Lecture 02: Introduction to R and RStudio

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Today

The goal of today is get you set up on your own computer with GitHub, R, and RStudio.

Hopefully you brought your own machine to work with today so that you'll have this set up for the remainder of the semester.

Course Website

Reminder, all course materials (including the first set of notes) are available at:

https://statsmaths.github.io/stat289

GitHub

About GitHub

GitHub is a website that provides a public repository for code. In the open source software community it has become the de facto place to store code.

GitHub offers a free tier of its service; the only limitation is that all of your repositories will be publicly available.

While the site is a commercial enterprise, the underlying technology, **git**, is completely free and open source.

Profile

Click on the icon on the upper right hand side of the screen and select *Settings*.

Fill in the following information:

- Your name (first only is OK)
- A short bio (1-2 sentences)
- Location (either RVA or your hometown)
- A profile picture

Make sure to save the information.

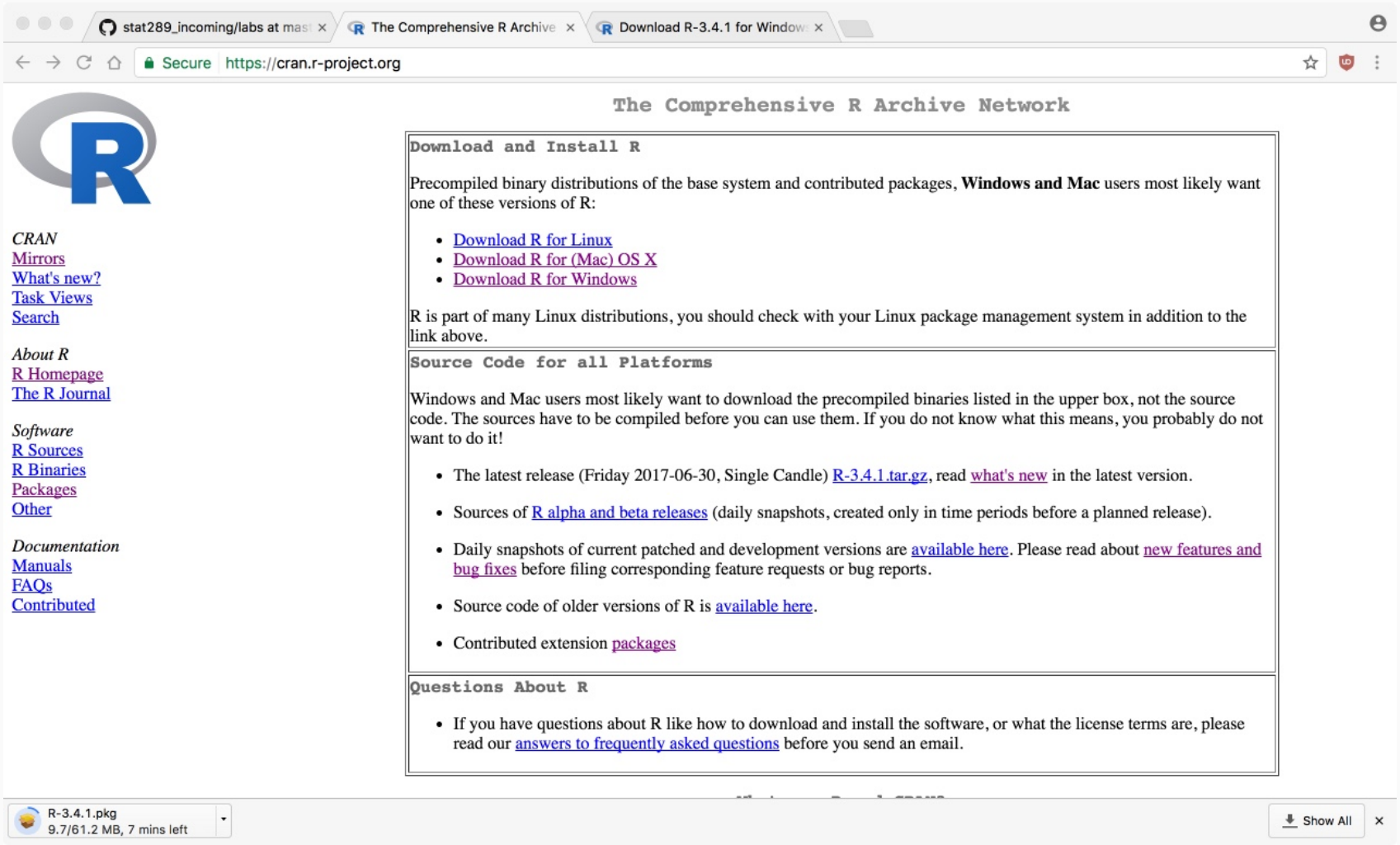
GitHub Classroom

We'll be using GitHub classrooms for this course. I will send out a link right now that takes you to the first assignment.

