

January 30, 2019 / Jure Šorn

Comprehensive Linux Cheatsheet

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Gnome

Ctrl+Alt T	Terminal
Ctrl+Alt F	Firefox
Ctrl+Alt H	Home
Ctrl+Alt G	Gedit
Alt F12	Run command
Alt F1	Minimize window
Alt F2	Toggle maximize window
Alt F3	Toggle full screen
Ctrl+Alt D	Minimize all windows
Ctrl+Alt F1-F6	Terminals (tty-s)
Ctrl+Alt F7-F12	Xwindows
Ctrl+Alt Bksp	Restart X
Ctrl+Alt Del	Log out
Ctrl+Alt End	Shutdown
Super PgUp/PgDn	Switch workspace
Middle mouse button	Paste selected text

Nautilus/Nemo

Ctrl L	Location, show path
Ctrl+Shift N	New folder
Ctrl H	Show hidden files

Gedit

Ctrl G	Find next
Ctrl+Shift G	Find previous
Ctrl+Shift K	Clear highlights

Terminal

Ctrl+Shift C	Copy
Ctrl+Shift V	Paste
Ctrl+Shift T	New tab

Ctrl+Shift W	Close tab
Ctrl PgUp/PgDn	Switch tab
Ctrl +/-	Zoom
Ctrl D	Close terminal
Ctrl S	Scroll lock

Bash

Keys when in emacs mode. You can switch to 'vi' mode with 'set -o vi' command.

Ctrl C	Interrupt, erase line
Ctrl A	Go to beginning of line
Ctrl E	End of line
Ctrl U	Copy line
Ctrl Y	Paste line
Alt .	Last argument
Ctrl R	Search trough history
Alt *	Show all matches for regular expression
Ctrl+Alt E	Show current line passed through alias, history and shell expansion
Ctrl X, Ctrl E	Edit command in editor
Ctrl P	Show last command (same as up arrow)

Awesome Terminal Commands

Packages

dpkg	Low level package manager for Debian.
-l	Lists installed packages.
-i <package> (sudo)	Installs package from a package file.
apt-get	Advanced Package Tool built on top of 'dpkg'. New command called simply 'apt' is also available. It merges the functionalities of 'apt-get' and 'apt-cache'.
update	Updates local list of existing packages.
-u dist-upgrade	Upgrades by intelligently handling changing dependencies with new versions of packages. To regularly update put this line in 'crontab': 'apt-get update && apt-get -u dist-upgrade'.
upgrade	Same as dist-upgrade, but will not remove installed packages or install new ones.
install <package>	Also updates single package.
remove <package>	Removes package but leaves its configurations.
remove apt-listchanges	Useful when Debian can't find a package.
purge <package>	Removes package and its configurations. Run 'apt-get autoremove' after to remove all dependencies that are not needed anymore.
autoremove	Removes unneeded packages.
source <package>	Downloads code.
build-dep <package>	Installs the build dependencies.
--yes	Answers with 'yes' to most questions (Except the ones that can have potentially harmful consequences).
--force-yes	Answers 'yes' to all questions (Not recommended).
apt-cache	Queries the APT's internal database.
search <keyword>	Searches packages like 'apropos', but globally.
show <package>	Shows package info like version, dependencies, etc.
showpkg <package>	Similar, but also shows the packages that depend on the

	searched package (reverse dependencies).
policy <package>	Shows installed and remote version.
apt-file	APT package searching utility.
search <file>	Search in which package a file is included.
update	Updates local list of package contents.
aptitude	Enables package browsing (skin for apt-get).
search '~i!~M'	Lists installed packages that were not installed as a dependency, with short description of each.
search <package>	Package search.
winetricks	Installs wine applications.
update-alternatives	Maintains symbolic links determining default commands.
unattended-upgrade	Automatic installation of security upgrades.

Commands

apropos <cmd>	Searches the manual page names and descriptions (use quotes for phrases). -a Matches all keywords.
whatis <cmd>	Displays one-line manual page description.
whereis <cmd>	Locates the binary, source, and manual page files for a command.
which <cmd>	Locates only the binary of a command.
wtf	Translates acronyms and filename suffixes.

Install Mantra

```
./configure --help
./configure
make
sudo make install
```

General

su	Switches user. - <user> Switches to user. - Switches to root.
man	Help on commands. <section> Section numbers: 1. Programs, 2. System calls, 3. Library calls, 4. Special files, 5. File formats, 7. Miscellaneous, 8. System administration commands
echo	Prints passed text. -n Does not add newline at the end. -e Enables interpretation of backslashed letters.
xargs <cmd>	Passes output from one command to arguments of another: 'echo -a xargs ls' -t Echoes the command before executing it. -p Echoes command and asks for confirmation before execution. -0 Input items are separated by null character instead of space.
tee <file>	Sends output of a program to specified file and to standard output: '<cmd_1> tee out_1.txt <cmd_2>' /dev/tty Sends output to terminal and to standard output
expr	Evaluates passed expression. 1 + 1 Prints '2'.
bc	Evaluates input. It's basically a calculator, but also provides some control commands. echo 1 + 1 bc Prints '2'. echo "scale=5;3/4" bc Prints '.75000'.

sh	Runs command interpreter (shell). Can run a script even if not executable. -c '<commands>' Starts new non-interactive shell and reads commands from arguments instead of 'stdin'. To append lines to system configuration file run: 'sudo sh -c 'echo "<text>" >> <file>''
bash	Runs bash command interpreter (shell). -c Reads commands from arguments instead of 'stdin'. -n <script> Checks script for errors. -x Prints commands before execution. Useful for debugging.
gcc	Gnu C compiler. Run 'g++' for C++ code. -w Suppresses warnings (Only prints errors). -Wall All warnings. -g Compile for debugging. -std=<std> Sets the standard. Supported standards for C are: 'c90', 'gnu90', 'c99', 'gnu99', 'c11' and 'gnu11'. Supported standards for C++ are: 'c++98', 'gnu++98', 'c++11' and 'gnu++11'. 'gnu90' and 'gnu++98' are the default options. -O<level> Optimization level. '0': Reduce compilation time (default), '1-3': - Level of optimization, 's' - Optimize for size, 'g' - Optimize debugging experience.
run-parts <dir>	Runs all scripts or programs in a directory.
date	Tells and sets date and time. -s <string> Sets date. +%T -s "10:13:13" Sets time.
timedatectl	Controls the system time and date. set-timezone CET Sets timezone.
cal	Calendar
xclip	Copies to clipboard.
mkfifo <pipe>	Creates named pipe during that shell session.
mkisofs	Creates a DVD/CD image.
genisoimage	Creates a DVD/CD image (Debian).
cdrecord	Writes to a CD/DVD.
acpi	Checks battery.
fdisk -l (sudo)	Shows partitions.
shutdown	Closes down the system at a given time. now Takes you to the single user mode. -h now Begins the shutdown procedure, same as 'halt' and 'poweroff'. -h 11:50 At 11:50. -r now Same as 'reboot'.
make	Utility that maintains groups of programs. -q Doesn't run any commands, just returns '0' exit code if everything is up to date or non-zero otherwise. -B Unconditionally makes all targets.

