Assignment-1

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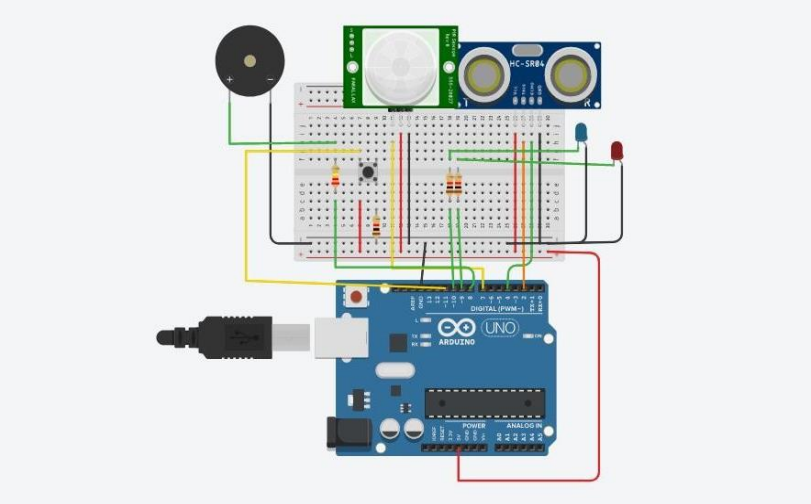
Smart Home:

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);
      }

}
```