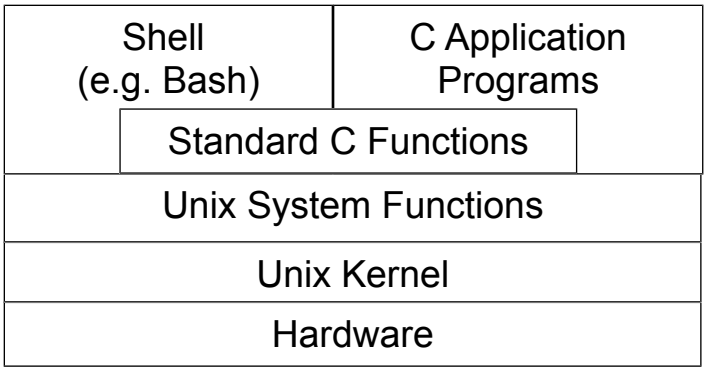
Princeton University
COS 217: Introduction to Programming Systems
Unix and Bash



File Names and Directory Names	
/dir1/.../dirN	Absolute dname
dir1/.../dirN	Relative dname
/dir1/.../file	Absolute fname
dir1/.../file	Relative fname

Special File Name and Directory Name 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

Command for Getting Help	
man [*section*] *pagename*	(bin) Write 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 functions (e.g. fork(), dup()). Section 3 describes library functions (e.g. printf(), strlen()).

Directory-Related Commands	
pwd	(Bash, bin) Write (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 (write) stdin to stdout
cat *fname* ...	(bin) Concatenate (write) *fname* ... to stdout
more *fname* ...	(bin) Write *fname* ... to stdout one screen at a time
less *fname* ...	(bin) Write *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* ...

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)

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*

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	
emacs	(bin) Create or edit a text file using the Emacs editor
gcc217	(bin) Preprocess, compile, assemble, and link a program using options appropriate for COS 217; a variant of gcc
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) Write a numbered command history list to stdout
passwd *oldpassword*	(bin) Change my password from *oldpassword*
wc [*fname* ...]	(bin) Write a count of characters, words, and lines in *fname* ... (or stdin) to stdout
date	(bin) Write the date and time to stdout
printenv [*variable*]	(bin) Write the definition of environment *variable* (or of all environment variables) to stdout
echo [*arg* ...]	(Bash, bin) Write *arg* ... to stdout
who	(bin) Write information about current users to stdout
grep *pattern fname* ...	(bin) Write each line of *fname* that contains *pattern* to stdout
sort [*fname*]	(bin) Write each line of *fname* (or stdin) in lexicographic order to stdout
diff *fname1 fname2*	(bin) Write an indication of the differences between the contents of *fname1* and *fname2* to stdout
which *command*	(bin) Search PATH for *command*, and write the dname where it was found to stdout

Process Control Commands	
jobs	(Bash) Write 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