Introduction to Git & GitHub

Terminal, RStudio

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AG Landscape Ecology

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Why Git?

- Version control software
- Modern software development
  - most R-packages
- Git is the **software**
- GitHub is the **platform**

Other Plattforms

- GitLab: https://about.gitlab.com
- BitBucket: https://bitbucket.org

Install Git

https://github.com/git-guides/install-git

On Linux

```
sudo apt update
sudo apt install git-all
```

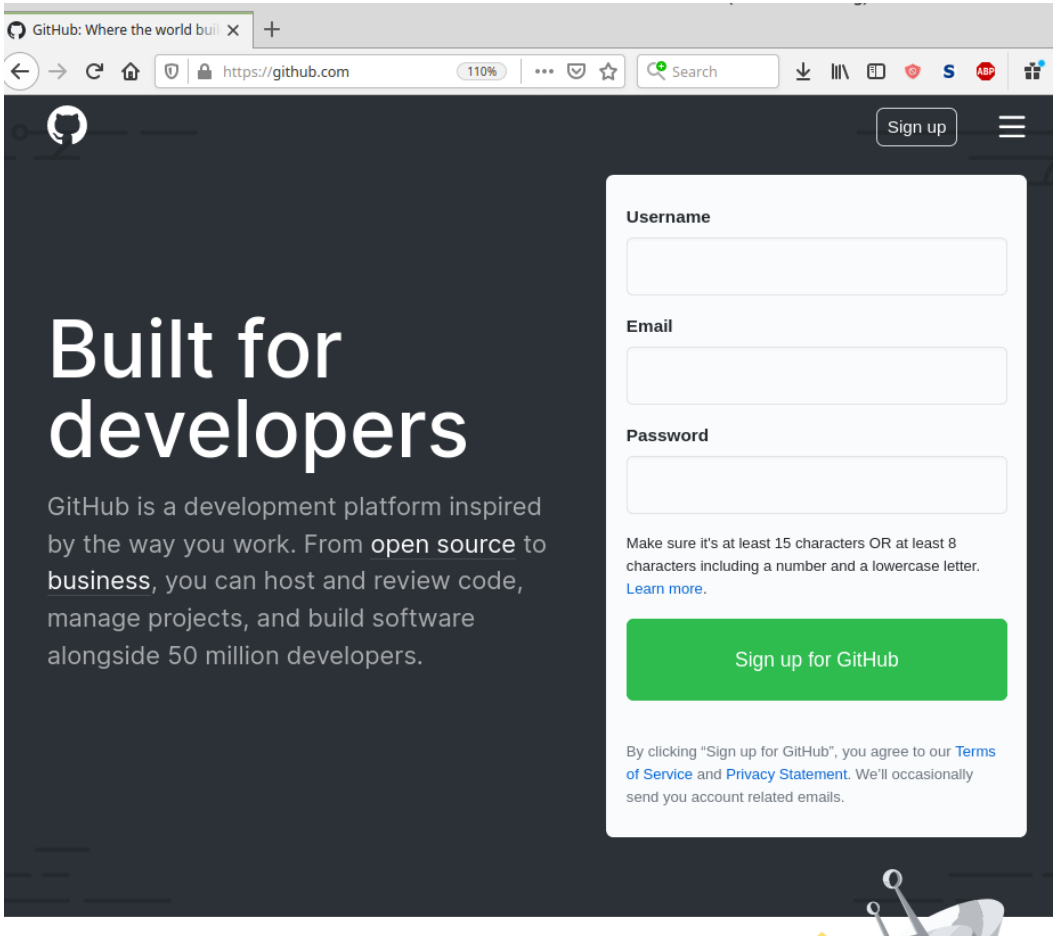
On windows

Download manually

Start Git

```
cd my_directory
git init
```

Create a GitHub account

