Modelsim (PE Student Edition) Installation Guide

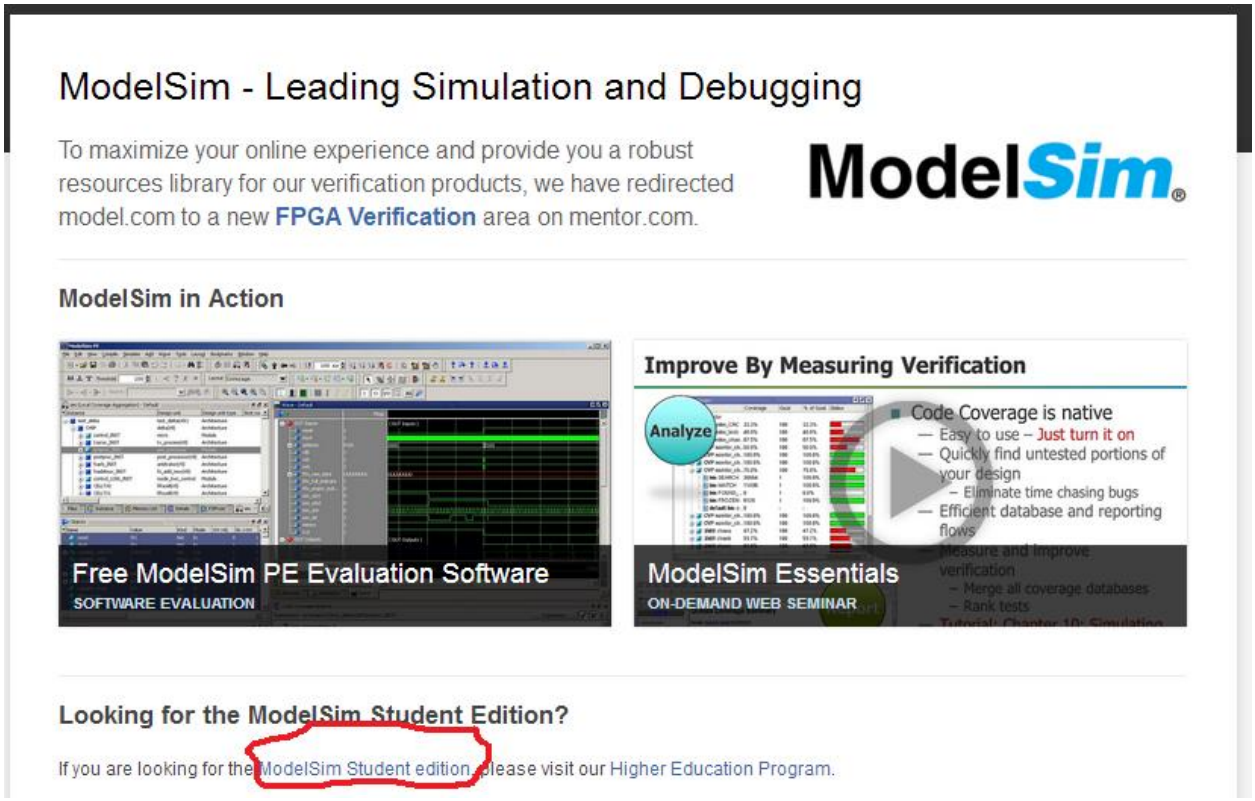
ECE 2500: Computer Organization and Architecture

