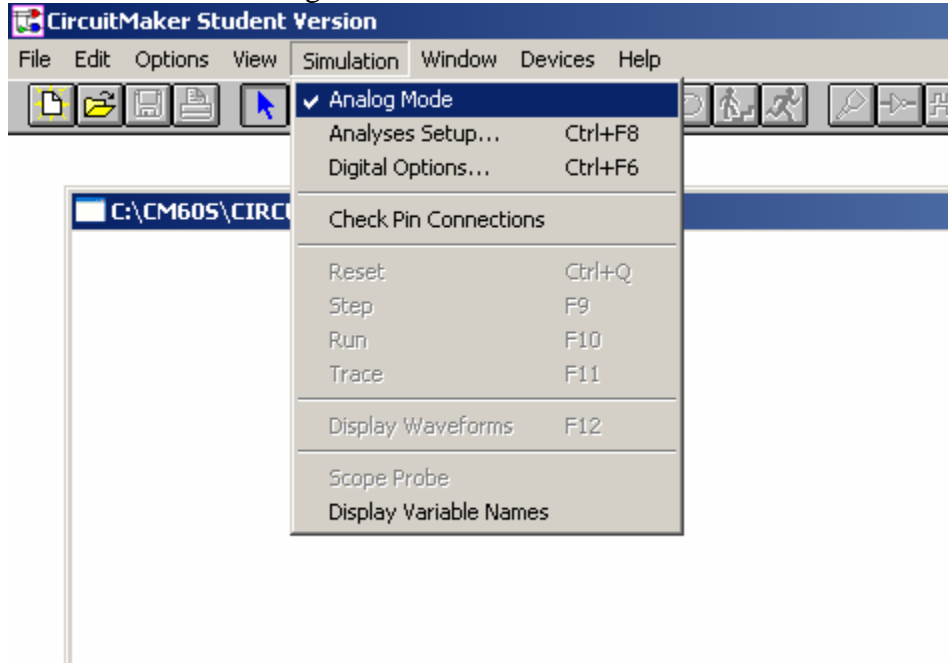
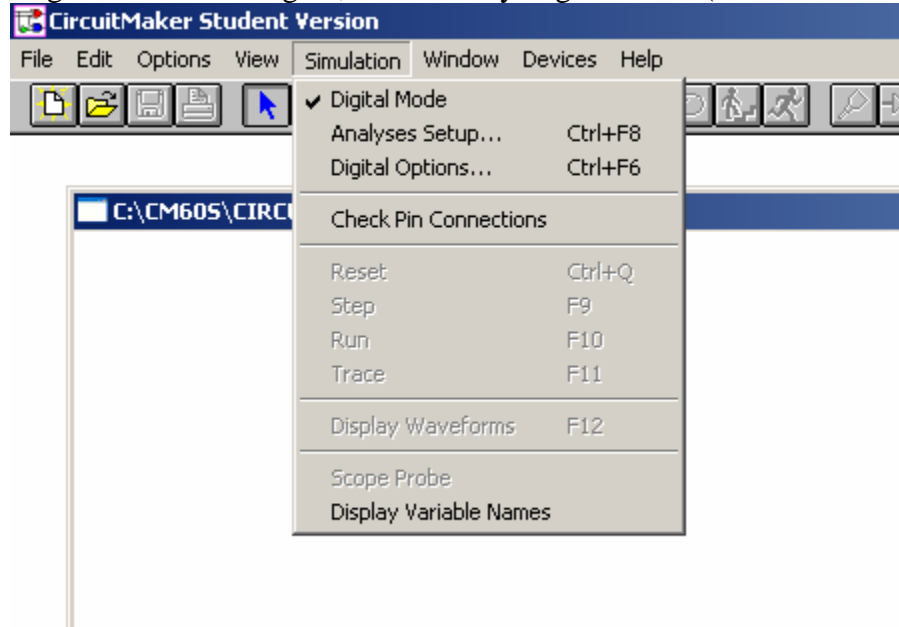


