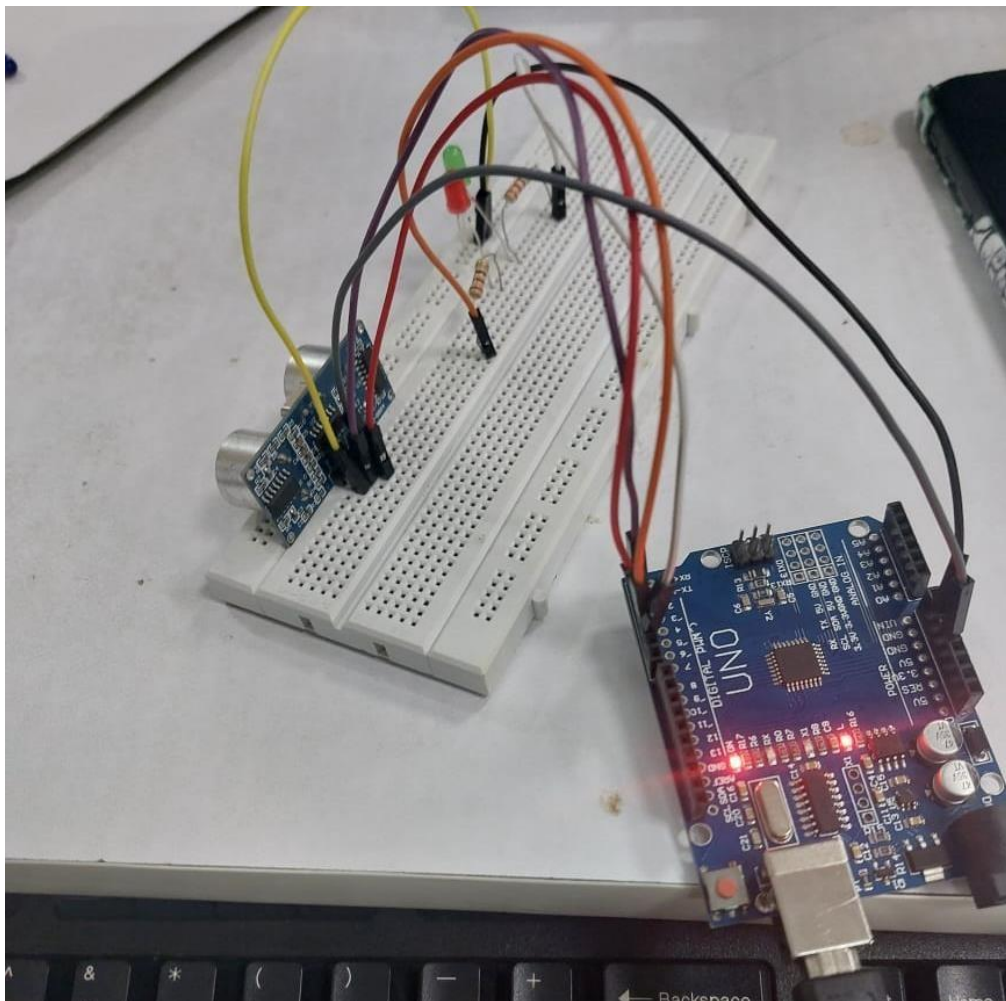
Aim:

To construct a circuit to calculate the distance using Arduino and ultrasonic sensor.

Components Required:

Name	Quantity
Arduino Uno	1
Bread board	1
Ultrasonic Sensor	1
LED	2
Resistor	2
USB Cable	1
Jumper wire	3

