Github basics

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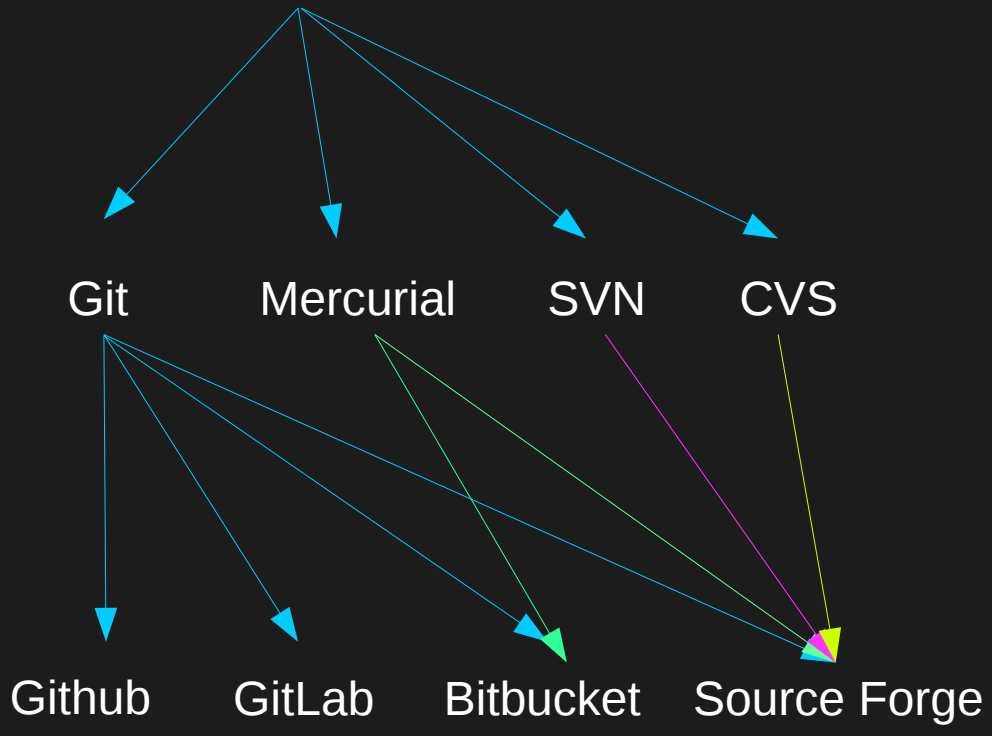
TIMESTEP

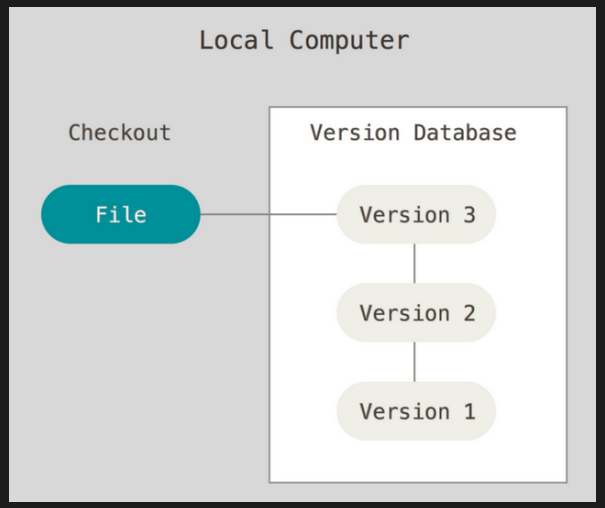
04/18/17

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



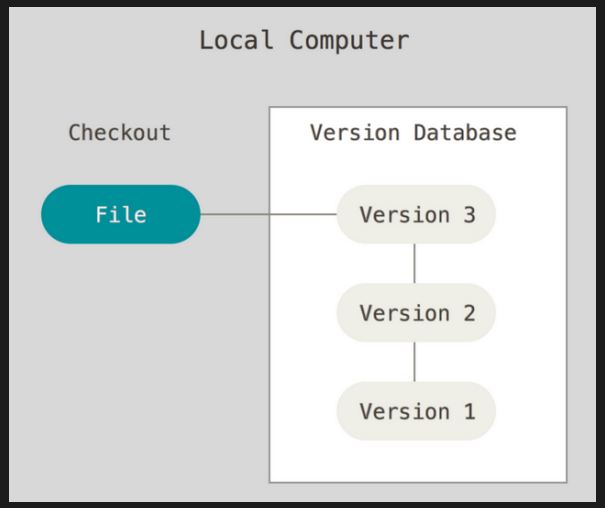
Web-based hosting service for source code.