CircuitMaker2000 Tutorial

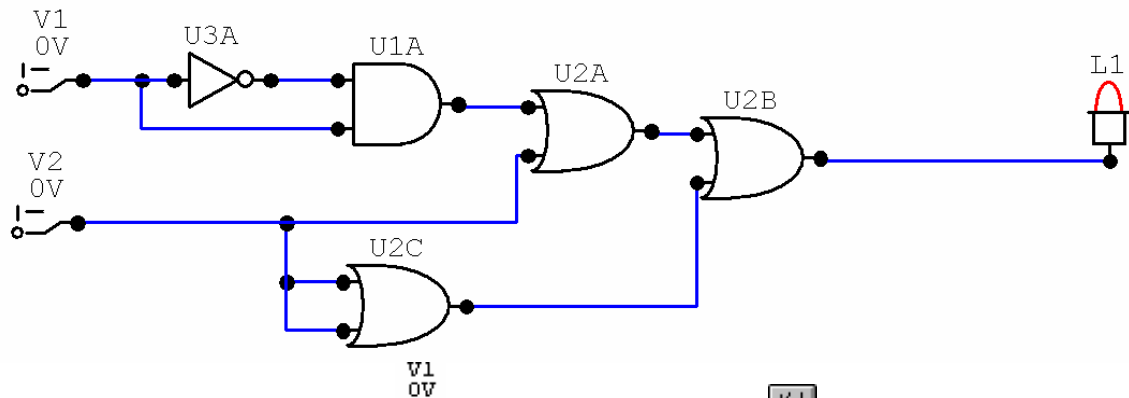
1. Launch CircuitMaker from:
Start->All Programs->CircuitMaker 6 Student->CircuitMaker
2. Go to Simulation->Analog Mode



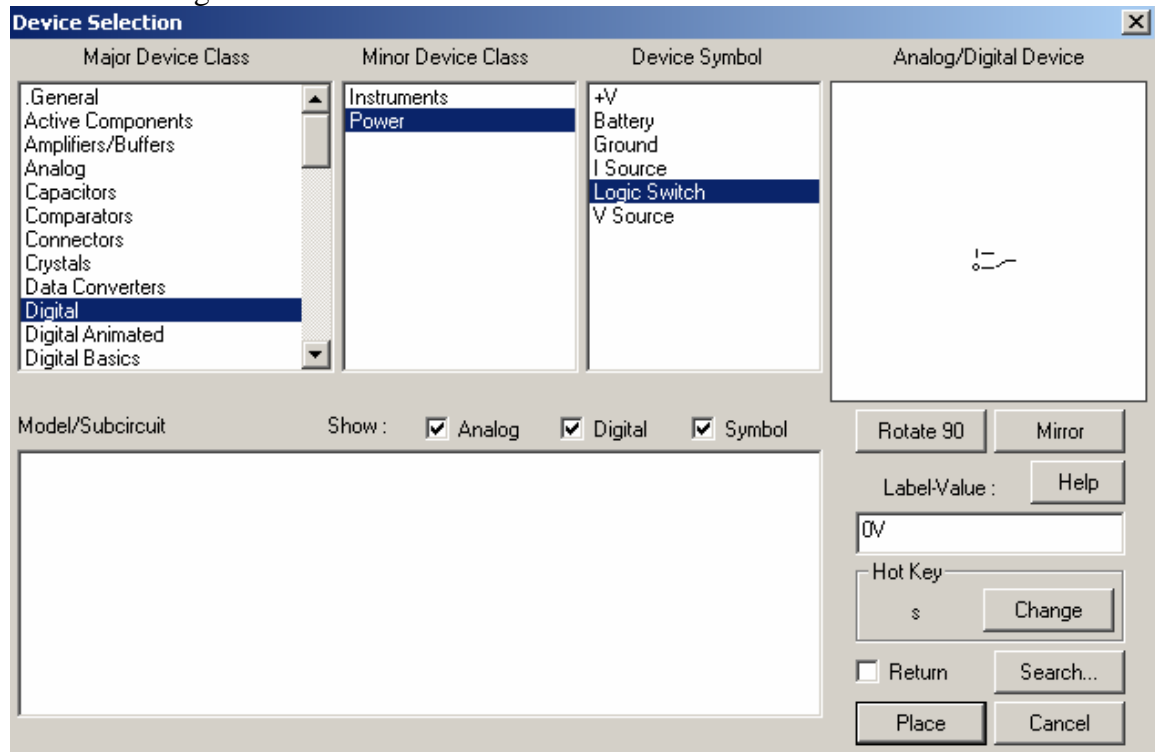
When you go to Simulation again, it should say Digital Mode (don't click on it):



