

# Introduction to Git & GitHub

Terminal, RStudio

Andreas Scharmüller, Prof. Ralf B. Schäfer

AG Landscape Ecology

2020/10/29 (updated: 2020-11-04)

# Why Git?

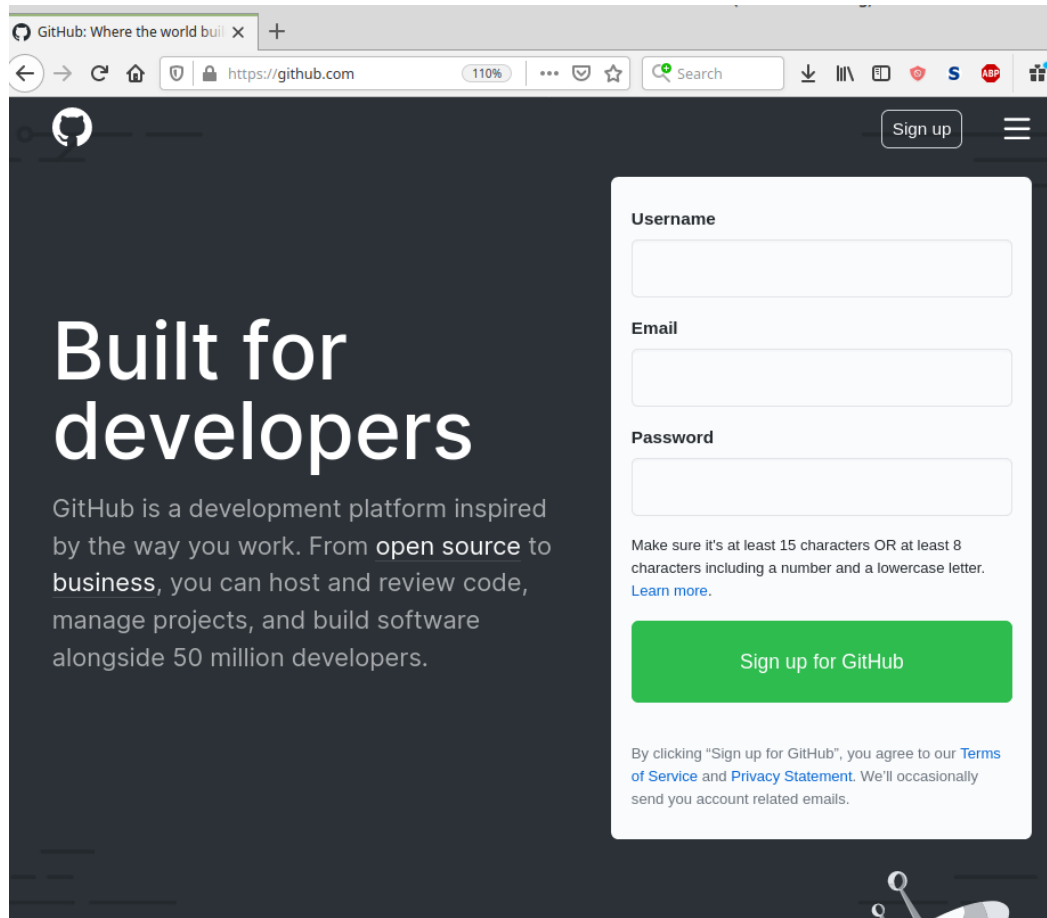
- Modern software development
  - most R-packages
- Version control
- Git is the **software**
- GitHub is the **platform**



## Other Platforms

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

# Create a GitHub account



The image is a screenshot of the GitHub website's sign-up page. The browser's address bar shows 'https://github.com' with a search icon and a 'Search' button. The GitHub logo is in the top left, and a 'Sign up' button is in the top right. The main heading 'Built for developers' is in large white text on a dark background. Below it, a paragraph describes GitHub as a development platform inspired by the way you work, from open source to business, for hosting and reviewing code, managing projects, and building software alongside 50 million developers. To the right, a white sign-up form contains three input fields: 'Username', 'Email', and 'Password'. The 'Password' field has a note: 'Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter.' with a 'Learn more' link. Below the form is a large green button labeled 'Sign up for GitHub'. At the bottom of the form, a disclaimer states: 'By clicking "Sign up for GitHub", you agree to our Terms of Service and Privacy Statement. We'll occasionally send you account related emails.'

