Unix Background
Introducing Unix

My boss says we need some eunuch programmers.

I think he means UNIX, not eunuchs. And I already know UNIX.

If the company nurse drops by, tell her I said, "Never mind."
In 1969, Ken Thompson at AT&T Bell Labs began developing Unix.
  – First done in assembly language.
  – Ran on DEC PDP-7 with 8K words of memory.
In 1974, Unix was rewritten in C.
  – By writing C compilers, Unix can be ported to other computers.

**BSD UNIX**
  – BSD: Berkeley Software Distribution
  – UCB put the Internet Protocols (IP) into UNIX
  – 4.4BSD (Berkeley): 1994
Brief Unix History

◆ System V
  – SVR4: System V Release 4 (current version)

◆ POSIX:
  – Most Unix systems try to conform with POSIX to a certain extent

◆ This course is based on SVR4.
  – Most of the things you will learn in this course work in different Unix systems with small differences
The Unix Philosophy

- Unix was not meant to be a user-friendly operating system
  - Instead, meant to be “user-helpful” and very powerful

- The Unix operating system protects users from other users but not necessarily from themselves

- It provides the necessary tools then gets out of your way
The Unix Philosophy

◆ The Unix Tools
  - Keep each tool simple
  - Have each tool do one thing, and do that one thing really well
  - Keep tools terse and not too talkative
  - More complex tasks can be accomplished by combining tools together in scripts or pipelines

  - Originally, input and output to workstations were slow and tedious, and this approach made things faster and more efficient.
Structure of a Unix System

- User
- Shell
- Utilities and User Software
- Kernel
- Hardware
Parts of a Unix Operating System

◆ Kernel
  – Manages the processes and resources
  – Controls and hides the hardware

◆ Shell
  – An interface between users and the kernel
  – A command line interpreter (CLI)

◆ Utilities are standard tools/applications
  – They are used so often that they become a part of Unix
  – “elm” and “pine” are Unix utilities, for example
A Word on Linux

◆ In 1991, Linus Torvalds wrote the Linux kernel
  – When he was an undergraduate in University of Helsinki.
  – Wanted a version of UNIX that he could run on the old computer he owned…

◆ Numerous programmers have worked on it
  – It’s a popular Unix-like operating system now
    ❖ Started with hobbyists and at universities
    ❖ Growing popularity in corporations and elsewhere
  – Occupies a large percentage of PC server market

◆ Achieved its goal of POSIX compliance
A Word on Linux

◆ Now available for many architectures
  – x86, PowerPC, SPARC, SGI Indy, HP PA-RISC, DEC Alpha, IA64 …

◆ Growing software base
  – Office suites, desktops, server software, games, …

◆ Has become the predominant Unix in the microcomputer world
  – Much more popular than Free/Open/NetBSD, Solaris x86, …

◆ Still a "free" operating system
  – Mostly under GNU General Public License (GPL or "Copyleft")
  – Many companies create and sell distributions (Redhat, SUSE, and many others)
  – Check it out at: http://www.linux.org

◆ Big servers start using linux now.
◆ We are thinking of teaching linux…