



Getting Started with Git and GitHub for R Users

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



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/>



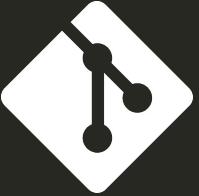
Windows (& perhaps MacOS) Users



Install GitHub Desktop:

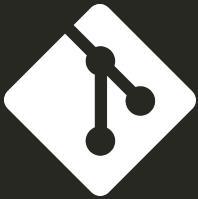
<https://desktop.github.com/>

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**"
 - 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

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	Time
.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

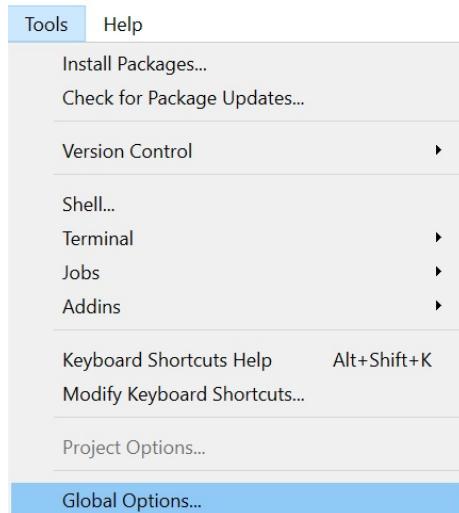


GitHub is built on Git.

Let's start by using Git in RStudio.

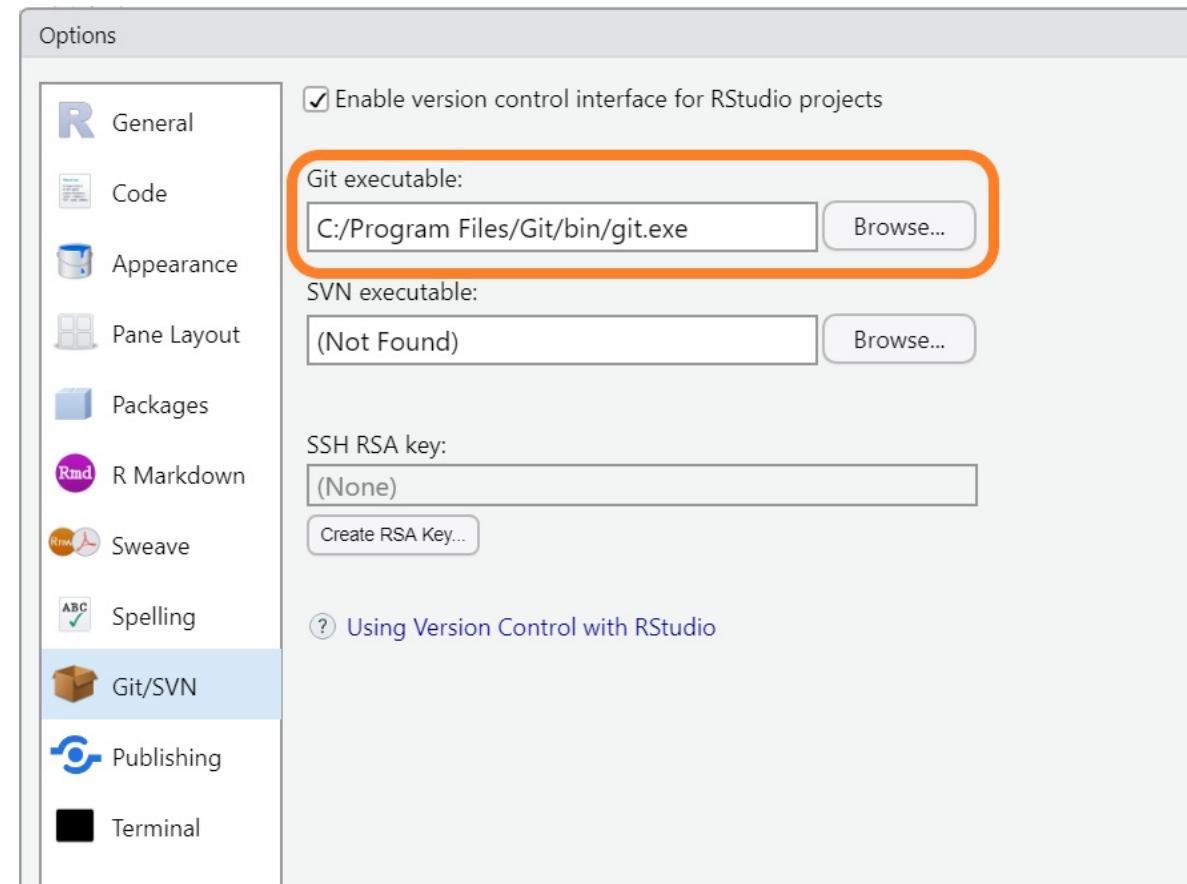
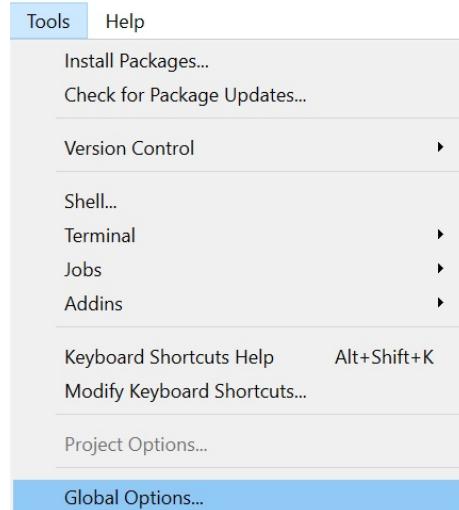
Then we will link back to GitHub.

