BM 627 - Virtual Instrumentation

Assignment 1: Traffic Light Simulator
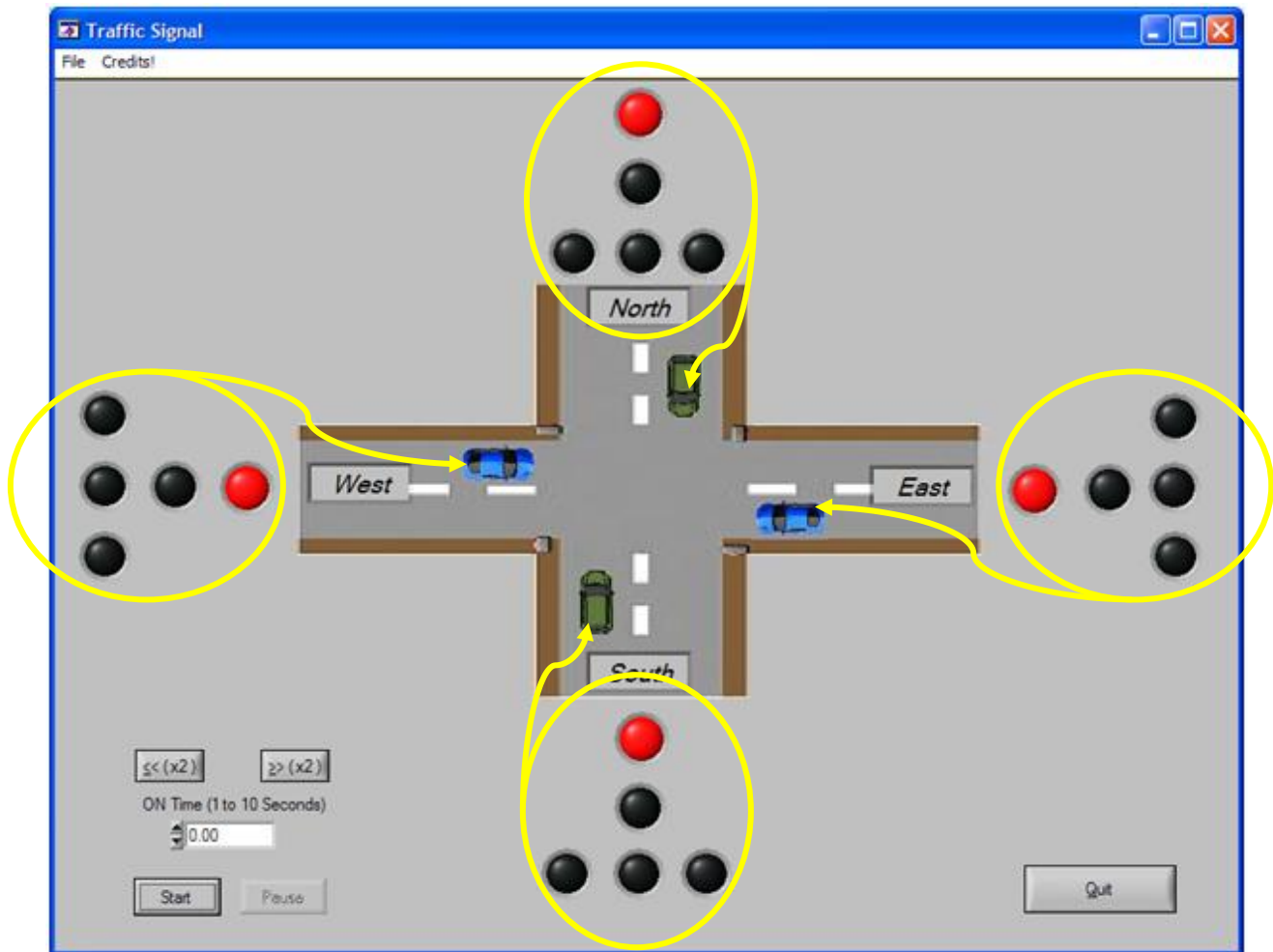
August 2nd Week, 2011

Figure 1: An example of user interface just to give an idea of what is expected. Please go ahead with your own ideas and experiment ☺

The labels in yellow are simply to show which vehicles would obey which signals. E.g. North signals are for vehicles coming from North, South signals for vehicles coming from South and so on.

There are four poles, namely North, South, East and West.

1. START State: Start from all red
2. STATE 1:   North-South orange on, East -West red on.
3. STATE 2:   North-South Left on, East -West red on.
4. STATE 1
5. STATE 3:   North right on, East -West -South red on.
6. STATE 1
7. STATE 4:   South Right on, East -West -North red on.
8. STATE 1
9. STATE 5:   North-South straight on, East -West red on.
10. STATE 6:   North-South, East-West orange on, i.e. all orange on.
11. STATE 7:   East –West left on, North-South red on.
12. STATE 8   East –West orange on, North-South red on.
13. STATE 9:   East right on, North - South - West red on.
14. STATE 8
15. STATE 10:   West Right on, North-South - East red on.
16. STATE 8
17. STATE 11:   East –West straight on, North-South red on.
18. STATE 6
19. Then repeat from step 3 to step 18 until user presses Pause or Stop controls.

Mandatory Features:

- One can draw picture of a square in any picture editor and use it as background in the user interface.

- Start/Stop and Pause/Resume command button controls.

- Take Delay input from user for green light (which is equal to red light) and use the one third of its values for orange light. Specify the range when taking the delay. It should be between 1 to 10 seconds. If user enters delay value out of range then ask user to re-enter the correct value. If user presses any of the above mentioned controls before specifying delay then the program should demand user to input Delay first.

- Use fast forwarding option (2x, 3x etc) to increase speed and option to revert back.

- Quit option with confirmation from user that whether user really wants to quit or not. This is mandatory for all the assignments.

- Create a Menu bar with at least the following options:
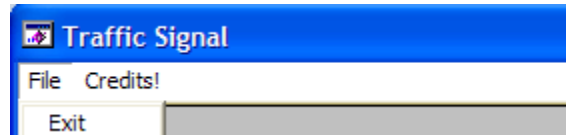 - ✓ File -> Exit
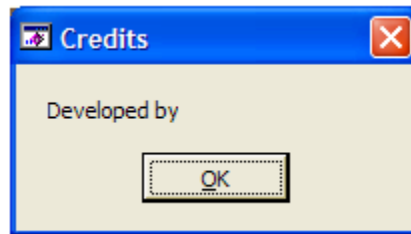 - ✓ Credits

Figure 2: Sample Menu Bar

Figure 3: Credits menu item should open a popup describing who created the program (you) :)

Additional Features [Extra Marks!]:

We leave it to you. You can innovate and improve with as many ideas as you can and enhance your program. Here are some ideas:

- Based on the time, have some feature (image, text or other means – be creative) to show that it is daytime or night. For uniformity, let us have:
  - ✓ 7 AM to 6 PM : Daytime
  - ✓ 6 PM to 7 AM : Night

- Display the wait time in seconds.