




Introduction to Git

Childhood Cancer Data Lab

Why use version control?

- `code-final.R`, `code-final-final.R`, `code-final-final-for-real-this-time.R`
 - `file.R`, `file.R (1)`, `file.R (2)`, `file.R (3)`

 - Provides a framework for collaborating, particularly on code

 - Allows you to restore previous versions and compare between versions
 - Ever wish you could "Undo changes" to say, the version 2 months ago? Now you can!
 - Note: this functionality is *much* more powerful than "Track Changes" in Word or file recovery options in Google Drive
- 

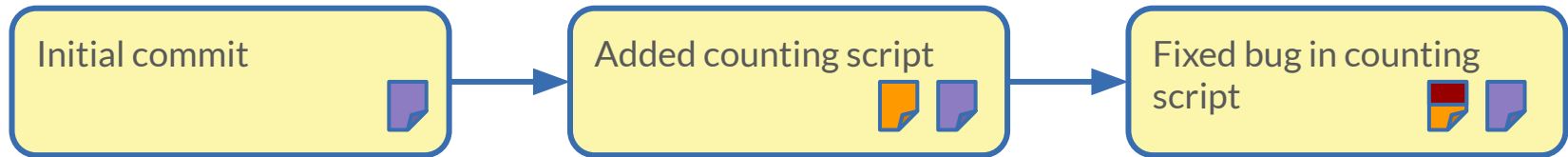
These days, we like to use `git` for version control

- **git** is an open-source software that performs version control
 - implemented as a set of command line tools
 - [GitKraken](#) is a GUI that (hopefully) makes `git` a bit easier to use
 - Other available GUIs: [SourceTree](#), [GitHub Desktop](#)
- **GitHub.com** is one of many websites that can host your **repositories**
 - Others include gitlab, bitbucket, gitbucket...
 - Using a host like GitHub means that you:
 - have a backup at all times
 - can work on your code from different computers
 - collaborate with other more easily



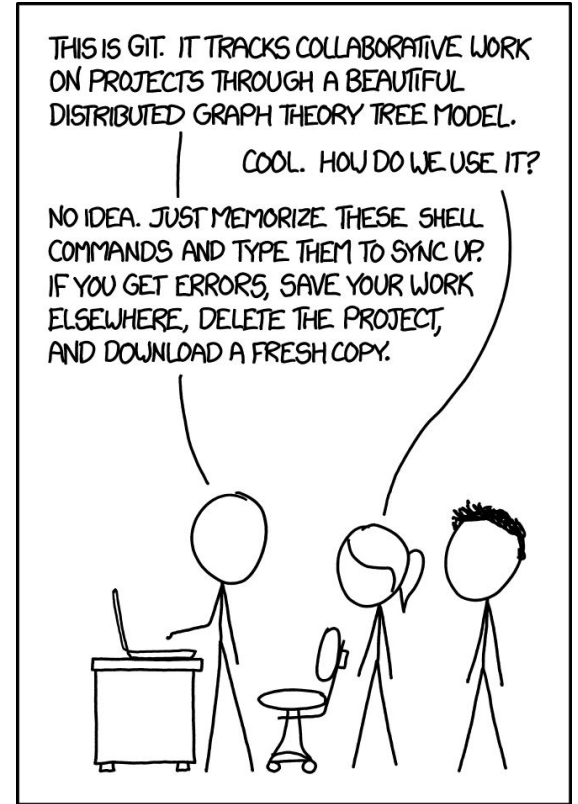
Git terminology

- A **repository** (repo) is a directory that `git` is managing
 - It looks like a regular folder from your perspective
 - There can be multiple copies of the repository, often on different machines
- Files that `git` knows about are **tracked**, i.e., they are under version control
- We take snapshots called **commits** to record the state *and history* of tracked files



Words to the wise

- git can be tricky, and the feelings of frustrations you ~~may~~ will have are normal!
- You will make mistakes.
That's ok! So do we, and so does everyone else!
- Remember: You have to start somewhere.



