

Getting Started with Git and GitHub for R Users

Saghir Bashir

24th May 2019



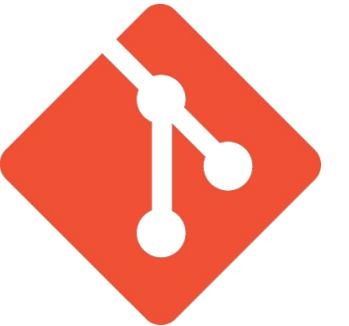
Relax

Experiment

Make Mistakes

Learn

Enjoy



Outline

Motivation

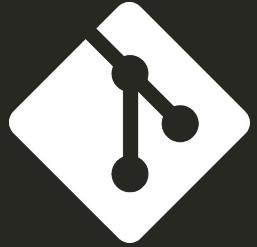
Discover GitHub

Git to GitHub

Summary



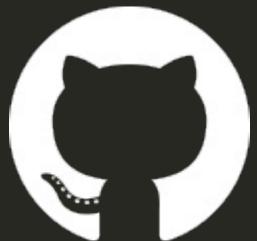
Prerequisites



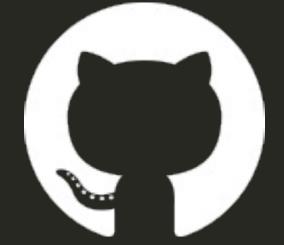
Latest versions of:

1. R: <https://cran.r-project.org>
2. RStudio: <https://www.rstudio.com/products/rstudio>
3. git: <https://git-scm.com/downloads>

An account on GitHub: <https://github.com/>



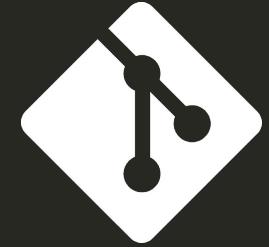
Windows (& perhaps MacOS) Users



Install GitHub Desktop:

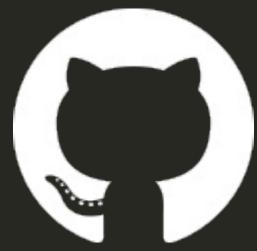
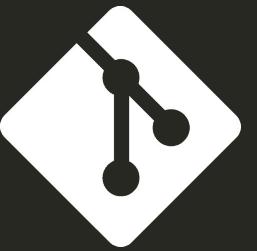
<https://desktop.github.com/>

Overcomes problems for participants using Windows 10.



Accept default options
during git installation.

<https://git-scm.com/downloads>



Using Git and GitHub

Motivation

Developing an R Program



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...
```

Processing R Program

1. Save as "**thesis-data.R**"

Developing an R Program



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...

# ... some more data cleaning code here ...
```

Processing R Program

1. Save as "thesis-data.R"
2. Overwrite "**thesis-data.R**"

Developing an R Program



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...
# ... some more data cleaning code here ...

# ... summary statistics to check data ...
```

Processing R Program

1. Save as "thesis-data.R"
2. Overwrite "thesis-data.R"
3. Overwrite "**thesis-data.R**" again

Developing an R Program



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...

# ... MODIFY data cleaning code here ...

# ... summary statistics to check data ...
```

Processing R Program

1. Save as "thesis-data.R"
2. Overwrite "thesis-data.R"
3. Overwrite "thesis-data.R" again
4. Overwrite "**thesis-data.R**" with modification

Developing an R Program



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...

# ... MODIFY data cleaning code here ...

# ... summary statistics to check data ...

# !!! Modified code messed up summary statistics !!!

# !!! Previous code worked better !!!
```

Processing R Program

1. Save as "thesis-data.R"
2. Overwrite "thesis-data.R"
3. Overwrite "thesis-data.R" again
4. Overwrite "thesis-data.R" with modification
5. Redo work that you did before



R Program - Saving Versions



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...
```

Processing R Program

1. Save as "**thesis-data-01.R**"

R Program - Saving Versions



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...

# ... some more data cleaning code here ...
```

Processing R Program

1. Save as "thesis-data-01.R"
2. Save as "**thesis-data-02.R**"

R Program - Saving Versions



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...
# ... some more data cleaning code here ...
# ... summary statistics to check data ...
```

Processing R Program

1. Save as "thesis-data-01.R"
2. Save as "thesis-data-02.R"
3. Save as "**thesis-data-03.R**"

R Program - Saving Versions



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...

# ... MODIFY data cleaning code here ...

# ... summary statistics to check data ...
```

Processing R Program

1. Save as "thesis-data-01.R"
2. Save as "thesis-data-02.R"
3. Save as "thesis-data-03.R"
4. Save as "**thesis-data-04.R**"

R Program - Saving Versions



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...
# ... MODIFY data cleaning code here ...
# ... summary statistics to check data ...

# !!! Modified code messed up summary statistics !!!
# ... I remember I can go back version 03 !!!
# ... Fixed, send final version to supervisor, ...
```

Processing R Program

1. Save as "thesis-data-01.R"
2. Save as "thesis-data-02.R"
3. Save as "thesis-data-03.R"
4. Save as "thesis-data-04.R"
5. Save as "**thesis-data-Final.R**"
 - Send to supervisor

R Program - Saving Versions



R Program

```
# Thesis Project Data Cleaning
library(data.table)
library(here)

tdata <- fread(here("mydata.csv"))

# ... some data cleaning code here ...
# ... MODIFY data cleaning code here ...
# ... summary statistics to check data ...
# !!! Modified code messed up summary statistics !!!
# ... Fixed, send final version to supervisor, ...
# ... and real life continues ...
```

Processing R Program

1. Save as "thesis-data-01.R"
2. Save as "thesis-data-02.R"
3. Save as "thesis-data-03.R"
4. Save as "thesis-data-04.R"
5. Save as "thesis-data-Final.R"
6. ... "**thesis-data-Final-Sup.R**"
 - o Received from supervisor
7. ... "**thesis-data-Final-Sup-ME.R**"
8. ...



Six months later...

The FUTURE YOU



Continues on the project.

Project needs updating.

Receive updated data.

Discovers an error.

...

Continue from where?

- thesis-data-01.R
- thesis-data-02.R
- thesis-data-03.R
- thesis-data-04.R
- thesis-data-Final-Final.R
- thesis-data-Final-Last.R
- thesis-data-Final-Sup-ME-minor.R
- thesis-data-Final-Sup-ME.R
- thesis-data-Final-Sup.R
- thesis-data-Final.R
- thesis-data-Final2.R
- ...



Danger of Using File Date & Time



They are not reliable

- What do they really represent? Modified? Opened?
- Did you modify the wrong file before?
- Was the true latest file deleted?

Other Problems



What changed between files?

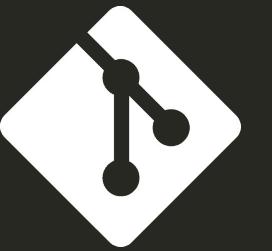
What needs to be done?

What issues are there?

How can multiple people collaborate?

...





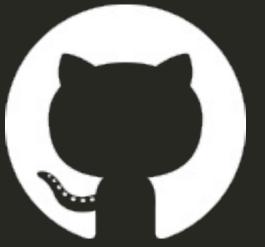
Git & GitHub

Track changes

Share your work

Collaborate

Track issues



Exercise

Learn GitHub through observation.

What do you observe?

What do you understand?

It is not about being right.

<https://github.com/saghirb/Getting-Started-in-R>



saghirb / Getting-Started-in-R

Code Issues 2 Pull requests 0 Projects 0 Insights

Watch 5 Star 57 Fork 20

An 8 page guide to starting with R - Tidyverse Edition

34 commits 1 branch 0 releases 1 contributor GPL-3.0

Branch: master New pull request Find File Clone or download ▾

File	Description	Last Commit
.gitignore	Major changes: Created a new make file, updated pinp files, updated l...	3 months ago
ChickWeight.csv	Pre-draft version released for reviews	9 months ago
Contributors.md	Update post Jordi's comments	8 months ago
ExamplesAndExercises.R	Major changes: Created a new make file, updated pinp files, updated l...	3 months ago
Getting-Started-in-R.Rmd	Major changes: Created a new make file, updated pinp files, updated l...	3 months ago
Getting-Started-in-R.Rproj	Pre-draft version released for reviews	9 months ago
Getting-Started-in-R.pdf	Resolved issue 2: _make.R Completely delete Share directory and rebuild	26 days ago
LICENSE	Initial commit	9 months ago
README.md	Cosmetic changes to README.md	2 months ago
RStudio-Screenshot.png	Pre-draft version released for reviews	9 months ago
_make.R	Resolved issue 2: _make.R Completely delete Share directory and rebuild	26 days ago

GitHub Questions



General

- What file types do you recognise?
- What is at the end of the main page?
 - How is "README.md" linked?

