

# J233

## Coding for Journalists

LECTURER  
Soo Oh

PROMPTS

Get ready to evaluate this  
course!

# **Course evaluations**

<https://course-evaluations.berkeley.edu>

(Retrieve Soo when you're all done)

# start Zoom recording

# Agenda

Course evaluations — thank you!

Announcements

Lecture

- Geocoding
- Command line basics
- GitHub (if time)

BREAK (at some point)

# Announcements

- Check [Office Hours \(extra credit\)](#) assignment to make sure I gave you extra credit
- [Final Project presentation](#) is next week (review rubric)
- [Final Project notebooks \(WITH DATA\)](#) are due **Dec. 11** (side note: I said we could change this date, depending on your schedules)

# Geocoding

Download notebooks from [class website](#)

# Break

Meet back in 15 minutes.

7:20 pm

# Using the Terminal

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: mkdir, cp, mv, ! rm

Your Macbook OS is based on **Unix**, a type of operating system developed in the late 1960s. (You can find a short history of Unix in the recommended reading.)

A **shell** is a Unix program that takes the commands you enter and interprets them for a Unix operating system. There are lots of shells.

**Bash** is a popular shell and was used by default on Macbooks until recently; **zsh** (Z Shell) is now the default shell on new Macbooks.

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: mkdir, cp, mv, ! rm

On Windows, the shell interface is titled **Command Prompt**.

**Terminal** is the shell interface app on Macbooks.

People often use the following terms **interchangeably**:

- shell
- command prompt
- command line
- command-line interface
- terminal

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: mkdir, cp, mv, ! rm

First, adjust **Security & Privacy** settings



# Terminal

## Terminology

First commands: date,  
cal, clear, man

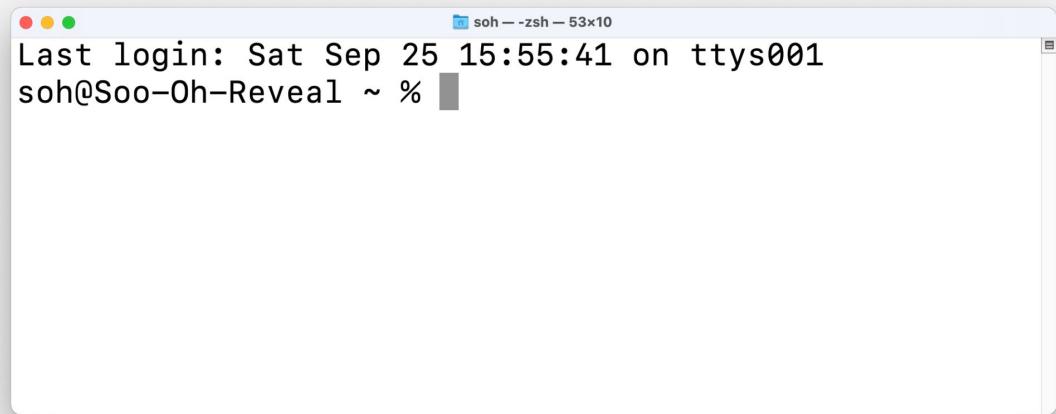
Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv, ! rm

Let's open up **Terminal**



# Terminal

## Terminology

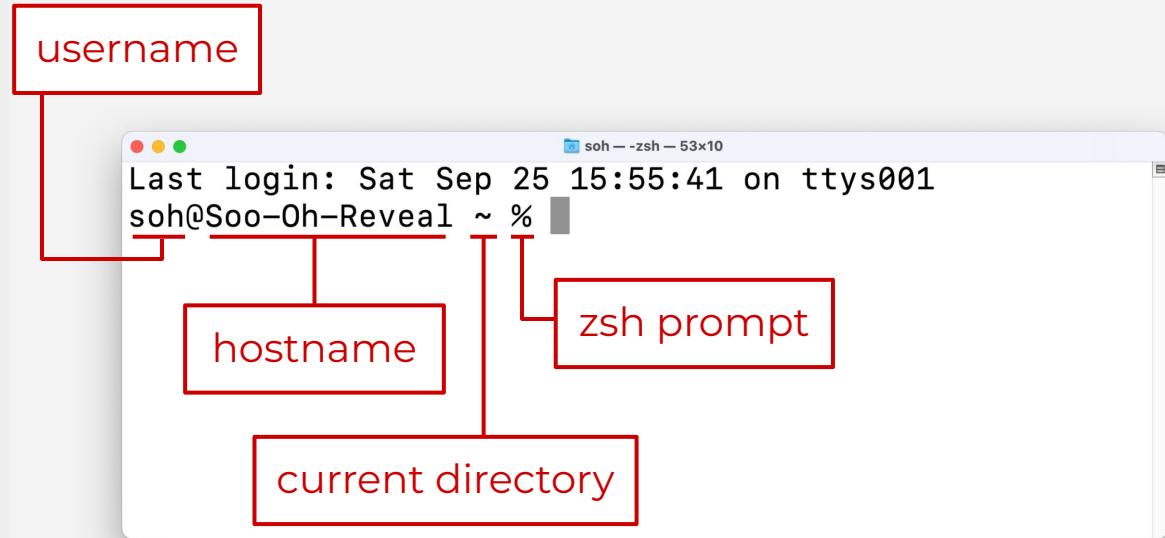
First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: mkdir, cp, mv, ! rm



# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: mkdir, cp, mv, ! rm

In our course slides, shell commands will be denoted with a percent sign (%), which indicates the shell is **zsh**.

```
% cal
```

If you look up shell commands online, you'll often see them with a dollar sign (\$) instead. The dollar sign indicates the shell is **bash**.

```
$ cal
```

 **You should not copy % or \$ into your terminal!** 

# Terminal

Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## date

```
Last login: Sun Sep 27 17:41:53 on ttys001
soh@Soo-Oh-Reveal ~ % date
Sun Sep 27 17:49:15 PDT 2021
soh@Soo-Oh-Reveal ~ %
```

## Screenshare

Note to Fall 2023 students:  
forgive the 2021  
copy/pastes, but it takes a  
surprisingly long time to  
reformat slides. I'm  
screensharing the  
commands, so pay  
attention to the screen!

# Terminal

Terminology

First commands: `date`,  
`cal`, `clear`, `man`

Navigate: `pwd`, `ls`, `cd`

Create/modify: `touch`,  
`cat`

Read: `cat`, `less`, `head`,  
`tail`, `wc`

Organize: `mkdir`, `cp`,  
`mv`,  `rm`

## cal (calendar)

```
Last login: Sun Sep 27 17:41:53 on ttys001
soh@Soo-Oh-Reveal ~ % date
Sun Sep 27 17:49:15 PDT 2021
soh@Soo-Oh-Reveal ~ % cal
```

September 2021

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Screenshare

```
soh@Soo-Oh-Reveal ~ %
```

# Terminal

Terminology

First commands: `date`,  
`cal`, `clear`, `man`

Navigate: `pwd`, `ls`, `cd`

Create/modify: `touch`,  
`cat`

Read: `cat`, `less`, `head`,  
`tail`, `wc`

Organize: `mkdir`, `cp`,  
`mv`,  `rm`

## cal (calendar)

```
Last login: Sun Sep 27 17:41:53 on ttys001  
soh@Soo-Oh-Reveal ~ % date
```

```
Sun Sep 27 17:49:15 PDT 2021  
soh@Soo-Oh-Reveal ~ % cal
```

September 2021

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

The current day is highlighted!

```
soh@Soo-Oh-Reveal ~ %
```

Screenshare

# Terminal

Terminology

First commands: `date`,  
`cal`, `clear`, `man`

Navigate: `pwd`, `ls`, `cd`

Create/modify: `touch`,  
`cat`

Read: `cat`, `less`, `head`,  
`tail`, `wc`

Organize: `mkdir`, `cp`,  
`mv`,  `rm`

## clear

```
Last login: Sun Sep 27 17:41:53 on ttys001  
soh@Soo-Oh-Reveal ~ % date
```

```
Sun Sep 27 17:49:15 PDT 2021  
soh@Soo-Oh-Reveal ~ % cal
```

September 2021

Su	Mo	Tu	We	Th	Fr	Sa
						1
					2	3
					4	<b>Screenshare</b>
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	<b>27</b>	28	29	30		

```
soh@Soo-Oh-Reveal ~ % clear
```

# Terminal

Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

**clear**

soh@Soo-Oh-Reveal ~ %

Screenshare

# Terminal

Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## man (manual)

```
soh@Soo-Oh-Reveal ~ % man  
What manual page do you want?  
soh@Soo-Oh-Reveal ~ %
```

Screenshare

# Terminal

Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## man (manual)

```
soh@Soo-Oh-Reveal ~ % man  
What manual page do you want?  
soh@Soo-Oh-Reveal ~ % man cal
```

Screenshare

# Terminal

Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## man (manual)

```
soh@Soo-Oh-Reveal ~ % man  
What manual page do you want?  
soh@Soo-Oh-Reveal ~ % man cal
```

**man(ual) for cal(endar)**

Screenshare

# Terminal

## Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

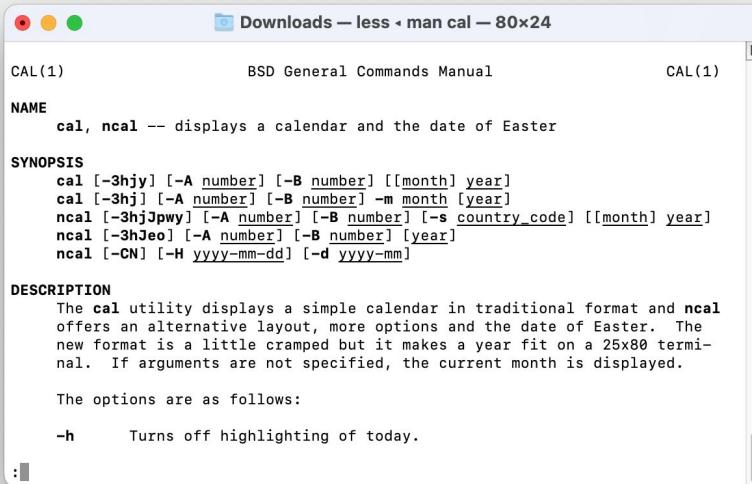
Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## man (manual)

```
soh@Soo-Oh-Reveal ~ % man cal
```



A screenshot of a macOS terminal window titled "Downloads — less - man cal — 80x24". The window displays the man page for the "cal" command. The title bar shows "CAL(1)" on the left and "BSD General Commands Manual" in the center. The main content area starts with the "NAME" section, which describes "cal, ncal -- displays a calendar and the date of Easter". The "SYNOPSIS" section lists several command-line options: "cal [-3hjy] [-A number] [-B number] [[month] year]", "cal [-3hj] [-A number] [-B number] -m month [year]", "ncal [-3hjJpwy] [-A number] [-B number] [-s country\_code] [[month] year]", "ncal [-3hJeo] [-A number] [-B number] [year]", and "ncal [-CN] [-H yyyy-mm-dd] [-d yyyy-mm]". The "DESCRIPTION" section explains that "cal" displays a simple calendar and "ncal" offers a more spacious layout and includes the date of Easter. It notes that the new format is cramped but fits on a 25x80 terminal. If no arguments are provided, the current month is displayed. The "OPTIONS" section lists "-h" as an option to turn off highlighting of today's date.

