
Traffic Light Control Project with Arduino Uno

Objective:

Simulate a basic traffic light system using Arduino to control Red, Yellow, and Green LEDs with time-based sequences.

Components Required:

- Arduino Uno
- 3 LEDs (Red, Yellow, Green)
- 3 Resistors (220Ω–330Ω)
- Jumper wires & breadboard

Circuit Overview:

- Each LED is connected to a digital pin on the Arduino (e.g., Red → D2, Yellow → D3, Green → D4).
- The cathode (short leg) of each LED is connected to GND through a resistor.
- The Arduino controls the LEDs in a timed sequence, mimicking real traffic lights.

Working Principle:

- The **Green LED** stays on for a certain duration (vehicles move).
- Then the **Yellow LED** lights up briefly (warning).
- Finally, the **Red LED** turns on (vehicles stop).
- This cycle repeats continuously to simulate traffic light control.

Use Cases:

- Learning automation and timing with Arduino
 - Miniature traffic system model for school projects
 - Base for more advanced systems with sensors
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