Initial Software Setup

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Goals

- The important software to install is **Git** and **Conda**
- This requires getting acquainted with the **command line**
- Launch an interactive computing environment with **Jupyter Lab**

Free and Open Source Software (FOSS)

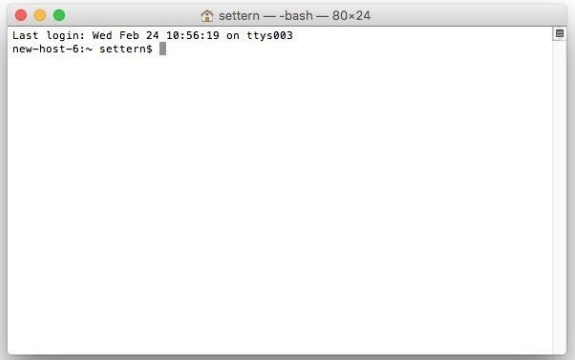
- All the required software for this course is free and open-source
- “Open source” is software that is released under a license in which the copyright holder grants users the rights to use, study, change, and distribute the software and its source code

Command Line Interface (CLI)

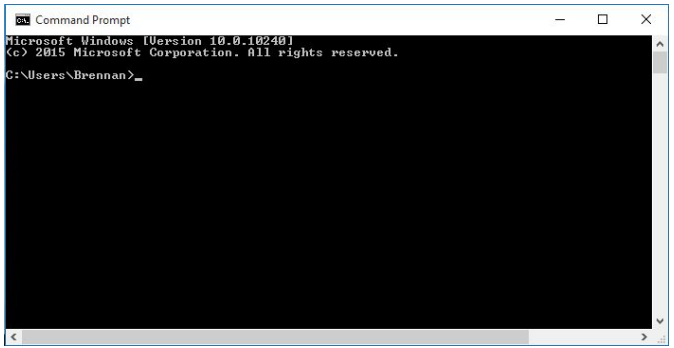
- The command line is a text interface for your computer
- Enables you to give your computer instructions via text commands, rather than point-and-click graphical user interfaces (GUIs)
- In order to install, write and run code, it will be helpful to first familiarize ourselves with the command line

Familiarize yourself with the command line

- Open the command line application on your computer
- On a Mac computer, this is called **Terminal**
- On a Windows computer, this is called **Command Prompt**



