

R² Academy



Command Line Crash Course



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- Launch Terminal/Shell
 - macOS
 - Windows
 - Linux

- Shell Commands
 - File management
 - System management
 - Navigating file system
 - Help/Documentation
 - Input/Output
 - Search & Regular expression

- Use RStudio terminal
- Run commands from R

Shell is a text based application for viewing, handling and manipulating files. It takes in commands and passes them on to the operating system. It is also known as:

- CLI (Command Line Interface)
- Terminal
- Bash (Bourne Again Shell)

It is sufficient to know a handful of commands to get started with the shell.



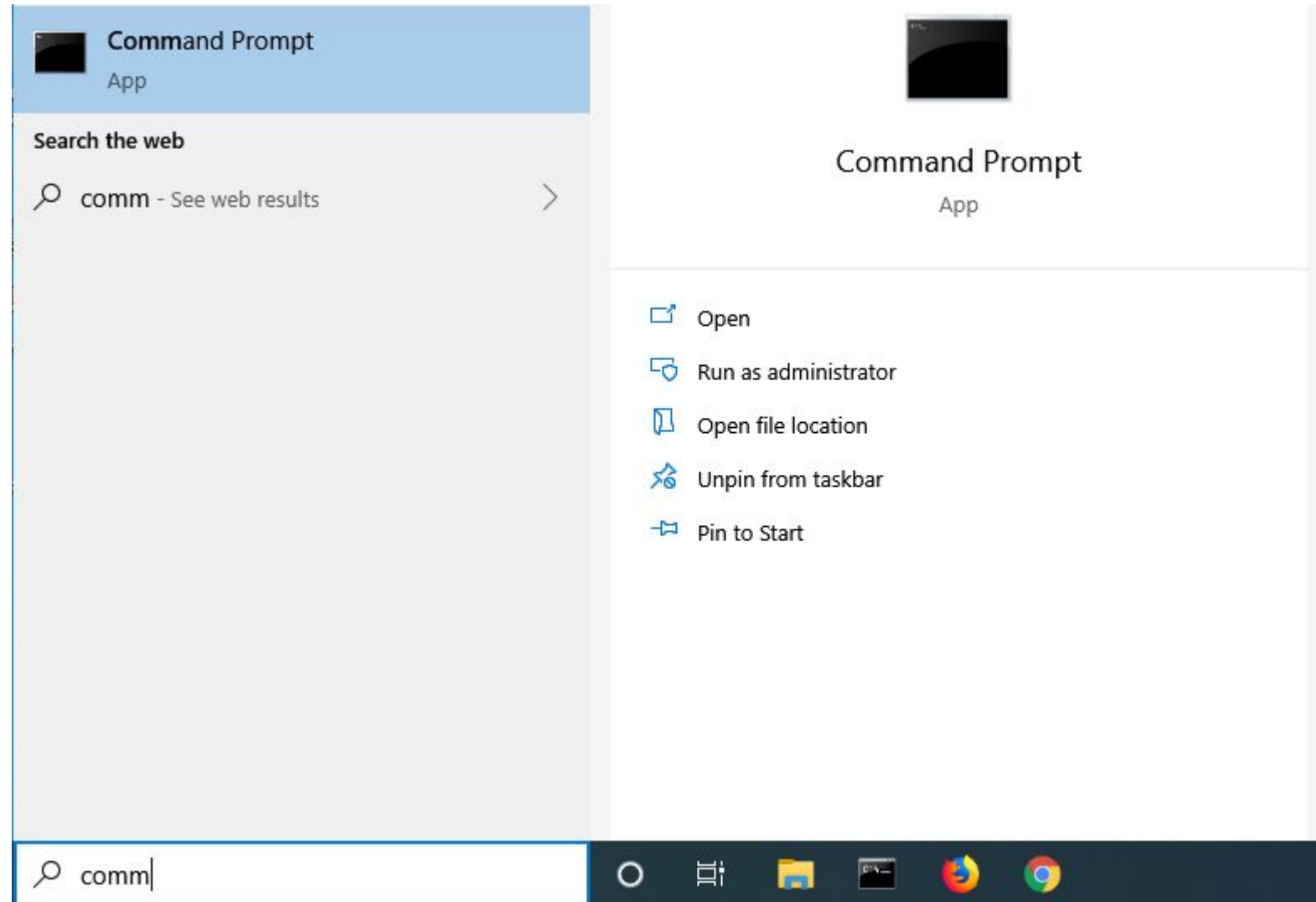
Version Control

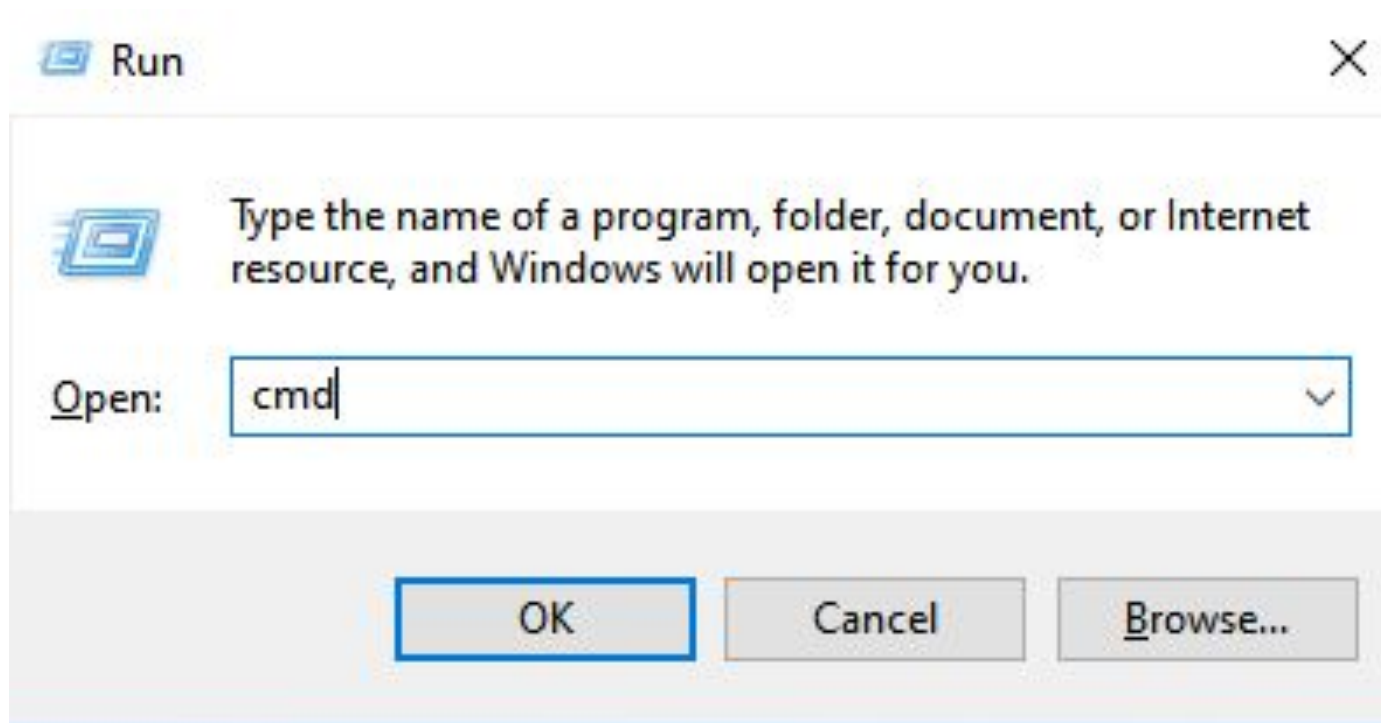


Cloud Services

