Introduction

What is the CLI?

The CLI stands for the Command Line Interface. It's also commonly referred to as the "Unix Shell".

When writing code, instead of using the GUI (Graphical User Interface) of your Operating System, you'll be typing commands into the shell to navigate and manage your files & folders.

The CLI application varies based on what Operating System you are on. For Mac OS X, we have Terminal.app; For Windows, we have PowerShell; For Linux, it varies on your window manager (if you use Linux, then you likely already know how to get to it).

Our Unix Shell (both on Mac OS X and in your Linux vagrant machine is powered by Bash, which is one of many programs that can power the shell.

Hint: If you're confused what all the flags and parameters are doing, many commands can be understood by putting them into ExplainShell and reading the analysis.

Ten Most Common Commands

You will be using at least these UNIX commands constantly from this point on (in your life!), so feel free to save this as a cheat sheet (or find another one online).

1. `ls`: List files

Generally used to list all files in current folder in vertical format, using these options: `ls -alh`

2. `cd`: Change into another directory

Can go up one level in the directory tree by using `..`.

Examples:

```
cd ..
cd some_folder
cd /
cd ~/
```

```
cd some_folder/some_subfolder/
```

Note how for folders, the `/` at the end of the path is not required.

3. `mkdir`: Create an empty directory

Can use `-p` option to make multiple subdirectories in the path at once.

Example:

```
mkdir -p work/lighthouse/assignment1
```

4. `rm`: Remove file or directory

Use `-r` flag for directory: Eg: `rm -rf work/lighthouse/assignment1`

5. `cp`: Copy file or directory

- Takes two parameters: source and destination
- Can use wildcard (*)
- Use `-r` option for directories

Example (copies all files and folders inside `some_folder` into `some/other/folder`):

```
cp -r some_folder/* some/other/folder/
```

6. `mv`: Move file or directory

- Takes two parameters: source and destination
- Can use wildcard (*)

Example (moves `some_folder` into `some/other/folder`)

```
mv some_folder some/other/folder/
```

7. `touch`: Create empty file

Creates an empty (0kb) file at the specified path, or if it already exists it just updates it's last modified datetime stamp to the current time.

Example:

```
touch hello.txt
```

8. `cat`: Output file contents

Display the contents of a text file to the screen.

Example:

```
cat /etc/hosts
```

9. `more`: Output file contents (Interactive)

Unlike `cat` though, instead of dumping the contents to the screen, it's a bit more interactive, showing content one page at a time.

- Use spacebar key or arrow keys to navigate a long output
- Use `q` key to quit out of it

10. `pwd`: Where Am I?

- Lists the directory path that you're currently in
- Stands for "Present Working Directory", not "Password" (I know, right?!)
- Doesn't take any options, just use as is to remind yourself where you are

Exercises

Part I

Enter these commands individually on the command line using Terminal.app. Try to interpret the output. Research their purpose on google as needed, and don't be afraid to experiment.

1. `pwd`
2. `cd ~/`
3. `ls -al`
4. `echo hello world`
5. `date`
6. `hostname`
7. `arch`
8. `uname -a`
9. `uptime`
10. `whoami`
11. `id`
12. `last`
13. `ps aux`
14. `top` (press q to quit)
15. `man "automatic door"`
16. `man who` (spacebar for next page, arrow keys for up/down and q to quit)

17. `man top` (spacebar for next page, arrow keys for up/down and q to quit)
18. `clear`
19. `cal 2000`
20. `cal 9 1752` (notice anything unusual in the output? wtf?)
21. `yes please` (press Ctrl-C to quit)
22. `time sleep 3`
23. `ping lighthouselabs.ca`
24. `history`

Part II

Same thing as above, run these and research/explain what each is doing. Notice that many of the commands below are multiple commands "chained" together using the "pipe" (`|`) symbol.

1. `cat /usr/share/dict/words`
2. `cat /usr/share/dict/words | grep "ous$"`
3. `wc -l /usr/share/dict/words`
4. `cat /usr/share/dict/words | grep "ous$" | wc -l`
5. `ls -al /usr/share > ~/ls.txt`
6. `less ~/ls.txt` (spacebar for next page, q to exit)

7. `nano ~/ls.txt` (simple text editor, list of commands at the bottom, CTRL+X to exit)

Part III

Note: Create a new gist using https://gist.github.com/

1. Write a command that will output the number of times the cat command was used previously
2. Write a command to output a count of all words in the unix dictionary file that begin with the letter "a"
3. Return all the words in the dictionary that start with "a" and end with "s"
4. Using one unix command, download & save the following page:`https://www.canada.ca/en.html`