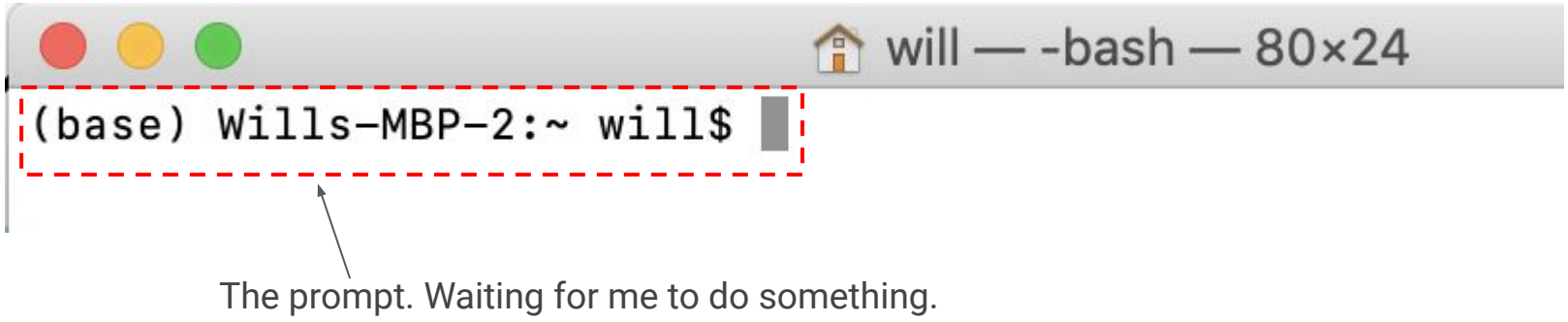
Mac Terminal



Windows Command Prompt

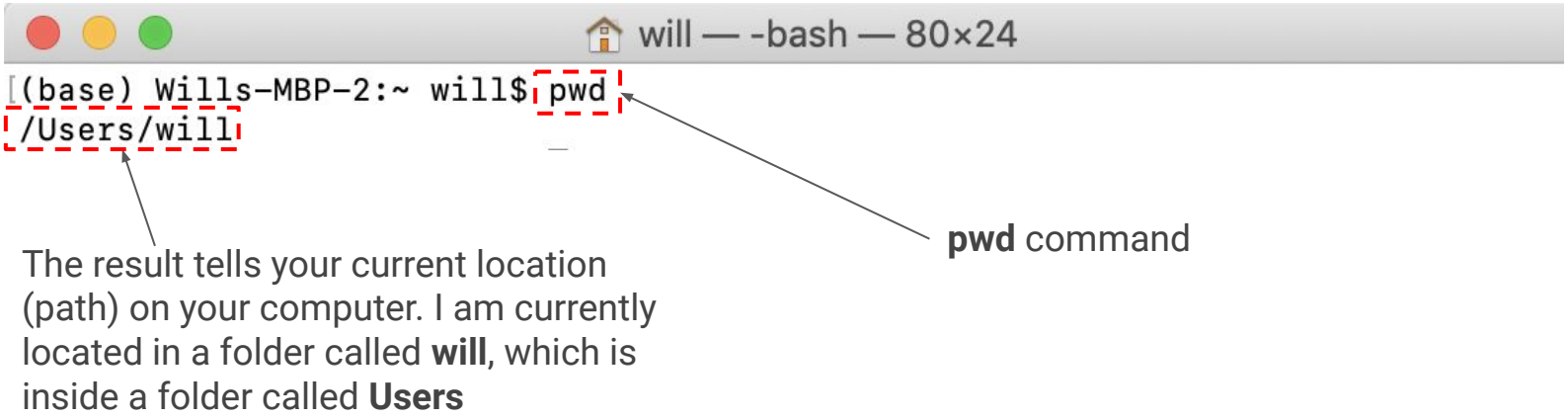
Familiarize yourself with the command line

- The first bit of text that shows up is called the ***prompt***
- The prompt is supplied automatically, you do not need to type it
- The exact details of the prompt will differ, not important right now



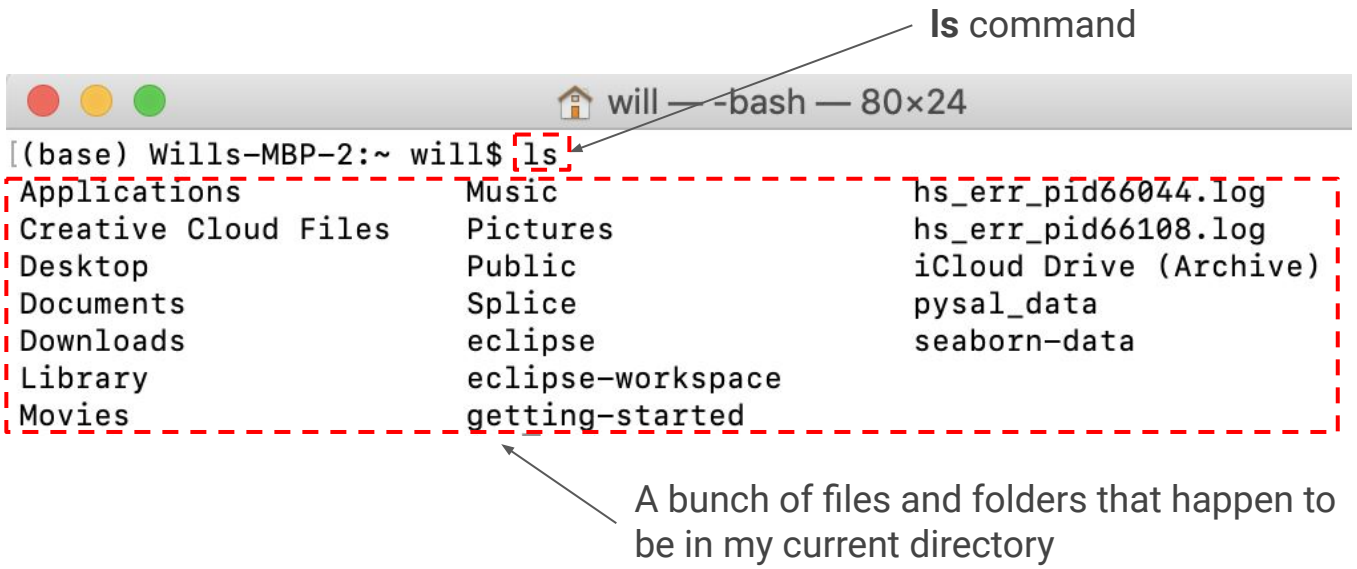
Navigating the command line

- Type `pwd` after the prompt and hit enter
- This prints the full path of the current location (i.e. “working directory”)



Navigating the command line

- Type `ls` (that's "L" followed by "S", short for *list*) and hit enter
- This lists all the files and folders within your current directory (folder)



