THE STATE UNIVERSITY OF NEW JERSEY RUTGERS
NEW BRUNSWICK COMPUTING SERVICES
HELP DESK GROUP

Basic UNIX Commands, Metacharacters, & Command Line Editing

Commands

Note: Most but not all of the commands listed herein are part of UNIX, some may not be available on every UNIX system. These commands are available on rci and eden. Where the behavior is different between eden and rci it will be noted.

NOTE: Items in *italics* indicate either a place holder where you would place specific information or and item that may be omitted.

Command	Description	Usage
On-line Help		
man	display reference manual pages	**man *cmd_name***
	Basic Options: **-k** locates commands by keyword lookup **-s** specifies a chapter or section to look in **-u** basic usage description	**man -k *keyword*** **man -s*chap# cmd_name*** **man -u**
whereis	locate the executable, source, and man page files	**whereis *command***
	Basic Option: **-h** basic usage description	**whereis -h**
Communicating With Other Users		
chfn	change finger entry (disabled on eden and rci. See note 1 at bottom.)	**chfn**
finger	lists information about users	**finger *NetID/username***
	Basic Option: **-h** basic usage description	**finger -h**
from	see who your mail is from	**from**
	Basic Option: **-h** basic usage description	**from -h**
ftp	file transfer protocol Transfers files from one networked computer where you have an account to another where you have an account.	**ftp *computer.domain***
mailx	UNIX mail program, not supported. Usable in shell scripts	**mailx**
pine	mail program recommended by NBCS	**pine**

Command	Description	Usage
	Basic Option: **-h** basic usage description	**pine -h**
ssh	login on another computer on the network	**ssh *computer***
w	list who is on the system and what they are doing	**w**
who	list who is on the system	**who**
whodo	list who is on the system and what they are doing	**whodo**
Dealing with the File System		
cat	concatenate and display arguments to standard output	**cat *file***
cd	change directory Note: given a full or relative path, set the working directory as specified; without arguments set the working directory to the login directory	**cd *path***
	Basic Option: **-h** basic usage description	**cd -h**
chmod	set the protections on a file	**chmod *code file***
	In the numeric mode the three numbers represent the protections for the user, group and others. Each number is a sum of 1 (for execute access), 2 (for write/delete access) and 4 (for read access). "chmod 750 file.name" sets full access for the user, read and execute for the group and no access for others	**chmod *### file***
	In the symbolic mode the options first indicate whose access is to be changed u (user, you), g (group), o (other), or a (all); then indicate the type of action + (add), - (delete), or = (set); and then specify the access to be set r (read), w (write/delete), or x (execute). &qiot;chmod o-rwx file.name" denies others from having any access to file.name and has no affect on user/group access	**chmod *ugoa+-=rwx file***
	Basic Option: **-R** descend into subdirectories	**chmod -R *code file***
cp	copy files	**cp *fromfile tofile***
	Basic Option: **--help** basic usage description	**cp --help**
diff	compares two files and reports the differences	**diff *file1 file2***
	Basic Option: **--help** basic usage description	**diff --help**
du	display disk usage NOTE: On rci 'du' and 'du -k' both yield results in 1 kilobyte blocks, while on eden 'du' yields results in ½ kilobyte blocks and 'du -k' yields results in 1 kilobyte blocks.	**du**

Command	Description	Usage
	Basic Options: **-k** show usage in 1 kilobyte blocks **--help** basic usage description	**du -k** **du ---help**
file	determine the type of a file	**file *filename***
	Basic Option: **-h** basic usage description	**file -h**
ftp	file transfer protocol Transfers files from one networked computer where you have an account to another where you have an account.	**ftp *computer.domain***
grep	search for a character string in a file	**grep *string file***
	Basic Options: **-v** show lines that do not contain the string **-h** basic usage description	**grep -v *string file*** **grep -h**
gzip	compress a file to take up less space	**gzip *filename***
	Basic Option: **-h** basic usage description	**gzip -h**
gunzip	re-expand compressed files	**gunzip *filename***
	Basic Option: **-h** basic usage description	**gunzip -h**
head	Show the first 10 lines of a file	**head *filename***
	Basic Options: **-#** show first # lines of the specified file **--help** basic usage description	**head -20 *filename*** **head --help**
ispell	check the spelling of the contents of a file	**ispell *file***
	Basic Option: **-h** basic usage description	**ispell -h**
less	browse or page through a text file. Usage: press the **space bar** to go forward a page, type **b** to go back a page and type **q** to quit.	**less *file***
	Basic Option: **-h** basic usage description	**less -h**
ln	create a link between source and destination files	**ln *source dest***
	Basic Option: **-s** create a symbolic link	**ln -s *source dest***
lpq	check the status of a print queue	**lpq**
	Basic Option: **-P*printer*** specifies the printer to be checked	**lpq -P*printer_name***
lpr	send a job to a print queue	**lpr *options file(s)***
	Basic Options: **-P*printer*** specifies the printer **-N*note*** print note on burster page **-m** send mail upon completion	

