



VIVEKANAND EDUCATION SOCIETY'S

INSTITUTE OF TECHNOLOGY

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University

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ECAD MINI PROJECT

TOPIC:-

Dark sensor using two transistors

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Dark sensor using two transistors

ABSTRACT-

This works same as the other dark detector circuit

INTRODUCTION-

It is a very simple experiment for Arduino amateurs, kids and beginners.

It needs two LEDs, one LDR (Light Dependent Resistor), one tactile switch and some resistors of different values.

Once the circuit is connected as shown in figure and activated by turning on the switch, it turns on the first LED, according to luminosity of the room.

The LED can also be turned with the same switch.

Therefore, it works as a toggle switch.

Once activated, whenever the LDR senses that the room is dark, it turns on the second LED automatically and vice versa

COMPONENTS-

RESISTOR- 1K(1) -330 ohm(2)

LDR

TRANSISTOR-BC547(2)

PRINCIPLE

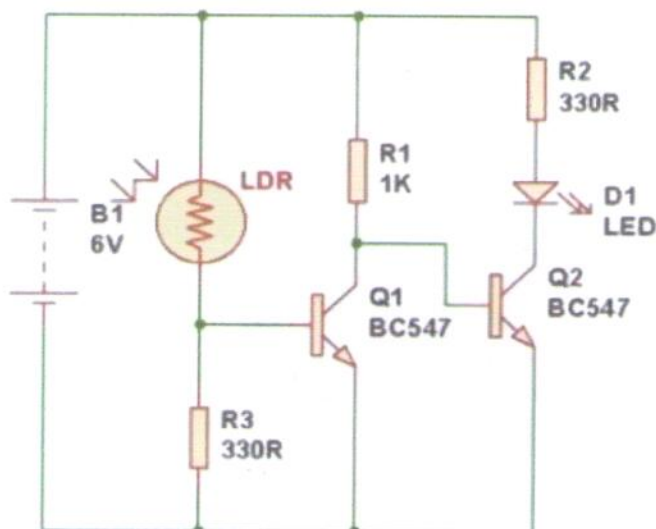
When light is falling on LDR, its low resistance drives transistor Q1-BC547 into conduction.

This keeps transistor Q2 cut-off due to low base bias.

The D1-LED does not get power as long as ambient light falls on LDR.

When the resistance of LDR becomes high in darkness, transistor Q1 stops conducting and transistor Q2 starts conducting to turn on the D1-LED.

CIRCUIT DIAGRAM

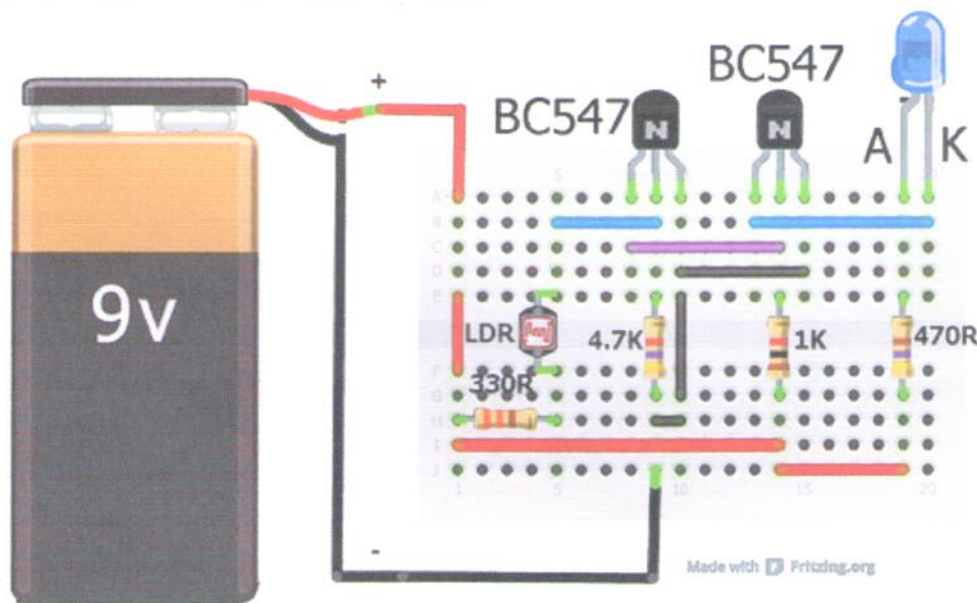


EXPLANATION

When the LDR (Light Dependent Resistor) is in light its resistance is low, and when in dark its resistance goes higher.

When the light level decreases means the LDR is in darks then LDR goes its maximum threshold resistance, then the circuit automatically switches on the LED.

CIRCUIT ARRANGEMENT:



Applications

A **sensor** (also called **detector**) is a converter that measures a physical quantity and converts it into a signal which can be read by an observer or by an (today mostly electronic) instrument.

A thermocouple converts temperature to an output voltage which can be read by a voltmeter.

For accuracy, most sensors are calibrated against known standards.

REFERENCE-

- 1) www.buildcircuit.com
- 2) www.circuitstoday.com
- 3) www.allaboutcircuits.com

CONCLUSION

The desired Circuit was successfully tested on breadboard and then implemented on Dotted PCB.