

### Quick basic commands

cd	change directory, case sensitive (Example: Desktop)
cd	home directory
.	this directory
cd ..	go up one directory
cd -	change dir to previous working dir
pwd	print working directory
ls	list contents, -a all, -h human readable
ll	LL list directories with RW permissions
la	LA list all including hidden
sudo	super user privileges
mkdir <dirname>	create directories
cp <path and locations> .	copy contents to current directory, cp by itself will overwrite files silently
mv <item1> <item2>	move file(s) to location
rm -i <item>	delete file, -i interactive confirmation
alias	lists alias commands
alert <"message">	sends a message to notifications
> emptyDOC.txt	make an empty text file
>	standard out to .txt (will overwrite)
>>	append standard out .txt will (not overwrite)
ls -la /usr/bin	will print the directory contents to a text file
ls-output.txt	

### Quick basic commands (cont)

&>	will include output and errors
<b>apt</b>	
apt list	grep Type a word to highlight in red
apt search	grep searchword
apt install	app name
apt remove	app name
apt update	
apt upgrade	

### Permissions

id	Display user identity
chmod	Change a files mode
umask	Set the default file permissions
su	Run a shell as another user
sudo	Execute a command as another user
chown	Change a file's owner
chgrp	Change a file's group ownership
passwd	Change a user's password

### Reading, Writing, Executing -rw-r--r--

Example	-rw-r--r--
-	col1. Regular file
d	col1. Directory
l	col1. A symbolic link. Dummy values.
c	col1. A charcater special file. Modem
b	col1. A block special file. Ex. CD, HDD.
r	Read only
w	Write
x	Executable

### iptables (firewall)

iptables -h	list commands
--list	list the rule in a chain or all chains
--verbose or -v	details
--line-numbers	print line numbers when listing
--version or -V	version number
--list-rules or -S	list rules
--numeric or -n	numeric output of addresses and ports

### Permission Attribute Examples

-rwx-----	read, write, execute by file's owner only
-rw-----	read and write by owner only
-rw-r--r--	read and write owner, read group, read world
-rwxr-xr-x	read, write, execute owner. read and execute everyone else.
lrwxrwxrwx	A symbolic link with dummy permissions
drwxr-x---	Directory. read, write, execute owner. Read and execute group.

### Changing passwords

passwd [user]	with sudo you can change a user password
passwd	change your password

### chown

chown [owner][:[group]] file..	syntax use
bob	change ownership from current to bob
bob:users	change file ownership to bob and group to users

### chown (cont)

:admins change group owner to admins, the owner is unchanged

bob: change the current owner to bob and change the group to the login group for bob

### text editors

gedit GUI (installed in Ubuntu)

kedit KDE default

kate sudo apt install kate

nano command line based (installed in Ubuntu)

vi or vim vi IMproved (installed in Ubuntu)

emacs sudo apt install emacs-gtk

### text editing basics

make a backup before editing cp <filename> <filename.bak>

nano <filename> load a text in nano

### nano text editor

^X to quit nano, ^ mean CTRL

^O CTRL-O save the file

### vi or vim text editor

vi start vim

vi newdoc.txt create a blank text doc in vi from command line

:q quit

:q! quit without saving

vi starts in command mode press i to go to insert text mode

press ESC to exit insert mode with ESC

:w save the file, or write to file

### vi or vim text editor (cont)

double tap ESC if you don't know where you are in vi

#### Navigating Command Mode

H or left arrow left one character

J or down arrow down one line

K or up arrow up one line

L or right arrow right one character

0 (zero) go to the beginning of the current line

SHIFT-6 (^) to the first non whitespace character on the current line

SHIFT-4 (\$) to the end on the current line

W to the beginning of the next word, or punctuation characters

SHIFT-W (W) to the beginning of the next word, ignore punctuation characters

B to the beginning of the previous word or character

SHIFT B (B) to the beginning of the previous word or character, ignoring punctuation

CTRL-F or page down down on page

CTRL-B or page up up one page

number-SHIFT-G to the line number, example 1G moves to the first line of the file

SHIFT-G to the last line of the file

### Cutting, Copying, Pasting Text

#### DELETE TEXT aka CUT TEXT

### vi or vim text editor (cont)

x delete the current character

3x delete the current character and the 2 after it

dd delete the current line

5dd delete the current line and the next 4 lines

dW delete from the current cursor position to the beginning of the next word

d\$ delete from the current cursor position to the end of the line

d0 delete from the current cursor position to the beginning of the line

d^ delete from the current cursor location to the first non whitespace character line

dG from the current line to the end of the file

d20g from the current line to the 20th line of the file

### COPYING

yy y stands for yank which is copy, yy copies the current line

### vi or vim text editor (cont)

5yy	copies the current line and the next 4 lines
yW	from the cursor location to the beginning of the next word
y\$	from the cursor location to the end of the current line
y0	from the current cursor location to the beginning of the line
y^	from the current cursor location to the first non whitespace character in line
yG	from the current line to the end of the file
y20G	from the current line to the 20th line of the file

