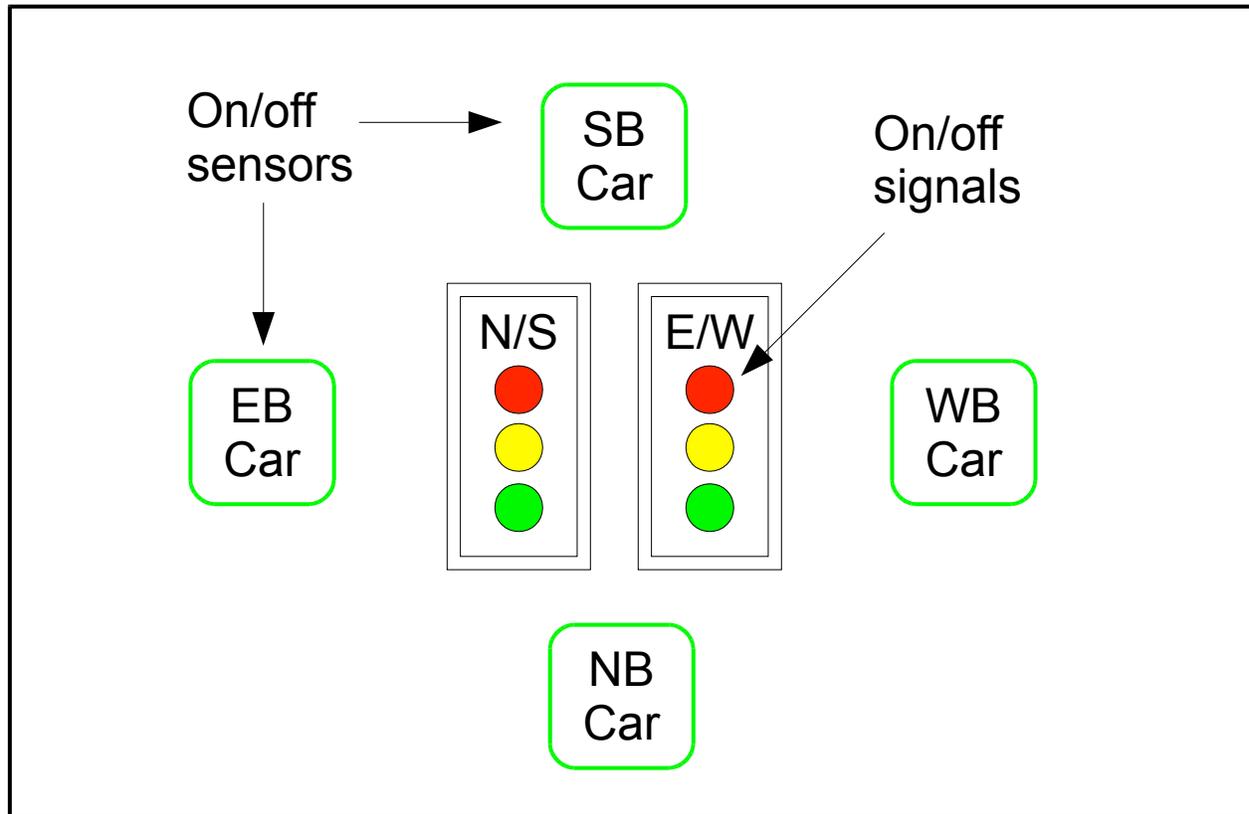


Fall 2013
1640 Programming Challenge



You have been hired to program the traffic signals for an intersection of a North/South road and an East/West road.

You have six signal lights to control: one red, one yellow, and one green for each road, which will be visible to both directions of each road. These are on/off signals, so your program needs to provide whether each of them are on or off at all times. Normal traffic signal behavior applies (e.g. only one green light should be on at a time).

You also have four car presence sensors: one for the southbound lane, one for the westbound lane, one for the northbound lane, and one for the eastbound lane. These indicate whether a car is waiting in the lane.

Your program needs to control the traffic signals to obey the following rules:

- The E/W road has priority and it should have a green light as long as it has had less than 15 seconds with a green light or as long as no NB or SB car is waiting. If a NB or a SB car is waiting, and the E/W road has had 15 seconds with a green light, the E/W road should get a yellow light followed by a red light.
- The N/S road should have a green light for its waiting traffic for at least 5 seconds and should go to a yellow light followed by a red light after 10 seconds, whether or not a EB or WB car is waiting. If a EB or WB car is waiting, the N/S road should get a yellow light followed by a red light if the N/S road has had a green light for at least 5 seconds.