git_tutorial_notes

Getting started with github, git and R-studio.

Creating a github account

Go to the github website

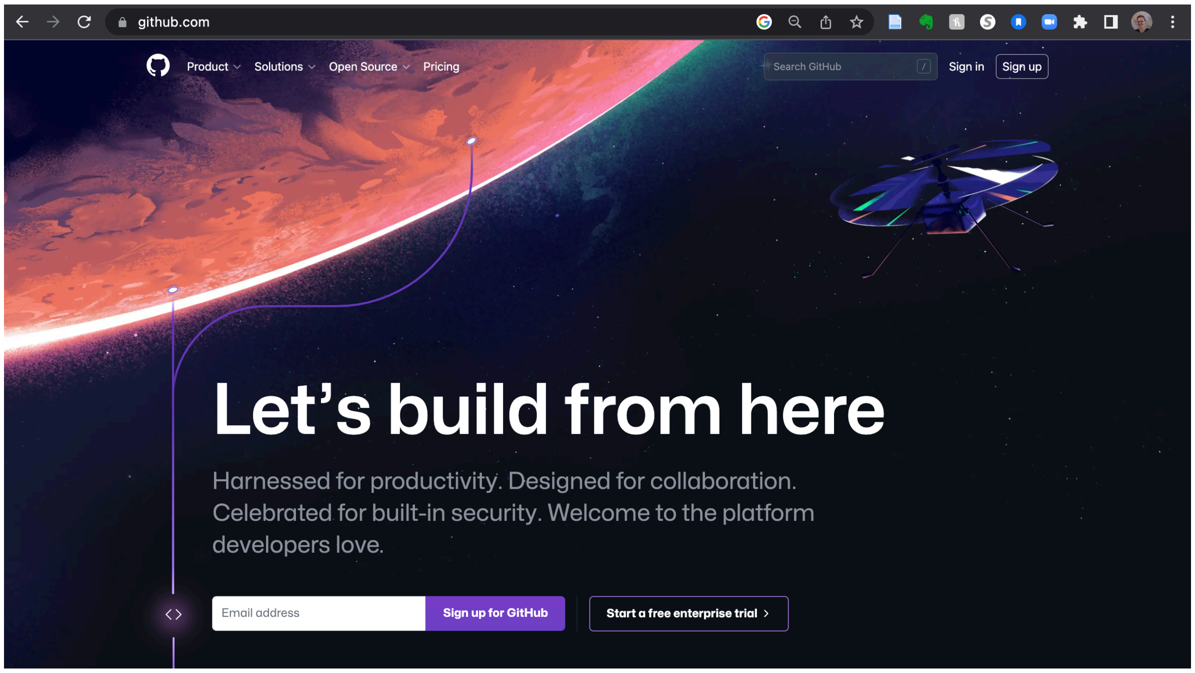
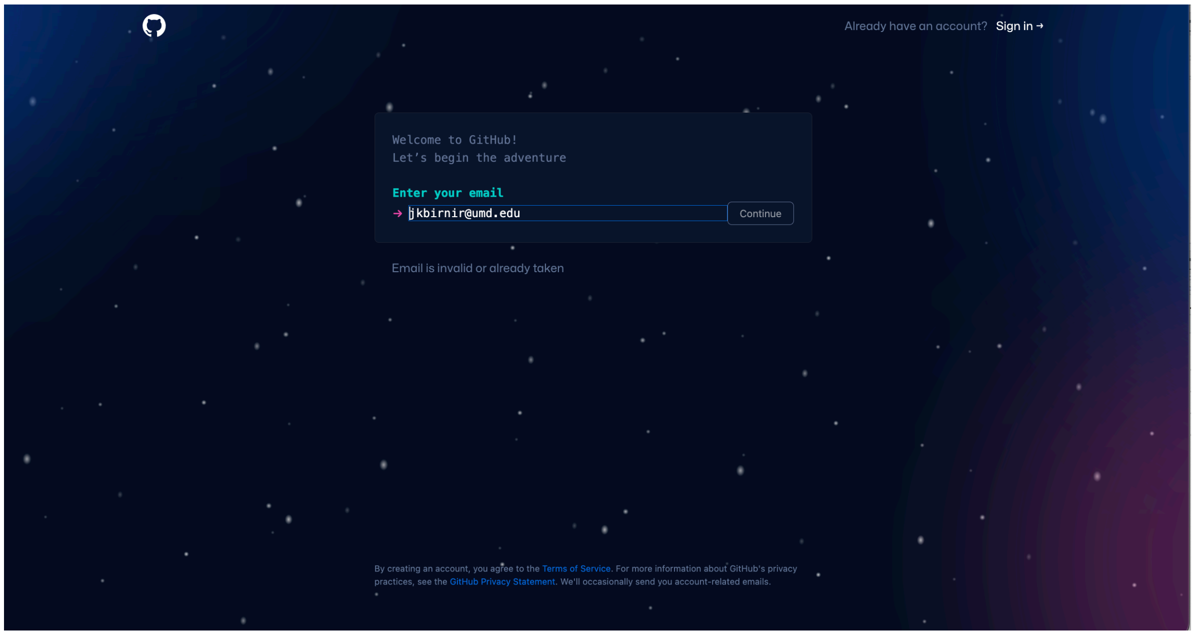

github.com
Product
Solutions
Open Source
Pricing
Search GitHub
Sign in
Sign up
Let's build from here
Harnessed for productivity. Designed for collaboration. Celebrated for built-in security. Welcome to the platform developers love.
Email address
Sign up for GitHub
Start a free enterprise trial

Figure 1: Github website

and signup with your email and password.

Once you have a github site, in the upper left hand corner on your github site create a repository for where you want files from your pending project to go. Name the repository whatever you



Welcome to GitHub!
Let's begin the adventure

Enter your email
→ jkbirnir@umd.edu

Email is invalid or already taken

By creating an account, you agree to the Terms of Service. For more information about GitHub's privacy practices, see the GitHub Privacy Statement. We'll occasionally send you account-related emails.

Figure 2: Github signup

will be calling your project. Select to have a readme file where you can post notes about the project. Select to make it private while you are working on int (this can be changed later).

Once you hit create you new repository should look something like this:

Getting started with git on your computer

Check if you have git installed on your computer. For this you have to use terminal to check. In your terminal write

git –version

and you should get back your version number.

If you do not have git on your computer you may have to install it. For instructions on how to check and install git on your computer see this very helpful website or better yet this manual

Setting up your project in R studio

Now that you have a github account and a local git on your computer you are ready to start working with git through R studio.

Open R-studio and start a new project. Choose a project with version control:

