

Type of Files

- Ordinary files - text, executable, library, etc.
- Directories - collection of files.
- Special files (devices) - files that are used by system to directly access hardware.

Files

- Systems typically have thousands of files (programs, documents, data)
- How can we organize these so that we can find what we want relatively easily?

Uniform Input/Output Specification

- Everything that is readable and writeable looks the same
 - Files and directories on the local disks
 - Files and directories on the network
 - Character-oriented devices (printers, terminals)
- Unlike other operating systems
 - Dos: c:\dos\edit.exe
 - VMS: dba0:[ribler.cs2304]grades.doc;2

Referencing Files

- Two Methods
 - Absolute Method
 - specifies full path from root
 - e.g. /usr/local/bin/ls
 - Relative Method
 - Starts from *current (working) directory*
 - e.g. if current directory is
 - /usr
 - local refers to /usr/local
 - local/bin refers to /usr/local/bin

Other methods to specify a file location

- . (a period) means the current working directory.
- .. (two periods) means the parent directory.
- ~ (is the user's home directory)
- ~ribler (is ribler's home directory)

Navigating through the Directory Tree

- `pwd` - print working directory
 - reports the name of the current directory
 - `pwd`
`/home/ribler_r`
- `cd` - change directory
 - changes the current directory
 - `cd /usr/local/bin`
 - `cd ..` (changes to `/usr/local`)
 - `cd bin` (changes to `/usr/local/bin`)

Listing the Contents of a Directory

- `ls` - list the directory
 - lists the files in a specified directory (default cwd)
 - `ls`
 - `ls /usr/local/bin`
 - `ls -F`
 - `ls -a`

File Manipulation

- Copy a file
 - `cp myexistingfile mynewfile`
 - copies myexistingfile to mynewfile
 - `cp /usr/local/bin/ls mydirectory`
 - creates newfile “ls” in mydirectory

File Manipulation (continued)

- Rename a file
 - mv myexistingfile newname
 - renames myexistingfile to newname
 - mv myexistingdir newdirname
 - mv works on both files and directories

File Manipulation (continued)

- Delete a file
 - `rm myunwantedfile`
 - deletes myunwantedfile
 - `rm -i myunwantedfile`
 - deletes with confirmation
 - `rmdir myunwanteddirectory`
 - deletes an empty directory

File Manipulation (continued)

- Make a new directory
 - `mkdir newdirectory`
 - creates newdirectory in the cwd
 - `mkdir /home/cs201/newdir`
 - creates /home/cs201/newdir

File Manipulation (continued)

- Display the contents of an ascii file
 - cat shoppinglist
 - displays the contents of shoppinglist on the terminal
 - more shoppinglist
 - display the content of shoppinglist one page at a time
 - less shoppinglist
 - display the content of shoppinglist one page at a time and allow additional capability (e.g., going back a page)

I/O Redirection

- **stdin**
 - Unix programs generally read data from here
 - default is the terminal
- **stdout**
 - Unix programs generally write data to here
 - default is the terminal
- **stderr**
 - Unix programs generally report errors to here
 - default is the terminal

I/O Redirection (continued)

- `ls -l > directory.dat`
 - `>` reassigns stdout to `directory.dat`
 - directory information is written to `directory.dat`
- `sort -r < directory.dat`
 - `<` reassigns stdin to `directory.dat`
 - `sort` will read input from `directory.dat`

I/O Redirection (continued)

- `ls -l >> dir.dat`
 - >> appends the output to an existing file
- `sort -r < dir.dat >> alldirs.dat`
 - input and output redirection can occur simultaneously
- `cat > shopping list`
 - pencils
 - notebooks
 - FreeBsd
 - ^D

Pipes

- provide the ability to combine commands
 - `ls -l | sort -r | more`
 - `ls -l | sort -r > reverse.dir`
- append another sorted directory to `reverse.dir`
 - `ls -l | sort -r >> reverse.dir`

Summary

- $cmd1 | cmd2$
 - pipe output from $cmd1$ to input of $cmd2$
- $cmd < data$
 - cmd reads data from file $data$
- $cmd > output$
 - cmd writes output to file $output$
- $cmd >> existingfile$
 - appends output from cmd to the end of $existingfile$

More Manipulation Commands

cmp compare two files (text or non-text)

cut cut fields in a text file

diff compare two text files

grep search for a string in a file

head output top lines of a file

less better file viewer; like more

sort sort lines of a file

tail output bottom lines of a file

uniq remove duplicate lines in a sorted file

wc count chars, words, and lines of a file

More UNIX Commands

cal	ftp	rmdir
cat	grep	sort
cd	head	tail
chgrp	id	time
chmod	ln	uniq
chown	ls	vi
cmp	man	wc
cp	mail	who
date	mkdir	^D
diff	more	^C
echo	mv	>
elm	passwd	>>
exit	pwd	<
finger	rm	

Misc. UNIX Commands

cal	display a calendar
date	display the time and date
echo	echo (output) text to the screen
finger	query the user database
hostname	print name of machine
id	print user id information
mesg	turn message on/off
ps	list all current processes
time	time a process
who	list users currently logged in
whoami	print out current user name