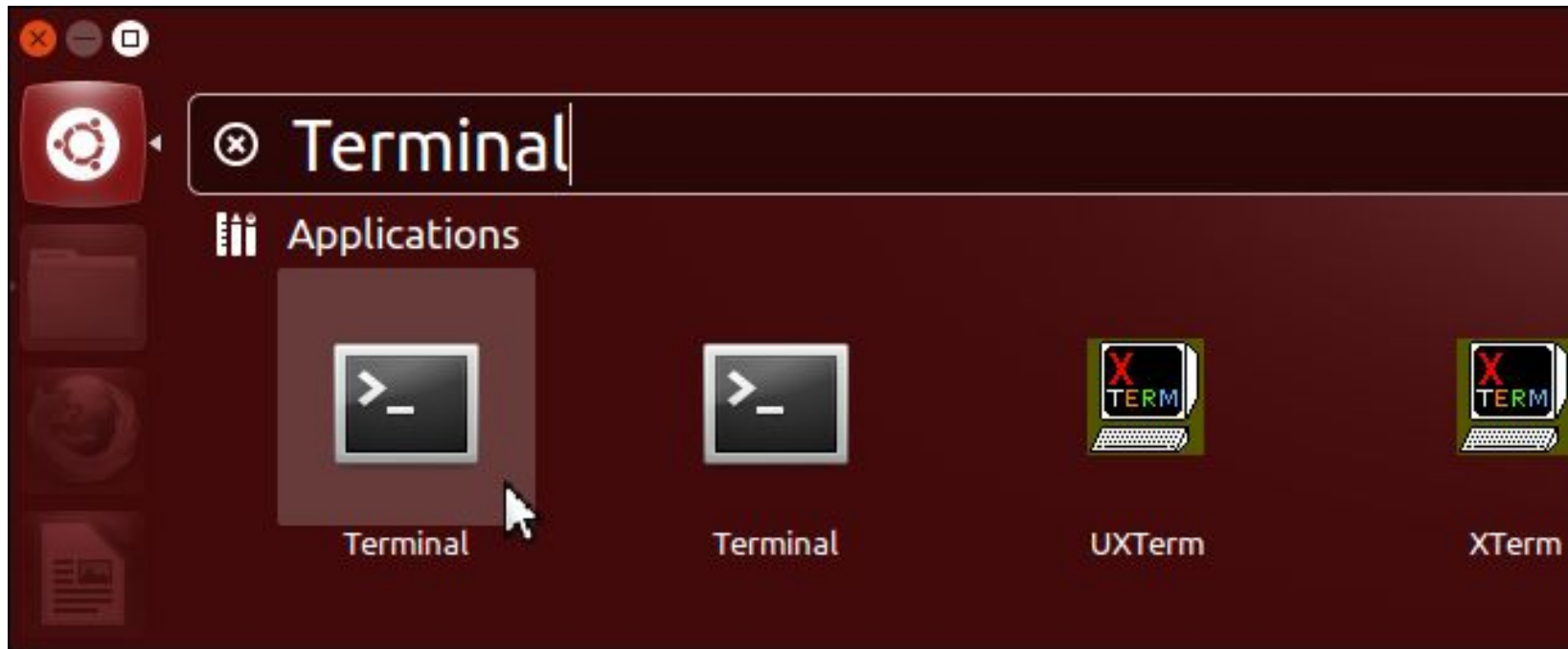
- Applications -> Utilities -> Terminal

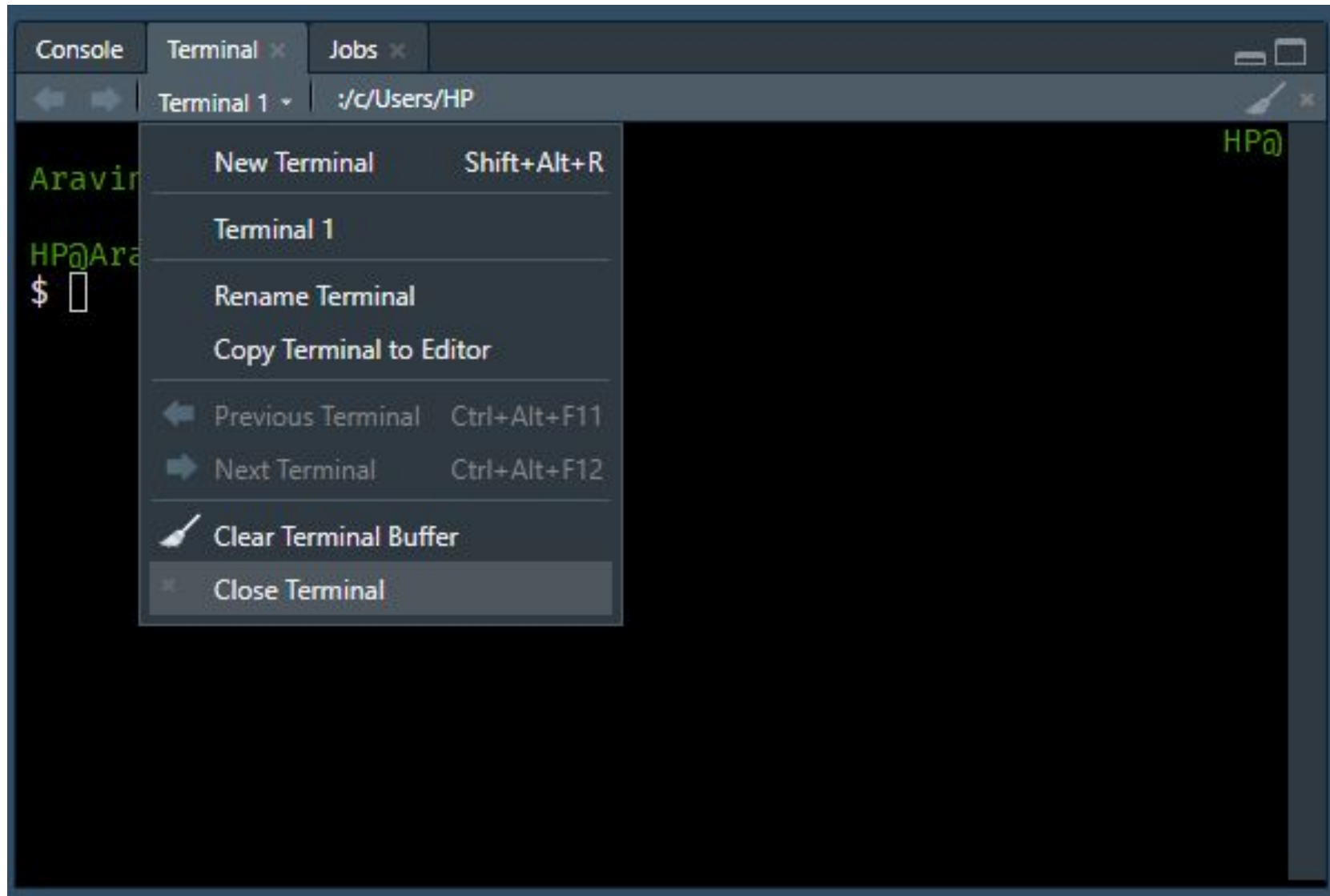






- Applications -> Accessories -> Terminal
- Applications -> System -> Terminal





Command	Description
whoami	List files & folders
date	Print working directory
cal	Create directory
clear	Remove/delete directory

Command	Description
ls	List files & folders
cd/pwd	Print working directory
mkdir	Create directory
rmdir	Remove/delete directory

Command	Description
ls	List directory contents
ls -l	List files one per line
ls -a	List all files, including hidden files
ls -la	Display permission, ownership, size & modification date
ls -lh	Long format with size displayed in human readable units
ls -lS	Long format list sorted by size
ls -ltr	Long format list sorted by modification date