Click on "Commit"

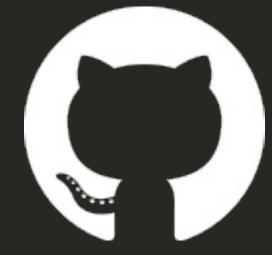
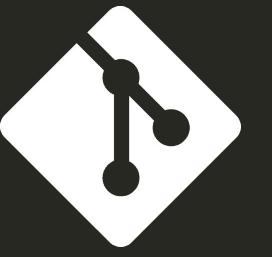
- When was the repository created?
- When was the last "commit"?
- When were all the R chunks labelled?
 - Click on the link. What do you see?
- What do you think a "commit" is?

Issues

- How many issues are open? Closed?
- Click on one open and one closed issue.
 - What is the difference?

Forks

- How many forks are there?
- What is a "fork"?
 - Hint: click on one of the forks.



Git, GitHub & RStudio



GitHub is built on Git.

Let's start by using Git in RStudio.

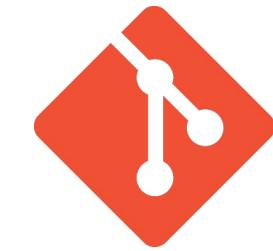
Then we will link back to GitHub.

IMPORTANT: R Set-up



The screenshot shows the 'Global Options...' section of the RStudio 'Tools' menu open. On the left, a sidebar lists various configuration categories: General, Code, Appearance, Pane Layout, Packages, R Markdown, Sweave, Spelling, Git/SVN, Publishing, and Terminal. The 'General' category is currently selected. The main pane displays the 'R Sessions' and 'Workspace' sections of the 'Basic' tab of the 'Session' settings. In the 'Workspace' section, the checkbox for 'Restore .RData into workspace at startup' is unchecked, and the dropdown menu 'Save workspace to .RData on exit:' is set to 'Never'. Two specific options are highlighted with orange rounded rectangles: 'Always save history (even when not saving .RData)' and 'Remove duplicate entries in history'. Both of these highlighted options are also unchecked.

RStudio Git Set-up



Screenshot of the RStudio Options dialog showing the Git executable path highlighted.

The screenshot shows the RStudio Options dialog with the "General" tab selected. The "Version Control" section is expanded, showing "Git executable:" set to "C:/Program Files/Git/bin/git.exe". This field is highlighted with an orange rectangle. Below it, "SVN executable:" is set to "(Not Found)". The "SSH RSA key:" field contains "(None)". A link to "Using Version Control with RStudio" is visible at the bottom.

Tools Help

Install Packages... Check for Package Updates...

Version Control

Shell... Terminal Jobs Addins

Keyboard Shortcuts Help Alt+Shift+K Modify Keyboard Shortcuts...

Project Options...

Global Options...

Options

General

Code Appearance Pane Layout Packages R Markdown Sweave Spelling Git/SVN Publishing Terminal

Enable version control interface for RStudio projects

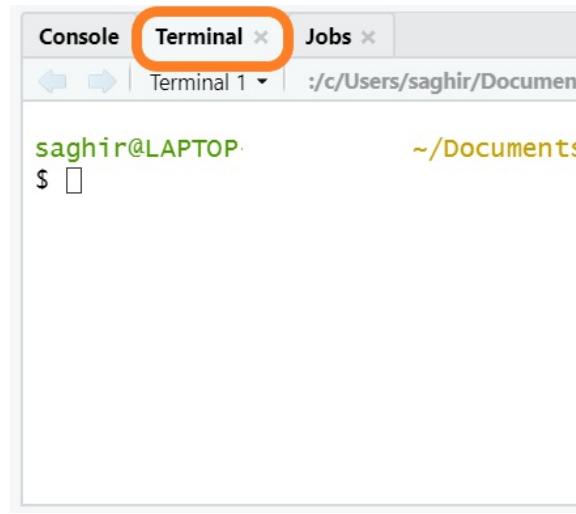
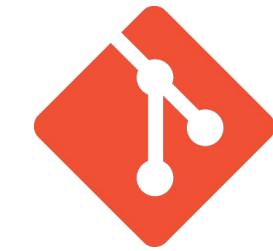
Git executable:
C:/Program Files/Git/bin/git.exe

SVN executable:
(Not Found)

SSH RSA key:
(None)

Using Version Control with RStudio

Git User Settings - Only Do Once



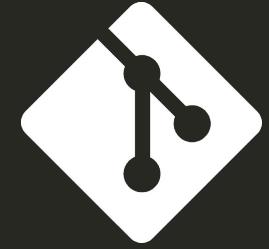
Switch to the terminal tab & type:

```
git config --global user.name "Your Name"  
git config --global user.email "email@example.com"
```

Note: Use the same email address as for GitHub

Check Settings

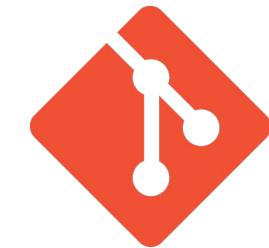
```
git config --global
```



We are ready to use Git with RStudio.

Let's start a new project.

New RStudio Project (i)

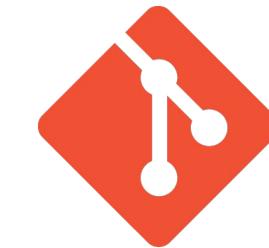


The image shows two screenshots related to creating a new RStudio project. On the left is a screenshot of the RStudio menu bar, specifically the 'File' menu. The 'New Project...' option is highlighted. On the right is a screenshot of the 'Create Project' dialog box. It lists three options:

- 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.

A 'Cancel' button is located at the bottom right of the dialog box.

New RStudio Project (ii)



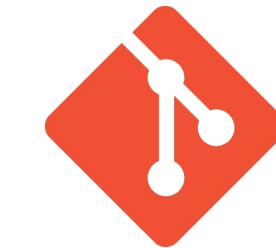
New Project

Back Project Type

- New Project > Create a new project in an empty directory
- R Package >
- Shiny Web Application >
- R Package using Rcpp >
- R Package using RcppArmadillo >
- R Package using RcppEigen >
- R Package using devtools >

Cancel

New RStudio Project (iii)



New Project

[Back](#) **Create New Project**

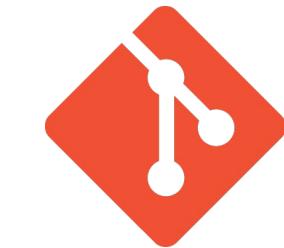
Directory name:

Create project as subdirectory of:
 [Browse...](#)

Create a git repository

Open in new session [Create Project](#) [Cancel](#)

New RStudio Project (iv)

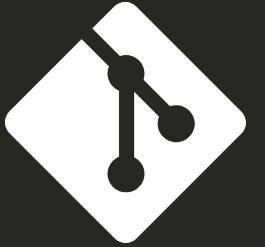


The screenshot shows the RStudio interface with two main panes: the Git pane at the top and the Files pane below it.

Git Pane: The title bar shows the project name "GitHub-R-Demo". The tab bar has tabs for Environment, History, Connections, and Git, with the Git tab highlighted by an orange circle. Below the tabs is a toolbar with icons for Diff, Commit, and various Git operations. The main area shows a file tree under "Staged" with two items: ".gitignore" and "GitHub-R-Demo.Rproj".

Files Pane: The title bar shows the project name "GitHub-R-Demo". The tab bar has tabs for Files, Plots, Packages, Help, and Viewer, with the Files tab highlighted. Below the tabs is a toolbar with icons for New Folder, Delete, Rename, and More. The main area shows a file list under "GitHub-R-Demo" with two items: ".gitignore" and "GitHub-R-Demo.Rproj". The ".gitignore" file is selected, indicated by a green arrow icon next to its entry in the list.

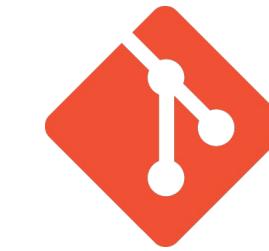
Name	Size	Modified
.gitignore	44 B	May 22, 2019, 11:29 AM
GitHub-R-Demo.Rproj	218 B	May 22, 2019, 11:29 AM