R and RStudio

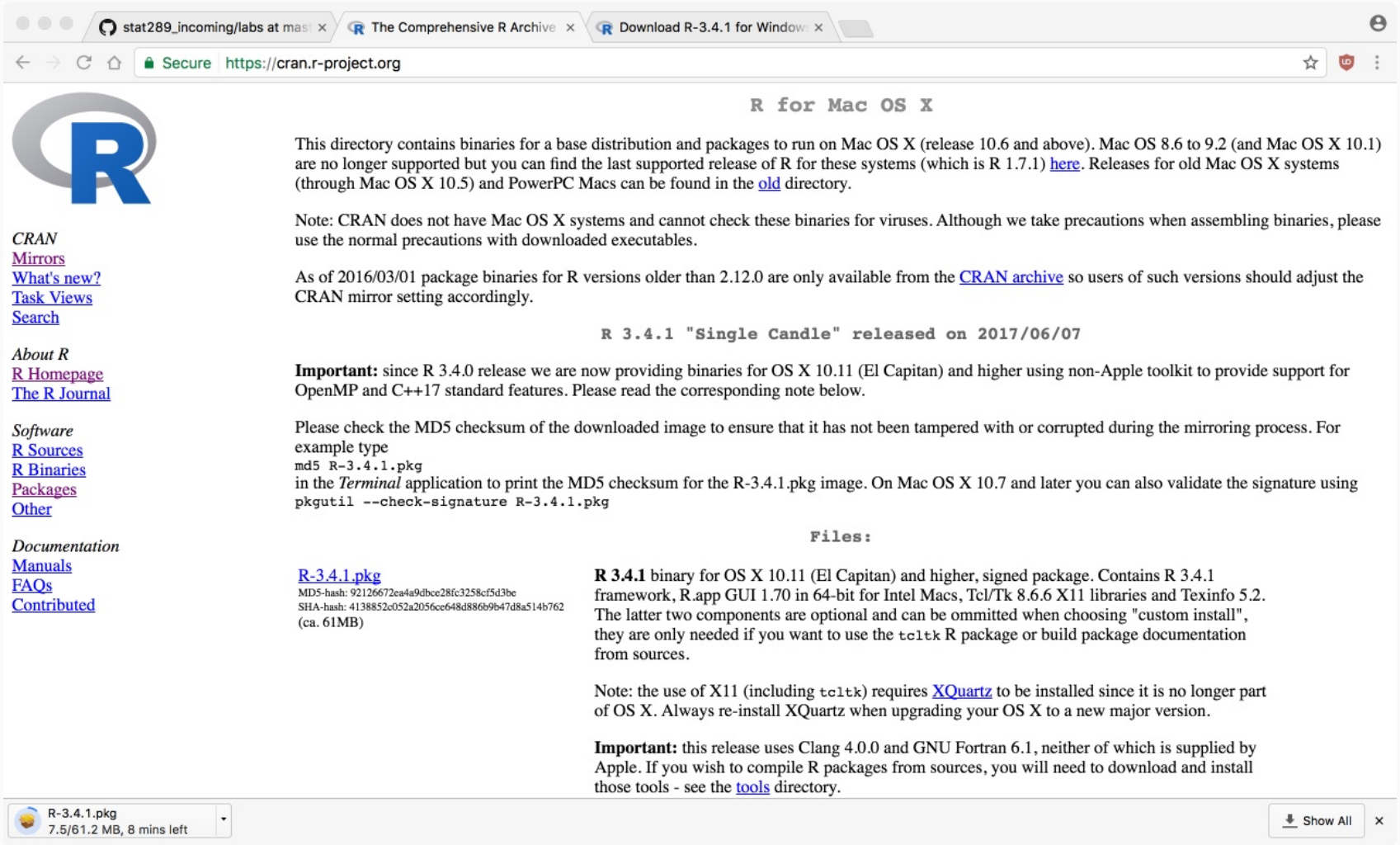
Download R

Next, we need to download the R programming language. To do this go to https://cran.r-project.org/ and select your platform:



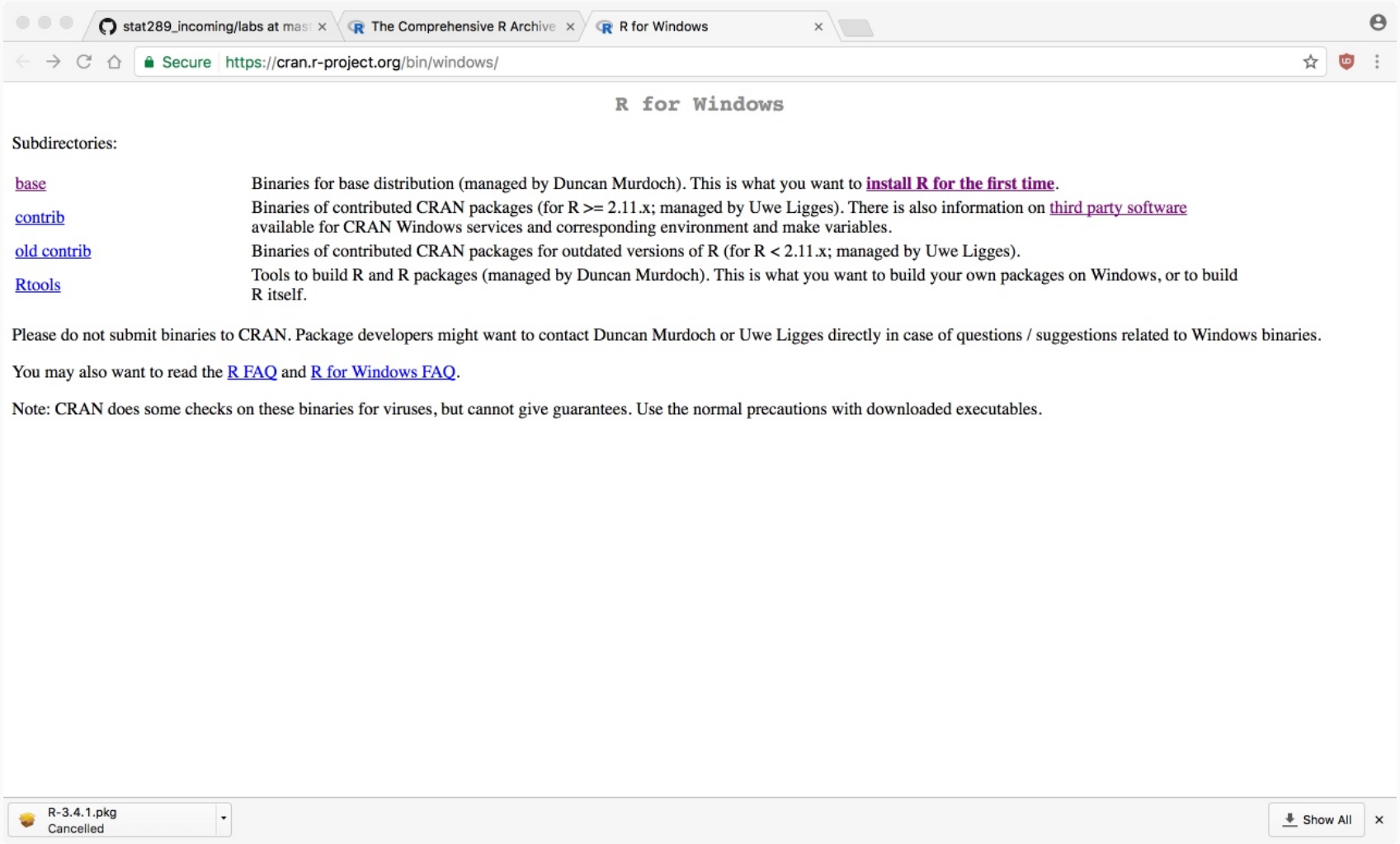
Download R

For macOS, just download R-3.4.1 (or whatever is the most recent):