Virginia Tech

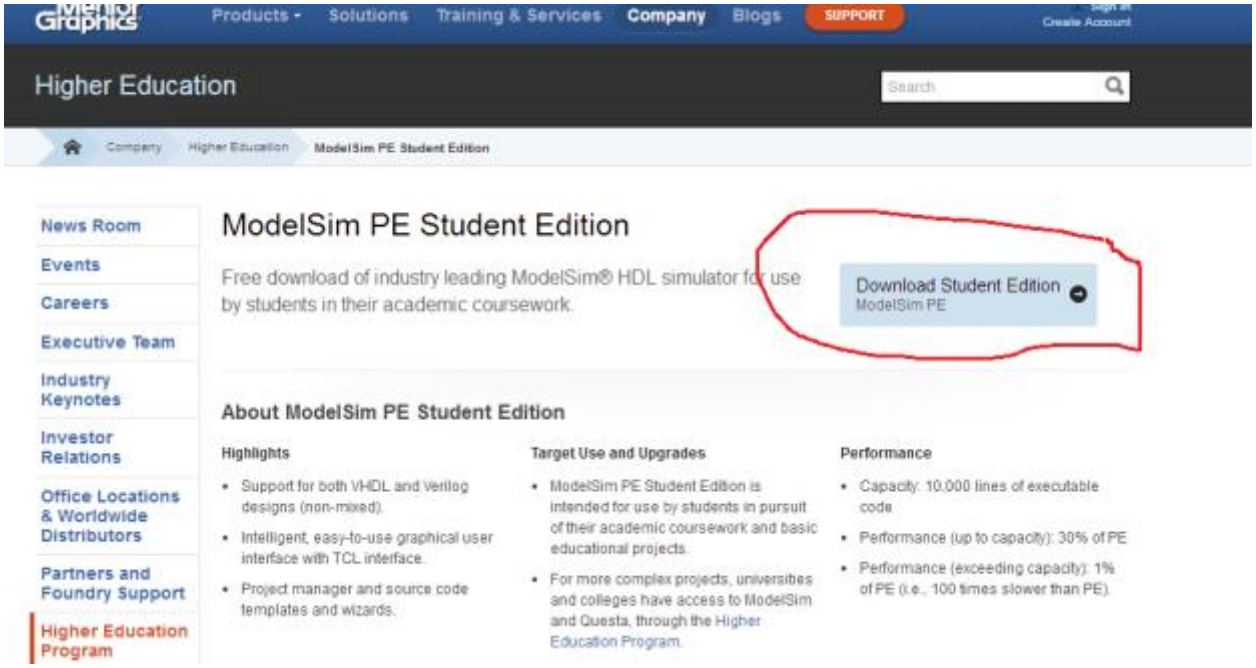
March 12, 2014 (Revised: November 20, 2016)

INSTALLATION OF MODELSIM:

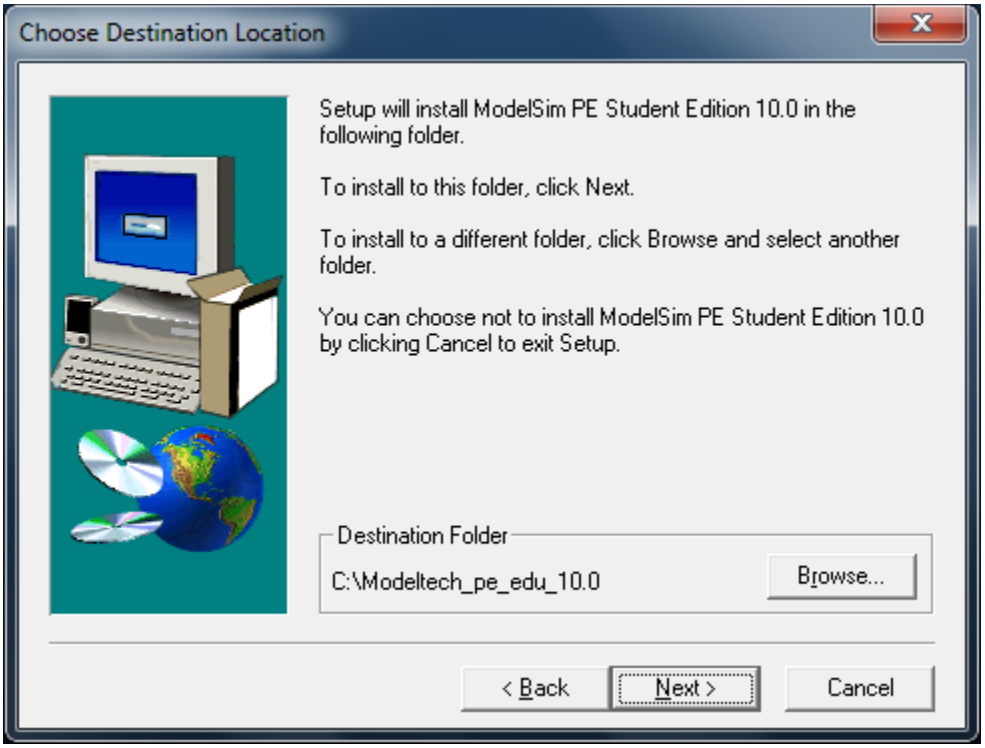
1. Go to http://model.com and click on the *ModelSim Student Edition* link.