### PASTING

p	pastes the current copied text below the current line
P	pastes the copied text above the current line
Join lines	J
vi has the ability to do search and replace	maybe I will add a cheat sheet for this later
/searchtext	searches vi
:%s/Line/-line/g	will search and replace Line with line globally

### EDIT MULTIPLE FILES

### vi or vim text editor (cont)

vi file1 file2 file3	
:n	switch to the next file
:N	switch to the previous file
:buffers	lists open files
:buffers 2	switch to buffer file 2
:e	open another file from vi. example :e filename.txt
:r	copy an entire file to the vi session. example :r myfile.txt

### Networking commands

ping	send an ICMP echo request to network hosts
traceroute	print the route packets trace to a network host
netstat	print the network connections, routing tables, interface stats, masquerade connections, and multi cast memberships
ftp	file transfer program
lftp	an improved ftp
wget	non interactive network downloader
ssh	openSSH SSH client (remote login)
scp	secure copy (remote copy program)
sftp	secure ftp

### Technical commands

cat (brings files together, uses input)	CTRL-D to quit, tell cat EOF
cat > sometext.txt; this is some text to be saved	a simple way to add text to a text file

### Technical commands (cont)

cat somete-xt.txt	to read the file with cat
	pipe connects input to output
ls /bin /usr/bin  sort   less	example sort 2 dirs binaries
sort	alphabetize a list
uniq	used with sort, removes duplicates
grep	pattern finding
head	checks the first 10 lines of a file. -n # (to adjust #)
tail	checks the last 10 lines of a file. -n#
tail -f /var/log/messages	-f is a real time log file viewer switch(CTRL-C to quit)
tee	for use with pipe
echo *D	display everything with a capital D
echo \$((2+2))	command line calculator
echo "\$(-cal)"	calendar
history	a list of all commands used
history: !88	!88 will use number 88 in history

### USB checking

lsusb	list connected USB devices
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### dpkg

dpkg --list	list all installed packages
-r or --remove	remove a package
-P or --purge	
--log=<filename>	log changes made
-i or --install <.deb file name>	install a deb file

### chmod octal chart

octal      binary - filemode

0            000 ---

1            001 --x

2            010 -w-

3            011 -wx

4            100 r--

5            101 r-x

6            110 rw-

7            111 rwx

example    owner, group, world  
setting  
octal 600

binary seems somewhat irrelevant

### chmod symbolic notation

u            user

g            group

o            others, world

a            all

### example notation

u+x         add execute permission for the owner

u-x         remove execute permission from the owner

+x          add execute for everyone, same as a+x

o-rw        remove read and write for everyone but owner and group

u+x,go=rx   add excute for owner, group and world changed to read and execute

### umask new file default permissions

umask      0022 ubuntu default

#            4000 sets program ownership to position app

0---

2000 sets group ownership for shared directories

### umask new file default permissions (cont)

1000 set to a directory prevents files from being deleted in shared directory

the last three are octal permissions

### system stuff

printenv |    system information  
less

printenv      views the contents of a variable, example USER contains your user name

set | less     display shell and environment variables

echo          echo can be used to view single variables

alias         lists all alias commands

[command];    to get a notification when a command is done(an alias in ubuntu)

[message]  
below are     \*\*  
some  
variables of  
interest

DISPLAY      the name of your display environment

EDITOR       the default text editor

SHELL        name of the shell running

HOME         path to home directory

LANG         keyboard language

OLD\_PWD     the previous working directory

PAGER        the name of the program used for paging output. Usually is app less

### system stuff (cont)

PATH         a colon separated list of directories that are searched when you enter the name of an executable program

PS1         prompt string 1, defines the contents of shell prompt

PWD         current working directory

TERM        the name of your terminal type

TZ          time zone

USER        your username

### Storage Media command overview

mount        mount a file system

umount      un-mount a file system (pay attention to the spelling of the command Umount)

fdisk        partition table manipulator

fsck        check and repair a filesystem

fdformat    format a floppy disk

mkfs        make a filesystem

dd          write block-oriented data directly to a device

geniso-     create an ISO 9660 image file image (mkisos)

wodim      write data to an optical storage (cdrecord)

md5sum     calculate MD5 checksum

### LISTING DEVICES AND FILESYSTEMS

/etc/fstab   is a list of devices

mount      will view a list of mounted filesystems

ls /dev     list devices



By **ralema56**  
[cheatography.com/ralema56/](https://cheatography.com/ralema56/)

