# Computational Social Science

## File management and Github

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# Plan

- File management
- Github
- Homework 1

# File management


Source: The Verge, 2021.

# File management

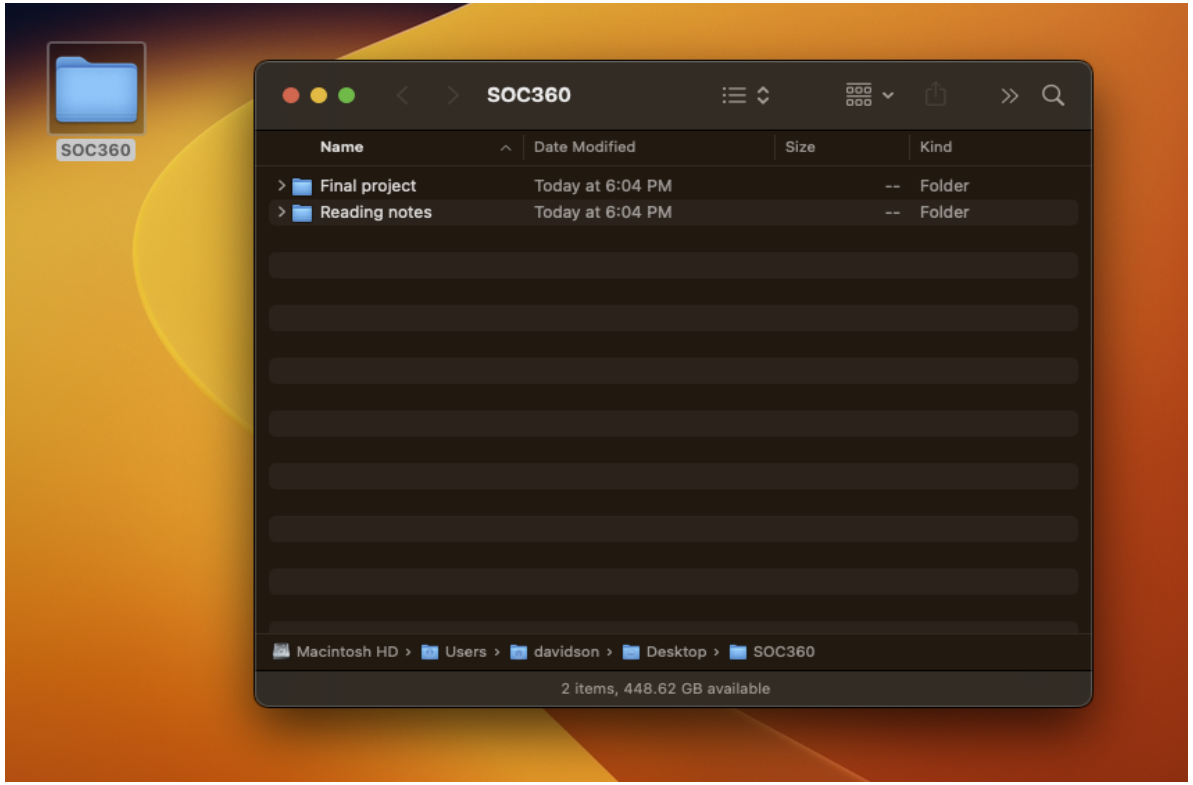
- File management in this class
  - Keeping track of course materials
  - Working on homework assignments
  - Organizing final projects
  - Reproducibility!

# Organizing your files

- Make a directory to contain all materials for this class
- Store this somewhere practical
  - e.g, `/Users/me/Documents/SOC360`, `/Users/me/Desktop/Classes/SOC360`
  - Do not just leave files in your `Downloads` directory!

# Organizing your files

- Within this directory, make a separate directory for the class materials, readings, and homework assignments. It might look something like this.