GitHub: Where the world builds software

Sign up

## Built for developers

GitHub is a development platform inspired by the way you work. From **open source** to **business**, you can host and review code, manage projects, and build software alongside 50 million developers.

**Username**

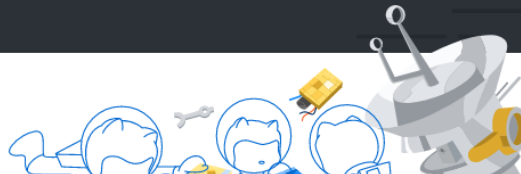
**Email**

**Password**

Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter. [Learn more.](#)

Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our [Terms of Service](#) and [Privacy Statement](#). We'll occasionally send you account related emails.

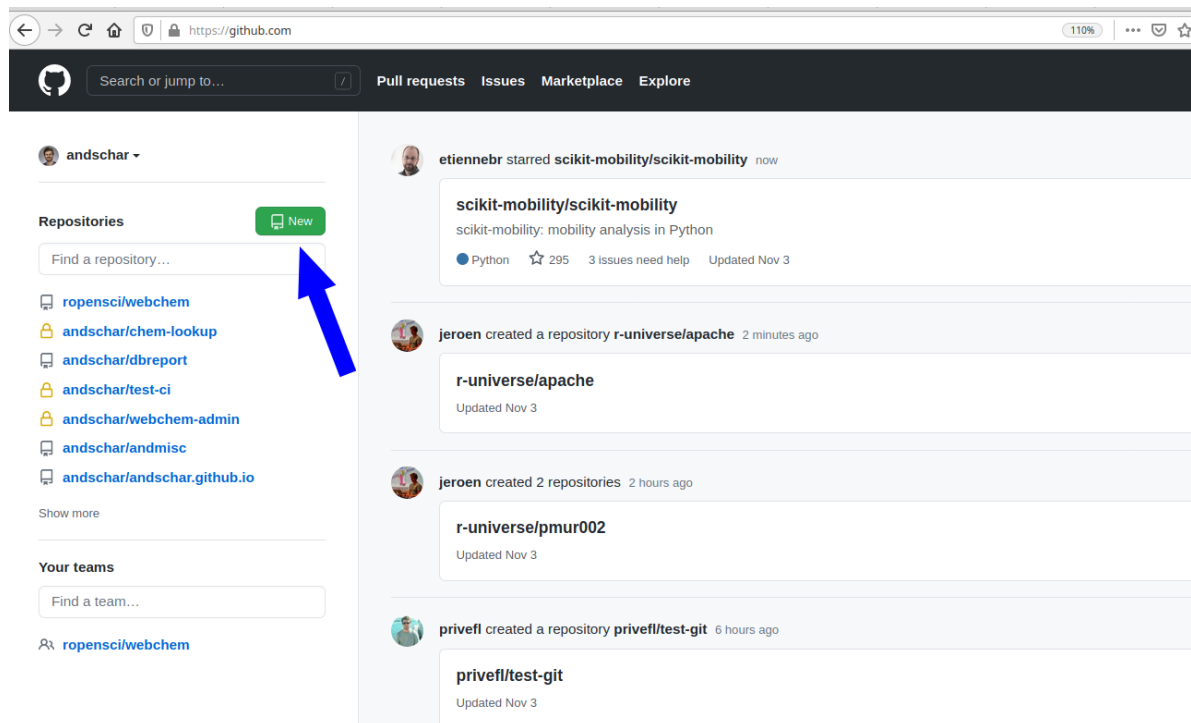


# Create (initialize) repository

## Locally

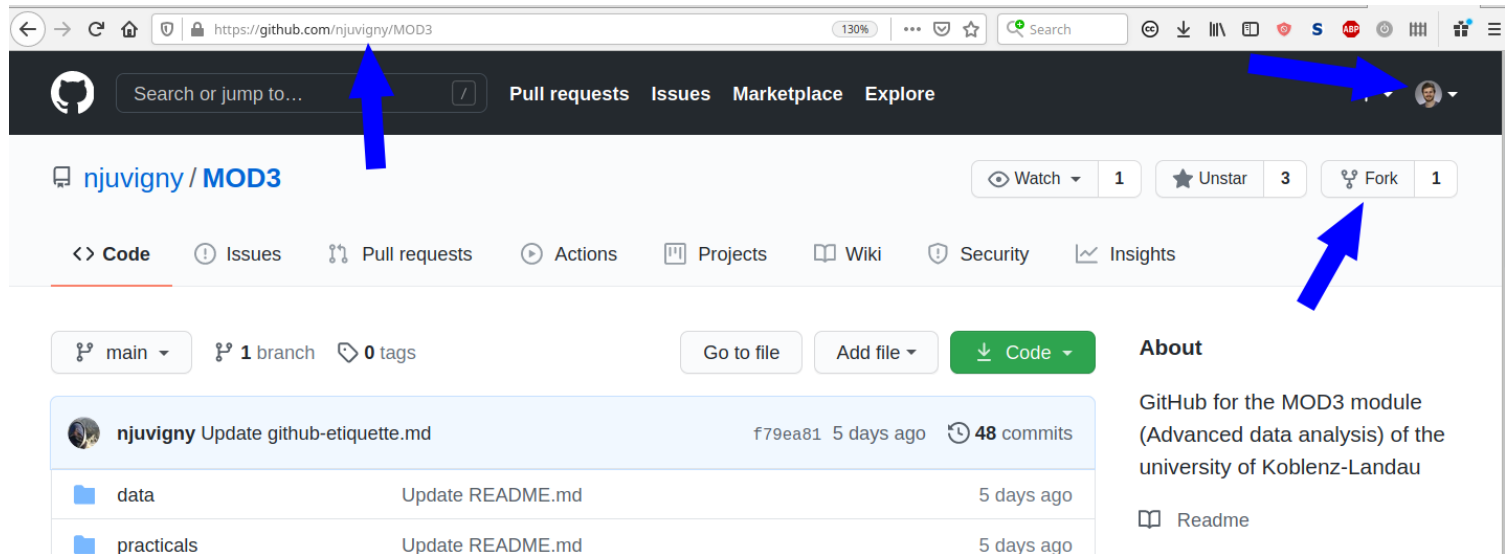
```
git init
```

## Remote



# Fork a repository

- Fork someone's repo to your GitHub account



# Clone a repository

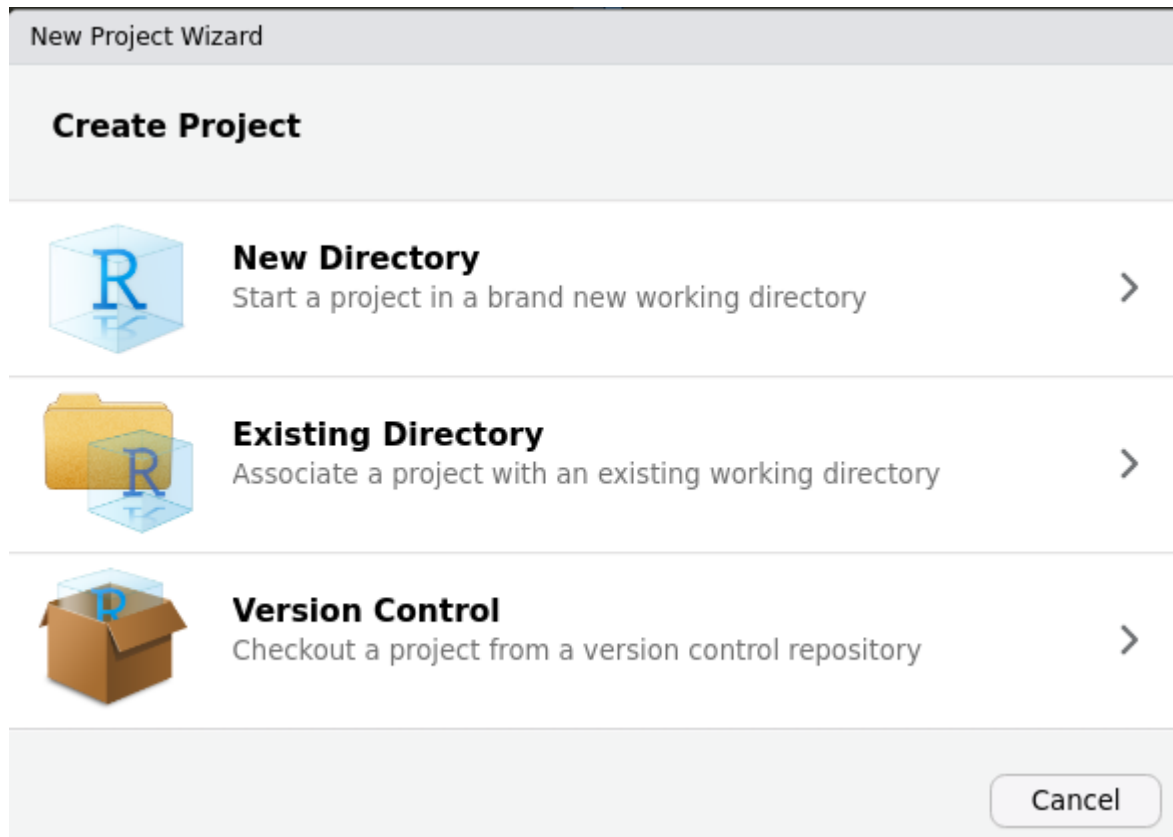
- Clone **your** fork (i.e. version) to your local machine

