

Github basics



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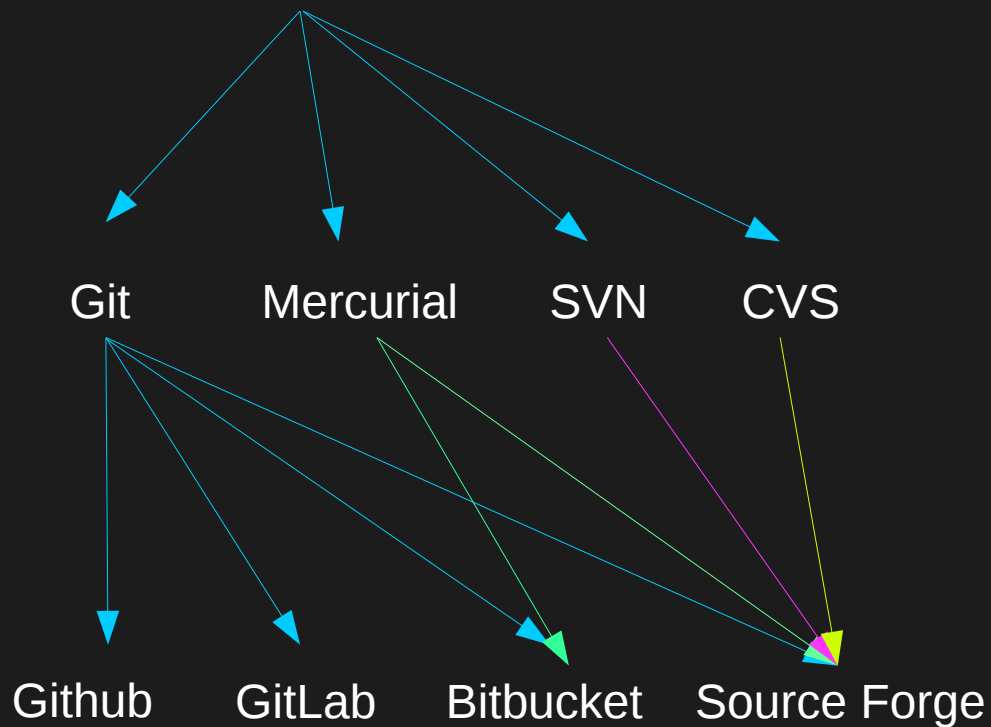
&

Nicolas Garavito-Camargo

TIMESTEP

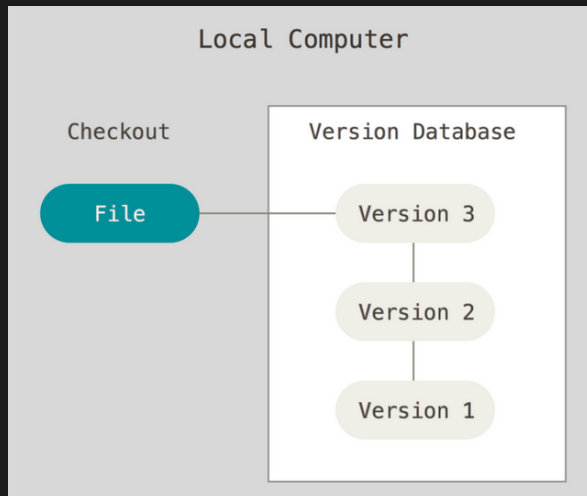
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Version control: *software that do management of changes to documents*



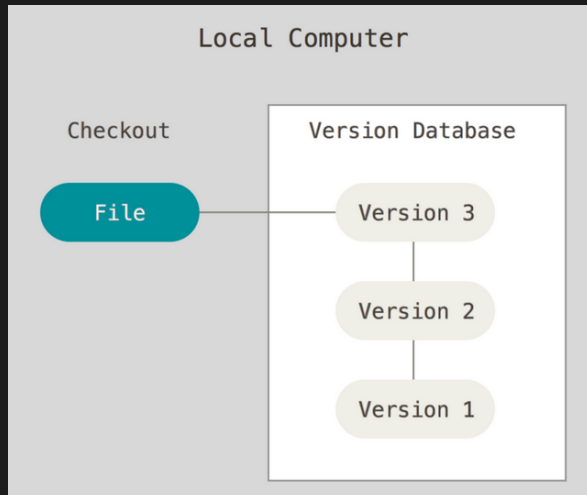
Web-based hosting service for source code.