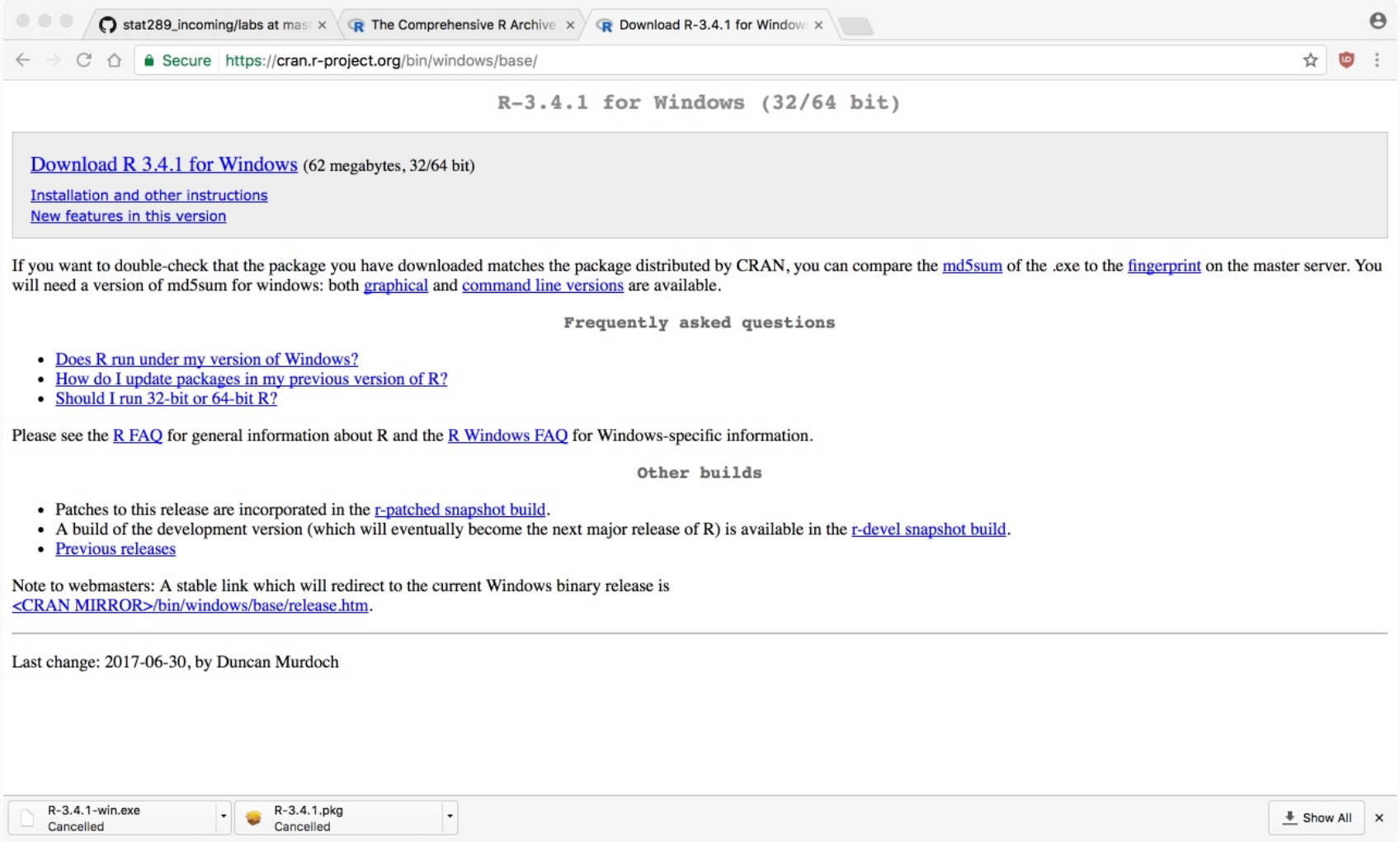
Download R

For Windows, first select **base**



Download R

And then *Download R 3.4.1*



Install R

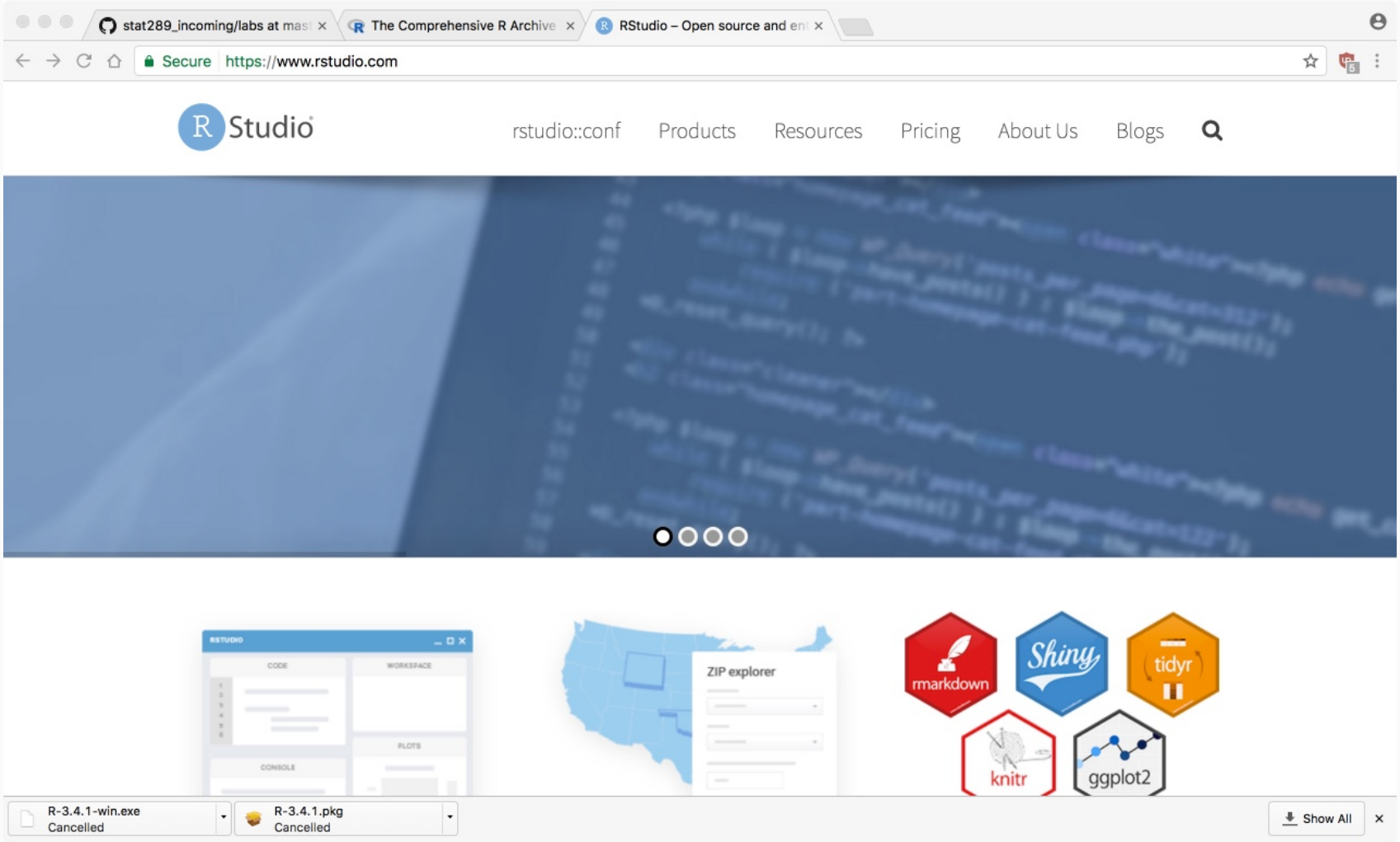
One you have the .pkg (macOS) or .exe (Windows) file, install this on your computer according to the default settings.