3. Suppose we wish to simulate the following circuit:

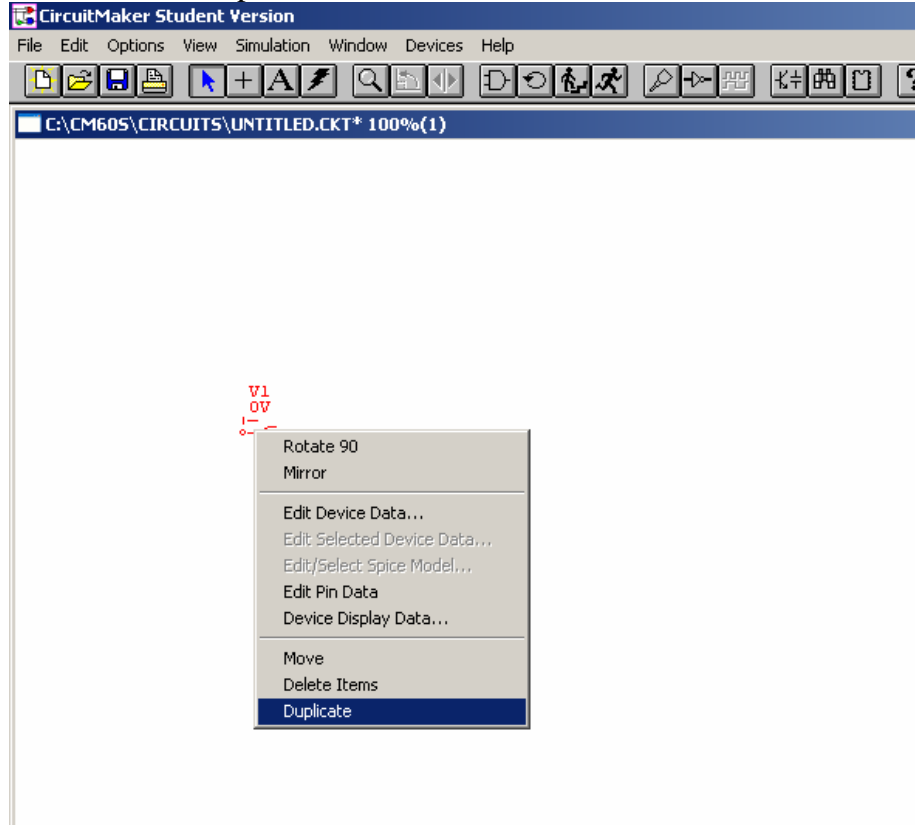


4. To get the Logic switches (⏻) click on the Parts Icon (⌘) and a window will pop up. Go to “Digital” *Major Device Class*, “Power” *Minor Device Class*, and Select “Logic Switch”:

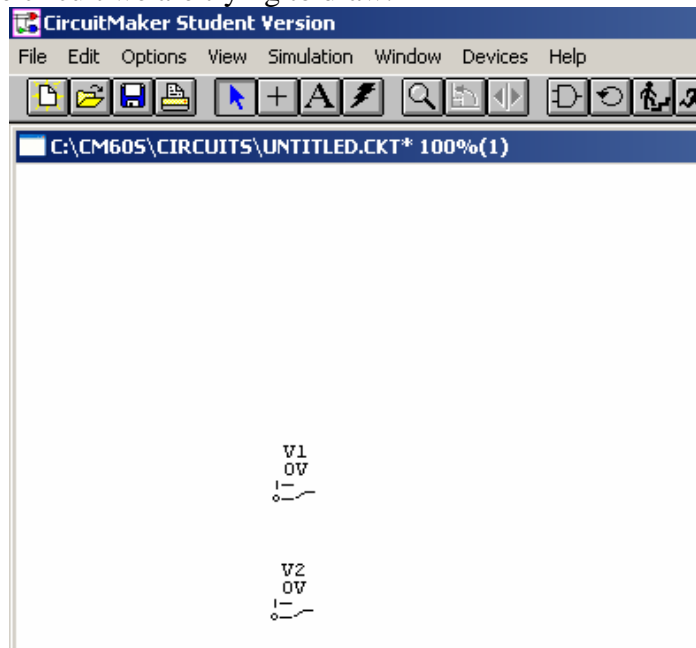



5. Click on Place and left-click the mouse button somewhere in the white area of the CircuitMaker window to place the object somewhere in your circuit.

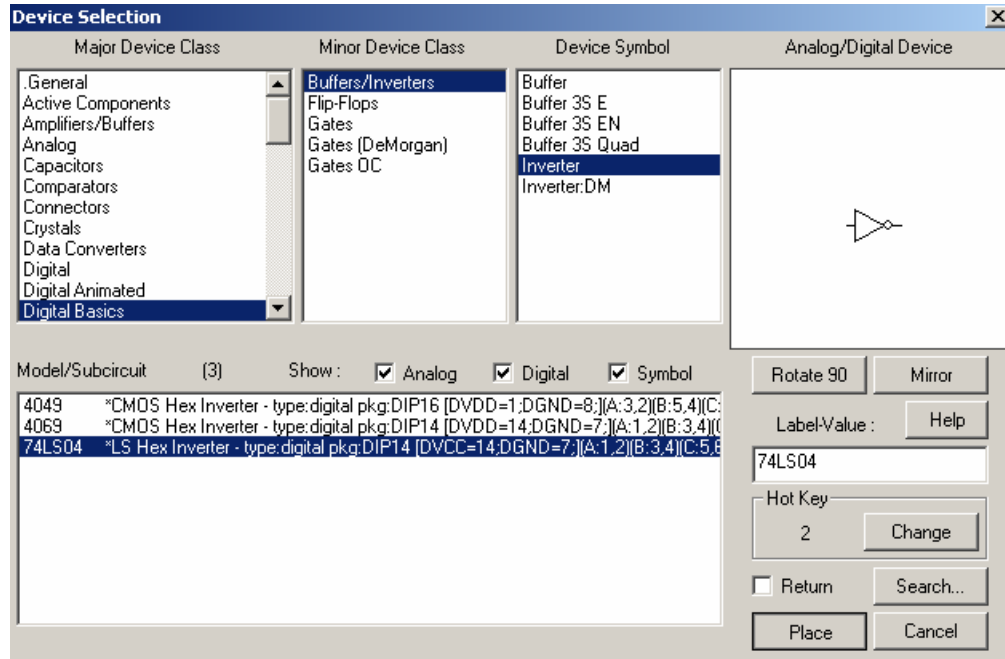
6. Right-Click on the Logic Switch which you just placed on the circuit to make it turn red and select duplicate:




7. You will see that a Logic Switch will be following your mouse. It will be placed wherever you Left-Click. Left-Click somewhere below the first one (to make it look like the circuit we are trying to draw).