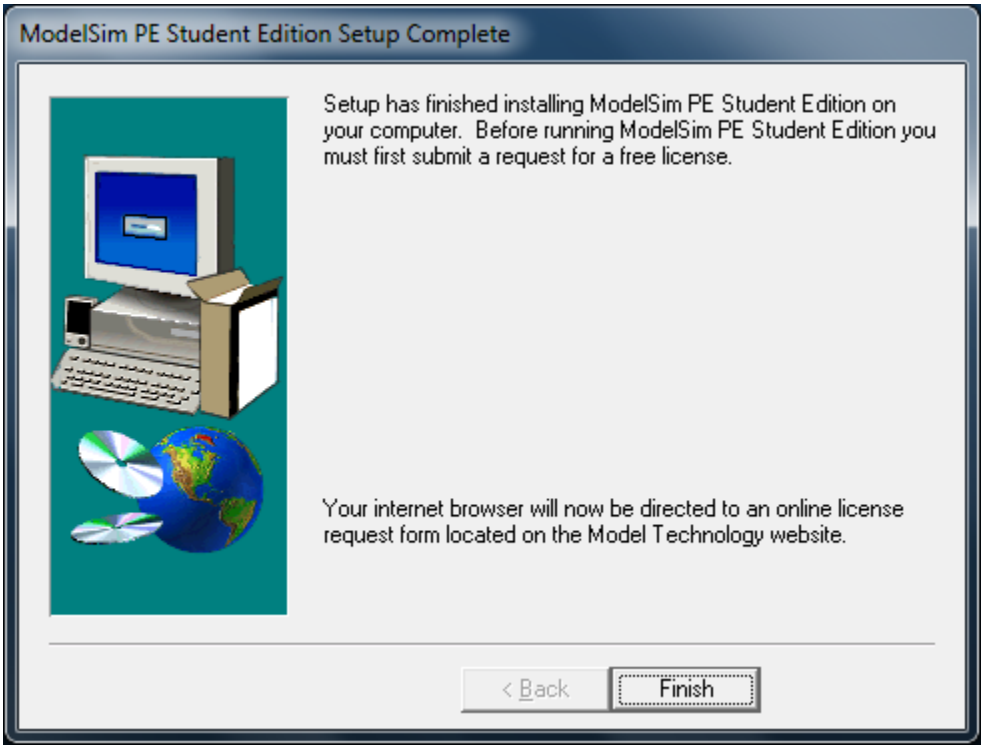
2. Click on the *Download Student Edition* link.



3. Run the downloaded *modelsim-pe_student_edition* executable (231 MBytes). Click *Next*. Agree to the license conditions, and to the default destination folder.



4. Click *Next*. Installation will begin. Click on *Yes* for popup questions. Click on *Finish*.



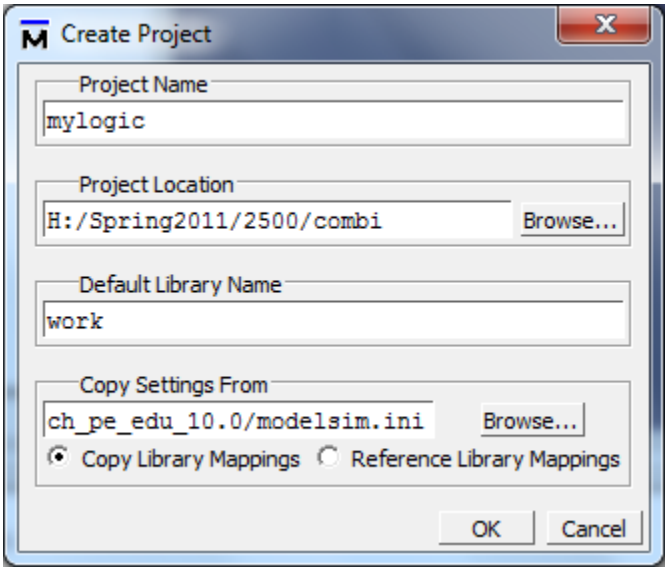
5. A browser window will appear for you to obtain a license. Provide the requested information (again) and click on *Request License*. The ModelSim license cannot be transferred to other machines since the license request includes your hard disk serial number.

6. In less than an hour a *student_license.dat* file should be e-mailed to you from info@model.com. The e-mail includes instructions for installing the license. After completing that step, you are ready to run test example.