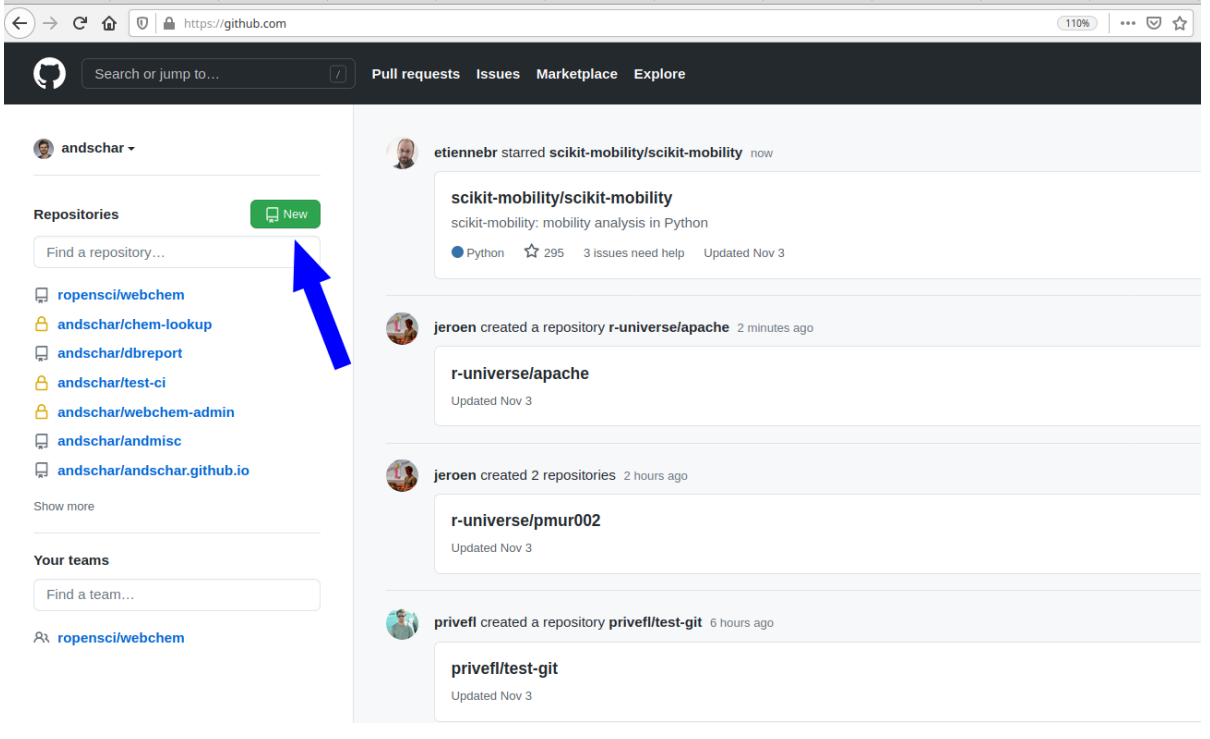


Create (initialize) repository

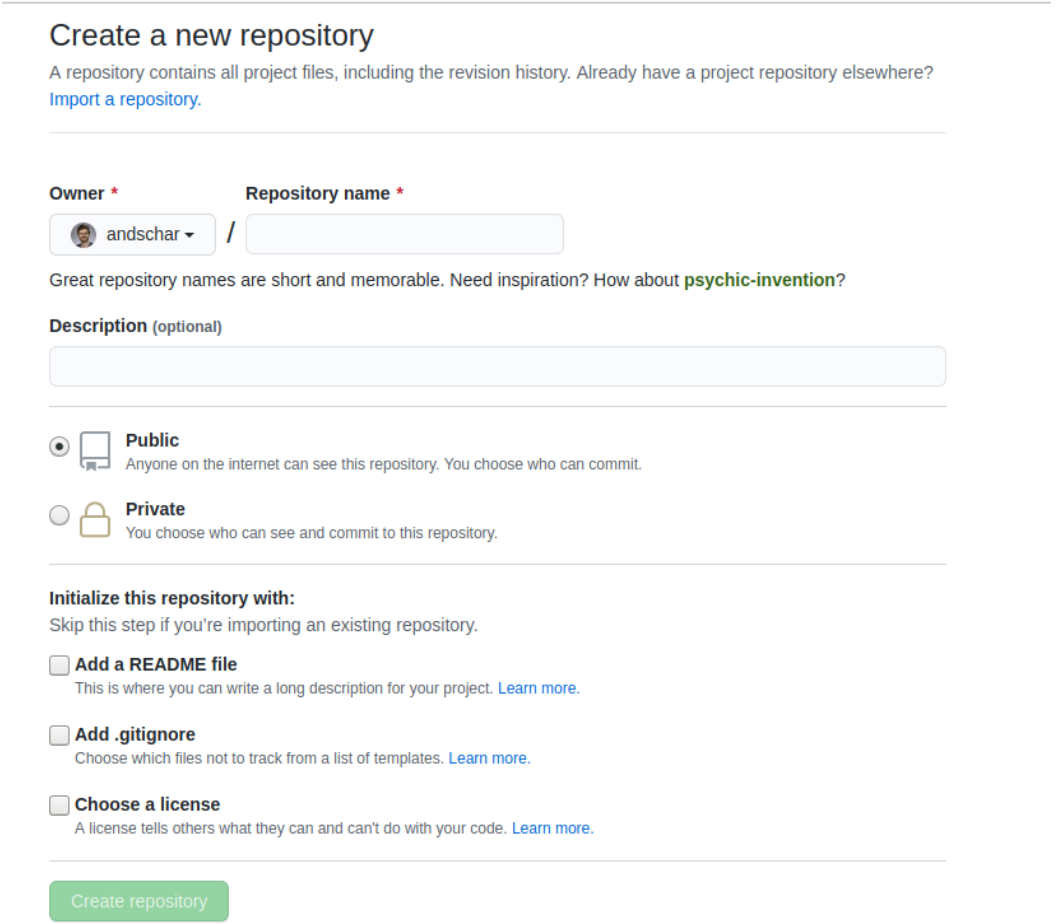
Locally

```
git init
```

Remote

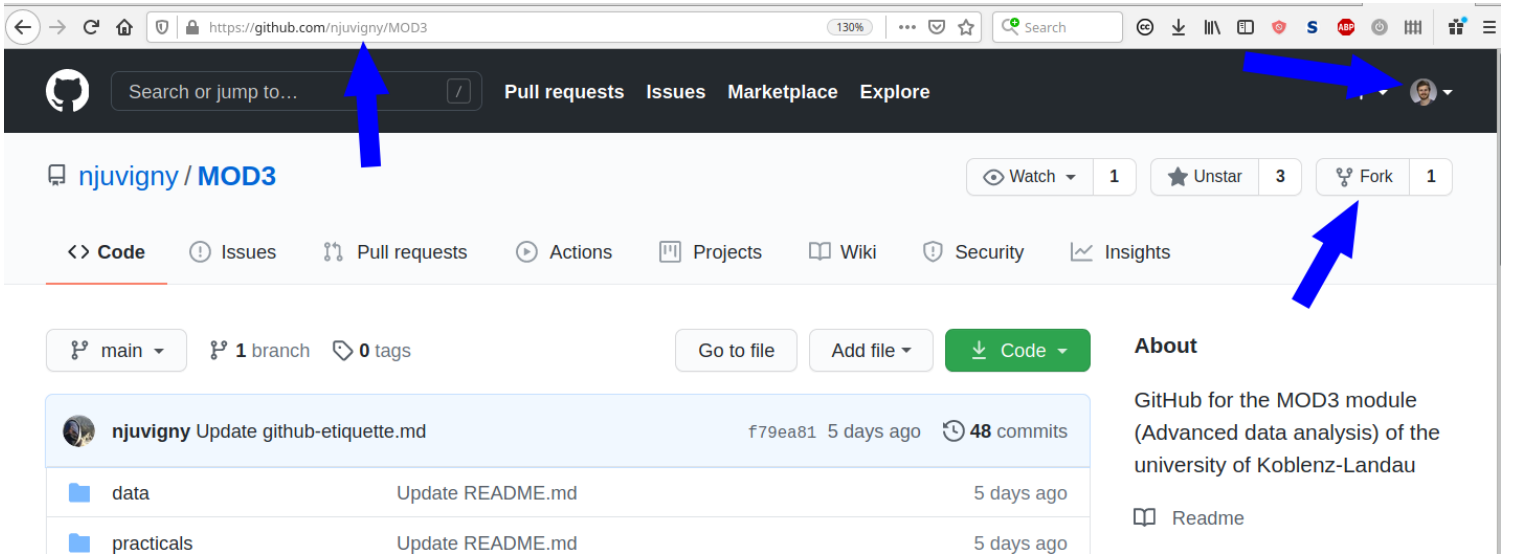


Create (initialize) repository



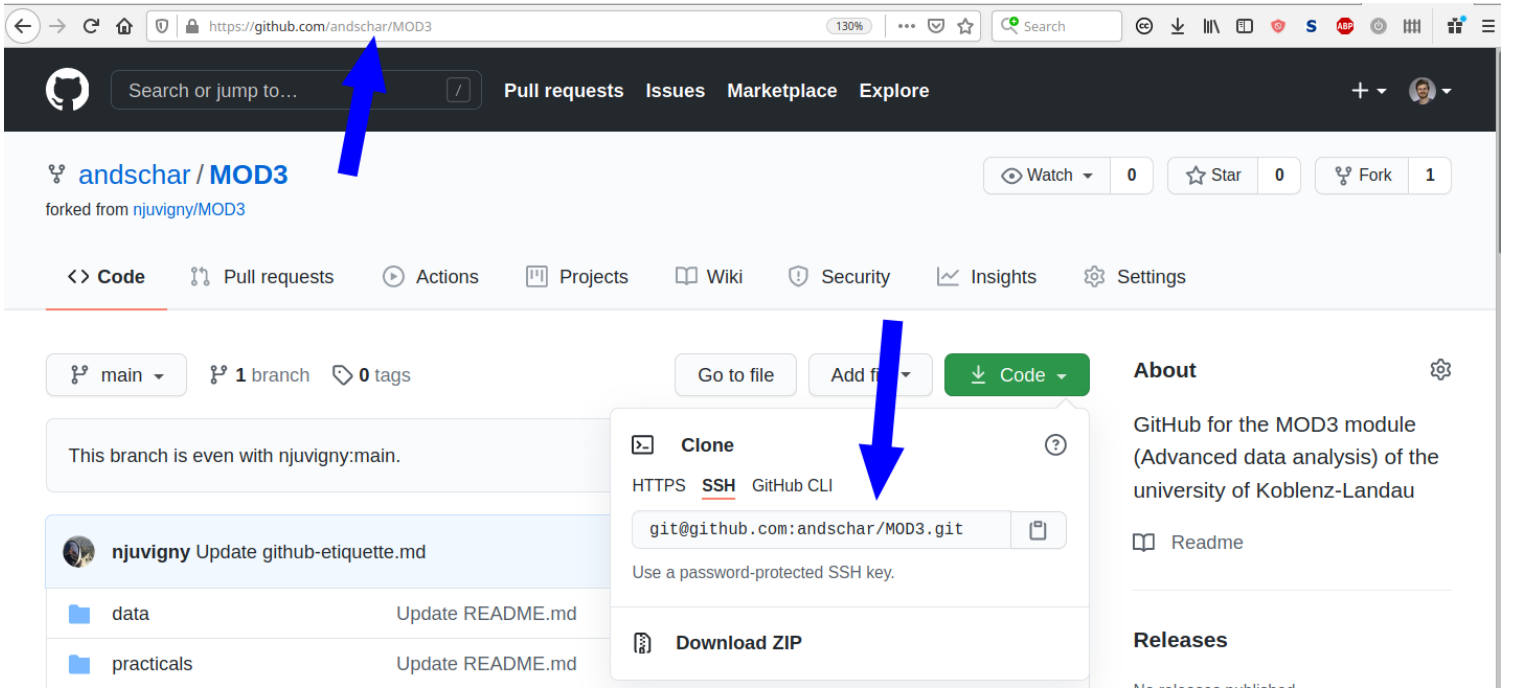
Fork a repository

- Fork someone's repo to your GitHub account



