Linux Cheatsheet

Basic Keyboard Commands

Key	What they do
Tab	A very handy key that can be used for autocompletion based on what you have typed. Pressing Tab twice will show you your alternatives.
↑	Show previously used commands
Ctrl + R	Reverse searching command
Ctrl + C	Stop the current command or program
Ctrl + D	Log out of current session, similar to **exit**
Ctrl + Shift + C \ V	Copy or paste selected text to or from the terminal

Notations

Notation	What it means
[value]	**value** is optional
<value>	**value** is mandatory

UNIX notations

The use of square brackets to denote optional command line argument is a common notation used in man pages and help pages in UNIX. Parameters that are not surrounded with square brackets means they are required verbatim.

e.g., The man page for git pull is

```
git pull [option] [<repository> [<refspec>...]]
```

Where pull is "an argument" but it's verbatim.

Basic Navigation

What is path

path is the location of the file or folder in question. There are two ways to describe the path of a file or folder. The absolute path that always start with / called root, and the relative path that starts from the present working directory (pwd), i.e., where you currently are.

For example:

```
/home/<user>/test-folder/file.txt
```

is an absolute path to file.txt in the test-folder in the user's home directory and for the relative path if you start from your home directory i.e., ~:

```
./test-folder/file.txt
```

is the same file.

Command	What it does
ls [-a][-l] [path]	Perform a listing of the given path or your current directory if **path** is not defined
cd [path]	Change into the given **path** or into your home directory if **path** is not defined
~	Is synonymous to your home directory, i.e., **/cshome/<csid>**

Flag	What does it means
-a	Shows everything including hidden files and folders
-l	Long form which includes size, ownership, date of change, etc

File Manipulation

Command	What it does
mkdir <directory name>	Create a directory based on the directory name
rmdir <directory name>	Remove a directory based on the directory name (note must be empty).
cp [-r] <source> <destination>	Copy the source file or folder to the destination.
mv <source> <destination>	Move the source file or directory to the destination. This is also the rename command.
rm [-r] [-f] <path>	Remove a file or directory

Flag	What does it mean
-r	Recursive, i.e., goes through the files and directories within directories.
-f	Force, certain files and folders will complain if you try to delete them without user permission or verification. Force will ignore all of that.

Note

Be careful on your path as this action cannot be undone.

Compression

A lot of your programming assignments require you to submit your assignments in a compressed format. There are two types of compression format: **tar** and **zip**, tar is primarily used on Linux while zip is mostly used in Windows. On the lab machines you can use both.

Command	What it does
tar czf <file.tar.gz> <file(s)>	Create a tar file that is called whatever **file.tar.gz** is with whatever **file(s)** you typed afterwards.
tar xzf <file.tar.gz>	Extract the tar file.
zip <zipname.zip> <file(s)>	Zip **file(s)** into a zip archive named **zipname.zip**
unzip <zipname.zip>	Unzip the zip file named **zipname.zip** to the present working directory.

SSH

If you want to test your code on the school's server from anywhere with an internet connection you can **ssh** onto the university's server

Command	What it does
ssh <user>@<host>	Connect to a **host** as **user**

Undergraduate server

The hostname for U of A's undergraduate server is **ohaton.cs.alberta.ca**, you should be using this server to test all your assignments, unless it's stated otherwise by your instructor. Make sure that the SHA256 fingerprint is this: VyH9b00aZNbQXN7P4sbdxART6WdjBl81rTgtOP0pRSc, so you are connecting to the right server.

Copying files over using scp

If you want to transfer files from one location to another using the terminal you can use a program called **scp** (Secure Copy).

Command	What it does
scp [-r] <file(s)> <user>@<server>:<path>	Copies **file(s)** from the local computer to the **server** using **user** for user authentication, similar to ssh. **path** is the destination path for the files to be copied to the **server**.
scp [-r] <user>@<server>:<file(s)> <destination>	Copies **file(s)** from **server** as **user** to the **destination** path on the local machine.

Flag	What they do
-r	Recursively copy entire directories and files within.

Downloading Files

If you want to download files to the present working directory you can use **wget**

Command	What it does
wget <URL>...	Download file(s) from the **URL**, you can have multiple URLs

Nano

If you want to edit something in the terminal you can use **nano**, a lightweight text editor program

`nano <file>`

Keystrokes	What it does
Ctrl + X	Exit the program
Ctrl + O	Save the file
Alt + U	Undo
Alt + E	Redo

Other Editors

Note there are other editors you can use that are better than nano like vim, EMACS, VS code, etc.

Searching

grep is a powerful command line find and search tool

Command	What it does
grep [-n][-i][-r] <pattern> <files>	Search for **pattern** in files. **pattern** could be a word or more generally a regex pattern.
<command> | grep <pattern>	Run a command like **ls** and its output will go through grep.

Flag	What does it mean
-r	Recursive if your searching through a directory.
-n	Show line number within the file
-i	Ignore cases

Man page

If you want to read the manual for a program, chances are they have a man page for it

Command	What it does
man <program>	Opens up the man page for **<program>**

Searching within the man page

Typing / followed by the search term will highlight the results. There should not be a space between / and the pattern i.e., /**<pattern>** not / **<pattern>** unless you want to find matches with a space before the pattern. To find the next match press the N key, to find the previous match is Shift + N.

Shameless Plug

The Undergraduate Association of Computing Science (UACS) strives to make life a better place for all computing science students here at the U of A. We have snacks, fun events like LAN parties, CMPUT 469 *(not an actual course)*, Buck-a-Burger, locker rentals, and more. To learn more about these events or just want to hang out *(we're a friendly bunch of people)* come to our office in CSC 1-40.

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- Thanks to anyone that helped make this cheatsheet
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