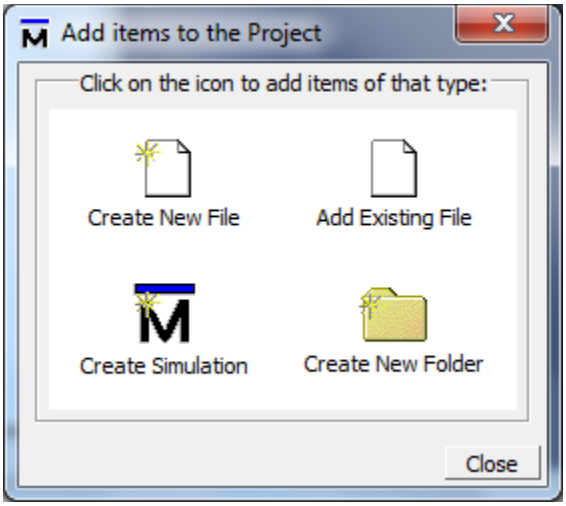
RUN TEST EXAMPLE

1. Download *mylogic.v* and *tb_mylogic.v* from canvas. Take a look at these (ASCII) files. The former describes our first example from the lectures, a 3-gate combinational circuit. The second file is a "test bench" that controls the circuit's inputs. By following these instructions, you will see how ModelSim can be used to exercise a simple combinational circuit.
2. Run ModelSim. On my Win7 machine, I do this by selecting
   Start → *All Programs* →*ModelSim PE Student Edition 10.0* → *ModelSim*.
3. Dismiss the Jumpstart popup, and select *File* → *New* →*Project*. A *Create Project* window will appear. Type the name of the project (here it is *mylogic*). Click *Browse* near

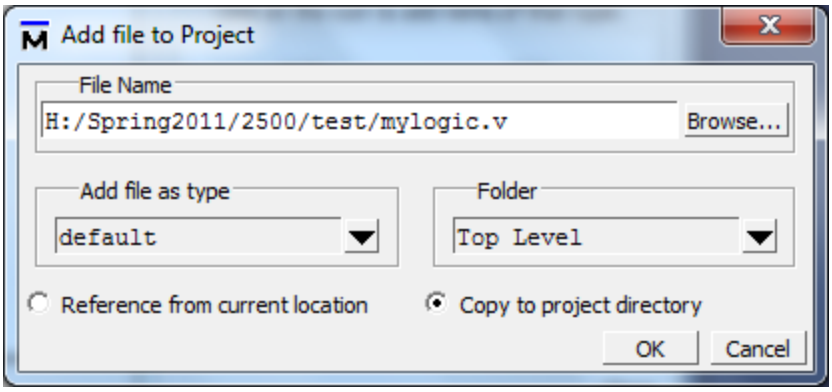
Project Location and specify an appropriate project directory. A possibility would be <*user-directory*>/2500/combi, as shown in the next figure.



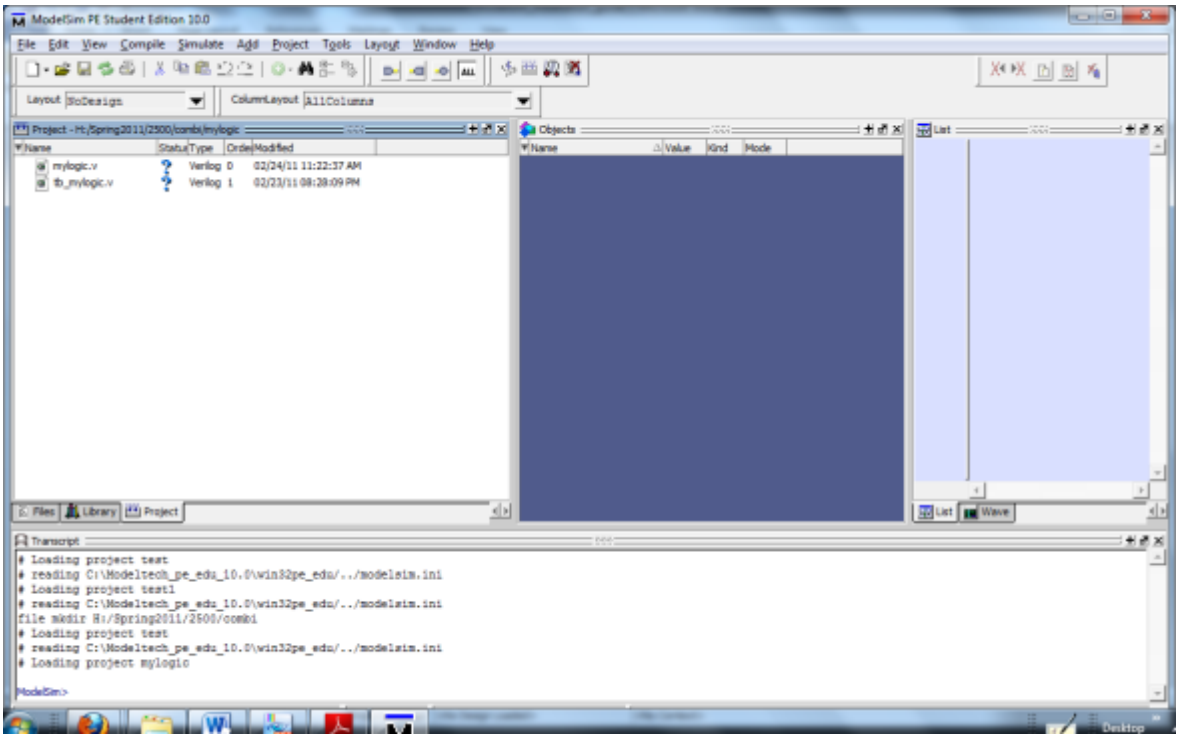
4. A new window will appear. Click on *Add existing files.*



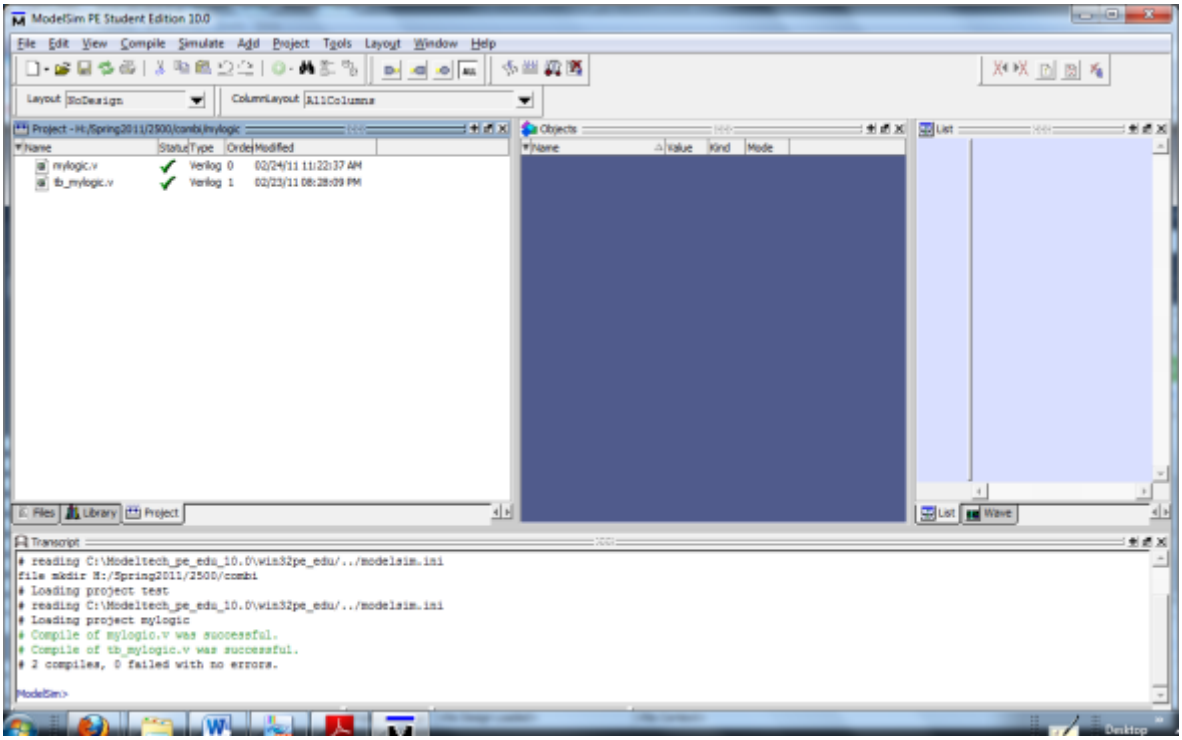
5. Separately for both downloaded files, browse and select *mylogic.v* and *tb_mylogic.v*. Click on *Copy to project directory* and *OK*.



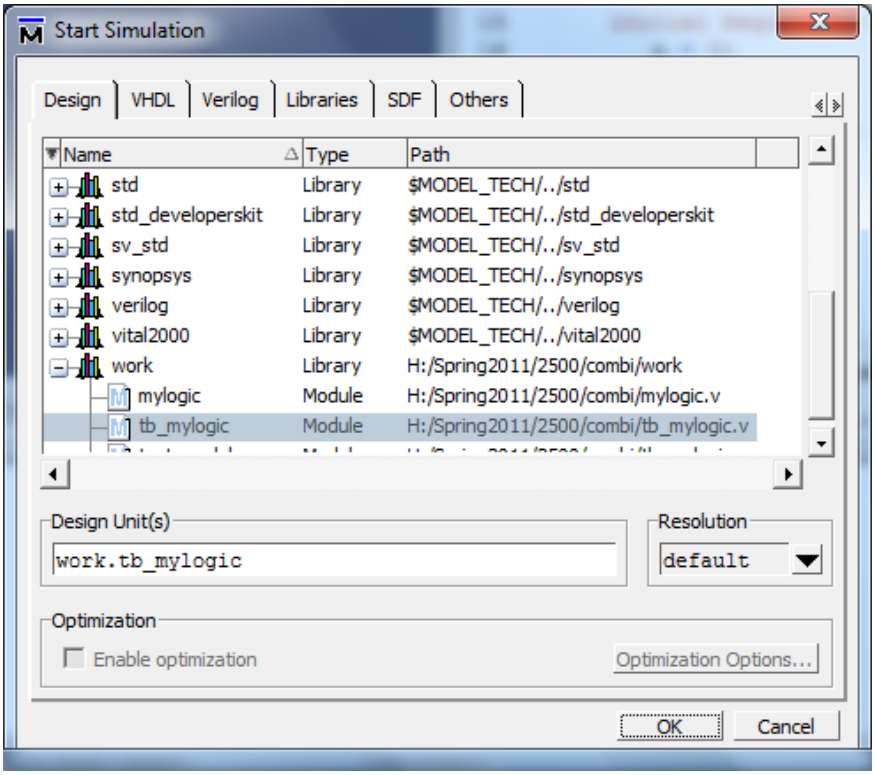
6. Select *Close*. The ModelSim window will look something like the following. Possibly your window will not show contain so many subwindows, but you should be able to see the file names *mylogic.v* and *tb_mylogic.v*.