Screenshare

# Terminal

## Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

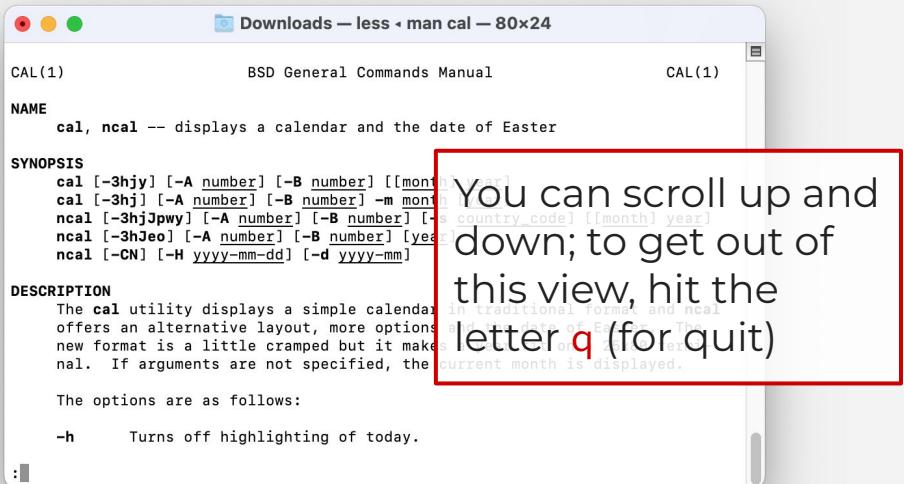
Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## man (manual)

```
soh@Soo-Oh-Reveal ~ % man cal
```



Screenshare

# Terminal

## Terminology

First commands: **date**,  
**cal**, **clear**, **man**

Navigate: **pwd**, **ls**, **cd**

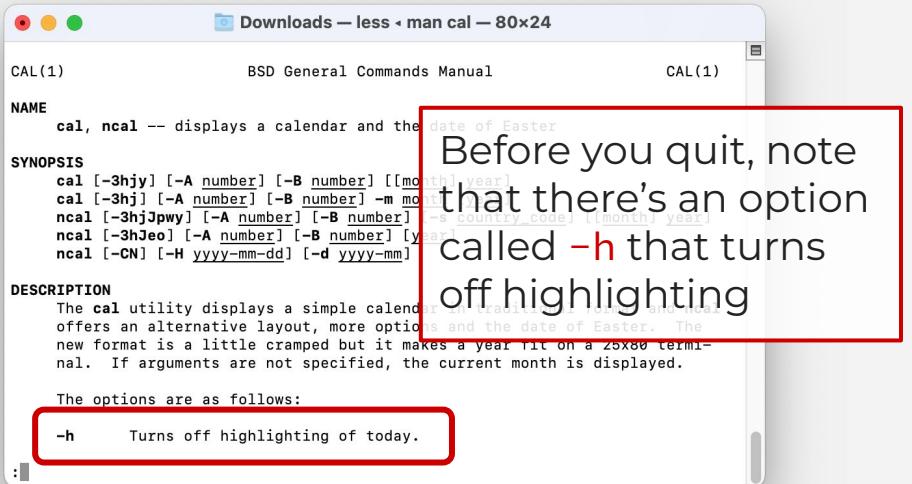
Create/modify: **touch**,  
**cat**

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

## man (manual)

```
soh@Soo-Oh-Reveal ~ % man cal
```



Screenshare

# Terminal

## Terminology

First commands: `date`,  
`cal`, `clear`, `man`

Navigate: `pwd`, `ls`, `cd`

Create/modify: `touch`,  
`cat`

Read: `cat`, `less`, `head`,  
`tail`, `wc`

Organize: `mkdir`, `cp`,  
`mv`,  `rm`

`cal -h`

```
soh@Soo-Oh-Reveal ~ % cal -h
```

September 2021

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4			

5	6	7	8	9	10	11
---	---	---	---	---	----	----

12	13	14	15	16	17	18
----	----	----	----	----	----	----

19	20	21	22	23	24	25
----	----	----	----	----	----	----

26	27	28	29	30		
----	----	----	----	----	--	--

No highlight!

```
soh@Soo-Oh-Reveal ~ %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: **pwd**, **ls**, **cd**

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

**pwd** (print working directory)

```
soh@Soo-Oh-Reveal ~ % cal -h  
September 2021  
Su Mo Tu We Th Fr Sa  
          1  2  3  4  
 5  6  7  8  9 10 11  
12 13 14 15 16 17 18  
19 20 21 22 23 24 25  
26 27 28 29 30
```

```
soh@Soo-Oh-Reveal ~ % pwd
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: `pwd`, `ls`, `cd`

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv, ! rm

`ls` (list directory contents)

```
soh@Soo-Oh-Reveal ~ % cal -h
September 2021
Su Mo Tu We Th Fr Sa
      1  2  3  4
 5  6  7  8  9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
```

Screenshare

```
soh@Soo-Oh-Reveal ~ % pwd
/Users/soh
soh@Soo-Oh-Reveal ~ %
```

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: `pwd`, `ls`, `cd`

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

## `ls` (list directory contents)

```
soh@Soo-Oh-Reveal ~ % ls
Applications      Dropbox          Public
Creative Cloud   Files Library    Zotero
Desktop           Movies           db-browser
Documents         Music            dev
Downloads         Pictures         records_requests
soh@Soo-Oh-Reveal ~ %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: `pwd`, `ls`, `cd`

Create/modify: touch,  
cat

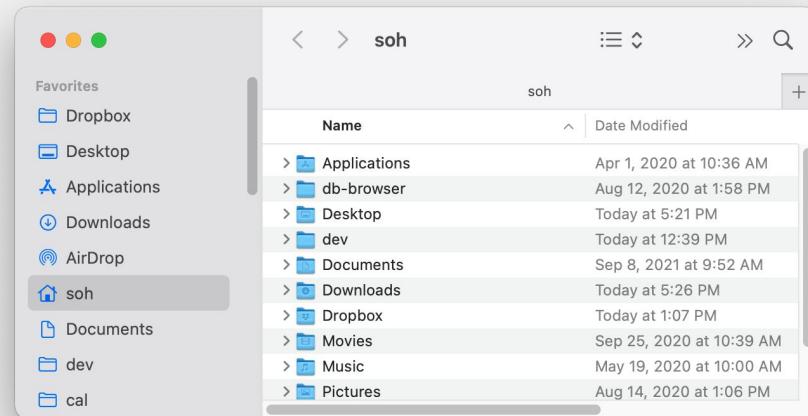
Read: cat, less, head,  
tail, wc

Organize: `mkdir`, `cp`,  
`mv`, `rm`

/Users/soh

`ls` (list directory contents)

is this directory in Finder:



Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: **pwd**, **ls**, **cd**

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

[Only works on MacOS] Use **open .** to open  
your Finder in the current directory:

```
soh@Soo-Oh-Reveal ~ % open .
```

The **.** stands for current folder.

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: **pwd**, **ls**, **cd**

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

## ls -l (as a -list)

```
soh@Soo-Oh-Reveal ~ % ls -l
total 0
drwx-----@ 3 soh staff 96 Apr  1  2020 Applications
drwx-----@ 4 soh staff 128 Sep 19 15:28 Creative Cloud Files
drwx-----@ 9 soh staff 288 Sep 26 17:21 Desktop
drwx-----@ 11 soh staff 352 Sep  8 09:52 Documents
drwx-----@ 14 soh staff 448 Sep 26 17:26 Downloads
drwx-----@ 45 soh staff 1440 Sep 26 13:07 Dropbox
drwx-----@ 79 soh staff 2528 May 10 20:31 Library
drwx-----+ 6 soh staff 192 Sep 25 2020 Movies
drwx-----+ 4 soh staff 128 May 19 2020 Music
drwx-----+ 6 soh staff 192 Aug 14 2020 Pictures
drwxr-xr-x+ 4 soh staff 128 Mar 27 2020 Public
drwxr-xr-x  10 soh staff 320 May 24 14:52 Zotero
drwxr-xr-x  4 soh staff 128 Aug 12 2020 db-browser
drwxr-xr-x  71 soh staff 2272 Sep 26 12:39 dev
drwxr-xr-x  3 soh staff 96 May  4 2020 records_requests
soh@Soo-Oh-Reveal ~ %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: `pwd`, `ls`, `cd`

Create/modify: `touch`,  
`cat`

Read: `cat`, `less`, `head`,  
`tail`, `wc`

Organize: `mkdir`, `cp`,  
`mv`,  `rm`

`ls -a` (-all, including dot files)

```
soh@Soo-Oh-Reveal ~ % ls -a
.
..
.CFUserTextEncoding
.DS_Store
.Rapp.history
.Rhistory
.python_history
.rbenv
.rstudio-desktop
.s3cfg
.ssh
.subversion
```

Screenshare

# Terminal

Terminology

First commands: date, cal, clear, man

Navigate: `pwd`, `ls`, `cd`

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: `mkdir`, `cp`, mv, ! rm

## `ls -al`

```
soh@Soo-Oh-Reveal ~ % ls -al
total 1728
drwxr-xr-x+ 63 soh  staff    2016 Sep 26 17:49 .
drwxr-xr-x   6 root  admin    192 Jan  1  2020 ..
-r-----  1 soh  staff     7 Nov 12  2020 .CFUserTextEncoding
-rw-r--r--@  1 soh  staff  14340 Sep 26 18:15 .DS_Store
-rw-r--r--   1 soh  staff     0 Apr  7  2020 .Rapp.history
-rw-r--r--   1 soh  staff     0 Dec 12  2020 .Rhistory
drwx-----  6 soh  staff  192 Sep 26 16:32 .Trash
drwxr-xr-x   4 soh  staff    128 Jun  1  2020 .aws
-rw-r--r--   1 soh  staff  587439 Sep 24  2020 .babel.json
-rw-----  1 soh  staff    2015 Sep 25 15:47 .bash_history
drwx-----  5 soh  staff    160 Sep 25 15:47 .bash_sessions
drwxr-xr-x   3 soh  staff     96 May  5  2020 .bundle
drwx-----  7 soh  staff    224 Feb 12  2021 .config
drwx-----  3 soh  staff     96 Dec 25  2020 .cups
drwxr-xr-x  11 soh  staff   352 Sep  3 14:58 .docker
drwxr-xr-x  14 soh  staff   448 Sep 25 15:29 .dropbox
drwxr-xr-x   4 soh  staff   128 Apr 17  2020 .gem
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: **pwd**, **ls**, **cd**

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

**cd directory** (**c**hange to **d**irectory within folder)

```
soh@Soo-Oh-Reveal ~ % cd dev/cal/coding-class-materials-2020  
soh@Soo-Oh-Reveal coding-class-materials-2020 %
```

**cd ..** (**cd** to previous level)

```
soh@Soo-Oh-Reveal coding-class-materials-2020 % cd ..  
soh@Soo-Oh-Reveal cal % cd ..  
soh@Soo-Oh-Reveal dev %
```

**cd ../../..** (**cd** to two previous levels)

```
soh@Soo-Oh-Reveal ~ % cd dev/cal/coding-class-materials-2020  
soh@Soo-Oh-Reveal coding-class-materials-2020 % cd ../../..  
soh@Soo-Oh-Reveal dev %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: **pwd**, **ls**, **cd**

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

**cd** all by itself (**cd** to root directory)

```
soh@Soo-Oh-Reveal ~ % cd dev/cal/coding-class-materials-2020  
soh@Soo-Oh-Reveal coding-class-materials-2020 % cd  
soh@Soo-Oh-Reveal ~ %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: **touch**,  
**cat**

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv, ! rm

## touch

```
soh@Soo-Oh-Reveal ~ % cd Downloads  
soh@Soo-Oh-Reveal Downloads % touch test_file.txt  
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: **touch**,  
**cat**

Read: cat, less, head,  
tail, wc

Organize: mkdir, cp,  
mv,  rm

## touch

```
soh@Soo-Oh-Reveal ~ % cd Downloads  
soh@Soo-Oh-Reveal Downloads % touch test_file.txt  
soh@Soo-Oh-Reveal Downloads %
```

Go to your Downloads folder.  
There should be a new file called  
test\_file.txt. Open it, add  
some text, then close it.