Forking a repository on GitHub

- Forking allows you to make *your own* copy of somebody else's repository
 - Anything that happens in the forked repository will not affect the “upstream” repository
 - You will be able to make whatever changes you want
 - Connections to what happens upstream will still exist, which can be handy
- Let's make a copy of the repository that holds examples for this workshop!
- Note that with *your own* project repositories, you would not need this step - you can just make a repository directly

💡 UPSTREAM



Repository X

🔗 FORK

Make a copy

💡 ORIGIN



X Copy

Remote

The screenshot shows a web browser displaying the GitHub repository page for 'rrp-workshop-exercises' by AlexsLemonade. The repository is public and has 10 forks, 1 star, and 5 watchers. The main content area shows a file browser for the 'main' branch with the following files and folders:

File/Folder	Recent Activity	Time
analyses/mutation_counts	_now_ the notebook is rendered	last week
data	remove extra .gitkeep files	last year
scripts	remove magrittr, switch to native pipe	last week
.gitignore	Updated .gitingore	last year
LICENSE.md	Add license	last year
README.md	Update link to workshop website	last year
rrp-workshop-exercises.Rproj	Add rproject	last year

Below the file browser, there are links for README, Code of conduct, License, and Security policy. The README section is currently empty, showing the title 'Reproducible Research Practices Workshop Exercises'.

On the right side, the 'About' section describes the repository as 'Materials for reproducible research practices workshop exercises.' and lists repository statistics: 1 Branch, 0 Tags, 1 star, 5 watching, and 10 forks. The 'Releases' and 'Packages' sections both show 'No releases/packages published' with links to create a new release or package.

Go to <https://github.com/AlexsLemonade/rrp-workshop-exercises>
(make sure you are logged into GitHub)

The screenshot shows the GitHub interface for the repository 'rrp-workshop-exercises' by user 'AlexsLemonade'. The repository is public and has 10 forks, 1 star, and 5 watchers. The 'Fork' button is highlighted with a red box. Below the repository name, there is a table of files and folders with their last update dates. The 'About' section on the right provides details about the repository, including its description, license, and activity. The 'Releases' and 'Packages' sections indicate that no releases or packages have been published yet.

rrp-workshop-exercises Public

Edit Pins Unwatch 5 Fork 10 Star 1 Code

sjspielman Merge pull request #17 from AlexsLemo... 87fafa7 · last week 64 Commits

File/Folder	Last Update
analyses/mutation_counts	_now_ the notebook is rendered last week
data	remove extra .gitkeep files last year
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main Go to file

README Code of conduct License Security policy

Reproducible Research Practices Workshop Exercises

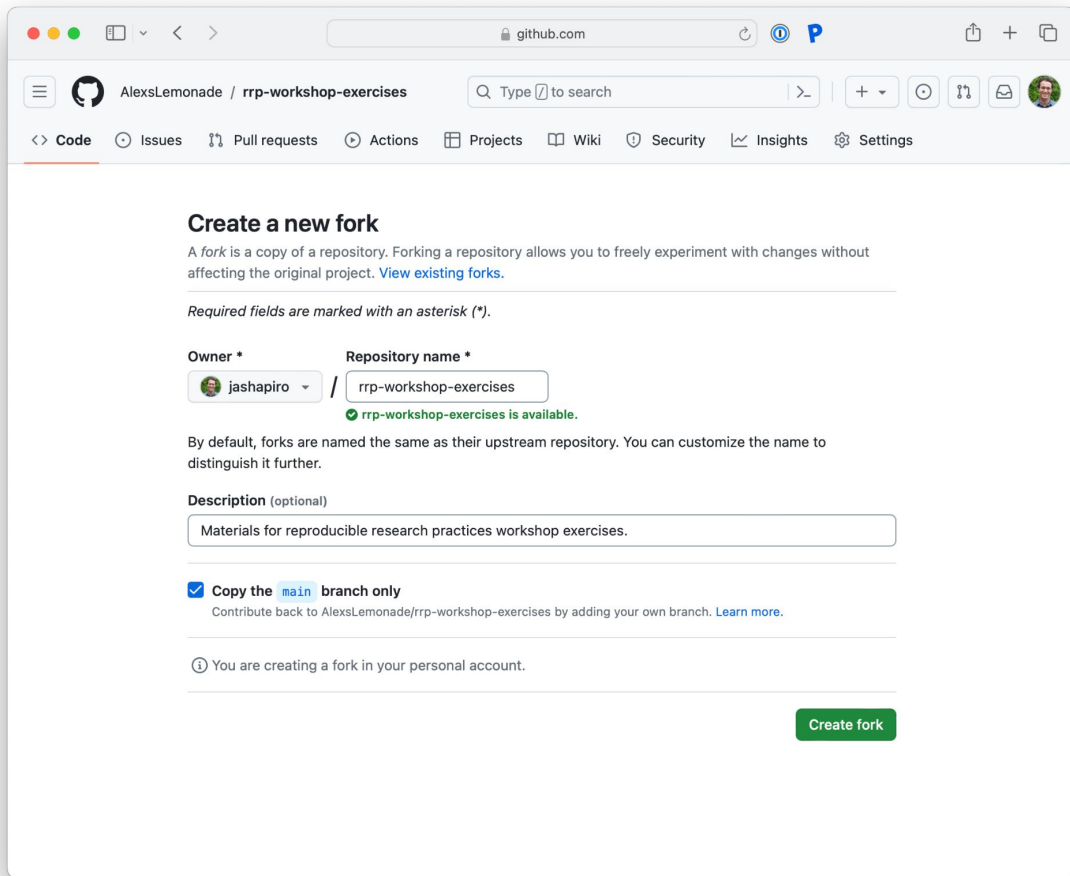
Materials for reproducible research practices workshop exercises.