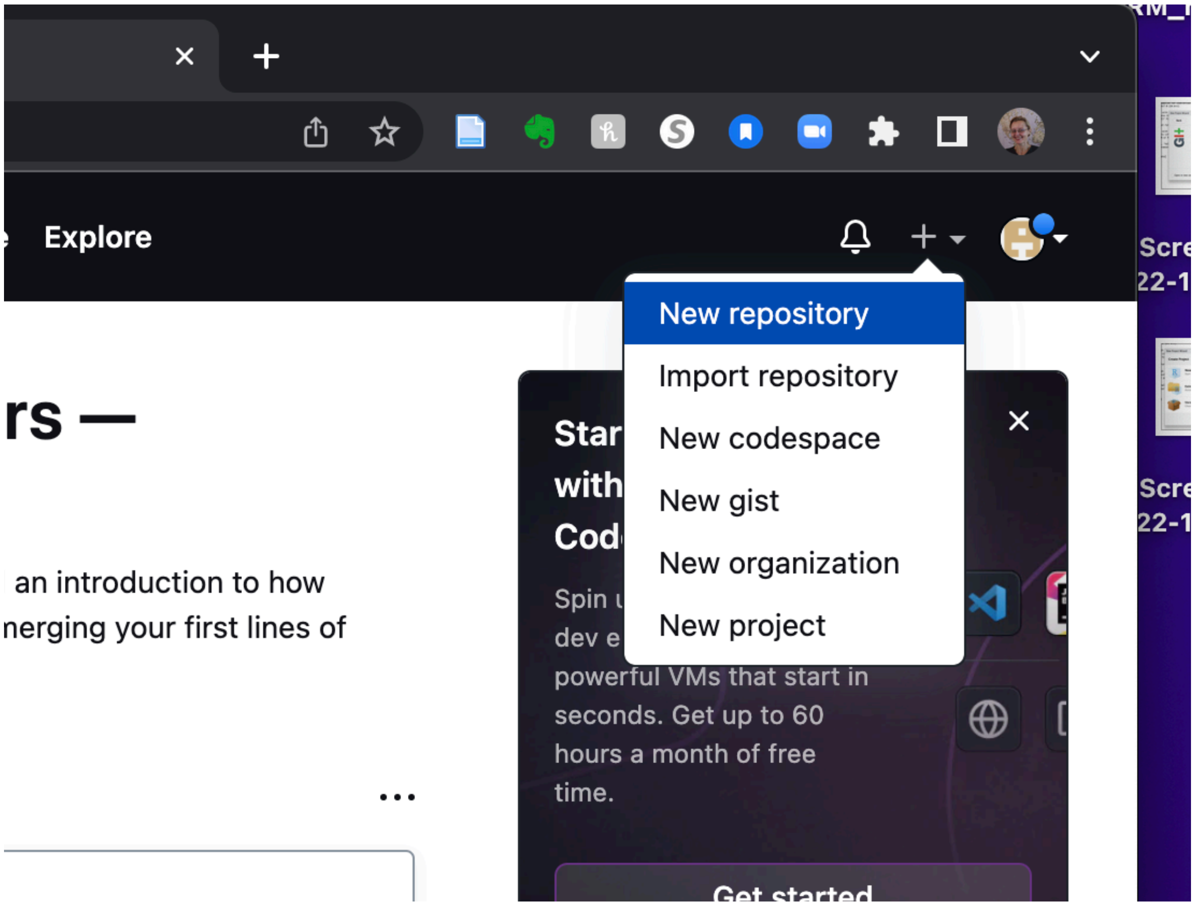


Figure 3: Github new repository

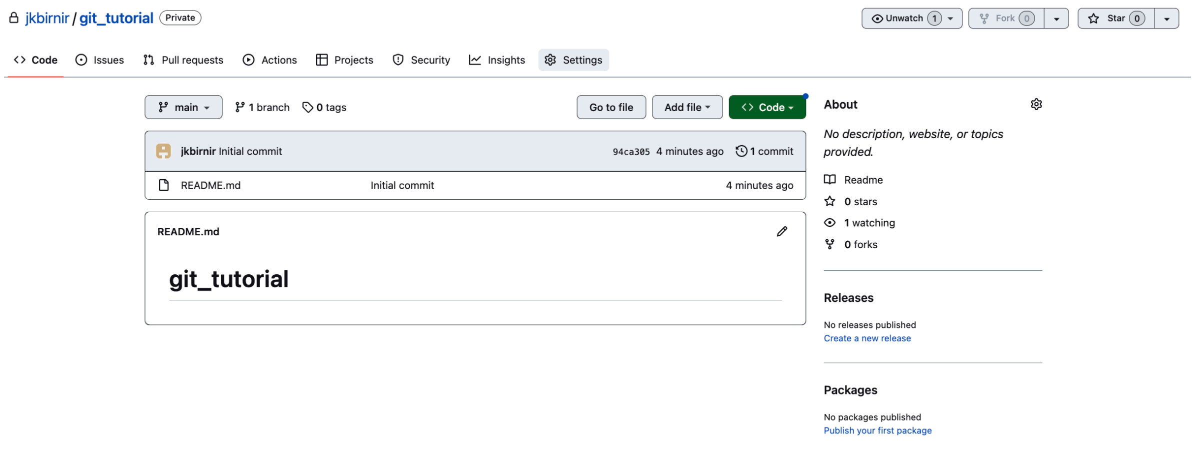
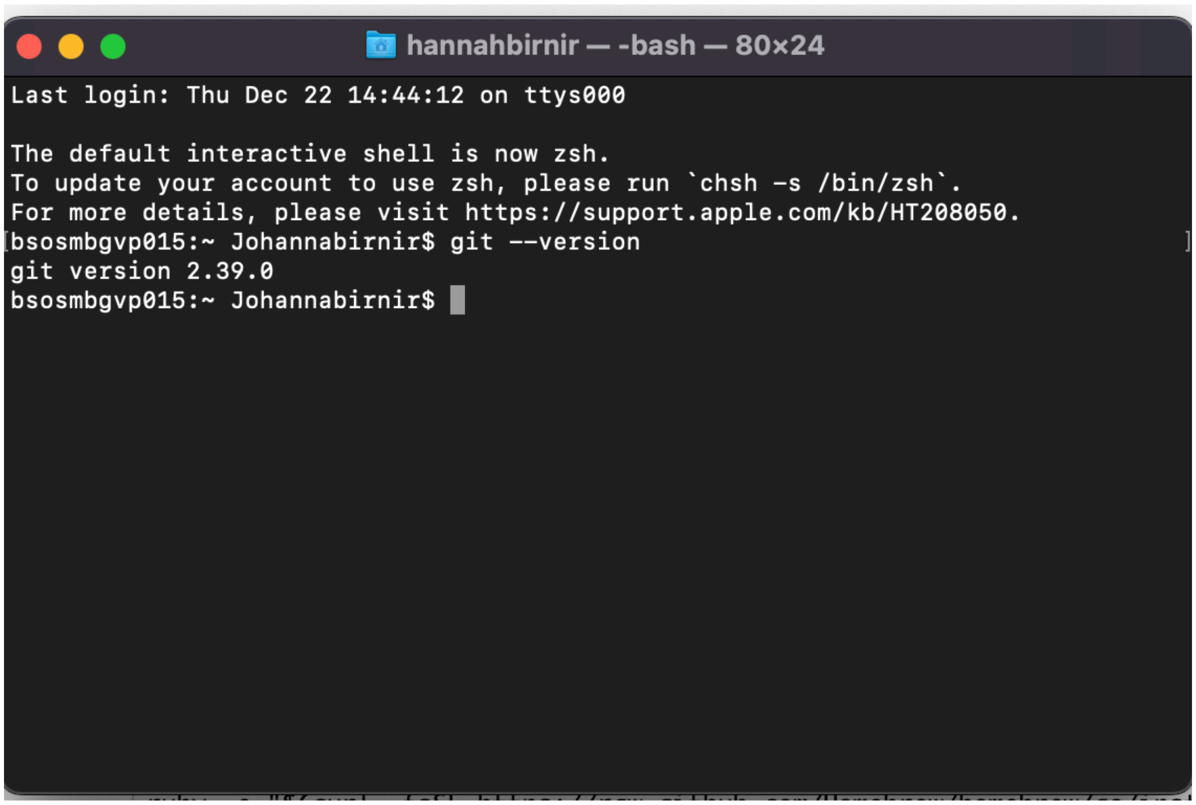


Figure 4: terminal git version



```
Last login: Thu Dec 22 14:44:12 on ttys000

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
bsosmbgvp015:~ Johannabirnir$ git --version
git version 2.39.0
bsosmbgvp015:~ Johannabirnir$
```

