Anatomy of a Unix Command

command-name -option(s) *filename(s)* or *arguments*

Example: **wc -l** *sample*

The first word of the command line is usually the command name. This is followed by the options, if any, then the filenames, directory name, or other arguments, if any, and then a RETURN. Options are usually preceded by a dash and you may use more than one option per command. The examples on this reference card use **bold** case for command names and options and *italics* for arguments and filenames.

Important Note about UNIX Commands

UNIX commands are case sensitive. Type commands exactly as shown; most UNIX commands are lower case. File and directory names can be lower, upper, or mixed case but must be typed exactly as listed. Commands prefaced by a ^ (caret) mean to hold down the CONTROL key and then press the indicated character.

On-line Documentation

man *command*   display on-line manual pages about *command*

Navigation**:** **SPACEBAR**   moves down 1 screen
RETURN   move down 1 line
^d   move down 1/2 screen
^b   move up 1/2 screen
q   exit
h   help

Printing

lprloc   lists available printers
setenv PRINTER *printer*   set the default printer
pcpasswd   initialize SAMBA password for lab printing /login; only works on Owlnet's short-earred and long-earred servers
http://www.owlnet.rice.edu/webprint.shtml
    web-based printing; view current charges
lpr *option filename*   print file
lpq *option*   check status of print queue
lprm *option*   remove jobs from printer queue
options: **-P***printer*   specify a printer other than the default

File System Manipulation

Create (or Make) a Directory

mkdir *directory-name*   create a directory called *directory-name*

Look at a File

more *filename*   display file contents, same navigation as **man**
head *filename*   display first ten lines of a file
tail *filename*   display last ten lines of a file

options**:**
    -#   replace # with a number to specify how many lines to show

List Files and Directories

ls   lists contents of current directory
ls *directory-name*   list contents of directory

options**:**
    -a   list all files including files that start with "."
    -s   list size of files (in kilobytes)
    -l   long list, shows ownership, permissions, and links
    -l -g   lists the group of each file or directory when used with **-l**
    -t   list files chronologically
    -F   append "*" to executable file name, "/" to directory name, and "@" to symbolic link
    -u   list files using time of last access instead of time of last modification

pwd (display the name of present working directory)

Change Working Directory

cd   to change to your home directory
cd *directory-name*   to change to another directory

examples:
cd test   change to the directory named test

Directory Abbreviation

~	home directory (tilde)
~username	another user's home directory
.	current or working directory
..	parent of working directory

Move (Rename) Files and Directories

mv *present-filename new-filename*   to rename a file
mv *source-filename destination-directory*   to move a file into another directory
options: **-i**   interactive mode. Must confirm file overwrites.

Copy Files

cp *source-filename destination-filename*   to copy a file into another file
cp *source-filename destination-directory*   to copy a file into another directory
options**:**
    -i   interactive mode. Must confirm overwrites. Note: this option is automatically used on all IT's systems.
    -R   recursive delete

Remove (Delete) Files and Directories

rm filename   to remove a file **rmdir** *directory-name* to remove an empty directory
options:
-i   interactive mode. Prompt for confirmation. Note: this is option is automatically set up on all IT's systems.

Change File Access Permissions

chmod [*who op permission*] *filename*
who can be any combination of:
    u   (user)
    g   (group)
    o   (other)
    a   (all) (i.e. **ugo**)

op adds or takes away permission, and can be:
    +   (add permission),
    -   (remove permission), or
    =   (set to exactly this permission)

permission can be any combination of
    r   (read)
    w   (write)
    x   (execute)

Ex: **chmod a+x** *filename* (makes *filename* executable by everyone)

Shell Tools

Wild Cards
?   single character wild card
*   arbitrary number of characters

History: Command Repetition

history	display list of most recent commands
!!	repeat the entire last command line at any point in the current command line
!$	repeat the last word of previous command line at any point in current command line
!^	repeat first argument from previous command line at any point in the current command line
! *n*	repeat command line *n*
!!:p	display previous command
!*string*	command beginning with *string*
!*	repeat all arguments to previous command

Command I/O

>	command output redirection (create new)
>>	command output redirection (append)
<	command input redirection (from file)
<<	command input (from script or standard input)

Alias

alias *alias-string command-string*

Alias abbreviates a command string with an alias string. For multi-command strings, enclose commands in quotes.

Example: **alias** shut chmod go-rwx

To use the aliased command shut on a file, and turn off read, write, and executable permissions for all users except yourself, type shut *filename*.

Process Control

Process Status

ps (display the status of the current processes)
options:

-a	include processes owned by other users
-g	display all processes
-u	display user-oriented processes
-x	include processes with no controlling terminals
-gx	display all of your local processes

kill *id-number*   terminate a process owned by you
The *id-number* (PID-Process ID) can be found by first using the **ps** command.

Run Command in Background: Job Control

To run a command in the background, as opposed to the more common method of running commands in the foreground, append an & to the end of a command string. Then, you can type more commands to the command prompt, or even run more commands in the background for simultaneous command execution.

Control-Z	stop (interrupt) foreground job
jobs	list of background jobs
bg	run a stopped job in the background
fg	resume stopped job in the background

File Operations

Search for Patterns in Files

grep *search-string filename* [*filename...*] to find and type out lines containing the string in a file

options: **-v** type out lines that don't contain the string (invert the search)

Counting Words in a File

wc *filename* counts the number of words, lines, or characters in a file
options:

-w	words
-l	lines
-m	characters

Compare Files

diff *filename1 filename2* compares contents of *filename1* and *filename2* on a line-by-line basis

File Transfer

mail *address* sends mail to user at the specified address (using the format is *user@host.domain*). ^d terminates input and sends message.

ftp *host.domain* use file transfer protocol to connect to remote host computer. Type **?** for commands.

Compress Files

compress *filename*	compress file and rename it *filename.Z*
uncompress *filename.Z*	decompress file and rename *filename*
gzip *filename*	compress file and rename it *filename.gz*
gunzip *filename.Z*	decompress file and rename *filename*

Program Compilation

f90 *filename.f*	FORTRAN compiler (also f77 code)
cc *filename.c*	C compiler
gcc filename.C	C compiler (other suffixes: .cc, .cxx, .cpp, .c++)
g++ filename.c++	C++ compiler
pc *filename.p*	Pascal compiler

options:

-o *filename*	direct output of program to *filename*
-l *library*	include *library* in program compilation

User Information and Helpful Commands

env	lists your environment settings
who	lists users on the local system
finger *username@host.domain*	
	looks up information on another user
clear	clears screen
ntalk *username@host.domain*	
	talk to another user
lprloc	shows names and locations of printers
stty sane	resets terminal characteristics to a usable set
stty	display terminal characteristics
date	displays current time and date
cal *year*	for yearly calendar
cal *## ####* (*month-year*)	for monthly calendar
ssh *host.domain*	user interface to a remote system
which *command*	locate a command; display its pathname
spell *filename*	report spelling errors
ispell *filename*	interactive spell-checker
echo $path	inspect your search path
bc	basic calculator (^d to exit)
du	display the number of disk blocks used per directory or file
du -s	display your total disk usage
quota -v	display your disk quota and usage