

# Using GitHub in RStudio

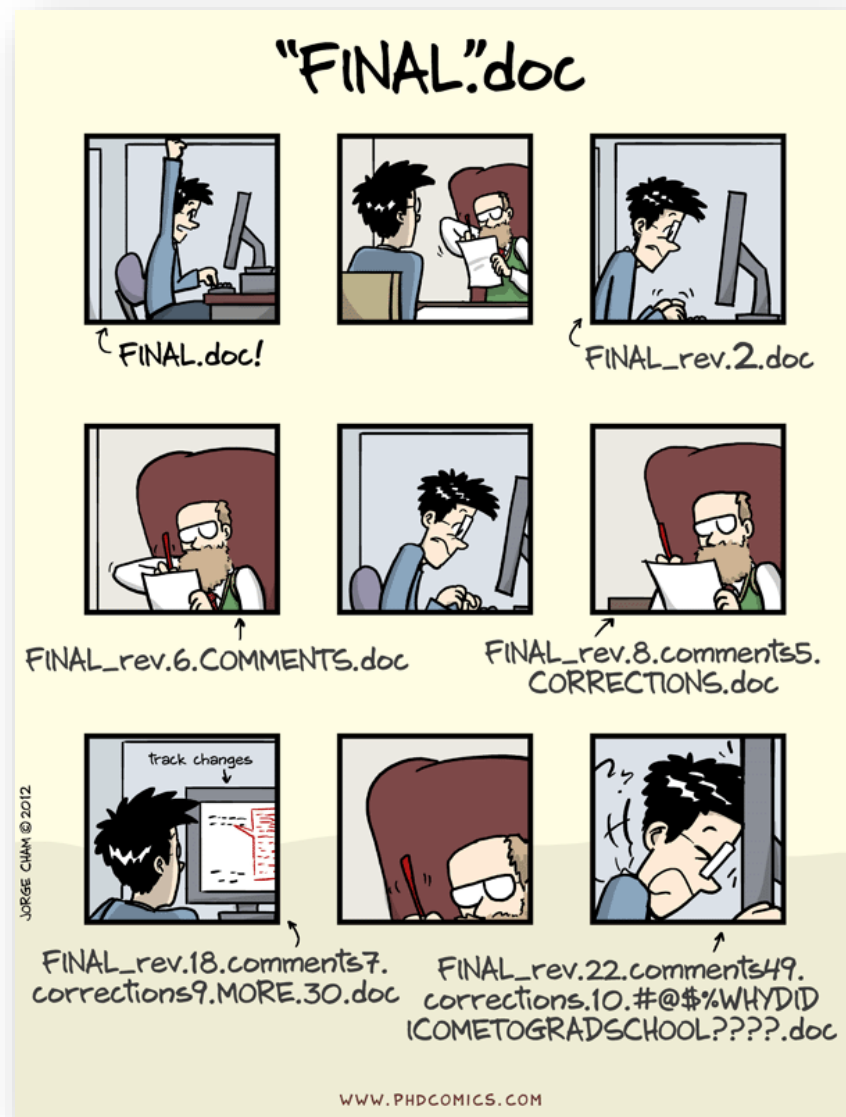
*Dr Andrea De Angelis*

*28 October 2020*

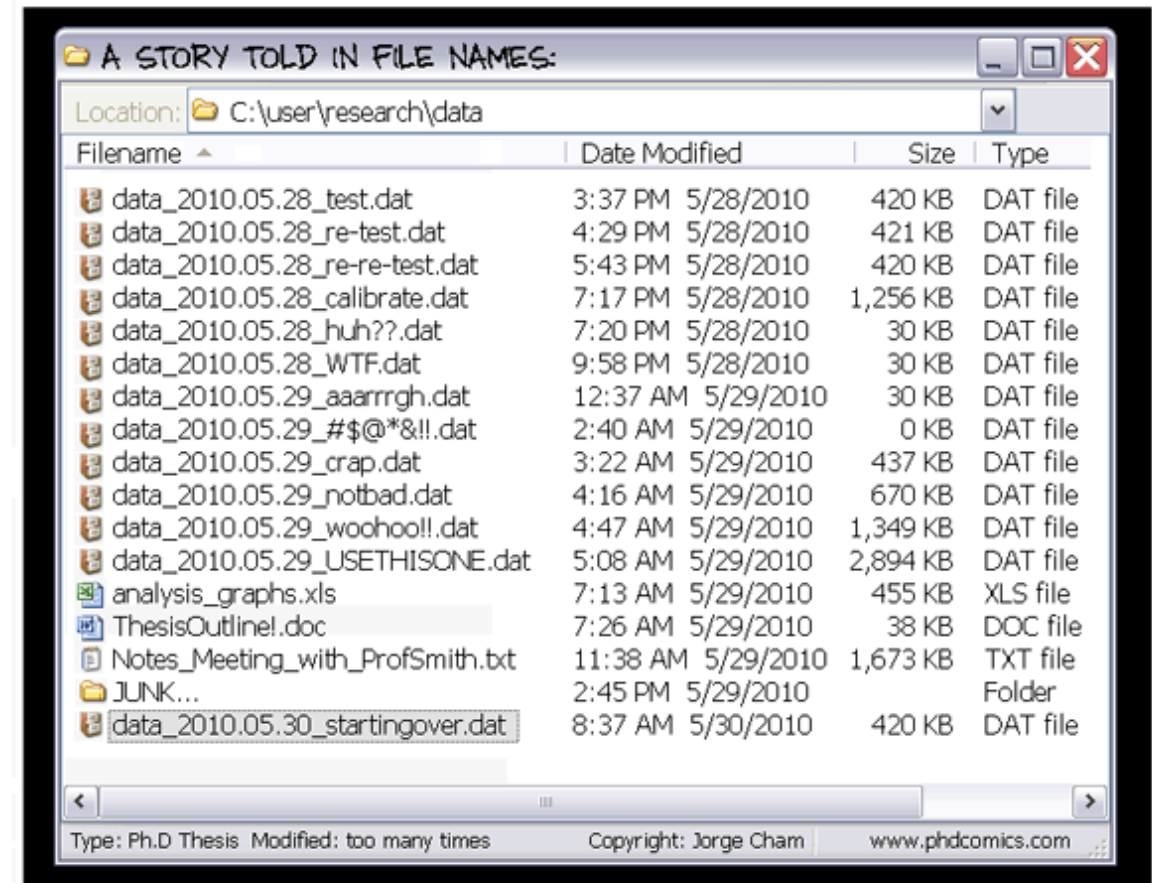
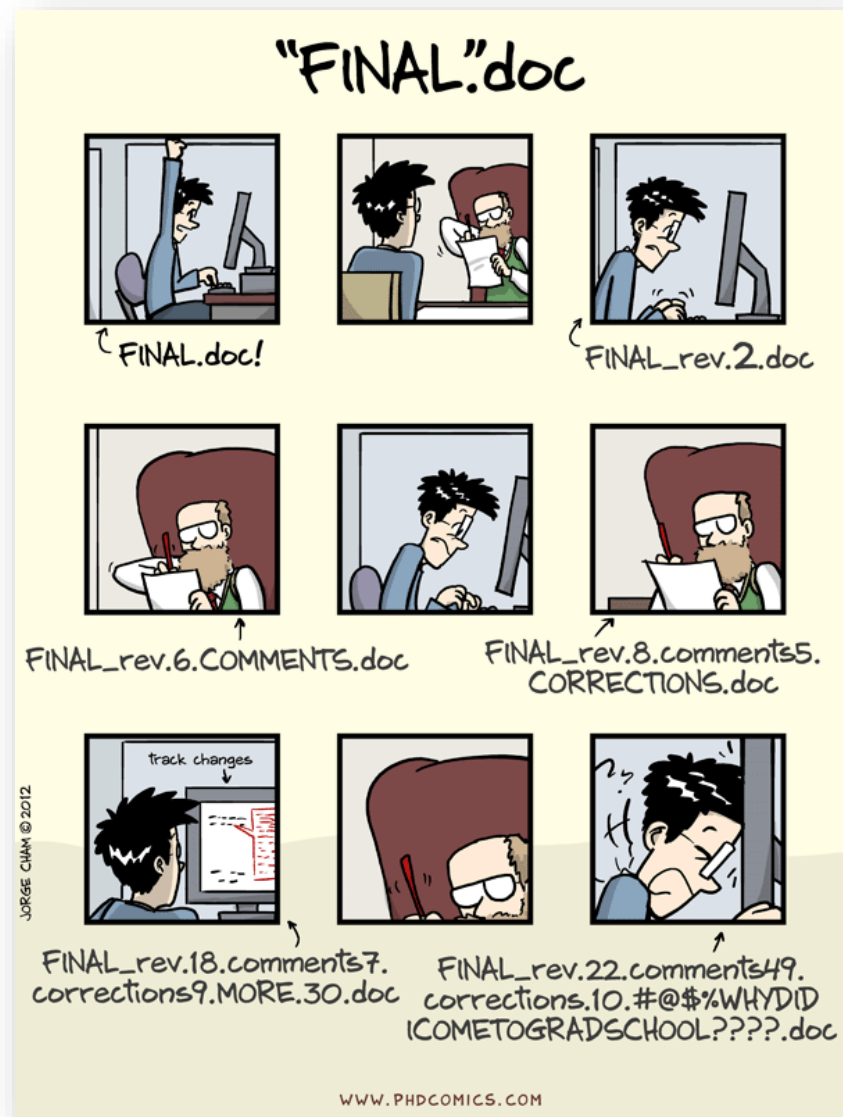


# Version Control? Why?

# File system




# File system







# Version Control system

History for [2020\\_06\\_24-inaugural-meeting](#) / 01-introduction-tidyverse

Commits on Jun 25, 2020

- Delete .gitkeep Verified  [d777c8b](#) [<>](#)  
DeAngelisA committed on Jun 25

Commits on Jun 24, 2020

- Add files via upload Verified  [4c01e0d](#) [<>](#)  
DeAngelisA committed on Jun 24
- Rename 02\_rmarkdown\_piping.Rmd to 01-introduction-tidyverse/02\_rmarkd... Verified  [251dacd](#) [<>](#)  
DeAngelisA committed on Jun 24
- Rename 01\_introduction.R to 01-introduction-tidyverse/01\_introduction.R Verified  [4847196](#) [<>](#)  
DeAngelisA committed on Jun 24
- Create .gitkeep Verified  [7516964](#) [<>](#)  
DeAngelisA committed on Jun 24

[Newer](#) [Older](#)

Every change is tracked and revertible



# Version Control system

History for [2020\\_06\\_24-inaugural-meeting](#) / 01-introduction-tidyverse

Commits on Jun 25, 2020

- Delete .gitkeep  
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Verified [d777c8b](#) [View](#)

Commits on Jun 24, 2020

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DeAngelisA committed on Jun 24  
Verified [4c01e0d](#) [View](#)
- Rename 02\_rmarkdown\_piping.Rmd to 01-introduction-tidyverse/02\_rmarkd...  
DeAngelisA committed on Jun 24  
Verified [251dacd](#) [View](#)
- Rename 01\_introduction.R to 01-introduction-tidyverse/01\_introduction.R  
DeAngelisA committed on Jun 24  
Verified [4847196](#) [View](#)
- Create .gitkeep  
DeAngelisA committed on Jun 24  
Verified [7516964](#) [View](#)

[Newer](#) [Older](#)

Every change is tracked and revertible

master 1 branch 0 tags

Go to file Add file Code

DeAngelisA Delete .gitkeep #5f4809 on Jul 3 17 commits

01-introduction-tidyverse	Delete .gitkeep	4 months ago
02-Bollmann-making-r-accessible	Delete .gitkeep	4 months ago
03-Attalides-introduction-to-shiny	Delete .gitkeep	4 months ago
LICENSE	Initial commit	4 months ago
README.md	Update README.md	4 months ago

README.md

## Lucerne R User Group

### Inaugural meeting (24/06/2020)

The folders contain the material for the inaugural meeting of the Lucerne R User Group:

- "Introduction to Tidyverse" by Andrea de Angelis
- "Making R accessible for sceptics" by Stella Bollmann
- "Introduction to Shiny" by Nicolas Attalides

Schedule:

18.00 - 18.10: Setup and virtual reception

18.10 - 19.00: "Introduction to Tidyverse" by Andrea de Angelis

19.00 - 19.30: "Making R accessible for sceptics" by Stella Bollmann

19.30 - 20.00: "Introduction to Shiny" by Nicolas Attalides

About

Material for the inaugural meeting of the Lucerne R User Group

[r](#) [meetup](#) [data](#) [data-science](#)  
[statistics](#) [r-user-group](#)

Readme

MIT License

Releases

No releases published  
[Create a new release](#)

Packages

No packages published  
[Publish your first package](#)

Languages

R 100.0%

You see the last version

# Version Control system

## Version-control System, VCS

a system to manage and organize the story of a project

## Git

the most popular distributed version-control systems (free and open-source)

## GitHub

Web-hosting service for version control using Git



# Getting started with git and GitHub



# Setup

## 1. Install git

[\[Supporting link\]](#)

⌘>⌘

(read: 'then')

## 2. Activate Git on RStudio

[\[Supporting link\]](#)