Readme View license 1 Branch 0 Tags Activity 1 star 5 watching 10 forks Report repository

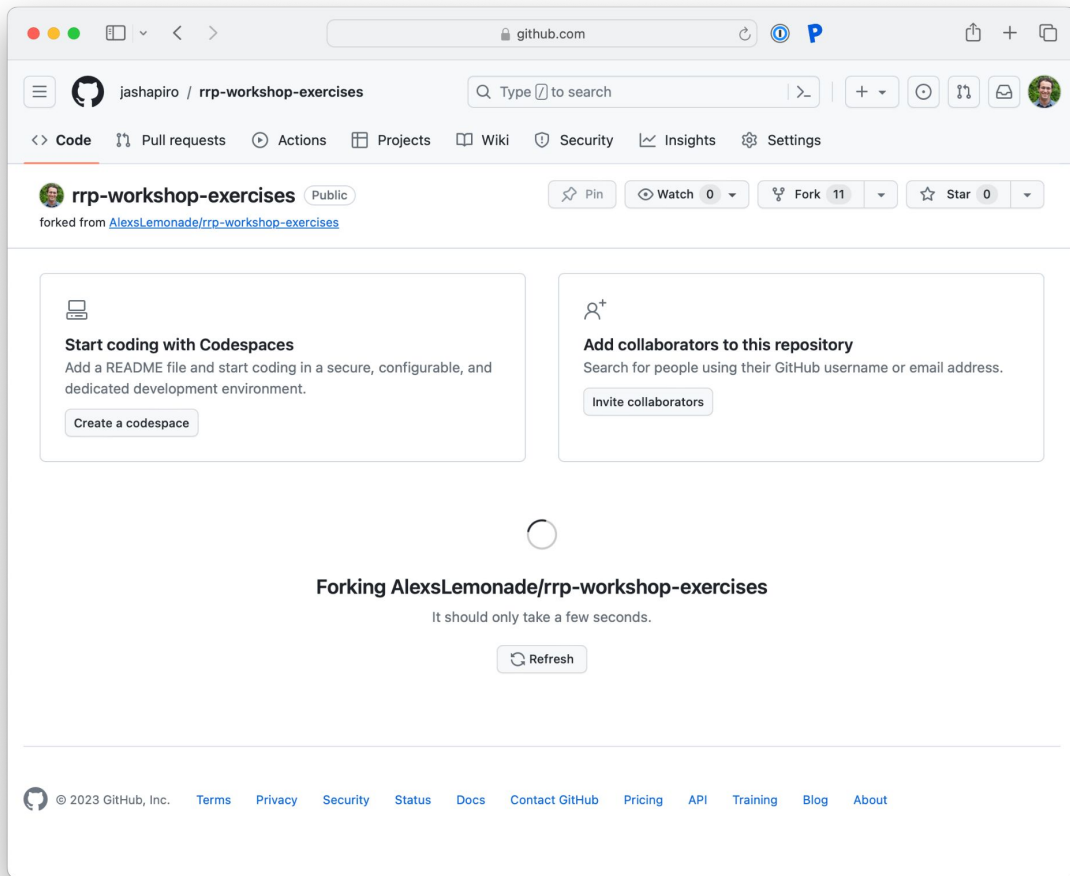
Releases No releases published Create a new release

Packages No packages published Publish your first package

Click the “Fork” button



Change the name if you like, but probably not; click “Create fork”



Wait...