Command	Description
touch	Create empty file/change timestamp
cp	Copy file(s)
mv	Rename/move file
rm	Remove/delete file
diff	Compare files

Command	Description
<code>mv</code>	Move or rename files & directories
<code>mv -f</code>	Do not prompt for confirmation before overwriting files
<code>mv -i</code>	Prompt for confirmation before overwriting files
<code>mv -n</code>	Do not overwrite existing files
<code>mv -v</code>	Move files in verbose mode

Command	Description
rm	Remove files or directories
rm -r	Recursively remove a directory & all its subdirectories
rm -rf	Forcibly remove directory without prompting for confirmation or showing error messages
rm -i	Interactively remove multiple files, with a prompt before every removal
rm -v	Remove files in verbose mode, printing a message for each removed file

Command	Description
diff	Compare files & directories
diff -w	Compare files; ignoring white spaces
diff -y	Compare files; showing differences side by side
diff -u	Compare files; show differences in unified format
diff -r	Compare directories recursively
diff -rq	Compare directories; show the names of files that differ

Command	Description
echo	Display messages
cat	Prints content of a file
head	Prints the first 10 lines of a file by default
tail	Prints the last 10 lines of a file by default
more	Display more
less	Display less
sort	Sort a file in ascending order

Command	Description
echo	Print text message
echo -n	Without the trailing newline
echo > file	Write message to a file
echo >> file	Append a message to a file
echo -e	Enable interpretation of special characters

Command	Description
cat	Print and concatenate files
cat >	Concatenate several files into the target file
cat >>	Append several files to the target file
cat -n	Number all output lines

Command	Description
head	Output the first parts of a file
head -n	Output the first n lines of a file
head -c	Output the first c bytes of a file
head -n -5 file	Output everything but the last 5 lines of a file
head -c -3 file	Output everything but the last 3 bytes of a file

Command	Description
tail	Display the last part of a file
tail -n num file	Show the last num lines of a file
tail -n +num file	Show all file since num line
tail -c num file	Show last num bytes in a file
tail -f file	Keep reading file until Ctrl + C
tail -f file	Keep reading file until Ctrl + C; even if the file is rotated

Command	Description
more	Open a file for interactive reading; allowing scrolling & search
space	Page down
/search	Search for a string; press n to go to the next match
q	Quit

Command	Description
less	Open a file for interactive reading; allowing scrolling & search
space	Page down
b	Page up
G	Go to end of file
g	Go to start of file
/search	Forward search
?search	Backward search
n	Go to next match
N	Go to previous match
q	Exit

Command	Description
sort file-name	Sort lines of text files
sort -r file-name	Sort a file in descending order
sort --ignore-case file-name	Ignore case
sort -n file-name	Use numeric order for sorting
sort -u file-name	Preserve only unique lines

Command	Description
grep	Search for a given string in a file
find	Find files using filenames
which	Search for binary executable files

Command	Description
grep	Matches patterns in input text
grep -i	Ignore case
grep -RI	Search recursively for an exact string
grep -E	Use extended regular expression
grep -Hn	Print file name & corresponding line number for each match
grep -v	Invert match for excluding specific strings

Command	Description
find	Find files or directories under the given directory; recursively
find directory -name '*.txt'	Find files by extension
find directory -type d -iname folder_name	Find directories matching a given name, in case-insensitive mode:
find directory -type d -name folder_name	Find directories matching a given name, in case-sensitive mode:

Command	Description
Ctrl + C	Halts the current command
Ctrl + D	Logout of current session (exit)
Ctrl + W	Erases one word in current line
Ctrl + U	Erases whole line
Ctrl + R	Bring up a recent command

Command	Description
wget	Download from the internet
curl	Download files from the internet
hostname	Name of current host
ping	Ping a remote host
nslookup	Name server and ip details