Figure 5: terminal git version

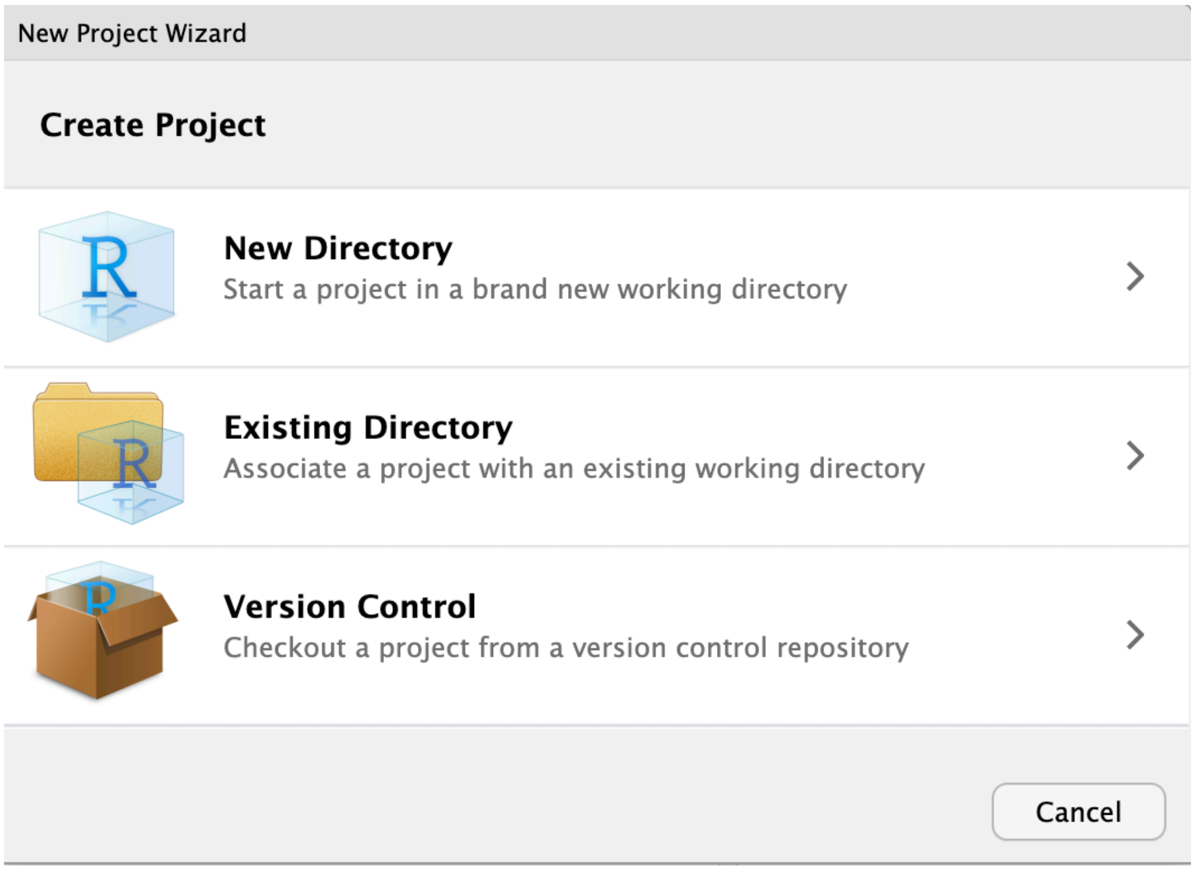

New Project Wizard
Create Project
New Directory
Start a project in a brand new working directory
Existing Directory
Associate a project with an existing working directory
Version Control
Checkout a project from a version control repository
Cancel

Figure 6: Creating a version control project

Select the option to clone a repository from git. What R studio will then do is to clone the repository you created on github locally on your computer.

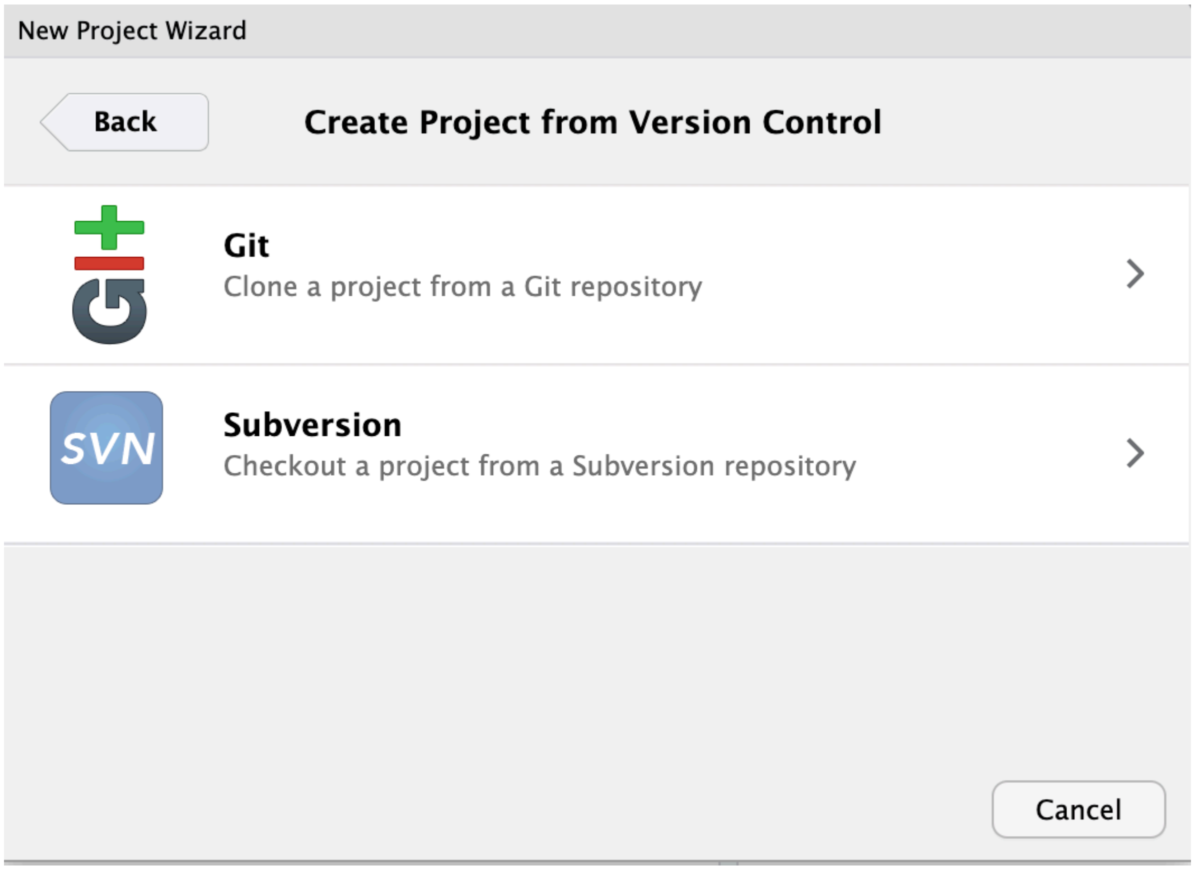

New Project Wizard
Back
Create Project from Version Control
Git
Clone a project from a Git repository
Subversion
Checkout a project from a Subversion repository
Cancel