IMPORTANT: R Set-up

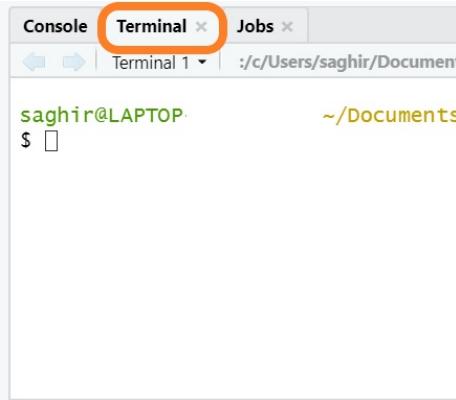
A screenshot of the RStudio Global Options dialog box, specifically the 'General' tab. It has two tabs at the top: 'Basic' (selected) and 'Advanced'.

- R Sessions**
 - R version: [Default] [64-bit] C:\Program Files\R\R-3.6.0
 - Default working directory (when not in a project):
 - Restore most recently opened project at startup
 - Restore previously open source documents at startup
- Workspace**
 - Restore .RData into workspace at startup
 - Save workspace to .RData on exit:
- History**
 - Always save history (even when not saving .RData)
 - Remove duplicate entries in history
- Other**
 - Wrap around when navigating to previous/next tab
 - Automatically notify me of updates to RStudio