RStudio

The files we just downloaded are the core R language files doing all the hard work of processing data. Next, we'll install a helpful GUI frontend that make calling R easier.

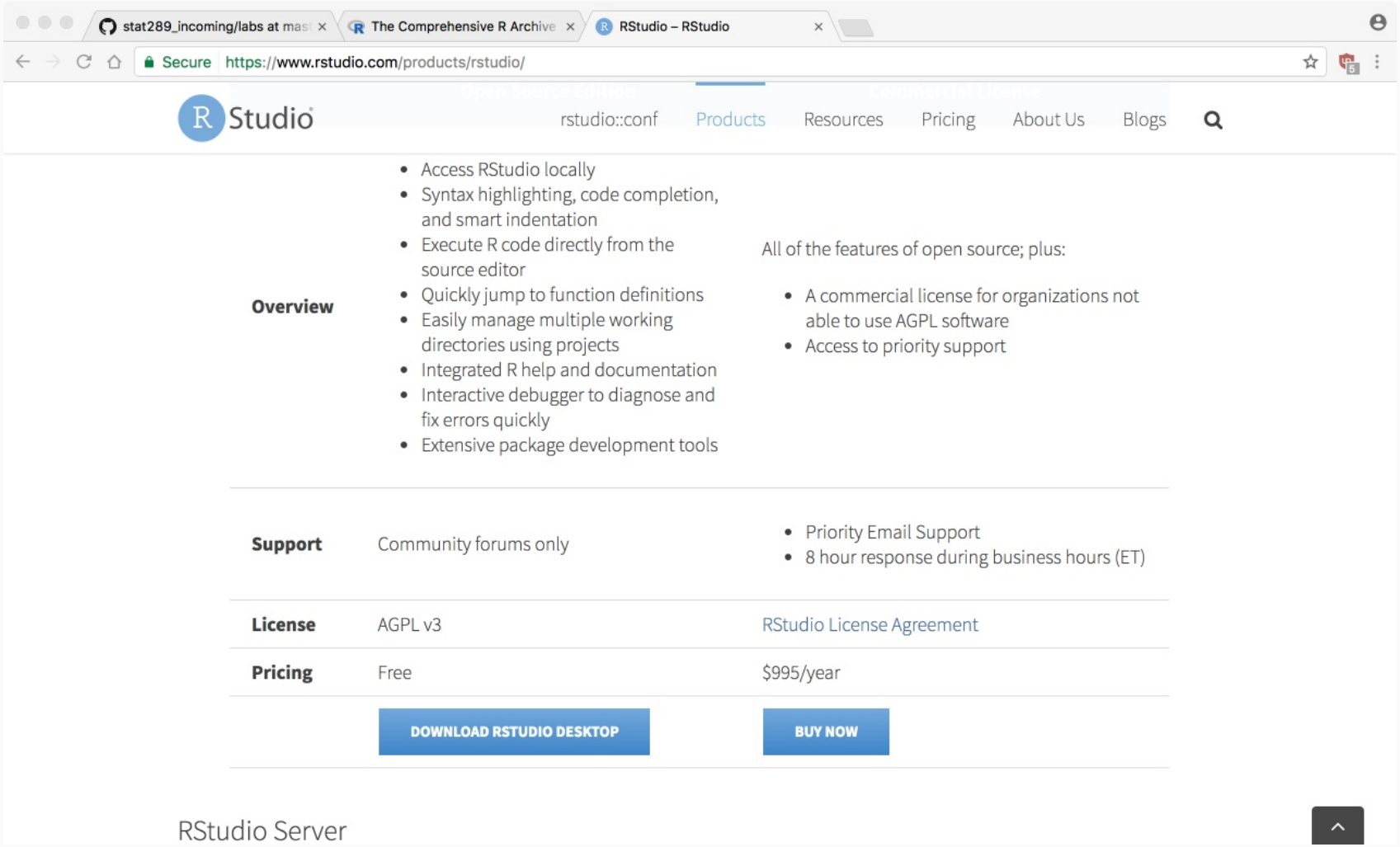
Download RStudio

Go to https://www.rstudio.com/. Click on Products => RStudio.



Download RStudio

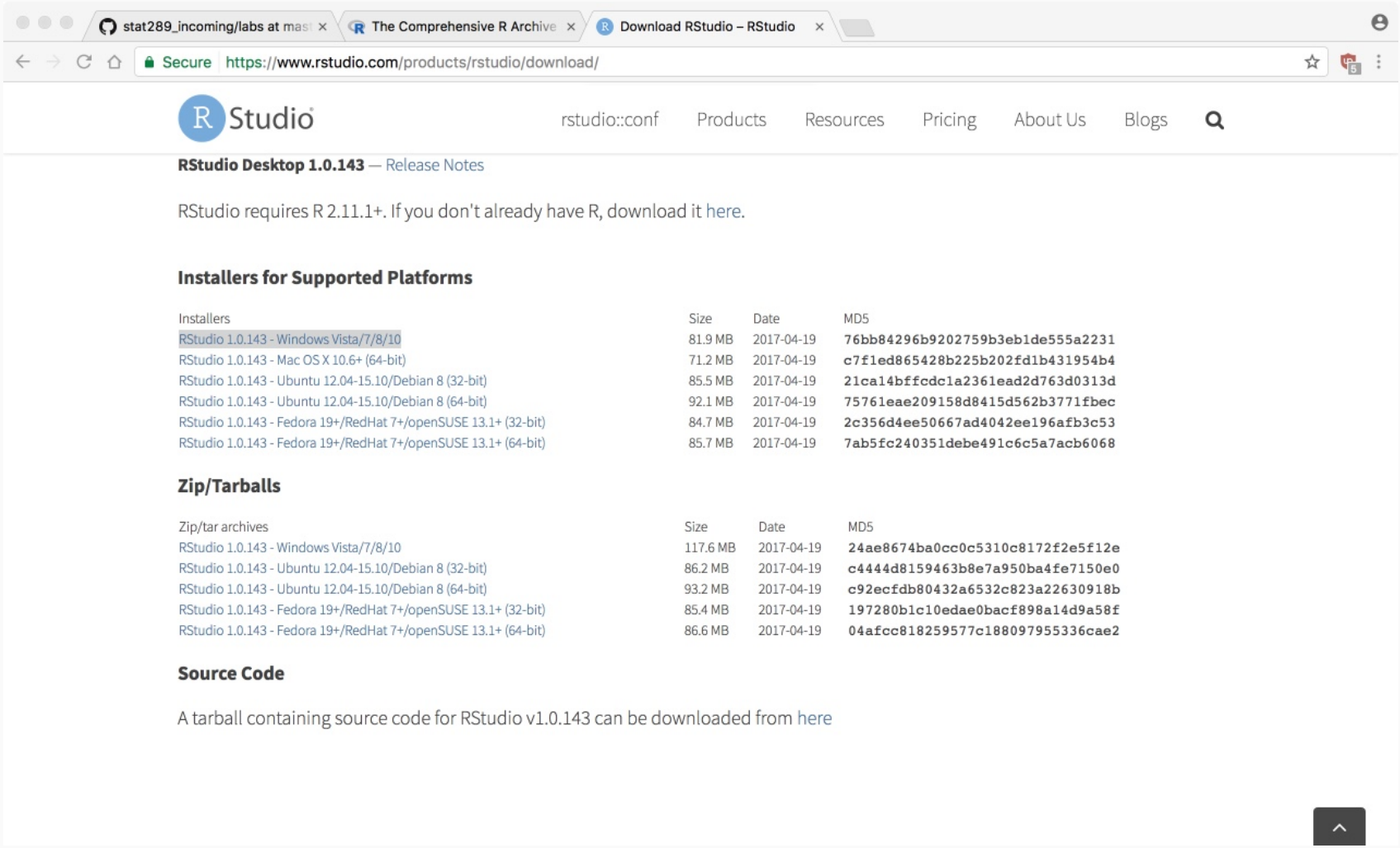
Scroll down to the **DOWNLOAD RSTUDIO DESKTOP** button and click on it.