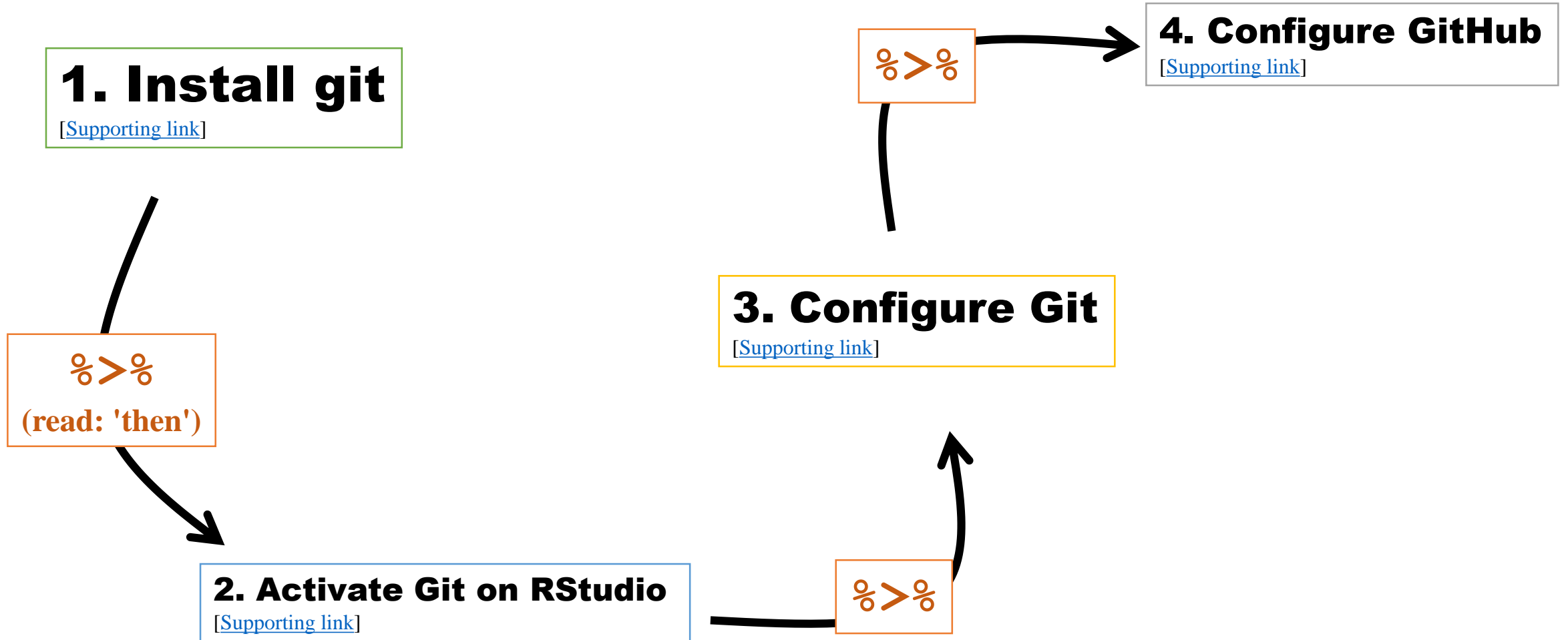
## 3. Configure Git

[\[Supporting link\]](#)

⌘>⌘

## 4. Configure GitHub

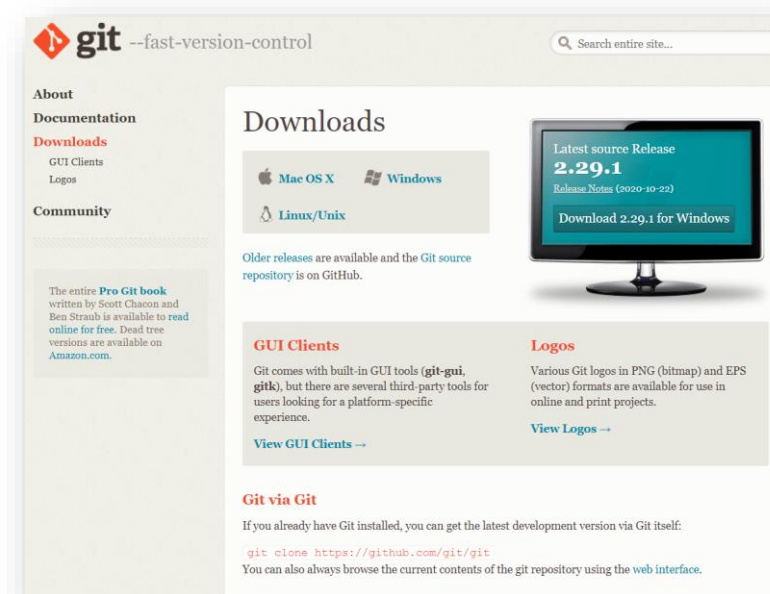
[\[Supporting link\]](#)



# Let's git started!

## 1. Install / update Git

- Download Git at this link: <https://git-scm.com/downloads>
- Click on the file and go through the installation process



Keep all default settings:

Next >

Next >

Next >

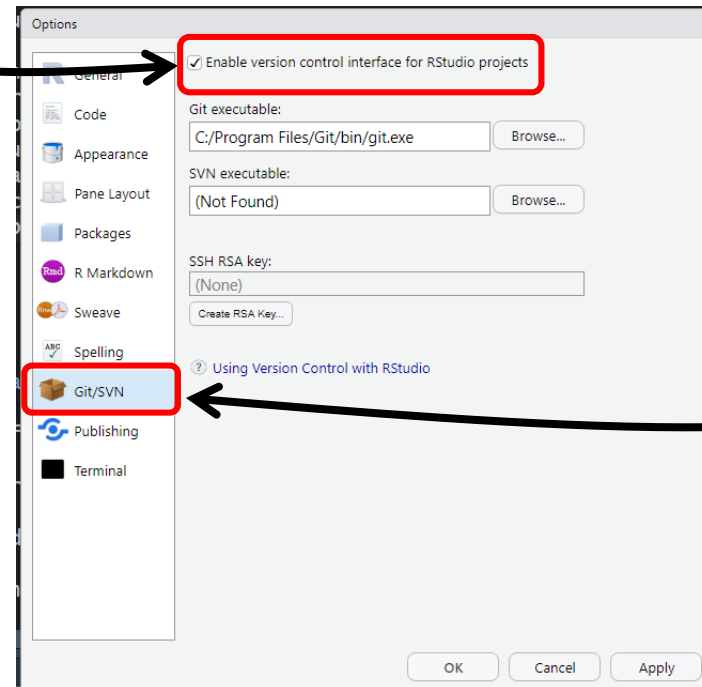
02:00

# Let's git started!

## 1. Install / update Git

## 2. Activate Git on RStudio

- Download Git at [this link](#)
- Click on the file and go through the installation process
- In RStudio: **Tools %>% Global Options %>% Git/SVN**
- Tick “Enable version control interface for RStudio projects”



00:30

# Let's git started!

## 1. Install / update Git

## 2. Activate Git on RStudio

## 3. Configure Git

- Download Git at [this link](#)
- Click on the file and go through the installation process
- In RStudio: Tools %>% Global Options %>% Git/SVN
- Tick “Enable version control interface for RStudio projects”
- Search the **Git Bash** program and open it

**Display you Git configurations** typing:

```
$ git config --list
```



### Reference

<https://happygitwithr.com/hello-git.html>


**00:30**

# Let's git started!

## 1. Install / update Git

## 2. Activate Git on RStudio

## 3. Configure Git

- Download Git at [this link](#)
- Click on the file and go through the installation process
- In RStudio: Tools %>% Global Options %>% Git/SVN
- Tick “Enable version control interface for RStudio projects”
- Search the **Git Bash** program and open it 
- **Set a Git username** typing:  

```
$ git config --global user.name "YOUR FULL NAME"
```
- **Set your commit email** typing:  

```
$ git config --global user.email "YOUR EMAIL"
```



### Reference

<https://happygitwithr.com/hello-git.html>

01:00



# Let's git started!

## 1. Install / update Git

## 2. Activate Git on RStudio

## 3. Configure Git

## 4. Set GitHub

- Download Git at [this link](#)
- Click on the file and go through the installation process
- In RStudio: Tools %>% Global Options %>% "Git/SVN"
- Tick "Enable version control interface for RStudio projects"
- Search the **Git Bash** program and open it
- Set a Git username
- Set your commit email
- **Sign up** on [GitHub.com](https://github.com): review ToS, Privacy and click "Create Account"
- Choose the [Educational plan](#) if you qualify



02:00

# Let's git started!

## 1. Install / update Git

## 2. Activate Git on RStudio

## 3. Configure Git

## 4. Set GitHub

## 5. Validate Git email

- Download Git at [this link](#)
- Click on the file and go through the installation process
- In RStudio: Tools %>% Global Options %>% "Git/SVN"
- Tick "Enable version control interface for RStudio projects"
- Search the **Git Bash** program and open it
- Set a Git username
- Set your commit email
- Register on [GitHub.com](#): review ToS, Privacy and click "Create Account"
- Choose the [Educational plan](#) if you qualify
- GitHub %>% Click your photo %>% Settings %>% Email
- Add and verify your **Git email** %>% "Keep my email address private"



**GitHub**

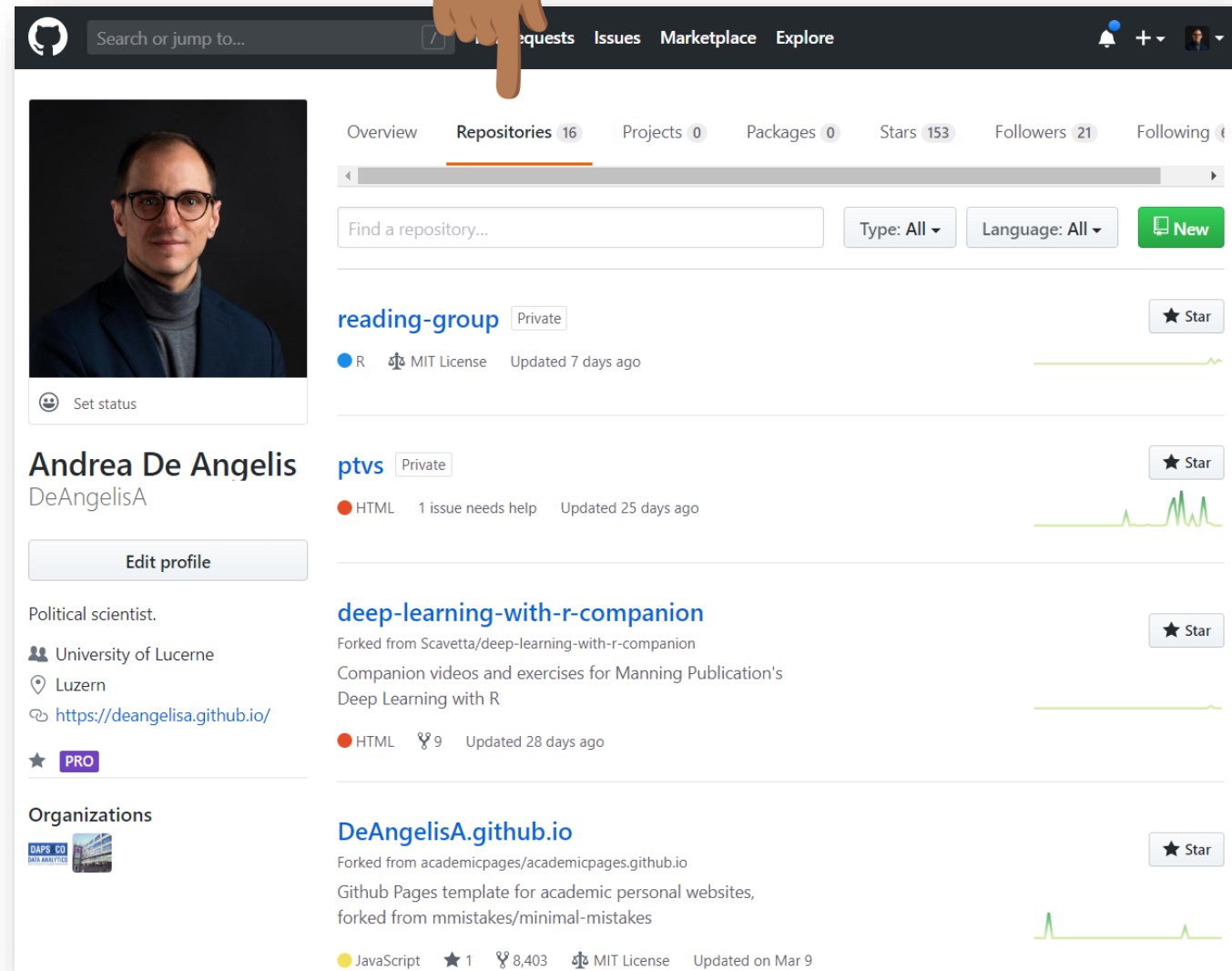
**02:00**

# Git basics



# Initialize a GitHub "repo"

**"New project, GitHub first"  
workflow**



The screenshot shows the GitHub profile of Andrea De Angelis (DeAngelisa). A hand icon points to the 'Repositories' tab in the top navigation bar. Another hand icon points to the 'New' button in the repository list. The profile includes a profile picture, a bio 'Political scientist.', university 'University of Lucerne', location 'Luzern', and a link to 'https://deangelisa.github.io/'. The repository list shows three repositories: 'reading-group' (Private, R, MIT License, Updated 7 days ago), 'ptvs' (Private, HTML, 1 issue needs help, Updated 25 days ago), and 'deep-learning-with-r-companion' (Forked from Scavetta/deep-learning-with-r-companion, HTML, 9 forks, Updated 28 days ago). The bottom repository, 'DeAngelisa.github.io', is a forked GitHub Pages template for academic websites, updated on Mar 9.

[Cache credentials](#)

[HTTPS or SSH?](#)




# Initialize a GitHub "repo"

## Create a new repository

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

Owner \*

 Lucerne-R-User-Group ▾

Repository name \*

/ 2020\_06\_24-meeting-2 ✓

Great repository names are short and memorable. Need inspiration? How about [shiny-octo-adventure](#)?

Description (optional)

Repo for the second meeting of the Lucerne R User group. Topics of the day: using GitHub in RStudio, scraping



**Public**

Anyone on the internet can see this repository. You choose who can commit.



**Private**

You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.

☒ **Add a README file**

This is where you can write a long description for your project. [Learn more.](#)

☒ **Add .gitignore**

Choose which files not to track from a list of templates. [Learn more.](#)

.gitignore template: None ▾

☒ **Choose a license**

A license tells others what they can and can't do with your code. [Learn more.](#)

License: MIT License ▾

This will set  `main` as the default branch. Change the default name in Lucerne R User Group's [settings](#).

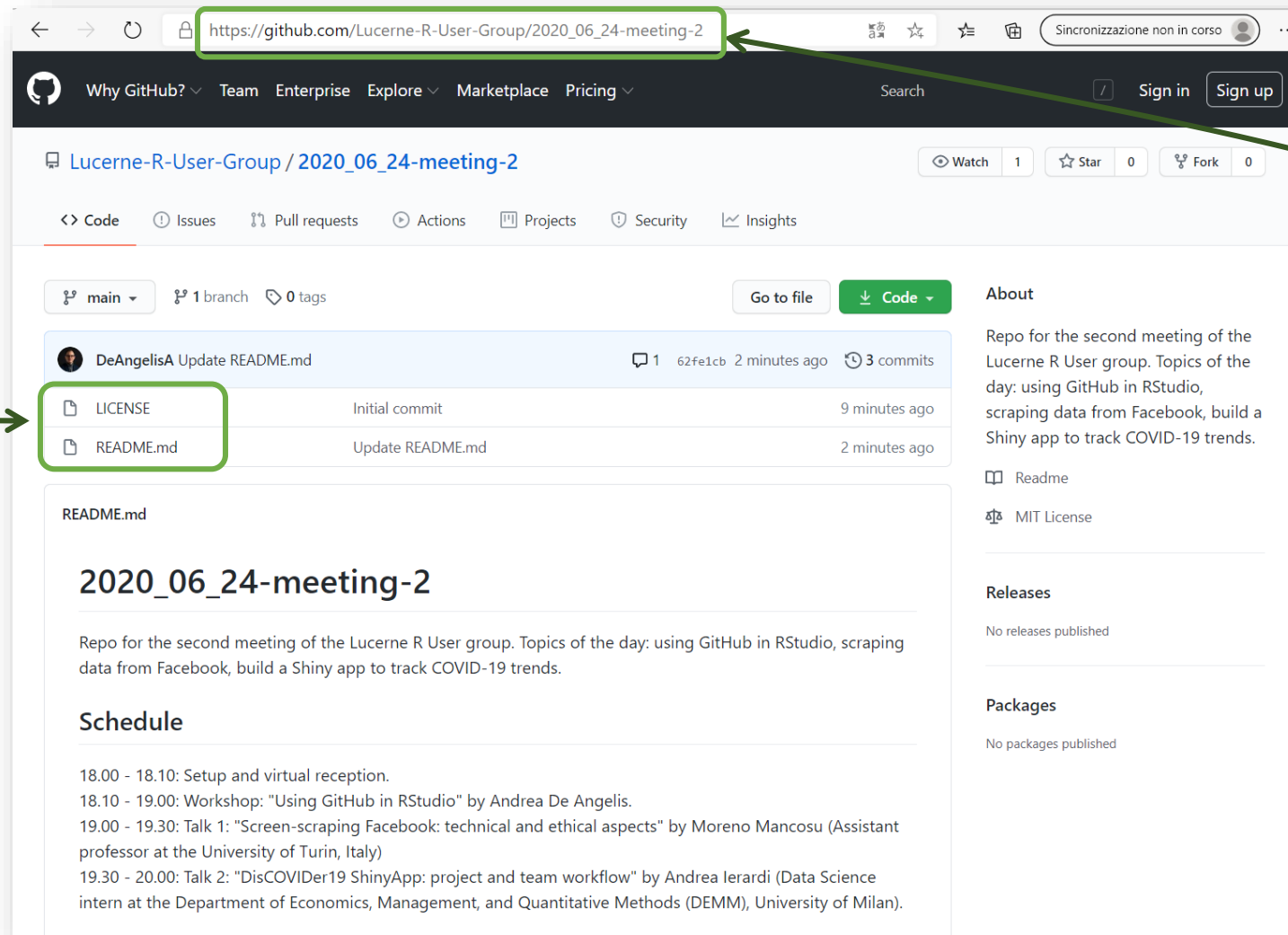
Create repository





# Initialize a GitHub "repo"

**Uploaded  
folders, files  
and scripts**



The screenshot shows a GitHub repository page for 'Lucerne-R-User-Group / 2020\_06\_24-meeting-2'. The browser's address bar is highlighted with a green box and contains the URL 'https://github.com/Lucerne-R-User-Group/2020\_06\_24-meeting-2'. A green arrow points from this URL to the text 'Repo URL' on the right. Another green arrow points from the text 'Uploaded folders, files and scripts' to a green box around the 'LICENSE' and 'README.md' files in the file list. The repository page shows a commit by 'DeAngelisA' that updated the README.md file. The README content includes a title '2020\_06\_24-meeting-2', a description of the repo's purpose, and a schedule of events.

https://github.com/Lucerne-R-User-Group/2020\_06\_24-meeting-2

Why GitHub? Team Enterprise Explore Marketplace Pricing Search Sign in Sign up

Lucerne-R-User-Group / 2020\_06\_24-meeting-2 Watch 1 Star 0 Fork 0

<> Code Issues Pull requests Actions Projects Security Insights

main 1 branch 0 tags Go to file Code

DeAngelisA Update README.md 1 62fe1cb 2 minutes ago 3 commits

LICENSE	Initial commit	9 minutes ago
README.md	Update README.md	2 minutes ago

README.md

## 2020\_06\_24-meeting-2

Repo for the second meeting of the Lucerne R User group. Topics of the day: using GitHub in RStudio, scraping data from Facebook, build a Shiny app to track COVID-19 trends.

### Schedule

18.00 - 18.10: Setup and virtual reception.  
18.10 - 19.00: Workshop: "Using GitHub in RStudio" by Andrea De Angelis.  
19.00 - 19.30: Talk 1: "Screen-scraping Facebook: technical and ethical aspects" by Moreno Mancosu (Assistant professor at the University of Turin, Italy)  
19.30 - 20.00: Talk 2: "DisCOVIDer19 ShinyApp: project and team workflow" by Andrea Ierardi (Data Science intern at the Department of Economics, Management, and Quantitative Methods (DEMM), University of Milan).

About  
Repo for the second meeting of the Lucerne R User group. Topics of the day: using GitHub in RStudio, scraping data from Facebook, build a Shiny app to track COVID-19 trends.  
Readme  
MIT License

Releases  
No releases published

Packages  
No packages published

**Repo URL**

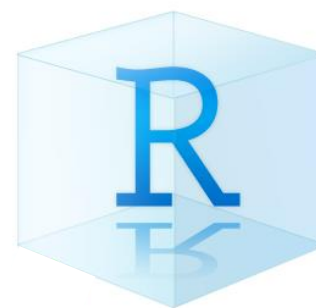
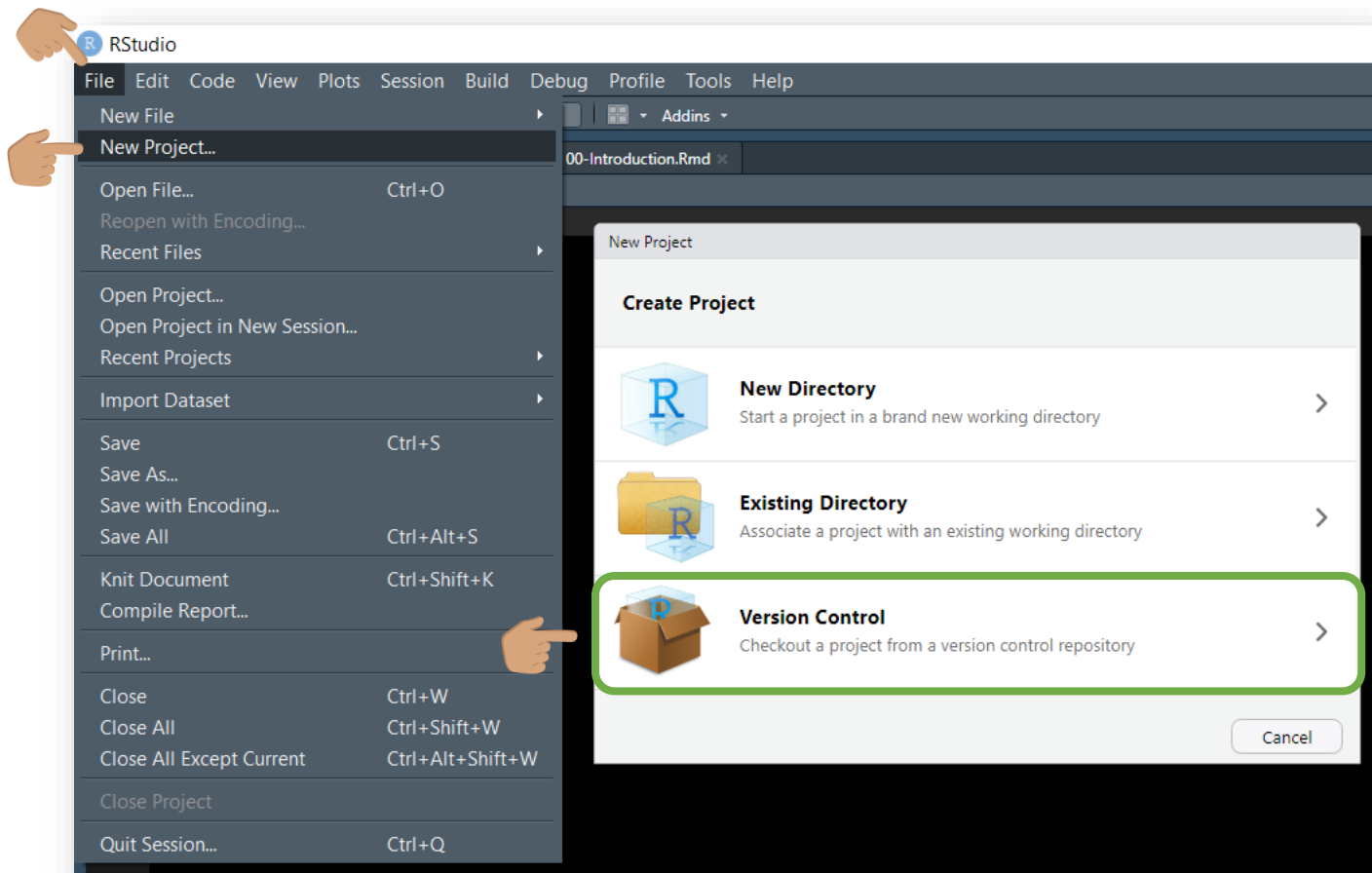


# Your turn!

Initialize your first GitHub repo!  
Call it: "git-sandbox"

**02:00**

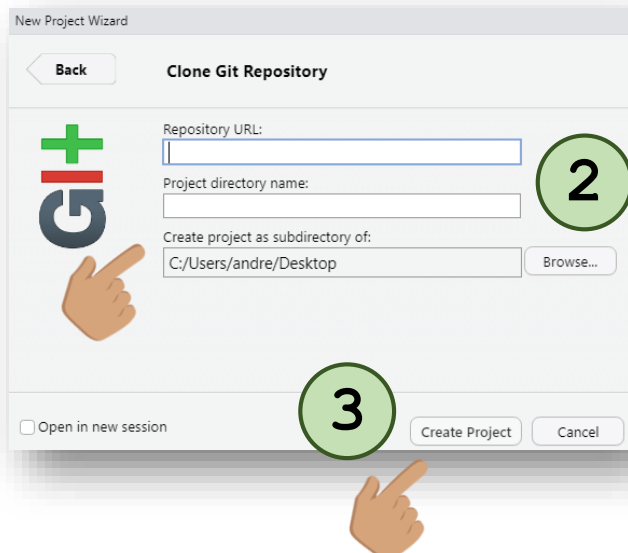
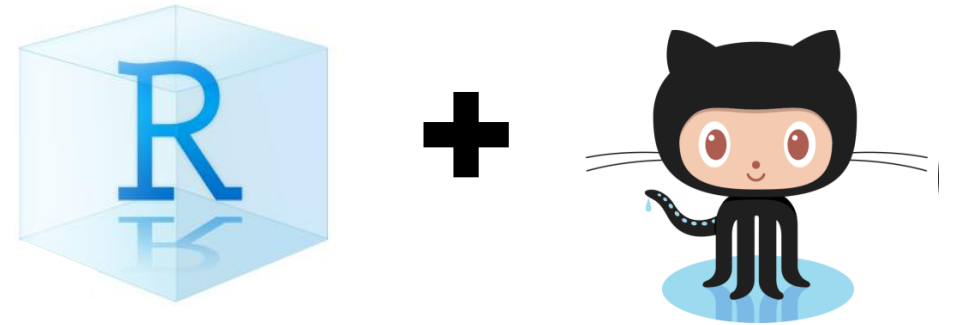
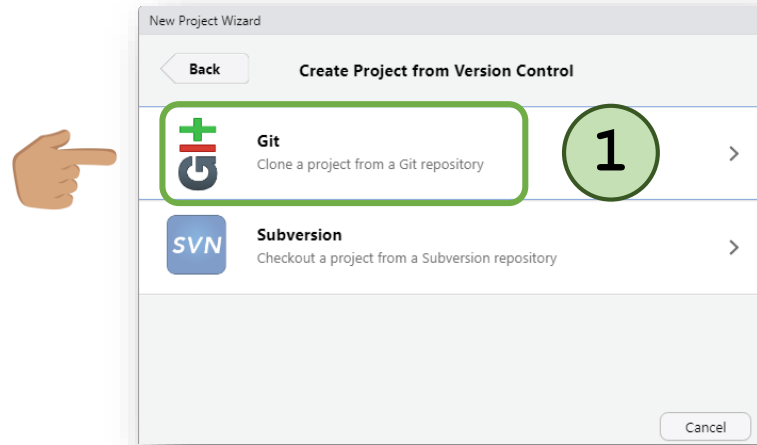
# GitHub & RStudio Projects