The screenshot shows a GitHub repository page for 'rrp-workshop-exercises' by user 'jashapiro'. The repository is public and was forked from 'AlexsLemonade/rrp-workshop-exercises'. A pull request is open, merged by 'sjspielman' from 'AlexsLemonade/sjspi...' on 87fa1e7 last week, with 64 commits. The main branch is up to date with the upstream repository. The file list includes folders for 'analyses/mutation_counts', 'data', and 'scripts', and files for '.gitignore', 'LICENSE.md', 'README.md', and 'rrp-workshop-exercises.Rproj'. The repository has 11 forks and 0 stars. The page title is 'Reproducible Research Practices Workshop'.

rrp-workshop-exercises (Public)
forked from [AlexsLemonade/rrp-workshop-exercises](#)

sjspielman Merge pull request [AlexsLemonade#17](#) from AlexsLemonade/sjspi... 87fa1e7 · last week 64 Commits

This branch is up to date with [AlexsLemonade/rrp-workshop-exercises:main](#) · [Contribute](#) · [Sync fork](#)

main

File/Folder	Commit Message	Last Updated
analyses/mutation_counts	_now_ the notebook is rendered	last week
data	remove extra .gitkeep files	last year
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README Code of conduct License Security policy

Reproducible Research Practices Workshop

About
Materials for reproducible research practices workshop exercises.

- Readme
- View license
- 1 Branch
- 0 Tags
- Activity
- 0 stars
- 0 watching
- 11 forks

Releases
No releases published
[Create a new release](#)

Packages
No packages published
[Publish your first package](#)

