

Assignment-1

Domain : _IOT

TOPIC : SMART HOME

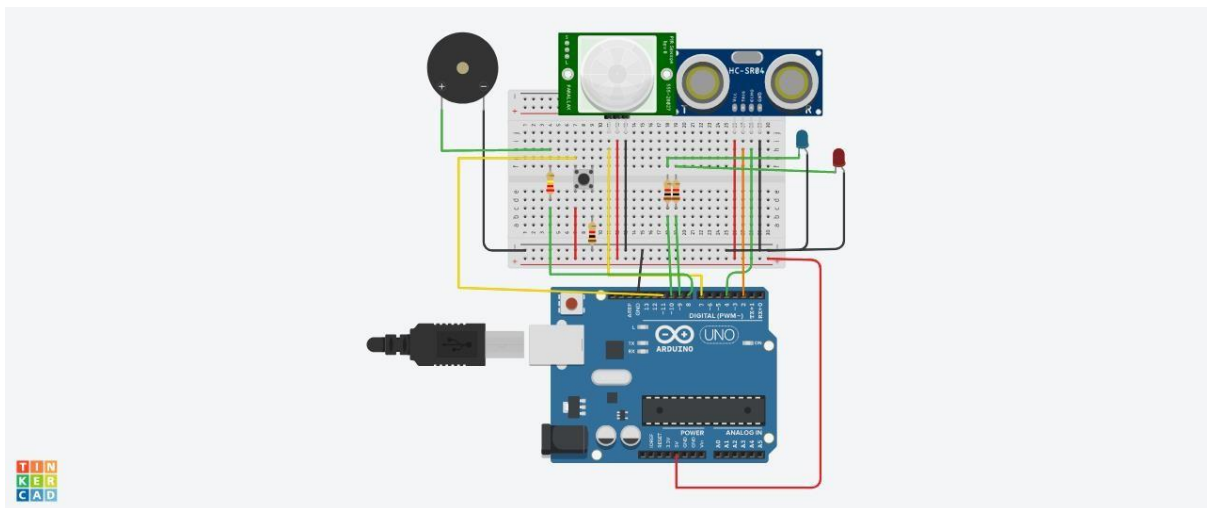
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Smart Home:

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);  
    }  
  
}
```