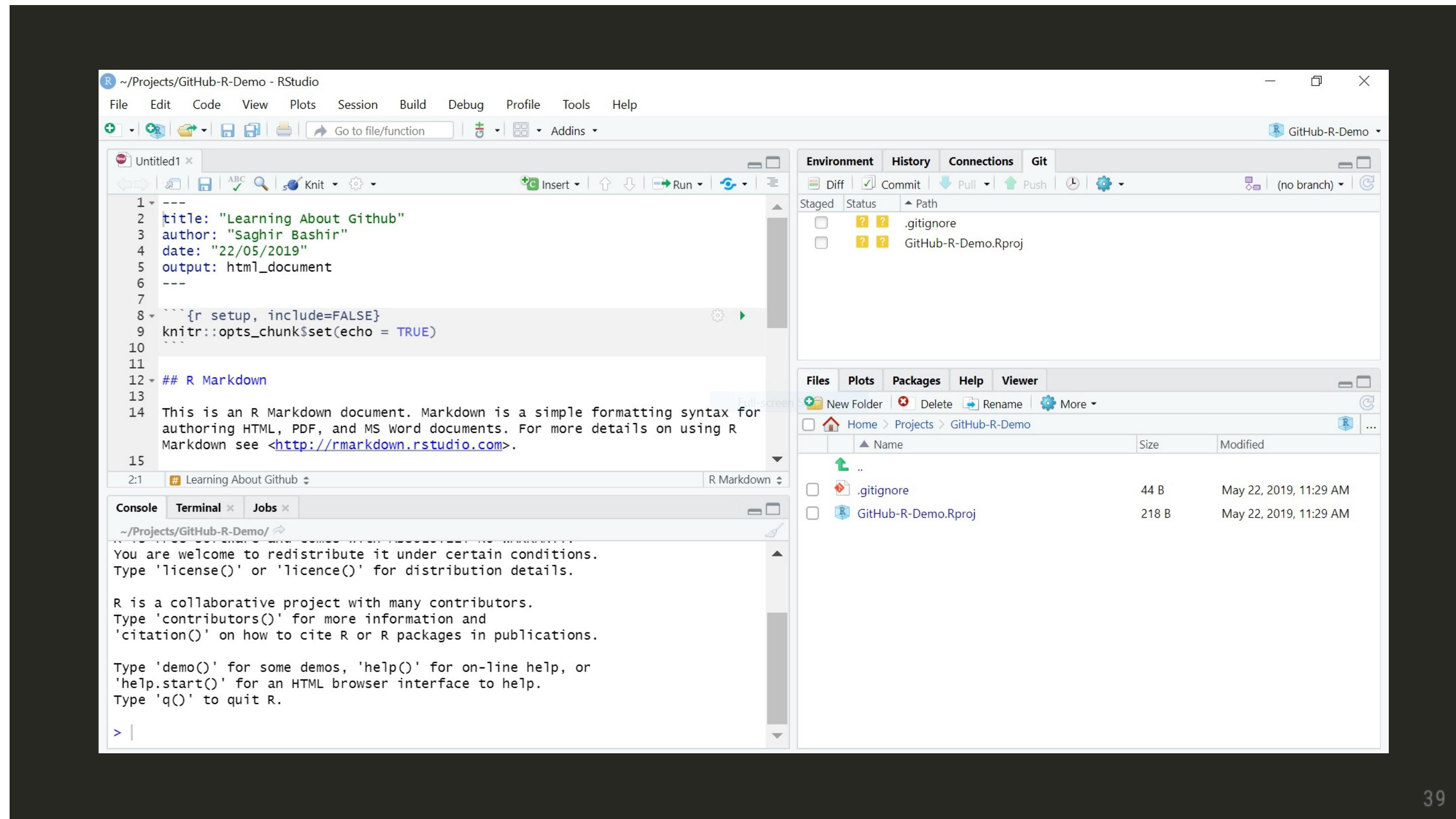
Working with Git in RStudio

- 1. Create an R file.**
- 2. Commit to git (part of git history).**
- 3. Modify the file and "commit" again.**
- 4. Save to your on-line GitHub account.**

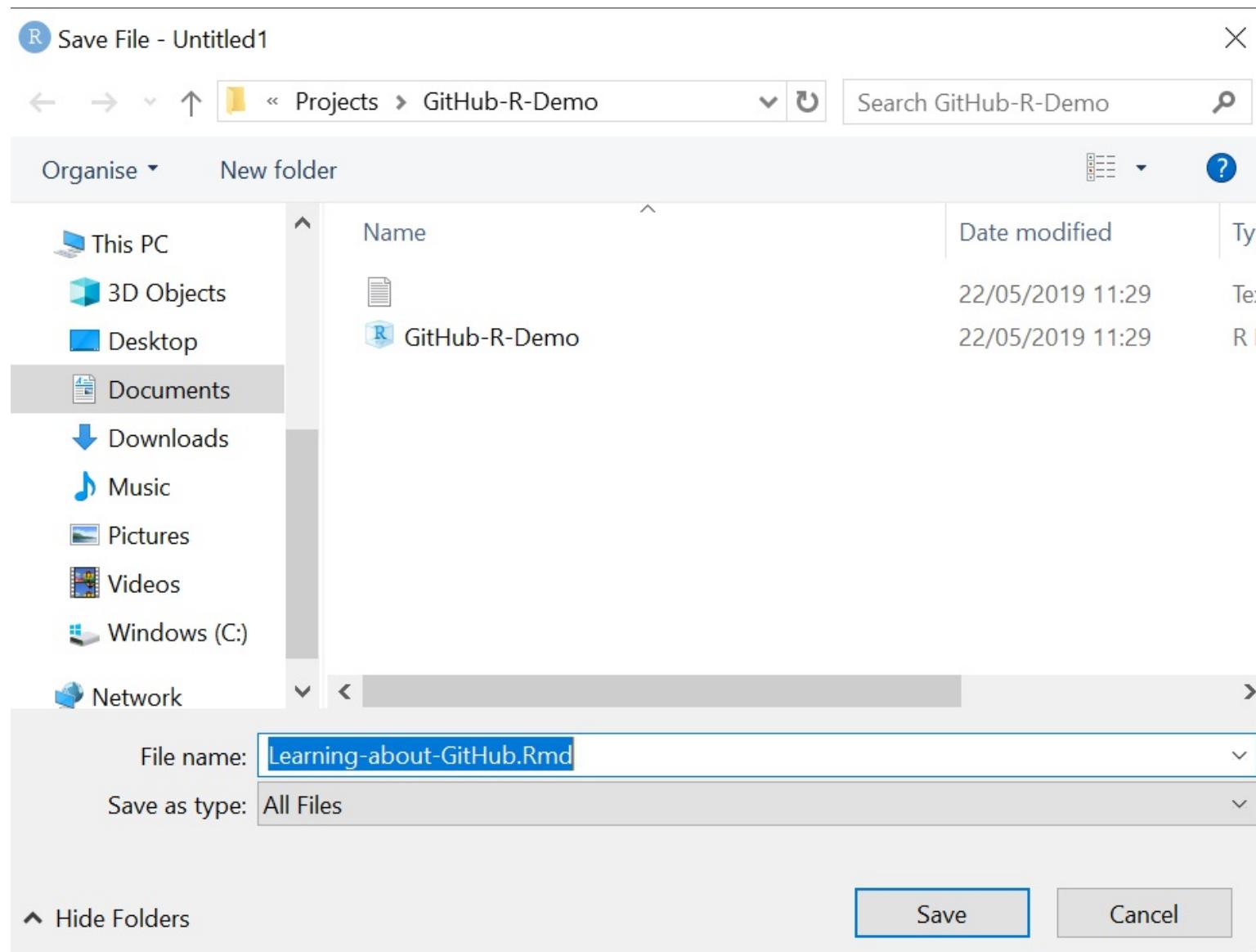
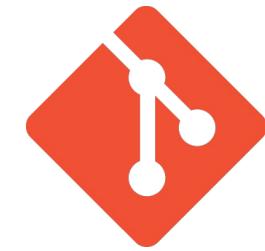
Create New R Markdown Document

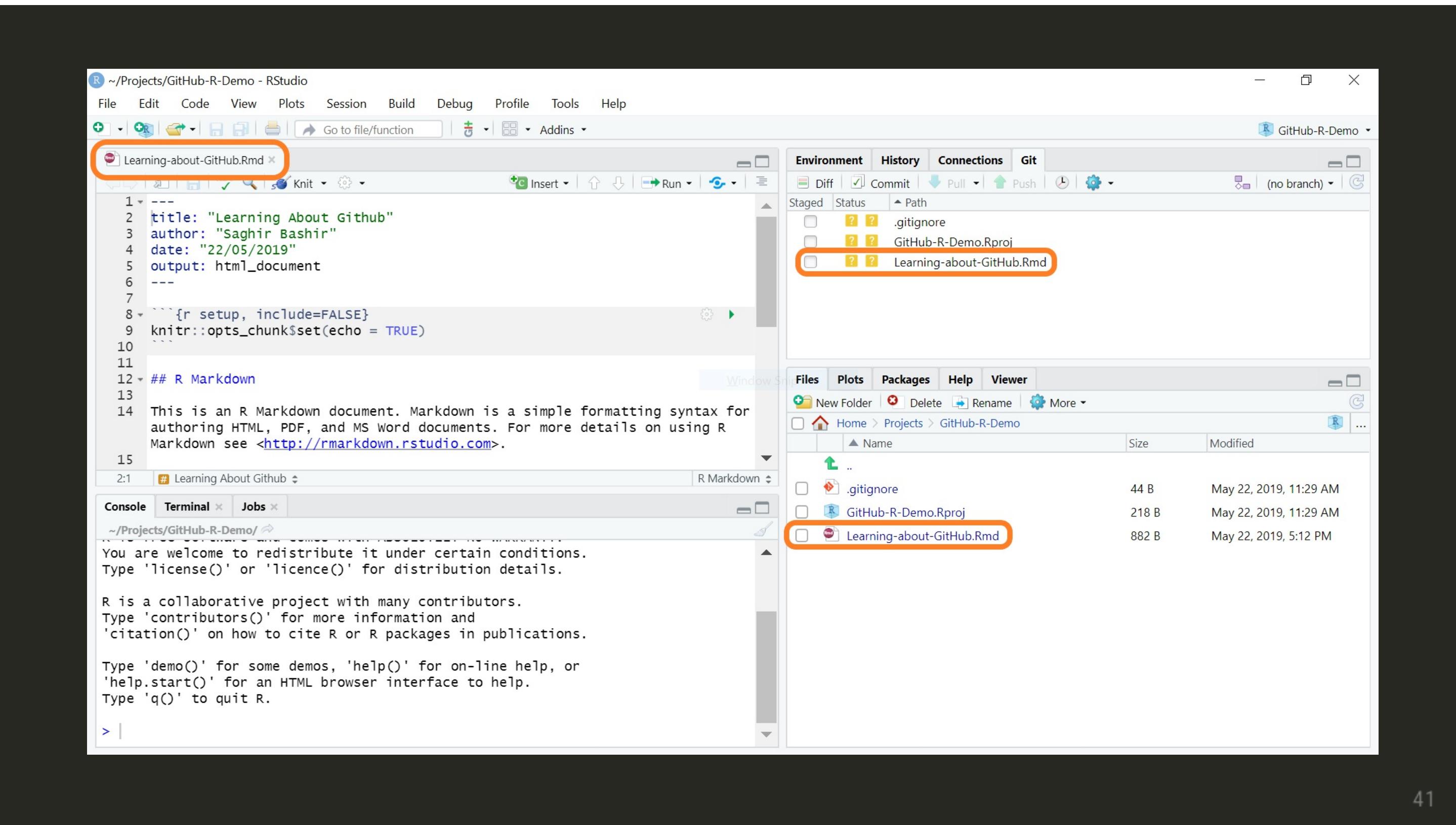


The screenshot shows the RStudio interface. In the top-left corner, the title bar reads "R ~/Projects/GitHub-R-Demo - RStudio". Below the title bar is a menu bar with File, Edit, Code, View, Plots, Sessions, etc. A toolbar follows, containing icons for file operations like Open, Save, and Print, along with a Go to... button. The main workspace contains a list of files and projects. An "R Markdown..." item is selected, and a context menu is open over it, showing options: "Create a new R Markdown document", "redistribut...", "liscence()", "e project w...", "()' for more...", "y to cite R...", "ome demos, an HTML bro...", and "R.". To the right of the workspace is a "New R Markdown" dialog box. The dialog has a sidebar with "Document", "Presentation", "Shiny", and "From Template" options. The main area shows "Title: Learning About Github" and "Author: Saghir Bashir" (with the "Author" field highlighted). Under "Default Output Format:", "HTML" is selected (indicated by a checked radio button). A note below says: "Recommended format for authoring (you can switch to PDF or Word output anytime)". There are also options for "PDF" and "Word". At the bottom of the dialog are "OK" and "Cancel" buttons.

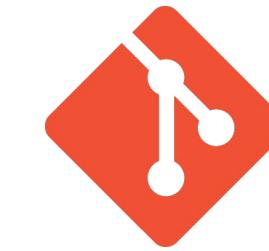


Save R Markdown File



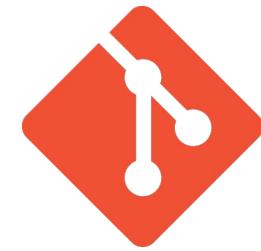


"Commit" Untracked Files



The screenshot shows the RStudio interface with the Git tab selected. In the top-left window, three files are listed as untracked (yellow question marks): `.gitignore`, `GitHub-R-Demo.Rproj`, and `Learning-about-GitHub.Rmd`. An orange box highlights these files. In the bottom-left window, the `Commit` button is highlighted with an orange box. A tooltip for the `Commit` button states: "Commit pending changes (Ctrl+Alt+M)". The top-right window is titled "RStudio: Review Changes" and shows the same three files now staged (green checkmarks). The commit message field contains "My first commit". The bottom-right window shows the diff output for the `Learning-about-GitHub.Rmd` file:

```
@@ -0,0 +1,30 @@
1 ---
2 title: "Learning About Github"
3 author: "Saghir Bashir"
4 date: "22/05/2019"
5 output: html_document
6 ---
7
```



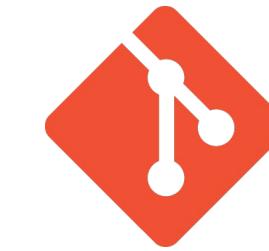
Successful First Commit

Git Commit Close

```
>>> C:/Program Files/Git/bin/git.exe commit -F C:/Users/saghir/AppData/I  
[master (root-commit) e70674b] My first commit  
 3 files changed, 47 insertions(+)  
  create mode 100644 .gitignore  
  create mode 100644 GitHub-R-Demo.Rproj  
  create mode 100644 Learning-about-GitHub.Rmd
```

◀ ▶

Git Panel Should be Empty



Screenshot of RStudio showing the Git panel and file browser.

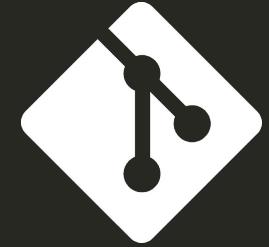
Git Panel:

- Environment, History, Connections, **Git** tabs.
- Diff, Commit, Pull, Push buttons.
- master branch selected.
- Empty content area below.

File Browser:

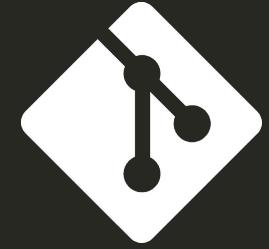
- Files, Plots, Packages, Help, Viewer tabs.
- New Folder, Delete, Rename, More buttons.
- Home > Projects > GitHub-R-Demo path.
- Table view:

	Name	Size	Modified
	..		
<input type="checkbox"/>	.gitignore	44 B	May 22, 2019, 11:29 AM
<input type="checkbox"/>	GitHub-R-Demo.Rproj	218 B	May 22, 2019, 11:29 AM
<input type="checkbox"/>	Learning-about-GitHub.Rmd	882 B	May 22, 2019, 5:12 PM



Commit

**Your files are now a part of the
git history of this project.**



Modify Learning-about-GitHub.Rmd

Then commit the changes.

The screenshot shows the RStudio interface with a dark theme. The top bar displays the path `~/Projects/GitHub-R-Demo - master - RStudio`. The menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. The toolbar contains icons for New File, Open, Save, Go to file/function, and Addins. The main workspace shows an R Markdown file named `Learning-about-Github.Rmd` with the following content:

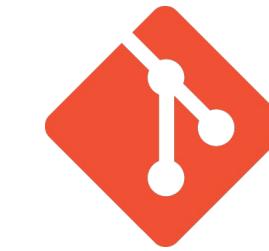
```
1 ---  
2 title: "Learning About Github"  
3 author: "Saghir Bashir"  
4 date: "22/05/2019"  
5 output: html_document  
---  
8 ```{r setup, include=FALSE}  
9 knitr::opts_chunk$set(echo = TRUE)  
10  
11  
12 # Chick Weight Data  
13  
14 Summary of Chick Weight Data  
15  
16 ```{r Cwsum}  
17 summary(Chickweight)  
18  
19  
20 # Chick weight Plot  
21  
22 ```{r Cwplot}  
23 with(ChickWeight, plot(Time, weight, col=Diet))  
24  
25  
26
```

The status bar at the bottom indicates line 25:1, a Chick Weight Plot, and R Markdown. To the right of the code editor is the GitHub integration interface, showing the `Git` tab selected. It displays a commit for the file `Learning-about-Github.Rmd` in the `master` branch. Below the Git interface is the `Files` panel, which lists the project files:

Name	Size	Modified
..		
.gitignore	44 B	May 22, 2019, 11:29 AM
GitHub-R-Demo.Rproj	218 B	May 22, 2019, 11:29 AM
Learning-about-Github.Rmd	376 B	May 22, 2019, 6:15 PM

The bottom right corner of the interface shows the number 47.

Knit the R Markdown File



Learning About Github

Saghir Bashir

22/05/2019

Chick Weight Data

Summary of Chick Weight Data

```
summary(ChickWeight)
```

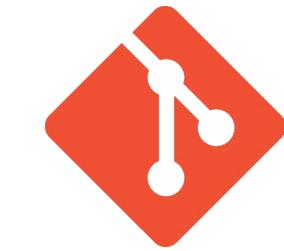
```
##      weight         Time      Chick      Diet
##  Min.   : 35.0   Min.   : 0.00   13   : 12   1:220
##  1st Qu.: 63.0   1st Qu.: 4.00    9   : 12   2:120
##  Median :103.0   Median :10.00   20   : 12   3:120
##  Mean   :121.8   Mean   :10.72   10   : 12   4:118
##  3rd Qu.:163.8   3rd Qu.:16.00  17   : 12
##  Max.   :373.0   Max.   :21.00  19   : 12
##                  (Other):506
```

Chick Weight Plot

```
with(ChickWeight, plot(Time, weight, col=Diet))
```



Rmd Modified & Untracked Files



R ~/Projects/GitHub-R-Demo - master - RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Learning-about-GitHub.Rmd x Go to file/function Addins GitHub-R-Demo

```
1 ---  
2 title: "Learning About GitHub"  
3 author: "Saghir Bashir"  
4 date: "22/05/2019"  
5 output: html_document  
---  
8 ```{r setup, include=FALSE}  
9 knitr::opts_chunk$set(echo = TRUE)  
10  
11  
12 # Chick Weight Data  
13  
14 Summary of Chick Weight Data  
15  
16 ```{r CWSum}  
17 summary(ChickWeight)  
18  
19  
20 # Chick Weight Plot  
21  
22 ```{r Cwplot}  
23 with(ChickWeight, plot(Time, weight, col=Diet))  
24  
25  
26
```

Environment History Connections Git

Diff Commit Staged Status Path master

Learning-about-GitHub.Rmd
Learning-about-GitHub.html
Learning-about-GitHub_files/

Files Plots Packages Help Viewer

New Folder Delete Rename More

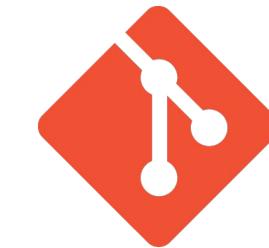
Home > Projects > GitHub-R-Demo

Name	Size	Modified
..		
.gitignore	44 B	May 22, 2019, 11:29 AM
GitHub-R-Demo.Rproj	218 B	May 22, 2019, 11:29 AM
Learning-about-GitHub.Rmd	376 B	May 22, 2019, 6:15 PM
Learning-about-GitHub_files		
Learning-about-GitHub.html	639 KB	May 22, 2019, 6:17 PM

25:1 # Chick Weight Plot R Markdown

Console

Performing Another Commit



RStudio: Review Changes

Changes History master Stage Revert Ignore Pull Push

Staged	Status	Path
<input checked="" type="checkbox"/>	M	Learning-about-GitHub.Rmd
<input checked="" type="checkbox"/>	A	Learning-about-GitHub.html
<input checked="" type="checkbox"/>	A	Learning-about-GitHub_files/figure-html/CWplot-1.png

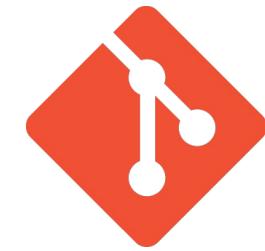
Commit message
Added |chick weight summary and plot.

Amend previous commit

Show Staged Unstaged Context 5 line ▾ Ignore Whitespace Unstage All

```
@@ -7,24 +7,19 @@ output: html_document
7 7
8 8 ```{r setup, include=FALSE}
9 9 knitr::opts_chunk$set(echo = TRUE)
10 10 ```
11 11
12 ## R Markdown
12 # Chick weight Data
13 13
14 This is an R Markdown document. Markdown is a simple formatting
syntax for authoring HTML, PDF, and MS Word documents. For more
details on using R Markdown see <http://rmarkdown.rstudio.com>.
14 Summary of Chick Weight Data
15 15
16 when you click the **Knit** button a document will be generated that
includes both content as well as the output of any embedded R code
chunks within the document. You can embed an R code chunk like this.
```

Git Status Explain



A	File Added
D	File Deleted
M	File Modified
R	File Renamed
?	File Untracked by Git

Second Commit Successful

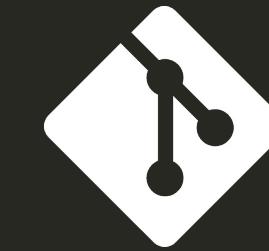


Git Commit Close

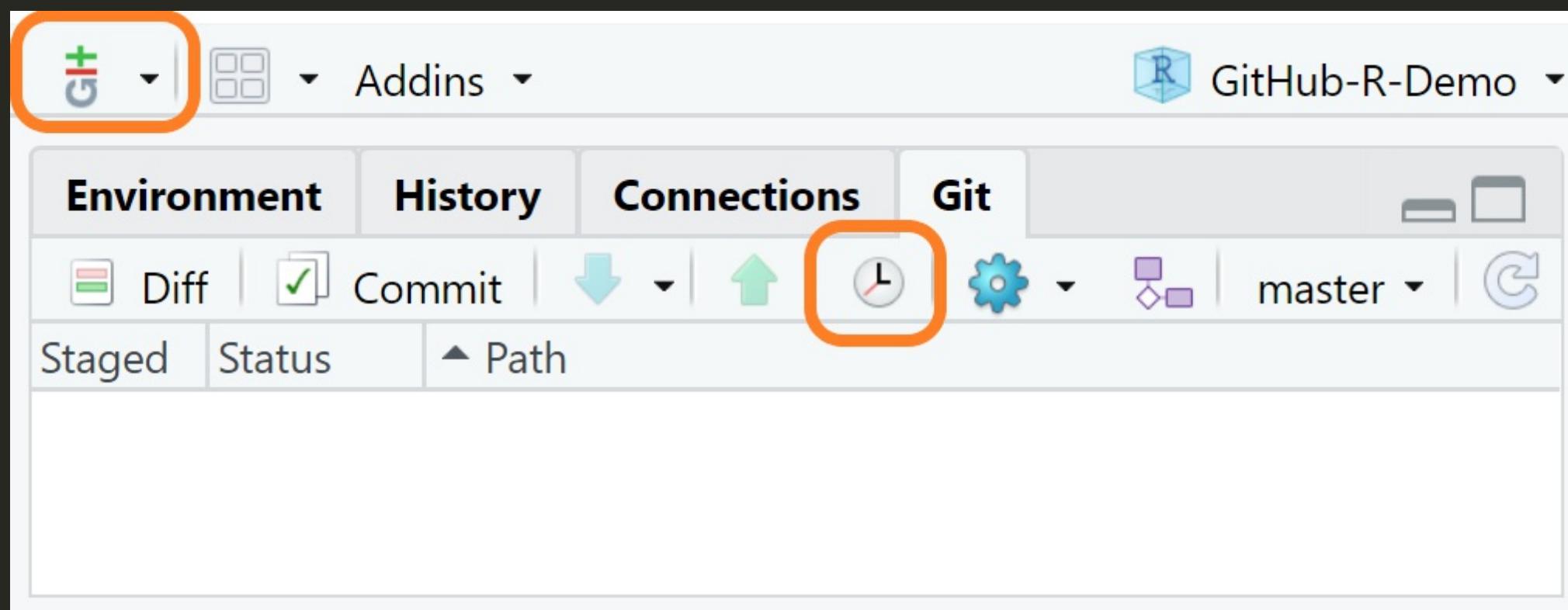
```
>>> C:/Program Files/Git/bin/git.exe commit -F C:/Users/saghir/AppD
[master b4ddc89] Added chick weight summary and plot.
 3 files changed, 457 insertions(+), 30 deletions(-)
 rewrite Learning-about-GitHub.Rmd (78%)
 create mode 100644 Learning-about-GitHub.html
 create mode 100644 Learning-about-GitHub_files/figure-html/cwplot-
```

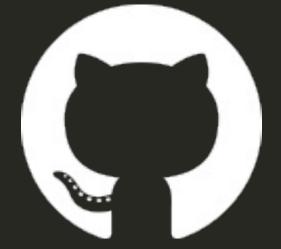
◀ ▶

Exercise



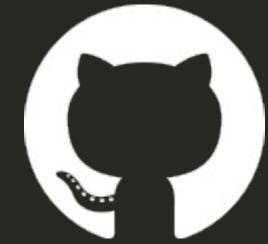
Look at your commit history in RStudio





Synchronising with GitHub

Synchronising with GitHub



1. Create new GitHub repository.

- Must be the same name as your RStudio project.

2. Link the local version of your project to your GitHub repository.

3. Push (upload) your work to your GitHub repository.

Note: Windows 10 users experiencing problems can use [GitHub Desktop](#) instead to overcome them.

Login to GitHub



Sign in to GitHub

Username or email address

Password

[Forgot password?](#)

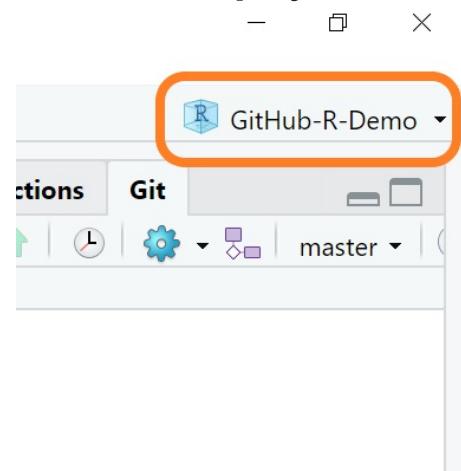
[Sign in](#)

New to GitHub? [Create an account.](#)

Create New Repository



Use RStudio project name



Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?
[Import a repository.](#)

Owner  saghirb / **Repository name *** 1
GitHub-R-Demo

Great repository names are short and memorable. Need inspiration? How about [ubiquitous-tribble](#)?

