Automatic Slot Switching

Objective:

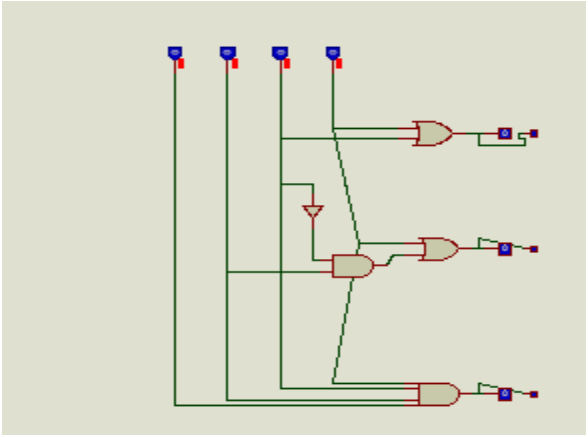
To give slot to the person who is superior in position when it is not busy and also he can use for a limited time.

Required components:

1. 555 timer.
2. Nor gate (2,3,4 inputs)
3. D flip flop
4. Or gate (2,3,4 inputs)
5. And gate (2,3,4 inputs)
6. Button
7. Capacitor
8. Inverter
9. Led (yellow)
10. Logic probe
11. Logic state
12. Resistor

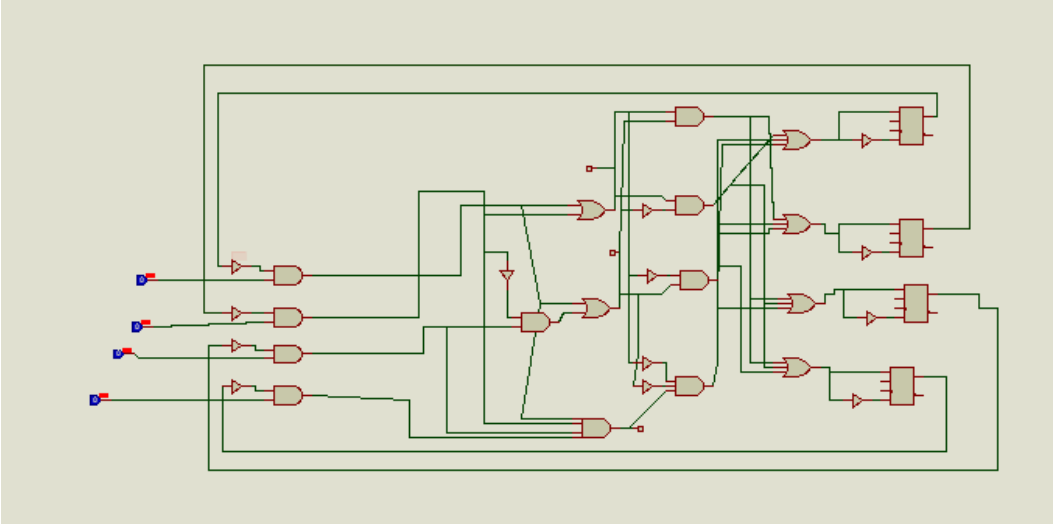
Working principle:

First of all we designed a 4 bit priority encoder. when the bit which is given the most priority is 1, then whatever the other bits are the output will be according to that bit. In the same way there is 2^{nd} 3^{rd} and 4^{th} priority.



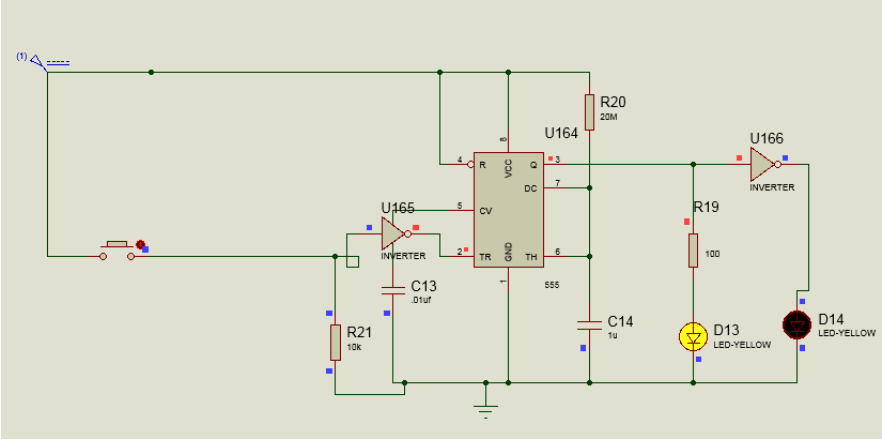
Priority Encoder

But our purpose is when someone is busy,no matter how superior the person who requested for slot is,he can't use the slot until it's free.So we use D flip flop to hold the output and disable others requests.



Also we want to give slot to two persons at a time.,so we use two of such blocks.The first applier will get the first slot and the second one the second slot.So we use the same block and disable the input of first slot user to permit the second applicant.

Now as the user can use for a limited time we use a timer.



Timer

In this way we designed for Head, Assistant Professsor,Associate Professor and Lecturer.

We also include options for students and there is no priority among students. So will get the slot when there is no teacher.But as soon as any of the faculties will to use the slot, the student/students will immediately loose the slot.In this way the whole block works.

Schematic Diagram: