

8/13/2009, 3/13/2011, 8/30/2014, 3/1/2015, 1/29/2018

EE457 Instructions to setup your unix account for modelsim and testing

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To setup your unix account to use modelsim, do the following.

1. login to your unix account.

2. from your home directory, execute (at your unix prompt just type in the following command and hit return)

```
~eeview/msim.setup
```

3. The response will be as shown below:

```
nunki-ee457lab{15} ~eeview/msim.setup
tar: blocksize = 6
x modelsim, 0 bytes, 0 tape blocks
x modelsim/modelsim.env.setup, 570 bytes, 2 tape blocks
```

4. Basically we create a modelsim directory under your home directory if you do not have a modelsim directory from previous setups.

We also add the following lines to your .login file:

```
#####
# The following lines are added in order to provide access to the #
# ModelSim VHDL/Verilog simulation tools used in #
# EE201L/EE457/EE560. #
#####
### setup environment for ModelSim VHDL/Verilog Simulation tools
if (-e ~eeview/modelsim.setup) then
    source ~eeview/modelsim.setup
else
    echo "***WARNING** ModelSim environment not properly set-up"
endif
####
```

5. Now to execute the newly added lines in the .login file, either logout and login, or do the following command:

```
source .login
```

6. modelsim subdirectory is created for you so that you can place all modelsim projects under this subdirectory.

If there is a modelsim subdirectory already, we will not overwrite it!

7. Now create a test project by creating a subdirectory under the modelsim directory:

```
cd
cd modelsim
mkdir middle_finder
cd middle_finder
~ee457lab/middle_finder.shar
```

8. The above causes bringing of the following files into your middle_finder subdirectory.

```
middle_finder.v
middle_finder_tb.v
middle_finder_tb_exhaustive_self_verifying.v
middle_finder_tb_exhaustive_self_verifying_solution.v
```

9. Invoke modelsim using `vsim` command in a mac ssh terminal or a vncviewer window or a Xwin32 window. Note that the modelsim uses a GUI and you need to use one of the above three so that you can display a graphical window on your mac or your PC. If you are using a mac perhaps you need to install XQuartz to get the ssh 11 forwarding for Mac OS. Please refer to the following info regarding XQuartz installation.

<http://www.cyberciti.biz/faq/apple-osx-mountain-lion-mavericks-install-xquartz-server/>

Start a new project with project location same as your `~/modelsim/middle_finder`.

Add to the project, the above four verilog files.

Compile only the following two: `middle_finder.v`,
`middle_finder_tb_exhaustive_self_verifying_solution.v`

Simulate the testbench module `middle_finder_tb`

When you invoke simulation, in the start simulation dialog box, **unselect "Enable optimization" box**.

Otherwise, it does not show any signals to watch in the waveform.

10. Some details of opening `a mac ssh terminal or a vncviewer window or a Xwin32 window`

10.1 `a mac ssh terminal` (check info about XQuartz in step #9 above)

- Open up terminal from Application -> Utilities -> Terminal.
- Sign in to aludra server using command: `(ssh -X uscid@aludra.usc.edu)`.
- Enter your password(usc password).
- You need to have a FTP program like FileZilla to transfer the files to your unix account from your Mac to simulate them on unix and perhaps finally transfer the results back to your Mac.

10.2 `a vncviewer window`

If you are new to `vncviewer`, please download the vncviewer on to your home PC and connect to the university SUN (aludra/nunki) using the following:

<http://www-scf.usc.edu/~eeview/README.vnc.setup.pdf>

Free VNC Viewer is available for download from the following website

<https://www.realvnc.com/en/connect/download/viewer/>

10.3 `a Xwin32 window`

Please consult

<http://itservices.usc.edu/unix/xservers/xwin32/>

11. Now you can follow the EE457 tutorial on Modelsim. Though this tutorial is written for ModelSim PE on a PC, most of it is useful for any modelsim

http://www-classes.usc.edu/engr/ee-s/457/ee457_tools/EE457_ModelSim_PE_Testing_USC.pdf

12. In most of your assignments, your instructor may provide you a `.do` file. It is a batch file to automate the various tasks (*after* setting up the project and adding the source files to the project) such as compiling the Verilog files, starting the simulation, adding signals to the waveform, changing radix, running the simulation, adding a cursor, etc.

For example, one can write a `.do` file for the current design as follows:

```
# middle_finder.do

vlib work
vlog +acc "middle_finder.v"
vlog +acc "middle_finder_tb.v"
vsim -lib work -t lps -novopt work.middle_finder_tb
view structure
view signals
view wave
do middle_finder_wave.do
log -r *
run 30ns
WaveRestoreZoom {0 ns} {30 ns}
# quit -sim
```

Notice that the above `.do` file is invoking another `.do` file `middle_finder_wave.do`, which adds the needed signals and sets up radices.

Invoke the `.do` file at the ModelSim> prompt by typing

```
do middle_finder.do
```

Note that unless you have setup your project directory same as the directory where you have all the Verilog files and .do files, the above does not work properly.

13. Enjoy simulating and proving your designs using modelsim on UNIX servers from home on your mac or PC.