

Quantlets



Härdle Hu Petukhina Sterling Zinovyeva

Ladislaus von Bortkiewicz Professor of Statistics

BRG Blockchain Research Center

International Research Training Group

Humboldt-Universität zu Berlin

lrb.wiwi.hu-berlin.de

www.case.hu-berlin.de

irtg1792.hu-berlin.de

Summary

- Quantlets have to be submitted to a repository in the Quantlet Github Organization
- Comply to the styleguide of Quantlets!
- Contribute Quantlets as member or non-member



Outline

1. Styleguide for Quantlets

1.1. Structure of Quantlets Folder

1.2. Metainfo.txt File

1.3. README File

1.4. Example Quantlets

1.5. Special Cases

2. Submission Guide for Members

3. Submission Guide for Non Members



Structure of Quantlet Folder 1

- Each Quantlet Q is a program that needs to be accompanied by a Metainfo.txt file, both files need to be in the same folder.
- Per folder only one Q. If you have multiple Qs structure them in GitHub like this:
 1. \RepositoryName\...\FolderName1\QuantletName1
 2. \RepositoryName\...\FolderName2\QuantletName2
- Give each Q a meaningful name:
 3. The name should start with the project / book / class abbreviation followed by a unique name.
- Each Q shall be executable, hence provide the input data! *If data are classified or too big, provide synthetic data of same structure or talk to the QTeam about alternative options.*
- Save output pictures in the same folder as png or jpg.



Structure of Quantlet Folder 2

- If you have a project which includes multiple major steps, split them into multiple Qs. For example a Q for each of the following steps:
 1. Data collection / scraping / mining,
 2. Data preprocessing,
 3. Data exploration,
 4. Data visualisation.
- The README file is created automatically out of the
 - 5. Metainfo file,
 - 6. Pictures in the same folder (in alphabetical order),
 - 7. Code of the Q.
- Existing README files are not overwritten, if you make changes in the Metainfo file or the Quantlet, please delete the README.



Metainfo.txt File 1

■ Required Meta-Information:

- ▶ **Name of Quantlet:** *Same name as the Quantlet without the program ending (.r,.py,.m,...).* Select a meaningful name!
- ▶ **Published in:** Book / Paper/ Class / other place of publication
- ▶ **Description:** Describe with at least 10 words what this Quantlet does, which techniques are used, what is the applied use case, for what purpose etc.
- ▶ **Keywords:** At least 5 keywords.
- ▶ **Author:** Name of the authors



Metainfo.txt File 2

■ Optional Meta-Information:

- ▶ **See also:** mention related Quantlets, e.g. Quantlets of same project
- ▶ **Submitted:** state the name and the time of the original submission
- ▶ **Datafile:** All datafiles used by your code need to be listed here
- ▶ **Input:** Should contain some new info, which is not written in other metainfo fields
- ▶ **Output:** Should contain some new info, which is not written in other metainfo fields
- ▶ **Example:** Should contain a list of generated plots and descriptions, which are not written in other metainfo fields



Metainfo.txt File 3

- The Metainfo file has to be a YAML debuggable text file.
 - ▶ A template is provided on GitHub.
 - ▶ If the Metainfo file is NOT debuggable the Quantlet is not displayed on Quantlet.de. You can check yourself whether it is debuggable, e.g. on <http://yaml-online-parser.appspot.com/>
- YAML rules:
 - ▶ The colon ‘:’ separates the data field (left) from its description (right).
 - ▶ The dash ‘-’ enumerates list items. Avoid them in text.
 - ▶ Put texts in quotes (single or double), especially if the text is multiline or if special characters, e.g. ‘:’, ‘-’, ‘_’, ..., are used.



README File

- The README file is the representation of the Quantlet, it contains
 - ▶ Name of Quantlet,
 - ▶ Metainfo file,
 - ▶ Graphics in the same folder (only JPEG or PNG),
 - ▶ Source code of Quantlet.
- The README file is automatically created for all Quantlets in the Github organisation.
 - ▶ README files are not overwritten, thus not updated.
 - ▶ If you need an updated README file, delete the README file, a new one is created automatically.



Example Quantlets

- Class projects:
 - ▶ [SPL class WS1617](#)
 - ▶ [DEDA Class SS2021](#)
- Projects with multiple Qs, e.g. thesis:
 - ▶ [FVC - Face Value of Companies](#)
 - ▶ [BLEM](#)



Special Cases

- R Shiny Apps:

1. Program UI and Server in one R Script, e.g.

```
library("shiny")
ui      = shinyUI(...)
server = shinyServer(function(input, output)){...}
app    = shinyApp(ui, server)
```

2. See for example SVCJOptionApp.

- If you have a special case that is not listed below ask your supervisor and if necessary contact the [Quantlet Team](#).