Command	Description
wget	Download files from the web
wget url	Download contents of a url to a file
wget -o file_name url	Download contents of a url to a file
wget -c url	Continue an incomplete download
wget -P folder_name -i urls.txt	Download all urls stored in a text file to a specific directory
wget --limit-rate=300	Limit download speed
wget --tries=100	Limit number of retries

Command	Description
curl	Transfers data from or to a server
curl url	Download the contents of a url
curl url -o file_name	Download the contents of a url to a file

Command	Description
finger	Information about user last login, home directory & full name
groups	Which groups a user is member of?
who	List the currently logged in users
whoami	Get username & group information

Command	Description
tar	Create, extract or view tar archive
unzip	To extract a zip file
gzip	Compress file

Command	Description
tar	Archiving utility
tar -cf target.tar file1 file2	Create an archive from file
tar -czf target.tar.gz file1 file2	Create a gzipped archive
tar -xf target.tar -C folder_name	Extract an archive in a target directory
tar -xzf target.tar.gz	Extract a gzipped archive in the current directory
tar -tvf target.tar	List the contents of a tar file

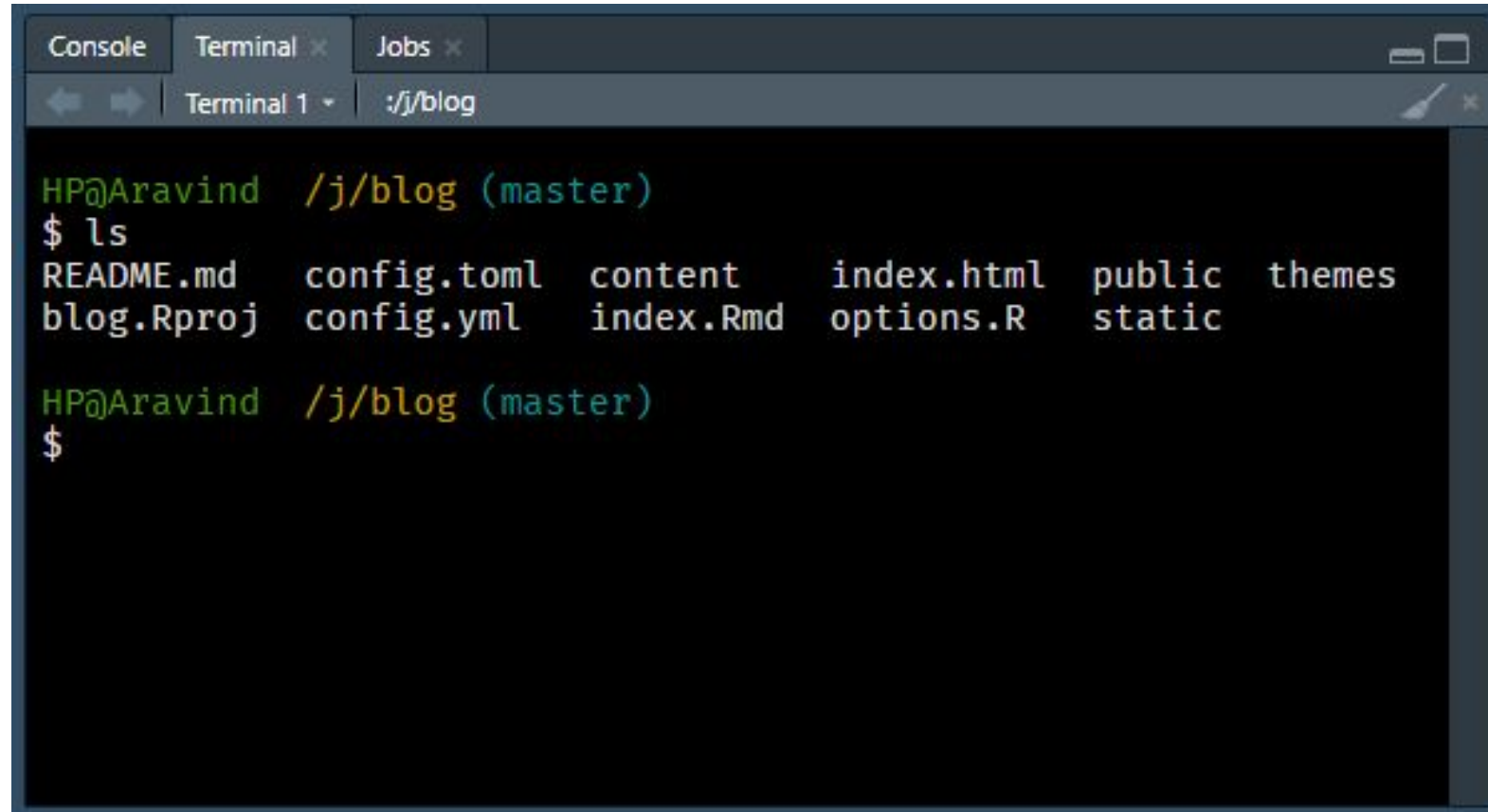
Command	Description
<code>unzip files</code>	Extract zip files
<code>unzip zipped_files -d target_directory</code>	Extract zip files to a given path
<code>gzip file.ext</code>	Compress a file
<code>gzip -d file.ext.gz</code>	Decompress a file
<code>gzip -c file.ext > compress_file</code>	Compress a file and specify the output file name

