

Homework with Git and GitHub inside RStudio

We will be using git and GitHub to get your homework assignments, work on your homework, and submit your homework solutions. This tutorial will walk you through that process using git and GitHub through RStudio.

Configuring Github Access Token for RStudio

Before you get started working on your homework, you will need to set up your Github access token for RStudio. You should only need to do this once. First, install and load in these two packages in RStudio:

```
install.packages("usethis")
install.packages("gitcreds")
library(usethis)
library(gitcreds)
```

Make sure you that are signed in to Github on your browser and run the following line of code to create a Github token:

```
usethis::create_github_token()
```

Use the default settings and select “Generate token”. Copy the generated token and run:

```
gitcreds_set()
```

Select “2. Replace these credentials” and paste the generated token that you just copied. You should be all set to proceed to cloning your homework repository!

Getting and Working on Homework

Cloning your Homework repository

Each of you will be made members of the **coredatascience** organization on GitHub. This means that your homework repositories all technically belong to us. But you will be granted unlimited access throughout the course!

You will notice when you visit the **coredatascience** Github page that you can only see repositories with your GitHub username on them. You will get one repository for each homework throughout the semester. When a new homework is released you can go to the corresponding repository to see what is in store. The work flow will be pretty simple.

1. Go to: <https://github.com/coredatascience>
2. Click on the repository you want to work on. For example <your_GitHub_username>-2022HW1 for Homework 1.
3. Copy the link near the top of the page that is revealed after clicking ‘clone or download’.

coredatascience / 2022HW1 Private

< > Code Issues Pull requests Actions Projects Security Insights Settings

master 1 branch 0 tags

hmttie Add files via upload

GunTrends_murders_per_1000.png	Add files via upload
HW1.Rmd	Add files via upload
HW1.html	Add files via upload
README.md	Update README.md

Clone

HTTPS SSH GitHub CLI

git@github.com:coredatascience/2022HW1

Use a password-protected SSH key.

Open with GitHub Desktop

Download ZIP

README.md

Homework 1

Several of your friends live in Europe and are offered jobs at a US company with many locations all across the country. The job offers are great but news with headlines such as [America is one of 6 countries that make up more than half of guns deaths worldwide](#) have them worried. Charts like this make them worry even more:

GUN MURDERS PER 100,000 RESIDENTS

4. In RStudio, start a new project:

File > New Project > Version Control > Git

In the “repository URL” paste the URL of the homework repository you just copied. Take charge of – or at least notice! – the local directory for the Project. A common rookie mistake is to have no idea where you are saving files or what your working directory is. Pay attention. Be intentional. Personally, I suggest you check “Open in new session” and to keep all your homework repositories in a ‘BST219’ folder.

New Project

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

New Project Wizard

Back

Clone Git Repository



Repository URL:

git@github.com:coredatascience/2022HW1.git

Project directory name:

2022HW1

Create project as subdirectory of:

~/Desktop

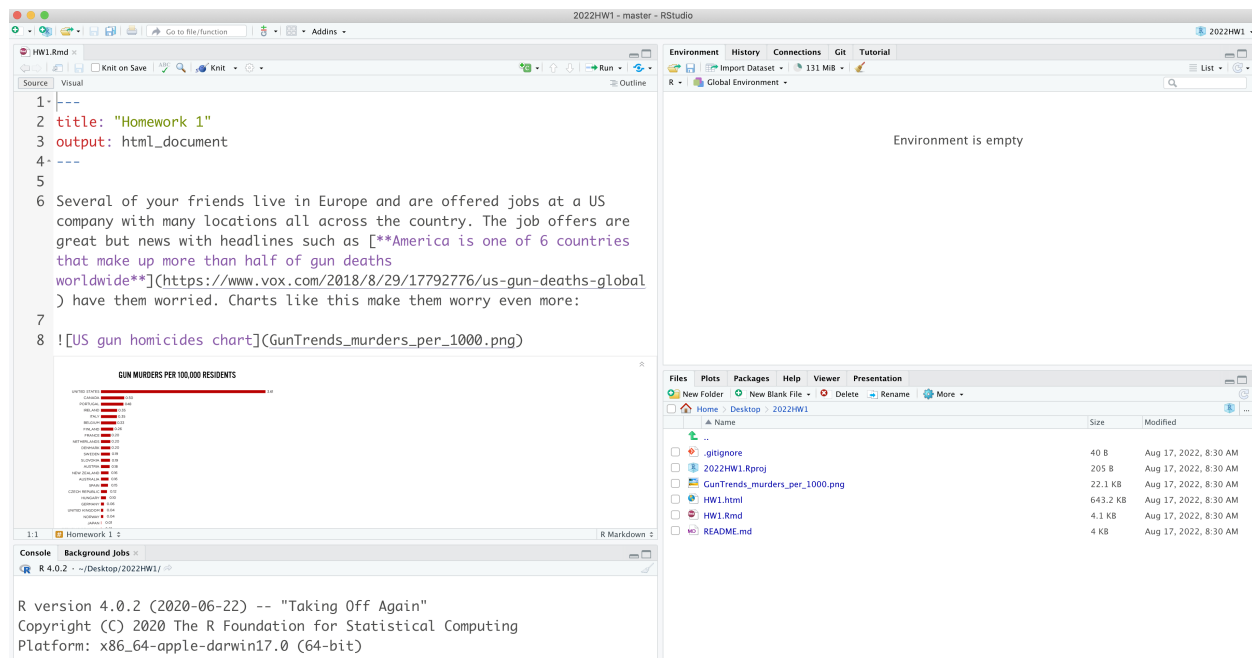
Browse...

☐ Open in new session

Create Project

Cancel

- Click “Create Project”. You should now see the files in the repository in the lower right window in RStudio. Also notice the Git tab in the upper right window.



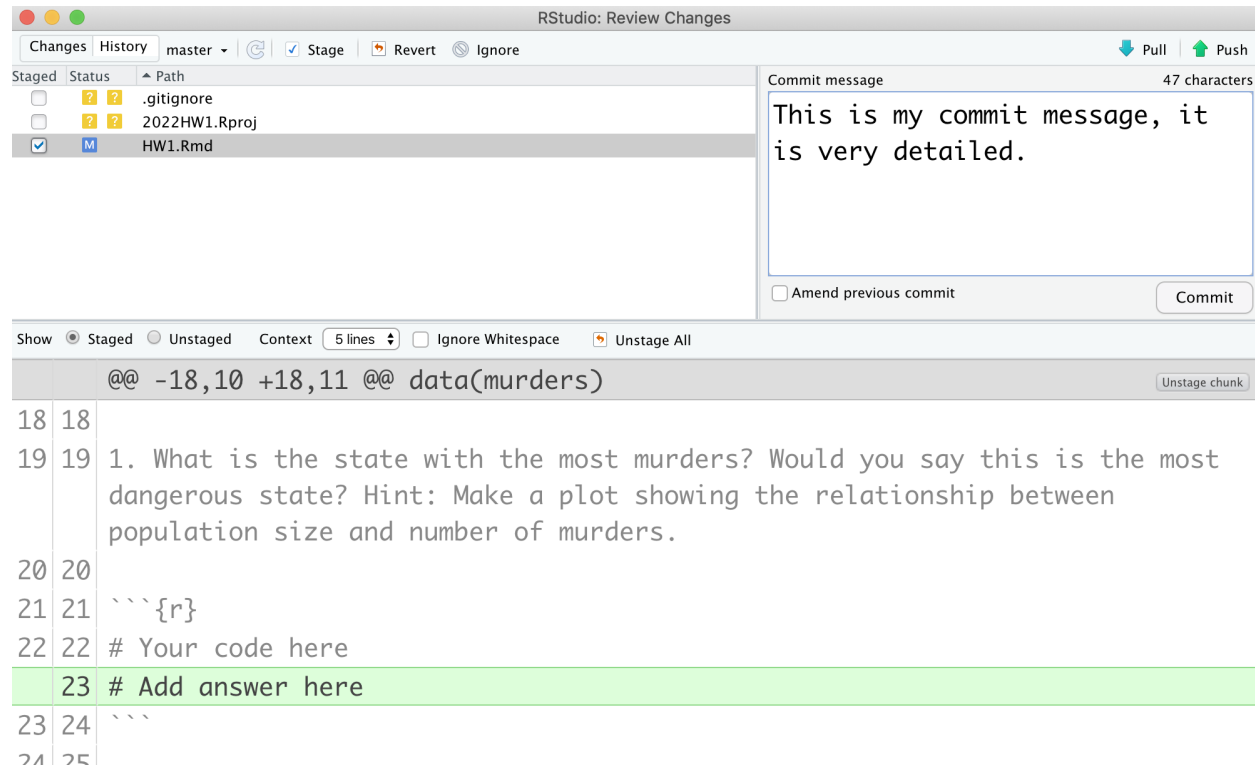
The screenshot shows the RStudio interface with the following components:

- Source Editor:** Displays an R Markdown file named `HW1.Rmd`. The content includes a title "Homework 1", output format `html_document`, and a paragraph of text about gun deaths in the US. A plot titled "GUN MURDERS PER 100,000 RESIDENTS" is shown below the text.
- Environment Pane:** Located in the upper right, it shows "Environment is empty".
- File Explorer:** Located in the lower right, it shows the project files: `.gitignore`, `2022HW1.Rproj`, `GunTrends_murders_per_1000.png`, `HW1.html`, `HW1.Rmd`, and `README.md`.
- Console:** Located at the bottom, it shows the R version 4.0.2 and the platform x86_64-apple-darwin17.0 (64-bit).

Working on your homework

Once you have a local copy of your repository, it's time to get to work!

After writing some of your homework in an Rmd file, **knit** it, make pretty plots, and find out some cool stuff about the dataset, it's time to **commit/push**. After some work, save your changes and click the **commit** button in the Git tab window. This is equivalent to **save** in most programs. But what is special about **git** and other version control software is that we can track and revert changes! We also need to give what's called a **commit message**, which will help us keep track of the changes we made when we look at this in the future. Leave detailed messages so that future you will know what you did. Future you will thank you. We will get to this part later.



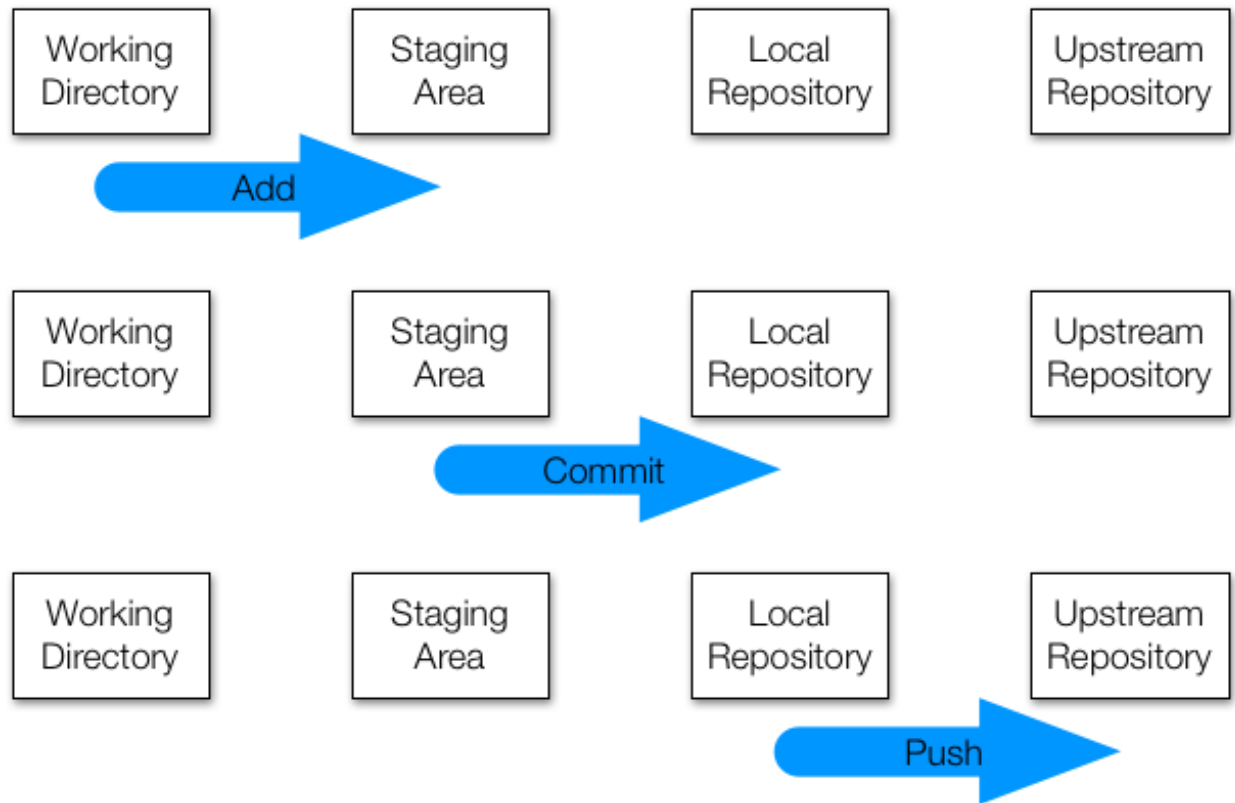
Cool! Now we've saved our work on our local directory, we can now **push** our work to Github by clicking the *green up-arrow* in the Git tab window. If you are asked for username and password, provide them. Note, we can (and should) do this as many times as we want before the homework deadline. What is great about this is that it will make getting help from your TA easier as well as keeping a copy of your work in the cloud in case your computer crashes, or you accidentally delete something.

Summary

To summarize, it is important to do the following steps whenever you finish working on your homework to make full use of **git** and Github as well as generally having the best experience in this class.

1. Work on your homework
2. Commit changes to your local repository: **commit** button in Git tab in RStudio
