

What is Unix?

- Unix is an operating system.
- An operating system is responsible for:
 - system resource allocation (e.g.. cpu, memory, disk space)
 - communicating with system devices (e.g.. disks, tapes, sound)
 - providing an application program interface (API)
 - providing a method of interaction with the user

What is Unix? (cont.)

- Unix is also often used to refer to the set of applications and utilities typically found to be running on Unix systems
 - Command line interpreters (shells)
 - Compilers/Linkers
 - Editors
 - Document Formatters

Why do people use Unix?

- Most popular operating system for workstations and scientific applications
- Available for almost all modern computer systems
 - Sun Microsystems (SunOS/Solaris)
 - Silicon Graphics (Irix)
 - Digital Equipment Corporation
 - MIPS (Ultrix)
 - Alpha

More platforms

- IBM PC/ Intel Architectures
 - Linux
 - SCO Unix
 - UnixWare
 - FreeBSD
- Hewlett-Packard
- Next (Mach)
- IBM Workstations (AIX)

Unix utilities are among the most powerful available

- Excellent program development facilities
 - Compilers
 - Linkers
 - Text Editors
 - Debuggers
 - Pattern Matchers
 - Numerous application programs
 - Document preparation
 - Graphics programs
 - Networking (Internet, WWW)

Unix is portable

- Almost entirely written in the “C” programming language
- New machines can adopt it
- Old machines can be adapted to it
- Users are not tied to any particular vendor

There is a large user base

- Unix has been around since 1969
- Unix has been in wide use since the late 70's
- Many programmers are trained in it
- Programmers are productive when using it

Unix makes it easy to combine many existing programs to perform a new task

- Powerful shell programming languages
- Output of one program can be made input of another (Pipes)
- Original philosophy - Every program/utility should do just one thing

Graphical User Interfaces

- X Window System (MIT)
- Motif (OSF)
- Open Look (AT&T and Sun Microsystems)
- DecWindows (DEC)

Unix is a very capable operating system

- Multi-user (more than one user at a time)
- Interactive
- Multi-tasking (more than one program running at a time)
- Virtual memory (programs do not need to fit in physical memory)
- Elegant hierarchical file system
- Excellent networking capabilities

What is wrong with Unix?

- It is an expert's operating system
 - Command line interface
 - Commands are non-mnemonic
 - It is unforgiving
 - Most people do not want an expert's operating system
- It has a much smaller user base than DOS
- Security is weak
- It is getting old

History of Unix

- Designed in 1969 by Ken Thompson at Bell Labs
 - patterned after Multics
 - written on a pdp-11 in assembly language (1971)
 - Rewritten in C by Dennis Ritchie
- AT&T released Unix to universities at a reduced price
 - Berkeley enhances Unix for DEC VAX
 - Creates BSD Unix

History of Unix (cont.)

- AT&T and Berkeley maintained different version of Unix
- Computer manufactures introduce more flavors of Unix
- AT&T System V, Release 4 attempts to merge AT&T and Berkeley
- Open Systems Foundation (OSF) attempts to standardize

Logging In

- Identify yourself to the system as an authorized user
- Establish identity for resource ownership
 - File ownership
 - Group membership
 - mail privileges

Procedure for logging in

login:

login: *your_account_name*

password: *your_password*

Last login: Mon August 1 08:00

You have new mail

vtaiX%

Logging out

vtaiX% *exit*

or

vtaiX% *logout*

or

vtaiX% *^D*

Changing your password

- Change at your first login
- Change every few weeks

vtaix% passwd

Changing password for ...

Old password: *your_old_password*

New password: *new_password*

Verify password: *new_password*

Password [not] changed for ...

vtaix%

Selecting a password

- Do not use any part of:
 - A proper name
 - A word found in any dictionary
 - A date
 - A license plate number
 - A telephone number
 - A password from another machine
- Do use:
 - Upper and lower case letters
 - Numbers, letters, and special characters
 - At least 8 characters

Correcting Mistakes

- Use the backspace or delete key
- If key does not have desired effect

Type `stty erase` followed by the key that you want to generate a delete:

```
stty erase ^h
```

- To delete an entire line type `^u`
- `#` and `@` are erase and line kill on some systems

General Form of Unix Commands

<command> [<options>]
[<arguments>] [<filenames>]

Example:

ls

ls -l

ls -la some_file_name

ls -l -a some_file_name

Some commands to try

who

who am i

finger ribler@csgrad.cs.vt.edu

sort

x

z

y

^D

Getting Help

- For a particular command type:

`man <command_name>`

example:

`man ls`

- For a general topic type:

`man -k <topic>`

example:

`man -k directory`