Description (optional)

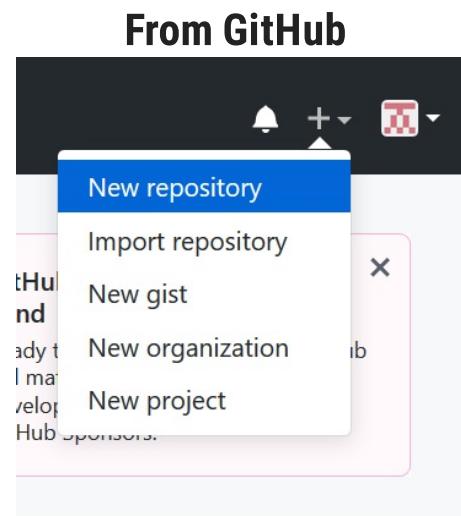
 **Public**
Anyone can see this repository. You choose who can commit.

 **Private**
You choose who can see and commit to this repository.

Initialize this repository with a README
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **None** ▾ Add a license: **None** ▾

Create repository 2



New Repository Created



saghirb / GitHub-R-Demo Watch 0 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Security Insights Settings

Quick setup — if you've done this kind of thing before

[Set up in Desktop](#) or [HTTPS](#) [SSH](#) <https://github.com/saghirb/GitHub-R-Demo.git>

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# GitHub-R-Demo" >> README.md  
git init  
git add README.md  
git commit -m "first commit"  
git remote add origin https://github.com/saghirb/GitHub-R-Demo.git  
git push -u origin master
```

...or push an existing repository from the command line

```
git remote add origin https://github.com/saghirb/GitHub-R-Demo.git  
git push -u origin master
```



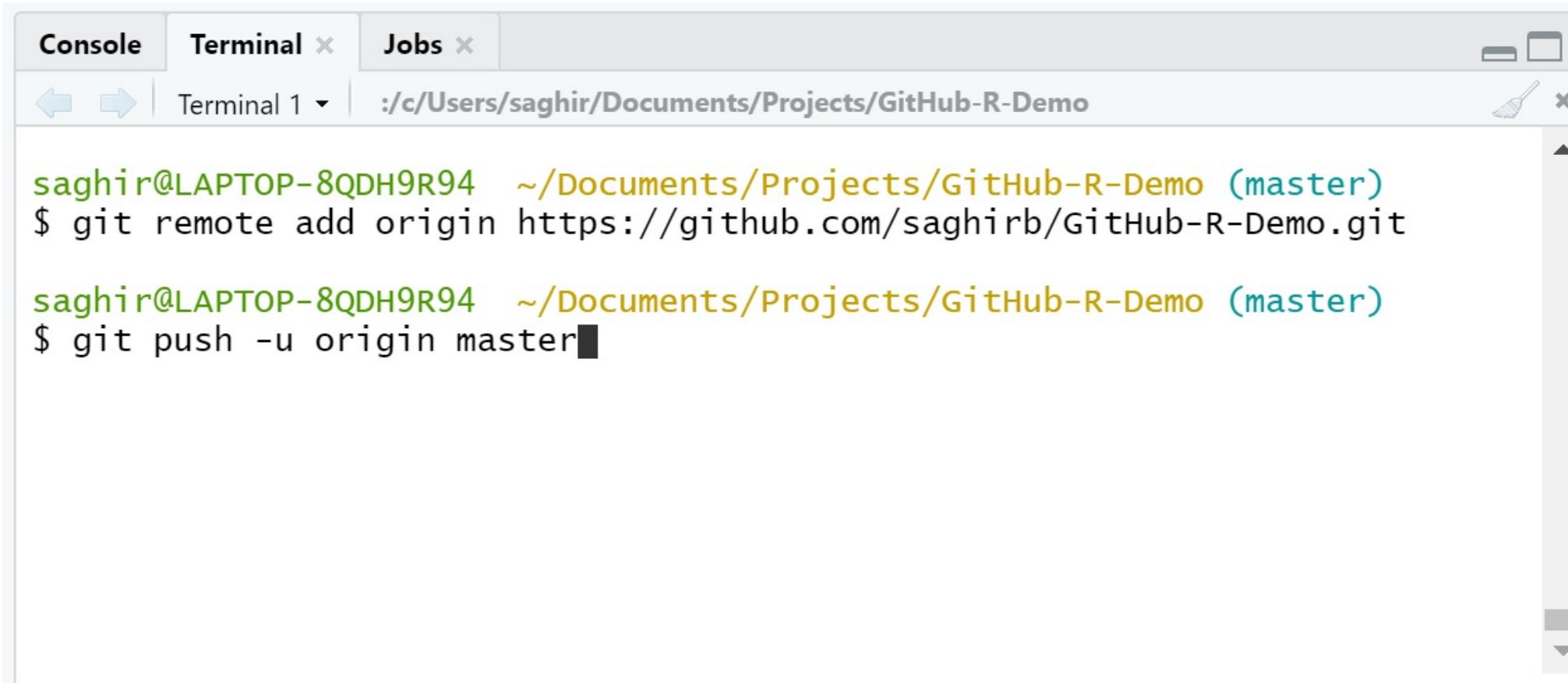
Copy Commands to link Git ("via RStudio") to GitHub

...or push an existing repository from the command line

```
git remote add origin https://github.com/saghirb/GitHub-R-Demo.git  
git push -u origin master
```



Paste into RStudio "Terminal" Tab

A screenshot of the RStudio interface showing the Terminal tab. The tab bar shows 'Console', 'Terminal', and 'Jobs'. The terminal window has a title bar 'Terminal 1' and path ':/c/Users/saghir/Documents/Projects/GitHub-R-Demo'. The terminal window contains the following text:

```
saghir@LAPTOP-8QDH9R94 ~/Documents/Projects/GitHub-R-Demo (master)  
$ git remote add origin https://github.com/saghirb/GitHub-R-Demo.git  
  
saghir@LAPTOP-8QDH9R94 ~/Documents/Projects/GitHub-R-Demo (master)  
$ git push -u origin master
```

The last line of the command is highlighted with a black rectangle.

Push local git repository to GitHub



A screenshot of a terminal window titled "Terminal 1 (busy)". The terminal shows two commands:

```
saghir@...: ~
$ git remote add origin https://github.com/saghir/R-Demo.git
$ git push -u origin master
```

Overlaid on the terminal is a "GitHub Login" dialog box. The "Username" and "Password" fields are highlighted with a red border. At the bottom of the dialog are "Login" and "Cancel" buttons, along with links for "Don't have an account? Sign up" and "Forgot your password?".

To the right of the terminal, there is a sidebar showing the repository structure:

- (master) R-Demo.git
- (master)

"Pushed" to "origin" (on GitHub)



```
Console Terminal x Jobs x
Terminal 1 :/c/Users/saghir/Documents/Projects/GitHub-R-Demo
saghir@ ~/Documents/Projects/GitHub-R-Demo (master)
$ git remote add origin https://github.com/saghirb/GitHub-R-Demo.git

saghir@ ~/Documents/Projects/GitHub-R-Demo (master)
$ git push -u origin master
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Delta compression using up to 8 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (12/12), 243.00 KiB | 2.70 MiB/s, done.
Total 12 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/saghirb/GitHub-R-Demo.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.

saghir@ ~/Documents/Projects/GitHub-R-Demo (master)
$ █
```



Check GitHub Repository



saghirb / GitHub-R-Demo

Watch 0 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Security Insights Settings

No description, website, or topics provided. Edit

Manage topics

2 commits 1 branch 0 releases 1 contributor

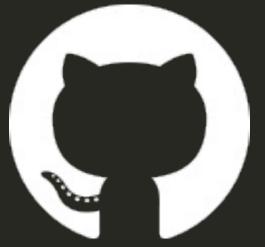
Branch: master New pull request Create new file Upload files Find File Clone or download ▾

		Latest commit b4ddc89 20 hours ago
	saghirb Added chick weight summary and plot.	
	Learning-about-GitHub_files/figure-html	Added chick weight summary and plot. 20 hours ago
	.gitignore	My first commit 20 hours ago
	GitHub-R-Demo.Rproj	My first commit 20 hours ago
	Learning-about-GitHub.Rmd	Added chick weight summary and plot. 20 hours ago
	Learning-about-GitHub.html	Added chick weight summary and plot. 20 hours ago

Help people interested in this repository understand your project by adding a README. Add a README



Exercise: Git, RStudio & GitHub



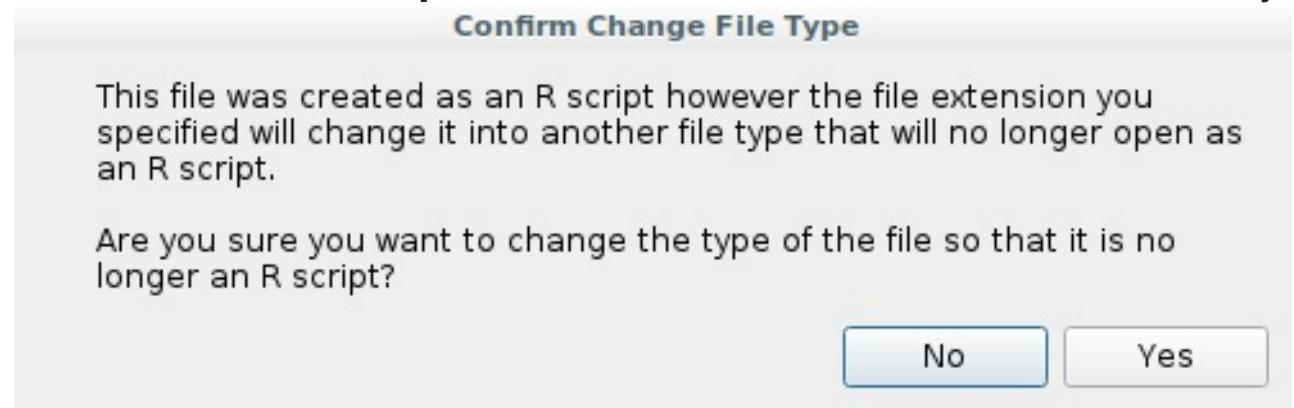
- 1. Create a README.md file.**
 - See next slide for contents.
- 2. Modify Learning-about-GitHub.Rmd.**
 - See following slide.
- 3. Commit changes locally.**
- 4. Push to GitHub from RStudio.**

README.md Contents