Command	Description	Usage
lprm	remove a print job from a print queue	**lprm *print_job_#***
ls	list the contents of a directory	**ls *options files(s)***
	Basic Options: **-a** all files **-d** list directories not their contents **-F** mark directories with **/**, executable files with *****, symbolic links with **@**, and sockets with = **-l** long listing showing protections, number of links, owner, size, and time of last modification **-s** size in kilobytes **--help** basic usage description	
mkdir	create a new subdirectory in the current directory	**mkdir *subdir***
	create a new subdirectory, in the indicated target directory	**mkdir *subdir targetdir***
	Basic Option: **--help** basic usage description	**mkdir --help**
more	browse or page through a text file. Usage: press the **space bar** to go forward a page, type **b** to go back a page and type **q** to quit.	**more *file***
	Basic Option: **-h** basic usage description	**more -h**
mv	move or rename files	**mv *fromfile tofile***
	Basic Option: **--help** basic usage description	**mv --help**
pr	prepare text for printing with headers and page breaks	**pr *file***
	Basic Options: **-h *"header text"*** set the page header **--help** basic usage description	**pr -h *"header text" file*** **pr --help**
printers	Display the available printers	**printers**
pwd	display the current directory's full pathname	**pwd**
quota	check to see if over allowed usage, no response if not	**quota**
	Basic Option: **-v** verbose, show status even if not over quota With this option eden will display more information than rci.	**quota -v**
rm	remove (delete) files	**rm *file***
	Basic Options: **-i** interactive, ask before removal **-r** recursive, descend into subdirectories removing files and then containing directories. **--help** basic usage description	**rm -i *file*** **rm -r *directory*** **rm --help**

Command	Description	Usage
	Note: Once a file is deleted, you can't undelete it. Use the **-i** option to have UNIX ask if you are sure about removing the file.	
rmdir	remove empty directories	**rmdir *dirname***
	Basic Option: **--help** basic usage description	**rmdir --help**
sort	sort input	**sort *filename***
	Basic Option: **-n** sort numerically.	**sort -n *filename***
tail	show last 10 lines of a file	**tail *filename***
	Basic Options: **-#** show last # lines of the specified file **--help** basic usage description	**tail -20 *filename*** **tail --help**
touch	update the time stamp on existing files, create new empty files	**touch *file***
	Basic Option: **--help** basic usage description	**touch --help**
umask	display or set the accesses to be denied on newly created files Each # indicates which accesses (if any) are to be denied to a class of user. The first affects the user (you), the second affects the group, and the third affects all others. If a # is 0 then no access is denied that class of user, 1 denies execute access, 2 denies write access, 4 denies read access, 3 is the sum of 1 and 2 (no execute or write access), 5 is the sum of 4 and 1 (no execute or read access), etc. umask 077 would allow full access by the user and deny all others any access. Usually this command is placed in the file .login to be executed every time you log in.	**umask *###***
	If used alone, display current value, leading zeros not shown	**umask**
wc	display the number of lines, words and characters in a file	**wc *filename***
	Basic Option: **--help** basic usage description	**wc --help**
Work Environment		
alias	create a new name for a command or series of commands	**alias *newname oldname***
chsh	change login shell (disabled on eden and rci. See note 1 at bottom.)	**chsh**
clear	clear the terminal screen	**clear**