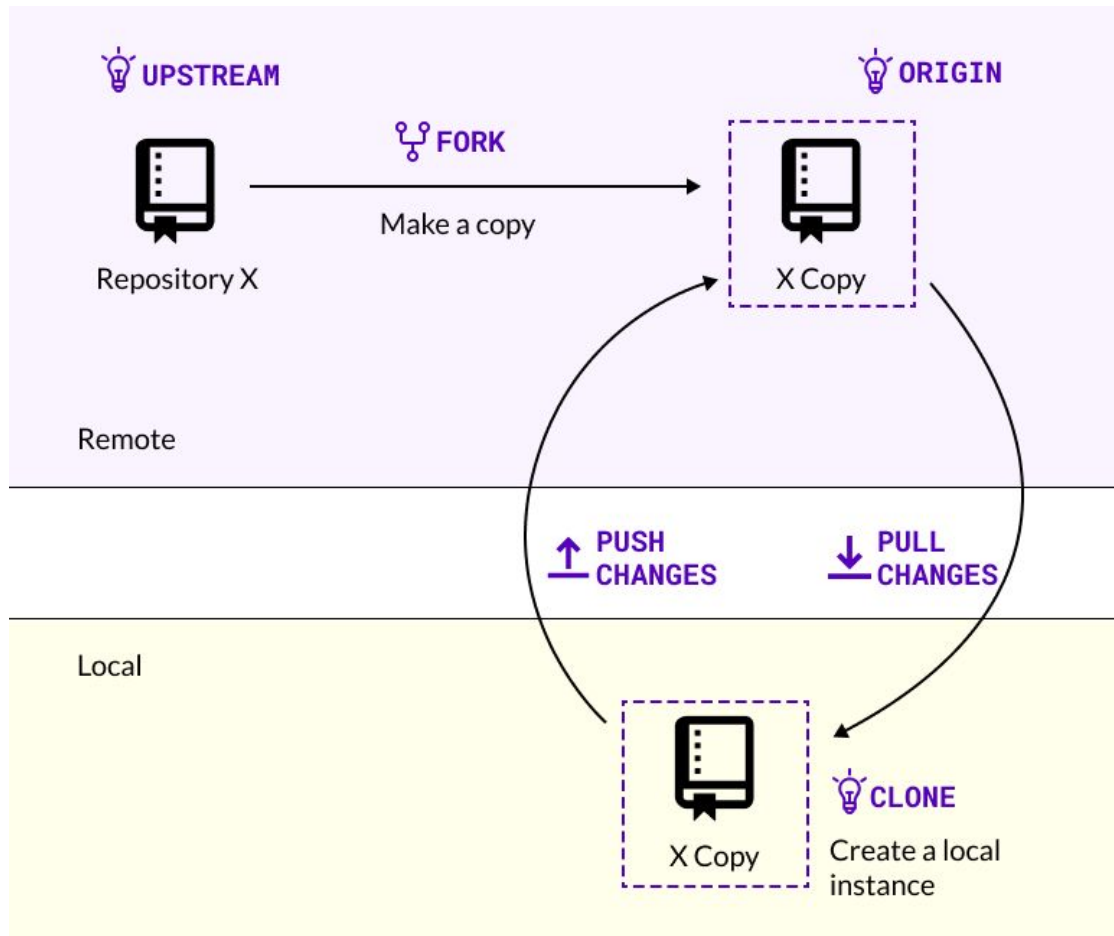
Languages

Enjoy your new repo!

Cloning your new repository

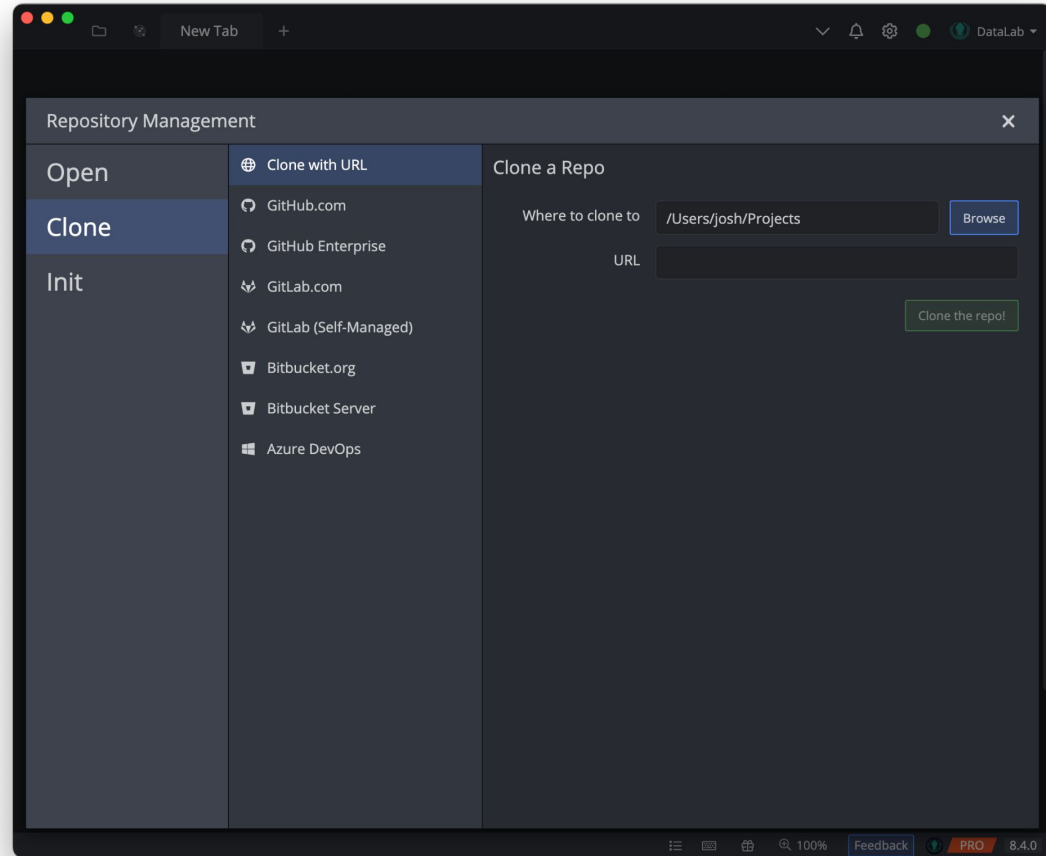
- Having a repository on GitHub is great, but you really want a copy on your own computer!
 - This is true whether it is a repo you made "from scratch" or one you forked
 - You can also go the other direction, starting a repo on your computer, then adding it to GitHub. We'll cover that later.