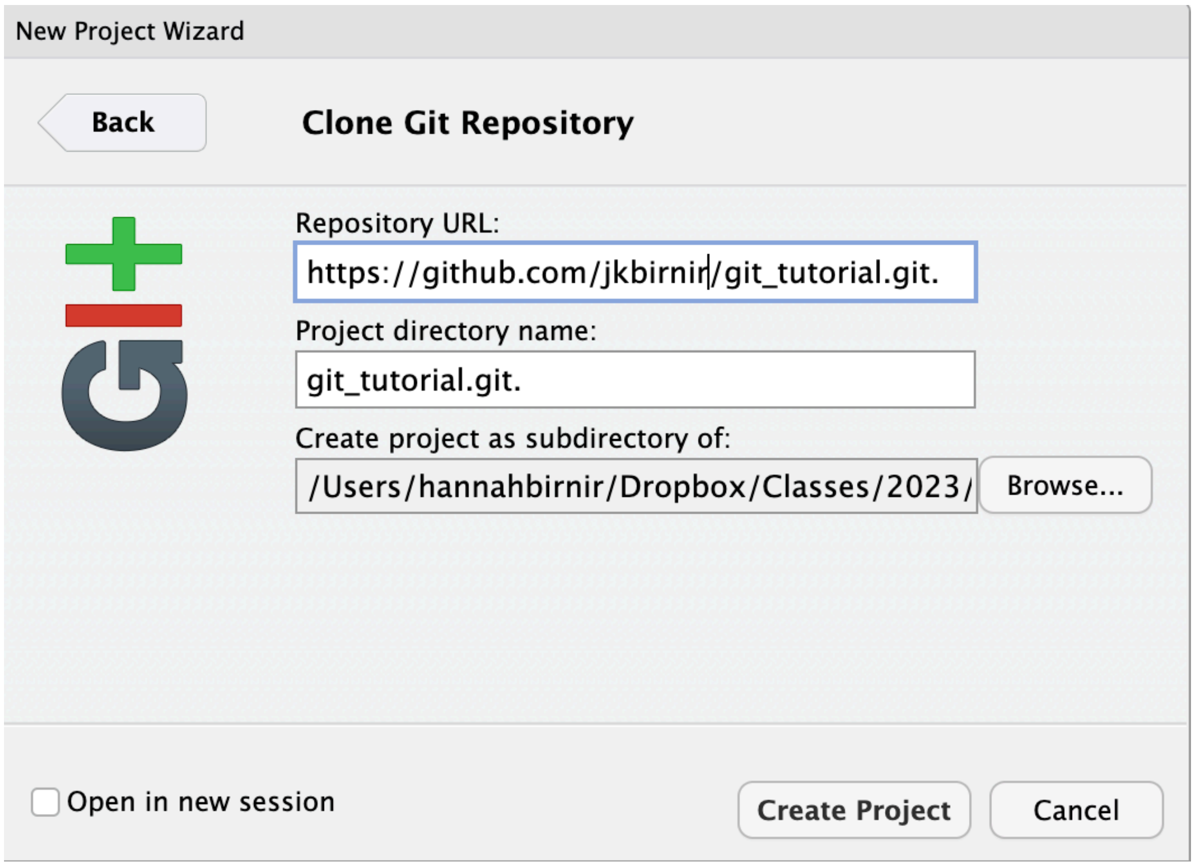
Figure 7: Cloning the git repository

So that R-studio knows which github local repository to clone you have to specify an external url that matches your username and the name of the new repository that you just created on github (Repository URL).

You also have to specify where your local git files are going to be located see (Create project as subdirectory of:).

Hit the create button and R studio will create a project site that should look something like this. Notice how the files replicate what is in

In case you run into trouble at this stage - and are not able to connect your files make sure that your local credentials (signup email matches the email you used to signup with github). To check this you can use:


New Project Wizard

Clone Git Repository

Repository URL:

https://github.com/jkbirnir/git_tutorial.git.

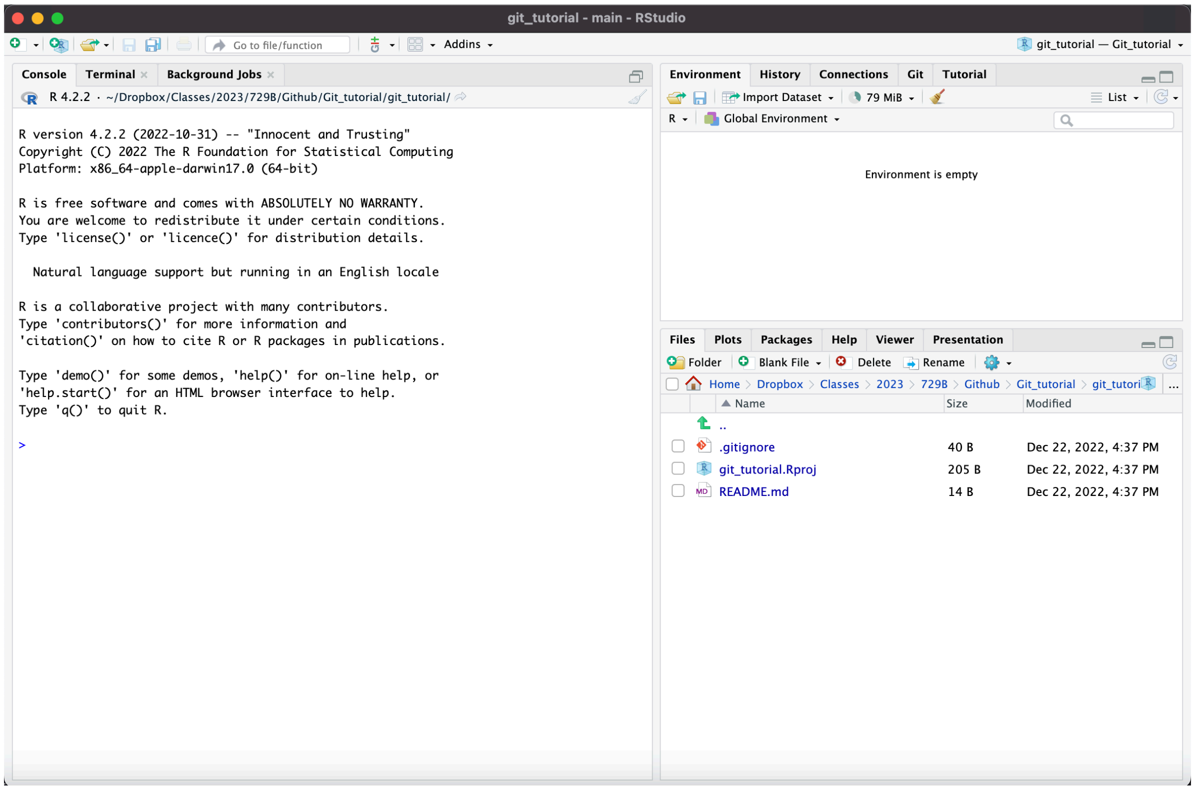
Project directory name:

git_tutorial.git.

