UNIX, Terminal, and Bash

Overview

- UNIX History and Guiding Principles
- What is a terminal?
- File Basics
- BASH (.bashrc, basic BASH program)
- “Advanced” command features

What is UNIX

- Unix is an operating system released in 1971 by AT&T
- Quickly became the de facto operating system
- Written in C

Why should I care about UNIX?

- You shouldn’t, well maybe not exactly
- Modern operating systems were built off the concepts of UNIX
- Linux and MacOS are UNIX-like, with MacOS complying to POSIX and Linux partially compliant.
- For Windows you’ll need to use WSL to get access to a UNIX-like environment.

Why should I learn about this?

- Everything is a File
- Modular and Simple, Each command does its job and does it well
- Built for multiple users (ideal for servers)
- Bash
- Portable software

How do I use it?

- You access all the wonderful things UNIX-like systems have to offer through your Terminal, which then uses a shell, which then does what you want it to do
- What are my options, Bash and Zsh
- What’s the Best way to learn to use the terminal?
- Use the terminal.

Customize Your Shell

- .bashrc
- Customize with aliases and functions
- Bash demo

File Navigation

- First how do I move around????
- Now what are all these Folders?
- / Root directory (everything starts here)
- /bin Essential system commands (e.g., ls, cp)
- /sbin System administration commands (reboot, fsck)
- /usr User applications (/usr/bin, /usr/lib)
- /var Logs, caches, and dynamic files (/var/log)
- /etc Configuration files (/etc/passwd, /etc/hosts)
- /home User home directories (/home/user)

File Navigation

- /root Superuser (root) home directory
- /tmp Temporary files (cleared on reboot)
- /dev Devices as files (/dev/sda, /dev/null)
- /mnt Manual mount point for external drives
- /media Auto-mount for USB, CDs, etc.
- /proc System process information (/proc/cpuinfo)
- /sys Kernel and hardware info
- /opt Third-party software
- /lib System libraries

What is the PATH

- Path is a list of places the shell should look for commands. If you want your command to work put it in a folder in your path

Touching Files

- mkdir makes a new directory
- touch creates a file
- cp, mv, rm, Copy, Move and Remove a file,
- rm -rf (recursively remove files and force, very useful… just don’t do it at root)

Do you use a lot of python?

- Miniconda is incredibly useful
- It allows environments that can be managed separately
- Plus it has a fancy conda install

Move to VS code for easier MD

Install a manager for MacOS

- Use brew if you’re a Mac to manage your downloads.