RStudio Git Set-up



Git User Settings - Only Do Once



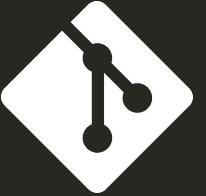
Switch to the terminal tab & type:

```
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

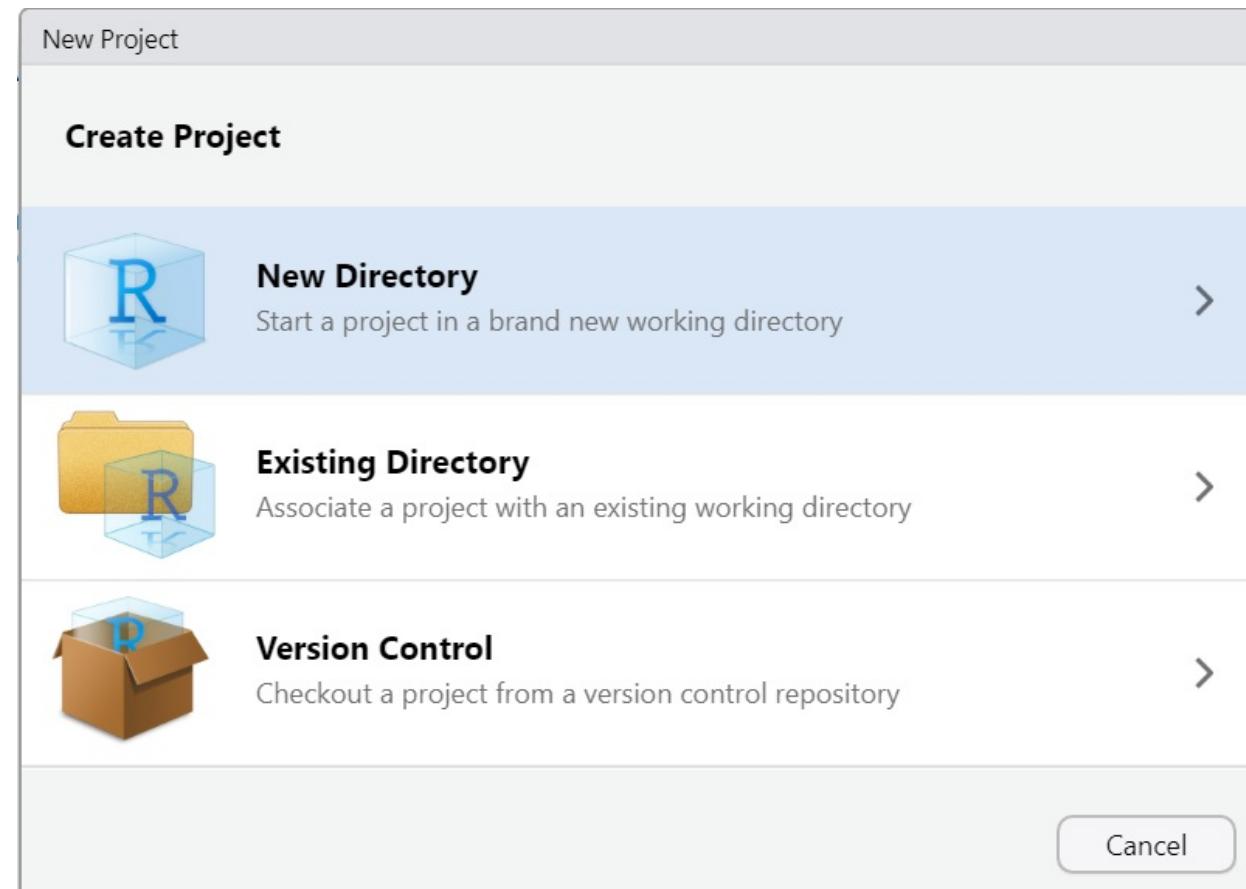
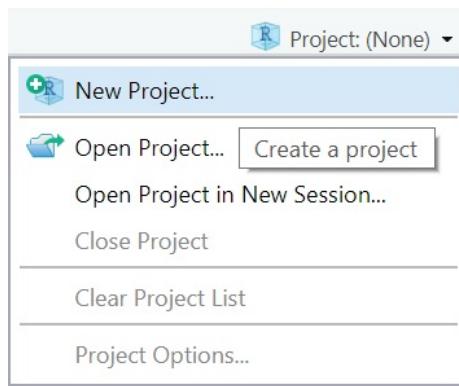
```
git config --list
```



We are ready to use Git with RStudio.

Let's start a new project.

New RStudio Project (i)



New RStudio Project (ii)



New Project

Back **Project Type**

-  New Project >
-  R Package >
-  Shiny Web Application >
 - Create a new project in an empty directory
- 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:
GitHub-R-Demo

Create project as subdirectory of:
~/Projects

Create a git repository

Open in new session

New RStudio Project (iv)



The screenshot shows the RStudio interface with a project titled "GitHub-R-Demo".

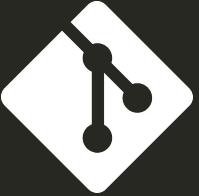
Top Panel (Git View):

- Tab bar: Environment, History, Connections, **Git** (highlighted with an orange circle).
- Toolbar buttons: Diff, Commit, Staged, Status, Path.
- File list:
 - .gitignore
 - GitHub-R-Demo.Rproj
- Branch status: (no branch) C.

Bottom Panel (File View):

- Tab bar: Files, Plots, Packages, Help, Viewer (highlighted with an orange circle).
- Toolbar buttons: New Folder, Delete, Rename, More.
- File tree: Home > Projects > GitHub-R-Demo (highlighted with an orange circle).
- Table view:

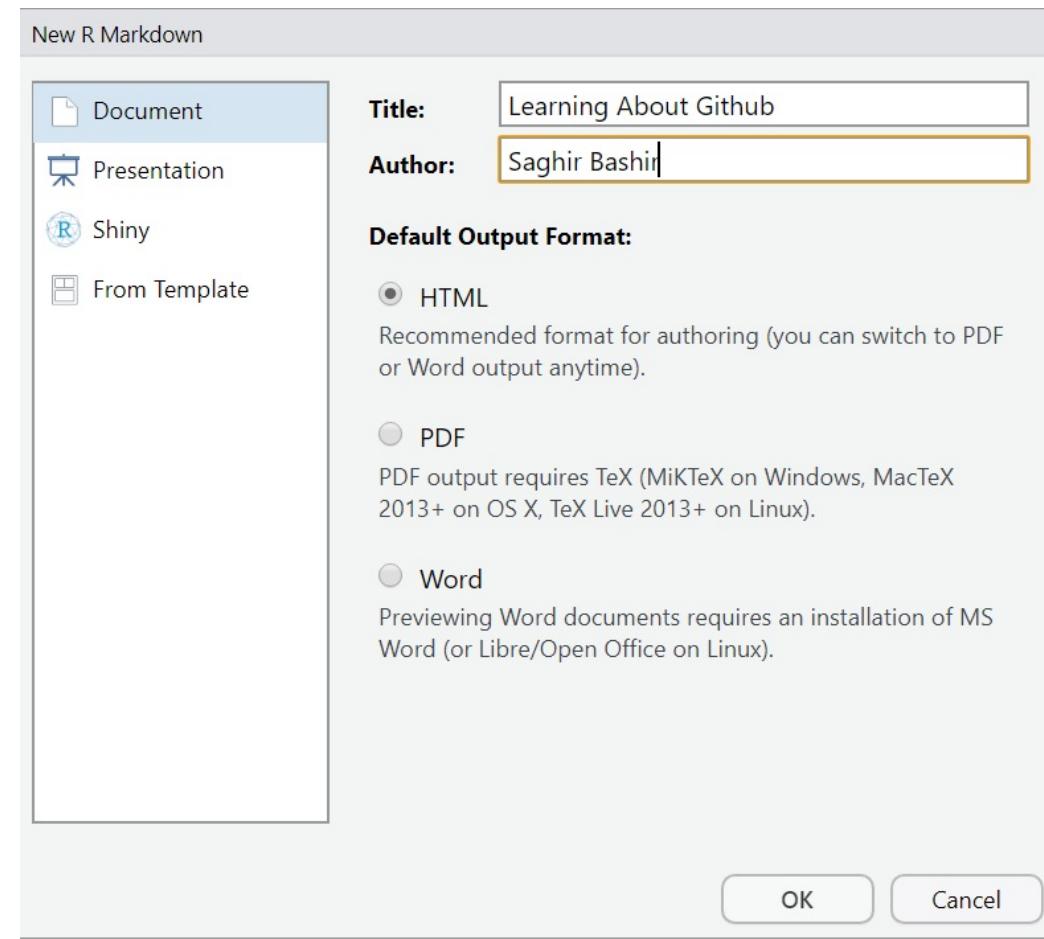
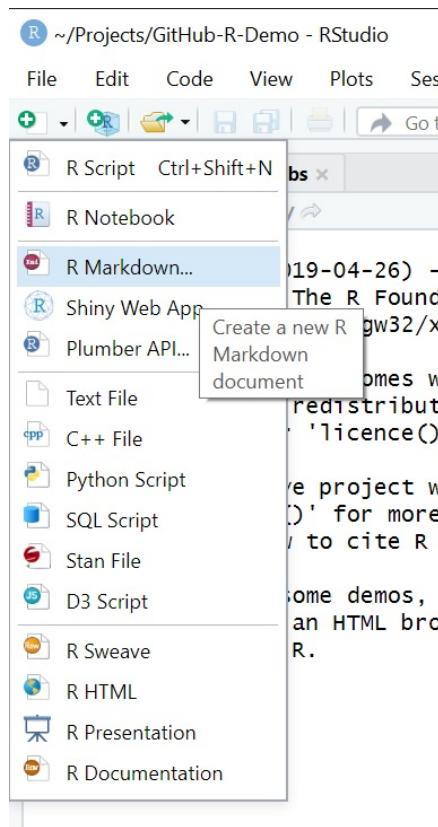
	Name	Size	Modified
<input type="checkbox"/>	..		
<input type="checkbox"/>	.gitignore	44 B	May 22, 2019, 11:29 AM
<input type="checkbox"/>	GitHub-R-Demo.Rproj	218 B	May 22, 2019, 11:29 AM



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



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

File Edit Code View Plots Session Build Debug Profile Tools Help

+ - Go to file/function Addins GitHub-R-Demo

Untitled1