Create project as subdirectory of:

/Users/hannahbirnir/Dropbox/Classes/2023/

Figure 8: Specifying location of external and local repositories



R 4.2.2 · ~/Dropbox/Classes/2023/729B/Github/Git_tutorial/git_tutorial/

```
R version 4.2.2 (2022-10-31) -- "Innocent and Trusting"
Copyright (C) 2022 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

  Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
```

Environment is empty

Home > Dropbox > Classes > 2023 > 729B > Github > Git_tutorial > git_tutori

Name	Size	Modified
..		
.gitignore	40 B	Dec 22, 2022, 4:37 PM
git_tutorial.Rproj	205 B	Dec 22, 2022, 4:37 PM
README.md	14 B	Dec 22, 2022, 4:37 PM

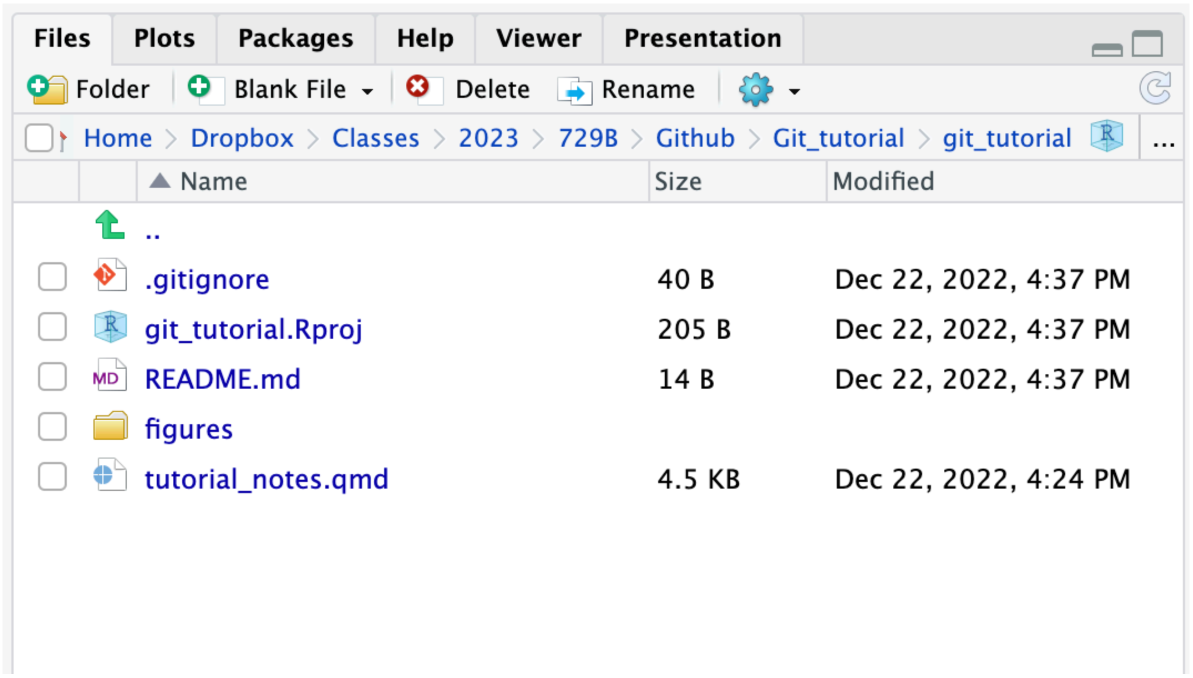
Figure 9: local files replicating external repository files

```r
library(usethis)
edit_git_config()
```

```
* Edit '/Users/hannahbirnir/.gitconfig'
```

Remember that you have to install the “usethis” package if it is not already on your computer.

If your git and hub have no problems communicating you can set about modifying your local files at will, adding files and changing them.


Files
Plots
Packages
Help
Viewer
Presentation
Folder
Blank File
Delete
Rename
Home > Dropbox > Classes > 2023 > 729B > Github > Git_tutorial > git_tutorial

Name	Size	Modified
..		
.gitignore	40 B	Dec 22, 2022, 4:37 PM
git_tutorial.Rproj	205 B	Dec 22, 2022, 4:37 PM
README.md	14 B	Dec 22, 2022, 4:37 PM
figures		
tutorial_notes.qmd	4.5 KB	Dec 22, 2022, 4:24 PM

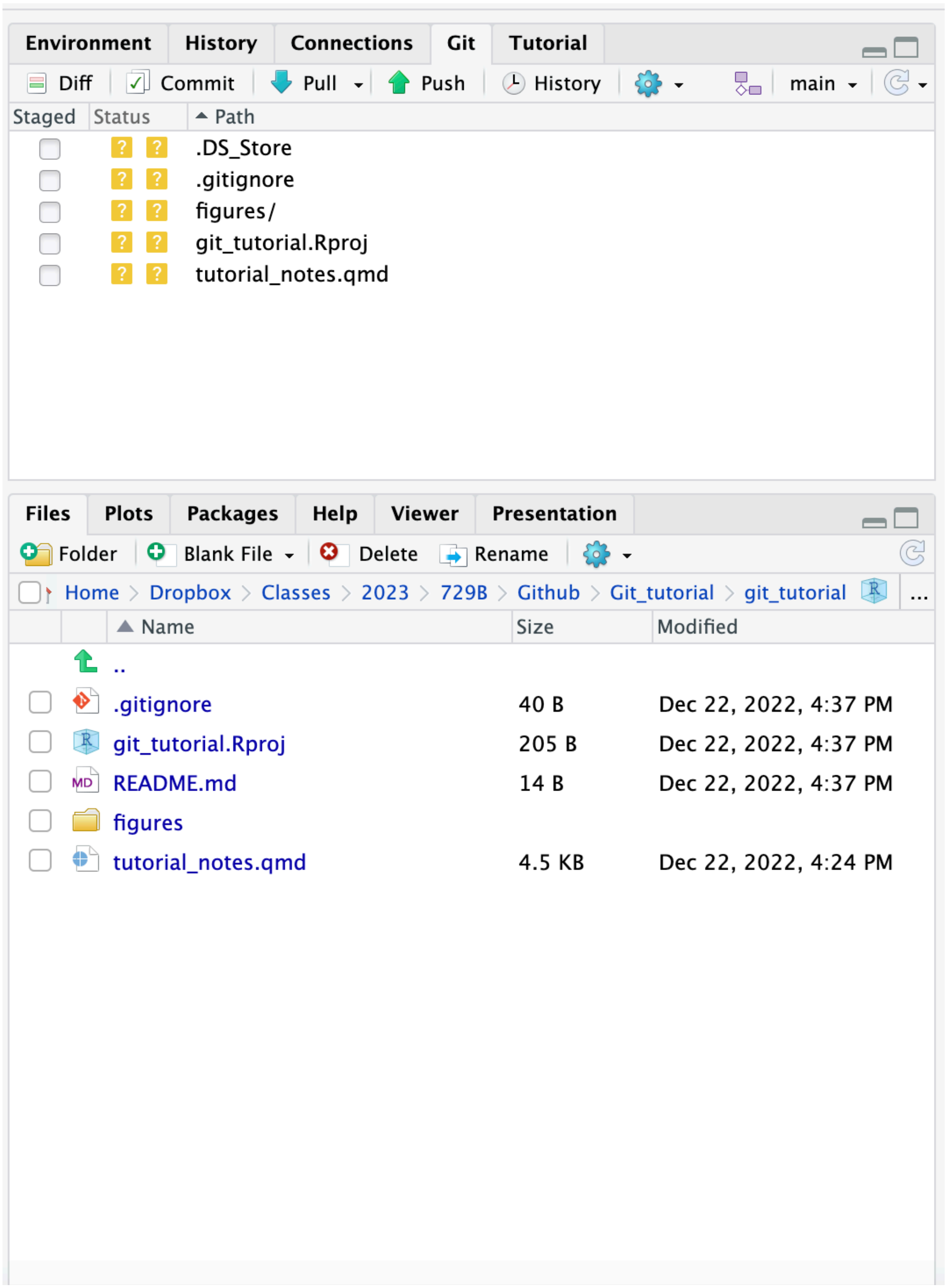
Figure 10: Modifying local files

Each time you add a new file in your local directory or change it in some way it will appear in your git tab like so:

Notice that because I have not modified the README file that was imported from github this file does not appear in my git tab.

