# PROJECT REPORT

## Automatic Street Light using LDR

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## Objective:

To design a smart lighting system that automatically switches ON the streetlight in darkness and switches it OFF in the presence of ambient light using a Light Dependent Resistor (LDR).

## Components Used:

* - LDR (Light Dependent Resistor)
* - NPN Transistor (BC547)
* - Resistors (10kΩ, 330Ω)
* - LED
* - Breadboard and connecting wires
* - 9V DC Power Supply

## Circuit Description:

The project utilizes an LDR and a transistor to create an automatic switch for the LED (representing a streetlight). In bright conditions, the resistance of the LDR is low, keeping the transistor OFF and the LED remains OFF. In dark conditions, the LDR’s resistance increases, turning ON the transistor and thus lighting up the LED.

## Working Principle:

- Daytime:  
 - Light falls on the LDR → Resistance is low  
 - Base current to transistor is insufficient  
 - Transistor is OFF, LED is OFF

- Nighttime:  
 - No light on LDR → Resistance is high  
 - Sufficient base current flows into transistor  
 - Transistor is ON, LED turns ON

## Circuit Diagram:

Attach a screenshot or include your Tinkercad circuit link here

Tinkercad Simulation Link: [Insert your link here]

## Advantages:

* - Energy-efficient: Operates only at night
* - Requires no human intervention
* - Low-cost and easy to implement

## Applications:

* - Street lighting systems
* - Outdoor garden lighting
* - Home/industrial automation

## Conclusion:

This project demonstrates the use of basic electronic components to automate lighting systems based on light intensity. It introduces the core principles of sensor-based automation and is ideal for beginners in electronics and communication engineering.