- Cloning can happen at the command line or through a GUI like GitKraken



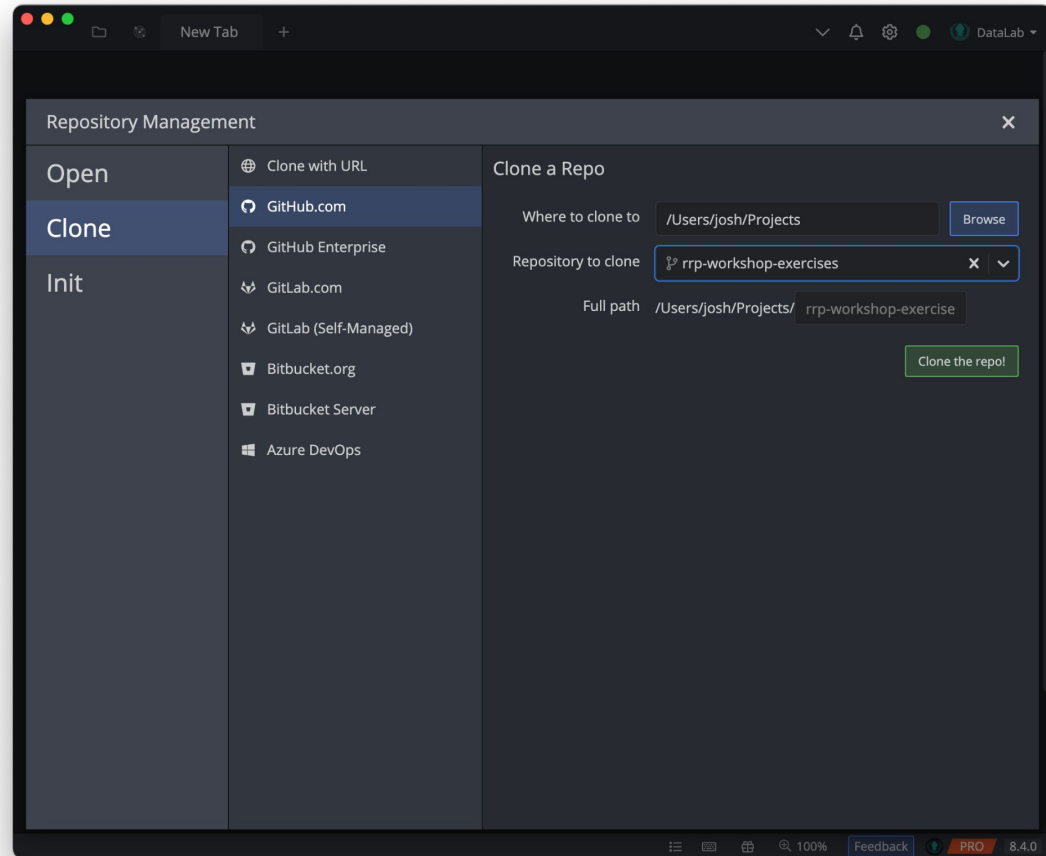
Cloning in GitKraken

- Choose the destination
 - “Where to clone to”
- “Clone with URL” copied from GitHub



Cloning in GitKraken

- Choose the destination
 - “Where to clone to”
- “Clone with URL” copied from GitHub
- OR select the GitHub.com repository from within GitKraken!



workspace repository branch
+ > rrp-workshop-exercises > main

Undo Redo Pull Push Branch Stash Pop Terminal

Viewing 2/2 Show All
Filter (% + Option + f)

LOCAL 1/1
main
REMOTE 1/1
origin
main
PULL REQUESTS 0
Search pull requests
My Pull Requests 0
Assigned To Me 0
Awaiting My Review 0
All Pull Requests 0
GITHUB ISSUES
Repo: Select...
TEAMS
Teams in GitKraken allow you to collaborate more effectively with team members and identify merge conflicts before they happen. [Create a team.](#)
TAGS 0/0
SUBMODULES 0
GITHUB ACTIONS 0