Pushing files

The final step is to commit the changes I have made to my local files to the github repository. For this purpose I have to commit the files I want to update (I only commit the files I wish to



Staged	Status	Path
☐	? ?	.DS_Store
☐	? ?	.gitignore
☐	? ?	figures/
☐	? ?	git_tutorial.Rproj
☐	? ?	tutorial_notes.qmd

Files
Plots
Packages
Help
Viewer
Presentation
Folder
Blank File
Delete
Rename
Home > Dropbox > Classes > 2023 > 729B > Github > Git_tutorial > git_tutorial

Name	Size	Modified
..		
.gitignore	40 B	Dec 22, 2022, 4:37 PM
git_tutorial.Rproj	205 B	Dec 22, 2022, 4:37 PM
README.md	14 B	Dec 22, 2022, 4:37 PM
figures		
tutorial_notes.qmd	4.5 KB	Dec 22, 2022, 4:24 PM

Figure 11: Local files in Git tab

update) and then I need to push them to the external repository.

To do this I first select the files that I want to commit. Next I hit the commit button.

When I hit the commit button another window pops up where I can write myself notes about the changes I am committing.

Once I hit commit R-studio knows which local files I want to change in my external depository. Note that I can work locally and commit many files and then work on other files and commit them later. **Commit only commits changes to my files locally.** The last step then is to push all my locally committed files to my external repository.

From within my project I simply push the push button in my now empty git tab and my external repository is updated.

Github then tracks all of the changes in each file and new files added in each commit while also updating the main file.

This is very nice if you are working on a project - like a website that you might want to change frequently. You can simply open the project - make a change to any one part of the project and commit those changes to github. Imagine, for example, a website where you post new data and other information as it becomes available.

Exercise

Install git on your computer

Create a github account

Create a version control project in R studio and upload it to Github

Working together in git.

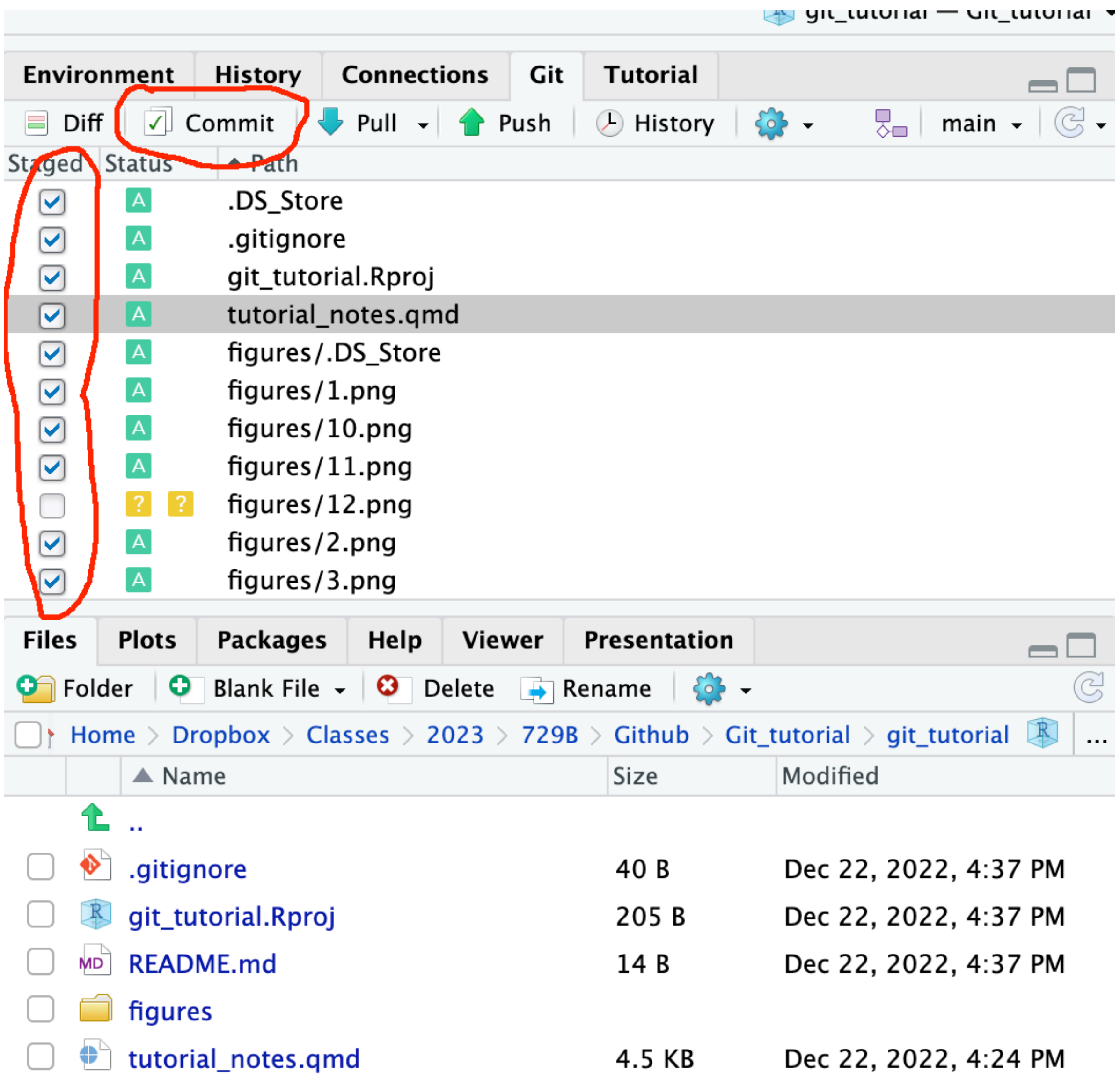
One of the most useful things about github is the ability to work collaboratively.

Associating your RStudio with a collaborative project

First, in order to work collaboratively, you may need to associate your RStudio with a project in GitHub that you did not create. If you created the project, do the following to add collaborators:

Go on the Github website to Settings > Manage Access > Invite a collaborator.

Your teammate should accept the invite in their email.