Outline

1. Styleguide for Quantlets

2. **Submission Guide for Members**

2.1. Member in GitHub Quantlet organization

2.2. Submission options:

2.2.1. Submission to existing repository

2.2.2. Fork repository from your account to Quantlet

2.2.3. Create a new repository

3. Submission Guide for Non Members



Member in GitHub Quantlet organization

- Check if you are member in the Quantlet organization (login to GitHub first): <https://github.com/orgs/QuantLet/people>
- If you are not, the owner (Prof. Härdle) or the Quantlet team (quantlet.wiwi@hu-berlin.de) can invite you.



Submission to existing repository

- There are 2 ways to submit to existing repositories:
- Directly:
 - ▶ You need write privileges (by default only the repository admin has such privileges),
 - ▶ the repository admin can grant write privileges,
 - ▶ alter the repository as if it was your own.
- Via pull request:
 - ▶ Step 1: Fork the repository,
 - ▶ Step 2: Commit changes,
 - ▶ Step 3: Create a pull request,
 - ▶ the steps will be explained in the following pages.



Step 1: Fork repository

The screenshot shows a GitHub repository page for 'QuantLet/SPL: Codes pro'. A large red arrow points to the 'Fork' button in the top right corner of the header bar. The header also includes a search bar, navigation links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore', and user profile information for 'Marius'.

QuantLet / SPL

Code Issues 0 Pull requests 3 Projects 0 Wiki Insights

Codes provided by students of the course "Statistical programming languages"

16 commits 1 branch 0 releases 4 contributors

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

mariussterling created README.md (automatically) Latest commit 09cc1ab 6 hours ago