# Github

- Github is a version-control system
  - This allows you to easily control and manage changes to your code (similar to Track Changes in Word)
  - It can facilitate collaboration
  - Version-control helps to ensure reproducibility
  - It makes it easy to share code
- Github is *not* designed as a place to store large datasets (100Mb file size limit)

# Terminology

- A Github *repository* (or *repo* for short) contains all files and associated history
  - A repository can be public or private
  - Files should be organized into folders
  - Github can render Markdown files (suffix `.md` in Markdown), useful for documentation
- Github repositories exist online and you can *clone* them to your local computer

# Using Github

- You can interact with Github in several different ways:
  - RStudio integration (recommended)
  - Github Desktop (redundant if using RStudio)
  - Through your browser (not recommended, but viewing is fine)
  - Using the command line (recommended for advanced users)

# Using Github

Follow the instructions on the course website to set up Github with RStudio: https://github.com/t-davidson/SOC360-CSS/

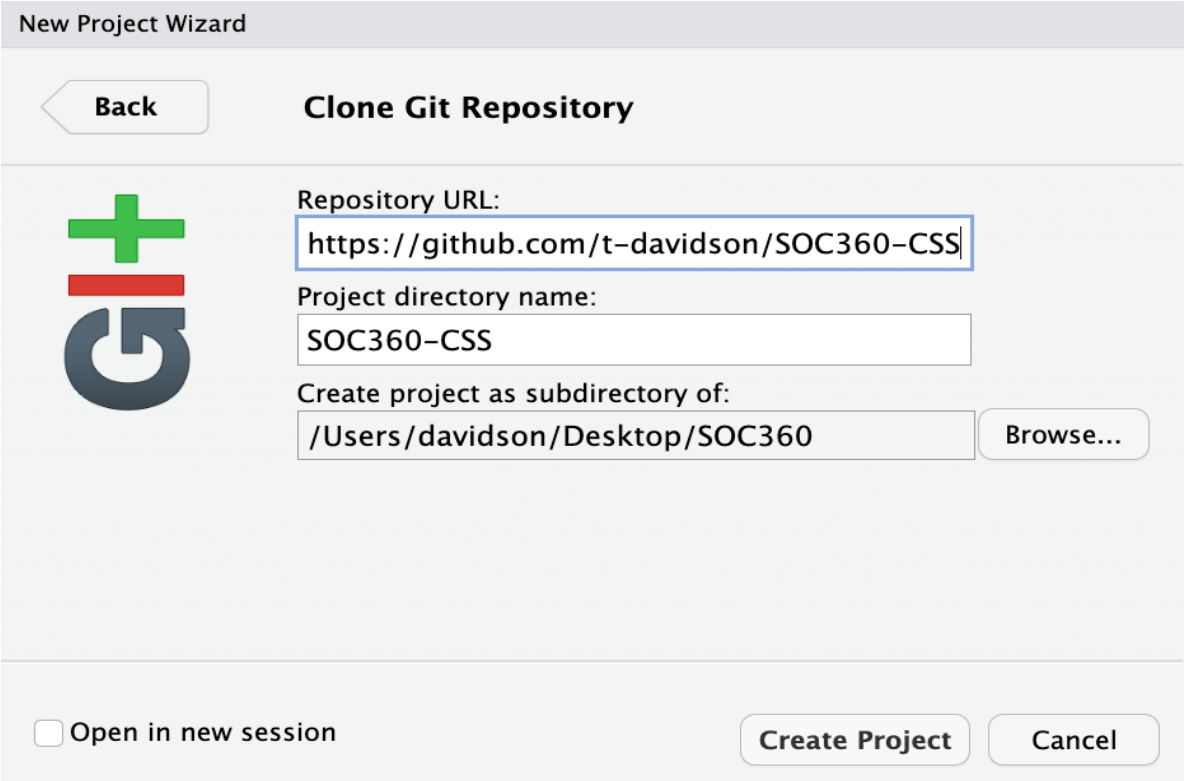
1. Register for a Github account
2. Install Git
3. Sync your Github account with RStudio

# Cloning the course materials

- Once you have this set up, navigate to the course website on Github and copy the URL:
  - https://github.com/t-davidson/SOC360-CSS