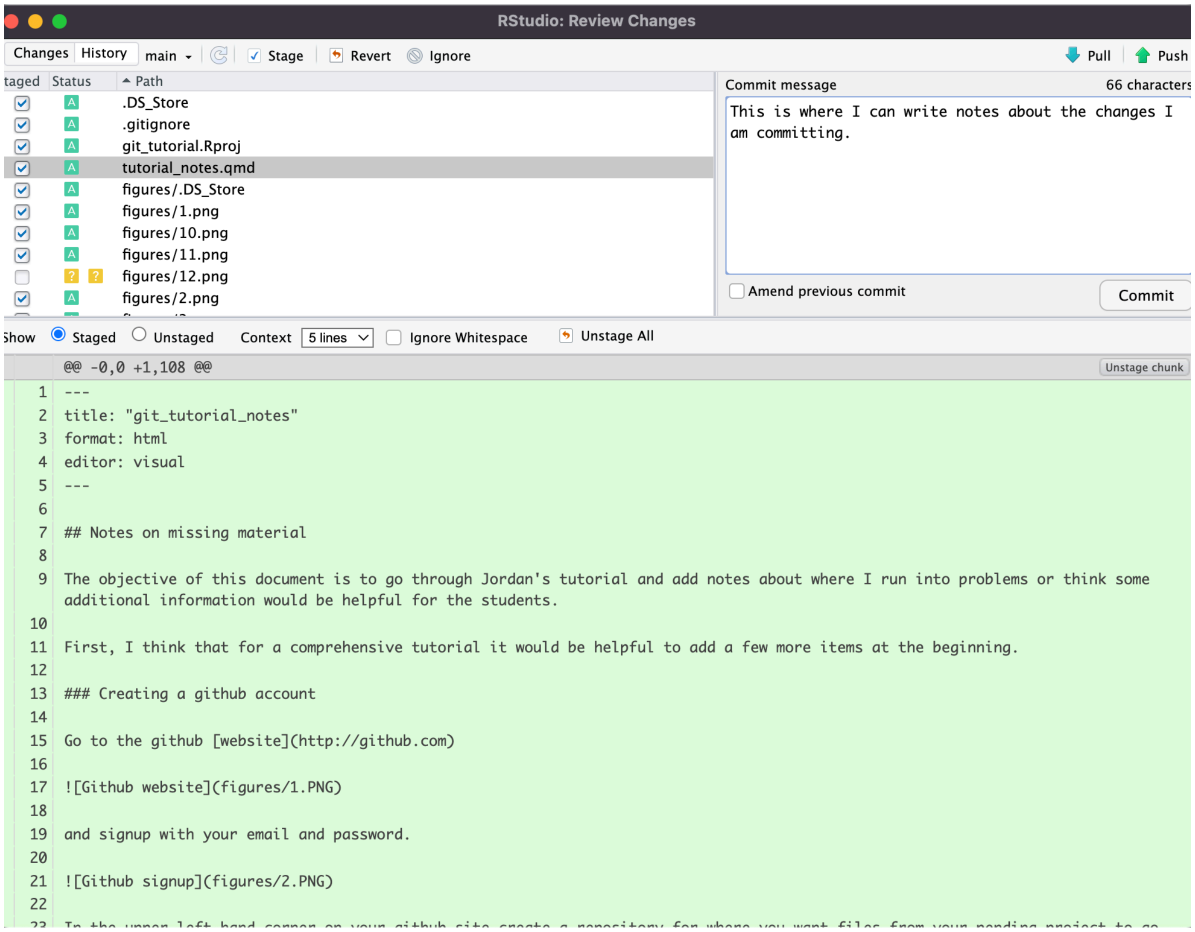


Staged	Status	Path
✓	A	.DS_Store
✓	A	.gitignore
✓	A	git_tutorial.Rproj
✓	A	tutorial_notes.qmd
✓	A	figures/.DS_Store
✓	A	figures/1.png
✓	A	figures/10.png
✓	A	figures/11.png
	? ?	figures/12.png
✓	A	figures/2.png
✓	A	figures/3.png

Files
Plots
Packages
Help
Viewer
Presentation
Folder
Blank File
Delete
Rename
Home > Dropbox > Classes > 2023 > 729B > Github > Git_tutorial > git_tutorial

Name	Size	Modified
..		
.gitignore	40 B	Dec 22, 2022, 4:37 PM
git_tutorial.Rproj	205 B	Dec 22, 2022, 4:37 PM
README.md	14 B	Dec 22, 2022, 4:37 PM
figures		
tutorial_notes.qmd	4.5 KB	Dec 22, 2022, 4:24 PM

Figure 12: Local files in Git tab



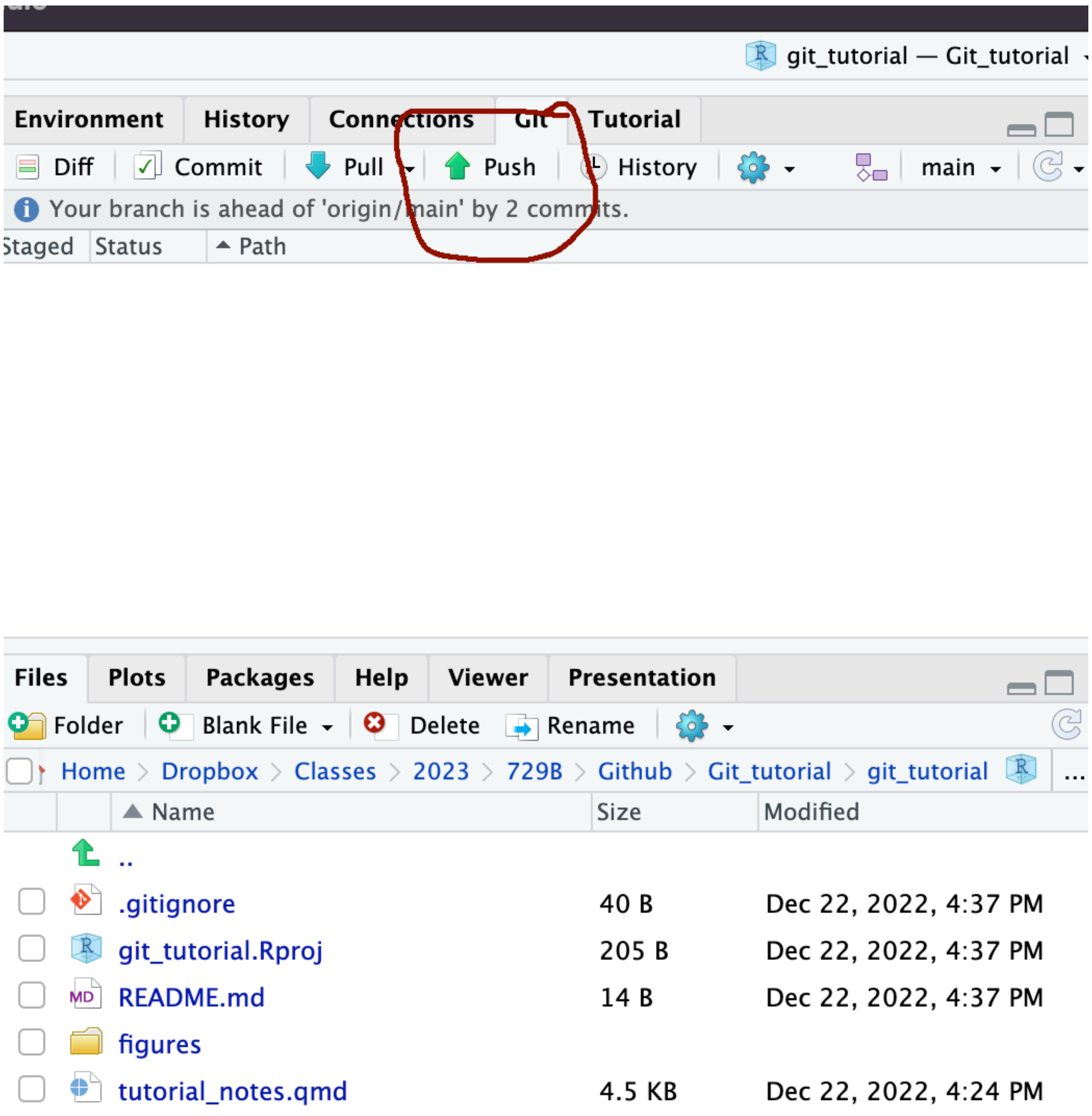
```
.DS_Store
.gitignore
git_tutorial.Rproj
tutorial_notes.qmd
figures/.DS_Store
figures/1.png
figures/10.png
figures/11.png
figures/12.png
figures/2.png
```

Commit message — 66 characters

This is where I can write notes about the changes I am committing.

```
@@ -0,0 +1,108 @@
---
title: "git_tutorial_notes"
format: html
editor: visual
---

## Notes on missing material

The objective of this document is to go through Jordan's tutorial and add notes about where I run into problems or think some additional information would be helpful for the students.

First, I think that for a comprehensive tutorial it would be helpful to add a few more items at the beginning.

### Creating a github account

Go to the github [website](http://github.com)

![Github website](figures/1.PNG)

and signup with your email and password.

![Github signup](figures/2.PNG)

