Intro-2-Astro: Assignment 1

Here are a few commands that I learnt from Unix Workbench and Unix Carpentry Course:

absolute path

A path that refers to a particular location in a file system. Absolute paths are usually written with respect to the file system's root directory, and begin with either "/" (on Unix) or "\" (on Microsoft Windows).

argument

A value given to a function or program when it runs. The term is often used interchangeably (and inconsistently) with parameter.

command-line interface

A user interface based on typing commands, usually at a REPL.

comment

A remark in a program that is intended to help human readers understand what is going on, but is ignored by the computer. Comments in Python, R, and the Unix shell start with a # character and run to the end of the line; comments in SQL start with --, and other languages have other conventions.

current working directory

The directory that relative paths are calculated from; equivalently, the place where files referenced by name only are searched for. Every process has a current working directory. The current working directory is usually referred to using the shorthand notation . (pronounced "dot").

file system

A set of files, directories, and I/O devices (such as keyboards and screens). A file system may be spread across many physical devices, or many file systems may be stored on a single physical device; the operating system manages access.

filename extension

The portion of a file's name that comes after the final "." character. By convention this identifies the file's type: .txt means "text file", .png means "Portable Network Graphics file", and so on. These conventions are not enforced by most operating systems: it is perfectly possible (but confusing!) to name an MP3 sound file homepage.html. Since many applications use filename extensions to identify the MIME type of the file, misnaming files may cause those applications to fail.

filter

A program that transforms a stream of data. Many Unix command-line tools are written as filters: they read data from standard input, process it, and write the result to standard output.

for loop

A loop that is executed once for each value in some kind of set, list, or range.

Git stuff

- Git tracks changes to plain text files (code files and text documents).
- A directory where changes to files are tracked by Git is called a Git repository.
- Change your working directory, then run git init to start a repository.
- You can track changes to a file using git add [names of files].
- You can create a milestone about the state of your files using git commit -m "message about changes since the last commit".
- To examine the state of files in your repository use git status.
- git help allows you to read the man pages for specific Git commands.
- git log will show you your commit history.
- git diff displays what has changed between the last commit and your current untracked changes.
- You can specify a .gitignore file in order to tell Git not to track certain files.
- Git branching allows you and others to work on the same code base together.
- You can create a branch with the command git branch [name of branch].
- To switch to a branch use git checkout [name of branch].
- You can combine a branch with your current branch by using git merge.
- You can use GitHub to create and host remote Git repositories.
- A remote Git repository is a Git repository that is always connected to the internet.
- List remote repositories with git remote.
- Add remote repositories with git remote add [name-of-remote] https://github.com/[username]/[repo-name].git
- Add commits to your remote repository with git push [name-of-remote] [name-of-branch] or just git push if you've set up a default remote and branch.

- To merge commits on a remote repository into your local repository use git pull [name-of-remote] [name-of-branch] or just git pull if you've set up a default remote and branch.
- A pull request allows you to interactively compare two different branches before you merge them.
- GitHub Pages allows you to host websites written in Markdown for free!
- Forking a repository allows you to make changes to a copy of a public repository. You can then open a pull request if you think your changes should be merged into the upstream repository!

graphical user interface

A user interface based on selecting items and actions from a graphical display, usually controlled by using a mouse.

home directory

The default directory associated with an account on a computer system. By convention, all of a user's files are stored in or below the home directory.

loop

A set of instructions to be executed multiple times. Consists of a loop body and (usually) a condition for exiting the loop.

loop body

The set of statements or commands that are repeated inside a for loop or while loop.

MIME type

MIME (Multi-Purpose Internet Mail Extensions) types describe different file types for exchange on the Internet, for example, images, audio, and documents.

operating system

Software that manages interactions between users, hardware, and software processes. Common examples are Linux, macOS, and Windows.

option

A way to specify an argument or setting to a command-line program. By convention Unix applications use a dash followed by a single letter, such as -v, or two dashes followed by a word, such as --verbose, while DOS applications use a slash, such as /V. Depending on the application, an option may be followed by a single argument, as in -o /tmp/output.txt.

parameter

A variable named in a function's declaration that is used to hold a value passed into the call. The term is often used interchangeably (and inconsistently) with argument.

parent directory

The directory that "contains" the one in question. Every directory in a file system except the root directory has a parent. A directory's parent is usually referred to using the shorthand notation .. (pronounced "dot dot").

path

A description that specifies the location of a file or directory within a file system.

pipe

A connection from the output of one program to the input of another. When two or more programs are connected in this way, they are called a "pipeline".

process

A running instance of a program, containing code, variable values, open files and network connections, and so on. Processes are the "actors" that the operating system manages; it typically runs each process for a few milliseconds at a time to give the impression that they are executing simultaneously.

prompt

A character or characters display by a REPL to show that it is waiting for its next command.

quoting

(in the shell): Using quotation marks of various kinds to prevent the shell from interpreting special characters. For example, to pass the string *.txt to a program, it is usually necessary to write it as '*.txt' (with single quotes) so that the shell will not try to expand the * wildcard.