```
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 ## R Markdown  
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>.  
15  
2:1 # Learning About Github
```

Console Terminal Jobs

~/Projects/GitHub-R-Demo/

You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

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 History Connections Git

Diff Commit Pull Push (no branch)

Staged Status Path

- .gitignore
- GitHub-R-Demo.Rproj

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



Save R Markdown File

R Save File - Untitled1 X

← → ⌂ ⌄ Projects > GitHub-R-Demo ⌅ ⌋ Search GitHub-R-Demo

Organise ▾ New folder

	Name	Date modified	Type
This PC			
3D Objects		22/05/2019 11:29	Tex
Desktop		22/05/2019 11:29	R F
Documents	GitHub-R-Demo		
Downloads			
Music			
Pictures			
Videos			
Windows (C:)			
Network			

File name:

Save as type:

▲ Hide Folders Save Cancel

The screenshot shows the RStudio interface with a GitHub project open. The top bar indicates the project is located at `~/Projects/GitHub-R-Demo`. The left pane displays an R Markdown file named `Learning-about-GitHub.Rmd`, which contains code for setting up the document and a sample R Markdown section. The right pane features a Git interface showing staged changes: `.gitignore`, `GitHub-R-Demo.Rproj`, and `Learning-about-GitHub.Rmd`. Below the Git interface is a file browser showing the contents of the project directory, including the same three files. The `Learning-about-GitHub.Rmd` file is highlighted with an orange circle.

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Learning-about-GitHub.Rmd

```
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 ## R Markdown  
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>.  
15  
2:1 # Learning About Github
```

Console Terminal Jobs

~/Projects/GitHub-R-Demo/

You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

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 History Connections Git

Diff Commit Pull Push (no branch)

Staged Status Path

- .gitignore
- GitHub-R-Demo.Rproj
- Learning-about-GitHub.Rmd

Files Plots Packages Help Viewer

New Folder Delete Rename More

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	882 B	May 22, 2019, 5:12 PM

"Commit" Untracked Files



The screenshot shows the RStudio interface with the Git tab selected. The 'Commit' button is highlighted with an orange box. Below it, the 'Staged' section lists three files: '.gitignore', 'GitHub-R-Demo.Rproj', and 'Learning-about-GitHub.Rmd', each with a yellow question mark icon.

The screenshot shows the 'Review Changes' dialog in RStudio. The 'Changes' tab is selected. The 'Commit message' field contains 'My first commit'. The 'Show' dropdown is set to 'Staged'. The diff view shows the following code changes:

```
@@ -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.

