This Course and Unix Overview

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Course Home Page

- The course home page is at:

`http://www.cs.rpi.edu/~hollingd/introunix`

- What will be online:
  - homework assignments
  - lecture notes
  - links to various resources on the WWW
  - Course and HW FAQs

Grading

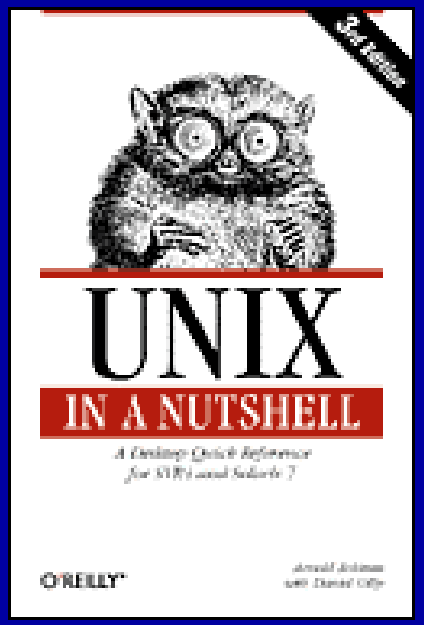
- 3 homework assignments 50%
- 1 quiz 15%
- 1 test (final exam) 35%

- The homework will require access to a Unix system, it is assumed that everyone has an RCS account (but you can use any Unix account you have).

Topics

Week	Topics
1	Accounts, Filesystem
2	Shells, I/O Redirection, text manipulation
3	Text Editors, Shell Programming, pattern matching
4	More Shell programming, Quiz
5	Text Editors, awk and sed
6	Programming tools, X Windows
7	Final Exam

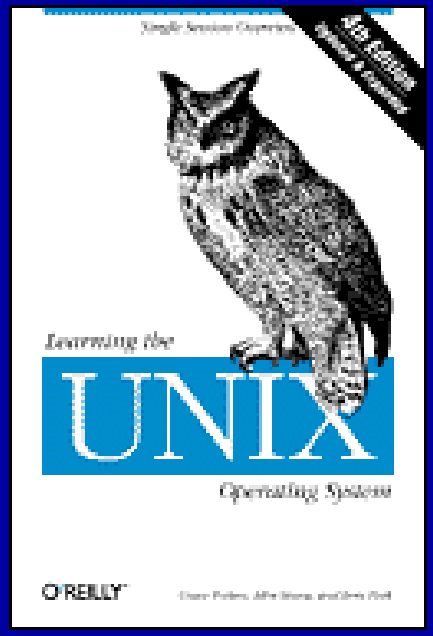
Course Texts



Required: Unix in a Nutshell

a good reference.

Optional: Learning Unix - for those who have not used Unix before.



Unix Help

- There is online help available on any Unix system.
- The help system is call the "Unix man pages"
  - set of help files and a command to view them.
  - the book has some of the same information, but you might need to check the man pages for your specific system for details.

RTFM

The acronym RTFM (commonly found in newgroups and other sources of information for Unix users and System Administrators) stands for:

Read The … Man page

(or Read The … Manual).

It's common for beginners to struggle instead of reading the man pages … it takes a while to get the hang of how to decipher the man pages.

Learning Unix

- In class we will have:
  - lectures
  - demonstrations
  - thought exercises
- You need to spend time playing on a Unix system to learn!

Operating Systems

- An Operating System controls (manages) hardware and software.
  - provides support for peripherals such as keyboard, mouse, screen, disk drives, …
  - software applications use the OS to communicate with peripherals.
  - The OS typically manages (starts, stops, pauses, etc) applications.

Single vs. Multitasking

- Some old operating systems could only do one thing at a time (DOS).
- Most modern systems can support multiple applications (tasks) and some can support multiple users (at the same time).
- Supporting multiple tasks/users means the OS must manage memory, CPU time, network interfaces, ...

User Interfaces

- The User Interface is the software that supports interactions with a human.
- Some operating systems directly provide a user interface and some don't.
- Windows is an example of an Operating System that includes a user interface.
- Unix (the OS) does not directly provide a user interface.

Unix and Users

- Most flavors of Unix (there are many) provide the same set of applications to support humans (commands and shells).
- Although these user interface programs are not part of the OS directly, they are standardized enough that learning your way around one flavor of Unix is enough.

Flavors of Unix

- There are many versions of Unix that are used by lots of people:
  - SysV (from AT&T)
  - BSD (from Berkeley)
  - Solaris (Sun)
  - IRIX (SGI)
  - AIX (IBM)
  - LINUX (free software)

POSIX

- POSIX is a standard that describes a single interface to a Unix like operating system.
- POSIX is not an implementation - it is a description!
- Most vendors are supporting POSIX (by making sure their version of Unix adheres to the standard).

Unix History and Motivation

- The first version of Unix came from AT&T in the early 1970s (Unix is old!).
- Unix was developed by programmers and *for programmers*.
- Unix is designed so that users can extend the functionality - to build new tools easily and efficiently (this is important for programmers).

Some Basic Concepts

- Unix provides a simple interface to peripherals (it's pretty easy to add support for a new peripheral).
- Unix includes a basic set of commands that allow the user to view/change the system resources (filesystem, processes, peripherals, etc.).

What we will look at

- In this course we will learn about:
  - Unix user accounts
  - the core set of Unix commands
  - the Unix filesystem
  - A couple of special programs called "shells".
  - A number of commonly used applications:
    - Window system, text editors, programming tools.

The power of Unix is that you can extend the basic commands

- We will also look at how to extend the basic functionality of Unix:
  - customize the shell and user interface.
  - string together a series of Unix commands to create new functionality.
  - create custom commands that do exactly what we want.