

CSCI 170 LAB OUTLINE

INTRODUCTION TO UNIX OPERATING SYSTEM

TEXT: UNIX the Textbook Sarwar/Koretski/Sarwar

SUPPLEMENTARY TEXT: Programming with GNU Software Loukides/Oram

Approved:

Effective: FALL 2007

MATERIAL TO BE COVERED	SECTIONS FROM TEXT	TIME LINE
Getting started with Solaris and Linux. Your student global accounts on the local CSCI subnet. Partitioning the HD and system installation for the standalone system. Booting, shutdown and run levels, prerogatives of system administrator "root." Controlling processes, installing optional packages. An overview of UNIX operating systems and computer hardware. A look at UNIX architecture, the kernel, system call interface, language libraries, interprocess communication. Utilizing some useful general purpose commands: creating and displaying directories and files, printing files, creating aliases.	1, 2, 3, 4	3.75 Hours
Editing text files and configuration of vi and emacs editors. Understanding the UNIX e-mail, telnet and FTP. Installing networked LINUX and Solaris systems.	5, 6	2.5 Hours
Using files and the UNIX file system UFS, file system structure and organization. Some standard directories: /usr, /etc, /var, /opt, /home. Handling file security (password based and access permission protection). Changing access privileges, ACL, special access bits: SUID, sticky bit and advanced file processing. Compressing, tarring sorting, searching files. Contrasting hard links vs. soft links. The FSCK utility for file recovery. Comparison of FS implementation based on I-nodes and FAT32.	7, 8, 9, 10, 11	3.125 Hours
An introduction to UNIX shells: Bourne shell, C-shell, Korn and bash shells, shell start-up files and environment variables, using redirection and piping, standard files. Running multiple processes simultaneously. Understanding UNIX process states, process attributes, process and job control. How UNIX daemons work. Sequential and parallel execution of commands, sending signals to processes, abnormal process termination.	12, 13, 21	1.25 Hours
Understanding computer networks and internetwork., network models and Internet services; the role of the inet daemon and the client-server model, the TCP/IP protocol and UDP, routing and IP address. Testing a connection, tracing the route. NFS and AutoFS. the X-windows (GUI) system installation and configuration. Setting xhost. Administering user accounts and managing cron jobs. Installing NIS and DNS.	14	1.825 Hours
Study UNIX system tools for software development. The SUN pro compilers and the SUN Workshop IDE. The GNU developer tools: editors, compilers, debuggers, profilers, version control and other tools. Detailed coverage of all GNU software (compiler, linker, librarian, debugger, profiler, version control - gcc, make, gdb, ddd, gprof, RCS, SCCS and other tools - all 9 chapters of *).	20, 1** - 9**	5 Hours

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More bash and Kron shell programming, running scripts, shell variables, command substitution, exporting environment, reading from stdin, passing arguments to shell scripts. Using the if, if elif, for, while, until, break, switch and case commands. Advanced topics: numeric data processing, interrupt processing, the exec command and file I/O functions. Local network configuration. Issues on network security, using admin logs and network intrusion detection tools.	15, 16	2.5 Hours

*** 1 Hours = 1 hour of face time. ****This outline allows for 3 hours review, testing and project presentation.

16 Week Term: 1 week = 2.8333 hours (face time) 6 Week Term: 1 week = 7.5 hours (face time)

There are 17 lab handouts that will direct student work all over the semester. The lab handouts require that you show your work, will be collected and graded. There are also 4 projects that will be graded. One project will require that you write a report and make a class presentation. The lab and projects grade will represent up to 35% of the course grade. A few questions on each of the 3 term exams will be on specific problems from lab work. The last two lab meetings will constitute a lab Final that will ask you to work on a small project based on all the material previously taught in the lab, including shell scripting. It is an integral part of your comprehensive Final Exam.

Submitted by: Pop