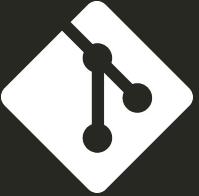
Git Panel:

- Environment tab is selected.
- Commit button is checked.
- Branch dropdown shows master.

File Browser:

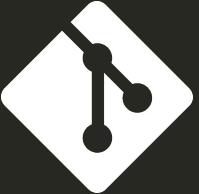
- Files tab is selected.
- Path: Home > Projects > GitHub-R-Demo
- Table of contents:

	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.

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

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

GitHub-R-Demo

Learning-about-GitHub.Rmd

```
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
```

25:1 # Chick Weight Plot R Markdown

Console

Environment History Connections Git

Diff Commit Status Path

M Learning-about-GitHub.Rmd

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

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

Go to file/function Addins

GitHub-R-Demo

Learning-about-GitHub.Rmd

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

Staged Status Path

- M 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 | C 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 12 ## R Markdown
13 13 # Chick Weight Data
14 14 This is an R Markdown document. Markdown is a simple formatting
15 15 syntax for authoring HTML, PDF, and MS Word documents. For more
16 16 details on using R Markdown see <http://rmarkdown.rstudio.com>.
17 17 Summary of Chick Weight Data
18 18 When you click the **Knit** button a document will be generated that
19 19 includes both content as well as the output of any embedded R code
20 20 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

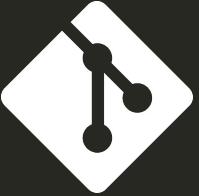


Git Commit

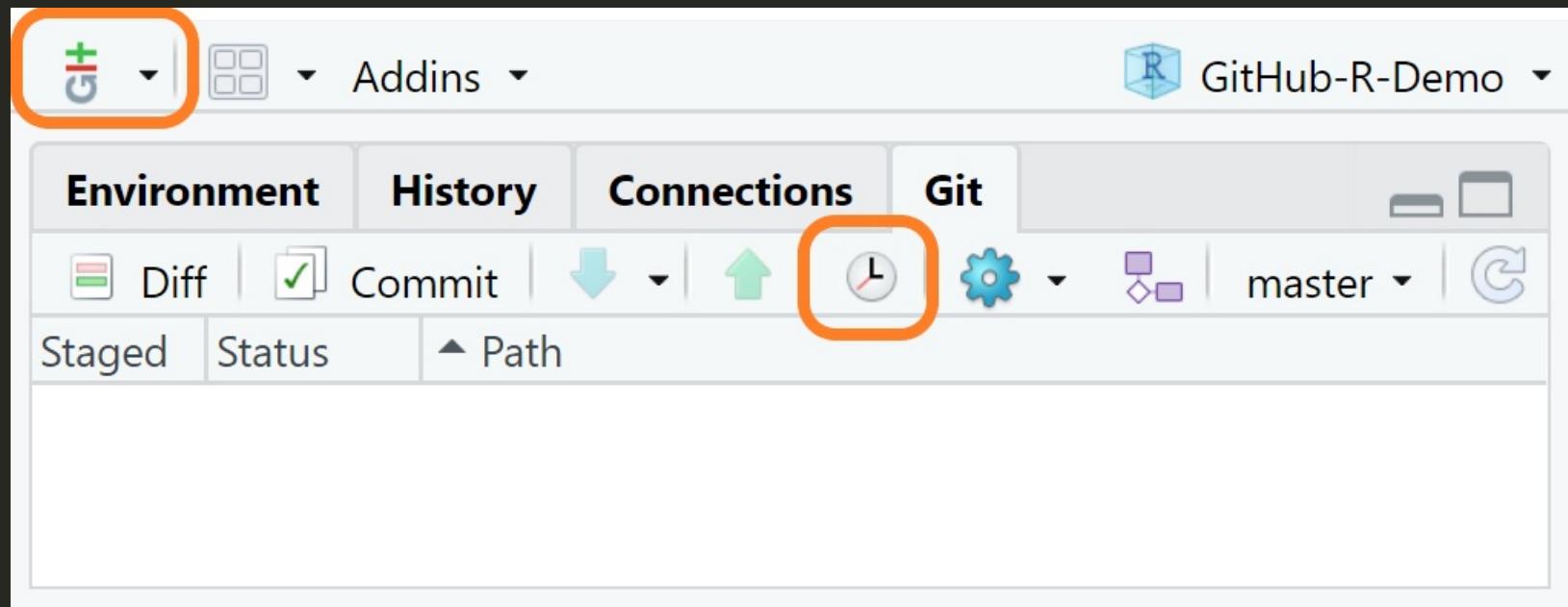
Close

```
>>> c:/Program Files/Git/bin/git.exe commit -F C:/Users/saghir/App  
[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?](#)

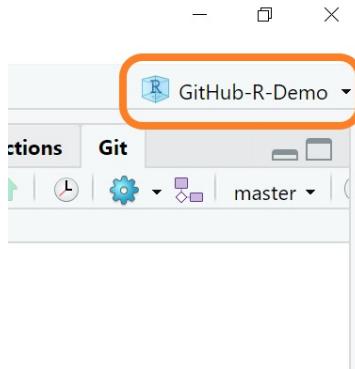
[Sign in](#)

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

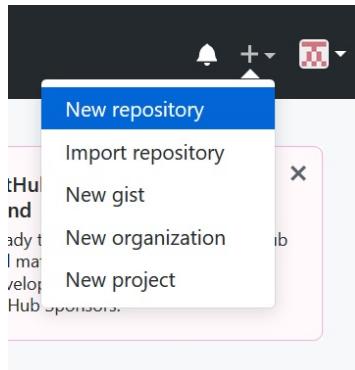


Create New Repository

Use RStudio project name



From GitHub



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 *

/ GitHub-R-Demo

1

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 x', and 'Jobs x'. The terminal window has a title bar with 'Terminal 1' and the path '/c/Users/saghir/Documents/Projects/GitHub-R-Demo'. The main area of the terminal shows 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█
```