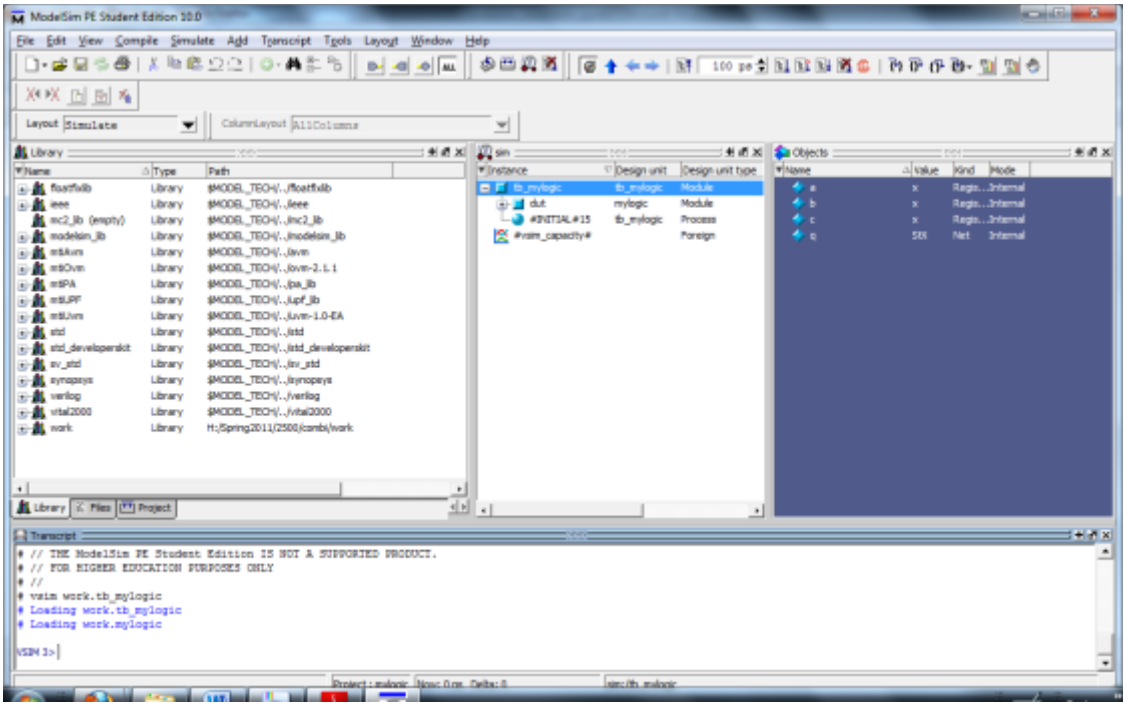
7. Click *Compile* → *Compile all.* You should see checkmarks appear after the file names, replacing the question marks that were present before. These indicate that the files were compiled successfully. You should also see the message "2 compiles, 0 failed with no errors" in the status window at the bottom.