Clone a repository

- Clone **your** fork (i.e. version) to your local machine

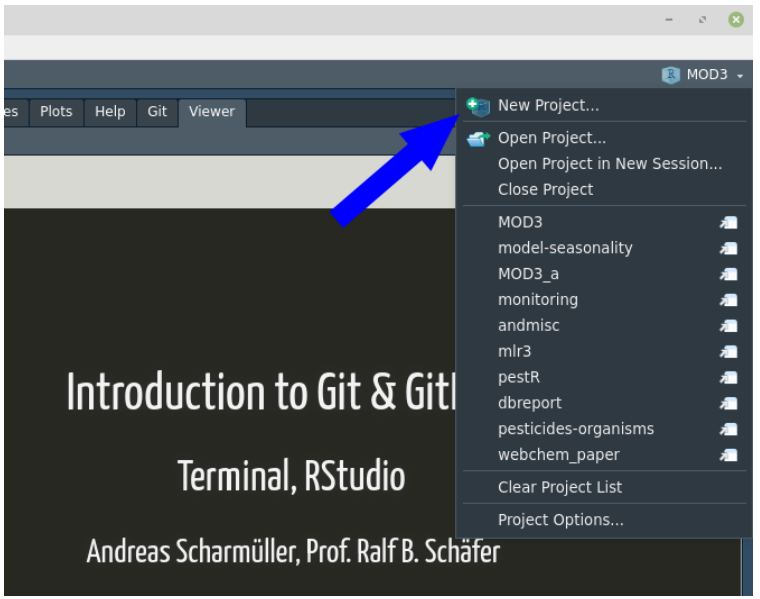


Clone a repository

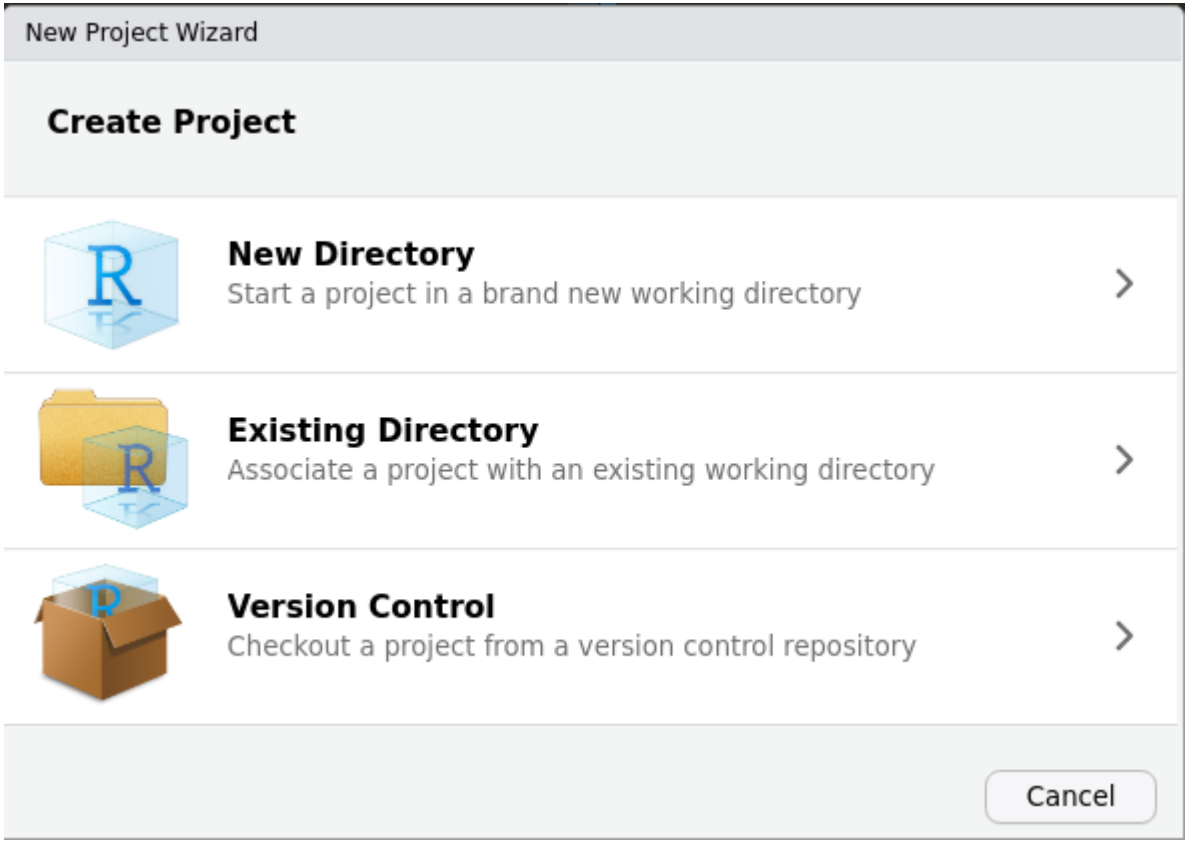
Command line

```
cd Projects
git clone git@github.com:njuvigny/MOD3.git # SSH
git clone https://github.com/njuvigny/MOD3.git # HTTPS
```