Push local git repository to GitHub



A screenshot of a terminal application interface. At the top, there are tabs for 'Console', 'Terminal' (which is currently selected), and 'Jobs'. Below the tabs, the terminal window shows two lines of command-line text:

```
saghir@          GitHub
$ git remote add origin https://github.com/saghir/R-Demo.git
saghir@          Login
```

The terminal window has a title bar 'GitHub Login' and a close button 'X'. To the right of the terminal, there is a sidebar with the text '(master) R-Demo.git' and '(master)'.

In the center of the screen, a GitHub 'Login' dialog box is displayed. It contains fields for 'Username' and 'Password', both of which are highlighted with a thick orange border. Below the fields are 'Login' and 'Cancel' buttons. At the bottom of the dialog, there are links for 'Sign up' and 'Forgot your password?'

"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 ▾

File / Commit	Description	Time
.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
Learning-about-GitHub_files/figure-html	Added chick weight summary and plot.	20 hours ago
saghirb	Added chick weight summary and plot.	Latest commit b4ddc89 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://illustat.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:

Confirm Change File Type

This file was created as an R script however the file extension you specified will change it into another file type that will no longer open as an R script.

Are you sure you want to change the type of the file so that it is no longer an R script?

No

Yes

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



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

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Learning-about-GitHub.Rmd

```
5 output. RMD _document
6 ---
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
10
11 # Chick weight Data
12
13 Summary of chick weight Data
14
15 ```{r cwsom}
16 summary(chickweight)
17
18
19 # Chick weight Plot
20
21 ```{r cwplot, message=FALSE}
22 library(ggplot2)
23 library(dplyr)
24
25 chickweight %>%
26   ggplot(aes(Time, weight, colour=Diet)) +
27   geom_point() +
28   facet_wrap(~Diet) +
29
23:18 | C Chunk 3: CWplot
23:18 | R Markdown
```

Console

GitHub-R-Demo

Environment History Connections Git

Diff Commit

Staged Status Path

- M Learning-about-GitHub.Rmd
- M 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
.gitignore	44 B
GitHub-R-Demo.Rproj	218 B
Learning-about-GitHub.html	653.2 KB
Learning-about-GitHub.Rmd	686 B
README.md	281 B
Learning-about-GitHub_files	

Always Add a (Useful) Message



R RStudio: Review Changes

Changes History master | Stage Revert Ignore

Staged Status Path

- Learning-about-GitHub.Rmd
- Learning-about-GitHub.html
- Learning-about-GitHub_files/figure-html/CWplot-1.png

Commit message

New plot with mean lines!