Command	Description	Usage
echo	display indicated text or variable contents	**echo *text*** **echo $*varname***
exit	log off the system	**exit**
getent	print information from a login database (passwd or group) Typically output piped to grep to sort for specifics May also be piped to wc to check the # of lines If a NetID is given, that exact NetID is searched for If a groupname is given, that exact groupname is searched for	**getent passwd** or **group** **getent passwd | grep *IID#*** **getent group | wc -l** **getent passwd *NetID*** **getent group *groupname***
id	display your system ID numbers if given a NetID/username, display their ID numbers	**id** **id *username***
logout	log off the system	**logout**
passwd	change the login password (disabled on eden and rci. See note 1 at bottom)	**passwd**
printenv	show your current environment variable settings if given an environment variable name display that setting	**printenv** **printenv *varname***
script	make a copy of everything displayed on the screen Useful for capturing error messages and program execution Usage: to end scripting, type a **<CTRL>d**	**script *filename***
	Options: **-a** append to file rather than overwrite **-h** basic usage description	**script -a *filename*** **script -h**
setenv	set environment variables	**setenv *varname value***
unalias	unset an alias that was previously set	**unalias *aliasname***
unsetenv	unset environment variables	**unsetenv *varname***
reset	reset the terminal screen	**reset**
whoami	display the current NetID/username	**whoami**
	Basic Option: **-h** basic usage description	**whoami -h**
Controlling your jobs		
bg	run the indicated job in the background	**bg %*job#***
fg	move a job from the background to the foreground	**fg %*job#***
jobs	list current jobs and their status	**jobs**
	Basic Option: **-h** basic usage description	**jobs -h**
kill	terminate a process	**kill %*job#*** **kill *process#***

Command	Description	Usage
nohup	run a command immune to hang-ups Notes: Standard input, output, and error must be redirected or will be lost. Over use or frivolous use of this can be considered abuse of the system.	**nohup *command***
ps	list current processes	**ps**
Text Editors		
emacs	the emacs editor	**emacs *filename***
pico	the pico editor (less powerful than emacs)	**pico *filename***
teach-emacs	the emacs on-line tutorial	**teach-emacs**
vi	the vi editor (UNIX default, not supported)	**vi *filename***
Languages		
adb	general purpose program debugger	**adb *objectcode***
cc	C compiler: (see note 2 at bottom)	**cc *file.c***
	Basic Option: **-flags** basic usage description	**cc -flags**
CC	C++ compiler: (see note 2 at bottom)	**CC *file.c***
	Basic Option: **-flags** basic usage description	**CC -flags**
dbx	program debugger	**dbx *executable***
f77	FORTRAN 77 compiler: (see note 2 at bottom)	**f77 *file.f***
	Basic Option: **-flags** basic usage description	**f77 -flags**
f90	FORTRAN 90 compiler: (see note 2 at bottom)	**f90 *file.f90***
	Basic Option: **-flags** basic usage description	**f90 -flags**
gcc	Gnu C compiler: (see note 2 at bottom)	**gcc *file.c***
g++	Gnu C++ compiler: (see note 2 at bottom)	**g++ *file.c***
lint	attempts to detect features of C programs that are likely to be errors, non-portable, or wasteful	**lint *file.c***
	Basic Option: **-flags** basic usage description	**lint -flags**
make	facilitates compilation of several program modules	**make**
	Basic Option: **-h** basic usage description	**make -h**
pc	Pascal compiler: (see note 2 at bottom)	**pc *file.p***
	Basic Option: **-flags** basic usage description	**pc -flags**
Web Browsers		
lynx	text only web browser, usable in ssh sessions	**lynx**

Command	Description	Usage
	Basic Option: **-h** basic usage description	**lynx -h**
netscape	graphic web browser, usable on X terminals	**netscape &**
	Basic Option: **-h** basic usage description	**netscape -h**
Miscellaneous Information		
cal	display the calendar of the current month if given a complete year number (03 = 3, not 2003), display that year if given a month and year number (01 = January), display that specific month	**cal** **cal *yr#*** **cal *mo# yr#***
date	show the current system date and time	**date**
dict	electronic dictionary, thesaurus, familiar quotations, and CIA world factbook	**dict**
	Options: **-d** dictionary, default action **-t** thesaurus **-q** familiar quotations **-w** CIA world factbook	**dict -d** **dict -t** **dict -q** **dict -w**
host	Display Computer Hostname & IP information If given an IP address, will attempt to resolve to a hostname. If given a hostname, will attempt to resolve to an IP address.	**host *IP-Address#*** **host *hostname***
units	converts units in one scale to another	**units**
	Basic Option: **-h** basic usage description	**units -h**

Note 1:
On eden and rci the standard UNIX user commands chfn, chsh, and passwd have been disabled and replaced by web tools, please go to http://www.rci.rutgers.edu/tools.php or http://www.eden.rutgers.edu/tools.php to perform these functions.