Command	Description
uname	Display important information about the system
free	Display free, used, swap memory in the system
df	Display file system disk space usage
exit	Exit the terminal
sudo	Run command as super user
shutdown	Shutdown the system

Command	Description
uname	Print details about the current machine and the operating system running on it
uname -mp	Hardware related information; machine & processor
uname -srv	Software related information; operating system, release number and version
uname -n	Nodename of the system
uname -a	Print all available information system
uname	Print details about the current machine and the operating system running on it

Command	Description
time	See how long a command takes to execute
sleep	Delay activity in seconds
sleep 1m	Delay activity in minutes
sleep 1h	Delay activity in hours
history	Display command history list with line numbers
history -c	Clear the command history list

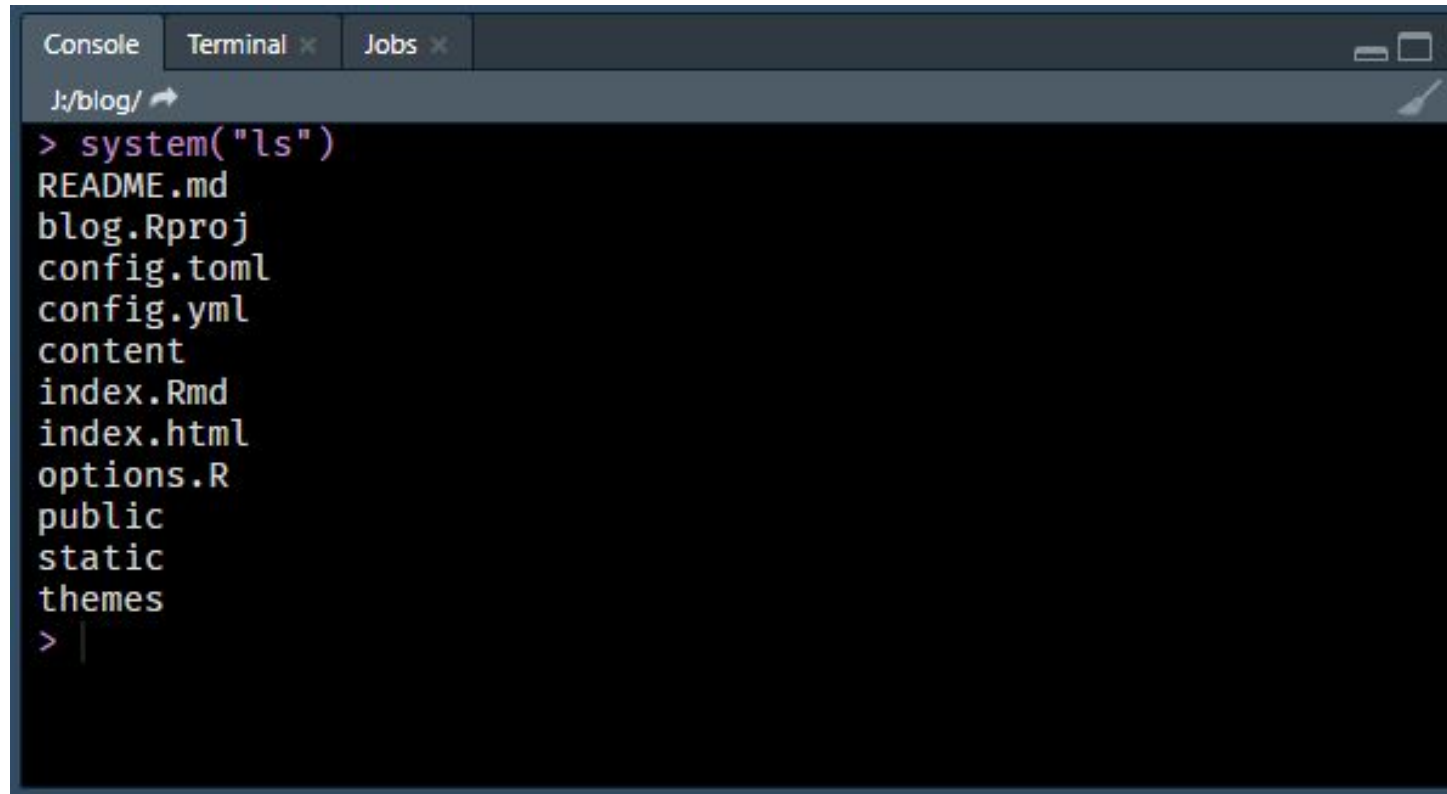
Command	Description
fortune	Poignant, inspirational and silly phrases
yes	Output a string repeatedly until killed
banner	ASCII banner
rev	Reverse each character



A terminal window with a dark background and light text. The window title bar shows 'Terminal 1' and the current directory path ':/j/blog'. The terminal content shows a user prompt 'HP@Aravind' followed by the directory name '/j/blog (master)'. The user enters the command '\$ ls', and the terminal outputs a list of files and directories: 'README.md', 'blog.Rproj', 'config.toml', 'config.yml', 'content', 'index.Rmd', 'index.html', 'options.R', 'public', and 'themes', 'static'. The prompt '\$' appears again at the end of the output.

