

Bash Cheat Sheet

Essential commands and syntax for efficient terminal usage and scripting

40+

Essential Commands

90%

Server Usage

1-2 Days

To Learn Basics

Print to PDF

File Operations

```
ls [options] [directory]
```

List directory contents

```
cd [directory]
```

Change working directory

```
pwd
```

Print current working directory

```
cp [options] source destination
```

Copy files/directories

```
mv [options] source destination
```

Move/rename files/directories

```
rm [options] file
```

Remove files/directories

```
mkdir [options] directory
```

Create new directory

```
touch filename
```

Create empty file or update timestamp

Pro Tip: Use `ls -l` for detailed listing, `ls -a` to show hidden files

File Viewing

```
cat [options] file
```

Display entire file

```
less [options] file
```

View file interactively (press `q` to quit)

```
head [options] file
```

Display first lines of file

```
tail [options] file
```

Display last lines of file

```
tail -f file
```

Follow file as it grows (great for logs)

```
grep [options] pattern [file]
```

Search for patterns in files

```
find [path] [expression]
```

Search for files/directories

Pro Tip: Use `grep -r "pattern"` directory to search recursively

Permissions

```
chmod [options] mode file
```

Change file permissions

```
chown [options] user[:group] file
```

Change file owner/group

```
sudo command
```

Execute command as superuser

```
su [username]
```

Switch user

```
passwd [username]
```

Change user password

Permission Codes: 4 = read, 2 = write, 1 = execute
Example: `chmod 755 file` (rwxr-xr-x)

Networking

```
ping [options] host
```

Test network connectivity

```
ifconfig
```

Display network interfaces (deprecated)

```
ip [options]
```

Modern network configuration tool

```
netstat [options]
```

Network statistics

```
ssh [user@]host
```

Secure shell remote login

```
scp [options] source target
```

Secure file copy

```
wget [options] url
```

Download files from web

```
curl [options] url
```

Transfer data from URLs

Process Management

```
ps [options]
```

Display current processes

```
top
```

Interactive process viewer

```
htop
```

Enhanced process viewer (if installed)

```
kill [options] PID
```

Terminate process by ID

```
killall [options] process_name
```

Terminate processes by name

```
bg [job_spec]
```

Run job in background

```
fg [job_spec]
```

Bring job to foreground

```
jobs
```

List background jobs

Pro Tip: Use `ps aux | grep process` to find specific processes

Scripting Basics

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

Shebang - first line in script

```
# Comment
```

Single-line comment

```
variable=value
```

Set variable (no spaces around =)

```
echo "Text $variable"
```

Print output

```
read variable
```

Read user input

```
if [ condition ]; then ... fi
```

If conditional

```
for var in list; do ... done
```

For loop

```
while [ condition ]; do ... done
```

While loop

```
function_name() { ... }
```

Define function

Variables: `$0` = script name, `$1` = first argument, `$#` = argument count

Redirection

```
command > file
```

Redirect stdout to file (overwrite)

```
command >> file
```

Redirect stdout to file (append)

```
command < file
```

Redirect stdin from file

```
command 2> file
```

Redirect stderr to file

```
command > file 2>&1
```

Redirect stdout and stderr to file

```
command1 | command2
```

Pipe stdout of `command1` to stdin of `command2`

```
command1 && command2
```

Run `command2` if `command1` succeeds

```
command1 || command2
```

Run `command2` if `command1` fails

Archives

```
tar cf archive.tar files
```

Create tar archive

```
tar xf archive.tar
```

Extract tar archive

```
tar czf archive.tar.gz files
```

Create gzipped tar archive

```
tar xzf archive.tar.gz
```

Extract gzipped tar archive

```
gzip file
```

Compress file (creates `file.gz`)

```
gunzip file.gz
```

Decompress file

```
zip archive.zip files
```

Create zip archive

```
unzip archive.zip
```

Extract zip archive