Post-Grad

LabVIEW Course

Exercise 11

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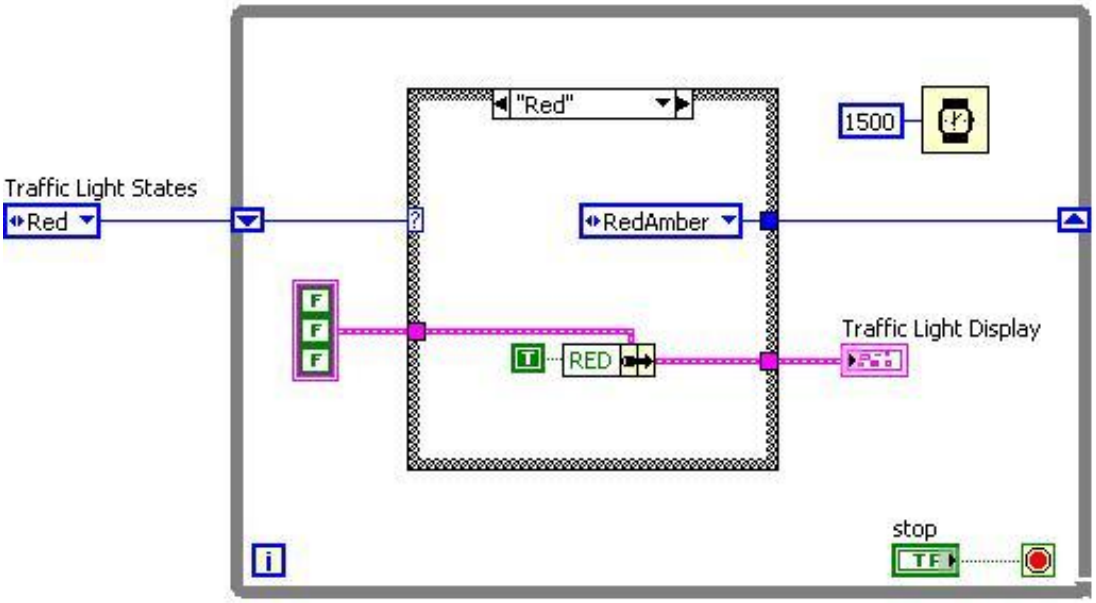
Exercise 11 – Simple Traffic Lights

A simple Traffic Light sequencer is realised using the Project and Custom Controls created in the previous exercise. The sequencer uses a simple *State Machine*.

1) Open the project named *Traffic Light Simulator.lvproj*. Right-click the *VI* virtual folder and do New>>VI.
2) Drag the *Traffic Light Display.ctl* from the Controls virtual folder and place it on the front panel of the new VI. Add a *STOP* button to the front panel and hide its label.
3) Create the following diagram using the tips below:



a) Create a While Loop, and right-click the left border and do *Add Shift Register*. Drag *Traffic Light States.ctl* from the project window to the diagram and wire it to the left-most shift register. Make the label visible.
b) Place a Case structure in the While Loop and wire from the left-most shift register to the Case Selector. This creates two cases – "*Red*",*Default* and "*RedAmber*". Delete the *Default* text. Move to the "*RedAmber*" case, right-click and do *Delete this Case*.

c) Drag *Traffic Light Display.ctl* to the diagram. This creates a Cluster Constant, containing three Boolean constants. Wire to the left-edge of the Case structure.

d) From the *Cluster, Class & Variant* palette add *Bundle by Name*. Wire the Cluster Constant to the *Input Cluster* of *Bundle by Name*. Add a TRUE constant to the *RED* input. Wire the output of *Bundle by Name* to the *Traffic Light Display* indicator outside the Case structure.

e) Right-click the Case Label and do *Duplicate Case* three times. This creates three copies of the RED sub-diagram. Go to the RedAmber case. Drag the lower edge of *Bundle by Name* to display AMBER and add a TRUE constant to the input. For the Green and Amber case, change the *Bundle by Name* to GREEN and AMBER respectively.

f) Drag *Traffic Light States.ctl* to the Red case. Change its value to RedAmber and wire through to the right-most shift register. This means that once the Red Case has executed, the next case will be RedAmber. Add *Traffic Light States.ctl* to each case and ensure the sequence will be correct.

4) Save the VI as *Simple Traffic Lights.vi* in the VI directory. Check this new VI appears in the project window and then save the Project.
5) Run the VI and check the traffic light sequence is correct.
6) How can you make the *ON* time different for each state?

End of Exercise