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### Storage Media command overview (cont)

/dev/fd\* floppy disks

/dev/hd\* hard drives

/dev/lp\* printers

/dev/sd\* SCSI disks

/dev/sr\* Optical drives CD/DVD readers and burners

sudo tail -f /var/log/syslog to see real time device changes in the system

### MOVING DEV MOUNT LOCATIONS

sudo mkdir /mnt/flash make a dir to mount flash drive

sudo mount /dev/sdb1 /mnt/flash moves the location to the new one (use the proper device name before moving)

df -h display disk space in human readable

### system startup stuff

/etc/profile a global configuration script that applies to all users

~/.bashrc a users personal startup file. can override the global config script

~/.bash\_profile if ~/.bashrc is not found, bash attempts to read this one

~/.profile if neither bash profile or login are found this is run. this is the default in Ubuntu

/etc/bash.bashrc a global config script that applies to all users

### system startup stuff (cont)

~/.bashrc a users personal startup file

files that start with a period are hidden is -a option when searching with ls

### fdisk commands

sudo umount /dev/sdb1 unmount the partition

sudo fdisk /dev/sdb mount the entire drive

### fdisk commands

p print partition tables

l list known partition types

t change a partitions system id

w write partition changes

q quit fdisk

### creating a new filesystem with mkfs

sudo mkfs -t ext3 /dev/sdb1 make an ext3 filesystem on device sdb1 partition

sudo mkfs -t vfat /dev/sdb1 make a fat32 filesystem on device sdb1

### testing and repairing filesystems with fsck

sudo fsck /dev/sdb1 checks the filesystem on sdb1 partition

### Moving data directly to and from devices with dd

dd raw copy tool (dd has 2 names, data definition and destroy disk)

dd if=input\_file of=output\_file [bs=block\_size [count=blocks]] syntax to dd raw copy

### Moving data directly to and from devices with dd (cont)

dd if=/dev/sdb of=/dev/sdc copy 2 identical usb drives that are the same size

dd if=/dev/sdb of=flash\_drive.img make a raw image of the drive

### creating CD-ROM images

dd if=/dev/cdrom of=ubuntu.iso copy the contents of a cd to an image file

of=ubuntu.iso

cdrdao is used for audio cds

### creating an iso from a collection of files

genisoimage -o cd-rom.iso -R -J ~/cd-rom-files if you had a directory called /cd-rom-files, you could use this command to make an image of the directory files

the -R -J options defined the allow the use of long filenames

### mounting an iso image directly

using the -o loop with mount

mkdir /mnt/iso\_image then the next line down

mount -t iso9660 -o loop image.iso /mnt/iso\_image mounts the iso as a virtual drive

image.iso /mnt/iso\_image

### blanking a RW CD

wodim dev=/dev/cdrw blank=fast there are other types of blanking

blank=fast

### writing an image file

wodim dev=/dev/cdrw image.iso writes an image to cd



### MD5 checksum

md5sum image.iso	will give you the md5 checksum value
md5sum /dev/cdrom	a cd-r write in disc at once can be checked like this

### lynis (auditing,hardening)

sudo apt install lynis	install it
lynis audit system	perform local security scan
lynis show version	version
--verbose	details
--pentest	non privileged scan

### systemctl (services)

systemctl -all or -a	see all loaded processes
list-units	list units currently in memory
list-sockets	list sockets currently in memory
list-unit-files	list installed unit files
poweroff	turn the computer off
reboot	shutdown and restart
is-system-running	checks to see if the system is running
--type service --state running	searching for running services

### ps (running processes)

ps -e	all running processes
ps aux   grep telnet	search for telnet running
ps #####	# = number for PID to view
ps -aux	custom running process search
ps --help all	list more commands
ps	report a snapshot of the current running processes

### ps (running processes) (cont)

top	display tasks with the top active ones
jobs	list active jobs
bg	place a job in the background
fg	place a job in the foreground
kill	send a signal to a process via PID
killall	kill process by name
shutdown	shut down or reboot the system
xlogo	creates a nonsense xlogo app for debugging and testing ps controls
[CTRL-c]	terminates programs started in terminal
xlogo &	& will make a program start in the background
fg %1	will bring the program to the foreground
[CTRL-z]	stops or pauses a process
bg %1	put program in background
killall [process name]	killall xlogo for example if multiples are running
pstree	outputs a process list in a tree pattern
vmstat	system resource snapshot [vmstat5] for continuous feed
xload	GUI draws a graph, showing sys stats overtime
tload	a terminal version of xload
tload	a terminal version of xload