```
# GitHub R Demo  
  
## Chick Weight Data  
  
The `ChickWeight` are analysed as follows:  
  
+ Summary statistics for weight by Diet and Time  
+ Box whisker plots by Diet over Time for weight  
  
## Further information  
  
Please see https://ilustat.com/shared/Getting-Started-in-R.pdf
```

Note: Create an "R Script" and save as "README.md". Click on "Yes" if you get the following message:



Modify Learning-about-GitHub.Rmd



Replace the code in CWplot chunk with:

```
library(ggplot2)
library(dplyr)

ChickWeight %>%
  ggplot(aes(Time, weight, colour=Diet)) +
  geom_point() +
  facet_wrap(~Diet) +
  stat_summary(fun.y="mean", geom="line", colour="black") +
  theme(legend.position = "none") +
  ggtitle("Chick Weight over Time by Diet") +
  xlab("Time (days)") +
  ylab("Weight (grams)")
```

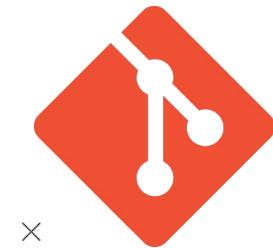
Knit the file to HTML

Commit & Push



- 1. Commit changes using git from RStudio.**
 - Don't forget to write a commit message.**
- 2. Synchronise to GitHub using the RStudio "Push" button.**
- 3. Check your repository on GitHub**
 - Check the Commit history**

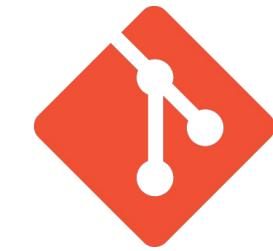
Commit New Changes



The screenshot shows the RStudio interface for a GitHub project named "GitHub-R-Demo".

- Code Editor:** The main window displays the R Markdown file "Learning-about-GitHub.Rmd". The code includes R code chunks for loading data and creating a plot.
- Toolbar:** Standard RStudio tools like File, Edit, and View are available.
- Git Tab:** The "Git" tab is selected in the top right, showing the "Commit" button highlighted with a red oval.
- Staged Changes:** The "Staged" section lists files: "Learning-about-GitHub.Rmd" (modified), "Learning-about-GitHub.html" (modified), and "Learning-about-GitHub_files/" (new folder).
- File Tree:** The "Files" tab shows the project structure: ".gitignore", "GitHub-R-Demo.Rproj", "Learning-about-GitHub.html", "Learning-about-GitHub.Rmd", "README.md", and "Learning-about-GitHub_files".
- Console:** A small "Console" tab is visible at the bottom.

Always Add a (Useful) Message



R RStudio: Review Changes

Changes History master Stage Revert Ignore Pull Push

Staged	Status	Path
<input checked="" type="checkbox"/>	M	Learning-about-GitHub.Rmd
<input checked="" type="checkbox"/>	M	Learning-about-GitHub.html
<input checked="" type="checkbox"/>	A	Learning-about-GitHub_files/figure-html/CWplot-1.png

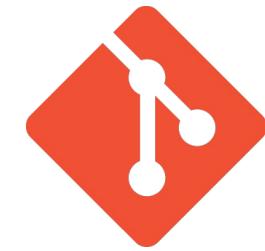
Commit message
New plot with mean lines.]

Amend previous commit Commit

Show Staged Unstaged Context 5 line Ignore Whitespace Unstage All

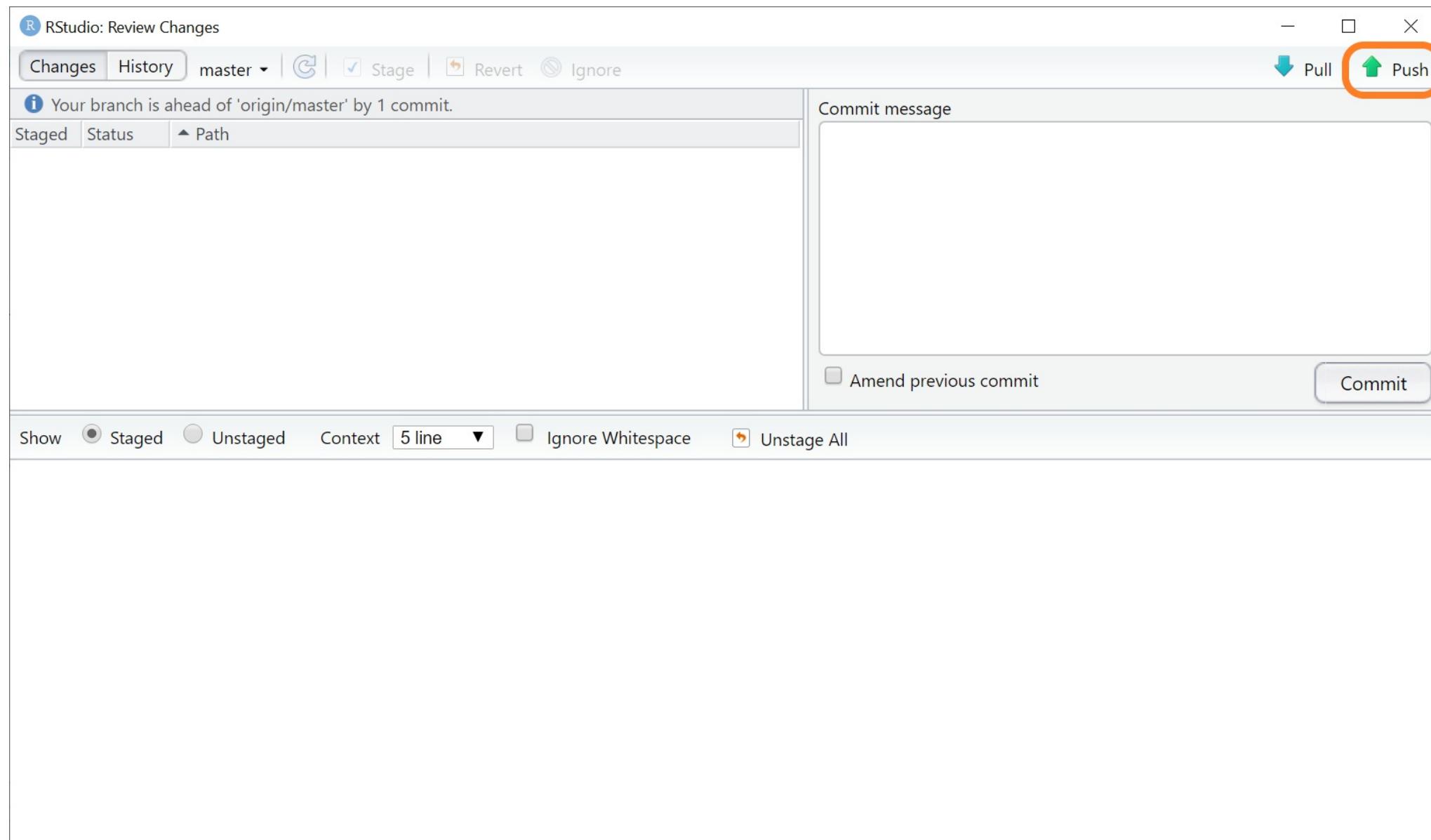
```
20 | # CHICK WEIGHT PLOT
21 |
22 | `r cwpplot, message=FALSE}
23 | library(ggplot2)
24 | library(dplyr)
25 |
26 | chickweight %>%
27 |   ggplot(aes(Time, weight, colour=Diet)) +
28 |   geom_point() +
29 |   facet_wrap(~Diet) +
30 |   stat_summary(fun.y="mean", geom="line", colour="black") +
31 |   theme(legend.position = "none") +
32 |   ggttitle("chick weight over Time by Diet") +
33 |   xlab("Time (days)") +
34 |   ylab("weight (grams)")
```

Successfully Committed

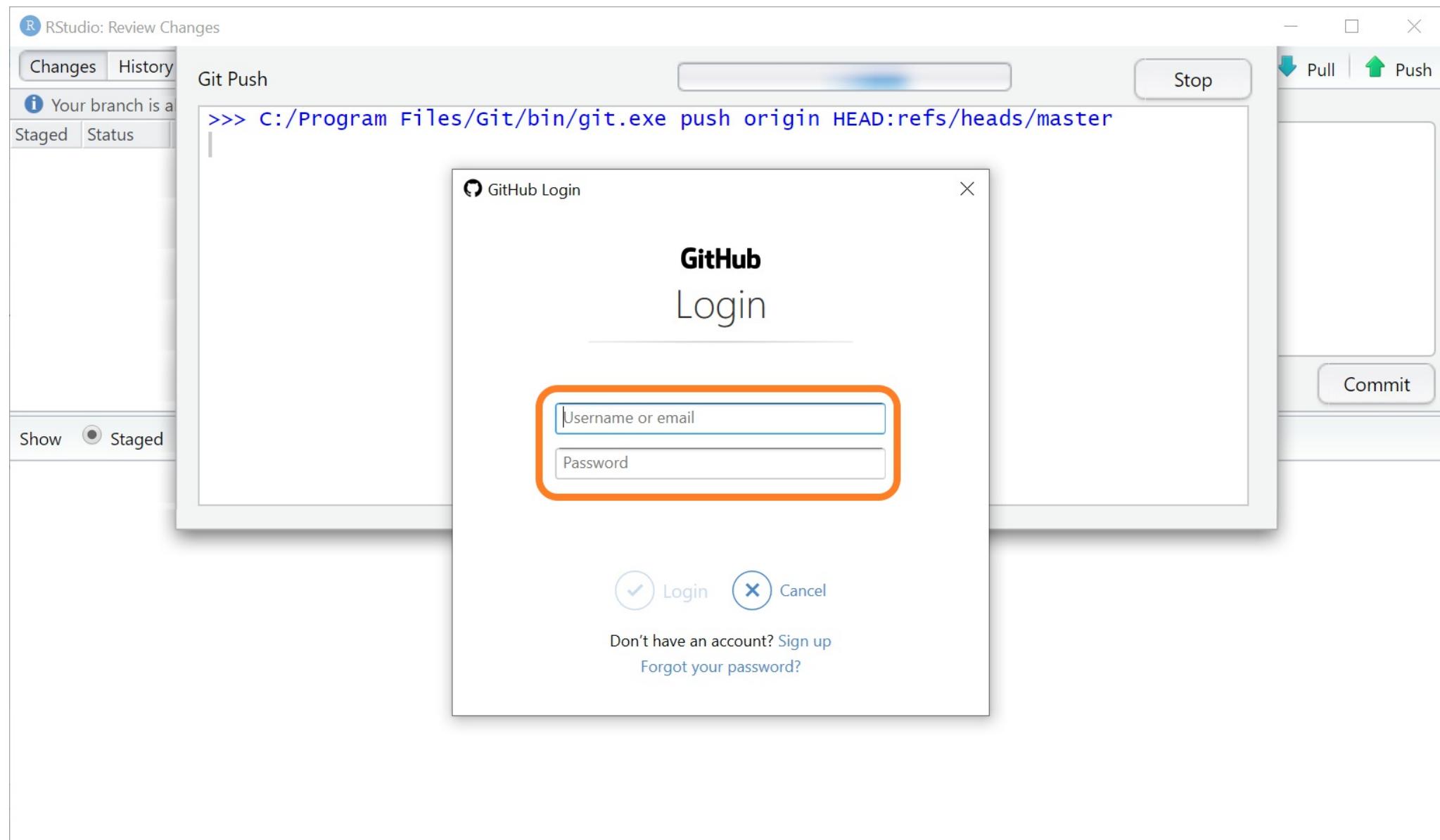




Push Local Changes to GitHub



Use Your Login Credentials





Check GitHub

A screenshot of a web browser window displaying a GitHub repository page. The URL in the address bar is https://github.com/saghirb/GitHub-R-Demo. The repository name is saghirb / GitHub-R-Demo. The page shows 5 commits, 1 branch, 0 releases, and 1 contributor. The commit list includes:

- saghirb New plot with mean lines. (Latest commit 6fc4475 3 minutes ago)
