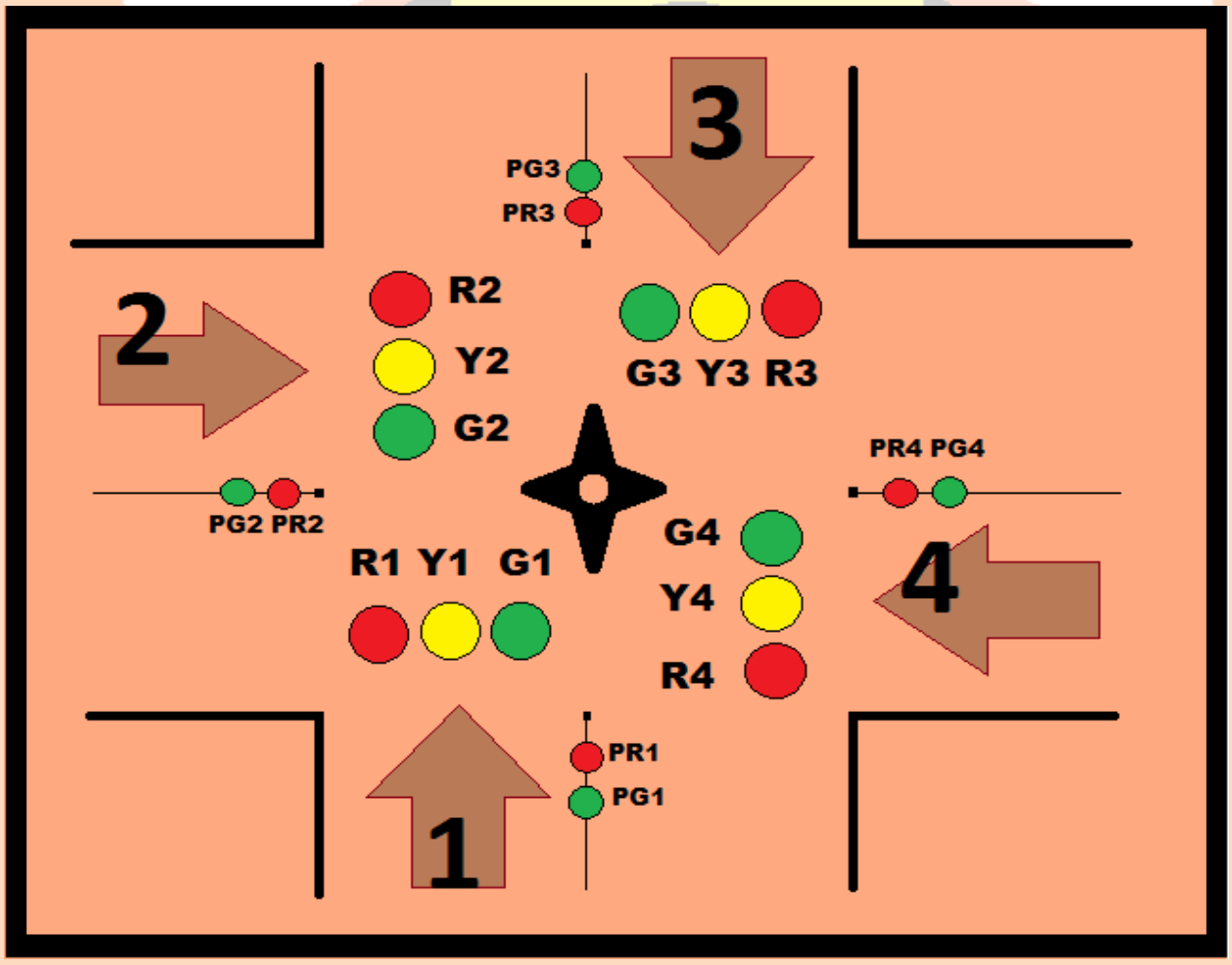
PREDEFINED HARDWARE

INTRODUCTION

We all have seen traffic lights and in fact quite a few of us have jumped it too. It's the synchronization of three lights, RED YELLOW GREEN, which results in the smooth movement of traffic. With huge influx of automobiles, it has become a necessity not only for big metropolis but also for small towns. One can gauge the importance of traffic lights while standing at a crossroad. So why not study the traffic light system in detail and dig deeper into this pillar of modern civilization??!!

PROBLEM STATEMENT

The objective is to design and implement a digital logic circuit for the system of traffic lights located on crossroads for the purpose of controlling the flow of automobiles as well as pedestrians. Consider a system (see figure below) of two orthogonal dual-way roads meeting at a junction. Each of the four directions will have a set of RED-YELLOW-GREEN indicators along with an indicator for the pedestrians.



DESCRIPTION:

BASIC PROBLEM:

- Each of the four roads needs to have following:
  a. Three indicators for traffic which are RED-YELLOW-GREEN (Marked as R1, Y3, G2 etc on the figure).
  b. Two indicators as RED and GREEN (Marked as PR1, PG2 etc on the figure) for the pedestrians at both side of the road.
- Only one of the four roads should have traffic running at a time.
- Whenever a signal at a particular road goes red from green, the next road awaiting a green signal should get a yellow signal first and then a green signal.
- The traffic signals change the states on a timed input to the hardware.
- The pedestrians at each side of a road should only be allowed to move when there is no chance of traffic on that particular road.

ADDITIONAL FEATURES:

The participants may add a few attractive additional features as well to improve or beautify the hardware. For example:

- There can be a provision for an emergency traffic blockage. In such a condition all operations should halt and all four RED indications should be operated.
- Another provision can be made in which if the control of the traffic is to be transferred from the traffic lights to a traffic officer at duty then all operations should halt and all YELLOW indications should start blinking.

RULES AND REGULATIONS:

- This event is open to students of B. Tech. first year (all branches) from any recognized college/university only.
- Three (or less) participants can form a team irrespective of their branches.
- Use of microcontrollers or other programmable devices is not allowed at all.
- Use of fabricated project boards is not allowed.
- The final decision lies in the hands of the judges under all circumstances.

JUDGING PARAMETERS:

- Judging will be done by faculty members of electrical and electronics departments.
- Neatness and clarity of the hardware would be considered as well while judging.
- Special credit will be given to more innovative appearance of the hardware.

EVENT COORDINATORS:

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