

CSE209 (Electrical Circuits) Project

A. Project Details

As a part of the course CSE109, the students have to do the following project:

“Constructing a simple DC circuit for Traffic Signal System”

To complete the project, the students have to complete the following tasks:

1. Design the circuit of the given topic in a hierarchical style and explain its operation.
2. Simulation of the designed circuit using the mentioned simulating software PSpice.
3. Construction of the circuit on the breadboard and demonstration of the project to the instructor.
4. Submission of project report
5. Project Defense

B. Project Evaluation Rubrics

	Max.	Awarded
A. Report		
I. Introduction / Problem statement		
II. Circuit Design		
III. Simulation results (Screenshots)		
B. Circuit Construction and Testing		
I. Design Style, effectiveness and accuracy		
II. Circuit construction		
III. Accuracy of the circuit outputs		
C. PSpice Simulation		
I. Compile without errors		
II. Error-free during runtime		
III. Accuracy of simulation output		
D. Presentation and Demonstration		
I. Content of the Presentation		
II. Presentation Skills		
III. Participation/Group Dynamics		
E. Soft Skill: Communication Skill (Psychomotor Domain)		
I. The ability to present ideas clearly, effectively, and confidently in both oral and written forms		
II. The ability to practice active listening skills and provide feedback.		
TOTAL		

B. Project Description

Introduction



Figure 01: Traffic signal system

At a cross-section of 2, 3, or 4 roads, there is a set of lights (Red, Yellow, and Green) for signals to control the traffic. Each road will be open for some time when only the green light is on. When the red light is on, no vehicle is allowed to run on that road. The yellow light will be turned on for a few seconds between the change of red to green or green to red in any set.

Circuit Diagram

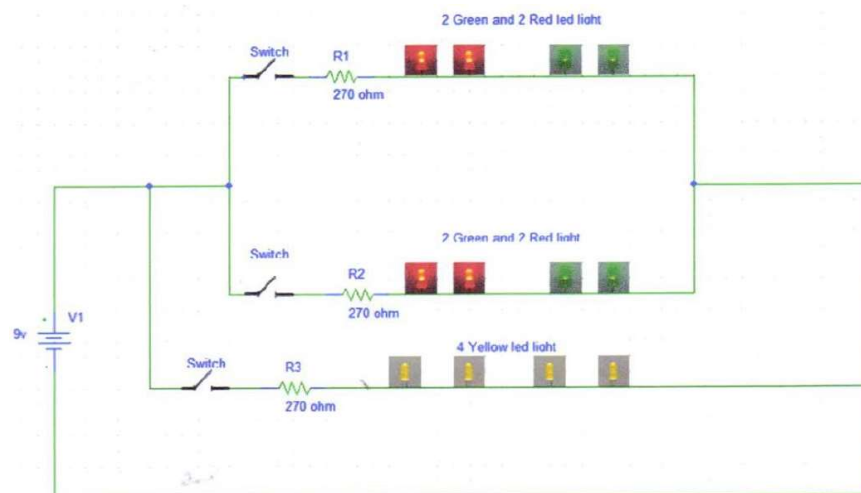


Figure 02: Circuit diagram of a simple manually controlled traffic signal.

Equipment List:

1. 9v DC voltage source (1pc)
2. slide switch (3pcs)
3. 270Ω resistor (3pcs)
4. LED (Red = 4pcs; Green=4pcs; Yellow=4pcs)
5. Connecting wires (use jumper wires)

Circuit Description

The traffic signal system is made with the help of 3 push switches. These are mainly used to turn off or on the LED lights. Two switches control 2 red and 2 green lights of opposite streets simultaneously. Another is to control the yellow ones.