Currency Exchange Rate created README.md (automatically) 6 hours ago

README.md Initial commit 2 years ago

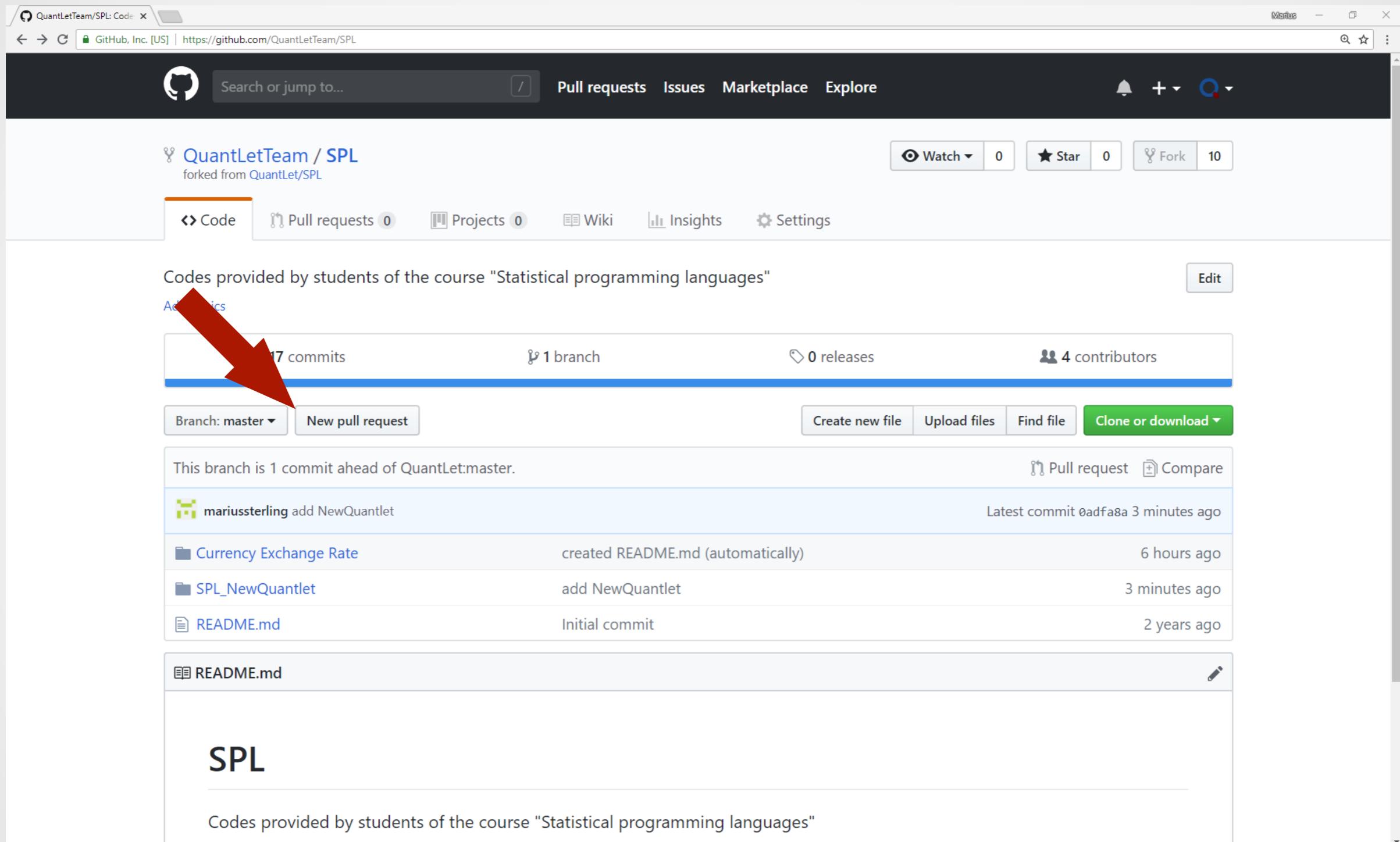
README.md

SPL

Codes provided by students of the course "Statistical programming languages"



Step 2: Commit changes



The screenshot shows a GitHub repository page for 'QuantLetTeam/SPL'. The repository has 17 commits, 1 branch, 0 releases, and 4 contributors. A red arrow points to the 'Branch: master' dropdown menu. The commit history includes:

- mariussterling add NewQuantlet (Latest commit 0adfa8a 3 minutes ago)
- Currency Exchange Rate created README.md (automatically) 6 hours ago
- SPL_NewQuantlet add NewQuantlet 3 minutes ago
- README.md Initial commit 2 years ago

The README.md file contains the text "SPL" and "Codes provided by students of the course \"Statistical programming languages\"".