The screenshot shows the GitHub interface for the repository 'andschar / MOD3'. A blue arrow points to the search bar at the top, which contains the text 'Search or jump to...'. Another blue arrow points to the 'Code' button in the 'Add file' dropdown menu. The repository page displays the following information:

- Repository name: **andschar / MOD3**
- Forked from: [njuvigny/MOD3](#)
- Buttons: Watch (0), Star (0), Fork (1)
- Navigation tabs: Code, Pull requests, Actions, Projects, Wiki, Security, Insights, Settings
- Branches: main (1 branch), 0 tags
- Message: This branch is even with njuvigny:main.
- Recent commits: njuvigny Update github-etiquette.md
- Files: data (Update README.md), practicals (Update README.md)
- Clone options: HTTPS, SSH, GitHub CLI
- SSH URL: `git@github.com:andschar/MOD3.git`
- Download ZIP button
- About section: GitHub for the MOD3 module (Advanced data analysis) of the university of Koblenz-Landau
- Releases section: No releases published

# Clone a repository

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



# Local changes

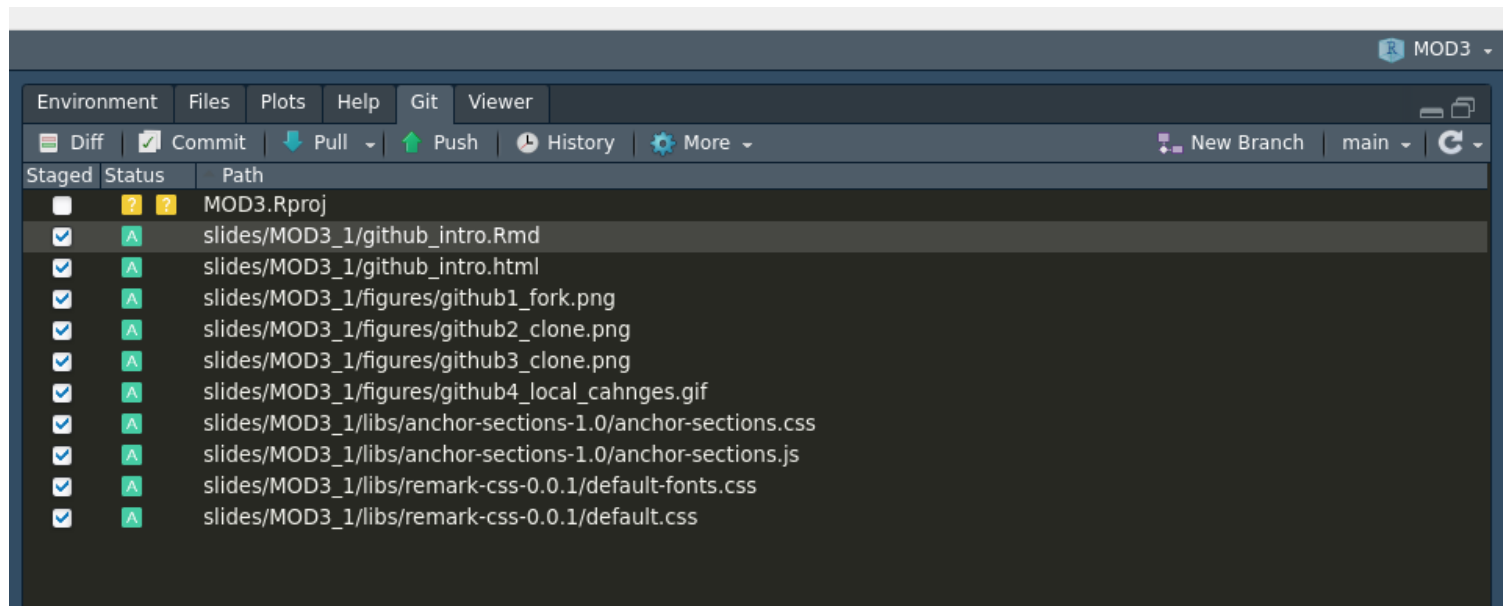
- Make changes to the .txt, .R, .python or to whatever file





