DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
College of Engineering and Technology,
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MINI PROJECT REPORT

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Lab code & Name :18ECC102J ELECTRONIC DEVICES LAB

Year & Semester : SECOND YEAR / 3RD SEMESTER

Project Title : AUTOMATIC STREET LIGHT CONTROLLER

Lab Supervisor **:**

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Reg. No / Mark split up	RA2011004010235	RA2011004010242	RA2011004010248
Novelty in the project work (1 marks)			
Level of understanding of the design formula (2 marks)			
Contribution to the project (1 Marks)			
Report writing (1 Marks)			
Total (5 Marks)			

Date:

Signature of Lab Supervisor

AUTOMATIC STREET LIGHT CONTROLLER

OBJECTIVE

To promote in today's age, usage of energy matters the most. The steps are needed to avoid the misuse of energy and this project focuses on it.

ABSTRACT

This report describes of utmost attention because, in smart cities, there is always a need for such automation. Moreover, sometimes the street lights remained ON during daylight and it drains a lot of energy. With the help of Automatic Street Light Controller, you can avoid such misuse of energy. There is no rocket science in this project as it simply consists of LDR, Relay, Resistors, Transistor and Power Supply.

INTRODUCTION

You may have seen the street light turning on and off automatically. It turns ON at night and turns OFF at day. With this observation, you can notice that there is some component used that detects the day and night and turns OFF and ON the light accordingly. This main function is done by the LDR (Light Dependent Resistor). Besides this component, there are other various components used as well.

Many people have a phobia of darkness, so to assist them in such situations, we have explained a simple circuit that will automatically turn on the street light consisting of LEDs or bulb coupled with relay. It is lit well enough to see the objects nearby. This circuit is very easy to work around and also it is battery operated. The power consumed by the circuit is very low because of the very few components used in the circuit.

HARDWARE REQUIREMENT/DESCRIPTION

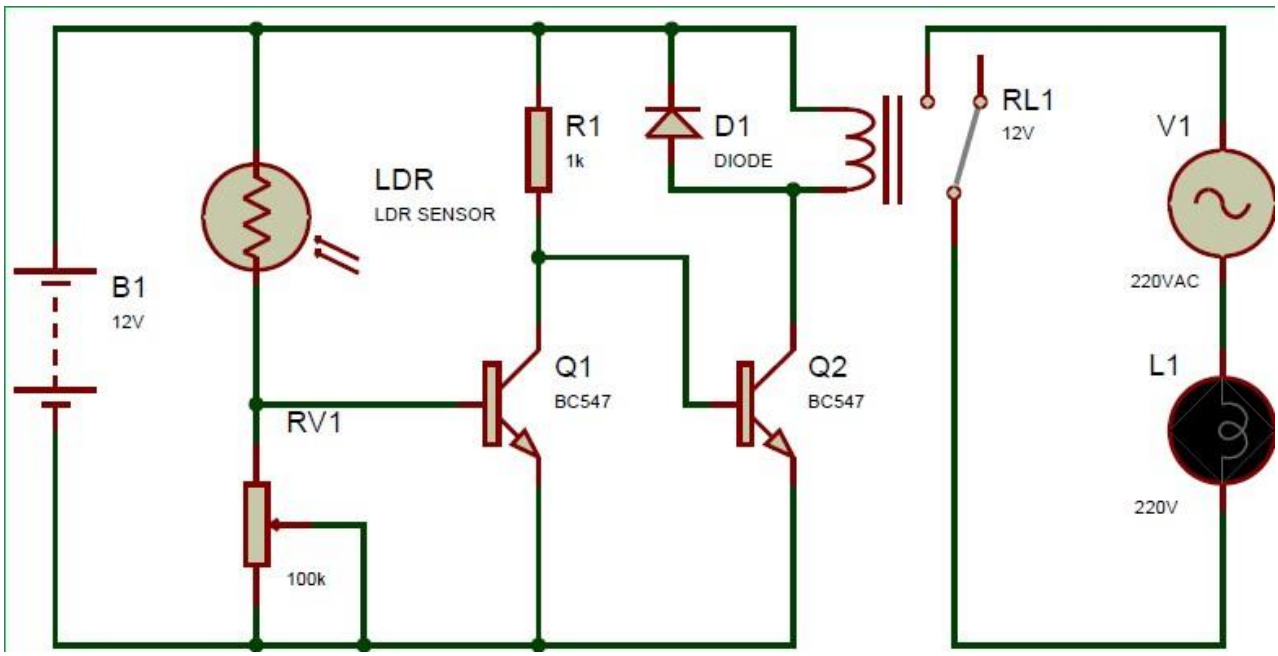
- Transistor
- LDR
- AC SUPPLY
- RELAY
- RESISTOR
- POTENTIOMETER
- DIODE
- BREAD BOARD