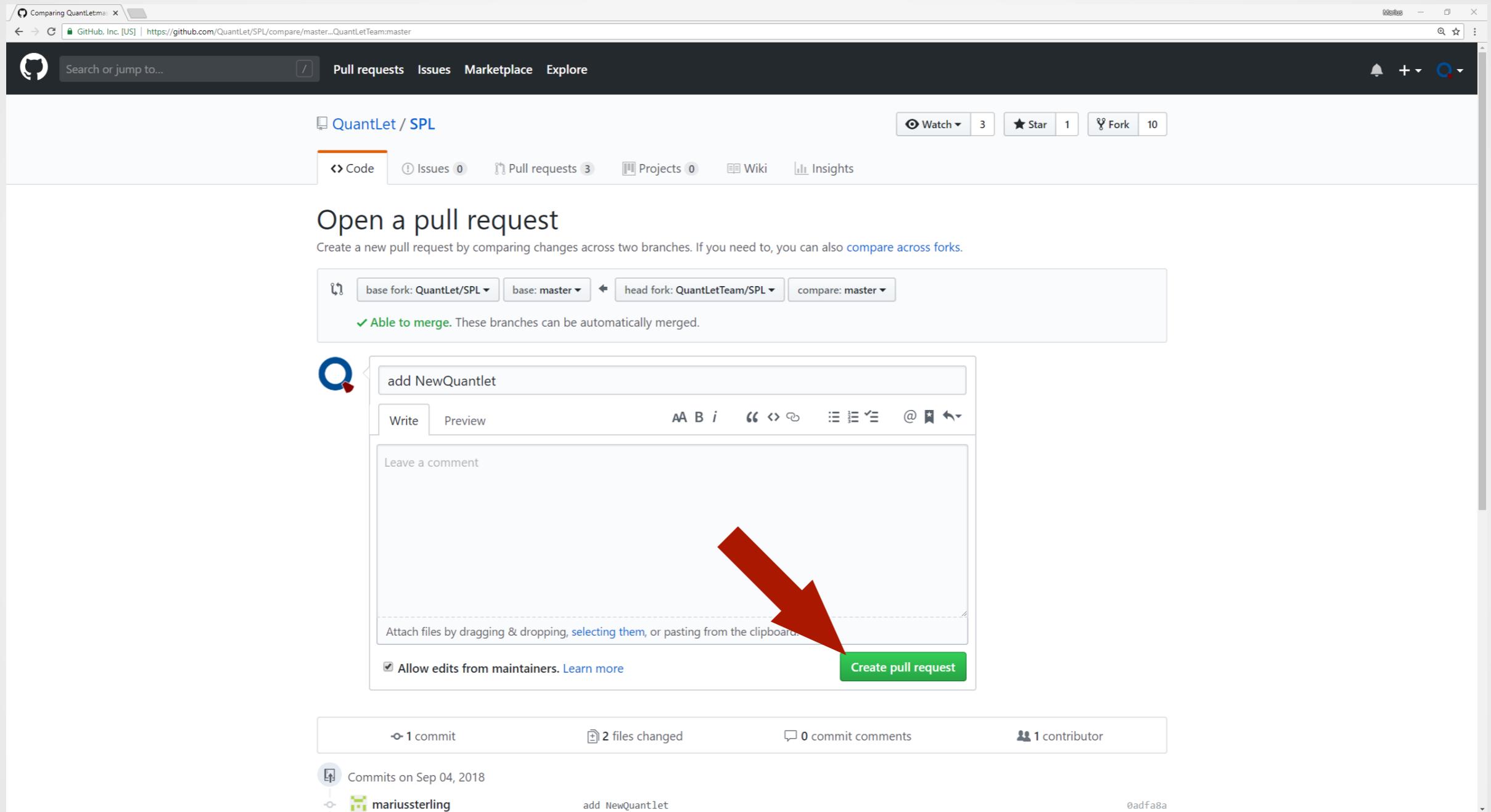


Step 3: Create pull request 1

The screenshot shows a GitHub comparison page for repositories QuantLet / SPL and QuantLetTeam:master. At the top, there are navigation links for Pull requests, Issues, Marketplace, and Explore. Below the navigation bar, there are buttons for Watch (3), Star (1), and Fork (10). The main section is titled "Comparing changes" and includes dropdown menus for base fork (QuantLet/SPL), base branch (master), head fork (QuantLetTeam/SPL), and compare branch (master). A green checkmark indicates "Able to merge". A prominent red arrow points to the "Create pull request" button. Below the button, a yellow box contains the text "Discuss and review the changes in this comparison with others." Summary statistics are shown: 1 commit, 2 files changed, 0 commit comments, and 1 contributor. The commit details show a single commit by user "mariussterling" on Sep 04, 2018, with the commit message "add NewQuantlet" and hash "0adfa8a". The commit history shows "Commits on Sep 04, 2018". At the bottom, it says "Showing 2 changed files with 2 additions and 0 deletions." and provides a unified diff view of the file "SPL_NewQuantlet/Metainfo.txt".



Step 3: Create pull request 2



Step 3: Create pull request 3

- ☐ The pull request is sent to the repository admin who accepts or denies the commit.
- ☐ If you want to change something after an accepted pull request, commit new changes to your forked repository and create a new pull request.



Fork repository from your account to Quantlet 1

A screenshot of a GitHub repository page for 'QuantLetTeam/Example_for_Quantlet'. The page shows basic repository statistics: 4 commits, 1 branch, 0 releases, and 1 contributor. A red arrow points to the 'Fork' button in the top right corner of the header. The URL in the address bar is https://github.com/QuantLetTeam/Example_for_Quantlet/tree/master.

No description, website, or topics provided.