**RStudio projects...**

**...on GitHub!**

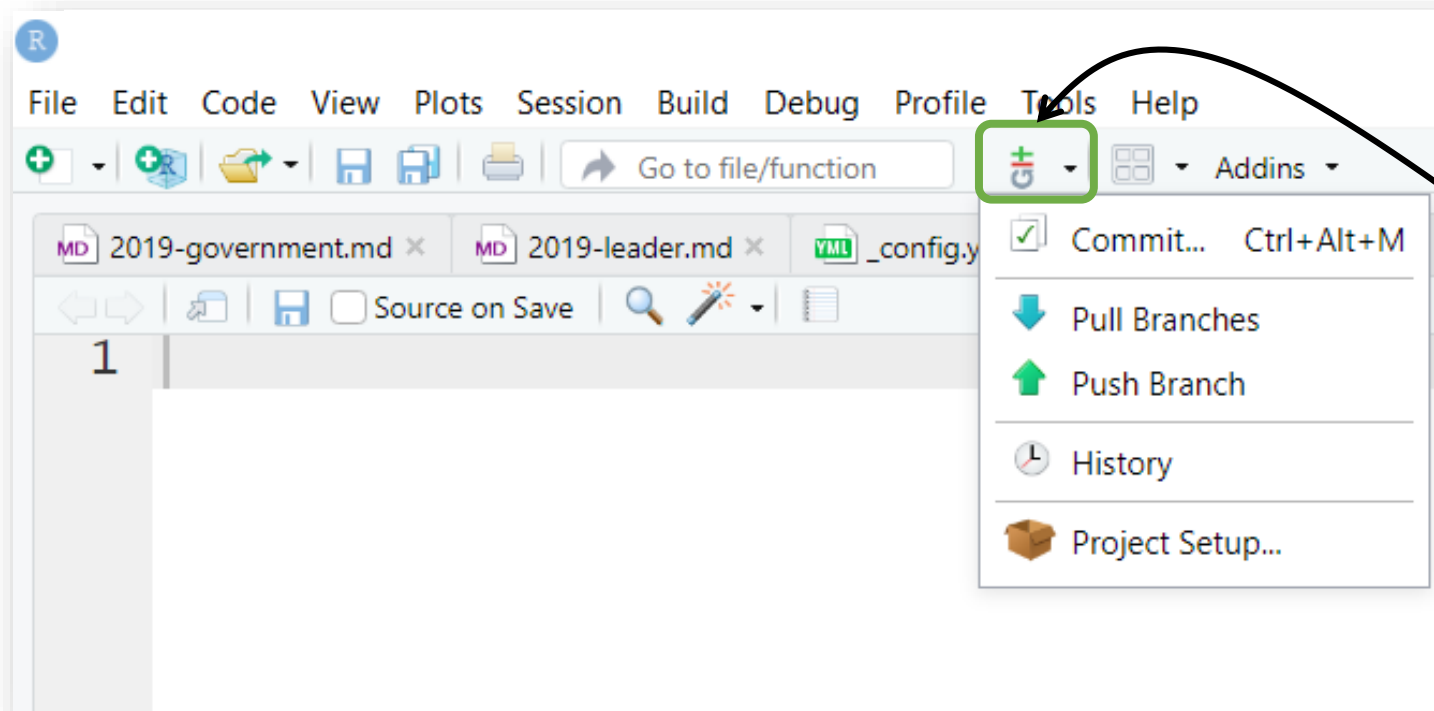
# GitHub & RStudio Projects



## Three steps:

1. Choose Git
2. Paste repo URL, give a name, select local folder
3. Create Project

# GitHub & RStudio Projects



**RStudio's Git toolbar  
is active**



# Your turn!

**Git that toolbar!**

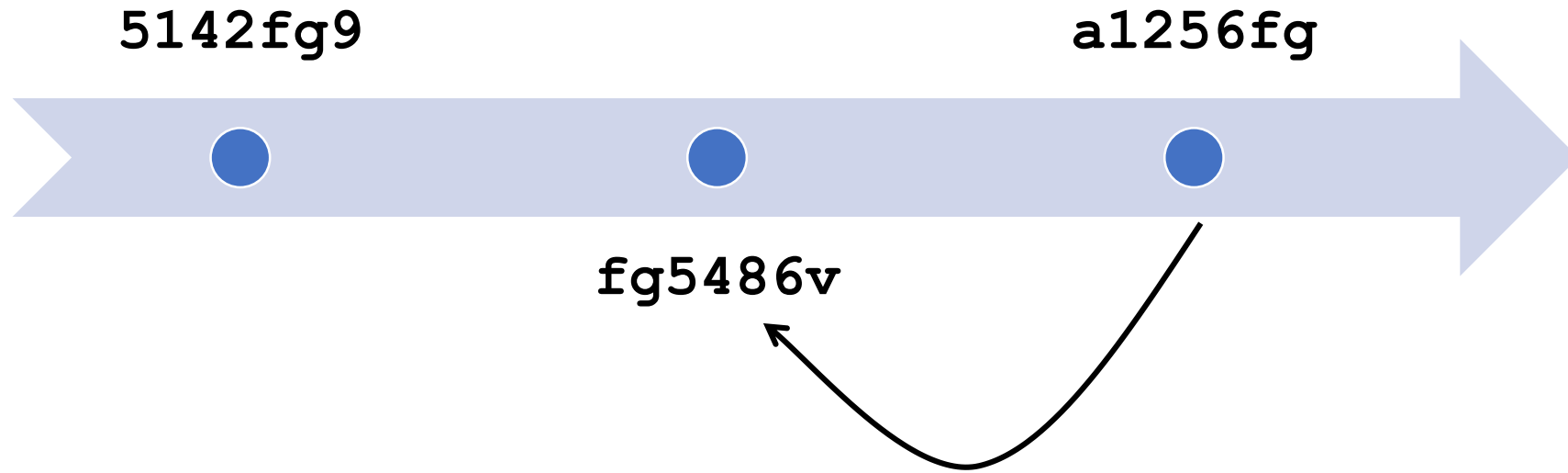


**02:00**

←  
**BACK**

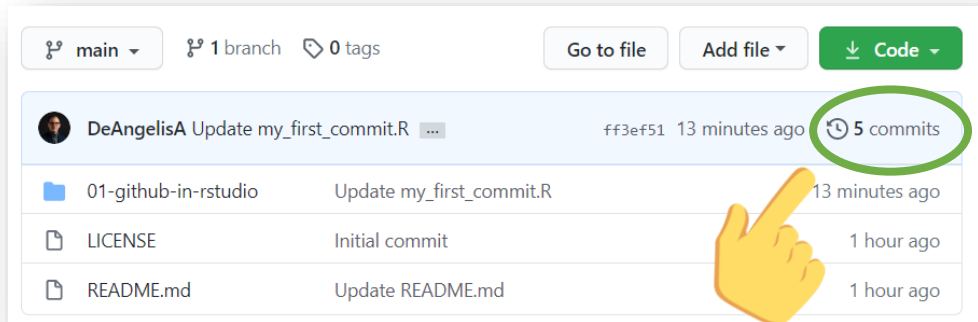
**Commits**

←  
**BACK**



**Commit:** a snapshot of the whole project  
{you can undo mistakes}

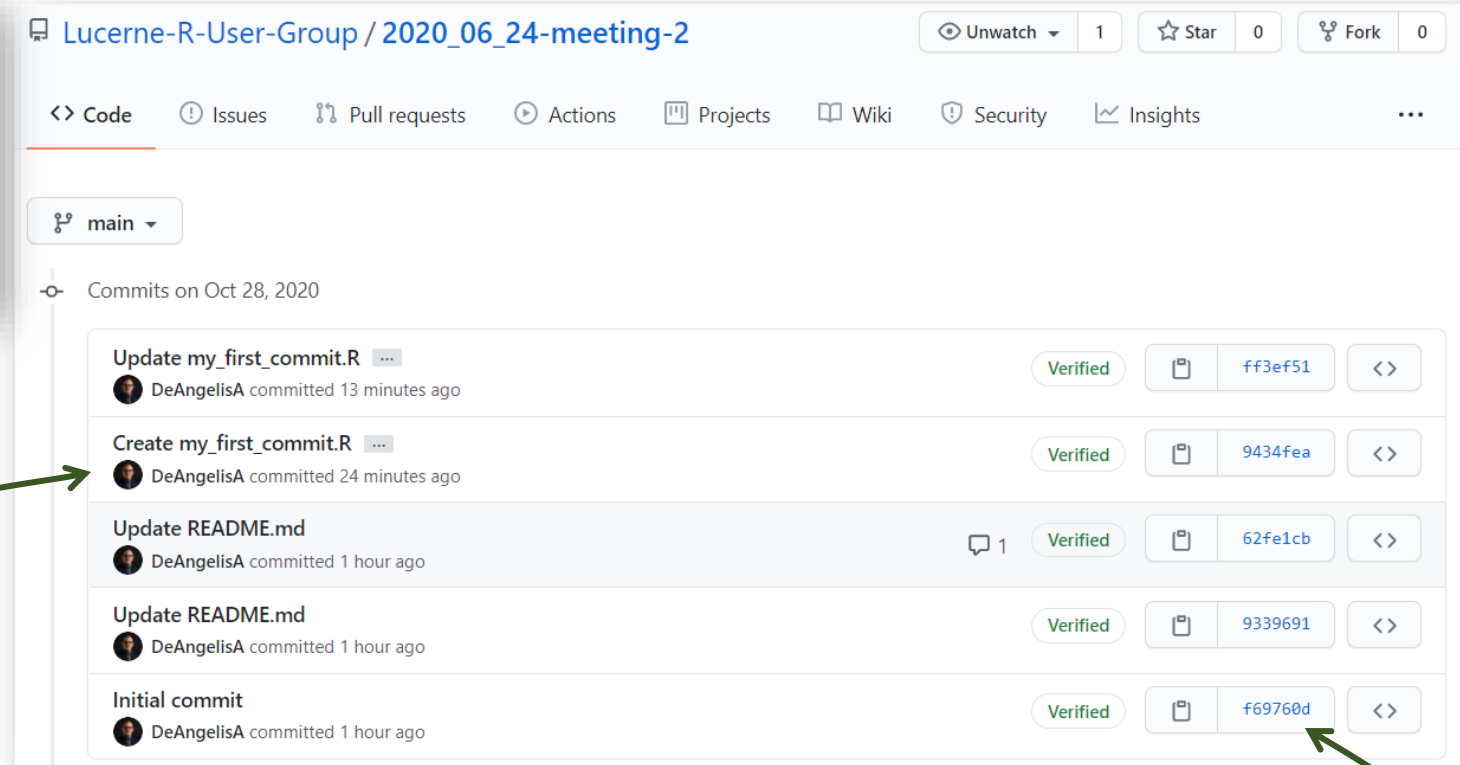
# Commits in a repo



This screenshot shows the commit history for the file 'my\_first\_commit.R' in the '01-github-in-rstudio' directory. The top commit by 'DeAngelisA' is highlighted with a green circle around the '5 commits' link. A yellow hand icon points to this link. Below it, a table lists the commit history for the file.

File	Commit Message	Author	Time
01-github-in-rstudio	Update my_first_commit.R	DeAngelisA	13 minutes ago
LICENSE	Initial commit	DeAngelisA	1 hour ago
README.md	Update README.md	DeAngelisA	1 hour ago

**Five commits  
in this repo**



This screenshot shows the commit history for the repository 'Lucerne-R-User-Group / 2020\_06\_24-meeting-2'. The commit history is listed below the repository name, showing the commit message, author, and time. The commit ID (SHA) is highlighted with a green circle and a yellow hand icon. A green arrow points from the '5 commits' link in the first screenshot to this commit history view.