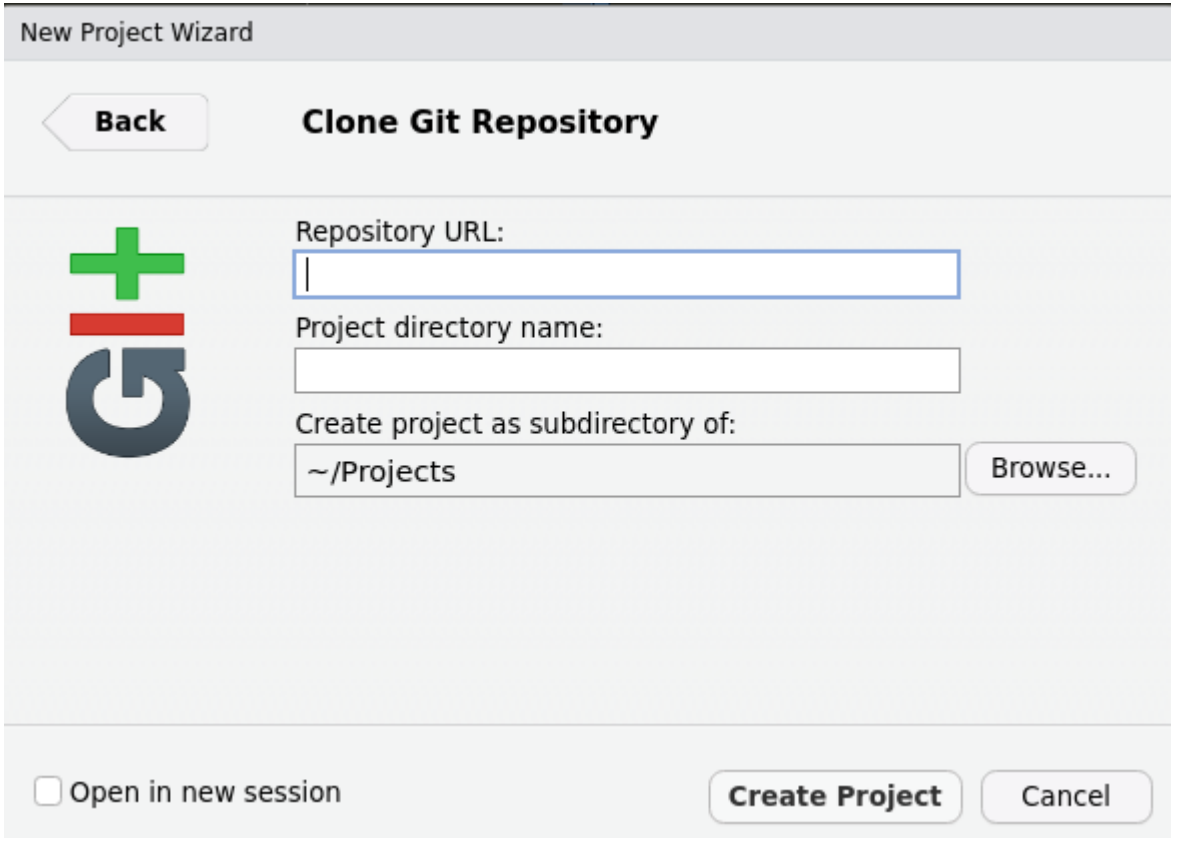
RStudio



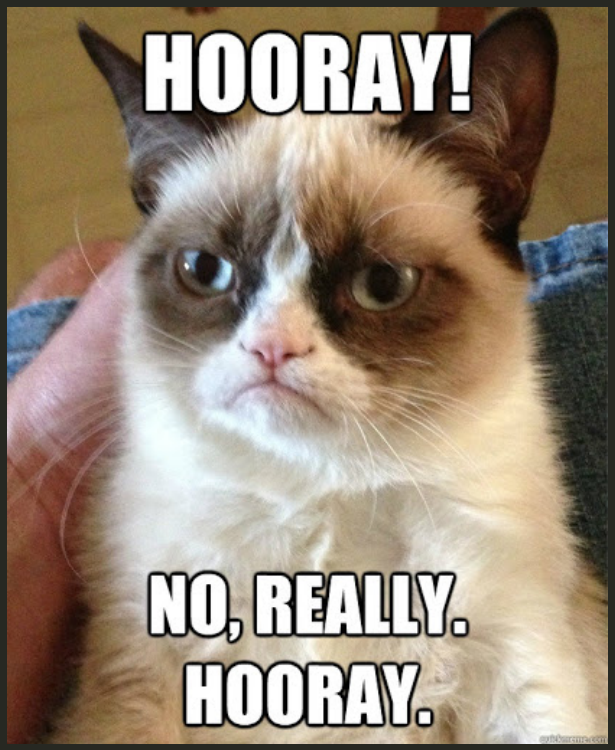
RStudio


New Project Wizard
Create Project
New Directory
Start a project in a brand new working directory
Existing Directory
Associate a project with an existing working directory
Version Control
Checkout a project from a version control repository
Cancel

RStudio


New Project Wizard
Back
Clone Git Repository
Repository URL:
Project directory name:
Create project as subdirectory of:
~/Projects
Browse...
Open in new session
Create Project
Cancel

First repository!!

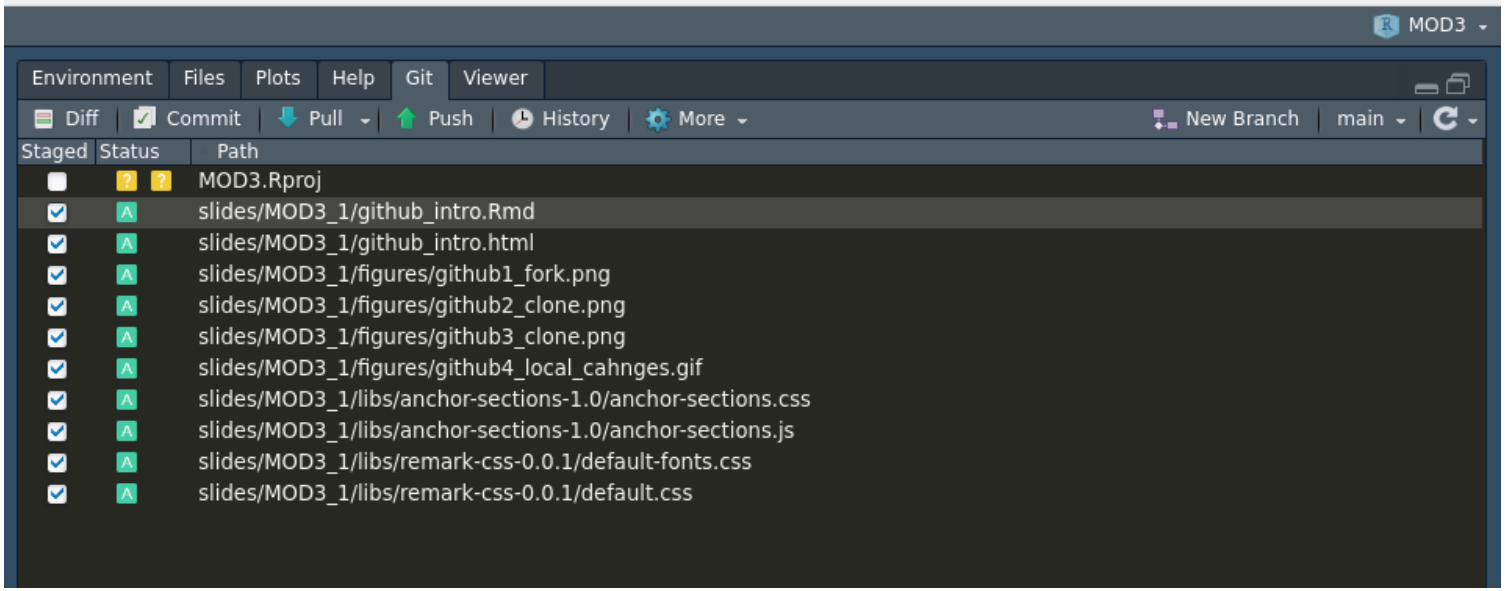


Local changes

Make changes to the `.txt`, `.R`, `.python` or to whatever file...