Add topics

4 commits 1 branch 0 releases 1 contributor

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

QuantLetTeam Delete README.md Latest commit fe58e41 a minute ago

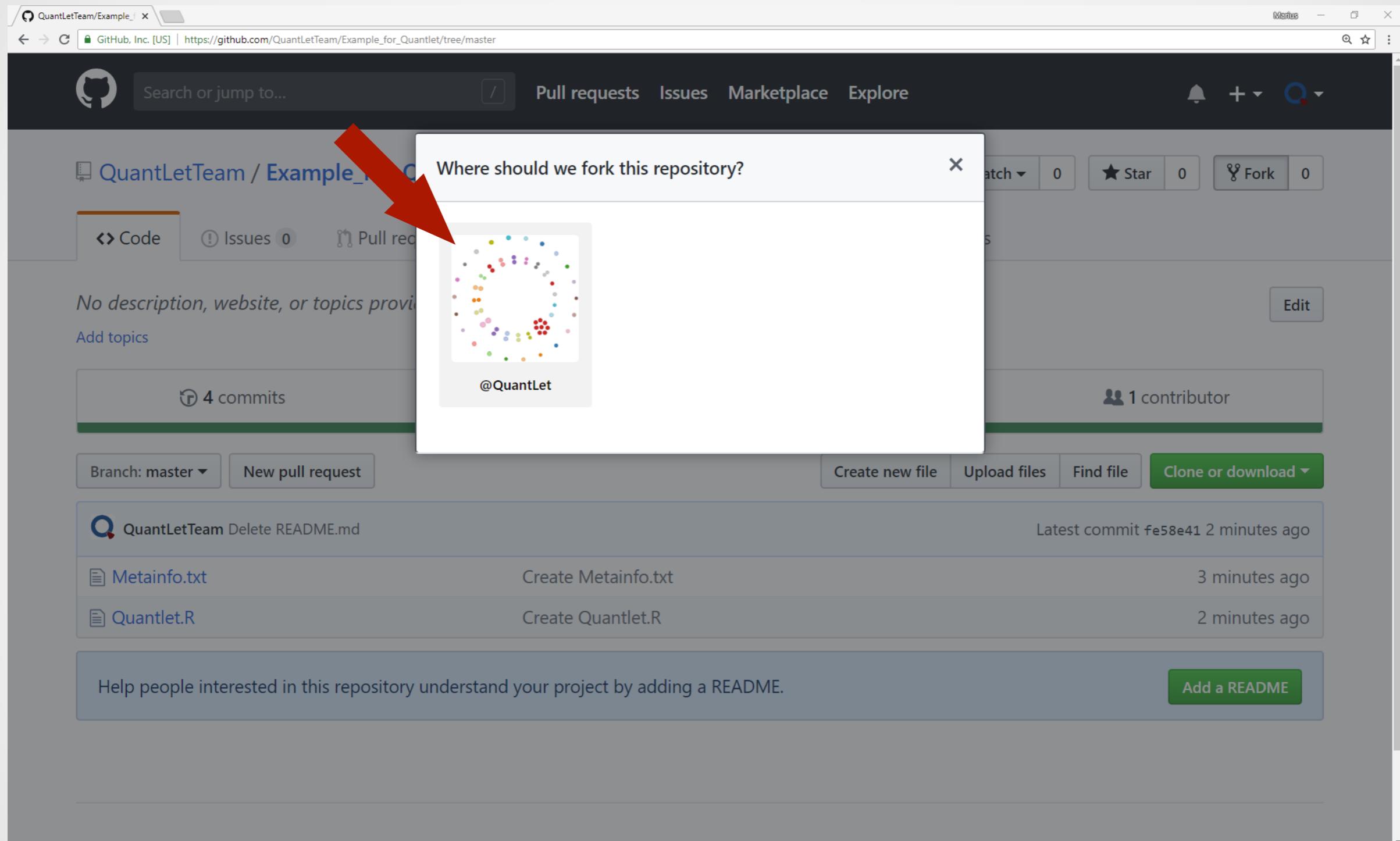
Metainfo.txt Create Metainfo.txt 2 minutes ago

Quantlet.R Create Quantlet.R a minute ago

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



Fork repository from your account to Quantlet 2



Responsibilities

- When you fork a repository into the Quantlet organisation, you are its creator and thus automatically admin!
- This brings some responsibilities:
 - ▶ Make sure every submitted Quantlet contains a Metainfo file.
 - ▶ Accept / deny pull requests by others.
 - ▶ Manage access privileges.



Create new repository 1

The screenshot shows a GitHub repository page for the organization "LvB". The page includes a header with navigation links like Pull requests, Issues, Marketplace, and Explore. Below the header, there's a section for "Pinned repositories" featuring five repositories: Styleguide-and-FAQ, D3Genesis, Git2Q3-Collaboration, MVA-Plotly, and CRIX. At the bottom right of the page, there's a prominent green "New" button with a white icon. A large red arrow points from the bottom right towards this "New" button, indicating where the user should click to start creating a new repository.

LvB
QuantNet Tokens for science
Humboldt-Universität zu Berlin http://www.quantlet.de

Repositories 177 People 86 Teams 4 Projects 0

Pinned repositories

Styleguide-and-FAQ
Includes the Styleguide and Frequently Asked Questions (FAQ)
★ 2 ⚡ 38

D3Genesis
Forked from d3VA/D3Genesis
Development of the main D3 components for the QuantNet visualization
HTML

Git2Q3-Collaboration
Forked from b2q/Git2Q3-Collaboration
Collaborative development of Quantlets

MVA-Plotly
Forked from d3VA/MVA-Plotly
new MVA quantlets based on Plotly / D3 technology
R ★ 1 ⚡ 1

CRIX
Quantlets for CRIX
R ★ 10 ⚡ 12

Search repositories... Type: All Language: All New



Create new repository 2

The screenshot shows the GitHub interface for creating a new repository. At the top, there are two tabs: 'QuantLetTeam/Example_for_Qua' and 'Create a New Repository'. The URL in the address bar is 'github.com/organizations/QuantLet/repositories/new'. The main header includes the GitHub logo, a search bar, and navigation links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. On the right side of the header are icons for notifications, a plus sign, and a search function.

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner QuantLet / **Repository name**

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

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



Responsibilities

- When create a repository in the Quantlet organisation, you are automatically its admin!
- This brings some responsibilities, see responsibilities in [page ‘Responsibilities’](#) in the [2. Fork repositories to Quantlet](#).