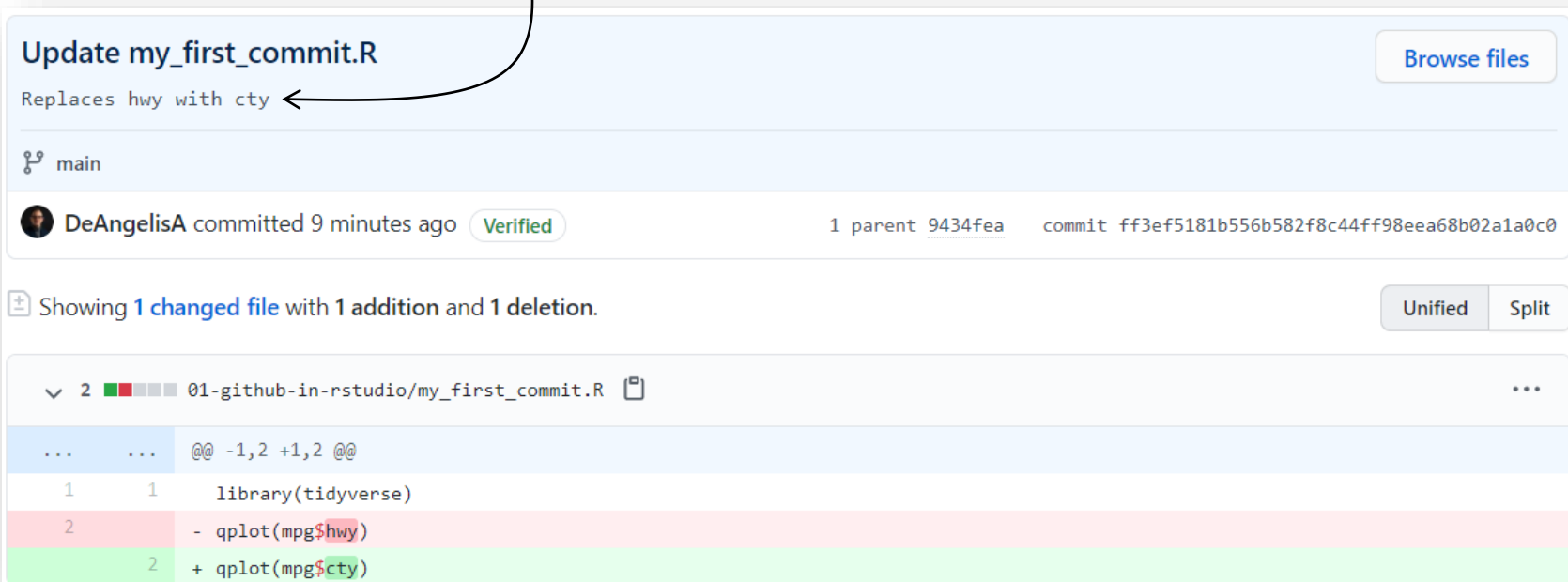
Commit Message	Author	Time	Commit ID (SHA)
Update my_first_commit.R	DeAngelisA	13 minutes ago	ff3ef51
Create my_first_commit.R	DeAngelisA	24 minutes ago	9434fea
Update README.md	DeAngelisA	1 hour ago	62fe1cb
Update README.md	DeAngelisA	1 hour ago	9339691
Initial commit	DeAngelisA	1 hour ago	f69760d

**Commit id (SHA)**

# One commit

**A commit message is required**  
"Replace A with B" "Fix issue2 scraper bug"

**Deletions** **Additions**



The screenshot shows a GitHub commit interface. At the top, the commit title is "Update my\_first\_commit.R" with a description "Replaces hwy with cty". Below this, the commit is attributed to "DeAngelisA" and is marked as "Verified". The commit message "Replaces hwy with cty" is highlighted with a callout box. The diff view shows a single file change: "01-github-in-rstudio/my\_first\_commit.R". The diff highlights a deletion of the line "qplot(mpg\$hwy)" (line 2, red background) and an addition of the line "qplot(mpg\$cty)" (line 2, green background). The commit ID (SHA) is displayed as "ff3ef5181b556b582f8c44ff98eea68b02a1a0c0".

```
@@ -1,2 +1,2 @@
1      library(tidyverse)
2      - qplot(mpg$hwy)
2      + qplot(mpg$cty)
```

## Commit id (SHA):

ff3ef5181b556b582f8c44ff98eea68b02a1a0c0

## Link to commit:

[https://github.com/Lucerne-R-User-Group/2020\\_06\\_24-meeting-2/commit/ff3ef5181b556b582f8c44ff98eea68b02a1a0c0#diff-301cb80351ee6dce13646cf3a5dd2a36f2e925ad6788aa66403b930bf1a96f29](https://github.com/Lucerne-R-User-Group/2020_06_24-meeting-2/commit/ff3ef5181b556b582f8c44ff98eea68b02a1a0c0#diff-301cb80351ee6dce13646cf3a5dd2a36f2e925ad6788aa66403b930bf1a96f29)

# How to commit

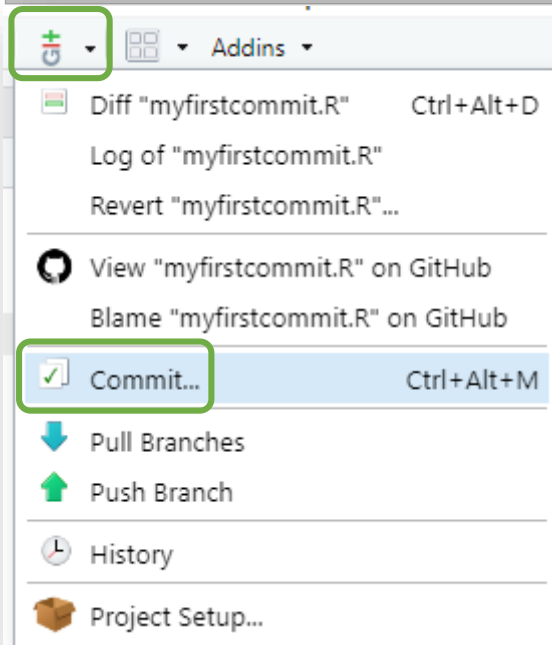
Make your changes and save

1

```
my_first_commit.R x
1 library(tidyverse)
2 qplot(mpg$year)
3
4 qplot(mpg$year, mpg$cty)
5
```

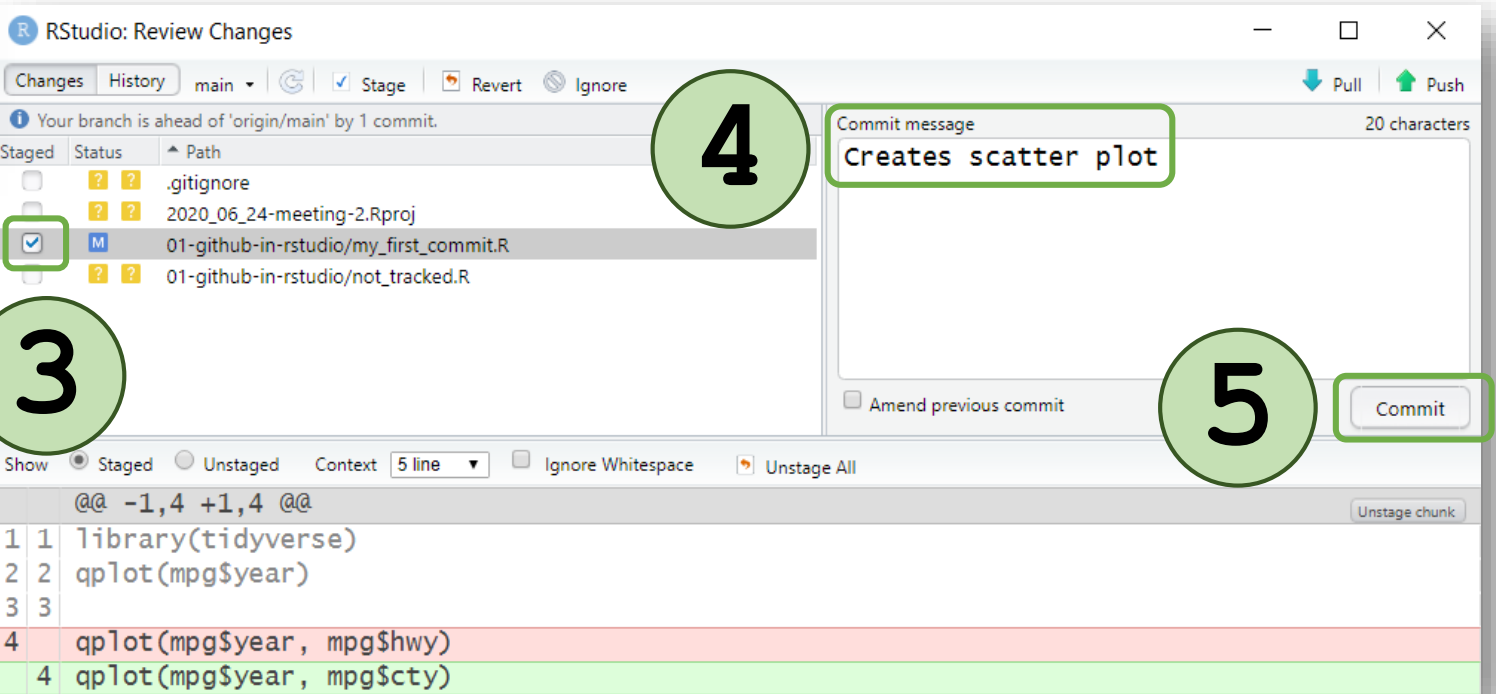
Click **commit** in the git bar

2



Stage changes, add a message and commit

4



3

5



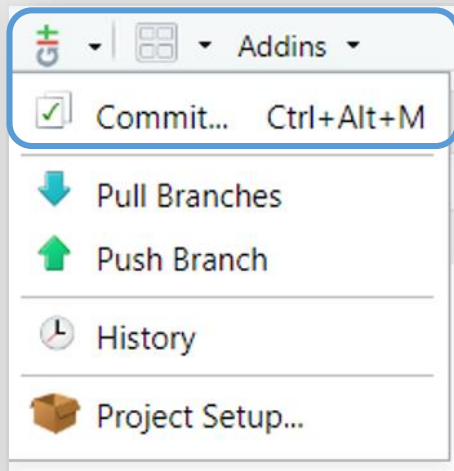
# Your turn!