Download RStudio

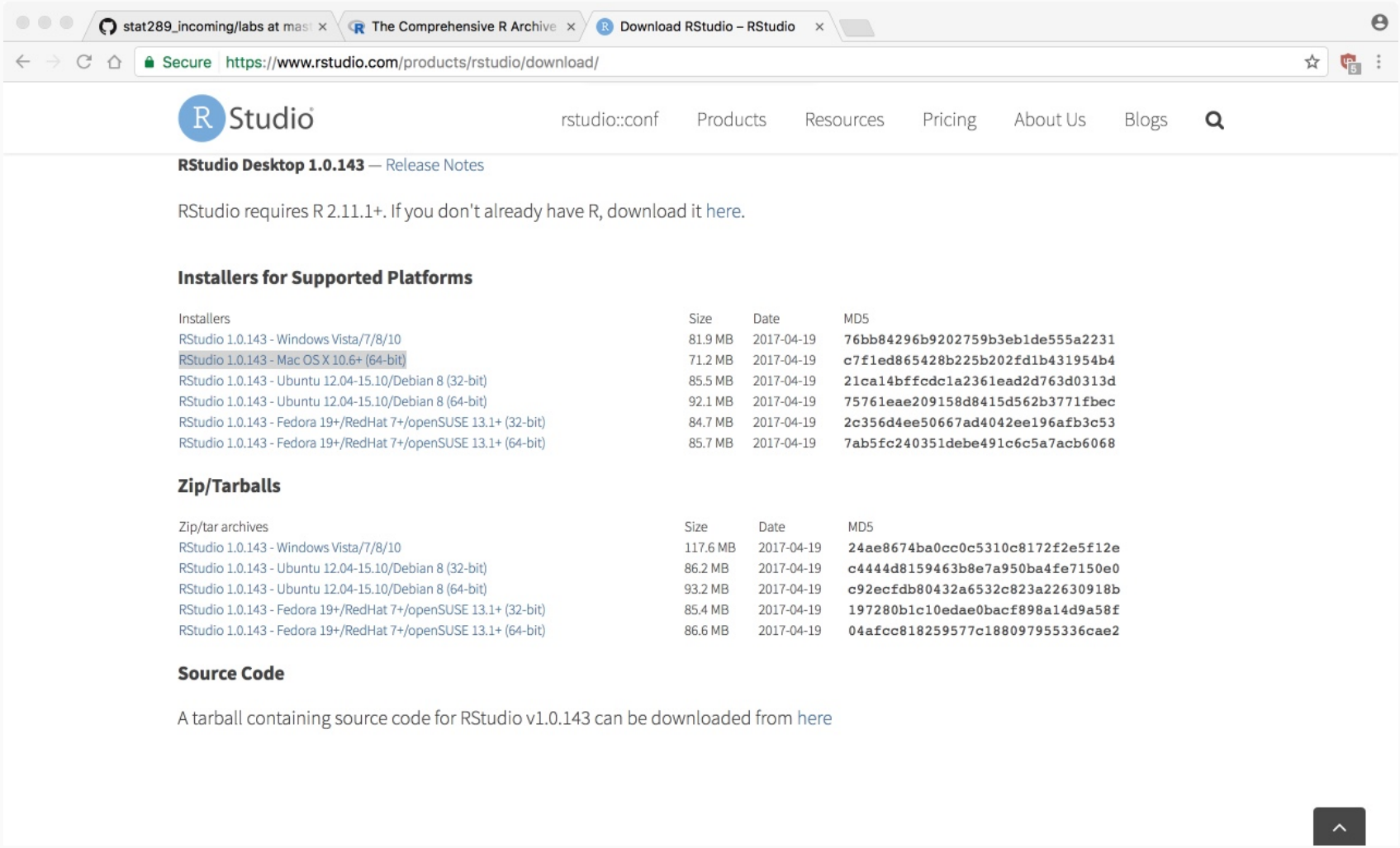
Scroll down again to the **Installers for Supported Platforms**.

The Windows link gives you an exe:



Download RStudio

And the macOS link gives a dmg:



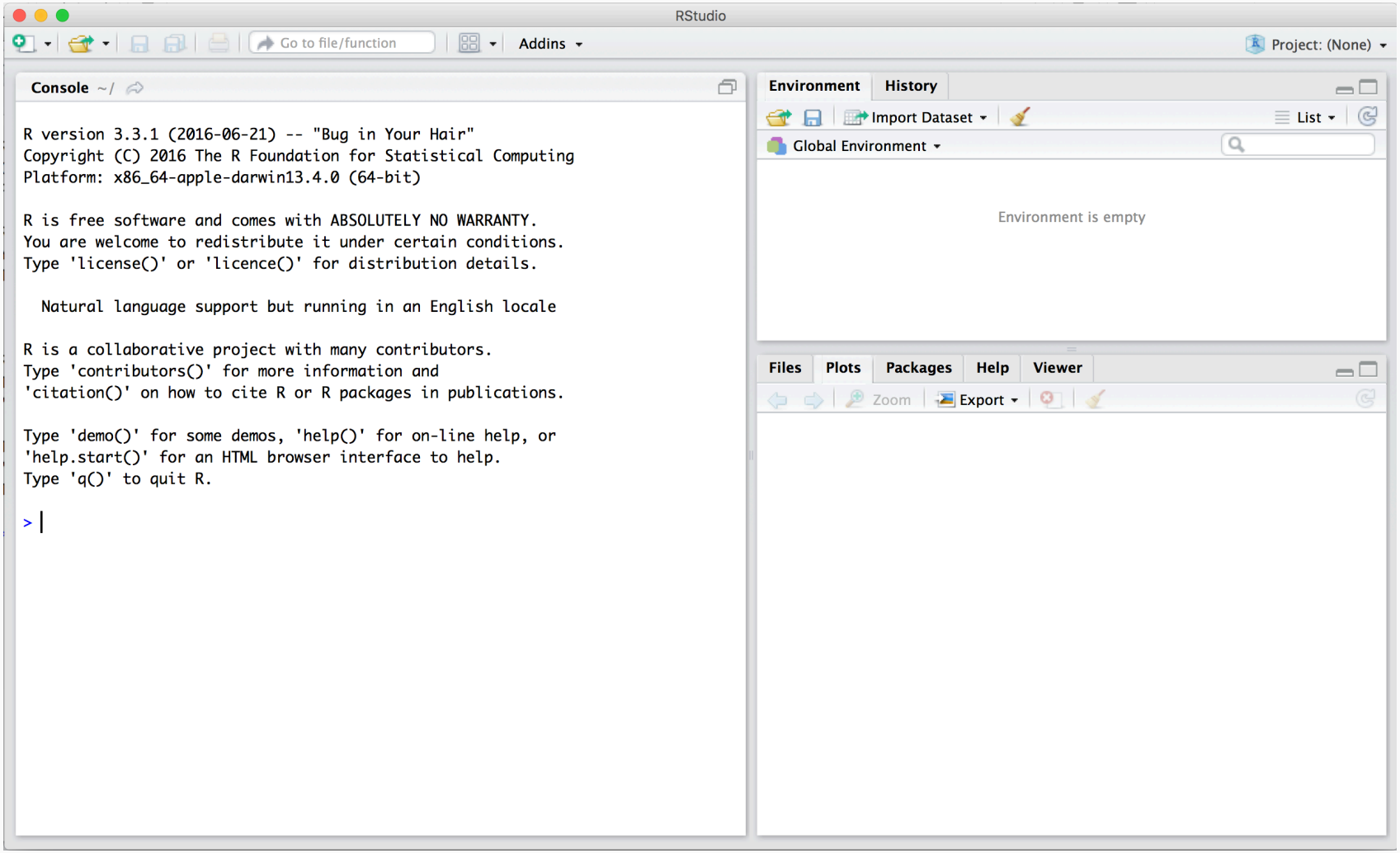
Install RStudio

Now, install R or RStudio as you would any other program. It should link automatically to the version of R you just installed.

Running R Scripts

Launch RStudio

Go ahead and launch RStudio. You should see a window that looks like this, as we saw on the class computers last time:

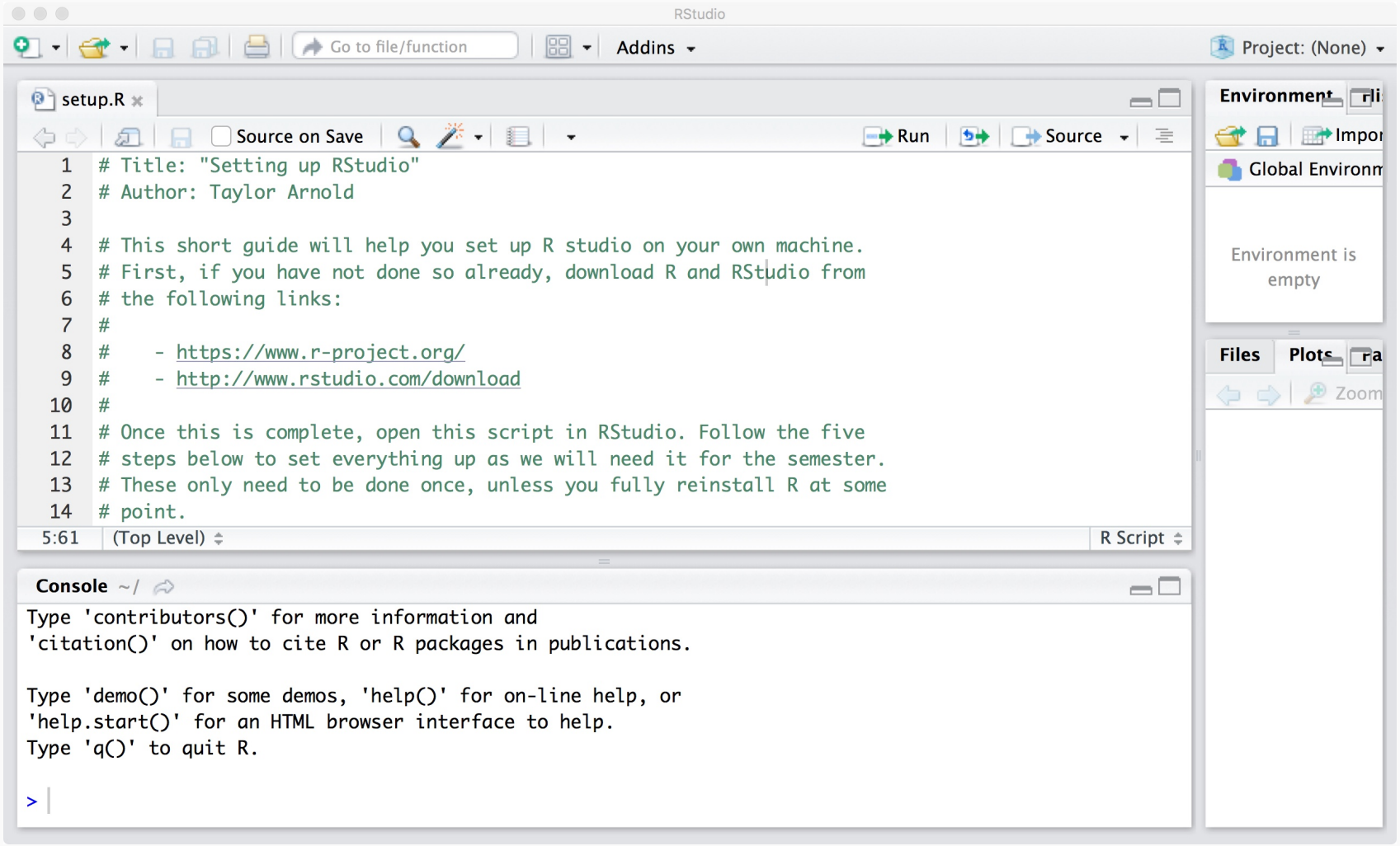


Open setup.R

Download the file *setup.R* from the course website and save it somewhere on your computer (perhaps the desktop?)