# Cloning the course materials

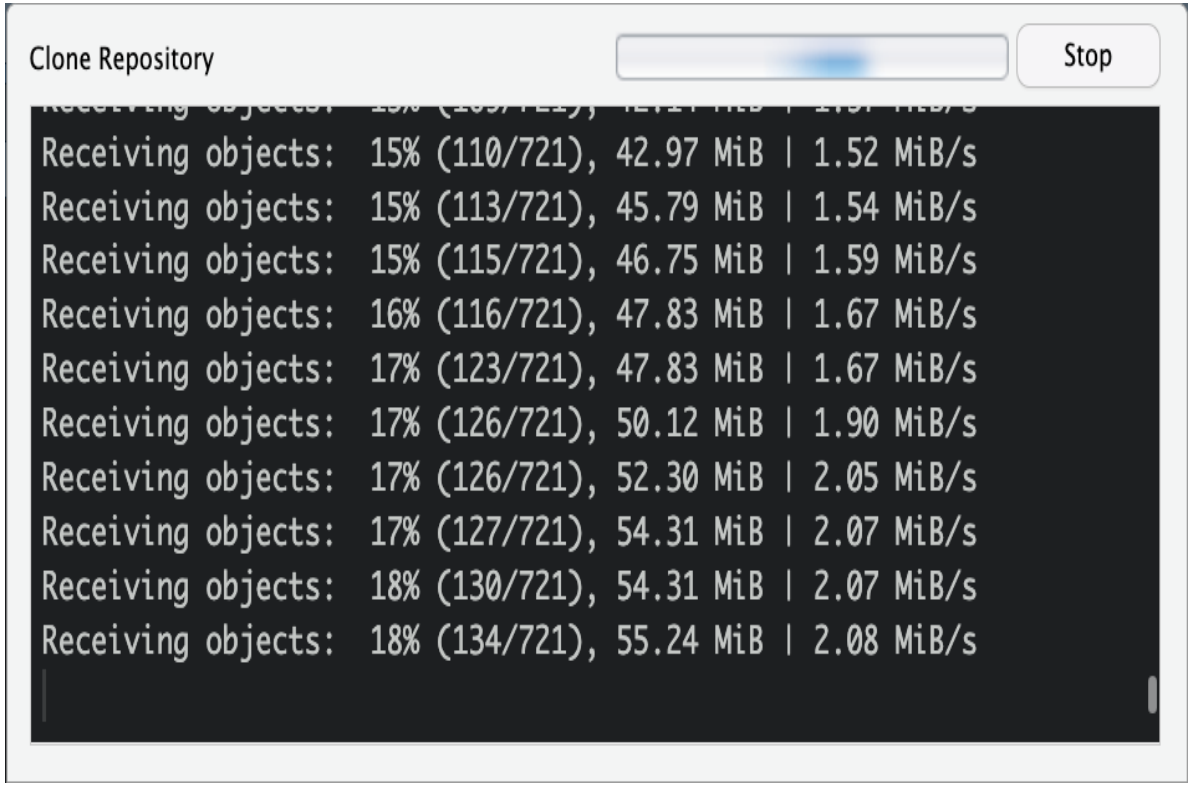
- In RStudio, click `File > New Project > Version Control > Git`