Navigate to your Desktop

- The `cd` command allows us to move to different folders on our computer
- `cd` stands for “change directory”
- From the root directory, enter `cd Desktop` to change to your Desktop folder
- Use `pwd` command to confirm that you successfully moved to your Desktop
- Use `ls` command to list all of the items on your Desktop

Move up one directory level

- Change up one directory (folder) with:

```
cd ..
```

  - That's `cd` followed by two periods

Create a new directory

- Create a new directory (folder) with:

```
mkdir myFolder
```

  - Insert your desired folder name into `myFolder`

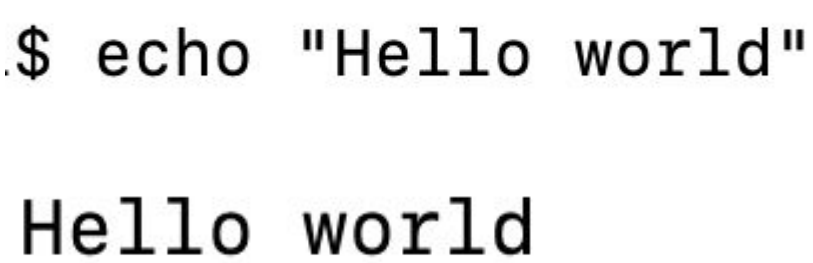
Common navigation commands

Windows CMD	Task	Mac OS Terminal
`dir`	List files and folders	`ls`
`cd`	Full path of current folder/directory	`pwd`
`cd` <path to directory>	Change folder/directory	`cd` <path to directory>
`cd..`	One directory up in directory tree	`cd ..`
`cd`	Move to root directory	`cd /`
`mkdir newFolder`	Create new directory in current directory	`mkdir myFolder`
`echo some-text > fileName(.txt)`	Create new file	`cat > fileName(.txt)`
`rmdir myFolder`	Remove a directory*	`rmdir myFolder`
`ren oldFolderName newFolderName`	Rename a directory	`mv oldFolderName newFolderName`
`robocopy myFolder` <path to destination directory>	Copy a directory	`cp -r myFolder` <path to destination directory>
`move myFolder` <path to destination directory>	Move a directory	`mv myFolder` <path to destination directory>
`del myFile`	Remove a file*	`rm myFile`
`ren oldFileName newFileName`	Rename a file	`mv oldFileName newFileName`
`copy myFile` <path to destination directory>	Copy a file	`cp myFile` <path to destination directory>
`move myFile` <path to destination directory>	Move a file	`mv myFile` <path to destination directory>
`cls`	Clear the terminal screen	`clear`

Familiarize yourself with the command line

- Print some text in the CLI with:

```
echo “Hello world”
```



Download Git

- Download Git (64-bit, use default options) if you don’t already have it
- Git is a distributed version control system
- Used to track changes in a set of files, usually used for coordinating work among programmers collaboratively developing source code during software development

Download Conda

- Download and install miniconda (64-bit, use default options)
- Conda is a package manager and environment management system
- It contains Python itself in addition to many other useful things

Create an account on Github

- Create an account on Github if you don’t already have one
- Github is a popular site for hosting software projects
- Use your personal email address rather than university email
- Select the free account option

Use Git to clone the course directory

- Open your command line
- Navigate to your Desktop directory using `cd Desktop`
- Enter the following:

```
git clone https://github.com/willgeary/info615.git
```

- Now you have a copy of the course repository on your desktop

Navigate to the course directory

- Change into the main directory with:

```
cd info615
```

View the contents of the directory

- List the contents with:

```
ls
```

```
LICENSE          assignments      modules          syllabus
README.md        environment.yml  software
```

View the contents of the directory

- List the contents with

```
ls
```

```
LICENSE          assignments      modules          syllabus
README.md        environment.yml  software
```

The **environment.yml** file provides the computer with some instructions to set up a Python environment for this course

Run these commands (only need once)

- Run these commands, one line at a time:

```
conda config --prepend channels conda-forge

conda config --set channel_priority strict

conda clean --all --yes
```

Create an environment

- Create the environment with:

```
conda env create --file environment.yml --force
```

Activate the environment

- Activate the conda environment with:

```
conda activate info615
```

Deactivating the environment

- If you want to deactivate this or any environment, you can do so with:

```
conda deactivate
```

Re-activate the environment

- Re-activate the conda environment with:

```
conda activate info615
```

Add Interactive Python support for Jupyter Lab

- Install a necessary dependence for interactive python:

```
python -m ipykernel install --sys-prefix --name info615
```

Launch Jupyter Lab

- Launch a Jupyter Lab interactive computing session with:

```
jupyter lab
```