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv, ! rm

## cat (concatenate)

```
soh@Soo-Oh-Reveal ~ % cd Downloads  
soh@Soo-Oh-Reveal Downloads % touch test_file.txt  
soh@Soo-Oh-Reveal Downloads % cat test_file.txt
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv, ! rm

## cat (concatenate)

Pacific Ocean through the seas which surround the pole. You may remember that a history of all the voyages made for purposes of discovery composed the whole of our good Uncle Thomas' library. My education was neglected, yet I was passionately fond of reading. These volumes were my study day and night, and my familiarity with them increased that regret which I had felt, as a child, on learning that my father's dying injunction had forbidden my uncle to allow me to embark in a seafaring life.

### Screenshare

These visions faded when I perused, for the first time, those poets whose effusions entranced my soul and lifted it to heaven. I also became a poet and for one year lived in a paradise of my own creation; I imagined that I also might obtain a niche in the temple where the names of Homer and Shakespeare are consecrated. You are well acquainted with my failure and how heavily I bore the disappointment. But just at that time I inherited the fortune of my cousin, and my thoughts were turned into the channel of their earlier bent.%

soh@Soo-Oh-Reveal Downloads %

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

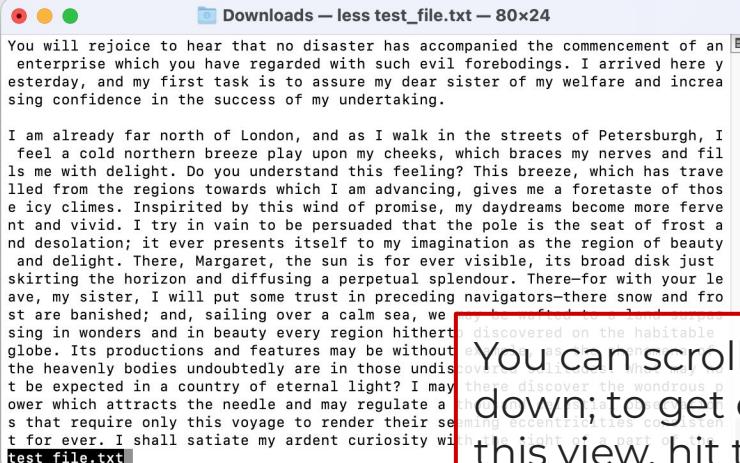
Create/modify: touch, cat

Read: **cat**, **less**, **head**, **tail**, **wc**

Organize: mkdir, cp, mv, ! rm

## less (read big file up and down)

```
soh@Soo-Oh-Reveal Downloads % less test_file.txt
```



You can scroll up and down; to get out of this view, hit the letter q (for quit)

## Screenshare

# Terminal

Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: **cat**, **less**, **head**, **tail**, **wc**

Organize: **mkdir**, **cp**, **mv**, **!** **rm**

**head** (get top 10 lines of file)

```
soh@Soo-Oh-Reveal Downloads % head  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
```



The screenshot shows a terminal window titled "Downloads — zsh — 95x34". The command entered was "head Service\_requests\_received\_by\_the\_Oakland\_Call\_Center\_\_OAK\_311\_.csv". The output displays the first 10 lines of a CSV file. Each line contains several fields separated by commas, including REQUESTID, DATETIMEINIT, SOURCE, DESCRIPTION, REQCATEGORY, REQADDRESS, STATUS, REFERREDTO, DATETIMECLOSED, SRX, SRY, COUNCILDISTRICT, BEAT, PROBADDRESS, City, State, and various coordinates and timestamps.

REQUESTID	DATETIMEINIT	SOURCE	DESCRIPTION	REQCATEGORY	REQADDRESS	STATUS	REFERREDTO	DATETIMECLOSED	SRX	SRY	COUNCILDISTRICT	BEAT	PROBADDRESS	City	State																																																											
1114896	09/22/2021 09:52:02 AM	SeeClickFix	Parking - Abandoned Vehicle	POLICE	"(37.81977864304157, -122.28255543553857)"	PENDING	,,68446811.664,2125865..338,CCD3,07X,2711 ADELINE ST,Oakland,CA	11149283	09/22/2021 01:21:01 PM	SeeClickFix	Litter in Parks	PARKS	"(37.80614227875927, -122.25995162146964)"	OPEN	,,6053246.171,2120777..326,CCD3,14X,LAKESIDE PARK,Oakland,CA	11149337	09/22/2021 01:22:41 PM	SeeClickFix	Parking - Abandoned Vehicle	POLICE	"(37.81562064149288, -122.29227432584074)"	OPEN	,,6043975.908,2124405.201,CCD3,05Y,1940 CAMPBELL ST,Oakland,CA	11149389	09/22/2021 02:17:23 PM	Phone	Parking - Abandoned Vehicle	POLICE	"(37.73345386712095, -122.17184783265584)"	OPEN	,,6078222.298,2093847.515,CCD7,32X,921 MOORPARK AV,Oakland,CA	11149654	09/22/2021 04:17:03 PM	Phone	Parking - Abandoned Vehicle	POLICE	,OPEN,....,889 34TH ST,Oakland,CA	1118162	06/02/2021 02:28:27 PM	SeeClickFix	Parking - Abandoned Vehicle	POLICE	"(37.74840801463848, -122.15874703644427)"	CLOSED	,09/22/2021 12:21:57 PM,6082106.733,2099224.339,CCD7,32Y,2403	WARNER AVE	Oakland,CA	1118164	06/02/2021 02:35:42 PM	SeeClickFix	Parking - Abandoned Vehicle	POLICE	"(37.747889376764036, -122.15899944270086)"	CLOSED	,09/22/2021 12:21:26 PM,6082030.42,2099036.816,CCD7,32Y,2328	WARNER AVE	Oakland,CA	1123329	06/21/2021 01:55:05 PM	SeeClickFix	Parking - Abandoned Vehicle	POLICE	"(37.74620005447517, -122.16311987521138)"	CLOSED	,09/22/2021 12:20:52 PM,6080828.349,2098442.942,CCD7,32Y,WARNE R AVE & OLIVE ST,Oakland,CA	1128649	07/09/2021 09:40:35 PM	SeeClickFix	Parking - Abandoned Vehicle	POLICE	"(37.74323700992588, -122.15858999692728)"	CLOSED	,09/22/2021 10:36:39 AM,6082141.89,2097340.557,CCD7,32Y,10311 BANCROFT AVE,Oakland,CA	soh@Soo-Oh-Reveal Downloads %

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

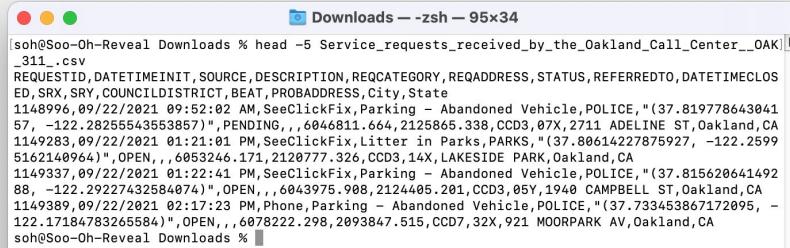
Create/modify: touch,  
cat

Read: **cat**, **less**, **head**,  
**tail**, **wc**

Organize: mkdir, cp,  
mv,  rm

**head -5** (get top 5 lines of file)

```
soh@Soo-Oh-Reveal Downloads % head -5  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
```



The screenshot shows a terminal window titled "Downloads -- zsh -- 95x34". The command entered was "head -5 Service\_requests\_received\_by\_the\_Oakland\_Call\_Center\_\_OAK\_311\_.csv". The output displays the first five lines of a CSV file. The columns listed are REQUESTID, DATETIMEINIT, SOURCE, DESCRIPTION, REQCATEGORY, REQADDRESS, STATUS, REFERERTO, DATETIMECLOSED, SRX, SRY, COUNCILDISTRICT, BEAT, PROBADDRESS, City, State. The data includes coordinates and addresses for various service requests.

REQUESTID	DATETIMEINIT	SOURCE	DESCRIPTION	REQCATEGORY	REQADDRESS	STATUS	REFERERTO	DATETIMECLOSED	SRX	SRY	COUNCILDISTRICT	BEAT	PROBADDRESS	City	State
1148996	09/22/2021 09:52:02 AM	SeeClickFix	Parking - Abandoned Vehicle, POLICE	"(37.81977864304157, -122.28255543553857)", PENDING,, ,6046811.664,2125865.338,CCD3,07X,2711 ADELIN	E ST, Oakland, CA										
1149283	09/22/2021 01:21:01 PM	SeeClickFix	Litter in Parks, PARKS	"(37.80614227875927, -122.25995162140964)", OPEN,, ,6053246.171,2120777.326,CCD3,14X,LAKESIDE PARK, Oakland, CA											
1149337	09/22/2021 01:22:41 PM	SeeClickFix	Parking - Abandoned Vehicle, POLICE	"(37.81562064149288, -122.29227432584074)", OPEN,, ,6043975.908,2124405.201,CCD3,05Y,1940 CAMPBELL ST, Oakland, CA											
1149389	09/22/2021 02:17:23 PM	Phone	Parking - Abandoned Vehicle, POLICE	"(37.733453867172095, -122.17184783265584)", OPEN,, ,6078222.298,2093847.515,CCD7,32X,921 MOORPARK AV, Oakland, CA											

Screenshare

# Terminal

Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: **cat**, **less**, **head**, **tail**, **wc**

Organize: mkdir, cp, mv, ! rm

## tail (get last 10 lines of file)

```
soh@Soo-Oh-Reveal Downloads % tail  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
```



