

Linux and Bash Command Cheat Sheet: The Basics

Getting information

return your user name

`whoami`

return your user and group id

`id`

return operating system name, username, and other info

`uname -a`

display reference manual for a command

`man top`

get help on a command

`curl --help`

return the current date and time

`date`

Monitoring performance and status

list selection of or all running processes and their PIDs

`ps`

`ps -e`

display resource usage

`top`

list mounted file systems and usage

`df`

Working with files

copy a file

`cp file.txt new_path/new_name.txt`

change file name or path

`mv this_file.txt that_path/that_file.txt`

remove a file verbosely

`rm this_old_file.txt -v`

create an empty file, or update existing file's timestamp

`touch a_new_file.txt`

change/modify file permissions to 'execute' for all users

`chmod +x my_script.sh`

get count of lines, words, or characters in file

`wc -l table_of_data.csv`

`wc -w my_essay.txt`

`wc -m some_document.txt`

return lines matching a pattern from files matching a filename pattern - case insensitive and whole words only

`grep -iw hello *.txt`

return file names with lines matching the pattern 'hello' from files matching a filename pattern

`grep -l hello *.txt`

Navigating and working with directories

list files and directories by date, newest last

```
ls -lrt
```

find files in directory tree with suffix 'sh'

```
find -name '*.sh'
```

return present working directory

```
pwd
```

make a new directory

```
mkdir new_folder
```

change the current directory: up one level, home, or some other path

```
cd ../
```

```
cd ~ or cd
```

```
cd another_directory
```

remove directory, verbosely

```
rmdir temp_directory -v
```

Printing file and string contents

print file contents

```
cat my_shell_script.sh
```

print file contents page-by-page

```
more ReadMe.txt
```

print first N lines of file

```
head -10 data_table.csv
```

print last N lines of file

```
tail -10 data_table.csv
```

print string or variable value

```
echo "I am not a robot"
```

```
echo "I am $USERNAME"
```

Compression and archiving

archive a set of files

```
tar -cvf my_archive.tar.gz file1 file2 file3
```

compress a set of files

```
zip my_zipped_files.zip file1 file2
```

```
zip my_zipped_folders.zip directory1 directory2
```

extract files from a compressed zip archive

```
unzip my_zipped_file.zip
```

```
unzip my_zipped_file.zip -d extract_to_this_direcory
```

Performing network operations

print hostname

```
hostname
```

send packets to URL and print response

```
ping www.google.com
```

display or configure system network interfaces

```
ifconfig  
ip
```

display contents of file at a URL

```
curl <url>
```

download file from a URL

```
wget <url>
```

Bash shebang

```
#!/bin/bash
```

Pipes and Filters

chain filter commands using the pipe operator

```
ls | sort -r
```

pipe the output of manual page for ls to head to display the first 20 lines

```
man ls | head -20
```

Shell and Environment Variables

list all shell variables

```
set
```

define a shell variable called my_planet and assign value Earth to it

```
my_planet=Earth
```

display shell variable

```
echo $my_planet
```

list all environment variables

```
env
```

environment vars: define/extend variable scope to child processes

```
export my_planet  
export my_galaxy='Milky Way'
```

Metacharacters

comments

```
# The shell will not respond to this message
```

command separator

```
echo 'here are some files and folders'; ls
```

file name expansion wildcard

```
ls *.json
```

single character wildcard

```
ls file_2021-06-?.json
```

Quoting

single quotes - interpret literally

```
echo 'My home directory can be accessed by entering: echo $HOME'
```

double quotes - interpret literally, but evaluate metacharacters

```
echo "My home directory is $HOME"
```

```
# backslash - escape metacharacter interpretation
echo "This dollar sign should render: \$"
```

I/O Redirection

```
# redirect output to file
echo 'Write this text to file x' > x

# append output to file
echo 'Add this line to file x' >> x

# redirect standard error to file
bad_command_1 2> error.log

# append standard error to file
bad_command_2 2>> error.log

# redirect file contents to standard input
$ tr "[a-z]" "[A-Z]" < a_text_file.txt

# the input redirection above is equivalent to
$cat a_text_file.txt | tr "[a-z]" "[A-Z]"
```

Command Substitution

```
# capture output of a command and echo its value
THE_PRESENT=$(date)
echo "There is no time like $THE_PRESENT"
```

Command line arguments

```
./My_Bash_Script.sh arg1 arg2 arg3
```

Batch vs. concurrent modes

```
# run commands sequentially
start=$(date); ./MyBigScript.sh ; end=$(date)

# run commands in parallel
./ETL_chunk_one_on_these_nodes.sh & ./ETL_chunk_two_on_those_nodes.sh
```

Scheduling jobs with Cron

```
# open crontab editor
crontab -e

# job scheduling syntax
m h dom mon dow command
minute, hour, day of month, month, day of week
* means any

# append the date/time to file every Sunday at 6:15 pm
15 18 * * 0 date >> sundays.txt

# run a shell script on the first minute of the first day of each month
1 0 1 * * ./My_Shell_Script.sh

# back up your home directory every Monday at 3 am
0 3 * * 1 tar -cvf my_backup_path\my_archive.tar.gz $HOME\
```

deploy your cron job
Close the crontab editor and save the file

list all cron jobs
crontab -l