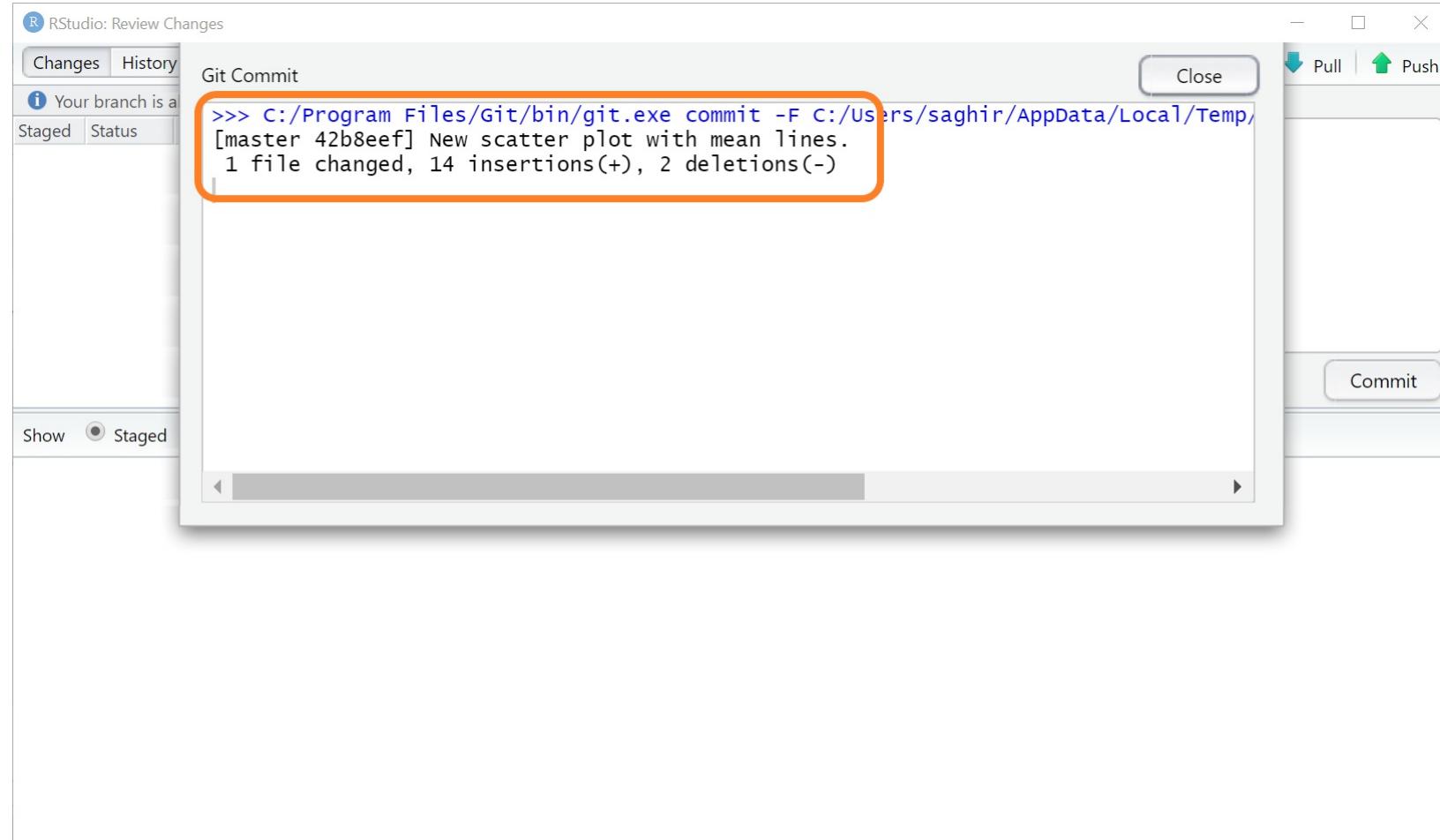
Amend previous commit

Commit

Show Staged Unstaged Context 5 line Ignore Whitespace Unstage All

```
20 # CHICK WEIGHT PLOT
21
22 `r CWplot, 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   ggtitle("chick weight over Time by Diet") +
33   xlab("Time (days)") +
34   ylab("weight (grams)")
```

