Princeton University
COS 217: Introduction to Programming Systems
UNIX and bash

Filenames and Directorynames	
/dir1/.../dirN	Absolute dname
dir1/.../dirN	Relative dname
/dir1/.../file	Absolute fname
dir1/.../file	Relative fname

Special Filename and Directoryname Characters	
*fnameord*name*	* matches 0 or more characters
*fnameord*name*	? matches any single character
"*fname or dname*"	" allows whitespace in a dname or fname
'*fname or dname*'	' allows whitespace in a dname or fname
fnameord\name	Backslash (escape) character allows special characters in a dname or fname
~loginid	Home directory of *loginid*
~	Your home directory
..	Parent of working directory
.	Working directory

Special Command Characters	
command 0< *fname* *command* < *fname*	Redirect stdin to *fname*
command 1> *fname* *command* > *fname*	Redirect stdout to *fname*
command 2> *fname*	Redirect stderr to *fname*
command 1> *fname* 2>&1	Redirect stdout and stderr to *fname*
command1 | *command2*	Pipe from *command1* to *command2*
^d	End of file
command &	Run *command* as a background process
^z	Turn my foreground process into a stopped background process
^c	Send a SIGINT signal
↑	Scroll backward through the command history list
↓	Scroll forward through the command history list
!*prefix*	Reissue the most recently issued command that begins with *prefix*
!*commandnum*	Reissue the command whose number is *commandnum* (see the "history" command)

Commands

Commands marked with "(bash)" are shell built-in commands. Commands marked with "(bin)" are executable binary files.

Command for Getting Help	
man [*section*] *pagename*	(bin) Print to stdout the UNIX manual page (from *section*) whose name is *pagename*. Section 1 describes commands and utilities (e.g. cat, ls). Section 2 describes UNIX system calls (e.g. fork, dup). Section 3 describes library functions (e.g. printf, strlen).

Configuration Commands	
source *fname*	(bash) Execute the shell script in *fname*
export *variable*=*value*	(bash) Set environment *variable* to *value*
export PATH=*dname1*:*dname2*:...	(bash) Set the PATH environment variable indicating that bash should search *dname1*, *dname2*, ... to find commands that are specified as relative fnames
export MANPATH=*dname1*:*dname2*:...	(bash) Set the MANPATH environment variable indicating that the man command should search *dname1*, *dname2*, ... to find man pages
variable=*value*	(bash) Set shell *variable* to *value*
PS1="\h:\w\$ "	(bash) Set the PS1 shell variable to indicate that the command prompt should contain the name of the host computer, a colon, the name of the working directory, a dollar sign, and a space
set –o *shelloption*	(bash) Turn on *shelloption*
set +o *shelloption*	(bash) Turn off *shelloption*
set –o ignoreeof	(bash) Turn on the ignoreeof shell option to indicate that ^D entered at the bash prompt should not terminate bash
set –o noclobber	(bash) Turn on the noclobber shell option to indicate that bash should not overwrite files via redirection
alias *aliasname*=*string*	(bash) Create an alias definition such that *aliasname* as an abbreviation for *string*
unalias *aliasname*	(bash) Destroy the alias definition that defines *aliasname*

Directory-Related Commands	
pwd	(bash, bin) Print the name of the working directory to stdout
cd [*dname*]	(bash) Make *dname* the working directory
ls [-la] [*dname*]	(bin) List the contents of *dname* to stdout
ls [-la] [*fname*]	(bin) List the attributes of *fname* to stdout
mkdir *dname*	(bin) Create *dname*
rmdir *dname*	(bin) Destroy the empty directory *dname*

File-Related Commands	
cat	(bin) Concatenate (print) stdin to stdout
cat *fname* ...	(bin) Concatenate (print) *fname* ... to stdout
more	(bin) Print stdin to stdout one screen at a time
more *fname* ...	(bin) Print *fname* ... to stdout one screen at a time
less *fname* ...	(bin) Print *fname*, ... to stdout one screen at a time The man command pipes its output through less
xxd *fname*	(bin) Hexdecimal dump *fname* to stdout
cp [-i] *sourcefname targetfname*	(bin) Copy *sourcefname* to *targetfname*
cp [-i] *sourcefname targetdname*	(bin) Copy *sourcefname* to *targetdname*
cp –r *sourcedname targetdname*	(bin) Copy (recursively) *sourcedname* to *targetdname*
mv [-i] *sourcefname targetfname*	(bin) Rename *sourcefname* to *targetfname*
mv [-i] *sourcefname ... targetdname*	(bin) Move *sourcefname* ... to *targetdname*
rm [-i] *fname* ...	(bin) Remove *fname* ...
rm –r [-i] *dname* [*fname* ...]	(bin) Remove *dname* (recursively) and *fname* ...

File and Directory Permission Commands	
chmod *mask fnameordname* ...	(bin) Set the permissions of *fnameordname* ... as indicated by *mask*
umask *mask*	(bash) Set the default permissions used when creating new files and directories as indicated by *mask*

Software Development Commands	
xemacs	(bin) Create or edit a text file using the xemacs editor
gcc	(bin) Preprocess, compile, assemble, and link a program
gdb	(bin) Debug a program
make	(bin) Build a program
ar	(bin) Create an archive file containing object code
gprof	(bin) Analyze the performance of a program

Miscellaneous Commands	
history	(bash) Print a numbered command history list to stdout
passwd *oldpassword*	(bin) Change my password from *oldpassword*
wc [*fname* ...]	(bin) Print a count of characters, words, and lines in *fname* ... (or stdin) to stdout
date	(bin) Print the date and time to stdout
printenv [*variable*]	(bin) Print the definition of environment *variable* (or of all environment variables) to stdout
echo [*arg* ...]	(bash, bin) Print *arg* ... to stdout
who	(bin) Print information about current users to stdout
grep *string fname* ...	(bin) Print each line of *fname* that contains *string* to stdout
sort [*fname*]	(bin) Print each line of *fname* (or stdin) in lexicographic order to stdout
diff *fname1 fname2*	(bin) Print an indication of the differences between the contents of *fname1* and *fname2* to stdout
which *command*	(bin) Search PATH for *command*, and print the dname where it was found to stdout
finger *loginid*	(bin) Print information about user *loginid* to stdout

Process Control Commands	
jobs	(bash) List the names and jobnums of my background processes to stdout
fg [%*jobnum*]	(bash) Move my background process with the given *jobnum* to the foreground
bg [%*jobnum*]	(bash) Turn my stopped background process into a running background process
kill [–*signal*] %*jobnum*	(bash) Send *signal* to my background process with the given *jobnum*
ps	(bin) Display a list of my processes
kill [–*signal*] *pid*	(bin) Send *signal* to the process whose id is *pid*
exit	(bash) Exit bash
logout	(bash) Exit bash and the terminal session

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