### netstat

netstat	-tulpn
-l (L)	display listening sockets
-n	don't resolve names
-p	display PID
-s	an overview - statistics
-g	group memberships
-r	router table
-i	interface table

### Customizing the Prompt

adjust how the prompt is displayed and operates	
echo \$PS1	display the current prompt setup
ps1_ol-d="\$PS1"	make a backup before making changes called ps1_old. check with echo \$ps1_old
PS1="\$ps1_ol-d"	restore the original
PS1=	clear all prompt data (no visible prompt)
<b>PROMPT VALUES</b>	ubuntu default value is: [u@\h \W]\$\
PS1="\\$ "	a minimal prompt
\a	ASCII bell. Makes the computer beep
\d	current date in day, month, date format
\h	hostname of the local machine minus the domain
\H	full hostname
\j	number of jobs in the current shell
\l	name of the current terminal device
\n	a newline character
\r	a carriage return
\s	name of the shell program
\t	current time in 24hour H:M:S
\T	current time in 12hour format



### Customizing the Prompt (cont)

\@	current time in 12hour am/pm format
\A	current time in 24 hour H:M
\u	username of the current user
\v	version number of the shell
\V	version and release number of the shell
\w	name of the current working directory
\W	last part of the working directory
!\	history number of the current command
\#	number of commands entered in shell
\\$	displays the \$ character unless you have root, in that case it displays #
\[	the start of a series of one or more non-printing characters
\]	the end of a non-printing character sequence

### COLOR TEXT

\033[0;30m	black
\033[0;31m	red
\033[0;32m	green
\033[0;33m	brown
\033[0;34m	blue
\033[0;35m	purple
\033[0;36m	cyan
\033[0;37m	light grey
\033[1;30m	dark grey
\033[1;31m	light red
\033[1;32m	light green
\033[1;33m	yellow
\033[1;34m	light blue
\033[1;35m	light purple
\033[1;36m	light cyan

### Customizing the Prompt (cont)

\033[1;37m	white
<b>BACKGROUND COLOR</b>	
\033[0;40m	black
\033[0;41m	red
\033[0;42m	green
\033[0;43m	brown
\033[0;44m	blue
\033[0;45m	purple
\033[0;46m	cyan
\033[0;47m	light gray

### Searching for files commands

locate	find files by name
find	search for files in directory hierarchy
xargs	build and execute command lines from standard input
touch	change file times
stat	display file or filesystem status

### locate (find files the easy way)

locate	locate will search for any string
bin/zip	with bin and zip
locate zip	and fancier search
grep bin	

### find (find files the hard way)

find ~	a list of directories in our home dir
find ~   wc -l	use word count to find how many files
find ~ -type d   wc -l	find how many directories with word count
find ~ -type f   wc -l	find regular files with word count

### Searching for files commands (cont)

find ~ type f	find files with the name .jpg
-name "*.J-PG" -size +1M   wc -l	larger than 1 mb and count them

### find test

-cmin n	match files of dirs whose content was modified exactly n minutes ago
-cnewer file	match files or directories whose content was last modified more recently than the file named
-ctime	match files or dirs that were modified within the last 24hours
-empty	match empty files or dirs
-group name	match files or dirs belonging to a group
-iname pattern	like name but case sensitive
-inum n	match files with inode number n
-mmin n	match files of dir whose contents were modified n mins ago
-mtime n	match files or dirs whose contents were modified n 24 hours ago
-name pattern	match files with wildcard pattern
-newer file	match files or dirs whose content was modified more recently than specified file



### Searching for files commands (cont)

-nouser match files or dirs that do not belong to a user

-nogroup match files that do not belong to a group

-perm mode match files that have permission set to a specific mode

-samefile match files with the same name  
inode number, similar to -inum test

-size n match file of size n

-type c match files of c type

-user name match files or dir belonging to user name

### find logical operators

-and match if both sides are true, also known as -a

-or match if one side is true also known as -o

-not match if the following test is false, also known as -!

( ) group tests together to form larger expressions

### examples

-type f -and testing for bad permissions  
-not -perms by testing for good ones  
0600

### Searching for files commands (cont)

find ~ (-type f -not -perms 0600) -or (-type d -not -perms 0700) test for bad files and directories

### actions for find

-delete delete the currently matching file(see warning)

-ls perform the equivalent of ls -dils on the matching file.

-print output the full pathname of the file

-print0 used to correctly print file names with spaces

-quit quit once a match has been made

### warning for delete

always use -print as a substitute for -delete to see what will be deleted

find ~ -type f -name \*.BAK' -print -print the files to output before deleting

find ~ -type f -name \*.BAK' -delete then proceed if you wish to delete still

