KAIST
EE 209: Programming Structures for EE
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 *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

emacs	(bin) Create or edit a text file using the Emacs editor
gcc209	(bin) Preprocess, compile, assemble, and link a program using options appropriate for EE 209; 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) 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 *pattern fname* ...	(bin) Print each line of *fname* that contains *pattern* 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

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