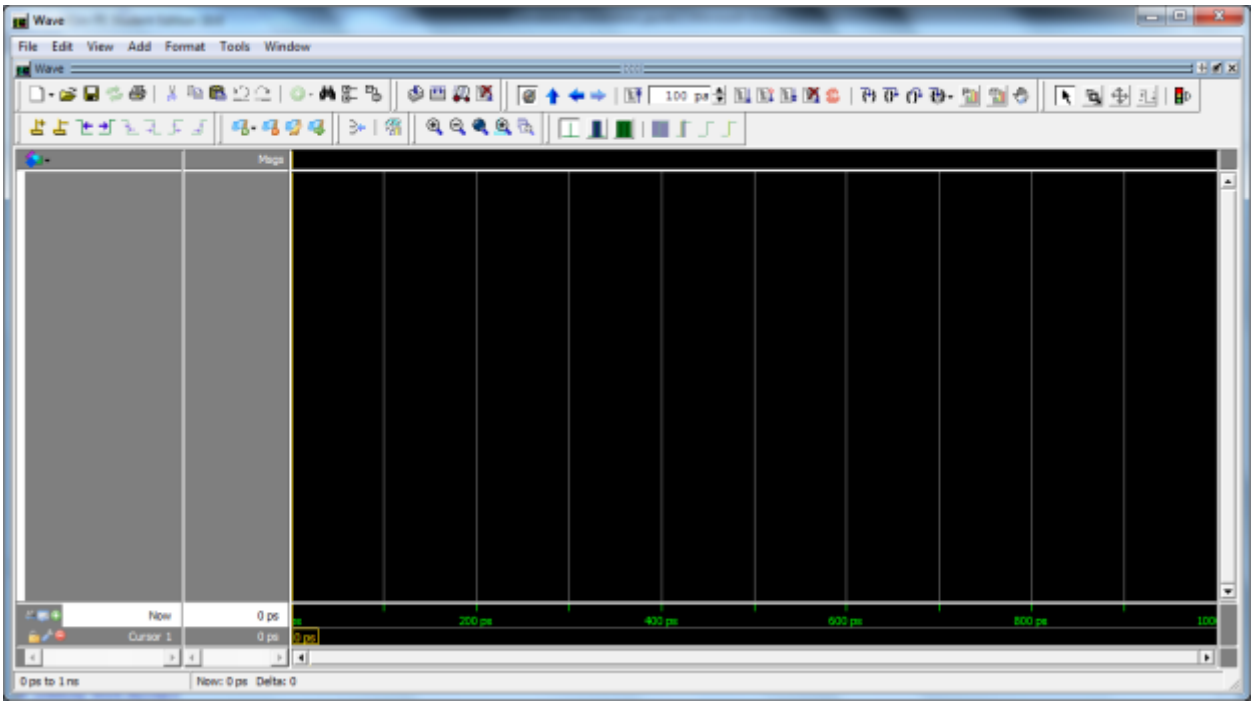
8. Click on *Simulate* → *Start Simulation*. In the new *Start Simulation* window that appears, select *work* → *tb_mylogic* and click *OK*.



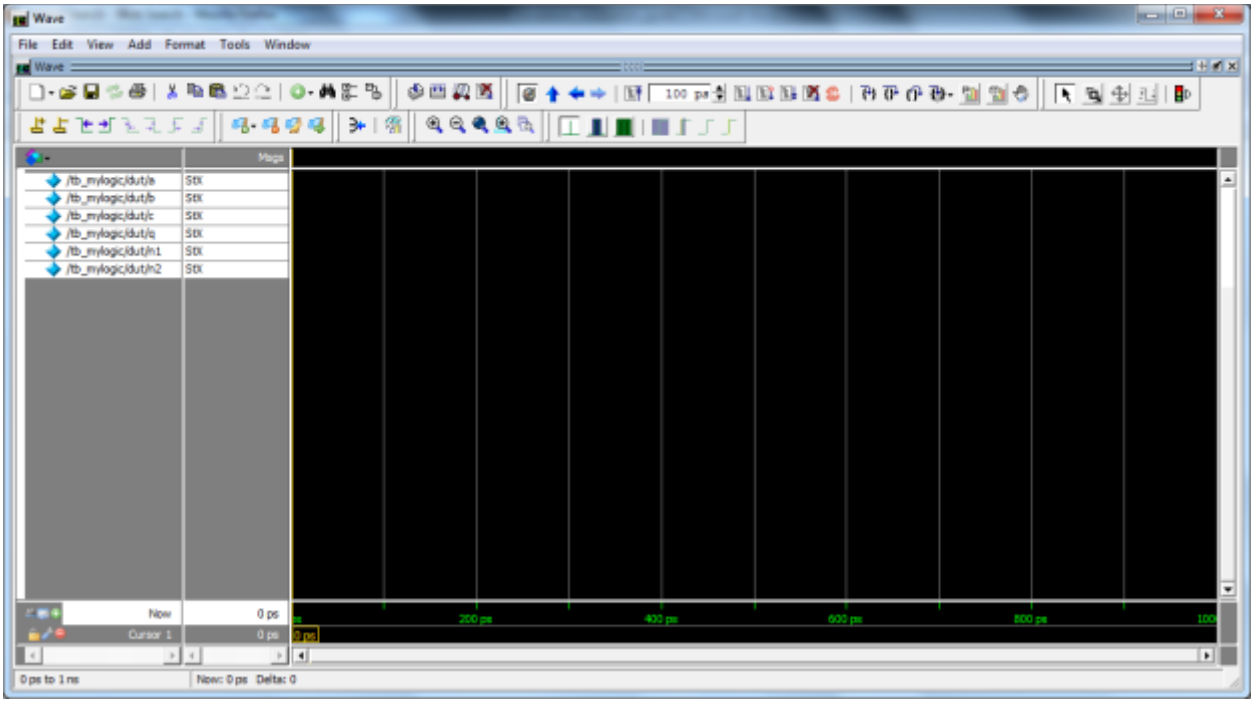
9. You should see something similar to the following. Your subwindow arrangement may be a little different. In the dark blue window, you should see the "ports" that are declared in *mylogic.v*.



