

**DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
College of Engineering and Technology, SRM IST.**

MINI PROJECT REPORT

EVEN Semester, 2022-23

Lab code & Title : 21ECC101J – Electronic Systems and PCB Design

Year & Semester : I Year, II Semester

Project Title : Motion Sensing Light

Lab Supervisor : **Dr T Rajlakshmi & Dr S. U. Maheshwari**

Team Members : Atharva Thombare- RA2211004010084

Reg. No & Name →			
Mark split up ↓			
Novelty of the project (5 marks)			
Understanding Level (10 marks)			
Contribution (5 Marks)			
Report writing (5 Marks)			
Viva voce (25 Marks)			
Total (50 Marks)			

Date: 28/04/2023

Signature of Lab Supervisor

Title:

Motion Sensing Light

OBJECTIVE

To build a motion automated device using PIR sensor for home automation

ABSTRACT

Have you ever had a time when you forgot to turn off the light while going out of a room or you were too lazy to turn on the light while entering the room? This device will help by solving these problems by turning on the light when you enter the room and turning off the light by itself after a certain delay.

With this, one won't have to use a switch to turn on the light while entering the room or turn off the light. This helps by saving electricity when people forget to switch off the light when leaving the room.

INTRODUCTION

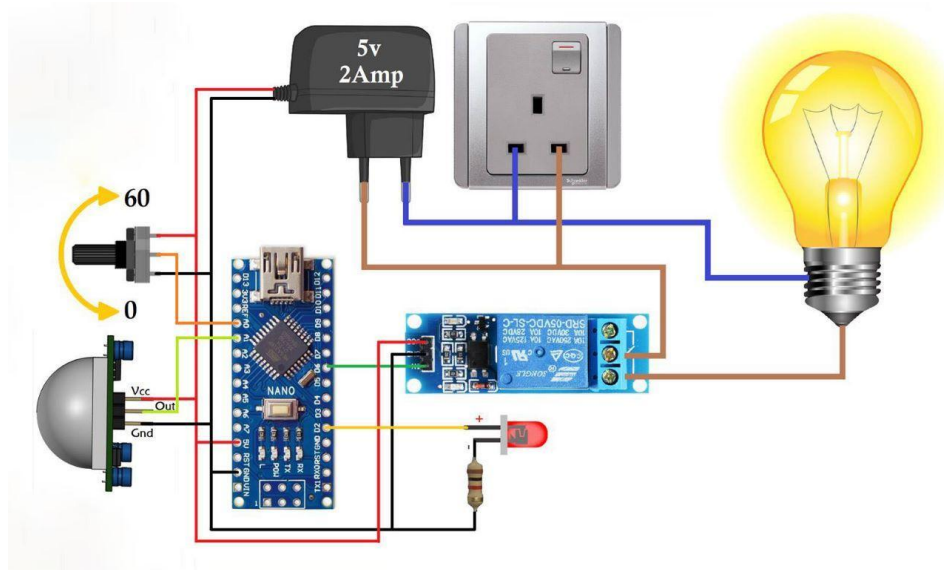
This device uses a PIR sensor to detect the motion of a person. PIR sensors use a pair of pyroelectric sensors to detect heat energy in the surrounding environment. After detecting the movement, it sends a signal to the Arduino nano board which then process the signal and gives a high signal to the relay which in return passes current to the bulb, hence turning it on. The led in this device turns on when the sensor is activated. The potentiometer attached to the device, enables the user to change the duration of time the bulb glows.

SOFTWARE REQUIREMENT/DESCRIPTION

The parts used in this device are:

- 1) Arduino Nano
- 2) 10k Potentiometer
- 3) PIR Sensor
- 4) 1k Resistor
- 5) Red Led
- 6) 1-Channel 5v Relay Module
- 7) Jumper Wires
- 8) Bulb Holder
- 9) Bulb
- 10) 5v 1amp Power Adapter

CIRCUIT DIAGRAM AND DESCRIPTION



PCB DESIGN RULES

The PCB for this device is fabricated carefully using a GPP board, here are a few rules followed during the fabrication

- 1) Careful soldering of wires
- 2) Proper insulation
- 3) Use of spray paint over the box for paint durability
- 4) Ground and Vcc supply trains are separated parallelly and properly insulated

DESIGN CONSTRAINTS

Considering this design is just a prototype, the device has following constraints:

- 1) The light glows only for a second and turns off
- 2) The device needs 32-35 seconds of run time before it can sense motion

CONCLUSIONS

With this device won't have to use a switch to turn on the light while entering the room or turn off the light. This helps by saving electricity when people forget to switch off the light when leaving the room

REFERENCES

[PIR Sensor Working Principle | How PIR Sensor Works | Robu.in](#)
(For PIR sensor)

APPENDIX

1. Installation instructions: This could include step-by-step instructions for installing the motion sensing light, including how to mount it securely, how to wire it properly, and any additional tools or materials that might be needed.
2. Setup instructions: Once the motion sensing light is installed, there may be additional setup steps required, such as configuring the motion sensor's sensitivity or range. This information could be included in the appendix.

3. Troubleshooting tips: If the motion sensing light doesn't seem to be working correctly, the appendix could include a list of troubleshooting tips. This might include suggestions for adjusting the sensitivity or range, checking the wiring connections, or replacing the light bulb.