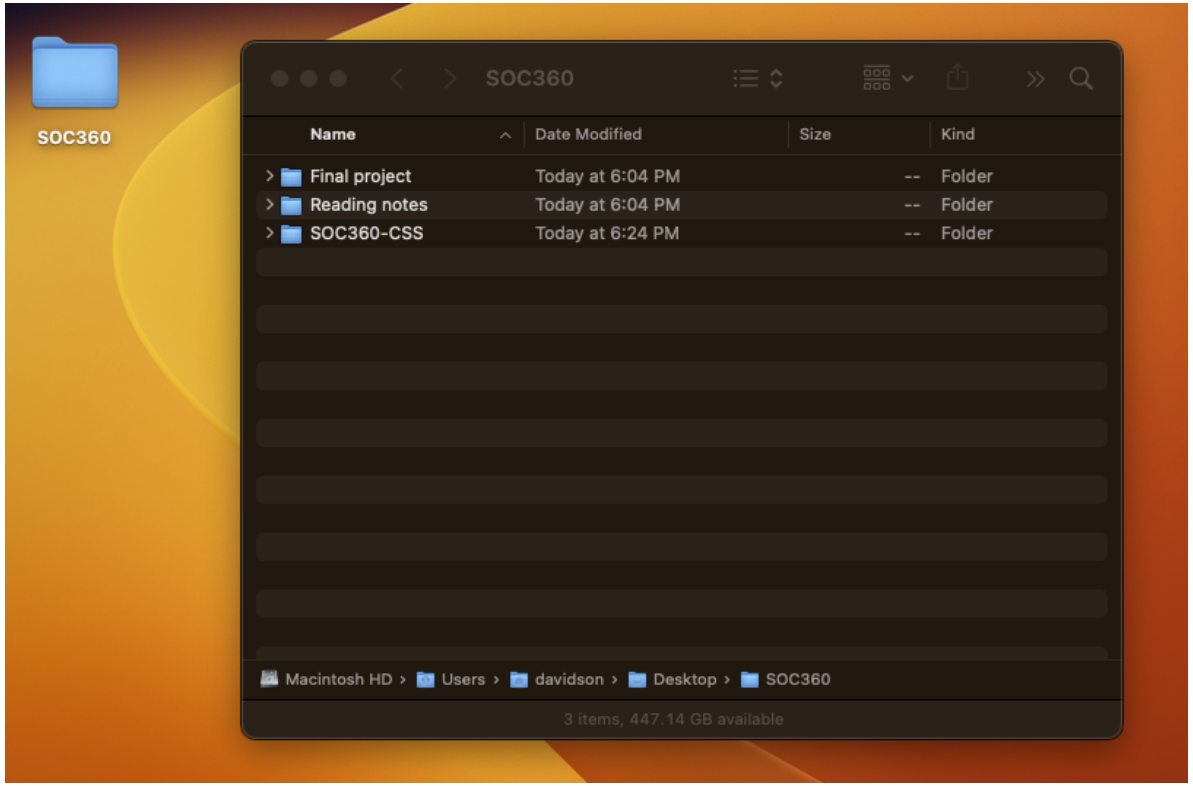
# Cloning the course materials

- Paste the URL into the `Repository URL` field
- Write a suitable name in the `Project directory name` field
  - This will be the name of the folder that is created on your computer
- Choose a location to store the repository on your computer
  - Recommend using the folder we created earlier
- Then click `Create Project`