10. Click *View* → *Wave*. A new window will open, where eventually you'll be able to observe waveforms.



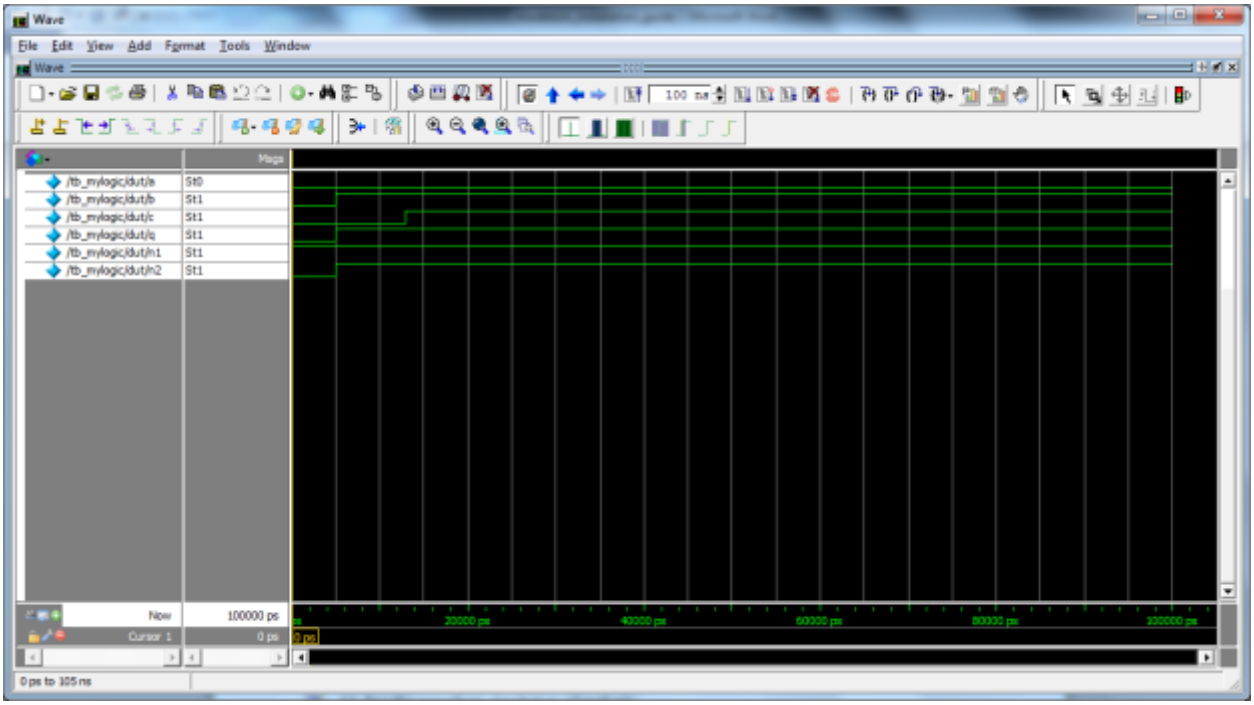
11. Go back to the main Modelsim window. Right-click on *dut* → *Add* → *To wave* → *All items in region.* It will add the internal "wires" from the design to the window. By the way, "dut" refers to "device under test".



12. At the top of the wave window, find the tabs as shown below:

13. Change *100 ps to 100 ns*. Click on the 1st tab to the right to *Run* your simulation. Click on *zoom full* on the tab at the top of the wave window:

14. You should now be able to see the functional simulation of *mylogic.v*. (The waveforms should look slightly different from those shown below.) Check the waveforms to see if the signal values are what you would expect for the inputs specified in the test bench.



15. To learn more, go to *Help* → *PDF Documentation* → *ModelSim PDF Bookcase – PE Student Edition menu* option. Select the *ModelSim Tutorial*. Refer to the tutorials to get familiar with the ModelSim tool.