## Git your first commit!

1. Create a new R script
2. Type in something
3. Save the R script
4. Git commit!

`my_first_commit.R`

```
# E.g.:  
library(tidyverse)  
qplot(mpg$hwy)
```

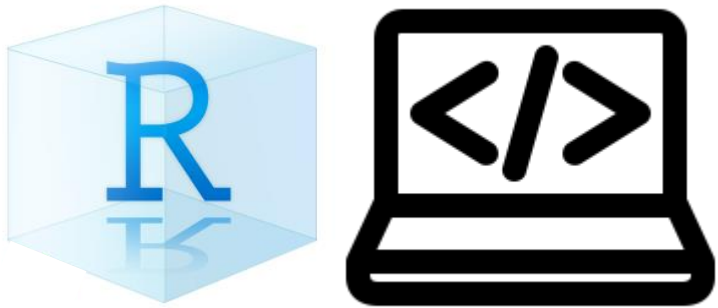


**02:00**

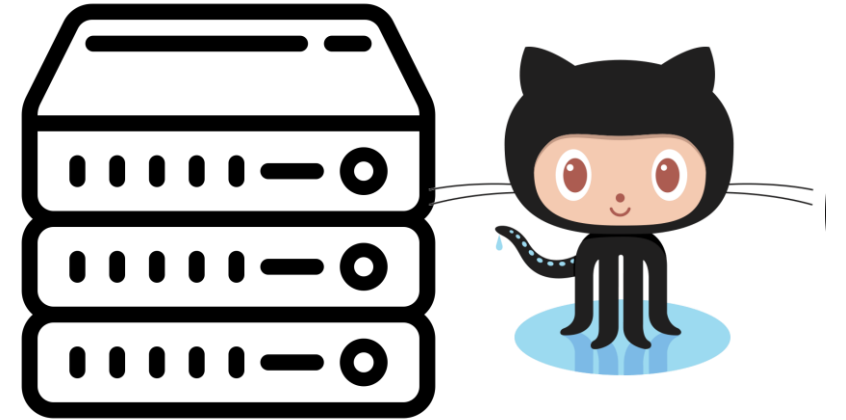
# Git workflow



# Basic workflow



You working  
locally



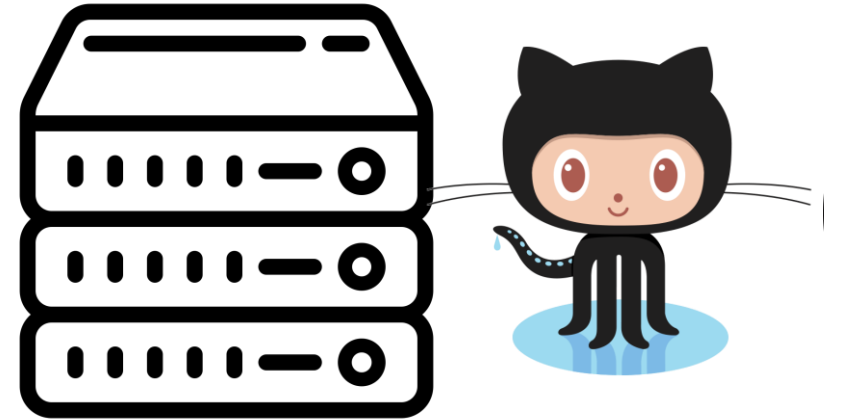
remote repo  
hosted on  
github

# Basic workflow



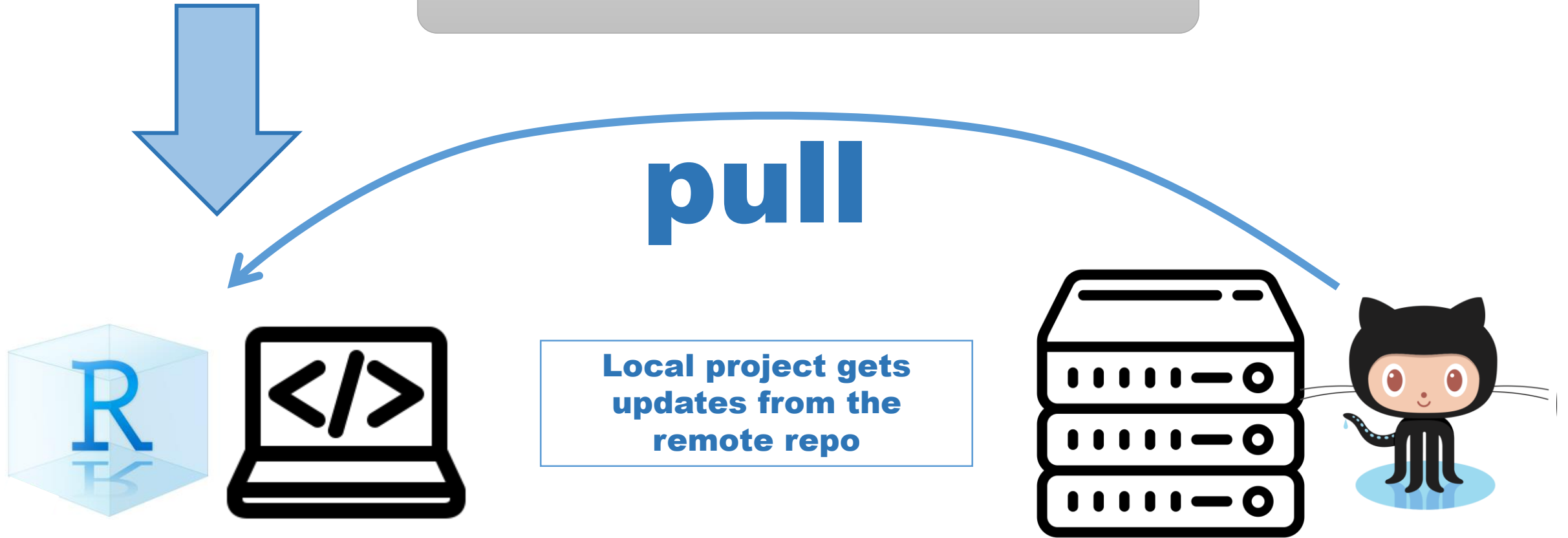
You working  
locally

**How to get  
changes from  
collaborators**

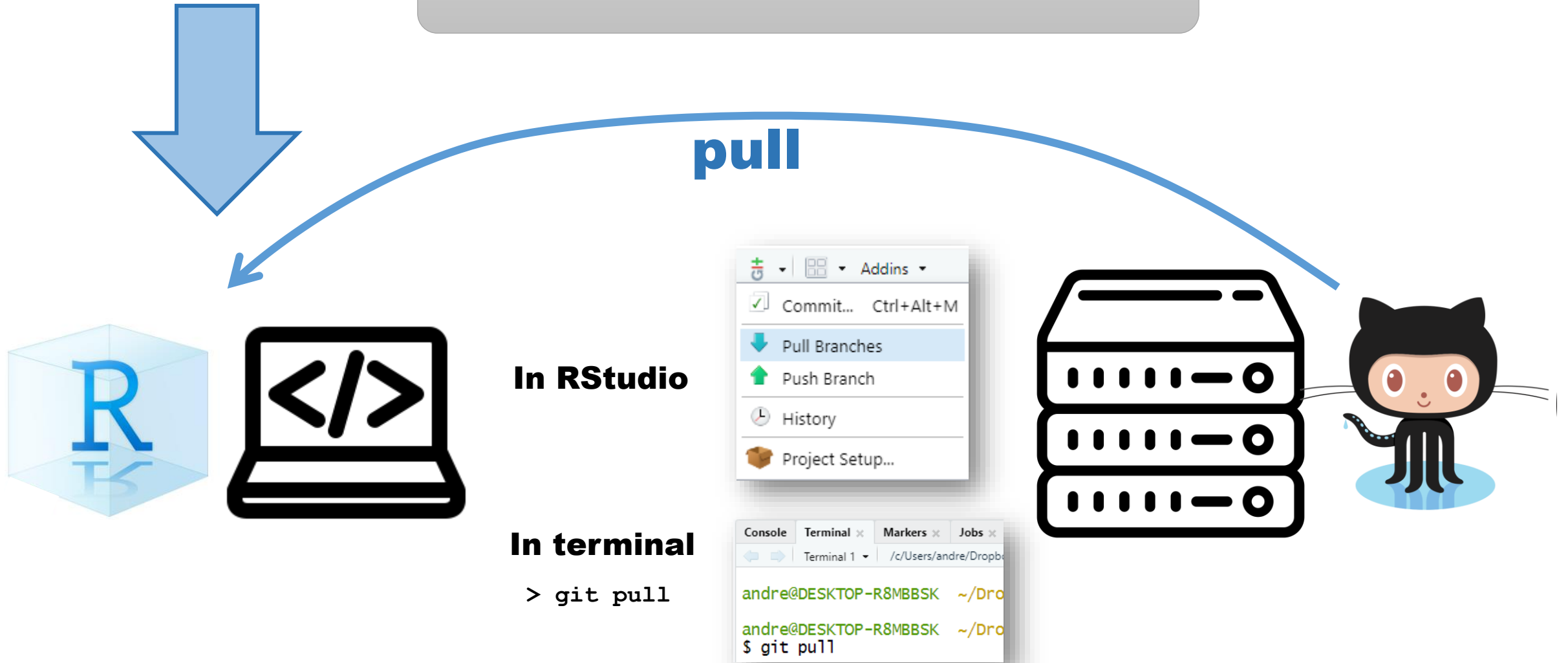


remote repo  
hosted on  
github

# Basic workflow



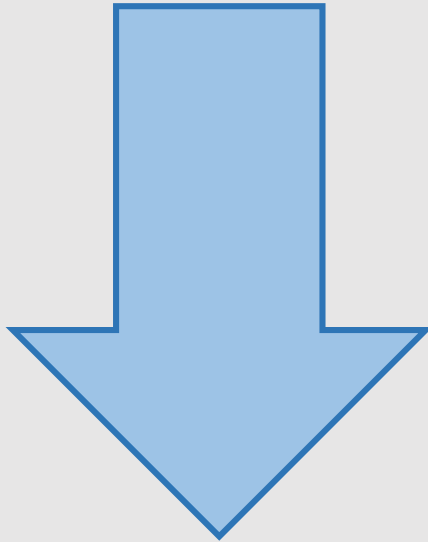
# Basic workflow



# Your turn!

## Pull a change

1. First **commit a change** to you script from GitHub.com

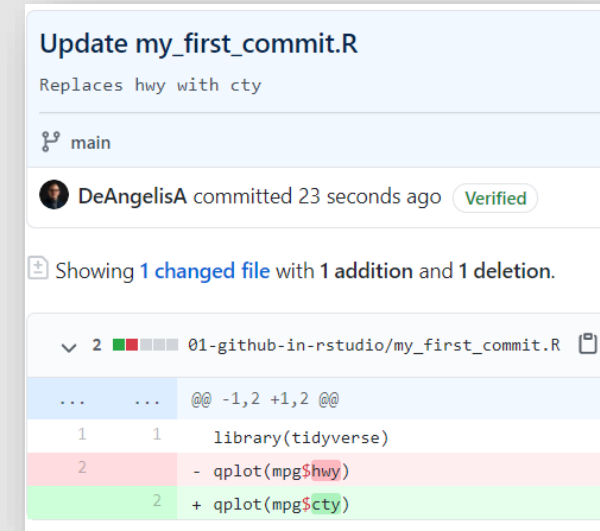
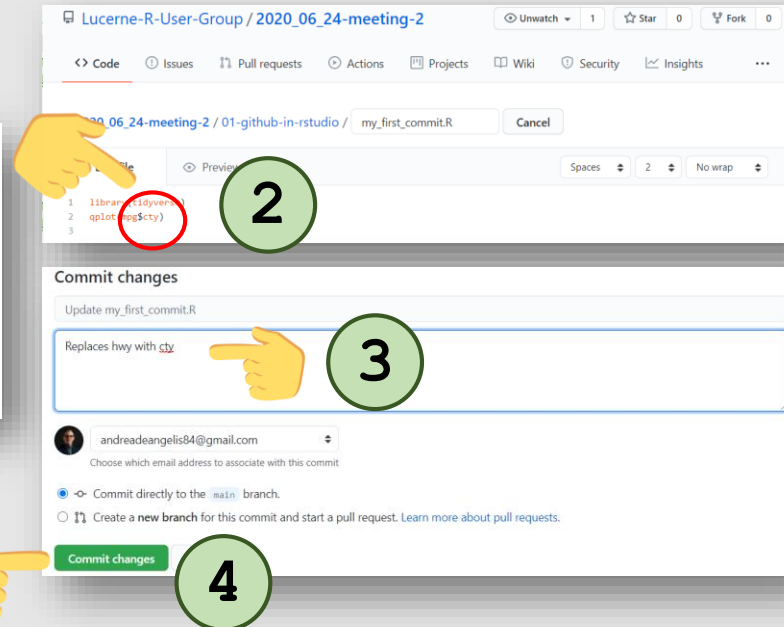
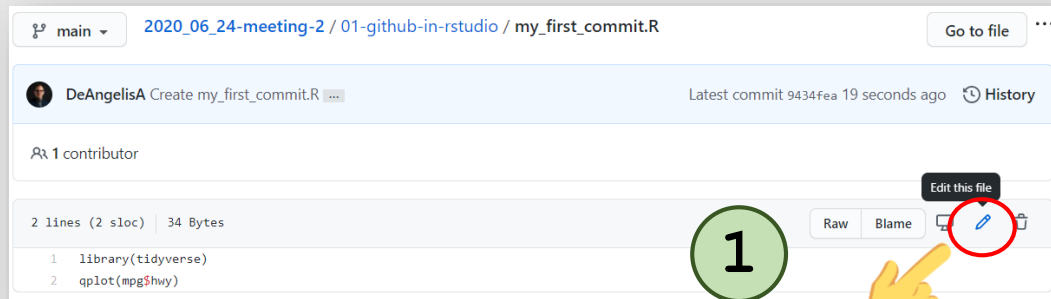


**01:00**

# Your turn!

## Pull a change

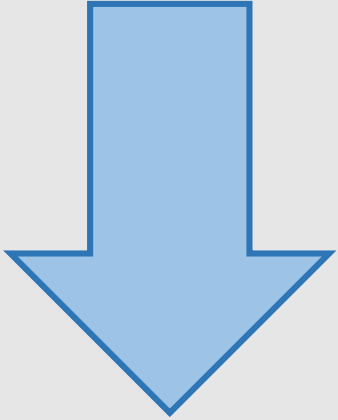
1. First **commit** a change to you script from GitHub.com



01:00



# Your turn!

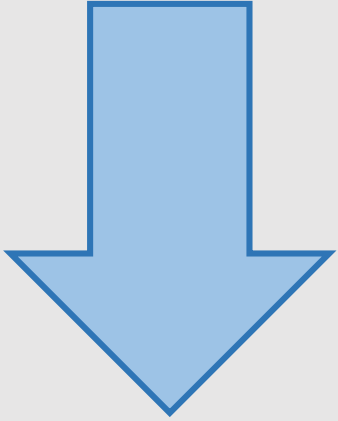


## Pull a change

1. First commit a change to you script from GitHub.com
2. **Update the GitHub page** of the repo to note that the GitHub version is now *ahead* of your local project by one commit

**00:30**

# Your turn!



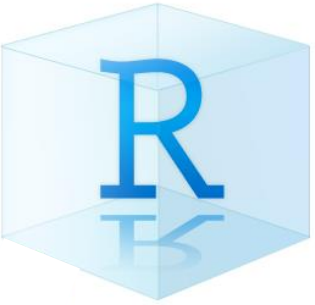
## Pull a change

1. First commit a change to you script from GitHub.com
2. Update the GitHub page of the repo to note that the GitHub version is now *ahead* of your local project by one commit
3. **Pull the commit** and... check the script!



**00:30**

# Basic workflow

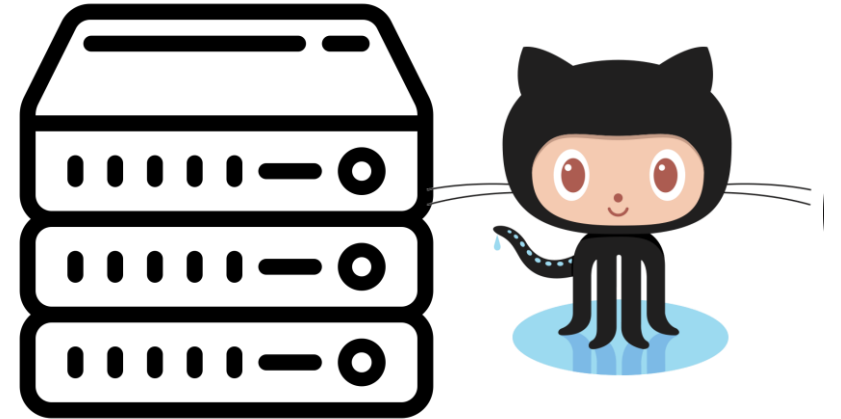


Tidy Data Project.Rproj



You working  
locally

**How to send  
changes to  
collaborators  
(or future you)**



remote repo  
hosted on  
github

# Basic workflow



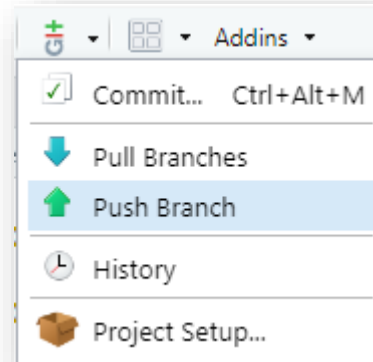
# Basic workflow



Tidy Data Project.Rproj

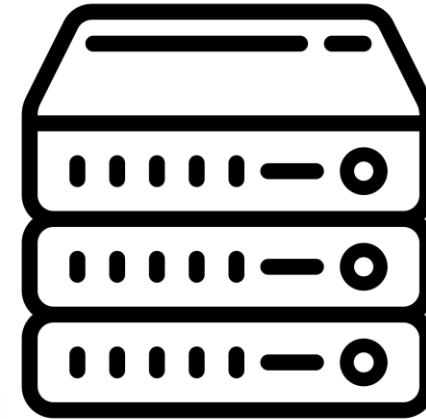
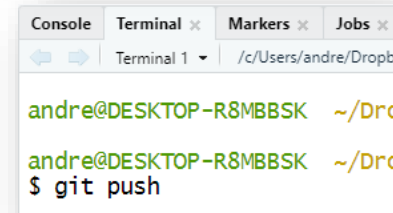


