

## Assignment-1

Domain: IOP

TOPIC: SMART HOME

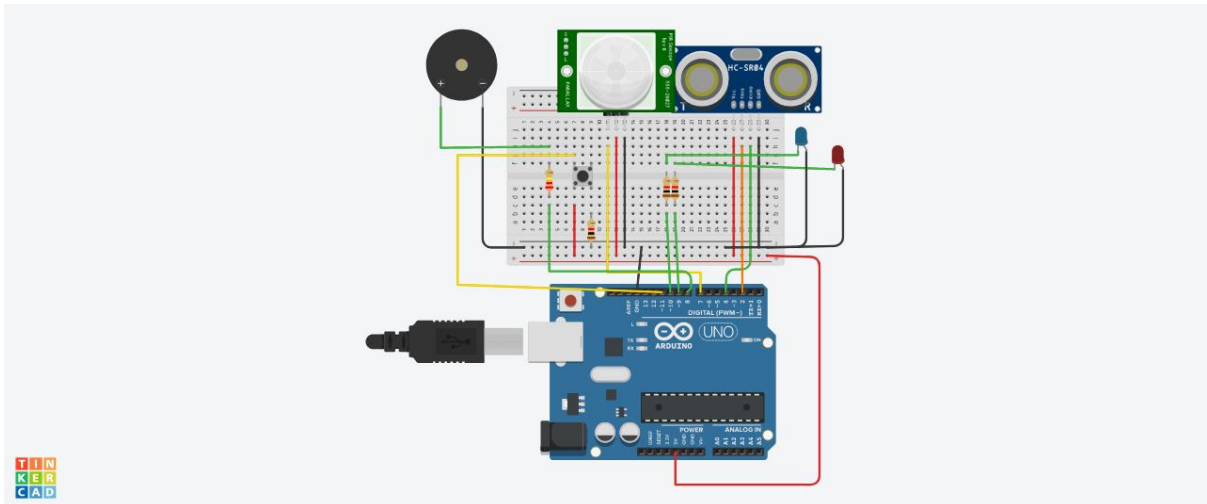
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COLLEGE GANESH OF COLLEGE ENGINEERING

Smart Home:

Circuit:



Components:

Quantity	Components
1	Push Button
1	Red LED
1	Blue LED
1	PIEZO Buzzer

1	Ultrasonic Distance Sensor
2	PIR Sensor
2	Resistor (220,560,10K)
1	Arduino R3
1	Breadboard Small

### Code:

```
const int trigPin = 2; //the trig pin of the ultrasonic sensor; sends signal
```

```
const int echoPin = 4; //the echo pin of the ultrasonic sensor; detects signal
```

```
const int pirPin = 7; //the PIR sensor pin
```

```
int pirState = LOW; //basically means that the PIR sensor starts as low and detects no motion
```

```
const int buzzerPin = 8; //the buzzer has been connected to pin 8
```

```
const int redLED = 9; //the red LED; intensity can be controlled to change the colour emitted
```

```
int redBright = 0; // how bright the LED is
```

```
int redFade = 5; // how many points to fade the LED by
```

```
const int greenLED = 10; //the green LED; intensity can be controlled to change the colour emitted
```

```
int greenBright = 0; // how bright the LED is
```

```
int greenFade = 5; // how many points to fade the LED by
```

```
const int button = 13; //button to momentarily reset all the sensors back to normal
```

```
void setup() {
```

```
    pinMode(echoPin, INPUT);
```

```
    pinMode(pirPin, INPUT);
```

```
    pinMode(button, INPUT);
```

```
pinMode(trigPin, OUTPUT);
pinMode(redLED, OUTPUT);
pinMode(greenLED, OUTPUT);
pinMode(buzzerPin, OUTPUT);
```

```
Serial.begin(9600); // initialize serial communication at 9600 bits per second
}
```

```
void distance() {
```

```
    long durationInDigit;
    long distanceInInches;
```

```
    digitalWrite (trigPin, LOW); //set this to LOW to start with
    delayMicroseconds(2); //delay in microseconds between different commands
    digitalWrite (trigPin, HIGH); //here, the trig pin sends signals or vibrations to be detected
    delayMicroseconds(10);
    digitalWrite (trigPin, LOW); //set the the trig pin back to low
```

```
    durationInDigit = pulseIn(echoPin, HIGH);
    distanceInInches = durationInDigit/74/2;
```

```
    Serial.println(distanceInInches);
```

```
    if (distanceInInches > 15 && distanceInInches < 30) {
        digitalWrite(greenLED, HIGH);
        digitalWrite(redLED, LOW);
    }
```

```
    if (distanceInInches < 10) {
        digitalWrite(redLED, HIGH);
```

```
digitalWrite(greenLED, LOW);  
}
```

```
if (distanceInInches > 10 && distanceInInches < 15){  
    digitalWrite(redLED, LOW);  
    digitalWrite(greenLED, LOW);  
}
```

```
if (distanceInInches < 5) {  
    digitalWrite(redLED, HIGH);  
    tone(8, 250, 2000);  
    digitalWrite(greenLED, 0);  
}
```

```
if (distanceInInches > 5 && distanceInInches < 10){  
    digitalWrite(redLED, HIGH);  
    digitalWrite(buzzerPin, 0);  
    digitalWrite(greenLED, 0);  
}
```

```
if (distanceInInches > 30 || distanceInInches < 0){  
    Serial.println("Distance Incalculable");  
}
```

```
delay(500);
```

```
}
```

```
void reset() {  
    if (digitalRead(button), HIGH);  
    digitalWrite(pirState, LOW);  
    digitalWrite(redLED, LOW);
```

```
digitalWrite(greenLED, HIGH);
digitalWrite(buzzerPin, 0);
//digitalWrite(echoPin, 0);
}

void loop() {

    distance();

    int pirState = digitalRead(pirPin);

    if (pirState==1) {
        Serial.println("Motion Detected!!!");
        digitalWrite(greenLED, LOW);
        digitalWrite(redLED, HIGH);
        digitalWrite(buzzerPin, 1);
        delay(500);
    }

    if (pirState==0) {
        Serial.println("Detecting...");
        digitalWrite(greenLED, HIGH);
        digitalWrite(redLED, LOW);
        digitalWrite(buzzerPin, 0);
        delay(500);
    }

}
```