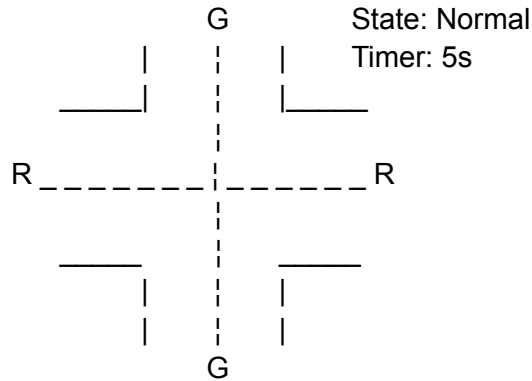**ENSE 452 Milestone Description**
Intersection Controller
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For my November 16th Milestone, I plan to implement all the basic functionality of a intersection controller:

- Red, Yellow, Green, and Turn, lights
- Timed interval for each change in state
- CLI Display of the intersection, for example:

```
                          G           State: Normal
              |      ┆    |           Timer: 5s
         _____|      ┆    |_____
                     ┆
   R _ _ _ _ _ _ _ _ ┆ _ _ _ _ _ _ R
                     ┆
         _____       ┆    _____
              |      ┆    |
              |      ┆    |
                          G
```

- Basic user input: Help command

For reference from my Project Description document here's what I will be implementing (red text will not be implemented for this Milestone)

ISRs:
- USART2 ISR for CLI user input
- External User Button ISR that indicates pedestrian crossing

Tasks:
- Traffic Light Controller Task (Main Task):
  - Responsible for managing the state of the 4-way traffic lights.
  - Handles the timing cycles for each state (red, yellow, green, turn)
  - Receives commands to switch between operating modes (Normal, Emergency Vehicle, Maintenance)
- Pedestrian Crossing Task:
  - Manages the pedestrian crossings and responds to push button activations.
  - Coordinates with the Traffic Light Controller Task to handle a pedestrian crossing at one of the corners
- CLI Task
  - Receives user commands from the USART2 interrupt
  - Coordinates with the Traffic Light Controller Task to update the operating modes (Normal, Emergency Vehicle, Maintenance)
- Console Task
  - Handles the display of the intersection

- - Coordinates with the Traffic Light Controller Task to get the state of the intersection, and each of the lights current state

CLI Commands:
- {'Emergency' or 'E'} - Changes the state to Emergency Vehicle
- {'Maintenance Mode' or 'M'} - Changes the state to Maintenance
- {'Normal Mode' or 'N'} - Changes the state to Normal
- {'Help' or 'H'} - Displays all the available commands, and a short description

CLI Status Display:
- The status portion of the CLI window will display the intersection, and state