```
soh@Soo-Oh-Reveal Downloads % tail Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
1129968,07/14/2021 03:53:11 PM,SeeClickFix,Parking - Abandoned Vehicle,POLICE,"(37.819612518928  
44,-122.270585554586)",OPEN,,6050267.36320819,2125739.22820119,CCD3,06X,30TH ST,Oakland,CA  
1138341,08/13/2021 02:28:12 PM,Phone,Street Cleaning - Schedule,KOCH,("37.7695130098713,-122.  
17483917302587"),OPEN,,60977640.825,2109698.73,CCD6,29X,6436 MOKELUMNE AV,Oakland,CA  
1143216,08/30/2021 04:23:17 PM,Phone,Tree - Pruning,TREES,,OPEN,,,,,,1047 SUNNYHILLS RD,Oaklan  
d,CA  
1133391,07/27/2021 12:07:54 PM,SeeClickFix,"Illegal Dumping - debris, appliances, etc.",ILLDUMP  
,("37.752289895207916,-122.15569565708161"),CLOSED,,08/04/2021 03:56:01 PM,6083013.83,2106621.  
965,CCD7,35X,9647 STEARNS AVE,Oakland,CA  
1126206,07/01/2021 12:01:36 PM,Phone,Parking - Abandoned Vehicle,POLICE,"(37.81016427409905,-1  
22.29321903095612)",OPEN,,6043665,2122424,CCD3,02Y,13TH ST & CENTER ST,Oakland,CA  
1132755,07/25/2021 11:32:19 AM,Email,Miscellaneous,OTHER,"(37.76813358428834,-122.179339186628  
37)",REFERRED,"OAKLAND SCHOOLS MAINTENANCE",,6076282.856,2106511.836,CCD6,30Y,2455 CHURCH ST,O  
akland,CA  
1142599,08/28/2021 08:15:30 AM,SeeClickFix,Parking - Abandoned Vehicle,POLICE,"(37.761697018681  
29,-122.14101998279526)",OPEN,,6087316.113,2103972.033,CCD7,35Y,23 SEQUOYAH VIEW DR,Oakland,C  
A  
1132676,07/24/2021 07:52:52 PM,SeeClickFix,"Illegal Dumping - debris, appliances, etc.",ILLDUMP  
,("37.74705146503974,-122.15721218616439"),CLOSED,,08/05/2021 04:06:06 PM,6082541.68,2098722.5  
87,CCD7,32Y,MACARTHUR BLVD & 99TH AVE,Oakland,CA  
1128005,07/08/2021 07:52:07 AM,Phone,Tree - Limb Down,TREES,"(37.763828000709166,-122.18194408  
959338)",CLOSED,,07/08/2021 02:33:52 PM,6075488.77,2104229.735,CCD6,30X,7338 Holly St,Oakland,C  
A  
1131301,07/28/2021 06:38:02 AM,SeeClickFix,Illegal Dumping & mattress/boxspring,ILLDUMP,"(37.78  
4124853826356,-122.18067269504203)",CLOSED,,07/22/2021 09:08:57 PM,6076002.034,2112340.578,CCD  
4,25X,4910 DAVENPORT AVE,Oakland,CA  
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv,  rm

## wc (word count)

```
soh@Soo-Oh-Reveal Downloads % wc  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv,  rm

## wc (word count)

```
soh@Soo-Oh-Reveal Downloads % wc  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
837710 10370583 176860461  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv, **⚠ rm**

wc (word count)

words

bytes (characters)

```
soh@Soo-Oh-Reveal Downloads % wc  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
837710 10370583 176860461  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
soh@Soo-Oh-Reveal Downloads %
```

lines

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv, **⚠ rm**

## wc (word count)

```
soh@Soo-Oh-Reveal Downloads % wc  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
837710 10370583 176860461  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
soh@Soo-Oh-Reveal Downloads %
```

name of file

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: **cat, less, head,**  
**tail, wc**

Organize: mkdir, cp,  
mv,  rm

## wc (word count)

```
soh@Soo-Oh-Reveal Downloads % wc  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
837710 10370583 176860461  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
soh@Soo-Oh-Reveal Downloads %
```

## wc -l (wc -line count)

```
soh@Soo-Oh-Reveal Downloads % wc -l  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
837710  
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, cp, mv, ! rm

## mkdir (make directory)

```
soh@Soo-Oh-Reveal Downloads % mkdir oakland_311
soh@Soo-Oh-Reveal Downloads % ls -al
total 345456
drwx-----@ 7 soh  staff      224 Sep 27 10:42 .
drwxr-xr-x+ 63 soh  staff     2016 Sep 27 10:29 ..
-rw-r--r--  1 soh  staff       0 Mar 27  2020 .localized
-rw-r--r--@ 1 soh  staff  176860461 Sep 26 13:13
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
drwxr-xr-x  2 soh  staff      64 Sep 27 10:42 oakland_311
-rw-r--r--  1 soh  staff    4000 Sep 26 20:45 test_file.txt
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, **cp**, **mv**, **⚠ rm**

## cp (copy)

copy the csv to oakland\_311 and name it data.csv

```
soh@Soo-Oh-Reveal Downloads % cp Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv oakland_311/data.csv
```

```
soh@Soo-Oh-Reveal Downloads % ls -al
```

```
total 345456  
drwx-----@ 7 soh staff 224 Sep 27 10:42 .  
drwxr-xr-x+ 63 soh staff 2016 Sep 27 10:29 ..  
-rw-r--r-- 1 soh staff 0 Mar 27 2020 .localized  
-rw-r--r--@ 1 soh staff 176860461 Sep 26 13:13 Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv  
drwxr-xr-x 3 soh staff 96 Sep 27 10:43 oakland_311
```

```
-rw-r--r-- 1 soh staff 4000 Sep 26 20:45 test_file.txt  
soh@Soo-Oh-Reveal Downloads %
```

**Screenshare**

```
soh@Soo-Oh-Reveal oakland_311 % ls -al  
total 345432  
drwxr-xr-x 3 soh staff 96 Sep 27 10:43 .  
drwx-----@ 7 soh staff 224 Sep 27 10:42 ..  
-rw-r--r--@ 1 soh staff 176860461 Sep 27 10:43 data.csv  
soh@Soo-Oh-Reveal oakland_311 %
```

# Terminal

Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, **cp**, **mv**, **⚠ rm**

## mv (move)

```
soh@Soo-Oh-Reveal oakland_311 % mv data.csv ../  
soh@Soo-Oh-Reveal oakland_311 % ls -al  
total 0  
drwxr-xr-x  2 soh  staff   64 Sep 27 10:47 ..  
drwx-----@ 8 soh  staff  256 Sep 27 10:47 ...  
soh@Soo-Oh-Reveal oakland_311 % cd ..  
soh@Soo-Oh-Reveal Downloads % ls -al  
total 690888  
drwx-----@ 8 soh  staff      256 Sep 27 10:47 .  
drwxr-xr-x+ 63 soh  staff    2016 Sep 27 10:29 ..  
-rw-r--r--@ 1 soh  staff     6148 Sep 26 20:42 .DS_Store  
-rw-r--r--  1 soh  staff      0 Mar 27 2020 .localized  
-rw-r--r--@ 1 soh  staff      13:13 Service_requests_received_by_the_Oakland_Call_Center_OAK_311_.csv  
-rw-r--r--@ 1 soh  staff  176860461 Sep 27 10:43 data.csv  
drwxr-xr-x  2 soh  staff     64 Sep 27 10:47 oakland_311  
-rw-r--r--  1 soh  staff    4000 Sep 26 20:45 test_file.txt  
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, **cp**, **mv**, **⚠ rm**

**mv** (move, can also be used to rename)

```
soh@Soo-Oh-Reveal Downloads % mv data.csv data2.csv
soh@Soo-Oh-Reveal Downloads % ls -al
total 690888
drwx-----@ 8 soh  staff
drwxr-xr-x+ 63 soh  staff
-rw-r--r--@ 1 soh  staff      6148 Sep 26 20:42 .DS_Store
-rw-r--r--   1 soh  staff      0 Mar 27 2020 .localized
-rw-r--r--@ 1 soh  staff  176860461 Sep 26 13:13
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
-rw-r--r--@ 1 soh  staff  176860461 Sep 27 10:43 data2.csv
drwxr-xr-x   2 soh  staff      64 Sep 27 10:47 oakland_311
-rw-r--r--   1 soh  staff     4000 Sep 26 20:45 test_file.txt
```

Screenshare

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, **cp**, **mv**, **⚠ rm**

## rm (remove)

```
soh@Soo-Oh-Reveal Downloads % rm data2.csv
soh@Soo-Oh-Reveal Downloads % ls -al
total 345456
drwx-----@ 7 soh  staff      224 Sep 27 10:50 .
drwxr-xr-x+ 63 soh  staff     2016 Sep 27 10:29 ..
-rw-r--r--@ 1 soh  staff     6148 Sep 26 20:42 .DS_Store
-rw-r--r--   1 soh  staff      0 Mar 27 2020 .localized
-rw-r--r--@ 1 soh  staff  176860461 Sep 26 13:13
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
drwxr-xr-x   2 soh  staff      64 Sep 27 10:47 oakland_311
-rw-r--r--   1 soh  staff    4000 Sep 26 20:45 test_file.txt
soh@Soo-Oh-Reveal Downloads %
```



**⚠ rm** is not reversible! Files do not get moved into Trash.

Screenshare

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, cp, mv, ! rm

## rm -i (remove -i nteractively)

```
soh@Soo-Oh-Reveal Downloads % rm -i test_file.txt
remove test_file.txt? n
soh@Soo-Oh-Reveal Downloads % ls -al
total 345448
drwx-----@ 7 soh  staff      224 Sep 27 10:56 .
drwxr-xr-x+ 63 soh  staff     2016 Sep 27 10:29 ..
-rw-r--r--@ 1 soh  staff     6148 Sep 26 20:42 .DS_Store
-rw-r--r--  1 soh  staff      0 Mar 27  2020 .localized
-rw-r--r--@ 1 soh  staff   176860461 Sep 26 13:13
Service_requests_received_by_the_Oakland_Call_Center__OAK_311_.csv
drwxr-xr-x  2 soh  staff      64 Sep 27 10:47 oakland_311
-rw-r--r--  1 soh  staff      0 Sep 27 10:56 test_file.txt
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

## Terminology

First commands: date, cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch, cat

Read: cat, less, head, tail, wc

Organize: **mkdir**, cp, mv, ! rm

**rm -r** (remove -recursively, i.e. folders and subfolders). Combine with **-i** for confirmation.

```
soh@Soo-Oh-Reveal Downloads % rm -ri oakland_311  
examine files in directory oakland_311? y  
remove oakland_311? y  
soh@Soo-Oh-Reveal Downloads %
```

Screenshare

# Terminal

Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: **mkdir**, **cp**,  
**mv**, **⚠ rm**

 Never ever **rm -rf ~**

This means **remove files -r**ecursively (i.e. any subfolders), **-f**orced (without any warnings or interactivity) from **~** (root)

It would delete everything on your computer

 It's a popular troll comment on various computer forums

# Terminal

## Terminology

First commands: date,  
cal, clear, man

Navigate: pwd, ls, cd

Create/modify: touch,  
cat

Read: cat, less, head,  
tail, wc

Organize: **mkdir**, **cp**,  
**mv**,  **rm**

We'll add some aliases to our shell configuration later on so we can always use **-i** when using **cp**, **mv**, and **rm**.

# Screenshare

# GitHub Desktop

## Installation

Even if you took J220, you may need to make some updates

# What is git and GitHub?

**Git** is a type of tool that allows for **version control** on your code or software. It's **revision history** for your code, kind of like [Google Docs' Version history](#), except Git doesn't save your code automatically at intervals.

Instead, you have to **commit** (save) your code, which only happens on your computer.

Then you **push** or **publish** changes, which moves your code to a central platform that your collaborators also have access to.

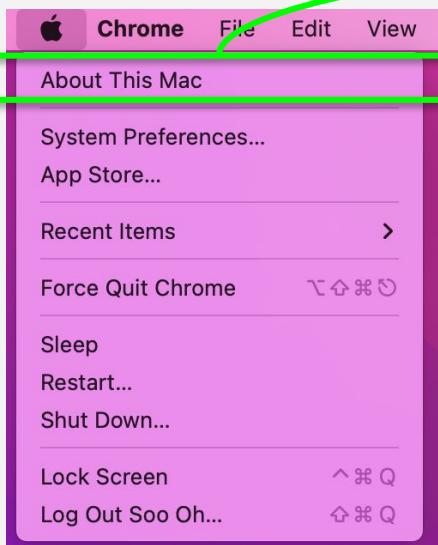
There are similar kinds of version control tools for code and software, but Git is the most popular.