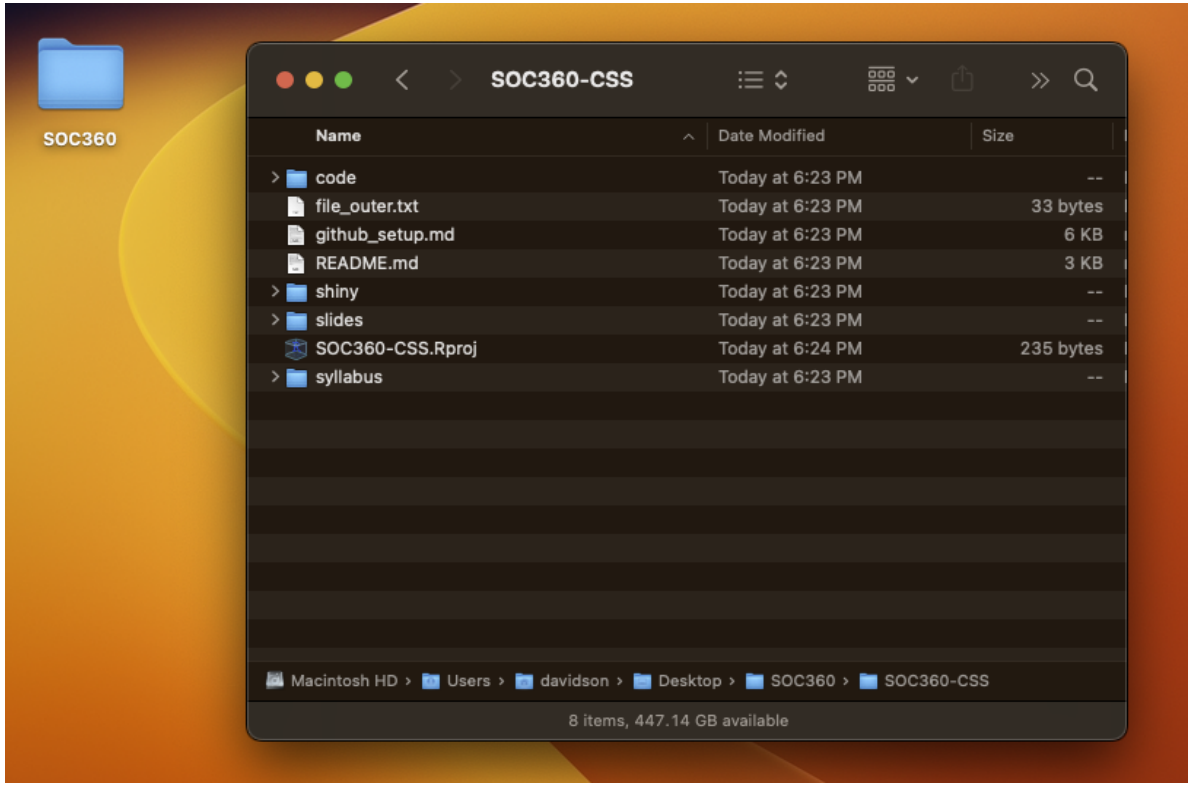
# Cloning the course materials



# Cloning the course materials

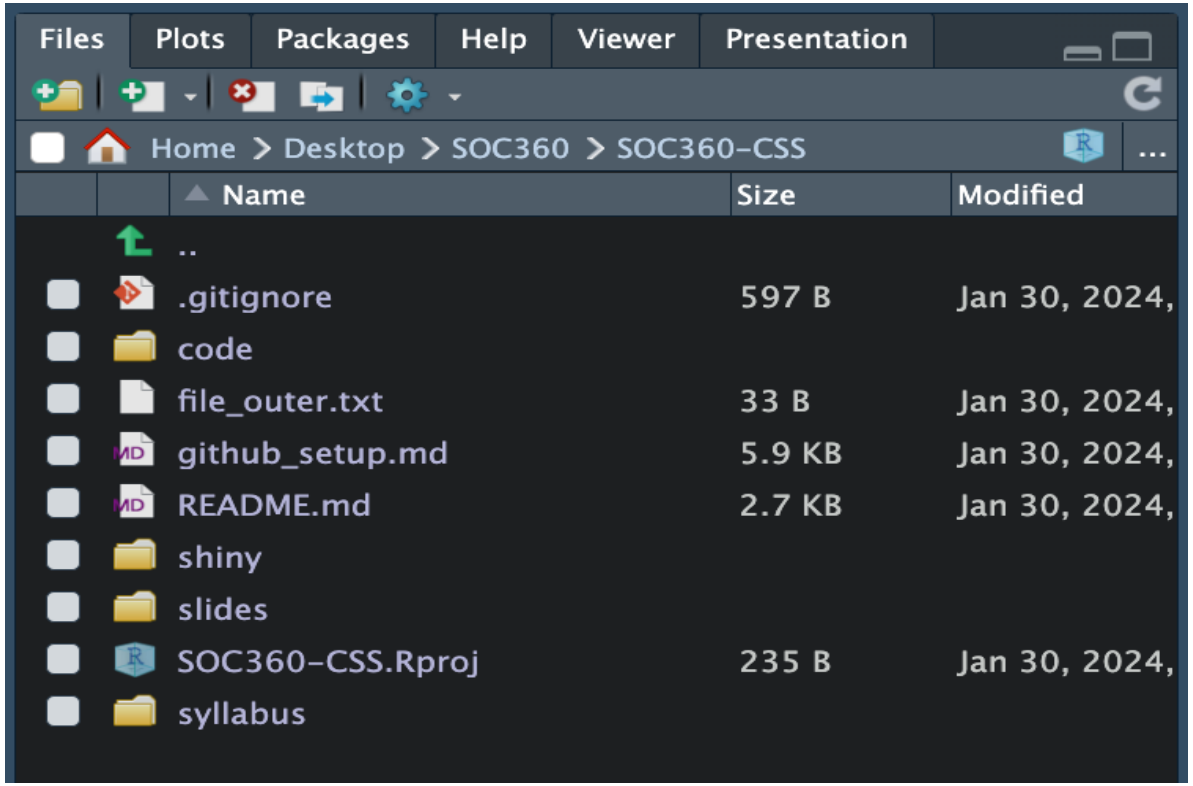


# Cloning the course materials



# Navigating files using RStudio

You can also use the `Files` pane in RStudio to navigate folders.



# Opening this .Rmd file

- Navigate to `slides/` and open `lecture5-file-management-and-github.Rmd` by double-clicking the file

# Navigating files using RStudio

Run the `getwd()` command to show the current working directory in R.

```
getwd()
```

# Navigating files using RStudio

Run the `setwd()` command to change your working directory. Try going one step back from the current directory using `..`. You can then run `getwd()` to verify it has changed.

```
setwd("..")
getwd()
```

# Navigating files using RStudio

- When a `.Rmd` file is opened RStudio defaults to the directory where the file is contained.
  - If you run `setwd()` it will change within a chunk, but other chunks will revert back to the working directory.

# Navigating files using RStudio

The working directory is important when considering loading files. Navigate to the `code` directory. You can use the `list.files` function to see a list of the files in the current directory.

```
setwd("../code/")
list.files()
```

# Using file paths

- The working directory is critical because it defines a path we need to use to load files. Different files will fall into one of three groups:
  1. File contained in the working directory.
  2. Files contained in outer directories.
  3. Files contained in inner, nested directories.

# Files contained in the working directory

If a file exists in the working directory, you will see it when running `list.files`. It can be loaded by using the file name.

```
library("tidyverse")
read_file("file.txt") %>%
    print()
```

# Files contained in an outer directory

If a file is contained in an upper level directory, you need to use the `..` to escape the current directory. For each step out from the current directory you need to add another `/..` to the file path. In this case, the file is contained one level above the current directory.

```
read_file("../file_outer.txt") %>%
    print()
```