Outline

1. Styleguide for Quantlets
2. Submission Guide for Members
3. **Submission Guide for Non Members**
 - 3.1. Submission to an existing repository via pull request
 - 3.2. Fork of entire repository by a member of the Quantlet Organization



Submission to existing repository via pull request

- Submitting a pull request
 - ▶ Step 1: Fork the target repository
 - ▶ Step 2: Commit changes
 - ▶ Step 3: Create a pull request
- The steps are explained on the following pages



Step 1: Fork the target repository

A screenshot of a GitHub repository page for 'QuantLet/SPL: Codes pro'. The page shows basic repository statistics: 16 commits, 1 branch, 0 releases, and 4 contributors. A red arrow points to the 'Fork' button in the top right corner of the header, which has 9 forks. Below the header, there are tabs for Code, Issues (0), Pull requests (3), Projects (0), Wiki, and Insights. The 'Code' tab is selected. The main content area displays commit history and a file named 'README.md' containing the text 'SPL'. The commit history shows three commits: one by 'mariussterling' creating 'README.md' (automatically) at 6 hours ago, one by 'Currency Exchange Rate' creating 'README.md' (automatically) at 6 hours ago, and an initial commit at 2 years ago.

QuantLet / SPL

16 commits 1 branch 0 releases 4 contributors

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

mariussterling created README.md (automatically) Latest commit 09cc1ab 6 hours ago