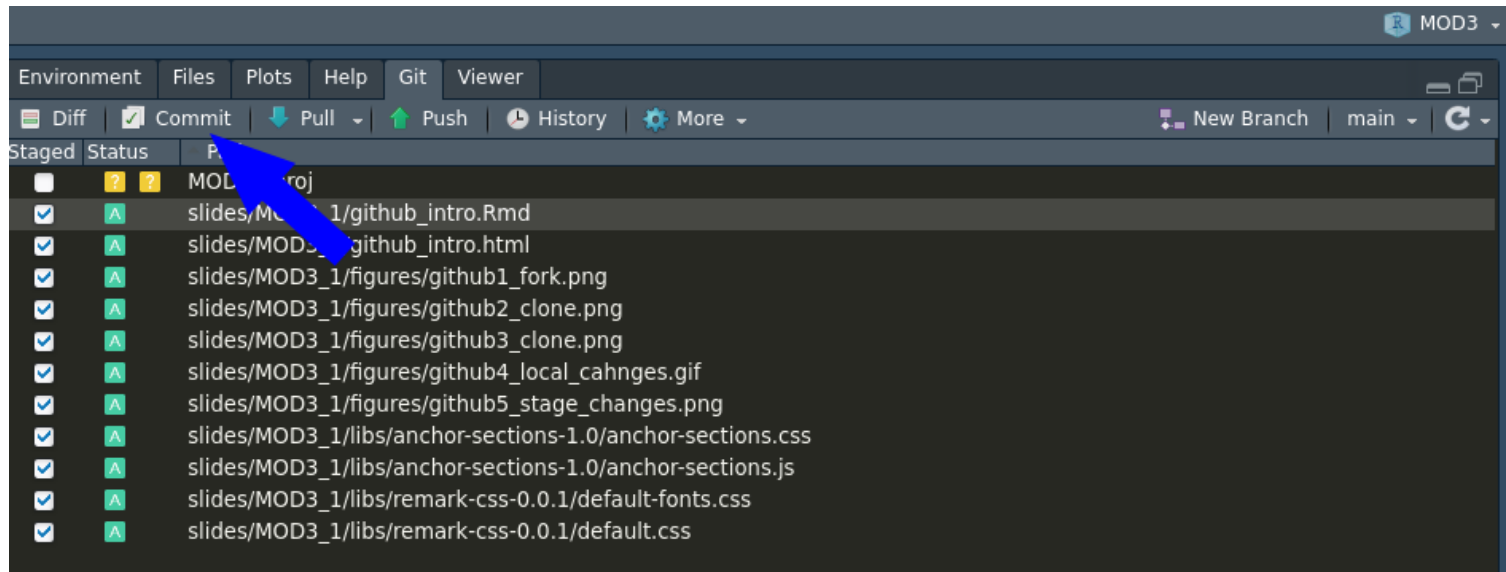
# Stage your changes

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



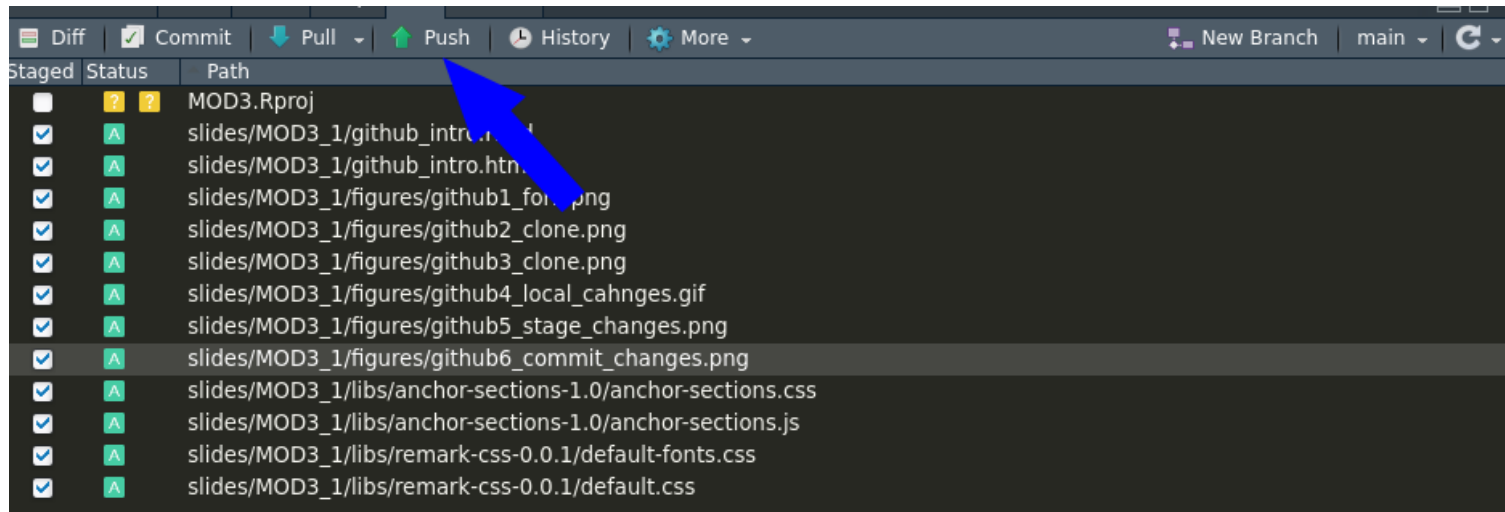
# Commit changes

```
git commit -m 'test'
```