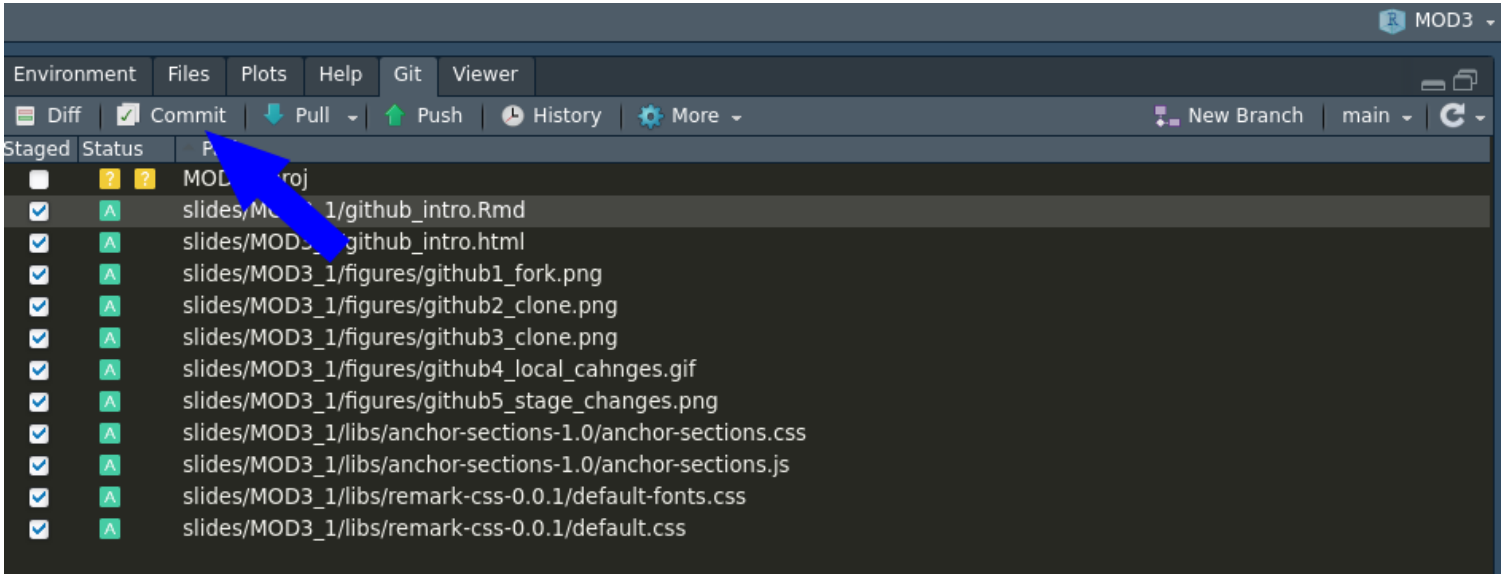
Stage your changes

```
git add file.txt
git add *.txt
git add -A
```



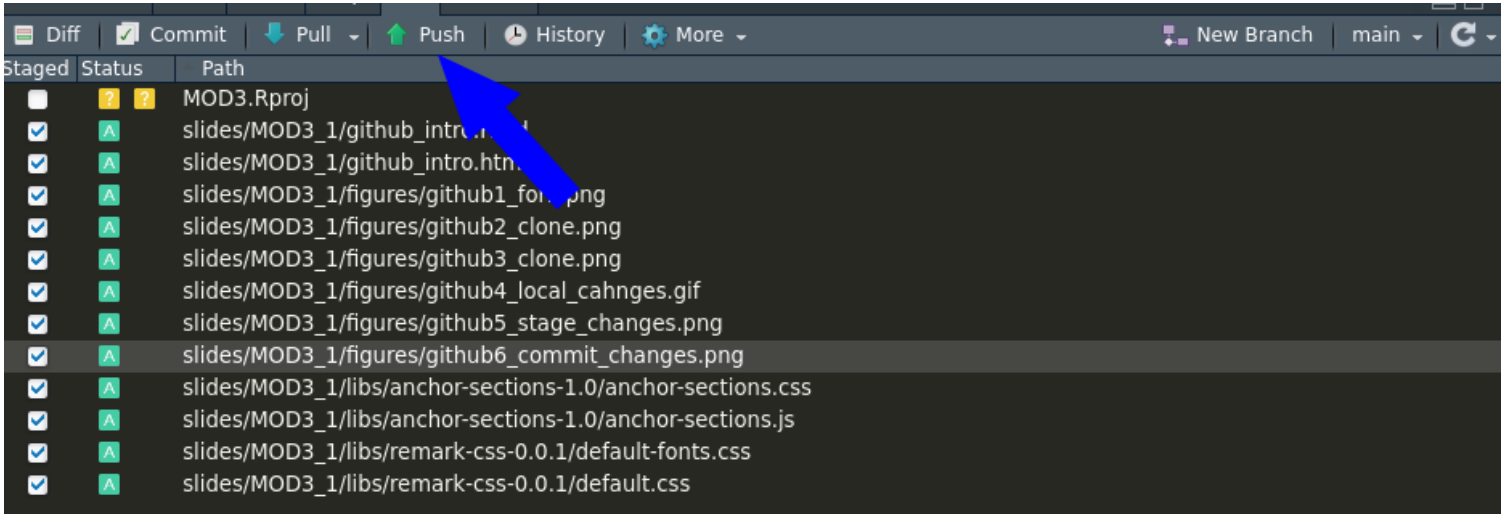
Commit changes

```
git commit -m 'Patch-1'
```