# Files contained in an inner directory

If a file is contained in an inner directory, you need to add the name of the directory to the file path.

```
read_file("nested/file_nested.txt") %>%
    print()
```

# Files contained in an inner directory

If a file is contained in an inner directory, you need to add the name of the directory to the file path.

```
read_file("nested/nested2/file_nested2.txt") %>%
    print()
```

# Exercise

Modify the path below to find and print the contents of the hidden file in the course repository.

```
read_file("") %>%
    print()
```

# File navigation

## Common errors

- It is common to get errors if you misspecify a path when trying to load a file. You will get an error like the following:
  - `Error: 'filename' does not exist in the current working directory ('directory').`
- If this happens, check whether the file is in your current working directory.
  - You can always use your `Files` tab or your normal file viewer to verify the location.

# Homework 1

## Github classroom

- Homework 1 released on Github Classroom
  - Follow link on Canvas in the Module for this week
  - Click on link to Github Classroom
    - Select your Rutgers NetID
    - This will take you to a personal Github repository with a copy of the homework

# Homework 1

## Cloning the repository

- Clone the repository using the same process as above and store within the class folder
  - Copy the URL
  - Start a new project and paste the URL
  - Store it somewhere sensible
    - DO NOT store this inside the repository for the course materials

# Homework 1

## Working on the homework

- The homework is contained in a `.Rmd` file. All instructions are located in this file.

# Homework 1

## Submitting the homework

- Homework is due next Wednesday, 9/26, at 5pm
- Github submission instructions are included at the bottom of the homework file
  - Make a test submission to verify it works
  - There is also a guide on the Github wiki on the course website
- Once your submissions is on Github, share link on Canvas assignment

# Next week

- Collecting data from websites and social media platforms using Application Programming Interfaces (APIs)
  - Introductory lecture on Monday
  - No class Wednesday due to conference travel, at home assignment