ASSIGNMENT: 1

TITLE: ULTRASONIC WAVE DETECTION.( HOME AUTOMATION)

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CODE:

```
Int sensor=4, trig=2, echo=2, light=8, buzz=12;
Int dist = 0;

Long objectDistance(int a, int b)
{
  pinMode(a, OUTPUT);  // Clear the trigger
  digitalWrite(a, LOW);
  delayMicroseconds(2);
  digitalWrite(a, HIGH);
  delayMicroseconds(10);
  digitalWrite(a, LOW);

  pinMode(b, INPUT);

  return pulseIn(b, HIGH);
}

Void setup()
{
  Serial.begin(9600);
  pinMode(sensor, INPUT);
  pinMode(light, OUTPUT);
  pinMode(buzz, OUTPUT);
  digitalWrite(light, LOW);
}
```

```
Void loop()
{
  //readUltrasonicDistance(7, 7)
  Dist = 0.01723 * objectDistance(trig, echo);
  Serial.print(“Distance is “);
  Serial.print(dist);
  Serial.println(“cm”);
  If(dist>50 && dist<100)
  {
    Tone(buzz, 50);
    Delay(2000);
    noTone(buzz);
    //delay(1000);
    If(digitalRead(sensor))
    {
      digitalWrite(light, HIGH);
      delay(2000);
    }
  }
}
```

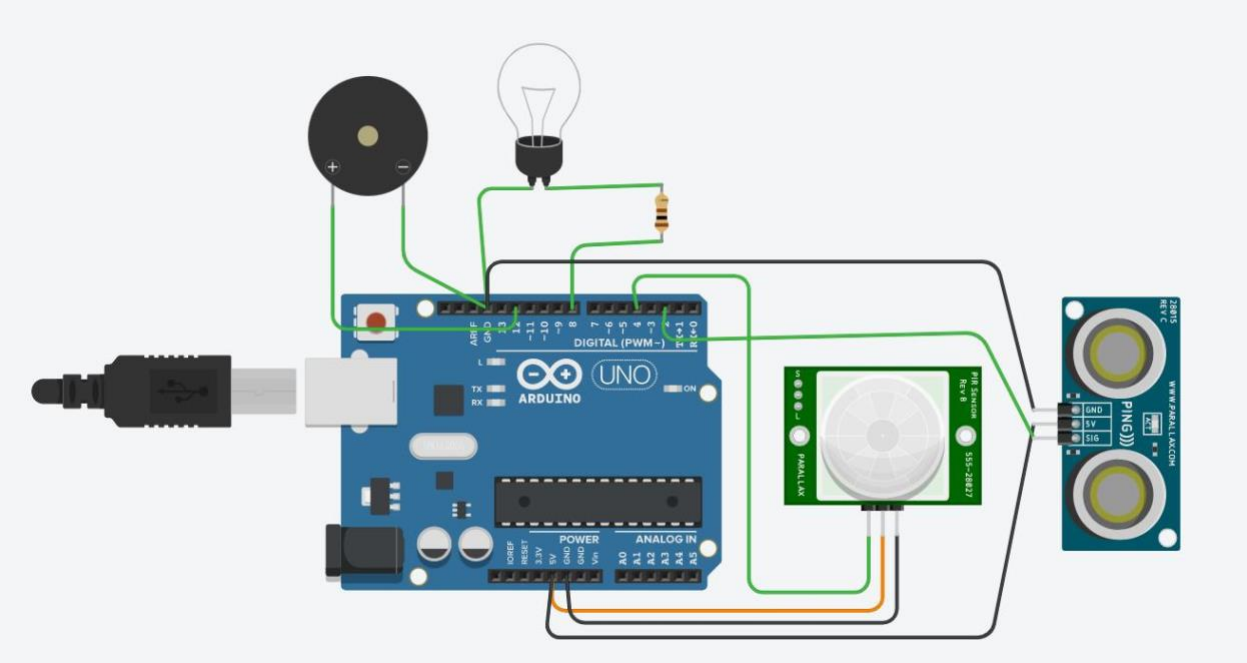
Home automation

```
// C++ code
//
#include <Servo.h>

Long readUltrasonicDistance(int triggerPin, int echoPin)
{
  pinMode(triggerPin, OUTPUT);  // Clear the trigger
  digitalWrite(triggerPin, LOW);
```

```
  delayMicroseconds(2);
  // Sets the trigger pin to HIGH state for 10 microseconds
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
  pinMode(echoPin, INPUT);
  // Reads the echo pin, and returns the sound wave travel time in microseconds
  Return pulseIn(echoPin, HIGH);
}

Servo servo_3;

Void setup()
{
  pinMode(0, INPUT);
  pinMode(13, OUTPUT);
  pinMode(0, OUTPUT);
  servo_3.attach(3, 500, 2500);
  pinMode(A5, INPUT);
  pinMode(12, OUTPUT);
  pinMode(A4, INPUT);
  pinMode(11, OUTPUT);
}

Void loop()
{
  If (digitalRead(0) == 1) {
    digitalWrite(13, HIGH);
  } else {
```

```
  digitalWrite(0, LOW);
 }
 If (0.01723 * readUltrasonicDistance(0, 0) >= 100) {
  Servo_3.write(90);
  Delay(1000); // Wait for 1000 millisecond(s)
 } else {
  Servo_3.write(0);
  Delay(1000); // Wait for 1000 millisecond(s)
 }
 If (analogRead(A5) <= 100) {
  digitalWrite(12, HIGH);
 } else {
  digitalWrite(12, LOW);
 }
 If ((-40 + 0.488155 * (analogRead(A4) – 20)) < 30) {
  digitalWrite(11, HIGH);
 } else {
  digitalWrite(11, LOW);
 }
}
```

CIRCUIT DIAGRAM: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