

PH2150 Labview and Data Acquisition: Developing larger VIs

Function Generator.vi

This VI, as provided, is a very basic Function Generator. Understand how the VI works and then finish the diagram to generate an output when the 'Square' function is selected. Add at least two further functions such as Triangle, Sawtooth or Pulse (open 'Function.ctf' and add extra items as necessary). You may need to add further controls on the front panel since extra functions may require more parameters.

Complete the VI documentation (icon, properties, comments) and keep both the front panel and diagram well styled.

Add a Boolean control to the front panel that controls whether 'noise' is added to the signal. One way of adding noise is to add a small random number (as a percentage of the amplitude or otherwise) to each sample generated.

You should put each function into a sub-VI to demonstrate your LabVIEW competence.

Important: Do not use Express VIs! Any functions created using Express VIs will not be assessed!

Traffic Lights.vi

The VI provided is a simple two-state State Machine which needs extending to make a basic traffic-light sequencer. Understand how the VI works and then add two states to make a single working traffic light – you will need to edit the Traffic Light States.ctf and add states 'RedAmber' and 'Amber'. The Case statement will need two more sub-diagrams, with appropriate, logic to turn on the traffic light lamps correctly.

Create *Pedestrian Light.ctf*, consisting of a red and green Boolean indicator cluster representing the 'don't walk' / 'walk' lights. Add a Boolean control to the front panel for the 'Cross' push-button. Add another State to turn on the Green pedestrian lamp. One state will require a decision of which state to go to next, depending on whether the 'Cross' button is pressed or not.

Ensure the VI documentation is completed as you progress.

Assessment

Zip all of the VIs and Controls for *Function Generator* and *Traffic Lights* then email them to G.Boorman@rhul.ac.uk Your work will be assessed as follows:

Function (50%): Does the VI work as required? Is it scalable? Is CPU-time less than 100%?

Style (25%): Are the Front Panel and Diagram tidy, readable and logically laid out?

Documentation (25%): Are controls/indicators labelled correctly? Comments on Diagram? Meaningful sub-VIs?