Files

ls	-d List directory names instead of contents -S Sort by size -t Sort by time -l One file per line ./* Ls one level deep -i Get inode number of file (file id). Use 'sudo find / -inum <number>' to find all links that point to same file.
cp	-i Interactive (Prompts before overwrite) -v Verbose (Explains what is being done) -R Copy directories recursively -p Preserve mode, ownership and timestamps

	--preserve=all Also preserves context, links and xattr
rm	-i Interactive (Prompts before every removal) -v Verbose (Explains what is being done) -f Force remove (Does not prompt, useful if 'rm' is aliased with '-i') -R Removes directories and their content recursively
mkdir	-p Make parents if needed
ln	Makes links to the files -s <file> <link> Makes symbolic link. If you want to use relative paths you must be in links directory !!!!!!!!!!!!!!!!!!!!!!!
df	-h Displays humanly readable free disk space
du	-s <dir> Directory size
mc	Midnight commander Alt o Open parent dir in another panel Ctrl o Switch to bash
find <dir>	-name <file> Search by name -regex <regex> Use regex for name search -not Insert before other options to negate -maxdepth <levels> Descend only to levels deep -samefile <file> Find all hard links of a file -xdev Don't descend directories on other filesystems -inum <inum> Find files with the inode number -type <f d b ...> Find files of type -delete Delete found files -exec <cmd> {} \; Find files and execute command for every found file. '{}' is replaced with filename -exec <cmd> {} + Find files and execute command with all filenames in place of '{}' -atime +/-n Find files that were last accessed less or more than n days. -print0 xargs -0 <cmd> Sends found files to a command as parameters. Uses 'NUL' character as separator, necessary for filenames with spaces
locate <regex>	Similar as 'find' but using index -i Ignore case --regex Interprets all patterns as extended regex -0 xargs -0 <cmd> Sends found files to a command as parameters.
updatedb (sudo)	Update locate index
md5sum	Prints md5 sum hash of a file
read	Read single line from standard input -n 1 Print after reading one character -s Do not echo input coming from terminal
shred	Securely remove files
file	Determine file's type
tree	Ls in a tree-like (hierarchical) format
install	Copy files and set attributes
gpg	Decrypt file with password -c Encrypt
mktemp	Create a temporary file or directory in '/tmp' and returns it's name.
rename	s/<from>/<to> <files> Renames multiple files using 'sed' syntax
rsync	A fast, versatile, remote (and local) file-copying tool -Hbaz -e ssh <src_dir> <user>@<host>:<dest_dir> - Backs up the 'src_dir': '-H' preserves hard links, '-b' renames preexisting destination files (back up), '-a' preserve everything except hard links and '-z' compresses. cmp Compares two files, similar to diff but also for binaries
stat	Displays files status -c%X Time of last modification of the file
readlink	-f Follow link recursively and print files path

xdg-open	Open file with default application for the file type
dialog	Display dialog box from shell script
watch	Execute command periodically

Archives

dtrx	<archive> Universal archive extractor
tar	xvzf <file>.tar.gz (.tgz) Decompress and detar xvjf <file>.tar.bz2 Decompress and detar -cf <archive>.tar <files> Compress
unzip	*.zip Backslash is necessary so that bash doesn't expand the '*' -d <dir> Extract into directory (create if doesn't exist)
zip	-r <archive> <dir> Compress whole directory recursively. -g <archive> <files> Add files to existing archive (grow).
unrar	e Extract files from rar archive
zcat	Cats gzipped file

Terminal Multiplexers

screen	Switch between multiple virtual terminals (useful in ssh). Prefix for a command is 'Ctrl a'. c New terminal, n Next, p Previous, a Go to beginning of line, New region vertically, S New region horizontally, tab Move to next region, Q Close all but selected region, X Kill the current region, esc Enter copy/scrollback mode -> space: start/stop marking,] Paste, k Kill window, t Show time and avg CPU load
tmux	Terminal multiplexer, better screen. Prefix for a command is 'Ctrl b'. Most commands are the same as in 'screen'. ls Shows running sessions attach [-t <no>] Attach to running session d Detach from currently attached session pgup Enter in copy mode and pageup, [Copy mode,] Paste, " Split horizontally, % Split vertically

Bash

"\$x"	ALWAYS PUT DOUBLE QUOTES AROUND VARIABLE!!!!!!!!!!!!!! All variables in bash are global!!!!!!
"\$*"	Combines all the arguments into single word, separating them with first character of IFS variable. If IFS is not set, space is used. If IFS is null, no separator is used!!!!!!!!!! No args provided will result in one empty string being passed on!!!
"\$@"	Use this instead!!!!!! Will retain arguments as-is, so no args provided will result in no args being passed on. This is in most cases what you want to use for passing on arguments. Google: "\$@" is right almost everytime, and \$* is wrong almost everytime.
"\$#"	Number of arguments

"\$1"	First argument
"\$0"	Name of the script
\$'\n'	String literal with escape sequences (there is a backslash before n) If you want IFS to be a new line (useful with for loop) you need to: <code>IFS=\$'\n'</code> - The dollar forces substitution!!!! Also if you want 'while read line; do...' to preserve leading spaces and tabs, you need to set <code>IFS=""</code>
\$?	Exit code of last command (0 - Success)
Ctrl-Z, kill %%	Kill looping bash script

test <expr>	Same as <code>[<expr>]</code> . Returns zero exit status if true.
-n	Is string non empty
-z	Is string empty
-a	And
-o	Or
=	Strings are equal
-nt	File newer than
-ot	Older than
-d	Directory exists
-e	File exists
-f	Is a regular file
-h	Its a symbolic link
-r	Has read permission
-w	Has write permission
-x	Has execute permission
[[<expr>]]	Same as <code>[]</code> , but without word splitting and filename expansion. And with additional operators: <code>&&</code> , <code> </code> , <code>'</code> , <code><</code> , <code>></code> (lexicographic less, more), and also regular expression matching.
=~	Regex comparison operator: <code>[["\$HOST" =~ ^user.*]]</code>
let <expr>	Executes expression: <code>let a="\$b"+2</code>

\$(command)	Same as 'command'
eval <variable>	Execute string as command
\$RANDOM	0 - 32767
input='cat'	Getting standard input
-	In place of a file name means standard in or out
set -o vi	Set line editing to vi mode
pushd .	Put current dir on stack
popd	Pop dir from stack
cd -	go to last dir
source <script>	Run script: for example <code>source /etc/profile</code> (same as <code>. <cmd></code>)
#!/bin/bash	Good practice to insert at beginning of a bash script
export	PATH="\$PATH:<dir>" Adds new directory to path environment variable.
read	-p <message> Prompt for user input
var=\${1:-"<default>"}	Setting variable with default value if \$1 is empty
getopts	Parse parameters/arguments, builtin
getopt	GNU version is even better then getopts, not a builtin
while read line; do <commands>; done < <file>	Read from file line by line
	-r Do not treat backslashes as escape characters
complete -F <completion_function> <cmd>	Set completion function for command
complete -p <cmd>	Print the completion function for command
compgen -c <pattern>	Print all completions for pattern
help <builtin>	Display information about builtin command
wait	Wait for all background processes to end

Safety

set	-e	Exit if any command fails
	-u	Exit if referencing undefined variable
	-o pipefail	If any command in a pipeline fails, its return code is used as the return code of the whole pipeline
IFS=\$'\n\t'		Remove space from the default Internal Field Separator

History

sudo !!	Run the last command as root
_<cmd>	Execute a command without saving it in the history
!<cmd>	Run last command that starts with cmd

Redirections

<cmd> 2> /dev/null	Redirect error output to 'null'
<cmd> &> /dev/null	Redirect both standard and error output to 'null'
<cmd> >&2	Write to stderr
<cmd> 2>&1 less	Add stderr to stdout and print it with less (useful for gcc)

Arrays And Lines

Reads line by line from variable. To preserve spaces use 'IFS='.

```
while IFS= read -r line; do
    echo "... $line ..."
done <<< "$list" -
```

\${a[1]}	Value of the second element of the array
for c in \${a[@]}	Iterate over array
\${varname:offset:length}	Get substring: 's="aeiou"; \${s:3:1} -> o'
\${#var}	Length of a var
\${#name[subscript]}	Length of the element
\${#name[@]}	Length of the array

Aliases And Functions

alias	Print all aliases
<name>	Print alias
<name>='cmd'	Set alias
command <cmd>	Executes original command, bypassing any aliases or shell functions that may be defined for command
\<cmd>	Temporarily disable alias (call original)
type <cmd>	Will tell you what is command aliased to or if it is a builtin, function or a command -P just check commands
declare -F	Print function names
declare -f	Print functions

Text

Print

head	-n-<num_of_lines> Print all lines but the last n
	-c <num_of_chars> Print first c characters
tail	-n+<line_num> Start at line number

	-f	Do not stop printing (follow)
cat	-n	Number all lines
	>> file	Simplest text editor (great for pasting)
less	&<patt>	Display only lines with pattern
	-N	Show line numbers
	-~	Do not show '~' after 'EOF'
	+G	Tells less to start at the end of the file
	+F	Follow the input (to scroll up first press ctrl+c)
	-F	Or --quit-if-one-screen
	v	Opens editor defined in '\$VISUAL' or '\$EDITOR'
	:n	Examine the next file
	<, >	Go to home, end
wc		Count lines, words and characters
Edit		
sudo -e <file>		Edit file as sudo
tr <from> <to>		Translate characters
	-d	Delete characters
cut <file>		Removes columns from each line of files
	-d ':' -f 1,7 /etc/passwd	Only show the username and the shell
sort		Sorts lines
	-u	Uniq, removes duplicates
	-t	Set delimiter for fields (default is space)
	-k	Select by which field to sort
uniq		Removes adjacent duplicates
	-d	Intersection
	-u	Difference
column		Columnate text
	-t	Create a table
shuf		Shuffle input lines
tac		Concatenate and print files in reverse (reverse 'cat')
join		Join lines of two files on a common field
colrm	[from [to]]	Removes columns
seq <number>		Output numbers from 1 to number
ispell, aspell		Interactive spell checker
basename <path>		Strips directory from path
	-s .<suffix>	Also strip suffix
	-a	Process multiple filenames
dirname <path>		Strip last component from path
fmt		Produce roughly uniform line lengths
fold		Wrap each input line to fit in specified width
paste		Glue two documents side by side
sed	's///g'	Substitute every occurrence in line, not just the first one
	's///I'	Ignore case
	-r	Extended syntax, for '+', '?', ... Also you shouldn't escape the parenthesis
	-r 's###e'	Execute match as a command
	-i <file>	Will make changes directly to the file (in place)
	-u	Unbuffered mode (processes input immediately)
	-n l	Print escape sequence (keycode) of a pressed key
expand		Convert tabs to spaces
	-t <number>	Set number of spaces (default is 8)
	-i	Do not convert tabs after non blanks

Diff

diff **-u <files>** Unified format
--brief -r Compare two directory trees

colordiff Version of diff with colors

sdiff Two files side by side

comm Compare two sorted files line by line

patch Apply a diff file to original
patch < patch.diff Apply patch
diff -u <old_file> <new_file> > patch.diff Create patch

Search

grep <patt> <file>

- v** Inverse
- n** Line numbers
- w** Whole word
- A<num>** Print also num lines after
- B<num>** Print also num lines before
- r** Recursive
- o** Print only matching part
- P** Perl notation with additional operators such as: '\\t', '+' and '?' (non-greedy!!!!).
- i** Ignore case
- I** Do not process binary files
- l** Just print files with matches
- L** Just print files without matches
- e <patt>** Necessary to put before pattern if it starts with '-'!!!!!! or if you want multiple patterns.
- | wc -l** Count occurrences
- line-buffered** Processes input line by line instead of in bigger chunks

look Display lines beginning with a given string

strings Print all text parts of binary file

Convert

todos, fromdos Convert line endings form/to windows format (package tofromdos)

enscript Converts text files to postscript, rtf, HTML

gs Ghostscript: postscript and PDF language interpreter and previewer

pdftohtml Pdf to html

pdftotext Pdf to text

libreoffice New Openoffice

figlet Display large characters made up of ordinary screen characters (Ascii art)

toilet Similar (Ascii art)

cproto Generates C function prototypes (declarations)

Editors

nano Simple text editor.
/etc/nanorc Config file.
/usr/share/nano/<lang>.nanorc Syntax highlight files.
Alt + / or ? Go to last line.

fte Cool text editor with CUA (IBM)-shortcuts

diakonos Simple terminal text editor with ctrl-c for copy

pyroom Distraction free writing (gui)

Network

whois Info about domain

host <ip/hostname>	DNS lookup utility
nslookup	Same interactively
dig	Same, lot of options
hostname	Prints/sets computer name, to set it permanently edit '/etc/hostname' and '/etc/hosts'
netstat	Displays contents of /proc/net files, status of ports... -r Show routing table -i Show interfaces
arp	Manipulate the system ARP cache (IP -> mac)
route	Tool used to display or modify the routing table add default gw <ip> Change the default gateway should DNS not be configured correctly on your machine, you need to edit '/etc/resolv.conf' to make things work
ifconfig eth0	down/up (sudo) Turn network interface on/off <ip> netmask <mask> up Set ip and mask
ifup eth0	Will bring eth0 up if it is currently down.
ip	link show List network interfaces link set dev eth0 up Bring interface eth0 up or down addr show List addresses of interfaces route add default via <ip> Set default gateway
traceroute, traceroute6, traceroute6.iputils	Traces route
tracpath, tracpath6	Similar (iputils package)
mtr	Combines the functionality of the traceroute and ping
findsmb	List info about machines that respond to SMB name queries - Windows based machines sharing their hard disks
/etc/services	List of internet services with their port numbers
NetworkManager	Network management daemon, configuration file is in /etc/NetworkManager/NetworkManager.conf
nm-tool	Prints info
nm-online	Is network connected
nmcli	Command-line tool for controlling NetworkManager
nc	(netcat) It can open TCP connections, send UDP packets, listen on arbitrary TCP and UDP ports, do port scanning...
ncat	Concatenate and redirect sockets
ethtool eth0	Show status of eth0 -S Statistics -s Change settings (speed, duplex,...)
ss -tupl	List internet services on a system -tuo List active connections to/from system

Wireless

iwconfig	Sets the wireless configuration options basic to most wireless devices
iwlist wlan0	<option> Displays current status information of a device, more detailed then iwconfig scan (sudo) List wireless networks in range
iwspy	Sets the list of IP addresses in a wireless network and checks the quality of their connections
iwpriv	Accesses configuration options specific to a particular device
rftkill	list Show wireless adapters (wifi and bluetooth) block/unblock <dev_num> Block/unblock wireless device
iw dev wlan0	link Show link status of wlan0 set biterates <standard> Manually set interface speed scan (sudo) List wireless networks in range

wavemon Monitor wireless connection link quality

Internet

mutt Mail client
sftp Secure ftp
sshd (openssh-server) ssh server daemon, on Windows service is named 'CYGWIN sshd'

/etc/init.d/ssh restart Restart sshd (ssh daemon)
(sudo)

/usr/local/etc/init.d/openssh Start openssh daemon
start (sudo)

ssh-keygen -t rsa -C <email> Generate rsa key pair, keys are stored in ~/.ssh

ssh SSH client
<user>@<address> "mpg321 -" <file>.mp3 Stream audio over ssh
enter ~. Kill unresponsive session

scp Securely copy files over network. Example: 'scp <local_file>
<user>@<host>:~<remote_file>'

wget Download files from WWW
-O Specify output file
-c Continue downloading unfinished file. Can also use wildcards, but use single quotes around url.
-r -ll --no-parent -A.gif Recursively to the depth of one ignoring references to the parent directory and all gifs.

curl Similar
-q0 - Writes to standard output + quiet
-i Urls specified by standard input

transmissioncli Torrent terminal client
-d Download limit (kB/s)
-u Upload limit

youtube-dl Download from YouTube
noip2 Dynamic dns update client
rdesktop Remote Desktop Protocol client
tin, nn Usenet client
nrss Rss feed reader

Browsers

lynx Terminal web browser
-cmd_log=<file> Write keystrokes to script
-cmd_script=<file> Read keystrokes from script
-syslog-urls Log requested URLs with syslog.
-dumb Prints txt to stdout
-crawl Same, turns numbers off
-source Prints html to stdout
-l Add the current link to your bookmark file
a Save the address of a document or link to a bookmark file, by default ~/lynx_bookmarks.html
o Options (you can select vim mode)
ctrl+n Scroll down two lines
ctrl+p Scroll up two lines
ctrl+p Previous line
ctrl+n Next line
elinks Another web browser (has menus)

Hacking

nmap	-sP 192.168.1.1-3 Network scanning 192.168.1.3 -p100-139 Port scanning -O 192.168.1.3 (sudo) Scanning os
tcpdump (sudo)	Sniffer (show network traffic) -l Buffered output (for piping to less, etc.)
ettercap	Multipurpose sniffer/interceptor/logger for switched LAN (can detect man in the middle, denial of service, DNS spoofing)
driftnet	Picks out and displays images from network traffic
kismet	Wireless 802.11b monitoring tool
aircrack-ng	Wireless WEP/WPA cracking utilities
Cain & Abel	Password recovery tool for Microsoft Operating Systems
dnsniff	Various hacking tools: arp spoof For man in the middle attack dsniff Password sniffer for several protocols, ...
ip link set eth0	promisc on Set network interface to promiscuous mode multicast off Set multicast off

System

meta, system info	In cinnamon
uname -a	Print system info, kernel version
cat /etc/issue	Show name and version of distribution
init	Upstart init daemon job configuration
telinit	Change system runlevel
dmesg	Print the contents of your bootup (startup) messages displayed by the kernel. This is often useful when debugging problems
getconf -a	Print all system configuration variables
nohup <cmd>	Run a command immune to hangups, runs even after the shell is closed (writes output to nohup.out)
&>/dev/null &	Run a command immune to hangups in background, do not save output
wmctrl	X Window Manager
awesome	Tiled window manager -k Check configuration script for errors
busybox <cmd>	Combines tiny versions of many common UNIX utilities into a single small executable. (1.5 Mb)
mono	.NET support

Users

users	Prints logged in users
who	Logged in users, more data
w	Logged in users, also what are they running
vipw	Edit password file
vigr	Edit groups file
umask	the umask is a value set by the shell. It controls the default permissions of any file created
usermod <user>	Modify user account information -l <new_name> <old_name> -c "<new_real_name>" <user> -d /my/new/home <user> Change location of the users home

	-m -d /my/new/home	Also move the files
useradd <user>	Add user	
adduser <user>	More high level (use 'adduser <user> sudo' after to add user to sudo group)	
	--system Create system user (can not log in)	
	<group> Add user to group (only takes effect after login!!!)	
groups <user>	What groups user belongs to	
userdel -r <user>	Remove user and his home dir	
deluser	-remove-all-files <user>	More high level, removes also files outside home, cron jobs, itd
passwd <user>	Change password	

File Systems

mkfs	Build a Linux filesystem
mke2fs	Create a ext filesystem
mkswap	Set up a swap area
parted	Partition manipulation program
	-l (sudo) List partitions
fdisk	Manipulate disk partition table
	-l (sudo) List partitions
disks	Nice GUI partition tool
mount	List all mounted devices (to get list of devices use 'fdisk -l')
	<device> <path> For example mount /dev/hdc2 to /mymedia
lsattr	List file attributes
chattr	Change file attributes
rkhunter -c	Checks if it can find any rootkits under the system
ntfsundelete	Undelete files on NTFS partition

Logging

last	When various users have logged in or out. This includes information on when the computer was rebooted.
lastlog	Displays a list of users and what day/time they logged into the system. To get all failed logins run: 'cat /var/log/auth.log grep "failed password" -i'.
rsyslogd	manages all the logs on your system closelog, openlog, syslog, vsyslog -> library calls that send messages to the system logger
logger	Makes entries in the system log
zeitgeist	Activity logger

Load

tlload	'graphic' representation of system load
top	Show processes by resource consumption <, > Change resource
htop	Better top
free -tm	Displays memory statistics -s <seconds> Continuously display
vmstat	Performance of system components / virtual memory statistics
sar	System activity information
iostat	Disk usage
time <cmd>	Time a execution of a command
perf	Profiler

Tracing

auditd	System call auditing (package)
ausearch	Queries the audit logs
autrace	Traces a specific process
auditctl	Controls the behavior of the auditd server
strace <cmd>	Trace system calls and signals. All printed system calls can be looked up by 'man'!
-s	Maximum string size we want printed (default is too short, 2000 is OK)
-f	Also follow children
-p <pid>	Attach to process
-o <file>	Write output to file
-c	Count/aggregate
-T	Time the execution of each call
ltrace	List library calls made by command
lsuf	List open files with file descriptors
-p <pid>	Open files by process
<path>	Open files in path
lsmod	Show which kernel modules (drivers) are loaded
modinfo <module>	Get more information about kernel module

Hardware

lshw (sudo)	List all hardware
lspci [-tv]	Show pci info
lsusb [-tv]	Show usb info
lscpu	Print CPU information
dmidecode -q	Display bios/dmi information like ram size/type, max ram, computer model name, cpu information.
smartctl	-A /dev/sda Show disk usage info
hdparm	-tT /dev/sda Do a read speed test
badblocks	-s /dev/sda Check for bad blocks
fstrim -v /	Discard unused blocks, useful for ssd-s
sensors	(lm-sensors) hardware monitoring tool, temperature, fan speed
pwmconfig	(fancontrol) set fan speed

Terminal

tty	Print the file name of the terminal connected to standard input
stty	Change and print terminal line settings
openvt	run a program on a next available tty
script	Makes a typescript of everything printed on your terminal. Ctrl-d to stop recording.
setterm	Set terminal attributes
	-cursor off/on Set cursor on/off
gpm	Enable mouse for tty

Keys/Characters/Fonts

In X

xmodmap	Remap keys
setxkbmap - layout us	Set us keyboard layout
xev	Get keycodes of pressed keys
xset	User preference utility for X
	-r Turn key autorepeat off
	r Turn key autorepeat on

X Not Necessary

loadkeys	Load key mapping
<country_code>	
showkey	Get keycodes of pressed keys
setfont 	Set console font
	/usr/share/consolefonts/Uni2-VGA16.psf.gz For example
	/etc/default/console-setup contains the default settings
jfbterm	Enable unicode characters in terminal
echo -en	Change blue color in tty (first numeral after P means slot, and others shade)
"\eJPC7373C9"	

Processes

ps --forest	View hierarchical view of processes
v	Virtual memory
--sort <field>	Sort by field
pstree	Similar
pgrep <pattern>	Prints PIDs of processes containing pattern
-l	Also print process name
pkill <pattern>	Kills every process that contains pattern in name
kill	<pid> Sends TERM signal to process
	-kill <pid> Sends KILL signal meaning force quit, data will be lost
killall	Uses name instead of pid
skill	Sends signals to command/user/tty or report process status
	-stop <user> Stop all of the users processes
	-cont <user> Continue all users processes
nice	Sets the priority for a process (from max of -20 to min of 20)
	-20 <cmd> Execute command with maximum priority
renice	Changes the priority of an existing process
	+20 <pid> Change processes priority to lowest level
snice	Works very similarly to skill
	-10 -u root Increase the priority of all root's processes
pmap	Report memory map of a process (mapped file)

Jobs

Ctrl z	Put job into background
jobs	Prints currently running job
bg <job_id>	Put job in background
fg <job_id>	Bring job to the foreground
%n	Job number n
%s	Job whose command line starts with s
%%	Current job
%-	Previous job

Scheduled Commands

at	Executes command at a particular time at 21:30 / at now + time / at -f shell_script now + 1 hour echo "ls -l" at midnight
atq	List jobs currently in 'at' queue
atrm	Remove a job from the 'at' queue
crontab -e	Schedule commands for repeating execution
cron	Daemon that executes scheduled commands

sudo service cron status Print status of cron
sudo service cron [stop|start|restart] Stop, start, or restart cron daemon
sudo vim /etc/default/cron Set logging lever
cat /var/log/cron Print log
anacron Like cron but it catches up with tasks next time the computer gets turned on

Services

service Allows you to start, stop or restart a service (it runs a script in /etc/init.d folder)
-f sshd Restart the ssh server
httpd status Get status of apache
--status-all Print status of all services You can also execute the shell script directly from /etc/init.d folder like: /etc/init.d/httpd stop.

System Runlevels

runlevel Output previous and current runlevel
0 Shuts down the system
1 Administrative single-user mode
2 Same as 3 but without networking / multiuser with X server
3 Text mode state (ctrl+alt+F1) / User defined
4 User defined
5 X-window mode (ctrl+alt+F7) / User defined
6 Reboots
S Single user mode

Multimedia

Audio

alsamixer Set audio level (curses)
amixer Set audio levels (command line)
rmmod pcspkr Disable pc-speaker, beep
(sudo)
cmus Music player (can be controlled from outside)
mplayer Movie/music player
mpg321 Plays mp3
ogg123 Plays ogg
aplay Plays audio
play Plays audio
arecord <file> Command line audio recorder and player
-f <format> Set file format (cd)
-d <seconds> Set duration
-f cd -d <seconds> -t raw | lame -x -r Out.mp3 — Capture audio that is playing and convert it to mp3
id3v2 -l Lists all files tags
sound-juicer Cd ripper
xfburn Cd burner
traverso Simple daw

Bitmap

display Displays an image
montage Creates a montage from images

<input_file/s> -set label '%t' <output_file/s>	Labels images
convert <old> <new>	Converts file format (imagemagick)
import	Captures screen-shots from the X server
mogrify	Edit image
gocr	Command line text recognition tool
ocrad	Command line text recognition tool
ppmforge	Creates picture of random planet or clouds
gnuplot	Interactive plotter: plot [-10:10] sin(x)
-p	Leave plots open after exit
plot <file>.dat	Plot data from dat file
fbi	Display images inside tty

Video

ffmpeg -i <file_in> <file_out>	Video and audio format converter. Has been replaced by avconv
avconv -i <file_in> <file_out>	Video and audio format converter (libav-tools)
openshot	Gui movie editor
openmovieeditor	Gui movie editor
aview, asciiview	ASCII art image viewer and video player

Awesome Debian Files

Bash

~/ .bashrc	Executed at every shell startup, user specific
/etc/bash.bashrc	Executed at every shell startup, all users
~/ .profile, .bash_profile, .bash_login	First file found executed at login, user specific
/etc/profile	Executed at login, all users (put PATHS here)
/etc/rc.local	Last startup script executed, runs command as su

Home

~/ .Xmodmap	Keyboard map
--------------------	--------------

Bins

/bin	Key programs like ls, cat, bash, ...
/sbin	Key programs for system management like ifconfig, mkfs, fdisk, ...
/usr/bin	Distribution managed programs
/usr/sbin	Distribution managed system programs
/usr/local/bin	User programs not managed by the distribution package
/usr/local/sbin	User system management programs, not managed by the distribution package

General Config

"Edit To Configure" or "Editable Text Configuration".

/etc/mailcap	Default programs for extensions
/etc/passwd	Users
/etc/groups	Groups
/etc/default	Boot script parameters that the end user or administrator is likely to change. /console-setup Set console (tty) character set, font size, ...
/etc/fstab	Filesystem table. To mount drive at startup, create dir in '/media' and append line like this: '/dev/sda1 /media/data ntfs user,fmask=0111,dmask=0000 0 2' (Check 'man fstab' for details).
/etc/alternatives	Links to default application versions (here you can change the default Java JDK)
/etc/issue	Name and version of distribution
/etc/fstab	Automatic mounts are handled by configuring the file
/etc/sudoers	Lists of users and the commands they can run with sudo (needs to be edited with visudo command)
/etc/apt	/sources.list List of places where to look for packages

Services

/etc/init/ , ~/ .init/	Init Upstart init daemon job configuration
/etc/init.d	Folder with service scripts, that get executed at start and end /halt Runs at the end
/etc/rc<level>.d	Startup scripts for different runlevels - Links to scripts in /etc/init.d - S85httpd -> S means startup, K is for stop. (To disable service just change S for K)
/etc/rc.local	Last initialization file executed - Put your commands here
/etc/init/ssh.conf	Sshd config
/etc/ssh/sshd_config	Sshd config
/etc/crontab	System-wide crontab
/etc/cron.hourly , /etc/cron.daily , ...	Links to scripts that will execute periodically. Scripts within a cron directory are run alphabetically.
/etc/rsyslog.conf rsyslog.d/50- default.conf	Log conf (need to restart rsyslogd after edit)
/etc/syslog.conf	Configuration information for syslogd

Network

/etc/resolv.conf	Dns information
/etc/sysconfig	/networking/devices/ifcfg-eth0 Use ifcfg to configure a particular interface
/etc/services	List of internet services with their port numbers
/etc/NetworkManager	/NetworkManager.conf Configuration file

Proc

Various information about the system.

/proc/cpuinfo	Information about the CPU
/proc/modules	information about which kernel-modules are loaded on your system
/proc/net	Network related /route Routing table /netstat Displays contents of /proc/net files
/proc/iomem	Neat memory map
/proc/partitions	Partitions info
/proc/acpi	/battery/BAT1/info Battery info /ac_adapter/ACAD/state Adapter info /wakeups List of devices that can

```
sudo sh -c "echo USB1 > /proc/acpi/wakeup"
```

wake up your machine
via acpi
Enable device USB1 to
wakeup computer from
sleep/suspend

/proc/net/wireless Wireless connection info

Uusr

"Unix System Resources"

/usr/lib **/jvm** Java JREs and JDKs
/usr/share **/man** Man pages
/bash-completion Bash completion functions

Sbin

The "system-administrator's bin file". Hosts programs that would be in /bin if they didn't have "root-only" access permissions.

Var

"Variable"

/var/log System logs in here
/auth.log Logins
/syslog Most of the rest of the logs
/var/spool Contains data which is awaiting some kind of later processing

Boot

Kernels.

/boot/grub/menu.lst Grub configuration file
/etc/default/grub Grub configuration file

Git

Git Mantra

```
git init
git add <file> OR git add .
git status
git commit -am "<commit_message>"
```

Clone From Github

git clone **git@github.com:<user>/<project>** Download repo (later you keep refreshing with 'git pull origin master') -> You need SSH key. If you don't want, use <https://github.com/<user>/<repo>> for address.

Generate Ssh Key

1. Check for existing keys: `cd ~/.ssh; ls -al`
2. Generate new key: `ssh-keygen -t rsa -C "your_email@example.com"`
3. Add your key to the ssh-agent: `ssh-add ~/.ssh/id_rsa`
4. Add your key to GitHub: copy contents of `~/.ssh/id_rsa.pub` and paste them into key field at 'Account settings' > 'SSH Keys' > 'Add SSH key'.

Add To Github

```
# Create remote repository on website.
git remote add origin git@github.com:<user>/<project>.git
git pull origin master
git push origin master
# Sometimes also: git push --set-upstream origin master
```

Remote

```
git remote      update      Get info about state of remote
                  show origin Print address of the origin
                  set-url origin <origin> 'git@github.com:<user>/<repo>.git' - Change
the url of origin, ssh key needed;
'https://www.github.com/<user>/<repo>.git'
- Same, but without key.

git status -    Check if everything up-to-date
uno

git fetch; git Checkout remote branch
checkout
<branch>
```

Tags

```
git push --tags Push tags
git fetch --tags Pulling tags (automatically if on the same branch and there is a new commit?)
```

Undo

```
git reset      --hard HEAD~1 Delete last commit and all of its changes
                  HEAD~1      Delete last commit but keep your changes
```

Also Useful

```
git checkout    Retrieve deleted file
HEAD^ <file>

git rm --cached Untrack file without deleting it
<file>

git tag -a 0.9.1 Tag latest commit
-m "Version
0.9.1 release"

git tag          List local tags
chown -R <user>: In .git/objects
<group> * (sudo)

git format-patch Generate patch file
-l <sha>

git rev-parse    Get sha of head
HEAD

git revert

git describe     Print version and hash of HEAD
git log --name-  Print changed files by commit
only --author=
<name>

git log <file>  Print files history
git ls-files     List files
git show         Take a peek at the older revision of the file
<revision>:
<file>

git diff         Compare two commits
<commit>
<commit>
```

git stash If you want to switch branches, but you don't want to commit your changes yet, you can 'stash' them

git stash apply Apply the changes you stashed

git stash list List all the stashes

git stash show -p stash@{0} Show the diff of most recent stash

git update-index --chmod=+x <file> Change files permissions

git config -l Print repos configuration settings

git config core.filemode false Ignores executable bit of the files

Checkout

git log > ../gitLog First save log to file

git checkout <hash> Then checkout previous versions

git checkout head Return to head

Github Md Format

![Alt text] (/doc/basket-stats.png?raw=true "<Description>") Insert image

Bisect

git bisect start

git bisect bad Tell git that current version is bad

git bisect good v25.0.2 Tell git the last good version you know about. Now git will checkout a version in between, so you can check it and tell:

git bisect bad/good This will continue until the commit that introduced the bug is found

git bisect reset Exit bisect mode

Tools

gitk Repo explorer

gitg A bit nicer version

tig Text based repo explorer

gitstats Generates stats for git repo, outputs HTML

Virtual Box

git config core.filemode false Ignores the filemode changes made by the host system

git config --global --unset https.proxy If problem pulling

Vim

+ <linenum>	Open file at line number
alt +<normal mode key>	Escape, key !!!!!!!!!!!!!!!
ctrl + [Escape
.	Execute last command again
;	Repeat the last character-wise search
\c	Case insensitive search
?	Search backward
V	Linewise visual mode
~	Switch case
>	Tab selection right
>>	Tab line right
P	Paste before cursor
x	Delete character
gF	Open file under cursor
K	Look up word under cursor in man pages
ctrl + v	Select visual box (block select)
:e	Reload file
:sav	Save file as and keep new file open (save as)

Help

ctrl +]	Follow link
ctrl + o	Go back
:q	Exit help

Movement

e	End of word
E	End of WORD
W	Start of WORD
ge	End of previous word
), (Sentence
{, }	Paragraph
]], [[Section
:<num>	Goto line number
ctrl + o	Go to previous location
ctrl + i	Go to next location
%	Jump to matching bracket

Lines

0	Start of line
^, _	First non-blank of line
+, -	First non-blank of next/previous line
Enter	First non-blank of next line

Screen Lines

g0, g\$	Start/end of screen line
gm	Middle of screen line
gk, gj	Up/down one screen line

Page Up/Down

H, M, L	Go to top/middle/bottom of screen
ctrl F, B	Page up/down
ctrl D, U	Half page up/down
ctrl E, Y	One more line at bottom/top
z Enter, z., z-	Reposition line with cursor at top/middle/bottom

Search

*, #	Search forward/backward for exact word under cursor
g*, g#	Same, but even when word is embedded
%	Find match of current brace, quote,...
fx, Fx	Move cursor forward/backward to x on current line
tx, Tx	Same, but to one char before x
;/,	Repeat/reverse last
:%s/old/new/gc	Replace, like sed, c means with conformations

Marks

''	Move to position of last edit of file
`.	Move to last change in file
`0	Position where you last exited vim

Insert Mode Commands

ctrl+h	Backspace
ctrl+u	Delete line
ctrl+w	Delete previous word

Macros

q<x>	Record actions (macro) into x
q	Stop recording macro
@<x>	Execute x (macro)

Registers

"ayy	Copy line into register a
"ap	Paste register a
:reg	Access all registers

Set Command

:set <x>	Set x
:set no<x>, <x>!	Unset x
:set <x>=value	Assign x
:set <x>-=value	Remove value from <x>
:set all	Print all values
:set <x>?	Print x

Set Command Operands

autoident, ai	Autoident (noai)
backup, bk	Back file up before overwrite (nobackup)
ignorecase, ic	Ignore case in search (noic)

number, nu	Display line numbers (nonu)
relativenumber, rnu	Display relative numbers (nornu)
shiftwidth, sw	Number of spaces added when indenting (8)
tabstop, ts	Tab width (8)
wrap	Wrap lines (wrap)
wrapscan, ws	Search wraps around file (ws)
mouse=a	Mouse mode (use shift when selecting to copy to clipboard)
linebreak	Do not break words
:set iskeyword=.	Remove dot from words part (two words if separated with dot)