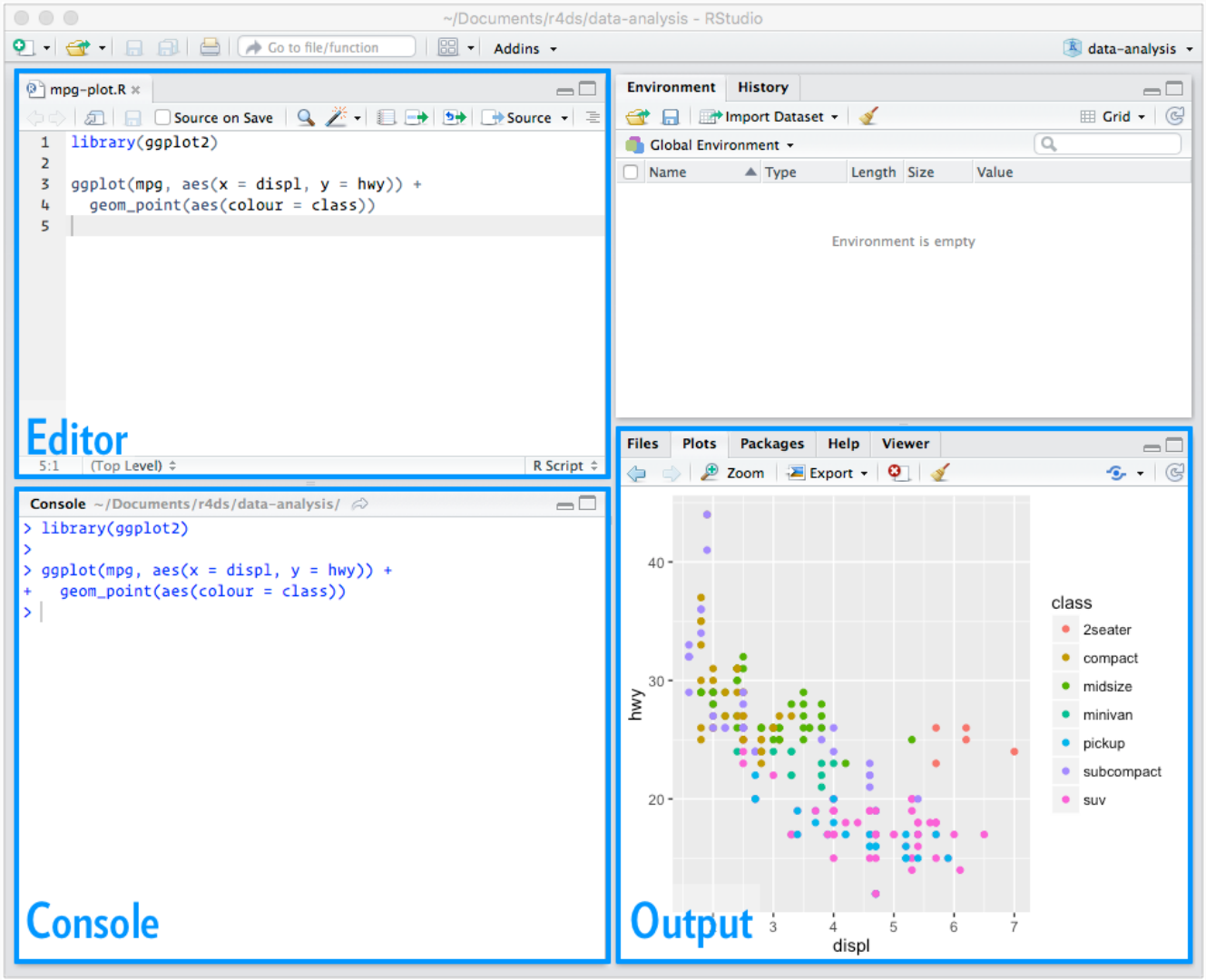
Select File => Open File and open the *setup.R* that you just downloaded.

Open setup.R


RStudio
Go to file/function
Addins
Project: (None)
setup.R
Source on Save
Run
Source
1 # Title: "Setting up RStudio"
2 # Author: Taylor Arnold
3
4 # This short guide will help you set up R studio on your own machine.
5 # First, if you have not done so already, download R and RStudio from
6 # the following links:
7 #
8 # - https://www.r-project.org/
9 # - http://www.rstudio.com/download
10 #
11 # Once this is complete, open this script in RStudio. Follow the five
12 # steps below to set everything up as we will need it for the semester.
13 # These only need to be done once, unless you fully reinstall R at some
14 # point.
5:61
(Top Level)
R Script
Console ~/
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
Global Environm
Environment is empty
Files
Plots
Zoom

Running setup.R

We now have a fourth panel in RStudio, which contains an editor for the code:



Running setup.R

We'll cover more about what types of code happen in the code editor. For now, notice that there are two types of code lines:

- comment lines starting with #, which contain plain text, and are highlighted in green
- code lines, which contain R commands in a specific format

To run a line of code, highlight the line or put your cursor in it and then hit the **Run** button. The code will run in the Console.

Lab 02

Download File

Finally, let's download the lab02.R file from the website (note: there is no lab01.R)

Open the file in RStudio, add your name, and save it.