- Learning-about-GitHub_files/figure-html New plot with mean lines. (3 minutes ago)
- .gitignore My first commit (2 days ago)
- GitHub-R-Demo.Rproj My first commit (2 days ago)
- Learning-about-GitHub.Rmd New plot with mean lines. (3 minutes ago)
- Learning-about-GitHub.html New plot with mean lines. (3 minutes ago)
- README.md Added README.md file (20 hours ago)

The commits from Learning-about-GitHub.Rmd and Learning-about-GitHub.html are highlighted with an orange border.

"I lost my work! My computer crashed!"

"I messed up my project!"



Git Clone or Download Zip



A screenshot of a web browser displaying a GitHub repository page. The URL in the address bar is <https://github.com/saghirb/GitHub-R-Demo>. The repository name is **saghirb / GitHub-R-Demo**. The page shows 5 commits, 1 branch, 0 releases, and 1 contributor. A dropdown menu is open at the top right, with the "Clone or download" option highlighted by a red box. This menu includes options for "Clone with HTTPS" (with a URL provided) and "Download ZIP".

No description, website, or topics provided.

5 commits 1 branch 0 releases 1 contributor

Branch: master New pull request

saghirb New plot with mean lines.

Learning-about-GitHub_files/figure-html New plot with mean lines.

.gitignore My first commit

GitHub-R-Demo.Rproj My first commit

Learning-about-GitHub.Rmd New plot with mean lines.

Learning-about-GitHub.html New plot with mean lines.

README.md Added README.md file

Find File Clone or download

Clone with HTTPS Use Git or checkout with SVN using the web URL.
<https://github.com/saghirb/GitHub-R-Demo>

Open in Desktop Download ZIP



Extract From Zip - Rescued

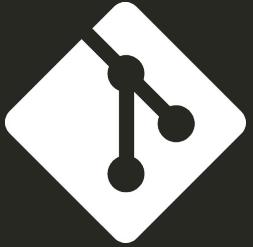
The screenshot shows a Windows File Explorer window with the title bar "GitHub-R-Demo-master". The "Extract" tab is selected in the ribbon. The address bar shows the path: "Users > saghir > Downloads > GitHub-R-Demo-master : GitHub-R-Demo-master". The main area displays a list of files and folders extracted from the zip file. An orange rectangle highlights the "GitHub-R-Demo" folder. The table below shows the details of the extracted items:

Name	Type	Compressed size	Password pr...	Size
Learning-about-GitHub_files	File folder			
GitHub-R-Demo	R Project	1 KB	No	1 KB
e Learning-about-GitHub	HTML File	237 KB	No	
Learning-about-GitHub.Rmd	RMD File	1 KB	No	1 KB
README.md	MD File	1 KB	No	1 KB



75

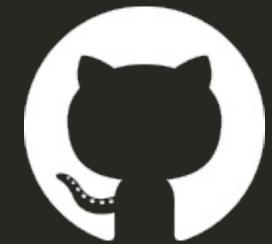
Next Steps

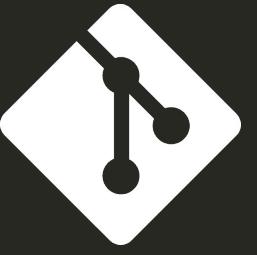


Make git and GitHub part of your workflow.

Learn how to collaborate with pull requests.

Be patient. The rewards are big.

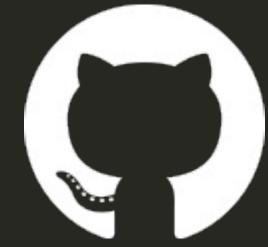




Final Live Demo & Exercise

Collaborating using Pull requests.

Creating a Pull Request



1. From your GitHub account fork:

- <https://github.com/saghirb/Comments-about-R>

2. Edit the file 20190524-Comments.Rmd.

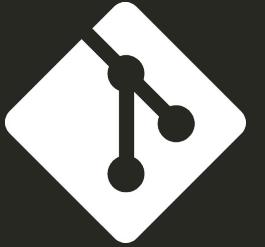
- Add your Name and three comments.

3. Create a "New Pull Request" (with comments).

- Click "Create Pull Request" to submit.

- The owner (saghirb) will receive it.

Summary



Git, GitHub and RStudio

- Great combination for tracking your work
- Revert back to past work
- Collaborate with others

Git/GitHub can be frustrating at times

- The rewards and benefits are far greater!



Feedback

Please send your feedback or comments via:

- <https://github.com/saghirb/Getting-Started-with-Git-and-GitHub-for-R-Users> or
- <https://twitter.com/ilustat>

Thanks!

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