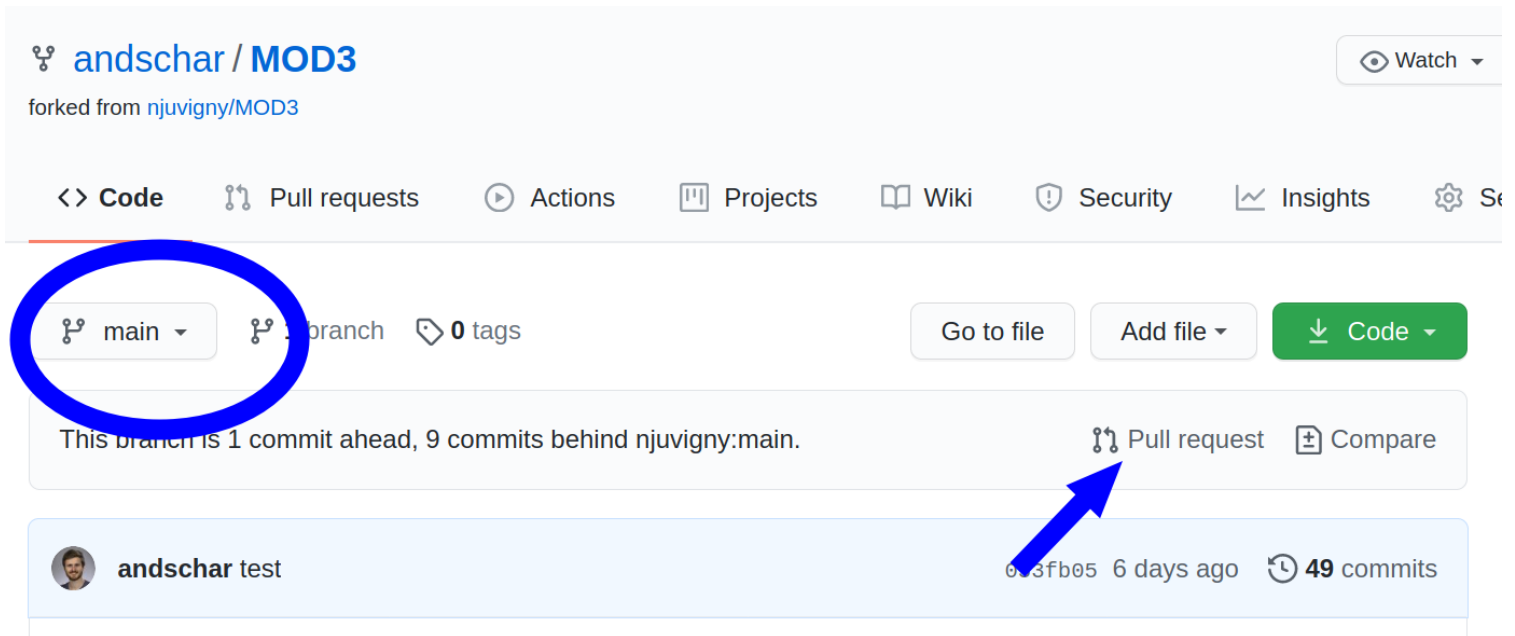
# Push to your repo (origin)

