

## Assignment-1

Domain: IOT

TOPIC: SMART HOME

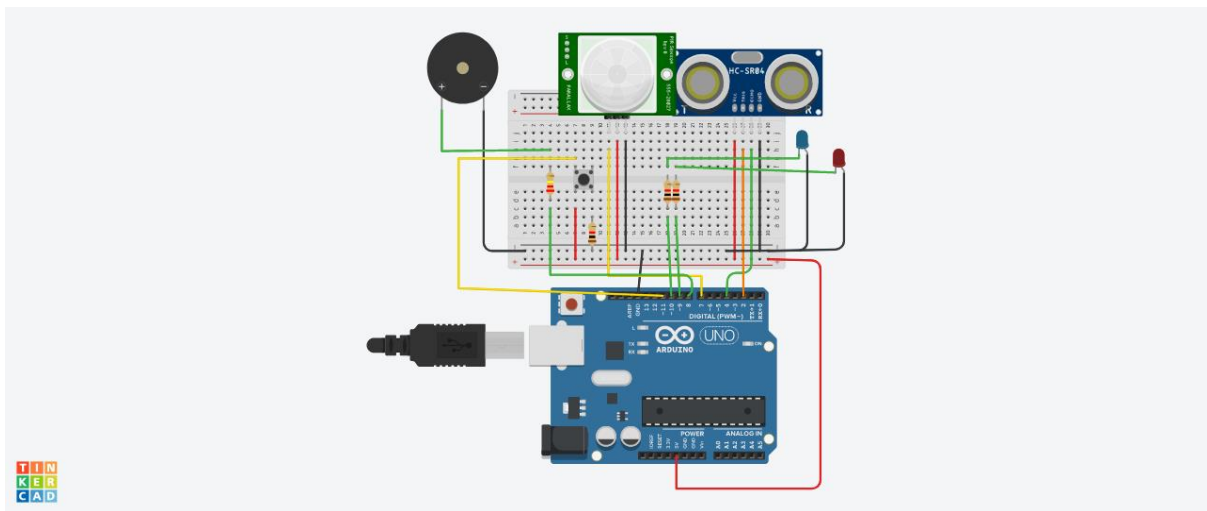
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Smart Home:

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);
```

```
}
```

```
}
```