[\*\*GitHub.com\*\*](#) is a web-based platform that offers Git version control as a service. There are other platforms that use Git. You can even install your own version of Git onto private servers so no one outside of your organization can see them.

# Create an account on `github.com`

Or send that password reset if you do have one.

# Determine what kind of chip you have



1. Go to the Apple icon in the upper-left of your screen, and click on **About This Mac**.
2. Find your **Chip or Processor** here:



# Determine what kind of chip you have

Apple Silicon

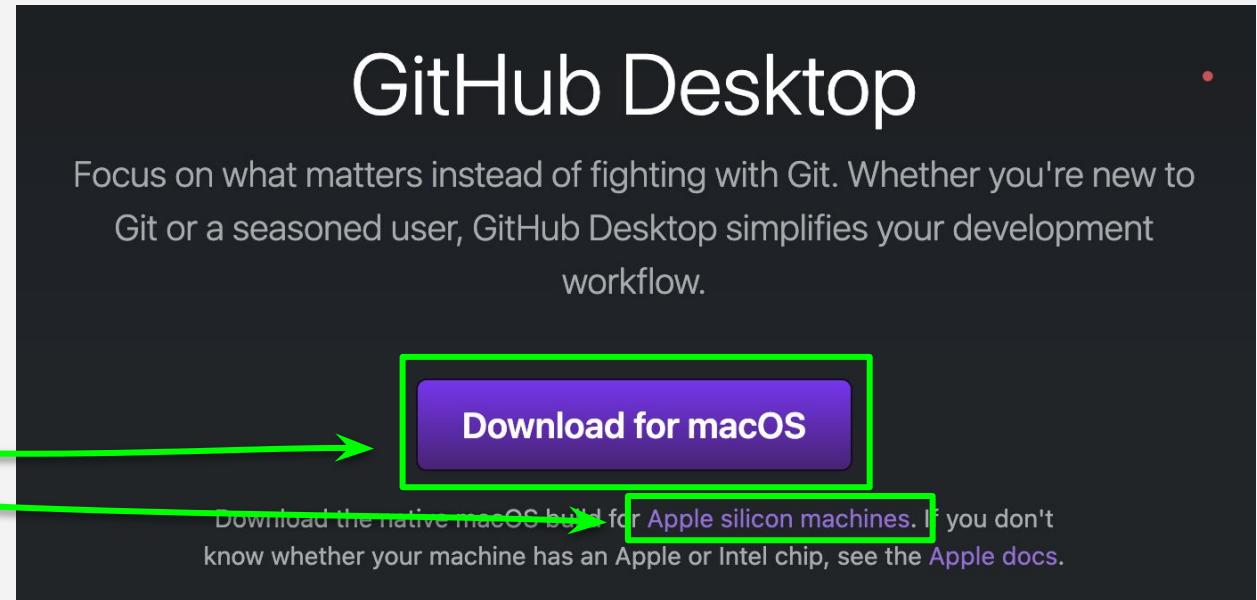


Intel

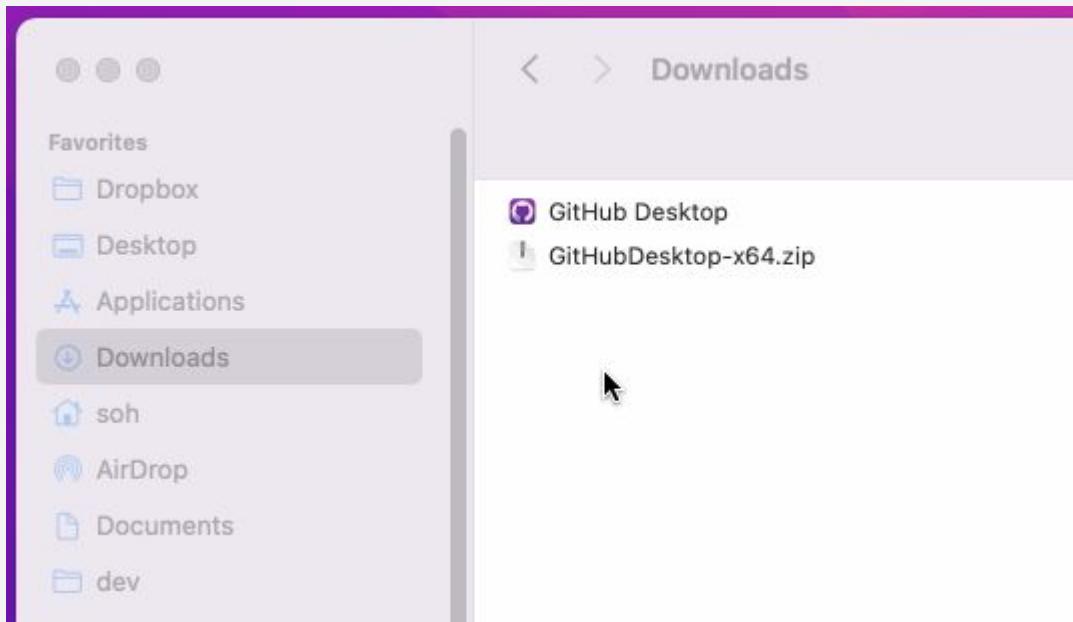


# Download GitHub Desktop

Go to <https://desktop.github.com> and download the correct version for your Macbook.

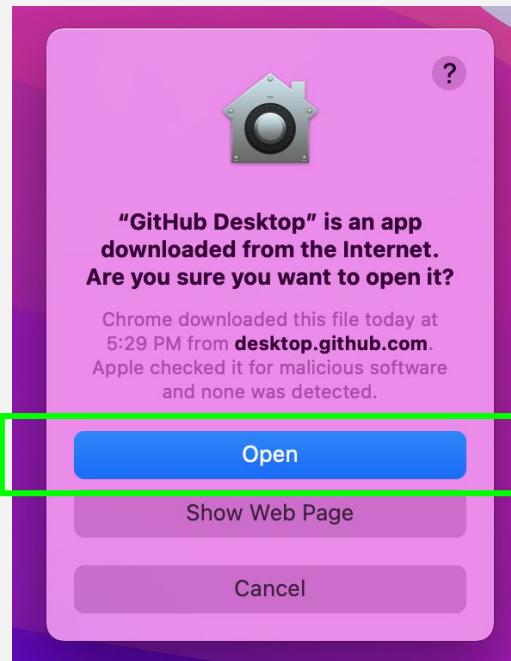


# Unzip the downloaded file...



... then **drag** the app to your **Applications** **folder** (don't forget this!)

Go to your Applications folder and open the GitHub Desktop app

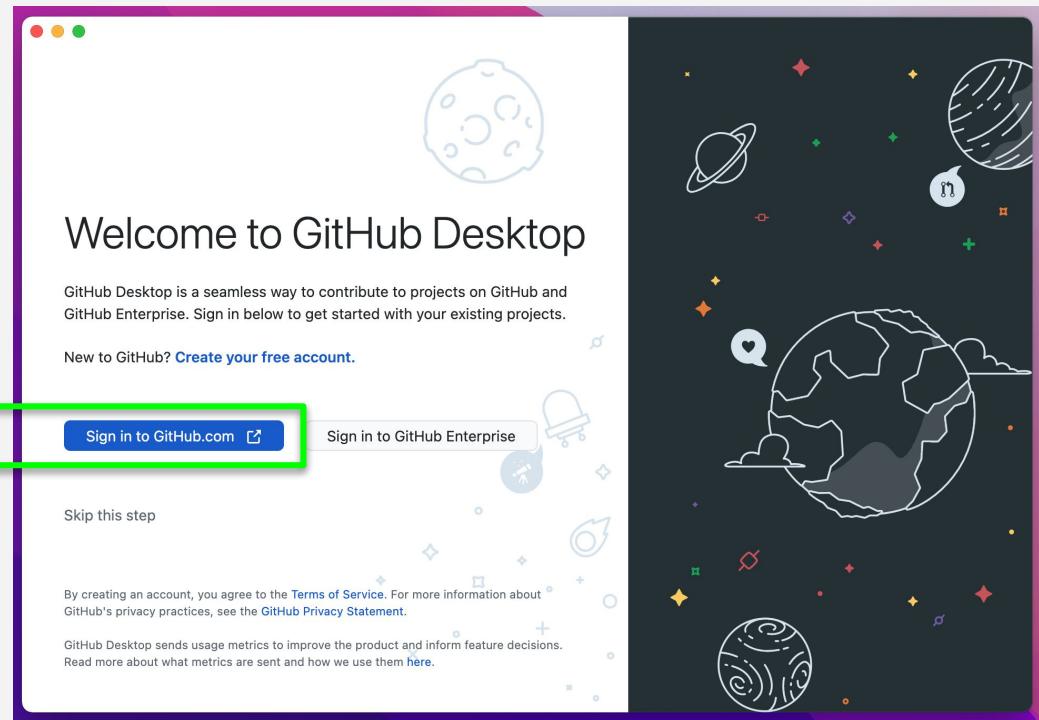


If you get this message,  
click on **Open**.

# Sign into GitHub.com

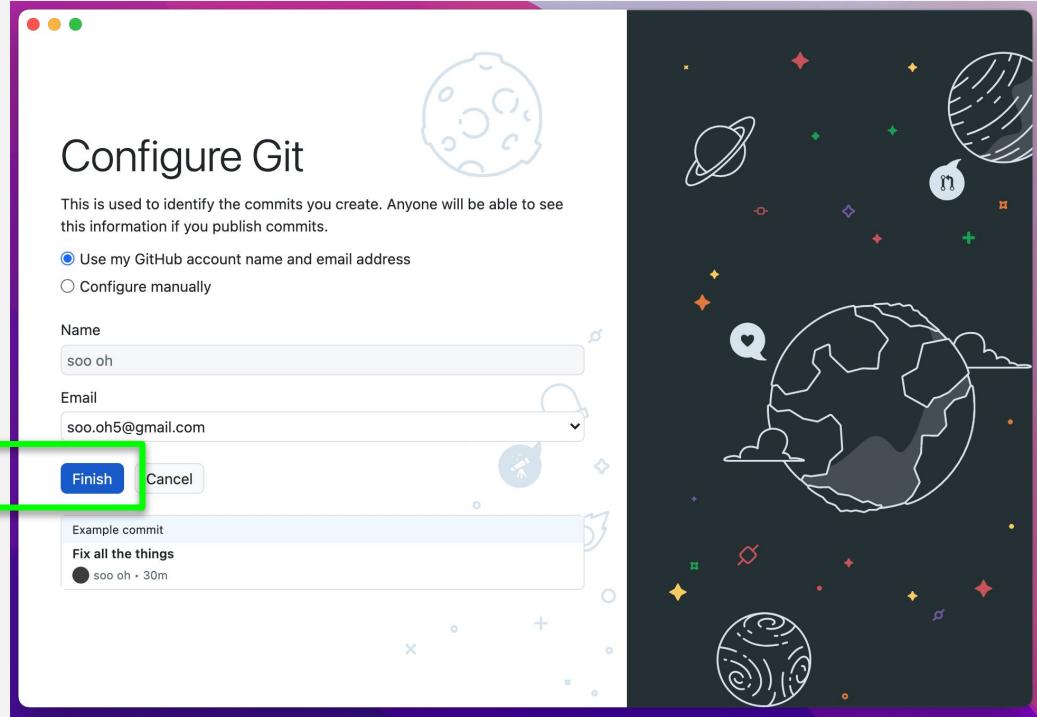
Click on the blue button.

