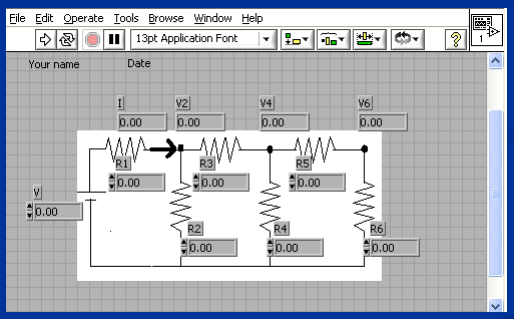
Engin 103
Fall ‘06
Meeting #17: October 26, 2006
Today we completed Circuit Analysis with LabVIEW III: the equations for wiring in the Block Diagram are shown in the link to this lab in the e-syllabus.

Circuit 3: see additional explanations and equations to be used ((1) to (4)) in the link to “Circuit Analysis with LabVIEW III” in the electronic syllabus.

Step 1: Draw circuit in Paint, then copy into Front Panel; place in seven numeric controls for the seven inputs (V, R1 to R6), and four numeric indicators for the four outputs (I, V2, V4, V6). Make sure you label every icon to distinguish them later in the Block Diagram.



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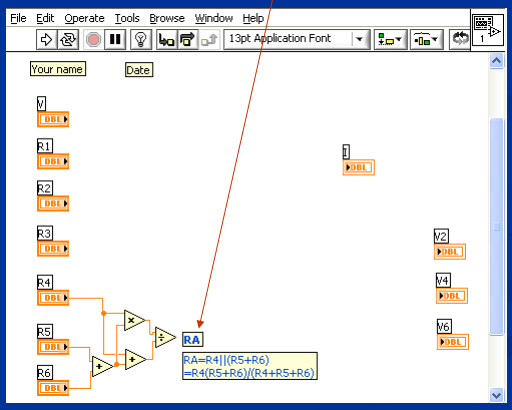
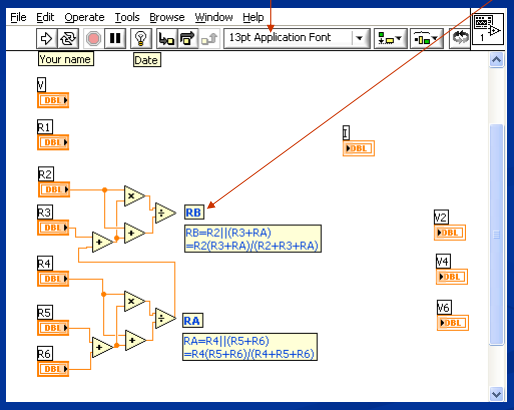
Step 2: in the Block Diagram, arrange the inputs to the left side, and outputs to the right Side; start implementing part of equation (1) in the explanation (use the expression after the second equal sign in that equation, the first equation will be used when we rewrite this Graphical program using SubVI’s), implementing RA as defined in the figure below.
-Remember to wire elements, use the “wire connect” tool within the Tools Palette (if not shown, Click on Window/Show Tools Palette.
-To change position, delete, resize, use the “select” tool or the arrow within the Tools Palette, then drag to the new location, do backspace, or click and drag to resize.

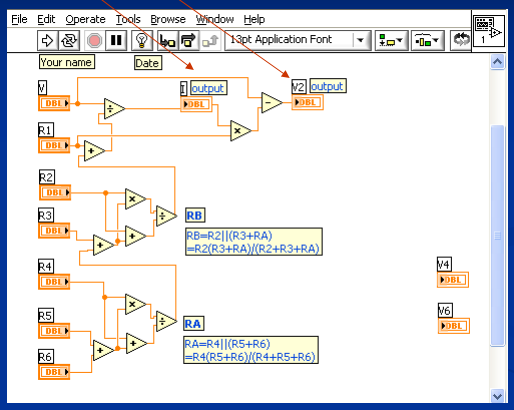


1

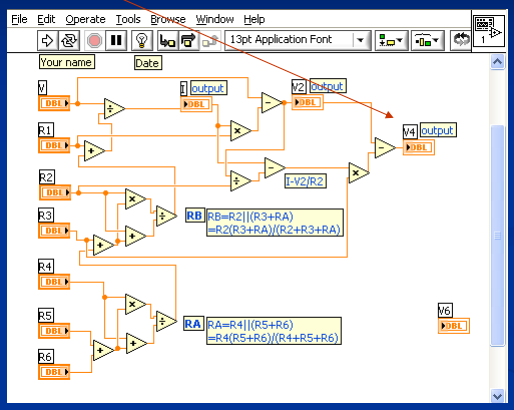
Step3: continue on implementing equation (1) to produce the intermediate variable RB
-The comment can be inserted as a Text Box (letter "A" within the Tools Palette)
-Font color can be changed under "Application Font/Color"



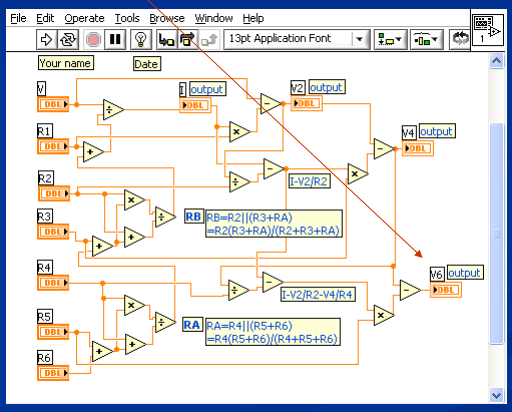
Step 4: produce I and V2 using equation (2)



Step 5: produce V4 using equation (3)

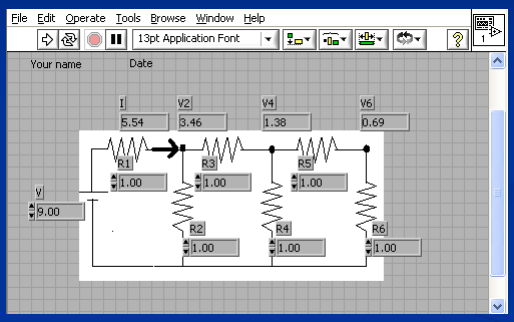


Step 6: produce V6 using equation (4). If the "Run Button" or arrow in the upper left corner Is not broken, you incurred no grammar error (short-circuiting terminals, data type conflict, Or wiring into a Numeric Control, remember outputs should be Numeric Indicators, not Numeric Controls. You can now go to the Front Panel to test your VI.



When using Sub-VI's: the interconnections between different "subroutines" can be caught with a glance in a graphical programming language as opposed to a conventional language such as C++

Step 7: Check! These numbers can be obtained manually by setting V=9V; R1 to R6=1 Ohm You should them get I=5.54; V2=3.46; V4=1.38; V6=0.69 (note I use 2 decimal digits, this can Be change by right click on the icon, select Format/Precision, select 2 decimal digits).



Suggested items to write in the Engin 103 logbook:

1) **By looking at the equation (1) to obtain the total current I in the link to Circuit Analysis with LabVIEW III in the e-syllabus, indicate what group of operations are repeating, how many times? Attach a print-out of the Block Diagram of your VI here and circle these groups.**
2) **Is there any repeating pattern in the equations (2) to (4) to obtain V2, V4, V6? Explain. Attach a print-out of the Block Diagram of your VI and circle the group of operations leading to V2, V4, and V6, respectively.**