```

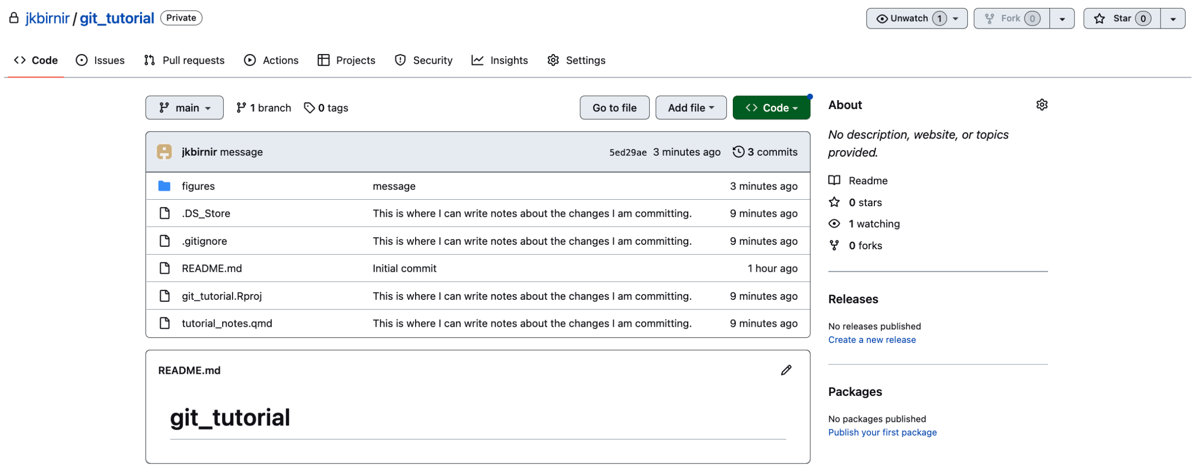
Figure 13: Commit notes



Your branch is ahead of 'origin/main' by 2 commits.

Name	Size	Modified
..		
.gitignore	40 B	Dec 22, 2022, 4:37 PM
git_tutorial.Rproj	205 B	Dec 22, 2022, 4:37 PM
README.md	14 B	Dec 22, 2022, 4:37 PM
figures		
tutorial_notes.qmd	4.5 KB	Dec 22, 2022, 4:24 PM

Figure 14: Pushing changes to github


jkbirnir / git_tutorial Private

Unwatch 1 | Fork 0 | Star 0

Code | Issues | Pull requests | Actions | Projects | Security | Insights | Settings

main | 1 branch | 0 tags | Go to file | Add file | Code

jkbirnir message 5ed29ae 3 minutes ago 3 commits

figures	message	3 minutes ago
.DS_Store	This is where I can write notes about the changes I am committing.	9 minutes ago
.gitignore	This is where I can write notes about the changes I am committing.	9 minutes ago
README.md	Initial commit	1 hour ago
git_tutorial.Rproj	This is where I can write notes about the changes I am committing.	9 minutes ago
tutorial_notes.qmd	This is where I can write notes about the changes I am committing.	9 minutes ago

README.md

git_tutorial

About

No description, website, or topics provided.

Readme
0 stars
1 watching
0 forks

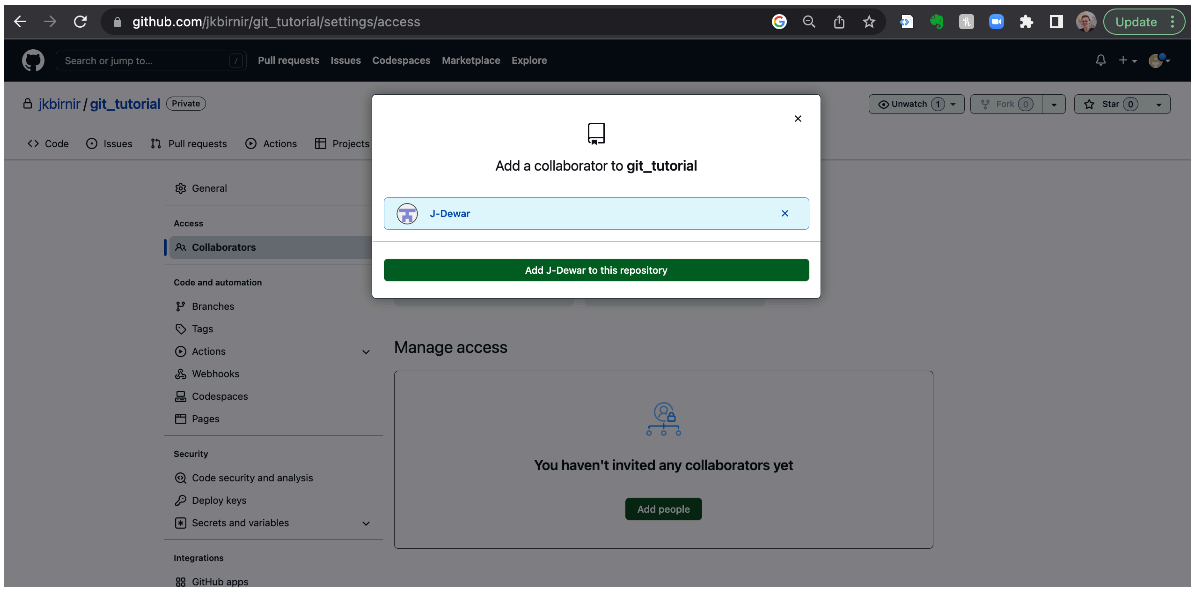
Releases

No releases published
Create a new release

Packages

No packages published
Publish your first package

Figure 15: Updated external repository


github.com/jkbirnir/git_tutorial/settings/access

Search or jump to... | Pull requests | Issues | Codespaces | Marketplace | Explore

jkbirnir / git_tutorial Private

Code | Issues | Pull requests | Actions | Projects

General

Access
Collaborators

Code and automation
Branches
Tags
Actions
Webhooks
Codespaces
Pages

Security
Code security and analysis
Deploy keys
Secrets and variables

Integrations
GitHub apps

Add a collaborator to **git_tutorial**

J-Dewar

Add J-Dewar to this repository

Manage access

You haven't invited any collaborators yet

Add people

Figure 16: Inviting Github Collaborations

Once this is complete, you can use the steps above to associate your RStuido with the GitHub project.

Pulling Changes

One important aspect of collaboration in Github is the ability to pull changes. This allows you to update your code to align with changes pushed by collaborators.

Using the down arrow button, RStudio goes to the GitHub repo, grabs the most recent code and brings it into your local editor. (Pulling regularly is extremely important if you're collaborating, though if you're the only one working on an RStudio project and associated GitHub repo, you know your local code matches what's on GitHub so it's less important.)

To pull, click the blue down arrow on your Git tab to see if you have changes to pull. If collaborating, you might run into merge conflicts.

You can look to this article for other useful information for keeping good Git hygiene when collaborating.

Briefly the first four rules of thumb are:

Always Pull Before a Push

Pull frequently

Push infrequently

Commit Frequently

Branches

Additionally the article discusses optimal git branch for working together.

Merge "forward" frequently

Create Pull Requests Infrequently

To better understand these

Associating existing r studio projects with git

In order to associate an existing RStudio project with Git you will need to create a Git repository as described above and then follow the steps below.

```
v Setting active project to '/Users/hannahbirnir/Dropbox/Classes/2023/729B/
Github/Git_tutorial/git_tutorial'
```

You will then get a prompt asking if you want to commit the files you've already created to your repo. Select yes (option 1). You should then also see the git tab.

```
* Call `gitcreds::gitcreds_set()` to register this token in the local Git credential store
  It is also a great idea to store this token in any password-management software that you us
* Open URL 'https://github.com/settings/tokens/new?scopes=repo,user,gist,workflow&descriptio
```

You will then get a number of options to select about what your token use case will be. This will be project-dependent.

You can learn more about the selections [here](https://docs.github.com/en/developers/apps/building-oauth-apps/scopes-for-oauth-apps) to help guide you in your process.

```
#library(gitcreds)
#gitcreds_set()
```

When prompted to enter a token or password, enter the token you just created. If you have entered one previously, you will be prompted to choose if you'd like to keep your credentials. If nothing has changed, select 1 and keep things as they are. If they have, follow the most applicable selection.