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



# Pull Request

From your main branch to the remote main branch



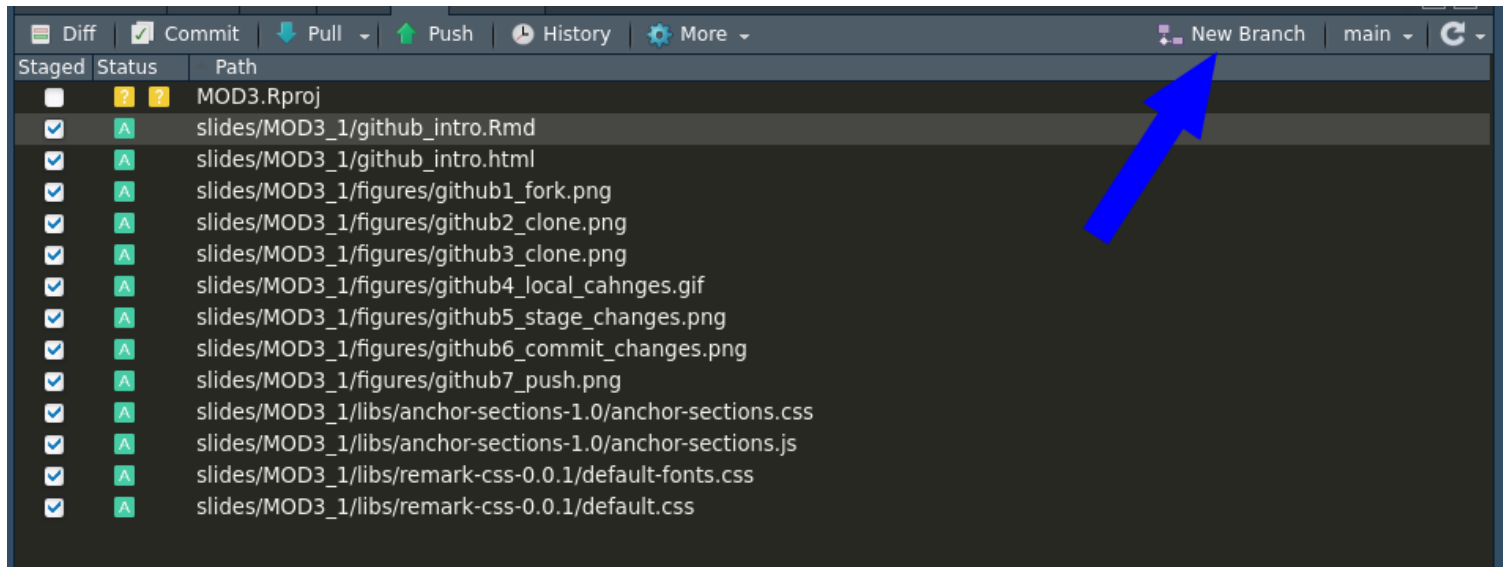
# Branches



# Branch

## Create/Switch Branch

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



# Branch

## Merge Branch

```
git checkout master  
git merge dev_scharmuel
```

# Pull Request

From your dev\_XXX branch to a new remote dev\_XXX branch

andschar / MOD3

forked from njuvigny/MOD3

Watch

<> Code

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

dev\_scharm Mueller had recent pushes 2 minutes ago

Compare & pull request

dev\_scharm Mueller

2 branches

0 tags

Go to file

Add file

Code

This branch is 2 commits ahead, 9 commits behind njuvigny:main.

Pull request

Compare