Note 2:
In order to use the math libraries of linkable subroutines, the last item on the compile command must be " -lm", as in "**`cc -o demo demo.c -lm`**"

Metacharacters

Metacharacters are a group of characters that have special meanings to the UNIX operating system. Metacharacters can make many tasks easier by allowing you to redirect information from one command to another or to a file, string multiple commands together on one line, or have other effects on the commands they are issued in. The following table lists some of the metacharacters for the Rutgers default shell (the T shell).

Metacharacter	Description
	UNIX interprets a space as a separator not as a character.

Metacharacter	Description
*****	A wild card character that matches any group of characters of any length, allowing a user to specify a large group of items with a short string. For example, to specify all the files that start with 'abc', you use **abc***.
?	A wild card character that matches any single character. Thus **ls ???** lists files in the current directory whose names are only three characters long, while **ls ???.*** lists those files with a three letter main name and any extension.
[..]	A set of characters that can be matched. Thus **ls [a-c]*.???** lists all files that begin with a, b, or c and have a three letter extension and **lpr [ad]*** prints all files that begin with a or d.
$	Indicates that the following text is the name of a shell (environment) variable whose value is to be used.
|	Separates commands to form a pipe (see redirection in "Intermediate Use Of The UNIX Operating System").
<	Redirect the standard input (see redirection in "Intermediate Use Of The UNIX Operating System").
>	Redirect the standard output (see redirection in "Intermediate Use Of The UNIX Operating System") to replace current contents.
>>	Redirect the standard output (see redirection in "Intermediate Use Of The UNIX Operating System") to append to current contents.
>&	Redirect the standard output and standard error (see redirection in "Intermediate Use Of The UNIX Operating System") to replace current contents.
>>&	Redirect the standard output an standard error (see redirection in "Intermediate Use Of The UNIX Operating System") to append to current contents.
%	Introduces a job name (see multitasking in "Intermediate Use Of The UNIX Operating System").
&	Place a process into the background (see multitasking in "Intermediate Use Of The UNIX Operating System").
()	Encloses a sequence of commands or pipes to be executed as a single command.
!	Precedes a history substitution (see "man history")
;	Separates sequences of commands (or pipes) that are on one line.
&&	Separates two sequences of commands or pipes the second of which is executed only if the first succeeds.
||	Separates two sequences of commands or pipes the second of which is executed only if the first fails.
****	Used to "quote" the following metacharacter so it is treated as a plain character, as in *****.

Command Line Editing

In the default Rutgers UNIX shell (the T shell) with the default editor set to emacs, commands may be edited and previous commands retrieved using control characters:

<CTRL>a	move the cursor to the beginning of the line
<CTRL>b	move the cursor to the left
<CTRL>c	abort the current command

<CTRL>d	if not at end of the command line, delete the character at the cursor if at end of command line, list possible command (or file) name completions
<CTRL>e	move the cursor to the end of the line
<CTRL>f	move the cursor to the right
<CTRL>h	delete the character to the left of the cursor
<CTRL>k	erase from the cursor to the end of the line
<CTRL>l	clear the screen and display current line
<CTRL>n	bring up next command line
<CTRL>p	bring up previous command line
<CTRL>q	continue displaying to the screen (see <CTRL>s)
<CTRL>r	redisplay the current line
<CTRL>s	stop displaying to the screen (see <CTRL>q)
<CTRL>t	exchange the character to the left of the cursor with the character at the cursor
<CTRL>u	erase the current line
<CTRL>w	will erase from the cursor to the beginning of the line
<CTRL>y	yank back the last item erased by <CTRL>k, <CTRL>u, or <CTRL>w
<ESC> b	move the cursor to the left one "word"
<ESC> f	move the cursor to the right one "word"
<ESC> c	move the cursor to the right one "word", capitalizing while moving
<ESC> l	move the cursor to the right one "word", making lower case while moving
<ESC> u	move the cursor to the right one "word", making upper case while moving

lpc

Work with the available printer queues

lpc status all