# Shell Cheat Sheet

Patrick Bucher

2017-05-18

## Contents

# Commands

## Files and Directories

- `cd`: change the working directory
  - `cd`: change to home directory
  - `cd ..`: change to parent directory
  - `cd /home/joe`: change to directory using a absolute path
  - `cd docs/letters`: change to directory using a relative path
- `cp`: copy files and directories
  - `cp [source] [destination]`: copy source file to destination
  - `-f`: force overwrite an existing file
  - `-i`: prompt before overwrite
  - `-n`: don't overwrite an existing file
  - `-r`: copy a directory recursively
- `dd`: convert and copy a file
  - `dd if=[in] of=[out] bs=[n]`: copy from in to out, n bytes at at time
- `du`: estimate file space usage
  - `-h`: print sizes in human readable format
  - `-s`: display only a total for each argument
- `ln`: make links between files
  - `ln [target] [link name]`: create a (hard) link to target
  - `-s`: make a symbolic link instead of a hard link
- `ls`: list directory contents
  - `-a`: also display hidden entries (starting with ".")
  - `-h`: print human readable sizes (in combination with `-l`)
  - `-l`: long listing format (`ll` is short for `ls -l`)
  - `-r`: reverse order
  - `-R`: list files recursively
  - `-t`: sort by modificaton time, newest first
- `mkdir`: make directories
  - `make foo bar`: create the directories "foo" and "bar"
- `mv`: move (rename) files
  - `mv [source] [destination]`
  - `-f`: force overwrite an existing file
  - `-i`: prompt before overwrite
  - `-n`: don't overwrite an existing file
- `pwd`: print name of current/working directory
- `rm`: remove files or directories
  - `-d`: remove empty directories
  - `-f`: force overwrite an existing file
  - `-i`: prompt before every removal
  - `-r`: delete a directory recursively

- `touch`: change file timestamps – or create a new file
    - `-c`: don't create a new file

## File Attributes

- `basename`: strip directory and suffix from filenames
- `cleanname`: clean a path name
- `chmod`: change file mode bits
- `chown`: change file owner and group
- `file`: determine file type
- `fsize`: print file information
- `mtime`: print file information

## Searching Files

- `find`
- `locate`
- `updatedb`

## File Transfer

- `ftp`
- `rsync`
- `scp`
- `sftp`

## Archives

- `ar`: create, modify, and extract from archives
- `tar`
- `zip`
- `unrar`
- `unzip`

## Text

- `cat`: concatenate files and print on the standard output
- `cut`: remove sections from each line of files
- `fmt`: simple optimal text formatter
- `fold`: wrap each input line to fit in specified width

- `diff`: compare files line by line
- `freq`: print histogram of character frequencies
- `grep`: print lines matching a pattern
- `head`: output the first part of files
- `join`: join lines of two files on a common field
- `look`: display lines beginning with a given string
- `read`: copies one line from a file to standard output
- `sed`: stream editor for filtering and transforming text
- `sort`: sort lines of text files
- `split`: split a file into pieces
- `strings`: print the strings of printable characters in files
- `tail`: output the last part of files
- `tee`: read from standard input and write to standard output and files
- `tr`: translate or delete characters
- `wc`: print newline, word, and byte counts for each file
- `uniq`: report or omit repeated lines

## Spelling

- `aspell`
- `hunspell`

## Document Preparation

- `troff`: the troff processor of the groff text formatting system

## Text Editors

- `ed`: line-oriented text editor
- `emacs`: GNU project Emacs editor
- `vi`: screen oriented (visual) display editor based on ex
- `vim`: Vi IMproved, a programmers text editor
    - `vim -p [files]`: open multiple files in tabs

## Miscellaneous

- `acpi`: show battery status and other ACPI information
- `ascii`: interpret ASCII characters
- `chroot`
- `curl`
- `cmp`: compare two files byte by byte

- `dmesg`
- `eval`
- `expr`
- `hexdump`: display file contents in hexadecimal, decimal, octal, or ascii
- `halt`
- `history`:
- `lspci`
- `pwgen`: generate pronounceable passwords
- `rsync`:
- `shutdown`
- `scp`
- `unicode`: interpret unicode characters
- `wget`
- `xrandr`
- `yes`

## Date and Time

- `cal`: display a calendar
- `date`: print or set the system date and time

## Math

- `bc`: an arbitrary precision calculator language (interactive)
- `dc`: reverse-polish desk calculator (interactive)
- `factor`: factor numbers
- `hoc`: interactive floating point language
- `primes`: list prime numbers
- `rand`: generate pseudo-random bytes

## Documentation

- `apropos`: search the manual page names and descriptions
- `man`: an interface to the on-line reference manuals
- `type`: write a description of command type
- `whatis`: display one-line manual page descriptions

## Printing

- `lpadmin`
- `cancel`: cancel jobs

- `lpr`: print files

## Programming

### Shell Scripting

- `alias`: define or display aliases
- `break`: exit from for, while, or until loop
- `echo`: display a line of text
- `export`: set the export attribute for variables
- `getflags`: command-line parsing for shell scripts
- `printf`: format and print data
- `sleep`: delay for a specified amount of time
- `test`: check file types and compare values
- `xargs`: build and execute command lines from standard input

### Scripting Languages

- `awk`: pattern-directed scanning and processing language
- `perl`: the Perl language interpreter
- `python`: an interpreted, interactive, object-oriented programming language
- `sh`: shell, the standard command language interpreter

### Building, Debugging

- `gcc`: GNU project C and C++ compiler
- `gdb`: the GNU Debugger
- `make`: GNU make utility to maintain groups of programs
- `mk`: maintain (make) related files
- `strip`: discard symbols from object files
- `valgrind`:
- `yacc`: parser generator

## System Administration

- `df`: report file system disk space usage
- `fdisk`: manipulate disk partition table
- `fschk`
- `mkfs`: build a Linux filesystem
- `mount`
- `su`: run a command with substitute user and group ID

- `sudo`: execute a command as another user
- `systemctl`: control the systemd system and service manager
- `uname`

## Processes

- `bg`: run jobs in the background
- `kill`: terminate a process
- `killall`: terminate a process by name
- `nice`: run a program with modified scheduling priority
- `nohup`: run a command immune to hangups, with output to a non-tty
- `ps`: report a snapshot of the current processes
- `top`: display Linux processes (interactive)

## User Administration

- `groupadd`: create a new group
- `groupdel`: delete a group
- `groupmems`: administer members of a users's primary group
- `groupmod`: modify a group definition on the system
- `groups`: display current group names
- `id`: print real and effective user and group IDs
- `passwd`: change user password
- `useradd`: create a new user or update default new user information
- `userdel`: delete a user account and related files
- `usermod`: modify a user account
- `users`: print the user names of users currently logged in

## Networking

- `ip`: show/manipulate routing, devices, policy routing and tunnels
- `ping`: send ICMP ECHO_REQUEST to network hosts

## Encoding, Deconding, Checksums, Encryption, Decryption

- `base32`: base32 encode/decode data and print to standard output
- `base64`: base64 encode/decode data and print to standard output
- `sha1sum`
- `sha256sum`
- `sha512sum`
- `shasum`

- `sum`

# Shell Programming

## Output Redirection

```
wc -l * | sort -n -r
wc -l >std-out 2>std.err
```

# Variables

- `$IFS`: internal field seperator