That will open your default browser, and you'll log into GitHub.com.



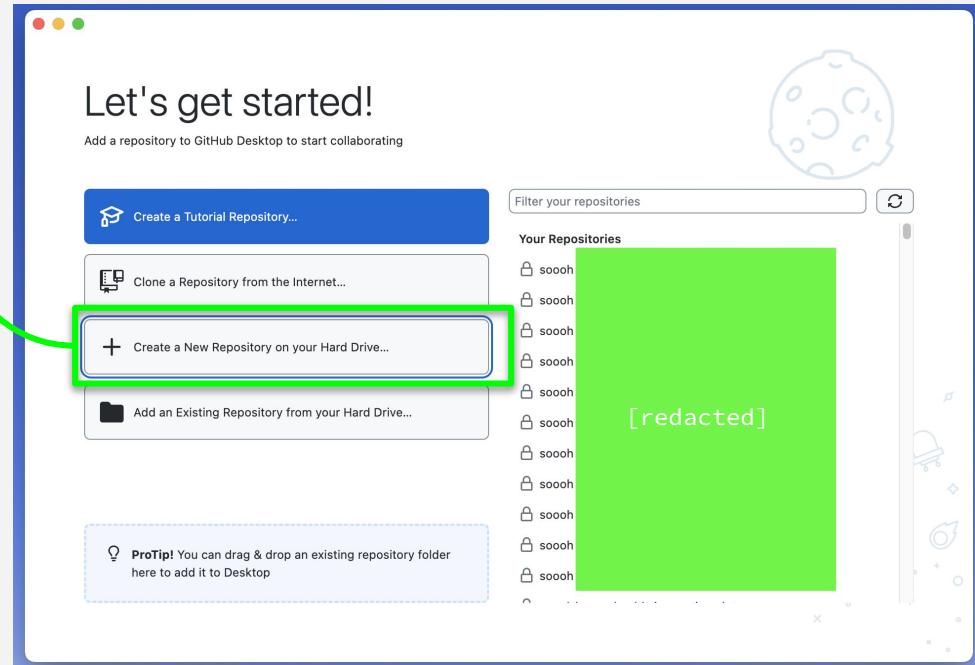
# Configure Git

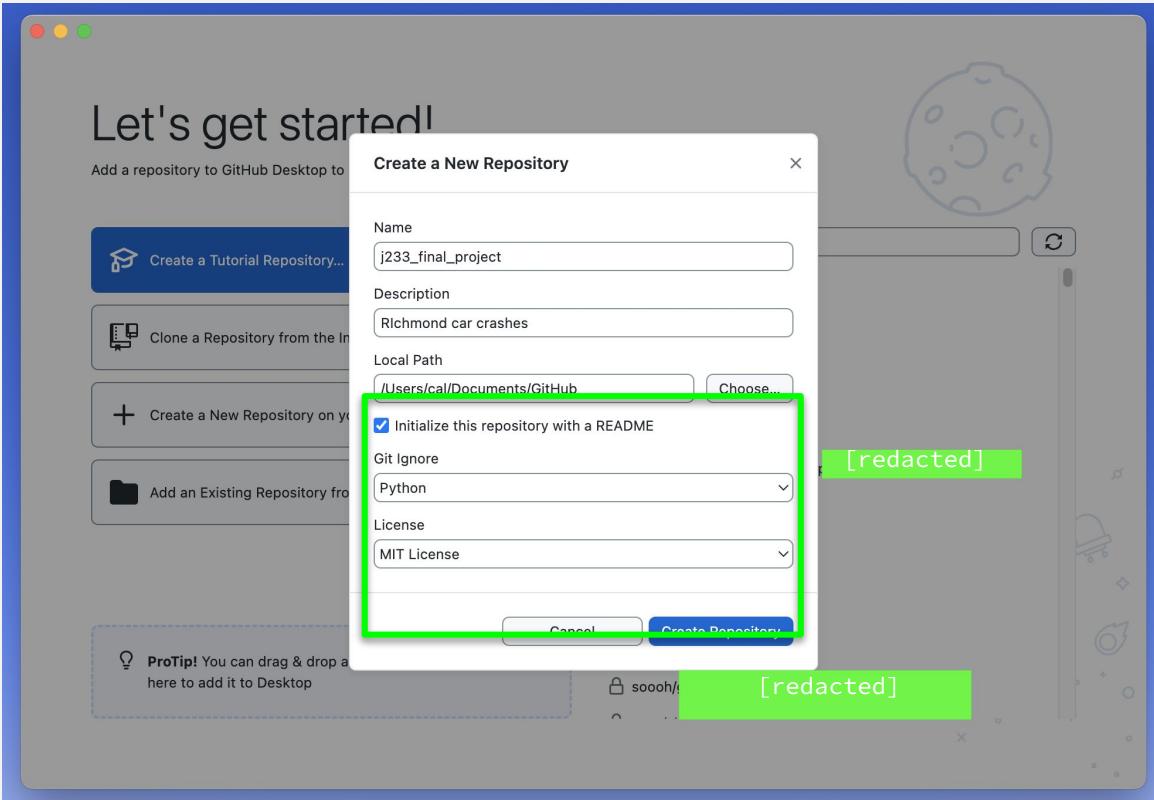
The default settings are fine. Click **Finish**.



# Create a new repository

Click the button that says “Create a New Repository on your Hard Drive...”





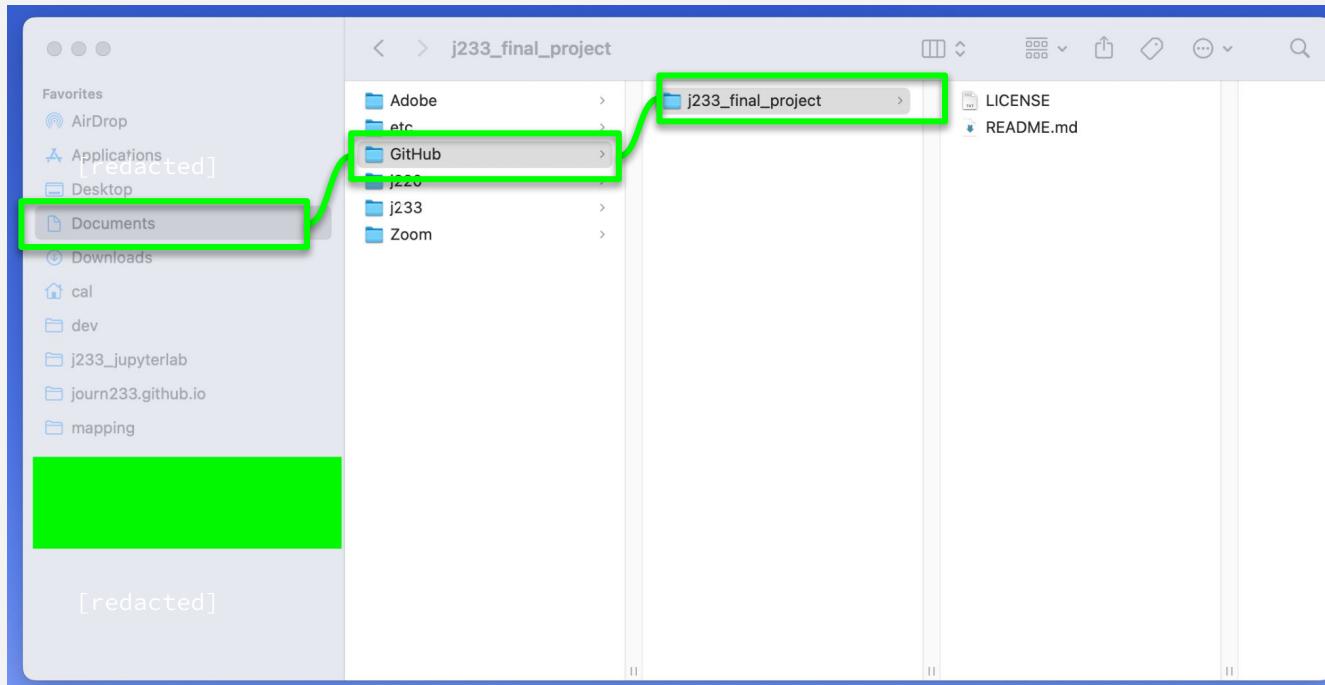
Give your project a  
**Name** and **Description**

Check the box to  
initialize with README

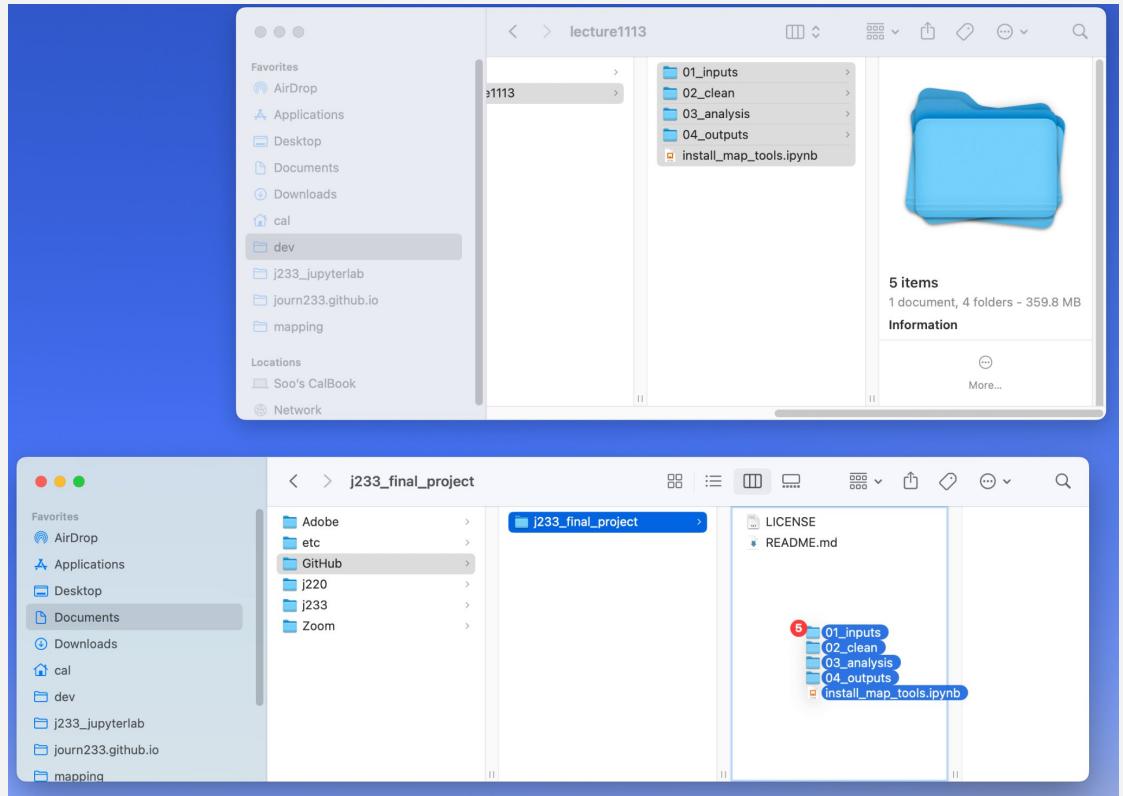
For **Git Ignore**, choose  
Python

For **License**, choose  
what you like (I  
recommend MIT  
License)