Edit Commands

[n] operation	If both n and m are specified then n x m
[m] motion	
c, d, y	Change, delete, yank
C, D, Y	Till the end of line
cc, dd, yy	Current line
cf<x>, df<x>, yf<x>	Forward up to x
c), d), y)	Sentence
~	Change case of character
g~w	Switch case of a word
gu, gU	To lower/upper case
[p	Paste but match current indentation
r	Replace character
S	Substitute entire line
x,X	Delete character/delete back
.	Repeat last change
ctrl+a, ctrl+x	Increment/decrement number under cursor

Automatic Linebrake (Wrap)

gq	Formats (wraps) selected text
gqq	Format current line
:set tw=72	Set text width

Advanced

tw=72 fo=cq wm=0	No automatic wrapping, rewrapping will wrap to 72
tw	Controls the wrap width you would like to use
fo	Controls whether or not automatic text wrapping is enabled, depending whether or not the t flag is set
wm	Controls when to wrap based on terminal size

Colorscheme

:colorscheme	darkblue, torte Nice, darker
	slate, default Less contrast
:highlight Normal	Set light background
ctermbg=grey	

Spellcheck

:set spell	Turn spellcheck on
spelllang=en_us	
:set nospell	Turn off
:setlocal spell	Set dictionary
spelllang=en_us	
z=	Show suggestions for misspelled word
]s	Go to next misspelled word
[s	Go to previous misspelled word

Tabs

:tabe <file>	Open new tab
gt, gT	Go to next/previous tab
ctrl+pgup/pgdn	Switch tab
vim -p	Open one tab page per file
ZZ	Save and close tab (same as :wq)

Splits

:vsp	Split vertically
ctrl-w, direction	Move to split

Autocomplete

ctrl+n	Show autocomplete suggestions
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Hexdump

:%!xxd	Convert to hex
:%!xxd -r	Convert back

Vundle

:PluginInstall	Install plugins
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Reformat Code

=	Fix indentation
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Misc

Piratebay

torrents.thepiratebay.sx/7532474/Cabin.torrent Download torrent file

Java

javac -cp <path>:<path>...	Tell Java where libraries are located
java -Xmx6g	Reserve 6 giga for process

myprogram

-jar <jar> Execute jar
-cp .:<path>:<path>... Tell java where libraries are located, you also need to pass the location of class among paths, hence .:

export Set heap space globally

_JAVA_OPTIONS=-Xmx1000m

appletviewer Run Java applet
<page>.html

jps -lvm List java processes

jmap -histo:live Memory map
<pid>

jvisualvm Profiler

jar cvfe Create executable jar

"bla.jar"
<main_class>
***.class**

jar xf <jar> Extract files from jar

jar tf <jar> Print contents of a jar

Install Oracle Jdk

```
sudo apt-get remove openjdk*
sudo add-apt-repository ppa:webupd8team/java
sudo apt-get update
sudo apt-get install oracle-java7-installer
```

Install Oracle Jdk On Debian

```
echo "deb http://ppa.launchpad.net/webupd8team/java/ubuntu precise main" | sudo tee /etc/apt/sources.list.d/
echo "deb-src http://ppa.launchpad.net/webupd8team/java/ubuntu precise main" | sudo tee -a /etc/apt/sources.
sudo apt-key adv --keyserver hkps://keyserver.ubuntu.com:80 --recv-keys EEA14886
sudo apt-get update
sudo apt-get install oracle-java7-installer
sudo apt-get install oracle-java7-set-default
```

Firefox

about:config Layout.css.devPixelsPerPx default zoom (-1.0)

Xrandr

xrandr **--output VGA1 --primary** Changes primary screen
--output VGA1 --auto --pos 0x0 '--output LVDS1 --auto --right-of VGA1' - To change their relative positions
-q List devices
--auto Reset
--output LVDS1 --off Turn off laptop screen
--output [VGA|HDMI] --mode 1600x1200 24" 16x12 on

Mount Iso

```
sudo mkdir /media/x
sudo mount -o loop <path_to_iso> /media/x
```

Eclipse

ctrl+l Quick fix
alt+shift+s Source submenu
ctrl+F7, esc Close pop-up console window
ctrl+7, ctrl+/, F3 Toggle comment
F3 Goto definition

objectaid UML plugin

Wine

winecfg Drives tab to set drive
wine explorer Run wine app in virtual desktop
/desktop=abalaba,1024x768
app.exe
reason on wine: down alt Open menu
down
regedit Registry editor

Cygwin

[cygwin] ssh-
host-cofig
[command prompt]
net start sshd
[any] ssh Run sshd (use windows password)
<windows_username
- CASE
MATTERS!>@<host>

Golang

go **build** Compile packages and dependencies
 clean Remove object files
 env Print Go environment information
 fix Run go tool fix on packages
 fmt Run gofmt on package sources
 get Download and install packages and dependencies (first you need to set
 GOPATH to dir where packages will get downloaded)
 install Compile and install packages and dependencies
 list List packages
 run Compile and run Go program
 test Test packages
 tool Run specified go tool
 version Print Go version
 vet Run go tool vet on packages

syntax highlight 'https://github.com/jnwhiteh/vim-golang'
for gedit 'sudo cp /usr/share/gtksourceview-3.0/language-specs/go.lang
 /usr/share/gtksourceview-2.0/language-specs/'
simple ncurses Go get github.com/nsf/termbox-go

Repackaging A Linux Install Iso

```
# Mount ISO
mkdir -p /mnt/linux
mount -o loop /tmp/linux-install.iso /mnt/linux

# Copy contents to a working directory
cd /mnt/
tar -cvf - Linux | (cd /var/tmp && tar -xf - )

# Make your changes and repack (on Debian use genisoimage). -c passes the name of the file that will be c
cd /var/tmp/linux
mkisofs -o ../your-new.iso -b isolinux/isolinux.bin -c isolinux/boot.cat -no-emul-boot -boot-load-size 4 -bc
```

Gdb

gdb <cmd> Start gdb

run <arguments> Start debugging
run < <file> Run with piped input
up Follow trace
print <variable> Print variable

Coredump

ulimit -c Set core file limit to unlimited
unlimited
gdb <cmd> core Debug core file with gdb

Chrome

F6, ctrl+l, Go to address bar
alt+d