- CONNECTING WIRES
- AC LOAD OR BUILD

CIRCUIT/COMPONENT SPECIFICATIONS

Voltage Source(Vcc)	12 V and 200V(AC Source)
Potentiometer	100k
Diode	1N4007
Transistor	BC547
Operating temperature	20°C to 85 °C

DIAGRAM



DESIGN FORMULA

The main important component of this project is relay

R = (Vcc - 0.6)hFE / Relay Coil Current,

- Where R = base resistor of the transistor,
- Vcc = Source or the trigger voltage to the base resistor,
- hFE = Forward current gain of the transistor

I = Vcc/R, where I is the required relay current, Us is the supply voltage to the relay.

DESIGN ISSUES

More power supply is required for more no of lights and some times LDR doesn't work properly at some cases like if there is a shadow on LDR because of Sun then in that case it might fail

APPROACH/METHODOLOGY

In this circuit, the LDR (Light Dependent Resistor) is used. The resistance of LDR varies according to the light and darkness and with the help of this resistance, it detects whether it is a day or night. Its resistance increases at night and decreases at day. At the end of the circuit, a simple AC load (Bulb) is used and it is operated with the help of relay. To operate the relay, the two NPN transistors BC547 are used.

- When the light falls on the LDR, the resistance of the LDR decreases and the transistor Q1 turns ON. But the collector is at a low state and the input signal to the second transistor Q2 is not enough to turn it ON. Hence, the relay remains OFF.

- When there is darkness, LDR resistance increases, the signal becomes low at the base of Q1. The second transistor Q1 gets a high signal and turns ON the relay. The AC load is connected to a relay circuit hence the bulb turns ON as well.

CONCLUSIONS

Hence with this project we came across the working principle of BJT, LDR and Relay and Also We Hope this project may help to save power

APPENDIX

LDR

Photoresistors, also known as light dependent resistors (LDR), are light sensitive devices most often used to indicate the presence or absence of light, or to measure the light intensity. ... LDRs have a sensitivity that varies with the wavelength of the light applied and are nonlinear devices.

DIODE (1N4007)

1N4007 is a member of 1N400x diodes. Diode is a rectifying device which conducts only from anode to cathode. Diode behaves open circuited for the current flow from cathode to anode. 1N4007 is a 1A diode with low forward voltage drop and high surge current capability.

TRANSISTOR BC547

The BC547 is a common NPN bipolar junction transistor (BJT) used for general purpose low-power amplifying or switching applications. It is designed for low to medium current, low power, medium voltage, and can operate at moderately high speeds.

RESISTOR (1K)

A resistor reduces (or resists) the flow of current. So, a 1k Ω resistor has a value of

1,000 ohms

POTENIOMETER (100K)

A potentiometer is a **three-terminal resistor with a sliding or rotating contact** that forms an adjustable voltage divider. ... Potentiometers are commonly used to control electrical devices such as volume controls on audio equipment.

AUTOMATIC STREET LIGHT CONTROLLER

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