**In RStudio**



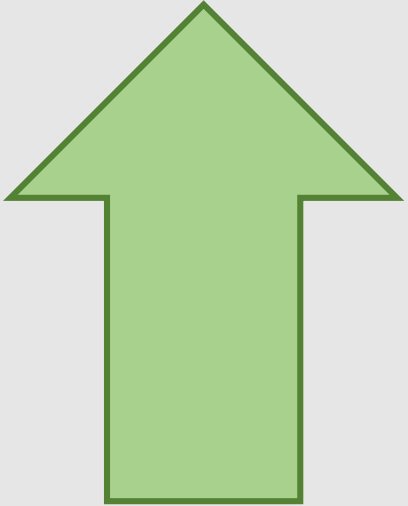
**In terminal**

```
> git push
```



**push**

# Your turn!



## Push a change

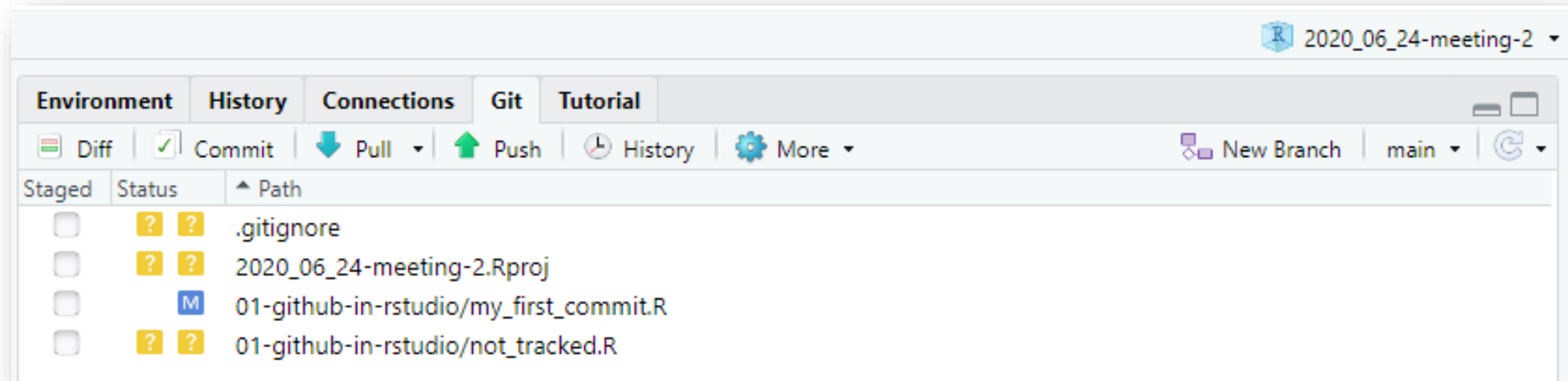
1. **Commit** a change in your script.
2. **Push the commit** and... check the repo [on github.com](https://github.com)!



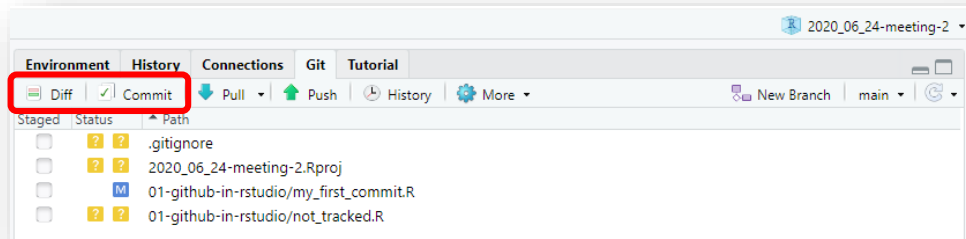
**00:30**

# RStudio git tab

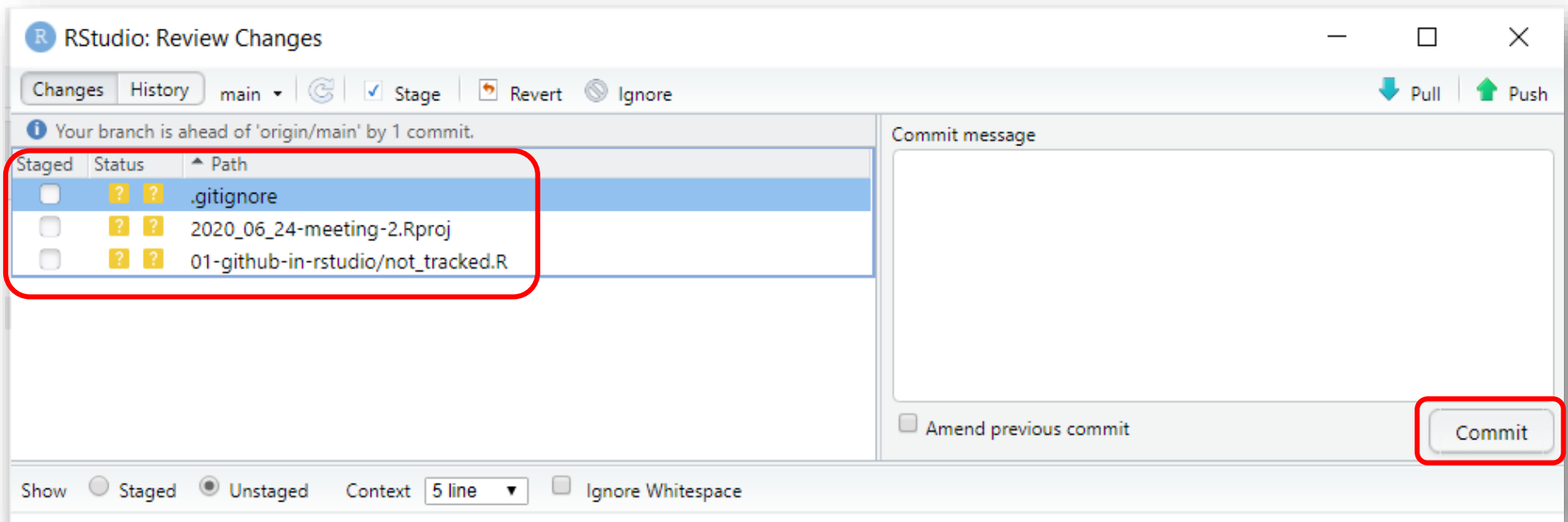
Interface to control RStudio / Git interaction



# Commit tab

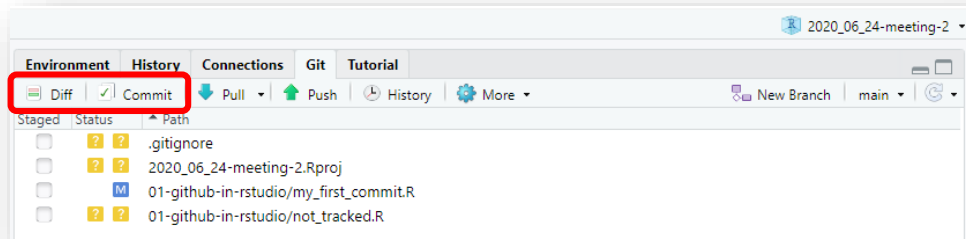


Review status of files in the project  
Stage & commit

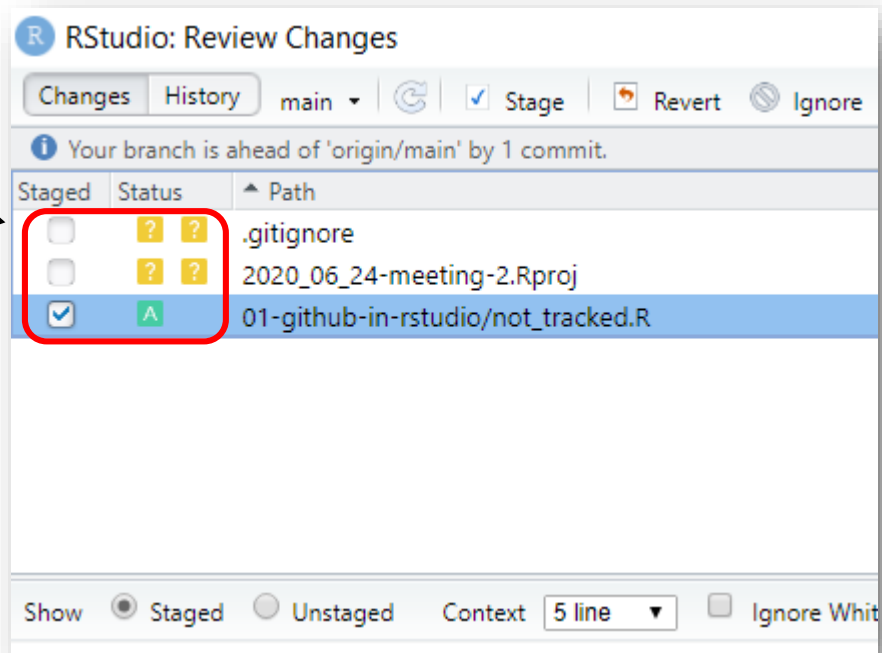




# Commit tab



Review status of files in the project  
Stage & commit



## File statuses

**Untracked:** changes won't be included in the next commit →



**Staged:** changes ready for next commit →



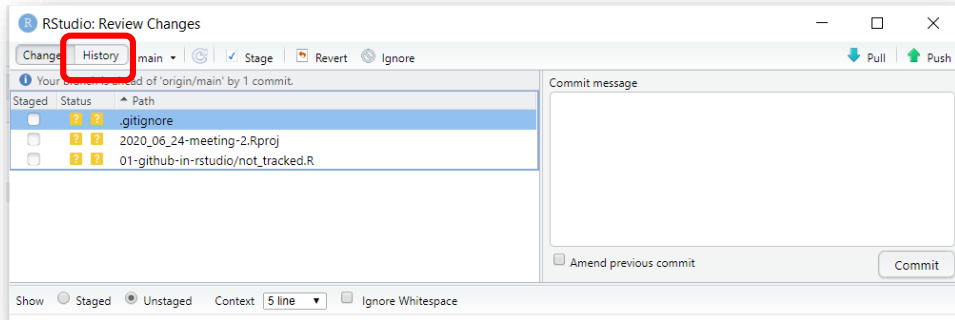
**Modified:** file is tracked and was locally changed →



Command `git add` adds changes to the **staging** area.

**In RStudio** we can `git add` to the staging area by clicking the “Staged” checkbox.

# History tab



The image shows the 'RStudio: Review Changes' window with the 'History' tab selected. The window displays a list of commits in a table format, including the subject, author, date, and SHA. The current commit is highlighted in blue. Below the table, the commit details are shown, including the SHA, author, date, subject, and parent. The diff for the selected commit is displayed at the bottom, showing changes to the file '01-github-in-rstudio/my\_first\_commit.R'.

Subject	Author	Date	SHA
HEAD -> refs/heads/main Stage script	Andrea De Angelis <andreadeangelis84@>	2020-10-28	0d76246a
origin/main origin/HEAD Update my_first_commit.R	Andrea De Angelis <andreadeangelis84@>	2020-10-28	ff3ef518
Create my_first_commit.R	Andrea De Angelis <andreadeangelis84@>	2020-10-28	9434fea7
Update README.md	Andrea De Angelis <andreadeangelis84@>	2020-10-28	62fe1cb6
Update README.md	Andrea De Angelis <andreadeangelis84@>	2020-10-28	9339691b
Initial commit	Andrea De Angelis <andreadeangelis84@>	2020-10-28	f69760d3

Commits 1-6 of 6

**SHA** 0d76246a9afe2d2fdebabda1ca1081cd6a82bc12  
**Author** Andrea De Angelis <andreadeangelis84@gmail.com>  
**Date** 2020-10-28 09:04  
**Subject** Stage script  
**Parent** ff3ef5181b556b582f8c44ff98eea68b02a1a0c0  
[01-github-in-rstudio/my\\_first\\_commit.R](#)

**01-github-in-rstudio/my\_first\_commit.R** [View file @ 0d76246a](#)

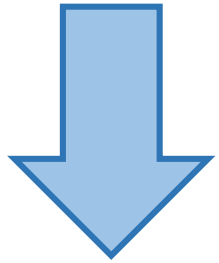
```
@@ -1,2 +1,4 @@
1 1 library(tidyverse)
2 2 qplot(mpg$cty)
3 3 qplot(mpg$year)
4 4 qplot(mpg$year, mpg$hwy)
```



# Basic team workflow



1



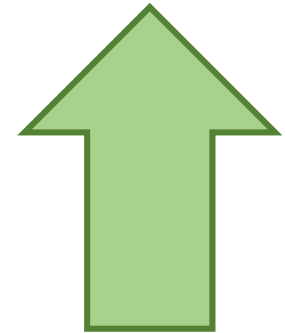
**Pull before starting  
and once in a while**

2



`git add`  
`git commit`  
**Repeat**

3



**Push every few commits**

# In case of fire



1. git commit



2. git push



3. leave building

# Test!



# Your Turn

Why should you use a VC system?

A

To simplify the  
workflow

B

To manage many files

C

To collaborate

D

To track & undo  
every change

**00:15**

# Your Turn

What should you do as you start a new working session on GitHub? Assume you work in a team.

A

I push

B

I pull

C

I start working  
and do commits

D

I check the status  
and then pull

**00:15**

# Your Turn

Do you always need to pull before start working?

**TRUE**

**FALSE**

**00:15**



# Your Turn

Which is a good-enough GitHub workflow?