Successfully Committed





Push Local Changes to GitHub



RStudio: Review Changes

Changes History master Stage Revert Ignore

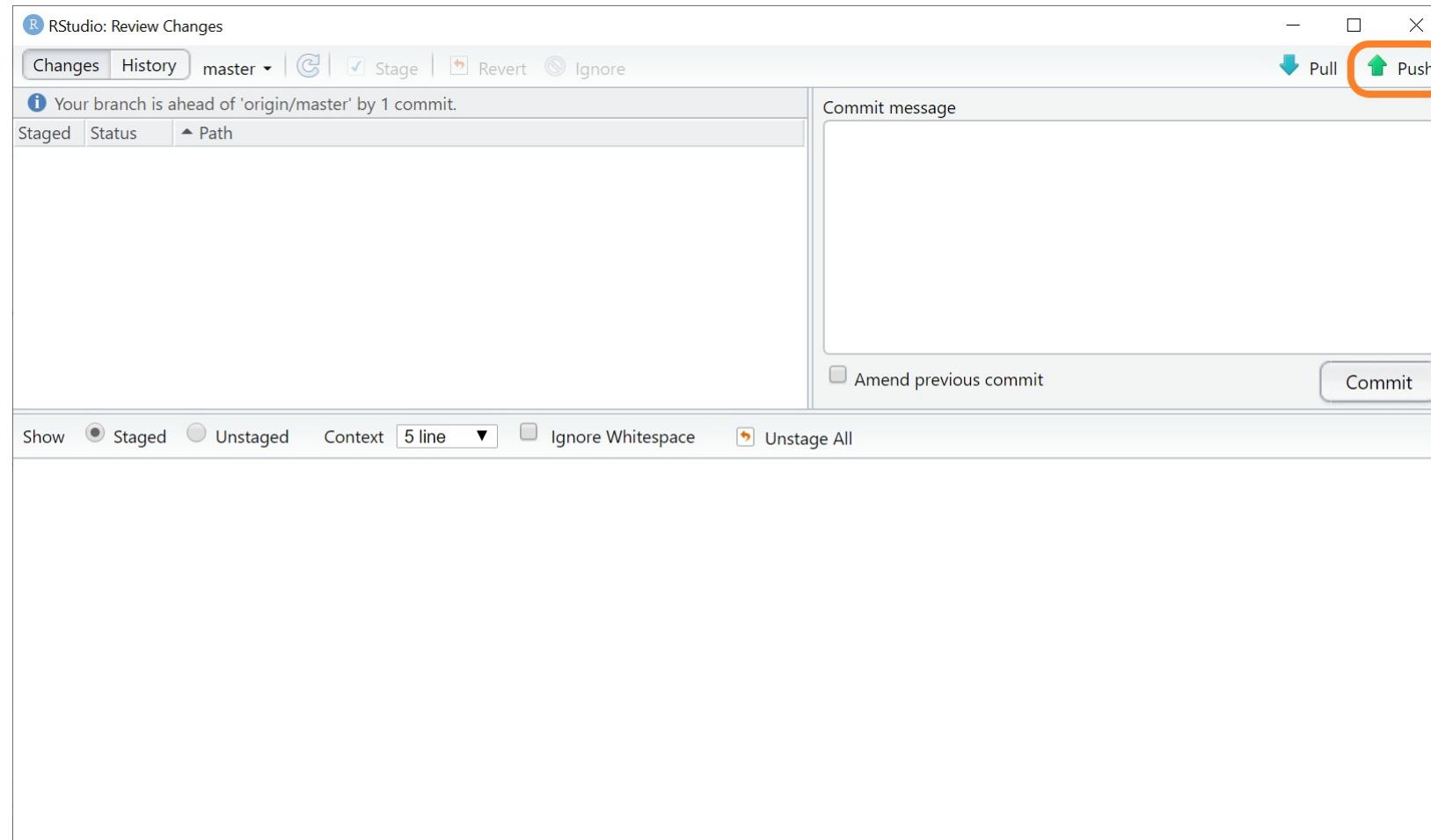
Your branch is ahead of 'origin/master' by 1 commit.

Staged Status Path

Commit message

Amend previous commit Commit

Show Staged Unstaged Context 5 line ▼ Ignore Whitespace Unstage All



Use Your Login Credentials



A screenshot of the RStudio interface showing a Git Push dialog. The dialog displays the command: `>>> c:/Program Files/Git/bin/git.exe push origin HEAD:refs/heads/master`. Overlaid on the dialog is a GitHub Login window. The GitHub Login window has fields for "Username or email" and "Password", which are highlighted with an orange border. At the bottom are "Login" and "Cancel" buttons, along with links for "Don't have an account? Sign up" and "Forgot your password?".



Check GitHub

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. The commits listed are:

File	Message	Time
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

"I lost my work! My computer crashed!"

"I messed up my project!"



Git Clone or Download Zip



A screenshot of a GitHub repository page for "saghirb/GitHub-R-Demo". The page shows basic repository statistics: 5 commits, 1 branch, 0 releases, and 1 contributor. A dropdown menu for the master branch is open, revealing options for "Find File" and "Clone or download". The "Clone with HTTPS" section displays the URL <https://github.com/saghirb/GitHub-R-Demo>. Below this, there are two buttons: "Open in Desktop" 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

Clone with HTTPS <https://github.com/saghirb/GitHub-R-Demo>

Open in Desktop Download ZIP



Extract From Zip - Rescued

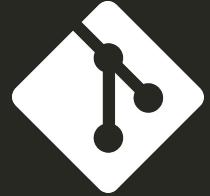
Screenshot of a Windows File Explorer window showing the contents of a zip file named "GitHub-R-Demo-master". The window title is "GitHub-R-Demo-master". The path in the address bar is "Users > saghir > Downloads > GitHub-R-Demo-master > GitHub-R-Demo-master". The contents of the folder are:

Name	Type	Compressed size	Password pr...	Size
Learning-about-GitHub_files	File folder		No	
GitHub-R-Demo	R Project	1 KB	No	1 KB
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

The folder "GitHub-R-Demo" is highlighted with an orange rectangle. The left sidebar shows standard Windows navigation options like Quick access, Desktop, Downloads, and This PC.



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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