Currency Exchange Rate created README.md (automatically) 6 hours ago

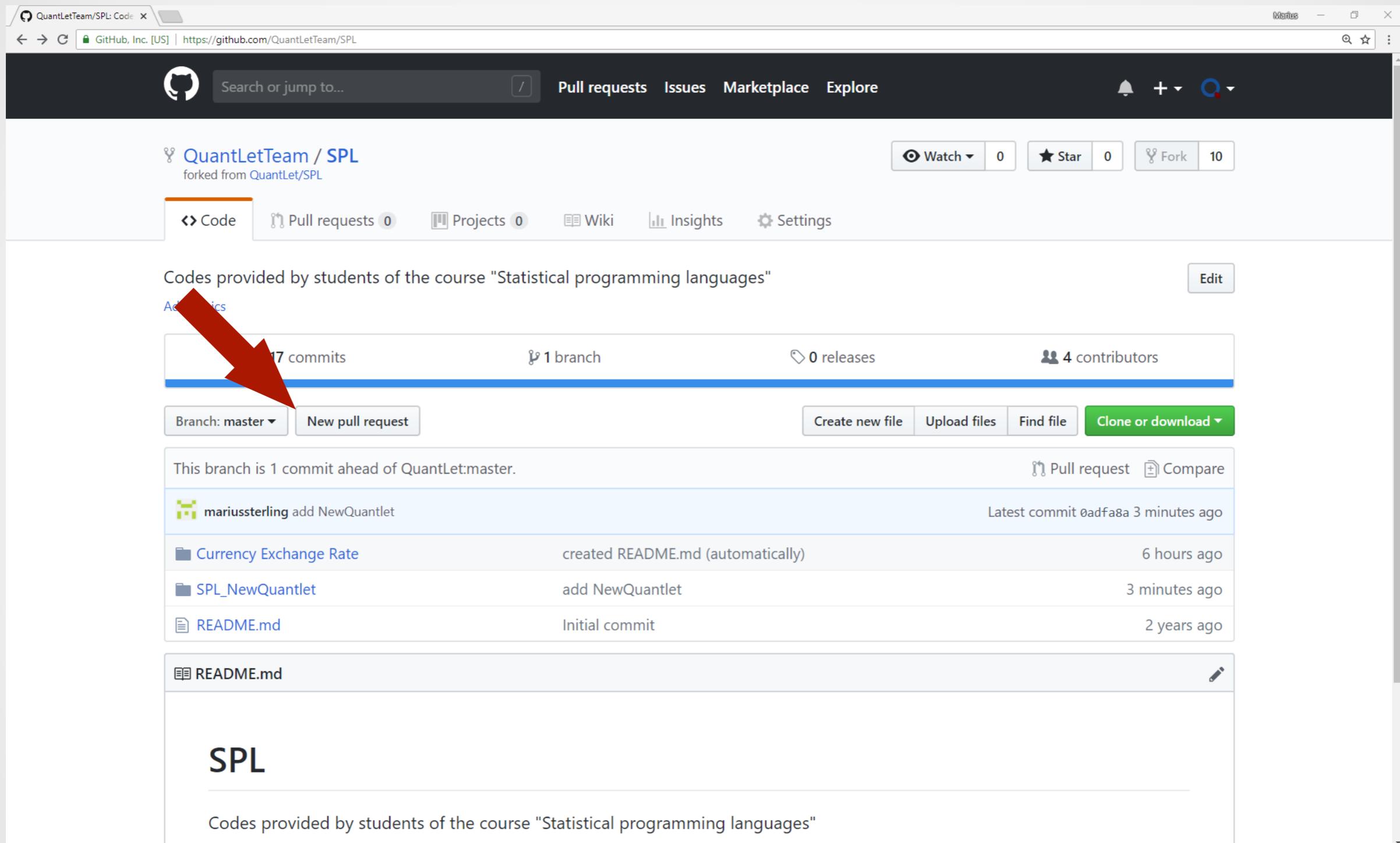
README.md Initial commit 2 years ago

SPL

Codes provided by students of the course "Statistical programming languages"



Step 2: Commit changes



The screenshot shows a GitHub repository page for 'QuantLetTeam/SPL'. The repository has 17 commits, 1 branch, 0 releases, and 4 contributors. A red arrow points to the 'Branch: master' dropdown menu. The commit history includes:

- mariussterling add NewQuantlet (Latest commit 0adfa8a 3 minutes ago)
- Currency Exchange Rate created README.md (automatically) 6 hours ago
- SPL_NewQuantlet add NewQuantlet 3 minutes ago
- README.md Initial commit 2 years ago

The README.md file contains the text "SPL" and "Codes provided by students of the course \"Statistical programming languages\"".



Step 3: Create pull request 1

The screenshot shows a GitHub comparison page for the repository QuantLet / SPL. The URL in the address bar is <https://github.com/QuantLet/SPL/compare/master...QuantLetTeam:master>. The page title is "Comparing changes".

At the top, there are navigation links: Pull requests, Issues, Marketplace, Explore, Watch (3), Star (1), Fork (10). Below the navigation, there are tabs: Code (selected), Issues (0), Pull requests (3), Projects (0), Wiki, Insights.

The main section is titled "Comparing changes" and says "Choose two branches to see what's changed or to start a new pull request. If you need to, you can also compare across forks." It shows the configuration: base fork: QuantLet/SPL, base: master, head fork: QuantLetTeam/SPL, compare: master. A green checkmark indicates "Able to merge. These branches can be automatically merged."

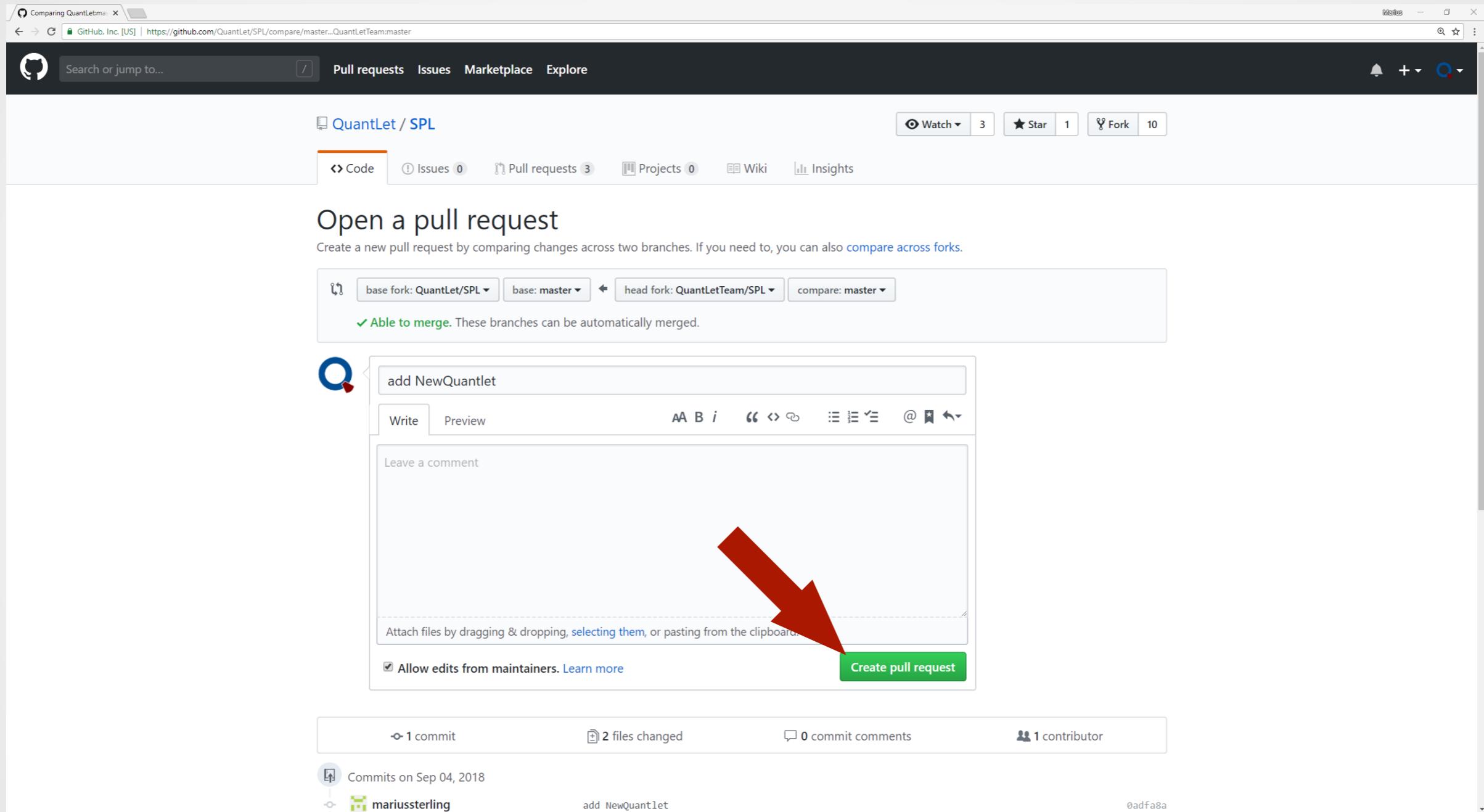
A large red arrow points to the "Create pull request" button, which is highlighted in green. Below it, a yellow box says "Discuss and review the changes in this comparison with others." and has a " @" icon.

