Preparatory Learning for ASIC Design Course

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(A) Working in the Unix environment

For easy access to a unix terminal, and that too in your browser on your Windows machine, register at https://www.webminal.org/register/. Once you register and log in, click on "terminal" and you will get a unix terminal. On the right side, there are lessons to get you skilled in Unix. You can execute examples in the browser-based terminal on the side in the same window.

You can also go through all the Unix material below, including awk and Tcl coding, on this browser-based unix terminal. Please do so before your first class.

Learning objectives:

(i) Operate with ease and expertise in the Unix environment
http://www.ee.surrey.ac.uk/Teaching/Unix/unix1.html. You can skip tutorial seven and tutorial eight
http://linuxcommand.org/lc3_learning_the_shell.php Go through all the links on the page.

(ii) Create and edit text files using the vi text editor
http://heather.cs.ucdavis.edu/~matloff/UnixAndC/Editors/ViIntro.html

(iii) Use the following unix utilities to productively analyze data and automate tasks:

a. grep (https://shapeshed.com/unix-grep/)
b. sort (https://shapeshed.com/unix-sort/)
c. wc (https://shapeshed.com/unix-wc/)
d. uniq (https://shapeshed.com/unix-uniq/)
e. awk (https://www.grymoire.com/Unix/Awk.html)
   - Special topic: Learn how to **Print Lines Between Two Patterns** using awk (https://www.baeldung.com/linux/print-lines-between-two-patterns) – you can skip the sections on sed
f. Write regular expressions for use in the relevant programs and utilities you learned above: https://regexone.com/

(iv) Learn Tcl programming: https://www.tutorialspoint.com/tcl-tk/index.htm

(B) CMOS Technology

Learning objectives:

(i) Develop familiarity with the physical structure of planar MOSFETs and FinFETs
Short intro: https://www.youtube.com/watch?v=Jctk0DI7YP8
Detailed lecture: https://www.youtube.com/watch?v=6LcTrp6SB3o

(ii) Develop familiarity with multilevel interconnect structures and technology
Overview of entire process, including multilevel interconnect:
https://www.youtube.com/watch?v=voGIU1i7k8M