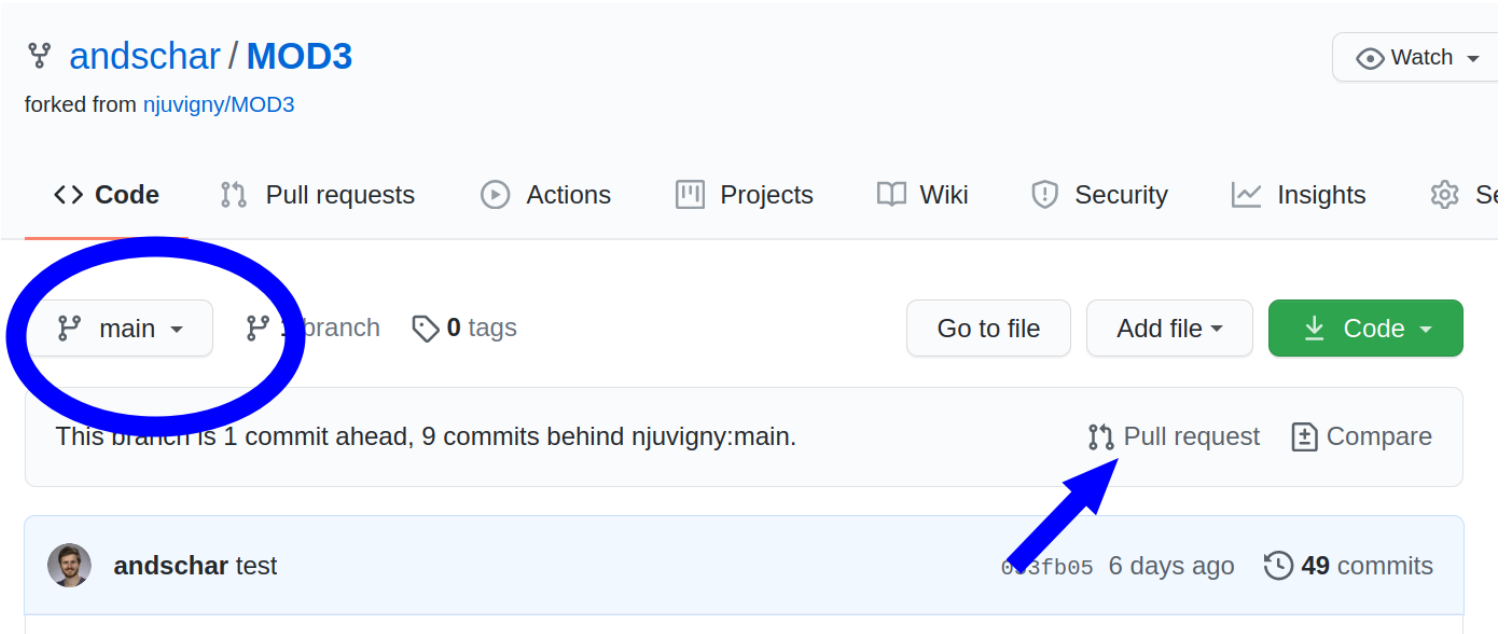
Push to your repo (origin)

```
git push origin master
git push origin main
```



Pull Request

From your main branch to the remote main branch



Git/Github Workflow

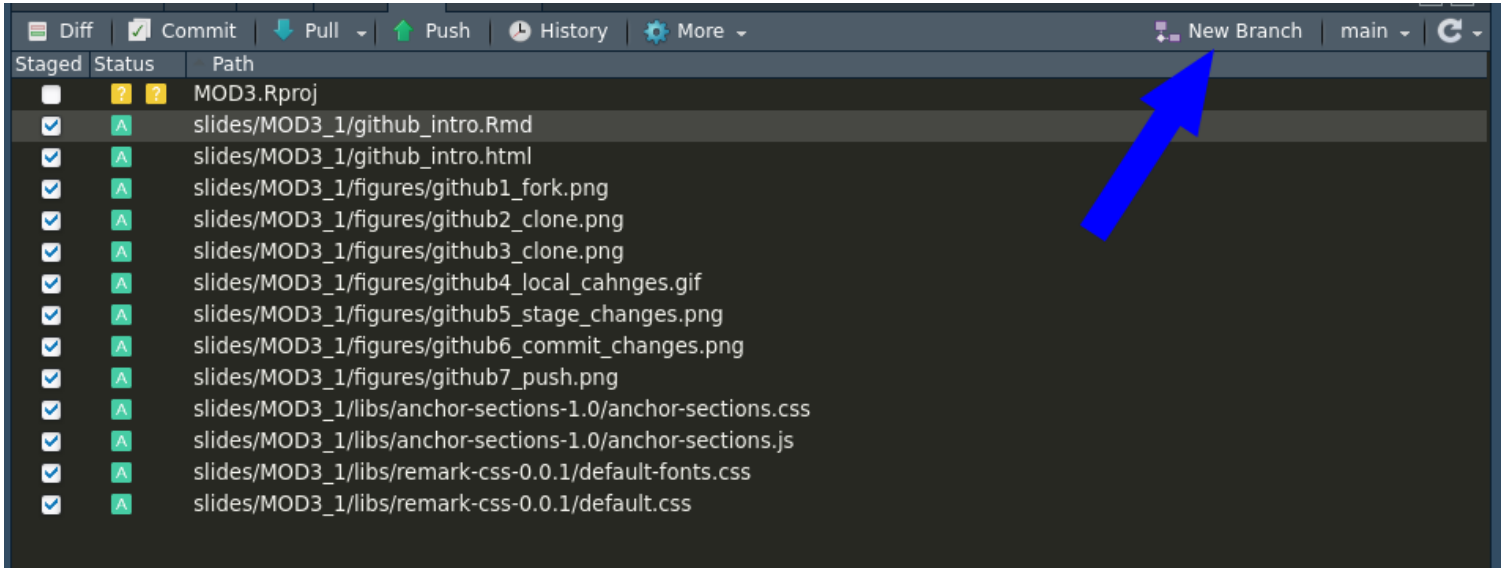
1. Create or Fork a repo
2. Clone the repo to local machine
3. Local changes
4. Stage (i.e. add) & Comit changes to Git tree
5. Push to origin
6. Create a Pull-Request against the remote repository

Branches

Branch

Create/Switch Branch

```
git checkout -b dev_scharmueller
git checkout main
git status
git branch
```