Local version control

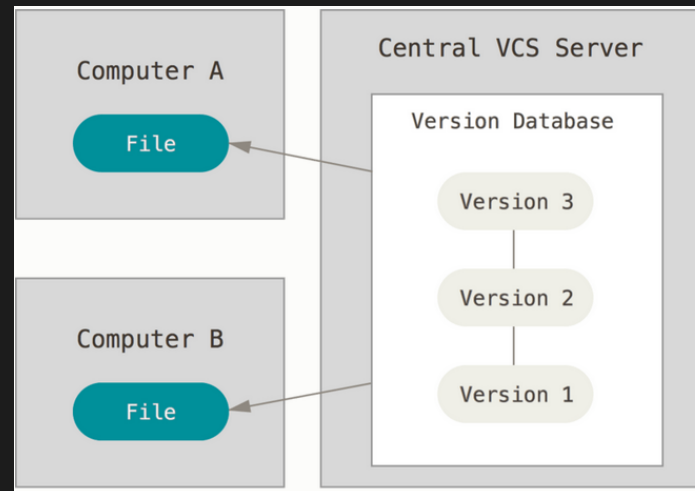


Credit: <https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control>

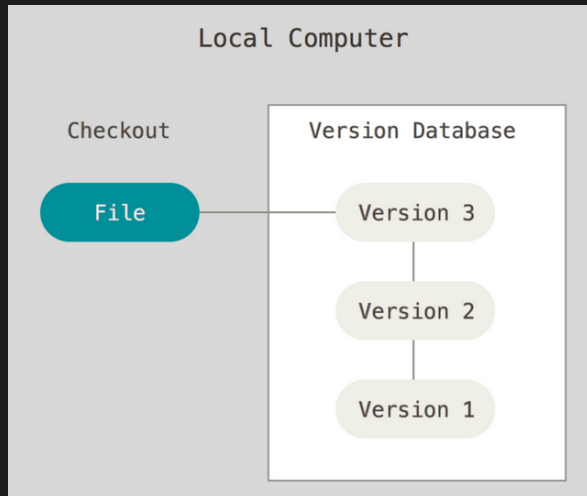
Local version control



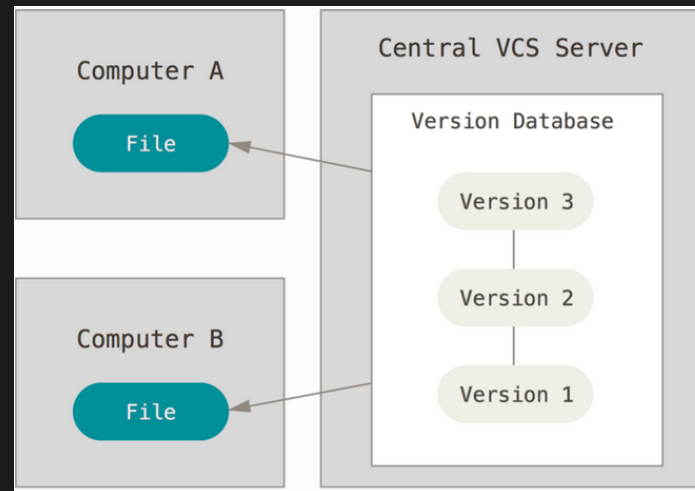
Centralized version control



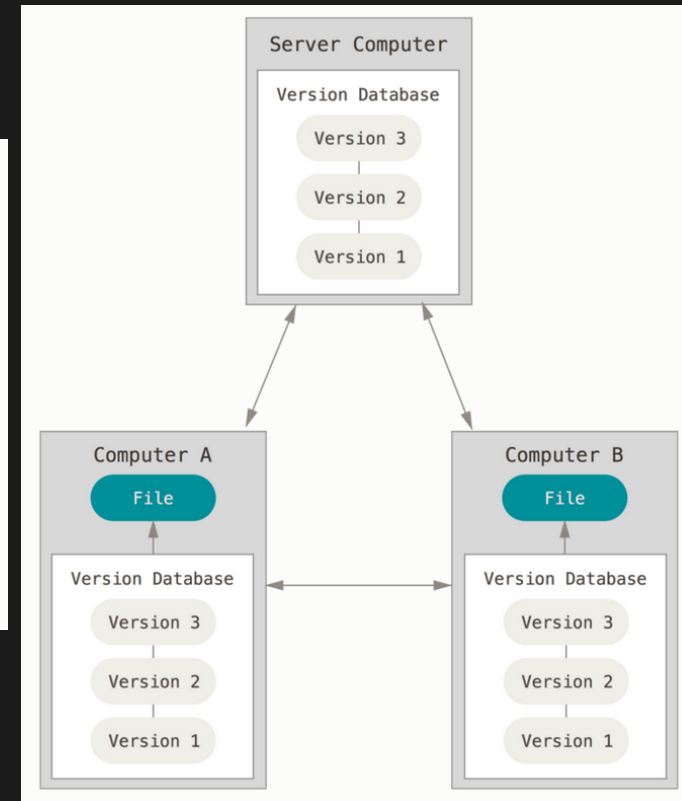
Local version control



Centralized version control



Distributed version control



Git, Mercurial, SVN, etc..

