

Unix

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What is UNIX?

- It is an operating system (it talks to the hardware and controls files on your computer or phone).



macOS Big Sur



Linux

- You can interact with point-and-click tools or type commands.
- Most people associate UNIX with Linux (Tux the penguin) and/or "Ubuntu" (a flavor of Unix), but the most popular UNIX-based systems are .red["Mac OS") and "Android".



Interacting with UNIX

- The core of an operating system (what talks to the hardware) is called the "kernel".
- The part that a user can interact with is called the shell.
- There are many different shells.
Bourne, Korn, POSIX, Bourne Again Shell (bash).
- You type commands to run programs.
 - For example, you can run a program called git to backup your files or a program called find to find files.

Set Up Bash Shell/Git

- Why use a shell?
 - It is "faster" to type than mouse
- Bash is the most popular UNIX shell.
- Mac has the terminal app preinstalled.
 - Type ⌘ spacebar and then type `terminal` and push the return key. Right click it to add it to your dock.
 - The Mac terminal runs `bash` (the most modern Macs ship with `zsh` instead of `Bash` by default) and has software including `git` already installed.
- If you use Windows, download and install the Bash shell
 - The git instalation for windows includes `bash`
 - Go here: <https://git-for-windows.github.io/>

How does UNIX work?

- UNIX commands are short "words" followed by options.
- The command to use git is ... `git`
 - The command by itself is mostly useless.
- You add options by typing them after `git`
 - sometimes they are just a word
 - sometimes `-` then a letter
 - sometimes `--` then a word

Pipe and Redirect

With the UNIX pipe `|` and redirect `>` or `>>` characters, simple verbs can be joined together to make complex workflows (just like pipes in dplyr) within a single command.

```
find folder1 folder2 -name "*.txt" -print0 | sort -z
```

You can redirect output into a new file with a `>`

```
ls > stuff.txt
```

You can append output into the bottom of a text file with `>>`

```
echo "the stuff" >> stuff.txt
```

UNIX Commands Ray Will Type (by reflex)

Command	It means:
pwd	Show me where I am (present working directory).
cd blah	Change into the subdirectory (child directory) of this directory called blah.
cd ..	Change into the directory holding this one (parent directory).
cd ~	Go to my home directory.
ls	List stuff in this directory.
ls -a	List all the stuff in this directory.
ls -l	List stuff in long form.
touch blah	Make a file called blah.
open blah	Open a file called blah.
rm blah	Delete a file called blah. (remove)
mkdir	Make a directory called blah