A

`pull, commit, push`

B

`pull, commit, commit,  
commit, push`

C

`pull, push, commit`

D

`push, pull, commit`

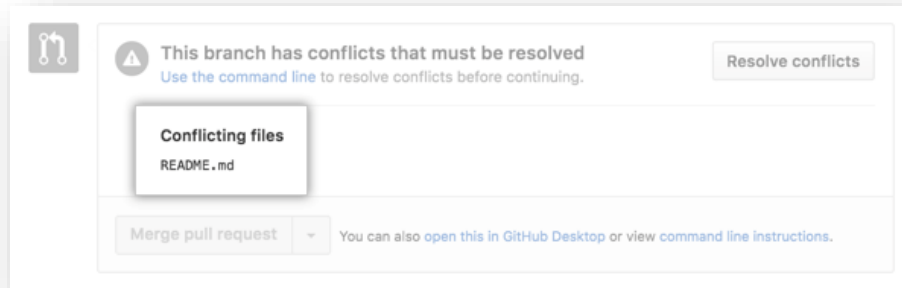
**00:15**

# Questions?

"But what if two developers change the same line  
in the same script in two different ways?"

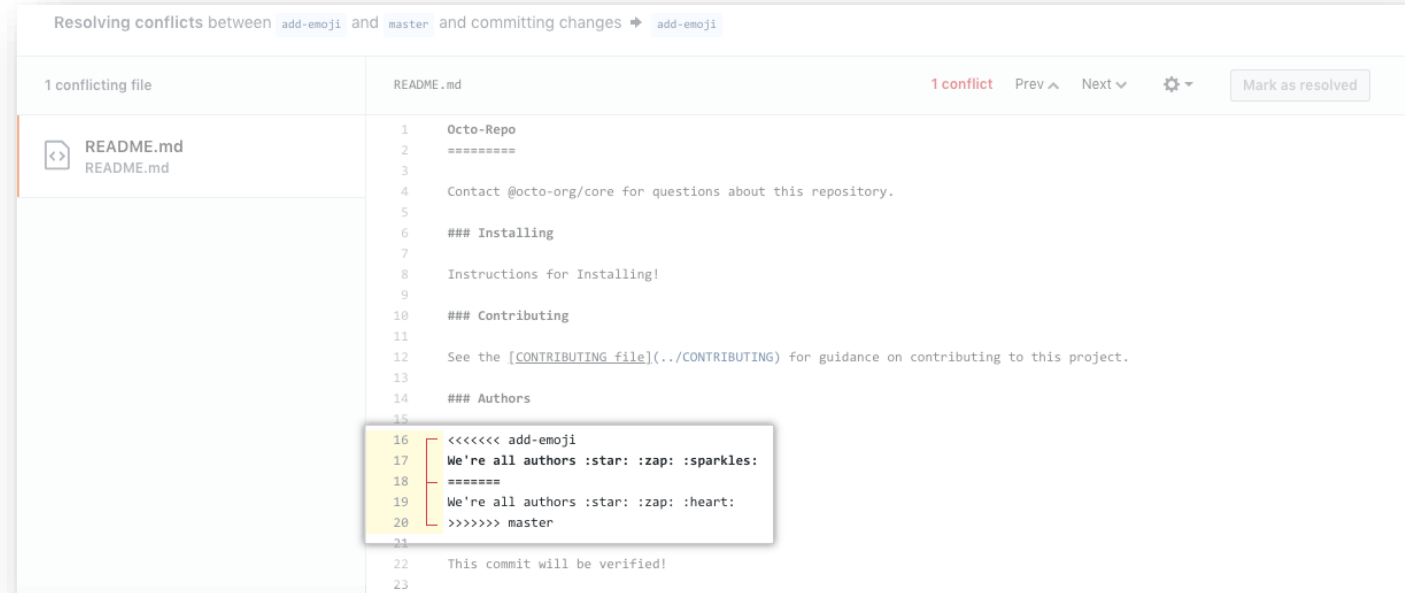


# Merge conflicts



Ref: 22.4 Dealing with Conflicts.

<https://happygitwithr.com/git-branches.html>

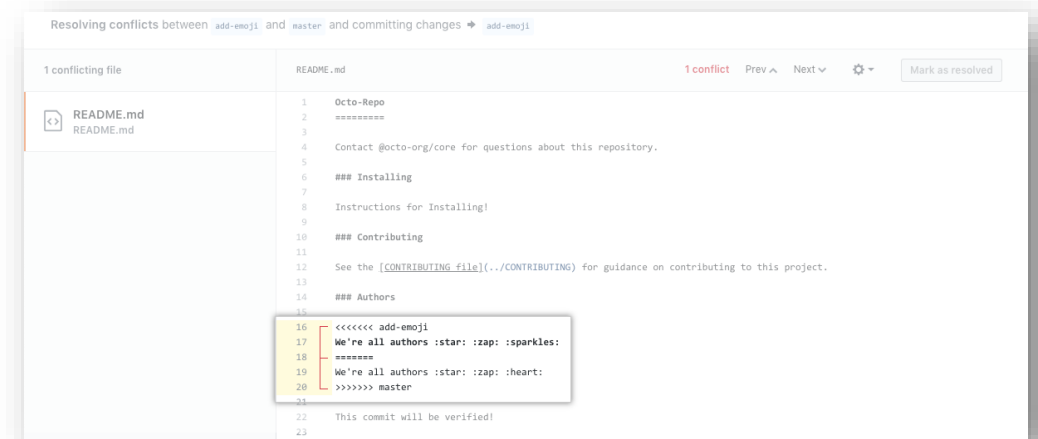


<https://help.github.com/en/github/collaborating-with-issues-and-pull-requests/resolving-a-merge-conflict-on-github>

# Solve conflicts

Just manually delete the bad version and the >>>> and <<<< lines. E.g., leave just:

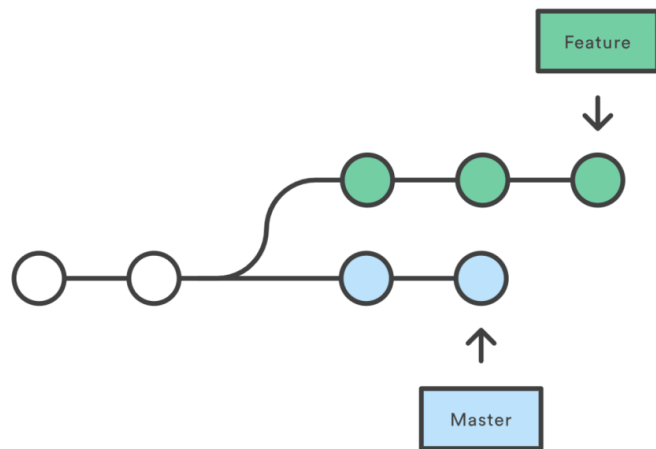
**We're all authors :star: :zap: :sparkles:**



<https://help.github.com/en/github/collaborating-with-issues-and-pull-requests/resolving-a-merge-conflict-on-github>

# Next steps

Use **branches** to safely experiment new features

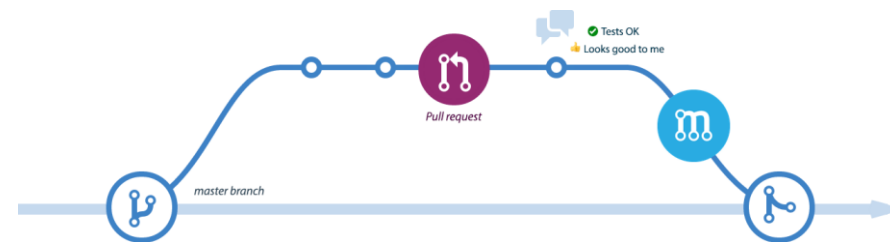


Use **issues** for effective collaboration

[Link](#): master issues in 10-min

- Labels
- Assignees
- Reviewers
- @mentions
- [ ] [X] TODO list
- #issue-references

Use **pull requests** to discuss changes



# Useful links

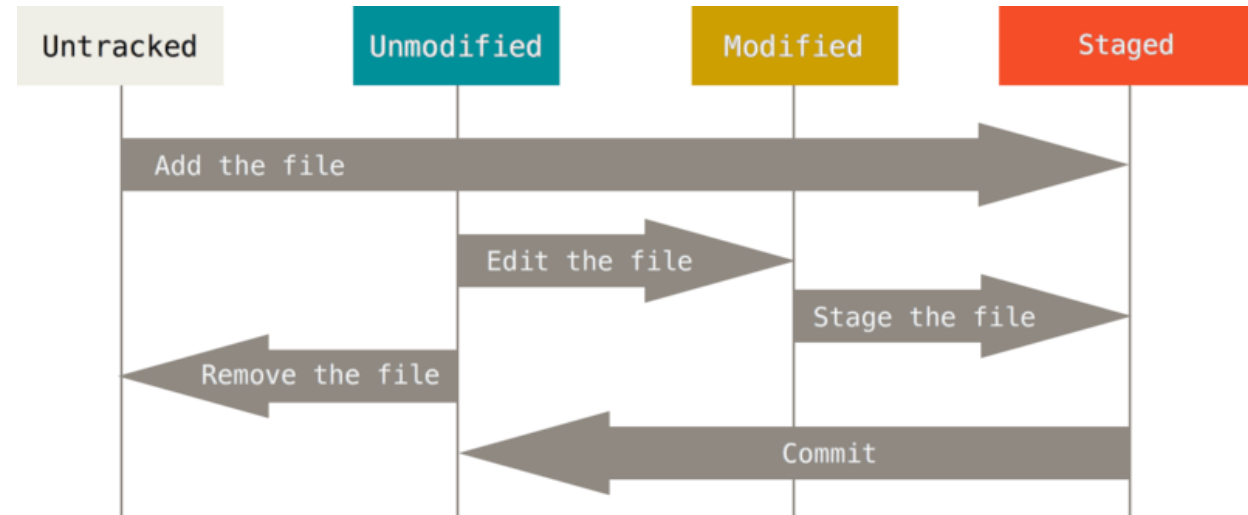
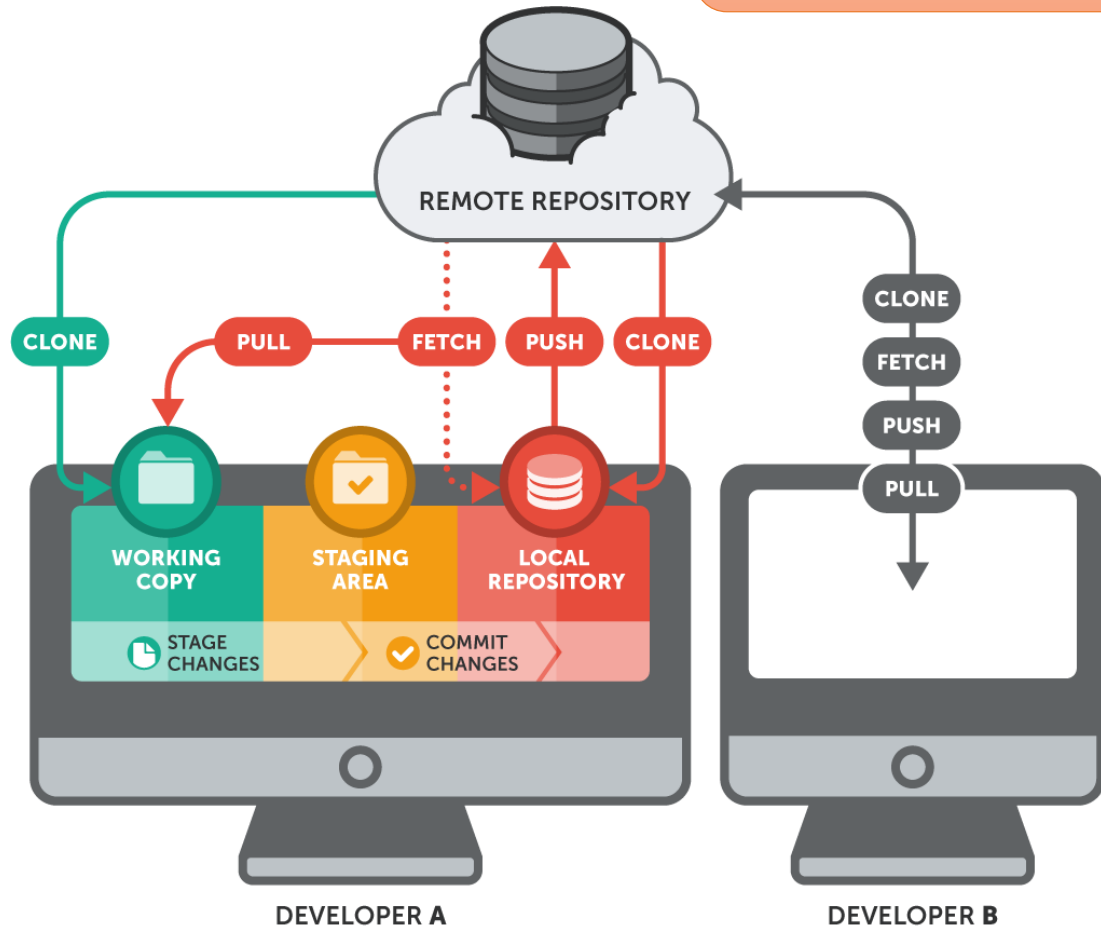
**Workflow**

**Branching**

**Pull requests**

**Manage merge  
conflicts**

# Useful links



## Main git commands explained



# Main references



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[Git and GitHub chapter](#)

R Packages book by H. Wickham

Short and to the point

[Happy Git and GitHub for the useR](#)

by Jenny Bryan

A whole book about git for RStudio users

[GitHub Learning Lab](#)

A GitHub course... on GitHub!

[Git Handbook](#)

Git started in one hour

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*Dr Andrea De Angelis*

*28 October 2020*



<https://www.meetup.com/Lucerne-R-User-Group/>



[https://github.com/Lucerne-R-User-Group/2020\\_06\\_24-meeting-2](https://github.com/Lucerne-R-User-Group/2020_06_24-meeting-2)