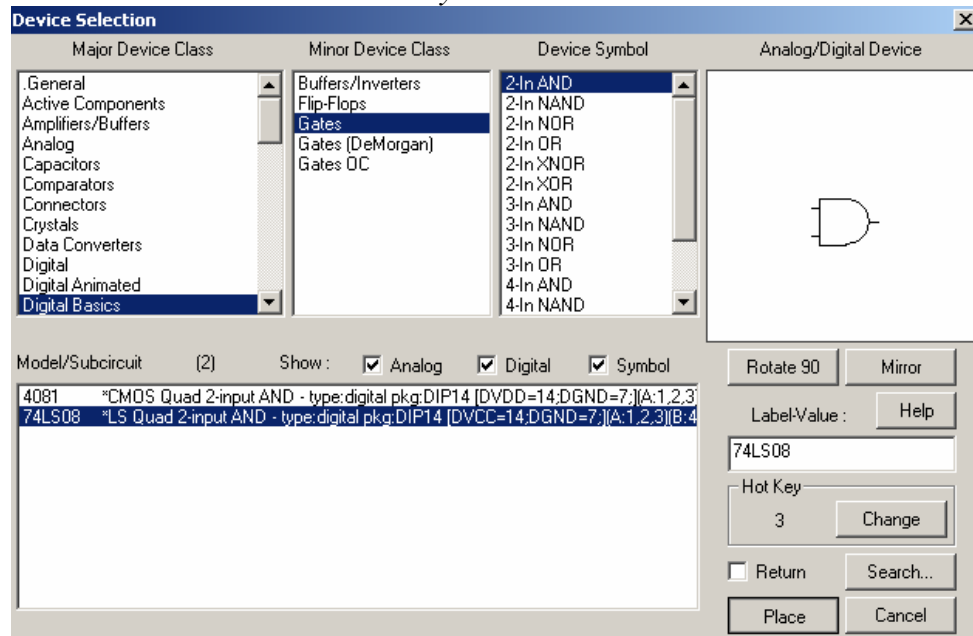



8. To place the NOT gate, or inverter, () Go to the parts dialog as in Step 4. But select the “Digital Basics” *Major Device Class* and the “Buffers/Inverters” *Minor Device Class* and then Select “Inverter” under *Device Symbol* and hit **PLACE**:

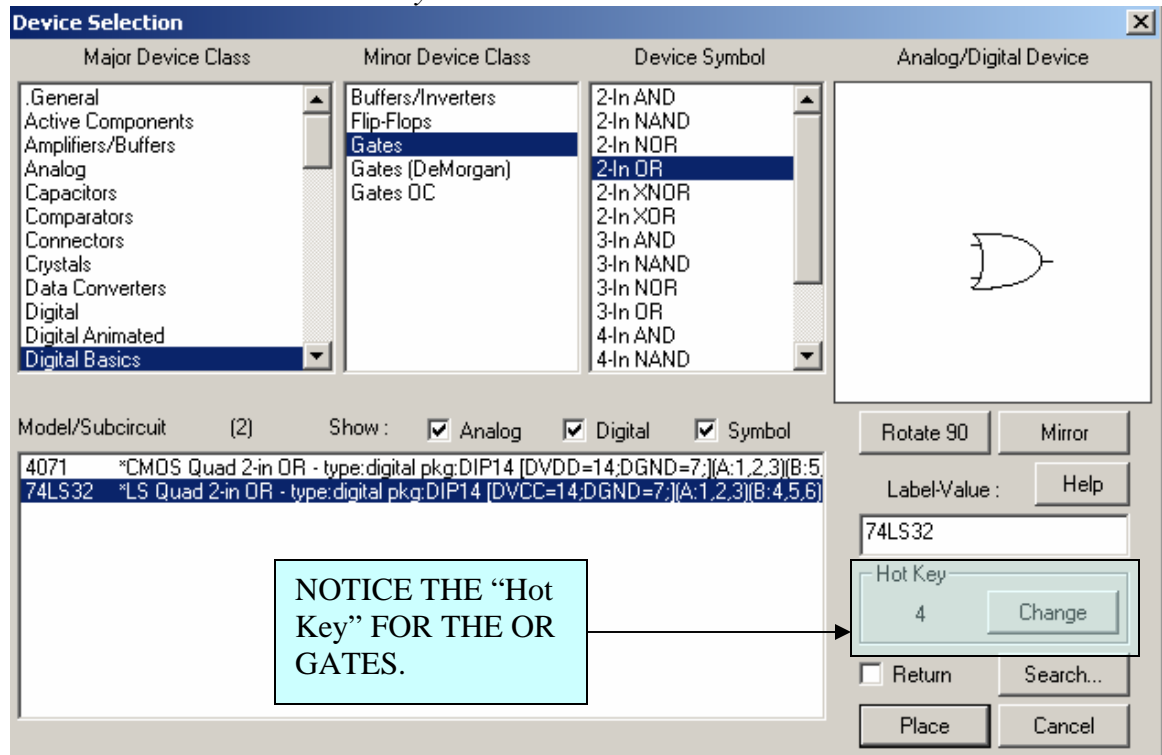


9. Do as you did for the Logic Switch and place the Inverter somewhere on the page.

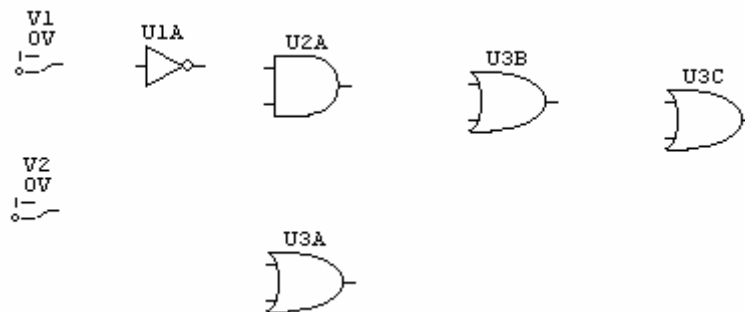
10. To place the AND gate () Go to the parts dialog as in Step 4. But select the “Digital Basics” *Major Device Class* and the “Gates” *Minor Device Class* and then Select “2-In AND” *Device Symbol* and hit **PLACE**:




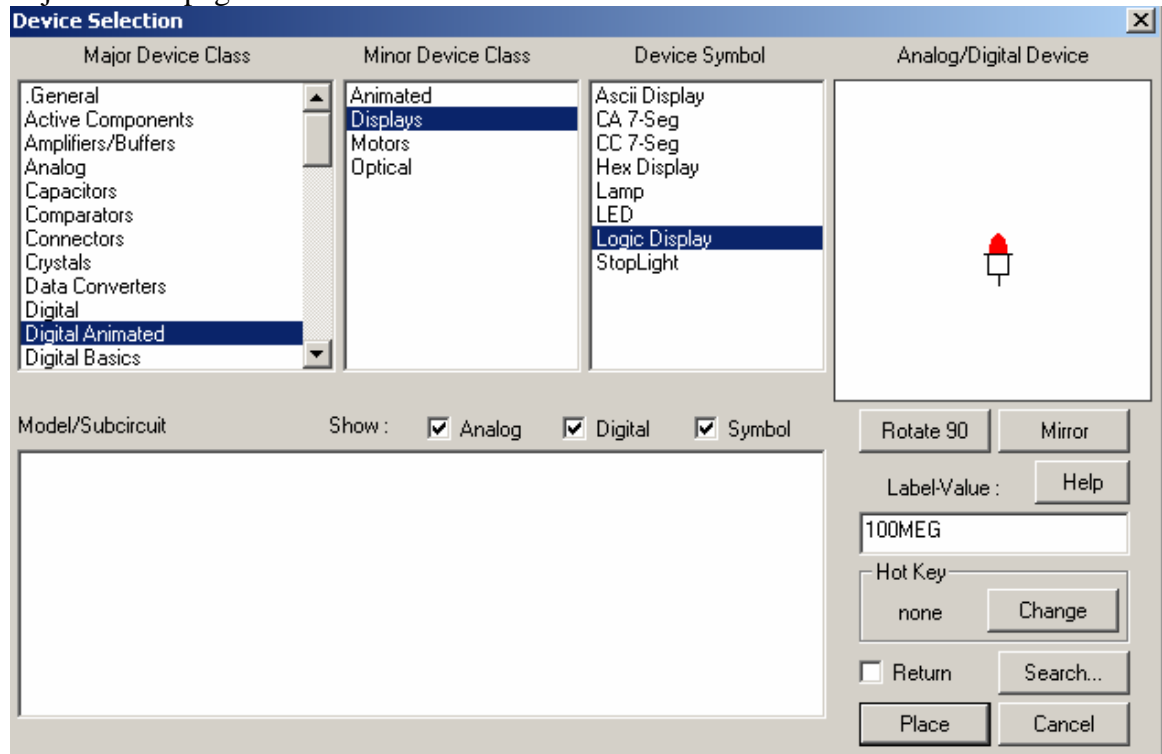
11. To place the OR gates () Go to the parts dialog as in Step 4. But select the “Digital Basics” *Major Device Class* and the “Gates” *Minor Device Class* and then Select “2-In OR” *Device Symbol*.