```
HP@Aravind /j/blog (master)
$ ls
README.md  config.toml  content      index.html  public  themes
blog.Rproj config.yml   index.Rmd   options.R   static

HP@Aravind /j/blog (master)
$
```



```
Console Terminal x Jobs x
J:/blog/ ↗
> system("ls")
README.md
blog.Rproj
config.toml
config.yml
content
index.Rmd
index.html
options.R
public
static
themes
> |
```

- Shell is a text based application for viewing, handling and manipulating files
- It is also known by the following names:
 - CLI (Command Line Interface)
 - Terminal
 - Bash (Bourne Again Shell)
- Useful in several scenarios including:
 - Version Control
 - Cloud Services
- RStudio includes a Terminal
- Use `system()` in R to run commands

- Shell scripting
- Editing files
- Using sudo
- File Permission
- User Information
- Pipes
- awk
- sed

- http://www2.imm.dtu.dk/courses/02333/cygwin_tutorial/index.html
- https://tutorial.djangogirls.org/en/intro_to_command_line/
- <https://ss64.com/>
- <https://www.learnenough.com/command-line-tutorial>
- <https://blog.rstudio.com/2017/08/11/rstudio-v1-1-preview-terminal/>
- <https://support.rstudio.com/hc/en-us/articles/115010737148-Using-the-RStudio-Terminal>



Thank You

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