read-evaluate-print loop

(REPL): A command-line interface that reads a command from the user, executes it, prints the result, and waits for another command.

redirect

To send a command's output to a file rather than to the screen or another command, or equivalently to read a command's input from a file.

regular expression

A pattern that specifies a set of character strings. REs are most often used to find sequences of characters in strings.

relative path

A path that specifies the location of a file or directory with respect to the current working directory. Any path that does not begin with a separator character (“/” or “\”) is a relative path.

root directory

The top-most directory in a file system. Its name is “/” on Unix (including Linux and macOS) and “\” on Microsoft Windows.

shell

A command-line interface such as Bash (the Bourne-Again Shell) or the Microsoft Windows DOS shell that allows a user to interact with the operating system.

shell script

A set of shell commands stored in a file for re-use. A shell script is a program executed by the shell; the name “script” is used for historical reasons.

standard input

A process’s default input stream. In interactive command-line applications, it is typically connected to the keyboard; in a pipe, it receives data from the standard output of the preceding process.

standard output

A process’s default output stream. In interactive command-line applications, data sent to standard output is displayed on the screen; in a pipe, it is passed to the standard input of the next process.

sub-directory

A directory contained within another directory.

tab completion

A feature provided by many interactive systems in which pressing the Tab key triggers automatic completion of the current word or command.

variable

A name in a program that is associated with a value or a collection of values.

while loop

A loop that keeps executing as long as some condition is true.

wildcard

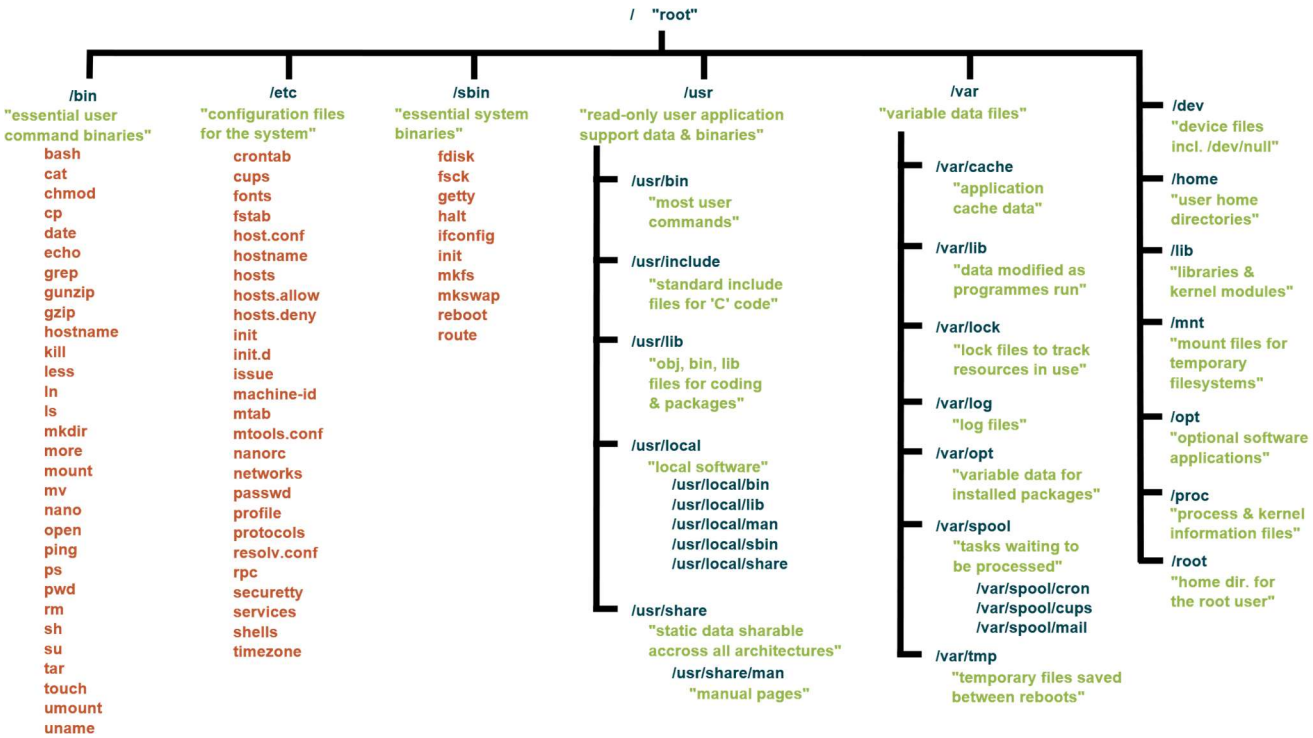
A character used in pattern matching. In the Unix shell, the wildcard * matches zero or more characters, so that *.txt matches all files whose names end in .txt.

Summary of basic commands

Action	Files	Folders
Inspect	ls	ls
View content	cat	ls
Navigate to		cd
Move	mv	mv
Copy	cp	cp -r
Create	nano	mkdir
Delete	rm	rmdir, rm -r

File System Hierarchy

The following is an overview of a standard Unix filesystem.



NOTE: The exact hierarchy may differ based on the platform.