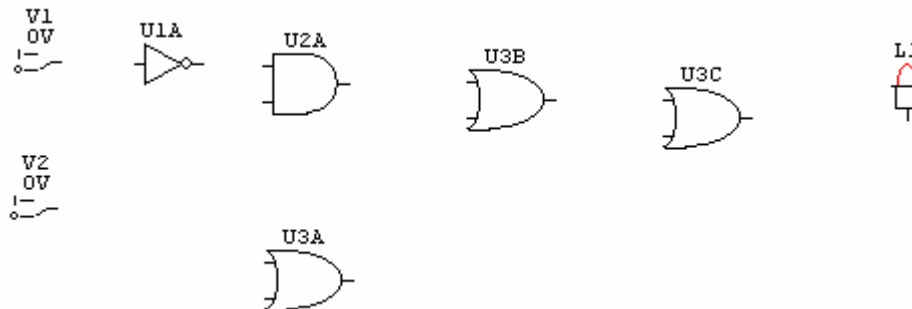
- Notice that the “Hot Key” for OR gates is “4”. So hit **PLACE** and insert the OR gate somewhere in the page.
12. Insert 2 more OR gates (total of 3) by pressing “4” while you are looking at your circuit. This will create an OR gate near your mouse, and you would place the OR gate by Left-Clicking in the place you want to place it. Do this once more (for the third OR gate). The circuit looks like this now:





13. To place the Logic Display () Go to the parts dialog as in Step 4. But select the “Digital Animated” *Major Device Class* and the “Displays” *Minor Device Class* and then Select “Logic Display” *Device Symbol*. Press **PLACE** and place the object on the page.




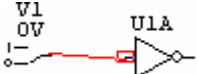
14. The schematic now looks like this:

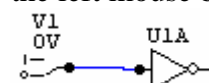


15. In order to create a wire, click on the cross icon () and move the mouse close

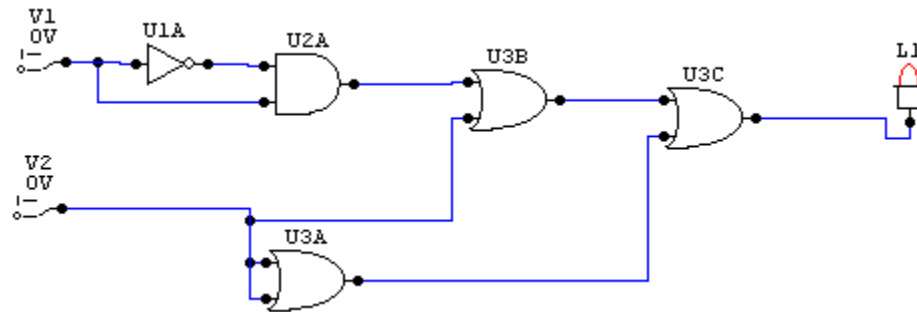
to the ‘-’ on the Logic Switch: . Notice that the ‘-’ will look as follows:


. When you see the red box surround the ‘-’, Click and hold the left mouse button there and drag the mouse to the ‘-’ of the inverter (NOT gate) as follows:

. When you see a red box around the ‘-’ of the inverter, let go of the left mouse button, and a wire should be connected there as follows:




16. Connect the other wires as described by the picture of the schematic wanted above. Notice that connecting two wires has the same effect no matter where they are connected.
17. The schematic should now look like this:




18. In order to simulate the schematic, click the Run button () . If you get a “Ground node must be connected to the circuit” error, that means that you failed to complete Step 2. You should be in Digital mode.
19. In order to test the circuit, click on the switch part of the Logic Switch:



20. Notice that the logic switch changes to this:  meaning that 5 volts are now passed to the components to the right of the switch.
21. The truth table for the above circuit is:

V1	V2	L1
T	T	T
T	F	F
F	T	T
F	F	F

22. To stop the Simulation, Press the STOP icon () .
23. To save the circuit, Choose File->Save As-> and select a filename and a directory to save into.