BRANCH / TAG GRAPH COMMIT MESSAGE

- main
- revert
- add gitignore
- Merge pull request #1 from AlexsLemonade/jashapiro/project-dirs 3 hours ago
- Minimize gitignore
- link to repo directly for now
- fix dangling list
- Apply suggestions from code review
- Add folders and update readme 2 days ago
- Revert "Add folders for project structure"
- Add folders for project structure
- Initial commit

commit: 7bf434

revert

Joshua Shapiro parent: 821887
authored 5/16/2022 @ 3:36 PM

1 modified

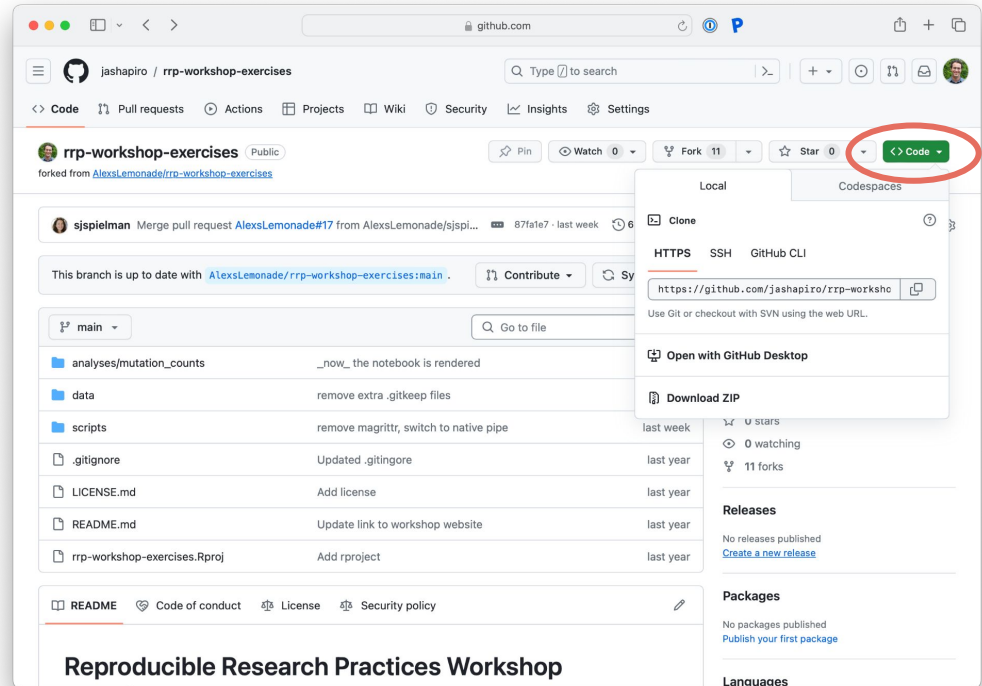
Path Tree View all files

.gitignore

Feedback PRO 8.4.0

Cloning at the command line

- Find the repository URL and copy it:
 - Click the “Code” button
 - Copy the URL under “Clone”
 - the URL will end with a `.git` extension



Cloning at the command line

- Navigate to the location where you want to put the repository with `cd``
- `git clone <URL-from-GitHub>`

```
> cd ~/Projects
> git clone https://github.com/jashapiro/rrp-workshop-exercises.git
Cloning into 'rrp-workshop-exercises'...
remote: Enumerating objects: 31, done.
remote: Counting objects: 100% (31/31), done.
remote: Compressing objects: 100% (26/26), done.
remote: Total 31 (delta 8), reused 19 (delta 1), pack-reused 0
Receiving objects: 100% (31/31), 5.21 KiB | 5.21 MiB/s, done.
Resolving deltas: 100% (8/8), done.
```

Cloning at the command line

- Use **cd** to move into your new repository and **ls** to look around
 - **cd rrp-workshop-exercises**
 - **ls -a** (include all of the hidden files)

```
> cd rrp-workshop-exercises
> ls -a
.   .git          LICENSE.md  analyses  rrp-workshop-exercises.Rproj
..  .gitignore    README.md  data      scripts
```