Navigate to your repo. It's in  
**Documents > GitHub > repo\_name**



# Drag your notebooks and data into the final project folder

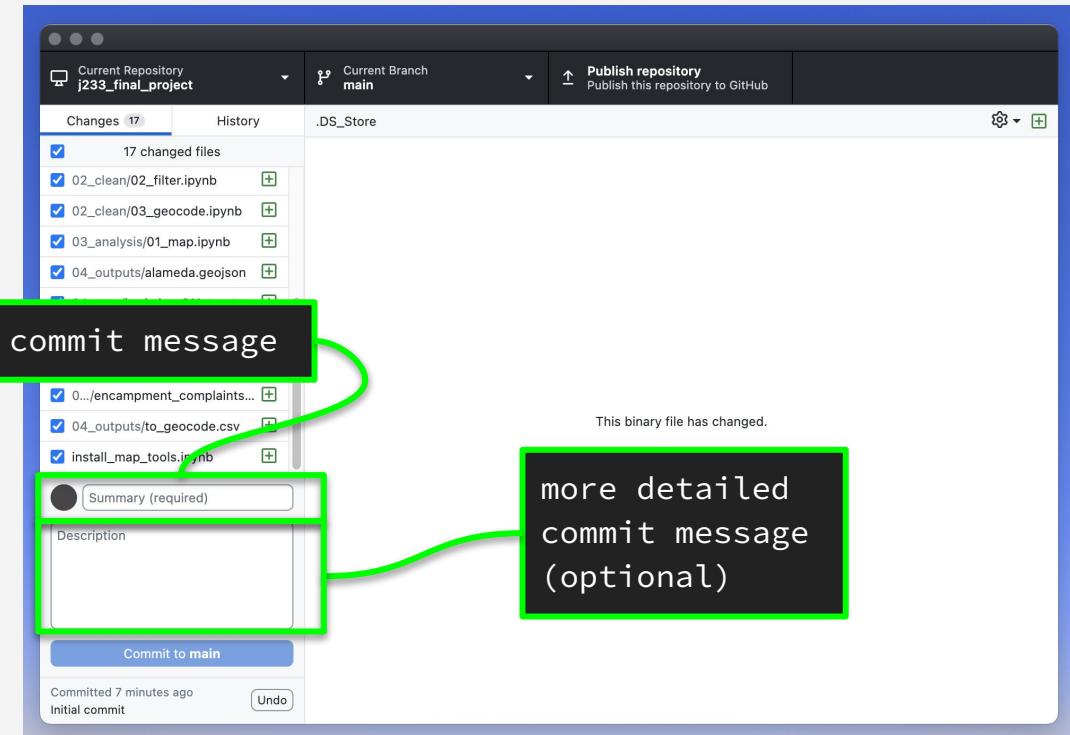


# Return to GitHub Desktop

You should now see **your project notebooks** here.

You now need to write a summary message, which is often called a “commit.”

“Committing” a file just means you’re saving a version of it.



# About commit messages

Every time you want to save a version of your code, you need to come up with a commit message.

A good commit message tells you what you did in case you want to go back and revert changes.

# Writing good commit messages matters

- o Commits on Feb 15, 2022

**adding slides and recordings**

 **sooh** committed 19 days ago

- o Commits on Feb 14, 2022

**adding feb 14 resources**

 **yolimartinez** committed 20 days ago

- o Commits on Feb 8, 2022

**adding feb 7 slides and video**

 **sooh** committed 26 days ago

- o Commits on Feb 7, 2022

**adding feb 7 materials**

 **sooh** committed 27 days ago

- o Commits on Feb 1, 2022

**adding jan 31 slides and recording**

 **yolimartinez** committed on Feb 1

- o Commits on Jan 31, 2022

**fixed assignment link**

 **yolimartinez** committed on Jan 31

**added homework and recommended reading for Jan 31**

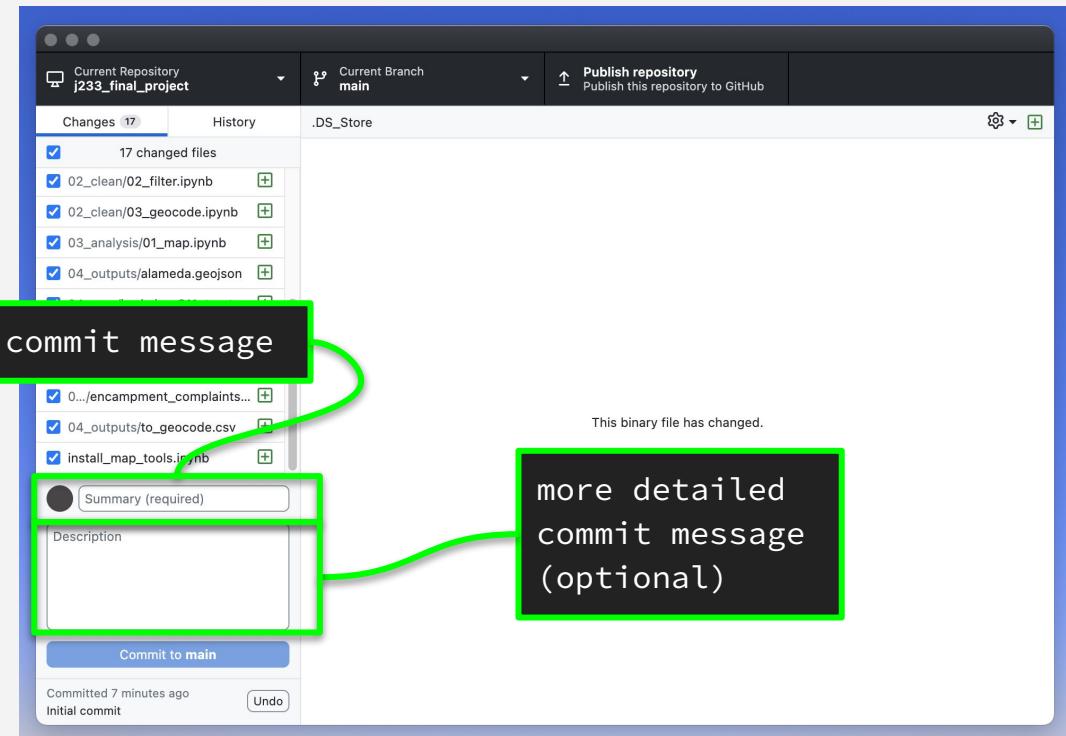
 **yolimartinez** committed on Jan 31

These are the commit messages for the J220 website.

How do you think we could have improved our commit messages?

# Write your first commit message

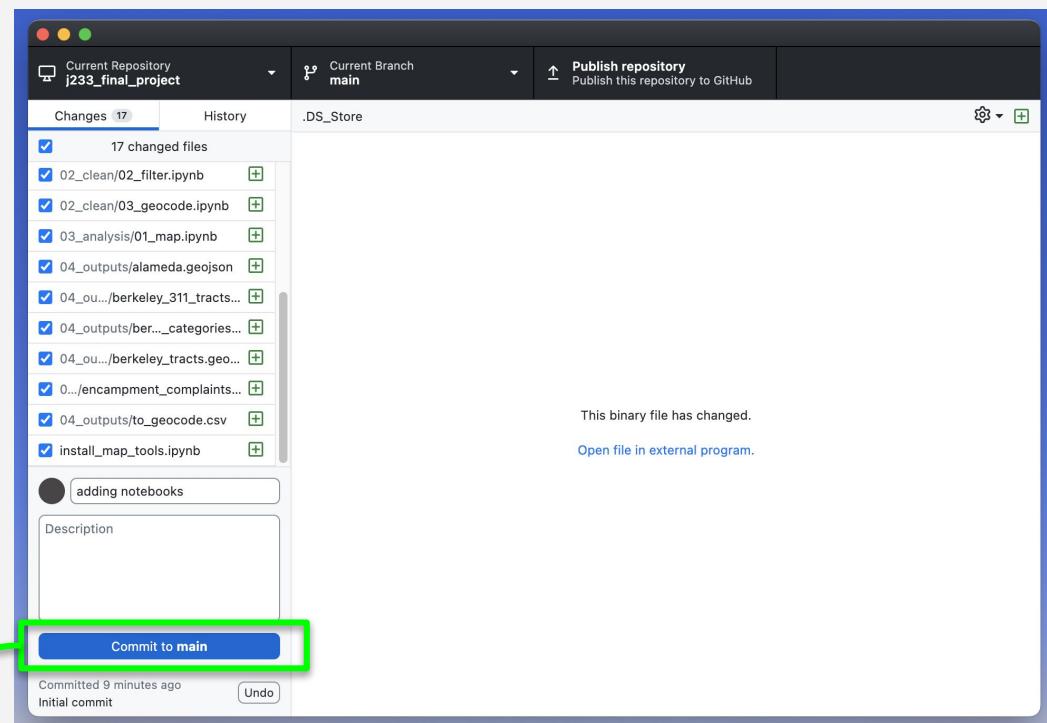
Write your first commit message.



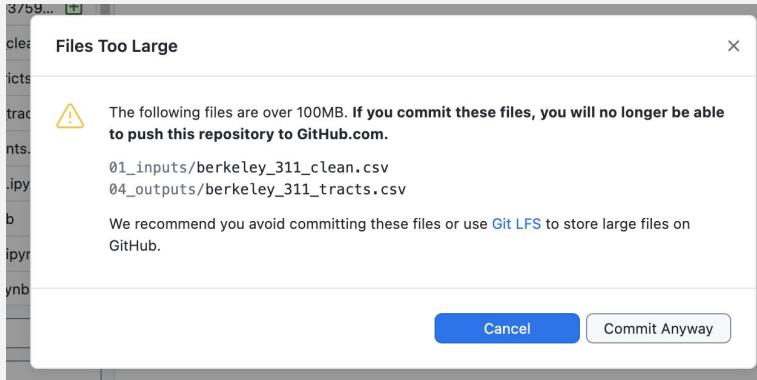
# Press the blue button to commit

After you've written a good commit message, you can press the blue button that says "Commit to **main**."  
(**main** is the name of the current branch, but you don't need to know this.)

Press this button  
to commit.



