Linux Reference Sheet (Author: Jack L. Watkin)

Hallmarks of Linux

Multiuser	Simultaneous access by multiple users
Preemptive Multitasking	Timesharing
Interactive	User interface is handled in real time
Portable (written in C)	Linux can be recompiled for any processor
Text-based	Linux can be used exclusively from terminal
Free	Many distributions of Linux are available free of charge and are open source.

Linux History

1967	Ken Thompson develops early version of UNIX.
1972	Dennis Ritchie writes the first C compiler.
1973	Thompson and Ritchie port UNIX to C.
1983	Thompson and Ritchie win Turing Award for work on UNIX.
1991	Linus Torvalds begins work on a free and open source version of UNIX called Linux.

Linux Philosophy

Communication	Problems solved by chaining smaller programs together
Concurrency	Processes can clone themselves and run simultaneously
Uniform I/O	Uniformity in I/O aids in chaining programs

Linux Essentials

General Syntax	`<cmd> <options> <args>`
Change password	Use `passwd` command
Logout	Ctrl-D or exit
Getting help	`man <command>`

Files and Directories in Linux

`cp <s> <d>`	Copy file from `<s>` to `<d>`
`mv <s> <d>`	Moves file from `<s>` to `<d>`
`mkdir <dir>`	Makes directory `<dir>`
`rm <file(s)>`	Permanently deletes `<file(s)>`
`rm -r <d>`	Permanently deletes directory `<d>`
`cd <dir>`	Change directory to `<dir>`
`ls`	List contents of current directory
`ls -l`	List contents of current directory with long listing

I/O Redirection

`<`	Redirects `stdin` (ex. `cat < f.txt`)
`<<`	Redirects `stdin` to `HERE` files
`>`	Redirects `stdout` (overwrites) (e.g., `cat < f.txt > cpy.txt`)
`2>&1`	Redirects `stderr` to `stdout`
`>>`	Redirects `stdout` (appends) (e.g., `cat < app.c >> app2.c`)
`|`	Pipes `stdout` to another program (e.g., `ls -l | wc -l`)

Useful Linux Utilities

`cat`	Displays files
`echo`	Displays a line of text
`vim`	Terminal based text editor
`grep`	Searches input for a given pattern
`less`	Displays file (good for viewing large text files)
`find`	Search for files in a directory
`indent`	Auto-formats C code (indentation and spacing)
`diff`	Prints line-by-line differences between two files to `stdout`
`tar`	Archiving utility
`gcc`	Compiles C code
`g++`	Compiles C++ code

Examples of Useful Linux Commands

`find . -exec grep -H {} \;`
Search all files in working directory (and all subdirectories) for the word 'printf'

`grep 'printf' HelloWorld.c`
Print all lines in HelloWorld.c that contain the word 'printf'

`diff -w file1 file2`
Print differences between file1 and file2 to `stdout`, ignoring whitespace.

`find /etc -name 'hosts'`
Find all files in etc directory named 'hosts'.

`indent -linux file1.c`
Format file1.c such that the formatting follows the Linux kernel standard.

`tar cvf hw7.tar file1.c file2.c`
Put file1.c and file2.c into hw7.tar.

`tar xvf hw7.tar`
Extract hw7.tar to the current directory.