Github features

- Unlimited Public repositories, limited Private repositories.
- Documentation of software: Doc, **Readme**
- Issues: Report bugs or other issues with a given code.
- Email notifications.
- Github host web pages: <https://pages.github.com/>
- Student package: <https://education.github.com/pack>

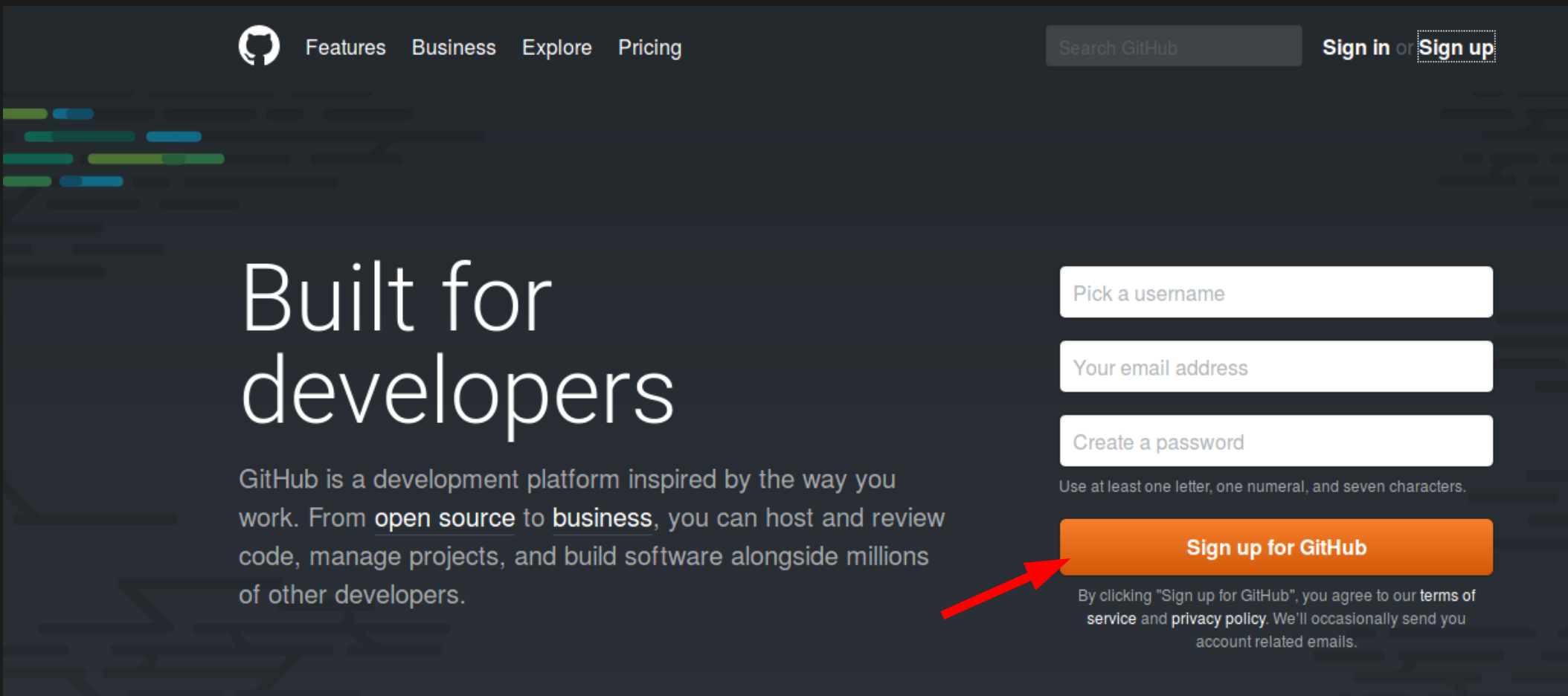
Github in astronomy:

- NASA, LSST, DESI etc ..
- Astropy: <https://github.com/astropy/astropy>
Matplotlib, scikits-learn, emcee, and many many more.
- Help science to be reproducible.