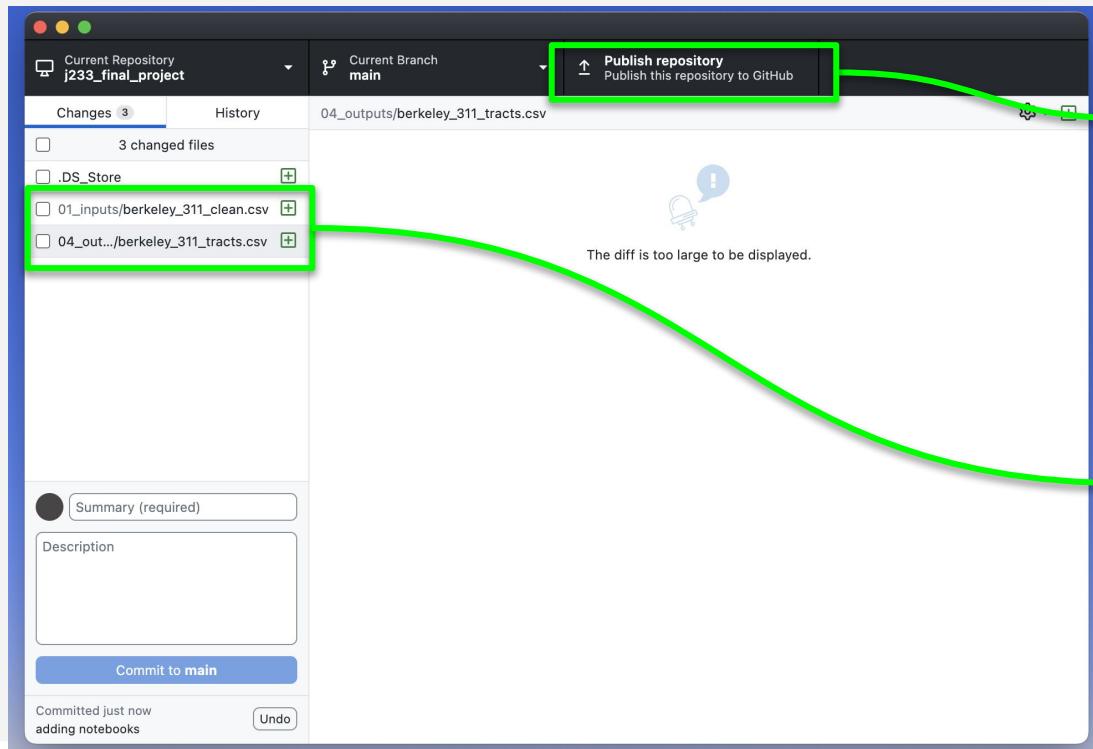
# Are your files too large?



Cancel the commit, then uncheck the files in the list.

We'll talk about how to deal with large files later.

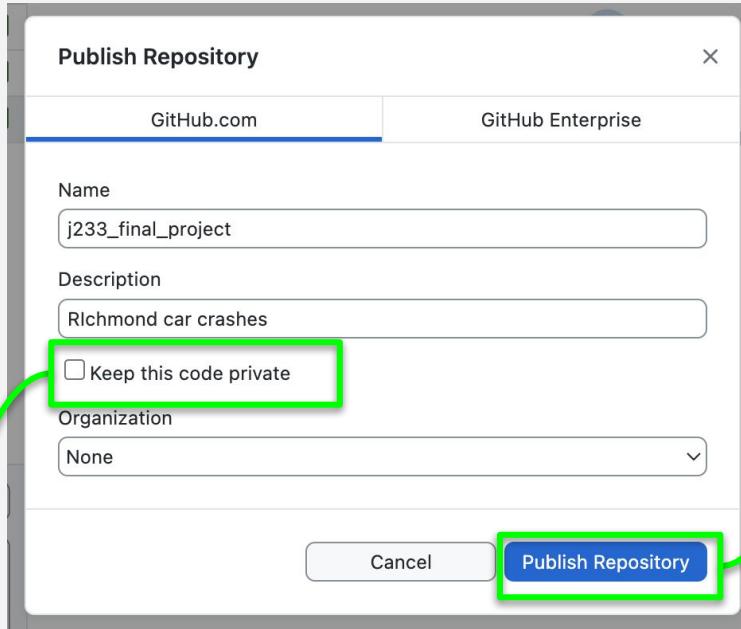
# Publish your repo to GitHub



Then you'll click on the button that says "**Publish repository.**"

If you didn't commit some of the large files, you'll see them on the left-side menu with a green plus button.

# You'll get another popup...



Push this button!

It doesn't matter if you check off this box right now.

# Making changes

You won't write any code in **GitHub Desktop**.

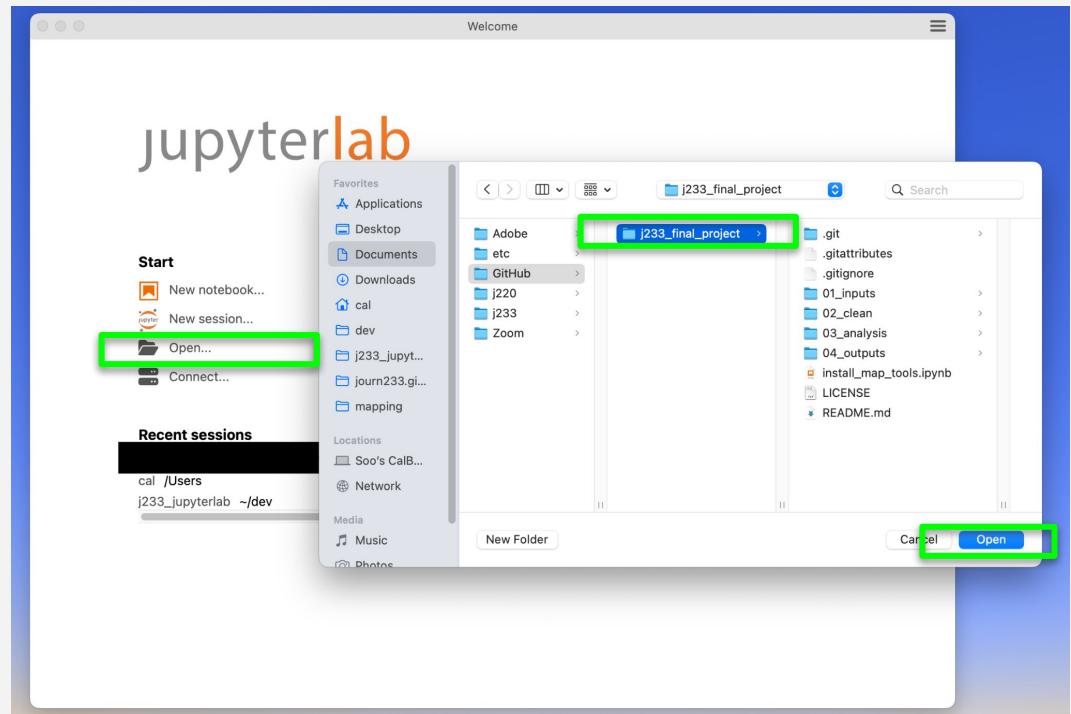
You should open up the folder you created in  
**JupyterLab Desktop**.

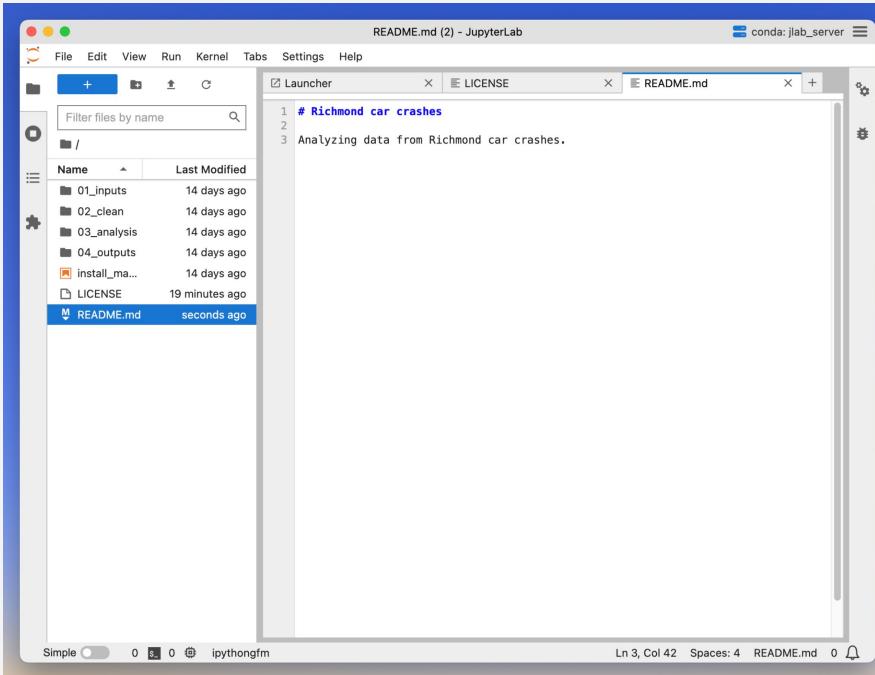
Anytime you want to make changes to your website, you'll go back to **GitHub Desktop**, write a **commit** message, then **publish** your repository.

Let's see what that looks like...

# Open JupyterLab

1. Click on **Open...**
2. Navigate to **Documents > GitHub > your final project repo** (whatever you called it)
3. Select the folder and hit **Open.**





The screenshot shows the JupyterLab interface with the title bar "README.md (2) - JupyterLab". The left sidebar displays a file tree with the following structure:

- /
- 01\_inputs (14 days ago)
- 02\_clean (14 days ago)
- 03\_analysis (14 days ago)
- 04\_outputs (14 days ago)
- install\_ma... (14 days ago)
- LICENSE (19 minutes ago)
- README.md (seconds ago)

The main area contains three tabs: "Launcher", "LICENSE", and "README.md". The "README.md" tab is active and shows the following content:

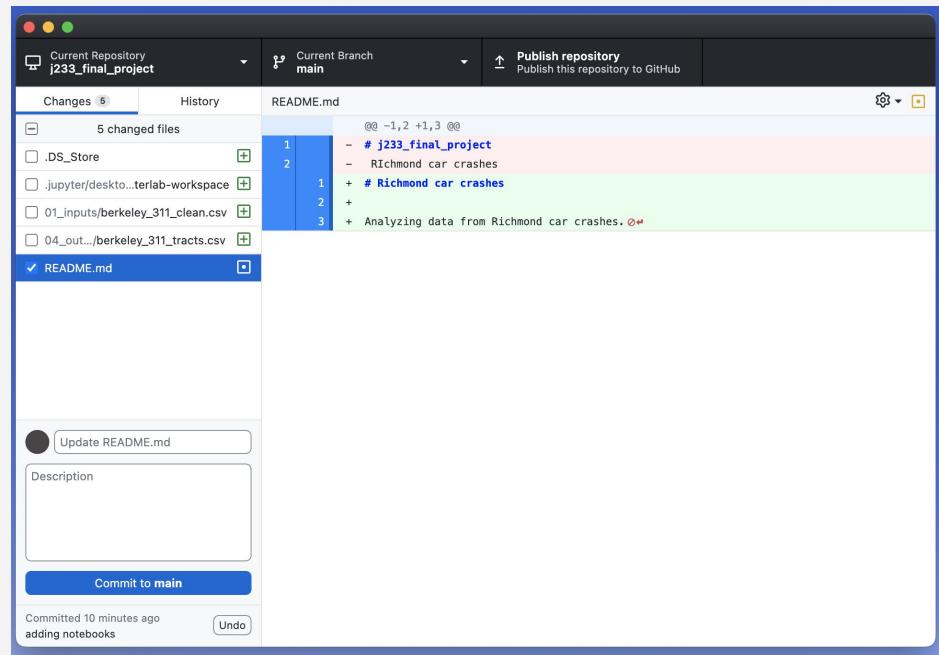
```
1 # Richmond car crashes
2
3 Analyzing data from Richmond car crashes.
```

At the bottom, there are status indicators: "Simple" (radio button), "0" (files), "0" (cells), "ipythonfm", "Ln 3, Col 42", "Spaces: 4", "README.md", and "0" (empty icon).

Make changes to **README.md** and save the file.

# Open GitHub Desktop

- Make sure **README.md** is checked.
- Write a commit message, push the button for **Commit to main** then **Publish repository**.



# Homework

<https://journ233.github.io>

Please help  
**clean up:** close  
windows,  
return tables,  
etc.