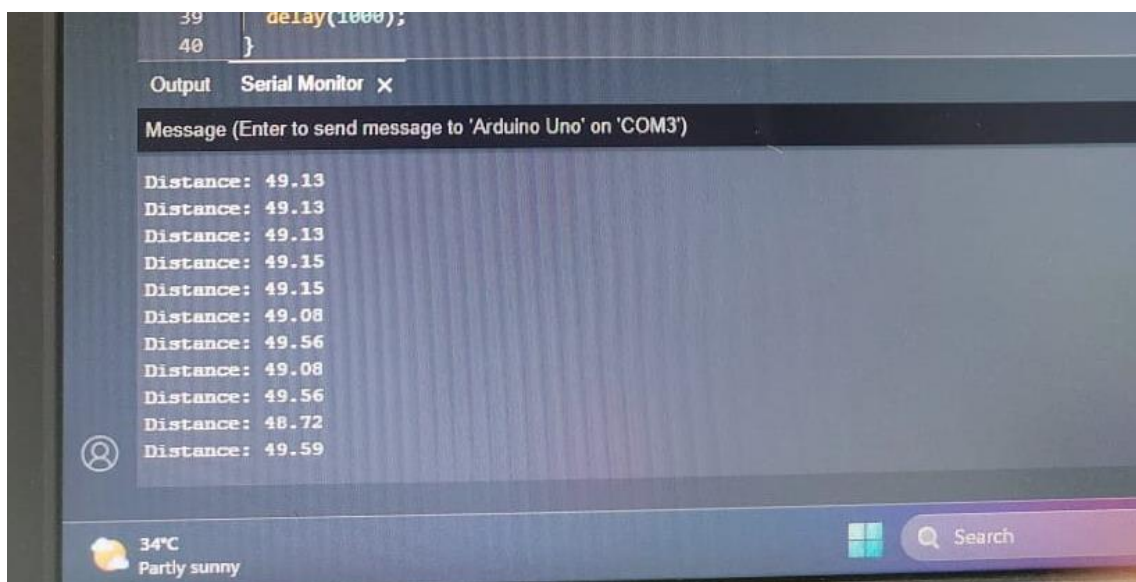
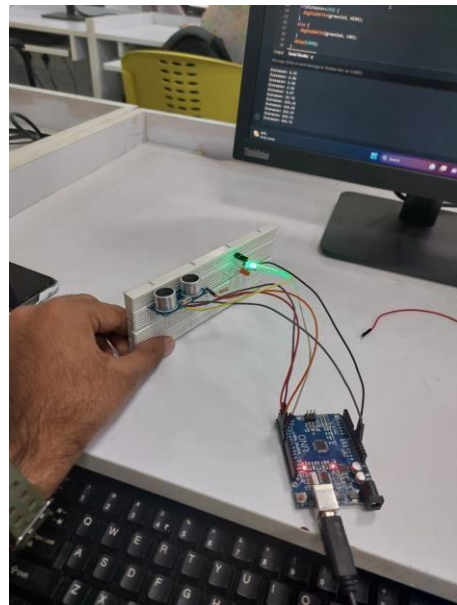
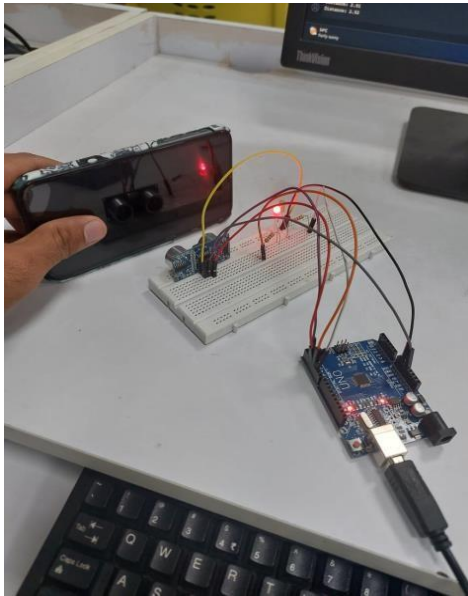
Circuit:



Code:

```
int echopin=9; int
trigpin=10; int Gled=5;
int Rled=6; int
duration; int distance;
void setup() {
  pinMode(Gled,OUTPUT);
  pinMode(Rled,OUTPUT);
  pinMode(echopin,INPUT);
  pinMode(trigpin,OUTPUT);
  Serial.begin(9600);

} void loop() {
  digitalWrite(trigpin,LOW);
  digitalWrite(echopin,LOW);
  delay(2);
  digitalWrite(trigpin,HIGH);
  duration= pulseIn(echopin,HIGH);
  distance= (0.340*duration)/2;
  Serial.println(distance);
  if(distance<5){
    digitalWrite(Rled,HIGH);
    delay(500);
    digitalWrite(Rled,LOW);
    delay(500);
  }
  if(distance>375){
    digitalWrite(Gled,HIGH);
    delay(500);
    digitalWrite(Gled,LOW);
    delay(500);
  }
}
```



Result and Inference:

The circuit was constructed. The output was observed both in serial monitor and in the LED's. The distance measured in centimetre was shown in the serial window. The red LED would glow when the object is below a minimum threshold value and the green LED would glow when the object is above a minimum threshold.