Hands-on

1. Create a github account:

go to **github.com**

A screenshot of the GitHub website's sign-up page. The background is dark gray with a faint, colorful, abstract pattern on the left side. At the top, there is a navigation bar with the GitHub logo, links for 'Features', 'Business', 'Explore', and 'Pricing', a search bar labeled 'Search GitHub', and links for 'Sign in or Sign up'. The main content area features the text 'Built for developers' in large white font, followed by a paragraph describing GitHub as a development platform. To the right, there is a sign-up form with three input fields: 'Pick a username', 'Your email address', and 'Create a password'. Below the password field is a small note: 'Use at least one letter, one numeral, and seven characters.' At the bottom of the form is an orange button labeled 'Sign up for GitHub'. A red arrow points to this button. Below the button is a line of text: 'By clicking "Sign up for GitHub", you agree to our terms of service and privacy policy. We'll occasionally send you account related emails.'

Github tour

2. Installing git

(see the docs)

For mac: Type git and follow instructions.

For Linux:

```
$ sudo yum install git-all
```

```
$ sudo apt-get install git-all
```

3. Set up git (

<https://help.github.com/articles/set-up-git/>)

- Set a Git user name

```
$ git config --global user.name  
"Mona Lisa"
```

- Setting your email address for every repository
on your computer

```
$ git config --global user.email  
"email@example.com"
```

Optional: Caching your GitHub password in Git

go [here](#)

4. Create a repository.

From github:

<https://help.github.com/articles/create-a-repo/>

From a terminal:

Adding an existing project to github

5. Clone your repository to your computer and see its status.

The screenshot shows the GitHub interface for a repository named 'octopus' by user 'jngaravitoc'. At the top, it displays '40 commits', '1 branch', '0 releases', and '1 contributor'. Below this, there's a navigation bar with 'Branch: master', a 'New pull request' button, and buttons for 'Create new file', 'Upload files', 'Find file', and a green 'Clone or download' button. A red arrow points to the 'Clone or download' button. A dropdown menu is open from this button, showing 'Clone with HTTPS' (with a help icon) and 'Use SSH'. Below these options, it says 'Use Git or checkout with SVN using the web URL.' and provides the URL 'https://github.com/jngaravitoc/octopus.ç' with a copy icon. At the bottom of the dropdown is a 'Download ZIP' button. The main content area shows a list of files and folders: 'notebooks' (building on cython), 'octopus' (reduced number of arguments in biff.acceleration), 'README.md' (Initial commit), '__init__.py' (codes), and 'setup.py' (update setup). At the bottom, there's a section for 'README.md'.

```
$ cd github_repos
$ git clone https://github.com/...
$ git status
```

6. Add a file, commit and push your file

Create a document

```
$ echo 'hello git' > git_doc.txt
```

See your repository status

```
$ git status
```

Add your file → start tracking your file (staging area)

```
$ git add first_doc.txt
```

```
$ git status
```

Commit your file → Store your file

```
$ git commit -m 'descriptive comment'
```

```
$ git log
```

```
$ git push
```

7. Editing, moving and removing files.

Move a file:

```
$ git mv file_from file_to
```

Remove a file:

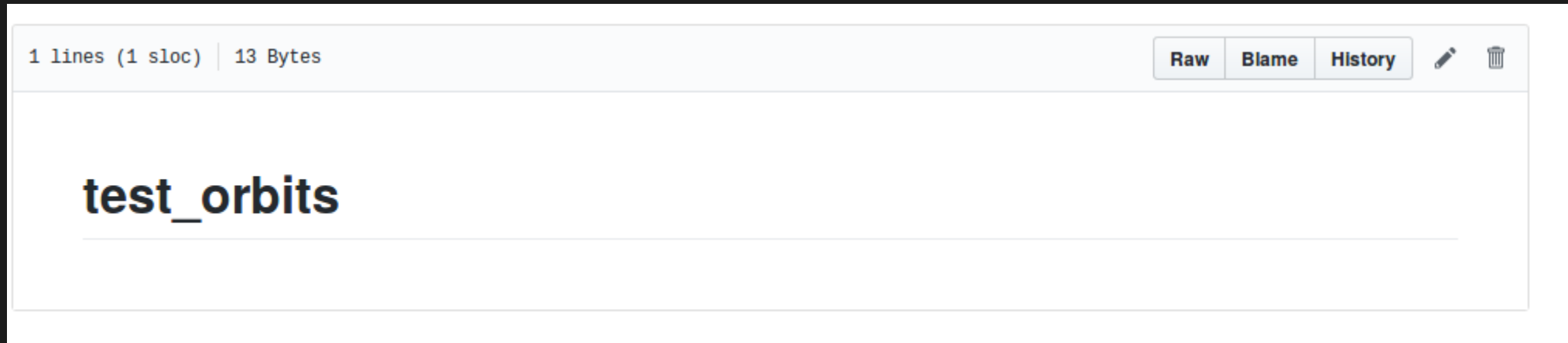
```
$rm file
```

```
$ git rm file
```

Remove file from github but not from your pc.

```
$git rm --cached file
```


Do a commit through your repository web page.



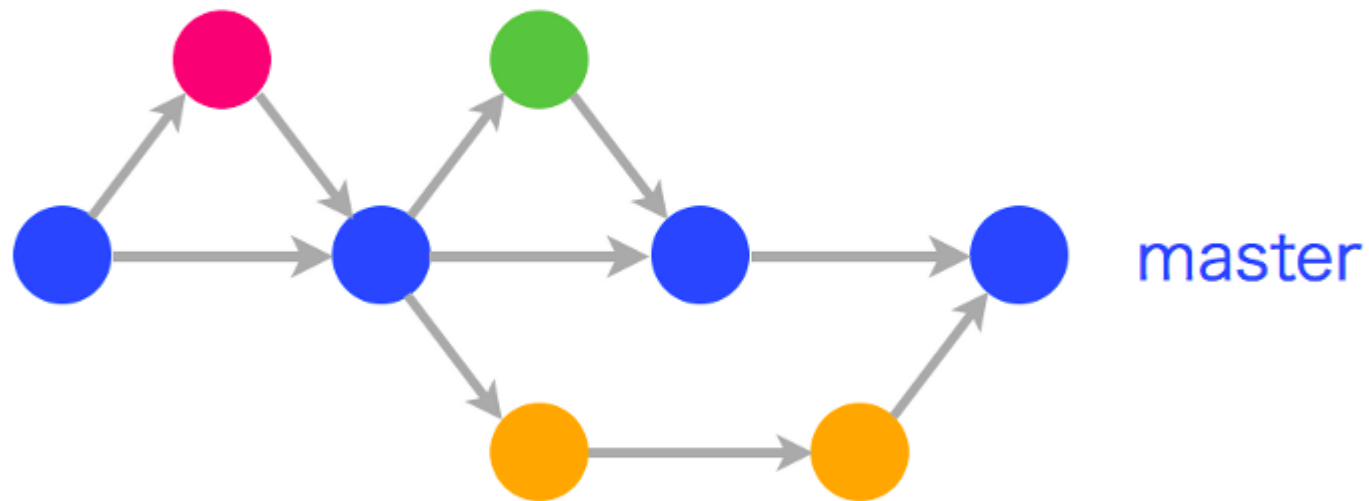
Pull your web page commits to your laptop.

On your repository type:

```
$ git pull
```

8. Branches

GitHub flow



Creating a branch:

```
$ git branch editing  
$ git checkout editing  
$ git branch
```

Do some changes in the editing branch and commit those changes:

```
$ git add debugged_code.py  
$ git commit -m 'fixed bug in ... '  
$ git push origin editing
```

Merging the editing branch with the master branch:

```
$ git checkout master  
$ git merge editing  
$ git push  
$ git branch -d editing  
$ git push origin --delete editing
```

9. Pull requests:

1. Create a branch.
2. Do some edits to the branch.
3. Go to your repository on github.
4. Click on New Pull Request

Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also [compare across forks](#).

 base: **master** ▼ ... compare: **version0.3** ▼  **Able to merge.** These branches can be automatically merged.

10. Collaborating

a) You are part of the team.

- Add a colleague to your repository.
- Clone the repository.
- Do your edits.
- Commit your edits / pull requests.

b) You are not part of the team.

- Fork or clone the repository.
- Do your edits.
- Commit your edits and make a pull request.

Good practices:

1. Document your repository.
2. Before working always: `$git pull`
3. Use descriptive comments in your commits, avoid 'update'
4. Cite and acknowledge others code in your code and repository.
5. Add a License to your repository.

Useful links

- Github help web page is very complete:
<https://help.github.com/>
- Git documents are very complete and easy to read:
<https://git-scm.com/doc>
- A 15 min interactive tutorial:
<https://try.github.io/levels/1/challenges/1>