andschar updated feature

fc54e9e 3 minutes ago

50 commits

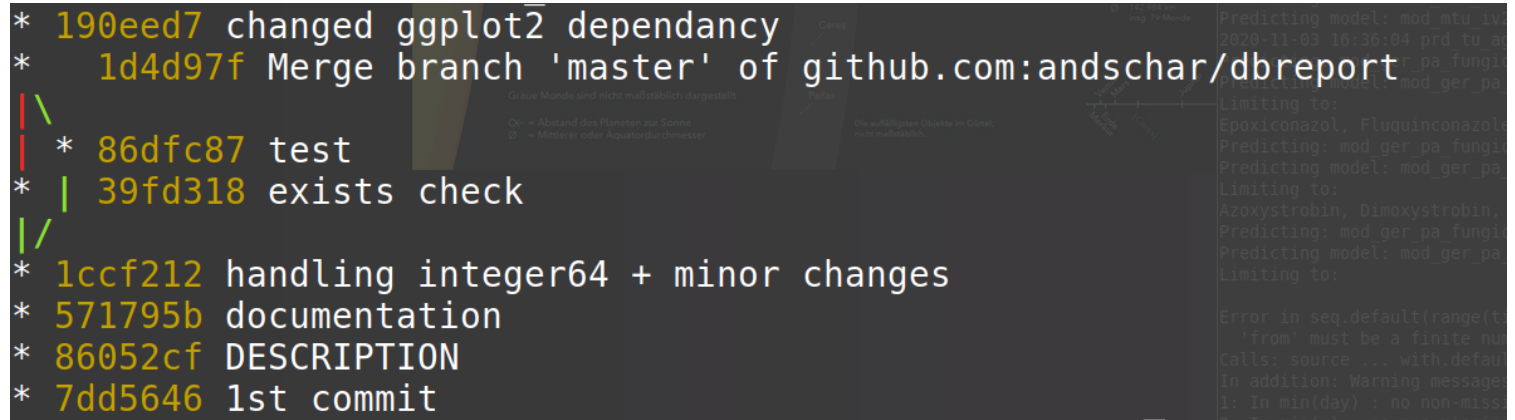


# Branch

First 8 commits of my R-package repo

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

```
* 190eed7 changed ggplot2 dependancy
* 1d4d97f Merge branch 'master' of github.com:andschar/dbreport
| \
| * 86dfc87 test
| * | 39fd318 exists check
| /
* 1ccf212 handling integer64 + minor changes
* 571795b documentation
* 86052cf DESCRIPTION
* 7dd5646 1st commit
```





# 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
- Create a Pull Request against Noel's repo

# 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>

# Other things

- <https://github.com/rstudio/blogdown>
- <https://github.com/r-lib/pkgdown>

**Thank you for your attention!**