Below the discussion box, there are summary statistics: 1 commit, 2 files changed, 0 commit comments, 1 contributor. The commit details show "Commits on Sep 04, 2018" by "mariussterling" with commit message "add NewQuantlet" and hash "0adfa8a".

At the bottom, it says "Showing 2 changed files with 2 additions and 0 deletions." with "Unified" and "Split" options. The diff view shows a single file "SPL_NewQuantlet/Metainfo.txt" with one addition and one deletion. The addition is "add NewQuantlet".



Step 3: Create pull request 2



Step 3: Create pull request 3

- ☐ The pull request is sent to the repository admin who accepts or denies the commit.
- ☐ If you want to change something after an accepted pull request, commit new changes to your forked repository and create a new pull request.



Fork by a member of the Quantlet Organization 1

- Members of the Quantlet organisation can fork public repositories into the Quantlet organisation.
- Since only entire repositories can be forked, it is not possible to fork parts of repositories, e.g. Quantlets.
- If your Quantlet is part of project, lecture, exercise etc. ask your Quantlet contact to create a repository and use [Submission to existing repository via pull request](#) method.



Fork by a member of the Quantlet Organization 2

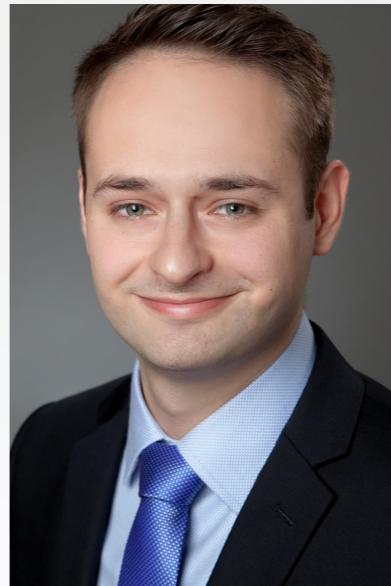
- Steps:
 - ▶ Create in your own Github account a repository and commit your program to it.
 - ▶ Make sure that the repository and Quantlet names are not yet used in the Quantlet organisation.
 - ▶ Ask your Quantlet contact to fork your repository into it. If you do not have one please contact the Quantlet Team via quantlet.wiwi@hu-berlin.de.
 - ▶ All following changes can be submitted by the Submission to existing repository via pull request method.



References

Borke L, Härdle WK (2018) Q3-D3-LSA, Handbook of Big data Analytics, (Härdle, Lu, Shen eds), Springer Verlag, ISBN 978-3-319-18284-1, DOI: 10.1007/978-3-319-18284-1





Härdle Hu Petukhina Sterling Zinovyeva

The  Team

International Research Training Group 1792
“High Dimensional Nonstationary Time Series”

School of Business and Economics
Unter den Linden 6
10099 Berlin

E-Mail: quantlet.wiwi@hu-berlin.de

Quantlet Submission Guide

