

Assignment-1

Domain : AI

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
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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);  
}
```

```
}
```