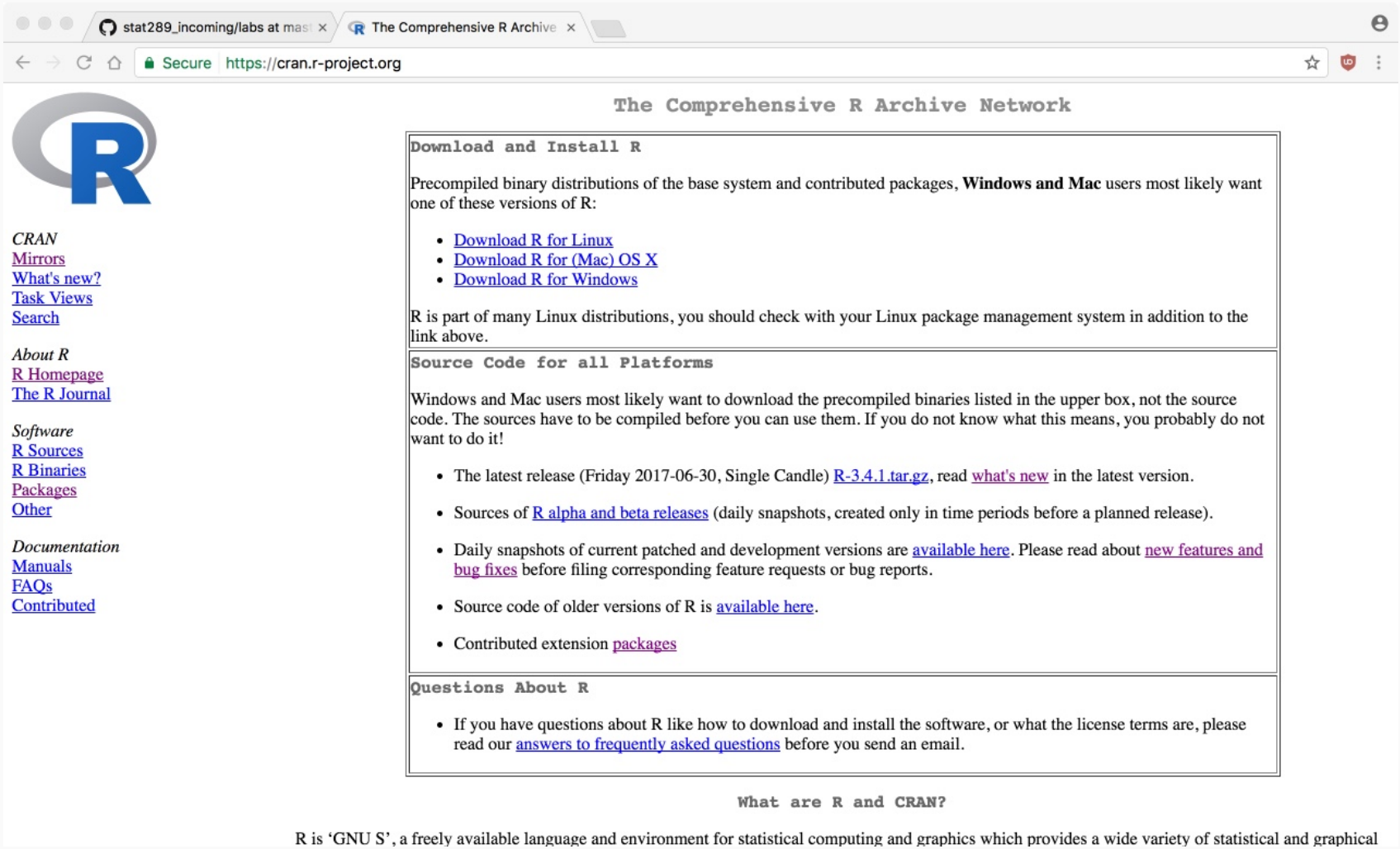
Upload the File

Now, go back to the new GitHub repository you created when you accepted the GitHub classroom invitation.

We want to add **lab02.R** to this repository. On Chrome you can drag and drop the file from your computer; otherwise, click on Upload files and navigate to the file on your computer.

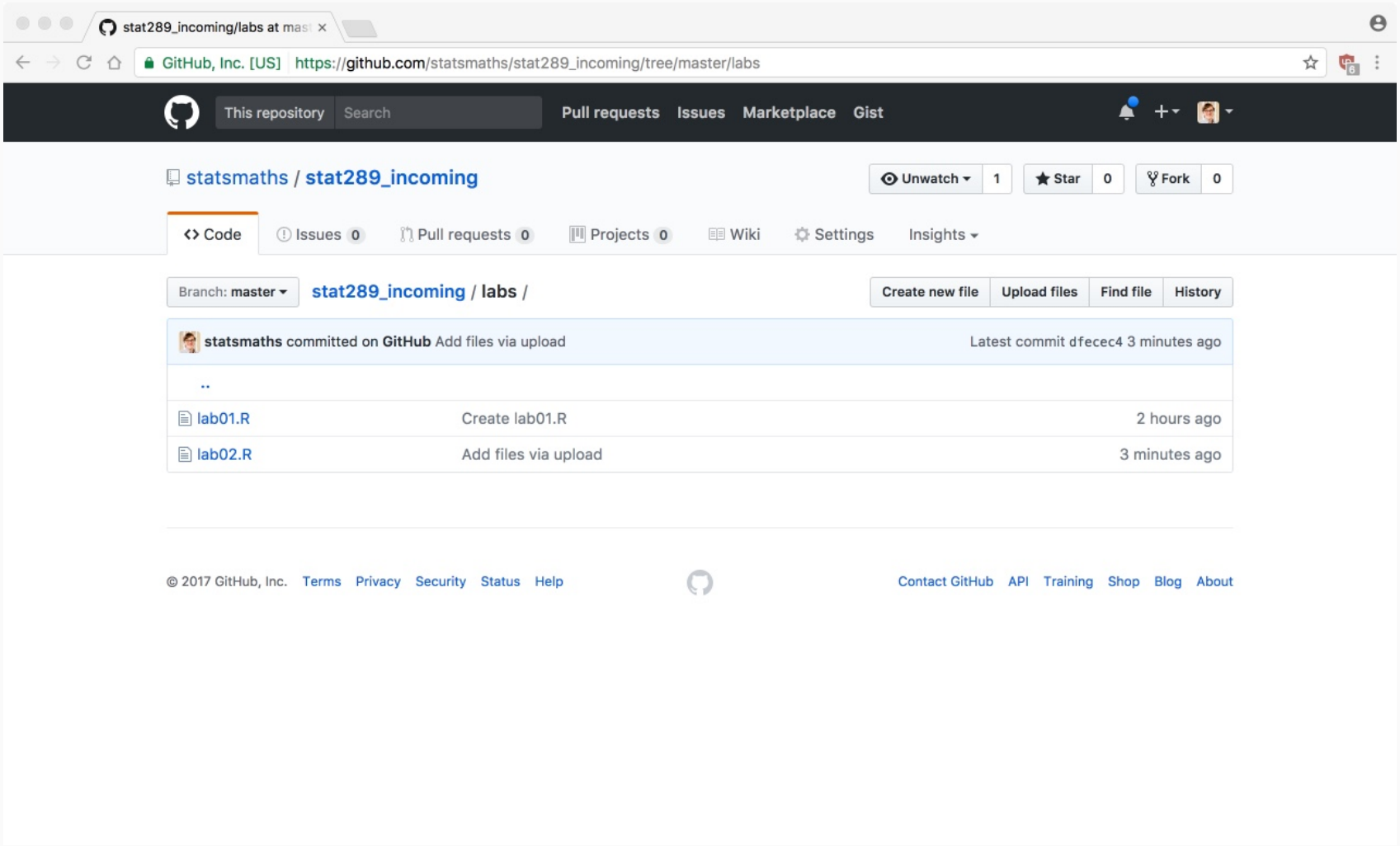
Commit Changes

Once the file loads, scroll down to the bottom of the page and select **Commit changes** (Note: changes will be lost otherwise)



Commit Changes

If you navigate to the labs directory, you'll see the **lab02.R** file added to the repository. You can see its contents by clicking on the file.



For Next Time

Complete the questions in **lab02.R** and upload the completed file to GitHub (just follow the same steps and make sure you commit the results).