Branch

Merge Branch

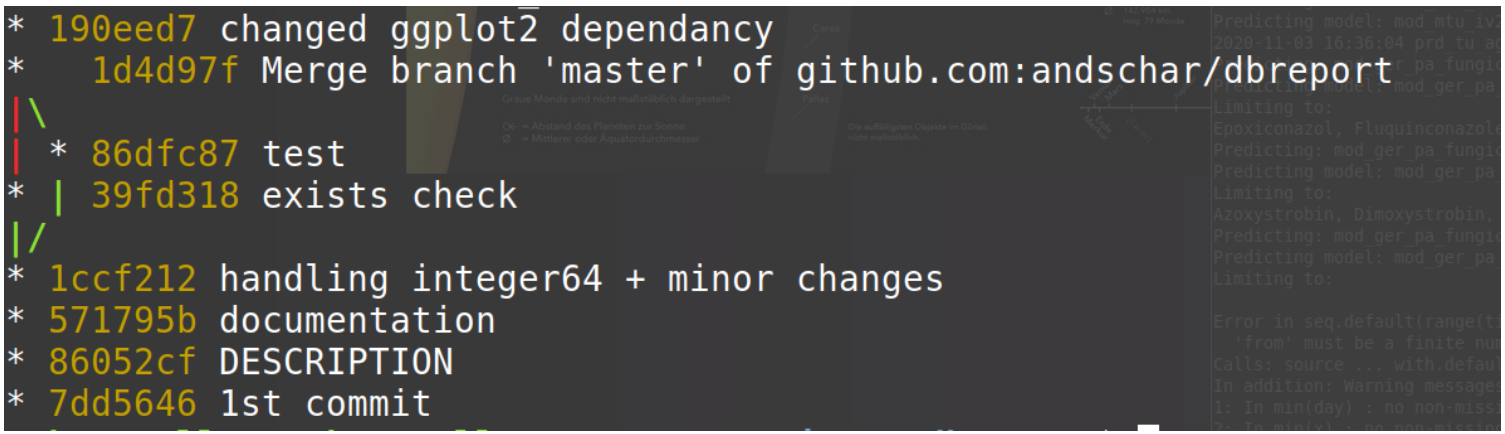
```
git checkout master
git merge dev_scharmueller
```

Branch

Merge example

First 8 commits of my R-package repo: **andschar/dbreport**

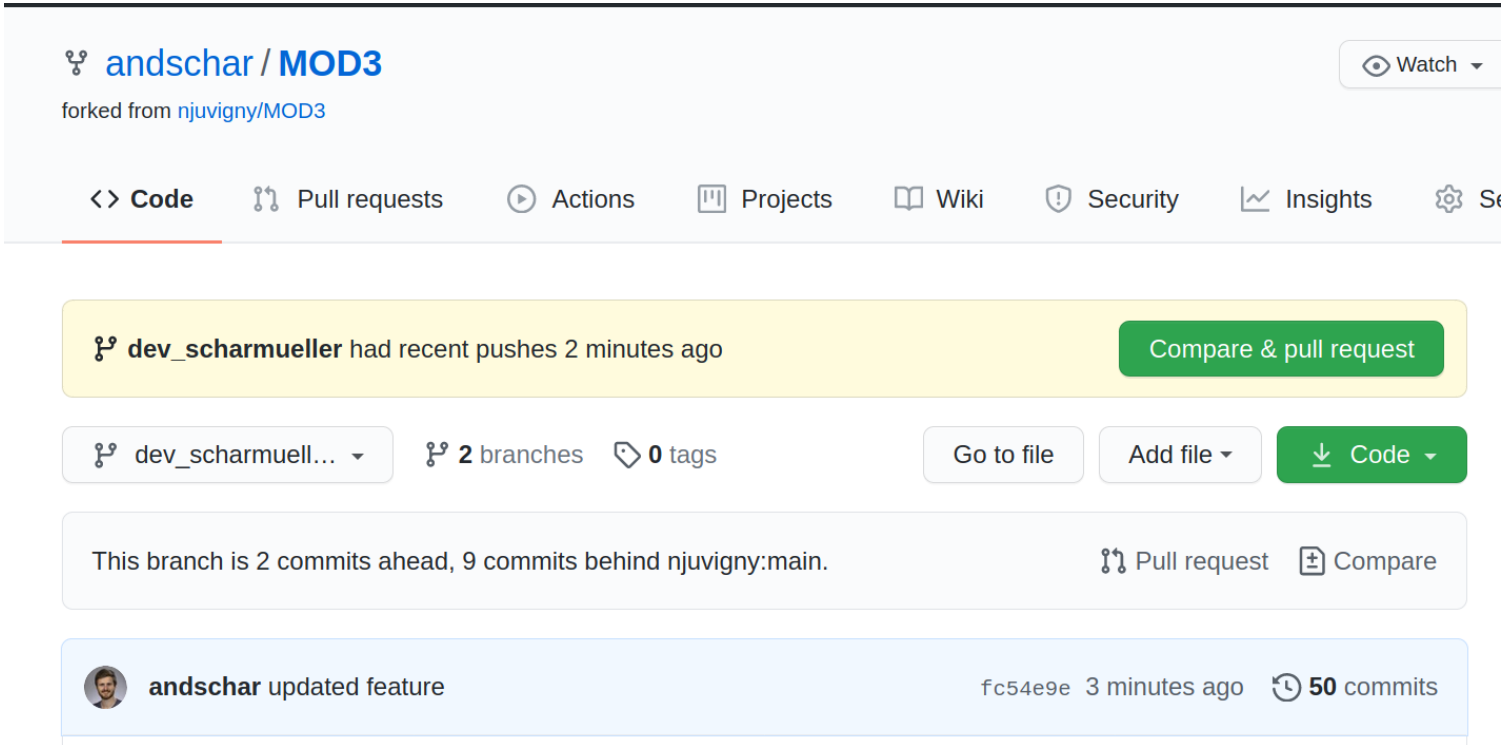
```
git log --all --decorate --oneline --graph
```



Branch

Pull Request

From your dev_XXX branch to a new remote dev_XXX branch




ONE DOES NOT SIMPLY
UNDERSTAND GIT
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Material

- OpenOlat
- StackOverflow
- YouTube
- https://guides.github.com/activities/hello-world
- https://support.rstudio.com/hc/en-us/articles/200532077-Version-Control-with-Git-and-SVN

Made with

- https://github.com/rstudio/rmarkdown
- https://github.com/yihui/knitr
- https://github.com/yihui/xaringan

Task

- Fork Noel's repo: https://github.com/njuvigny/MOD3
- Clone it to local machine
- Create a new branch named dev_YOURSURNAME
- Change the file **git_intro/task.Rmd** according to the steps described in said file
- Create a .html out of the .Rmd file
- Add & Commit both files in the new branch
- Push local changes to your repo (HINT: this might cause some trouble ;))
- Create a Pull Request against Noel's repo

Thank you for your attention!