3. Push the changes to your github repo: **push** (green arrow) button in Git tab in RStudio

Generally keep this picture in mind whenever you want to do this loop, it is important to only add changed files you care about and nothing you do not care about. If certain files keep popping up in your git status that you will never want to add, e.g. **.Rhistory**, etc, add them to your **.gitignore** to simplify your life, this will keep those files from showing up here.



Late Day Policy

Each student is given up to 2 late days per homework assignment. A late day extends the individual homework deadline by 24 hours without penalty. No more than two late days may be used on any one assignment. Assignments handed in more than 48 hours after the original deadline will not be graded. Late days are intended to give you flexibility: you can use them for any reason no questions asked. You don't get any bonus points for not using your late days. Also, you can only use late days for the individual homework deadlines - all other deadlines (e.g., project milestones and midterm) are hard.

We made this policy because we understand that you are all busy and things happen. We hope that this added flexibility gives you the freedom to enjoy the course and engage with the material fully.

Some unsolicited advice

To be fair to all the students we have to enforce this late day policy, so we have put together a list of things to consider near the deadline.

Say the homework is due Friday at 11:59 pm.

1. If we do not see any more **commits** two days after the deadline we will take the last **commit** as your final submission.
2. Check that the final **commit** is showing on your Github repo page. "I forgot to **push**" is not an acceptable excuse for late work.
3. It may help to add a message like "This is my final version of the homework please grade this" but that's up to you.

4. We will assess the number of late days you used and keep track.
5. You **do not** need to tell us that you will take extra days, we will be able to see the time stamp of your last **commit**.
6. When you are done with the homework, do not **commit** or **push** any more. If you **commit** and **push** after the deadline you will be charged a late day. This is strict.

Happy git-ing