Local version control

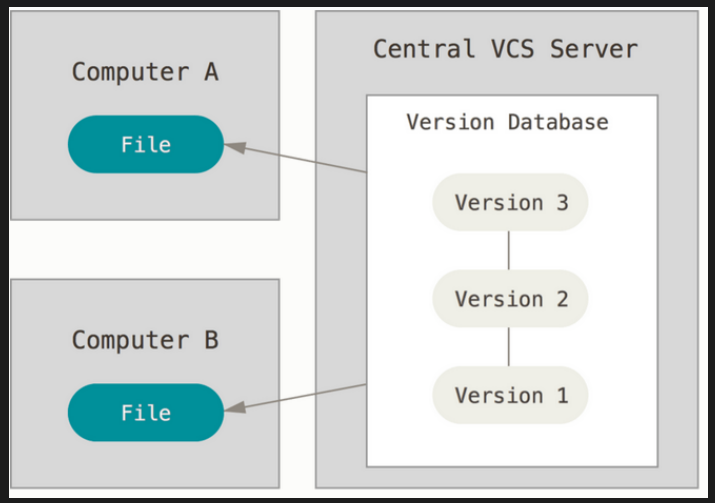


Credit: https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control

Local version control



Centralized version control



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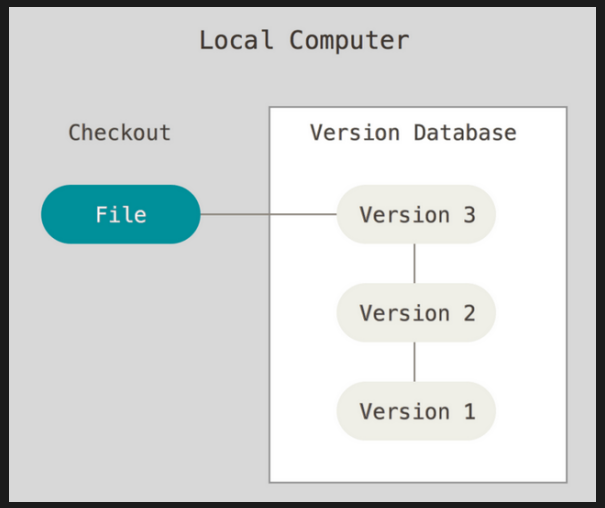
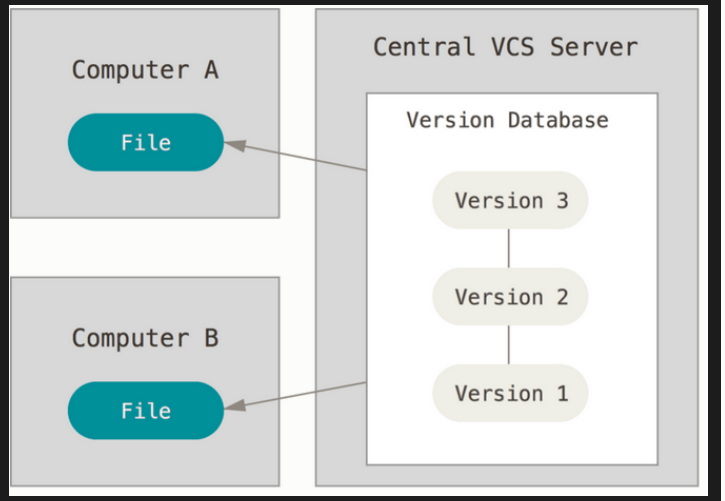
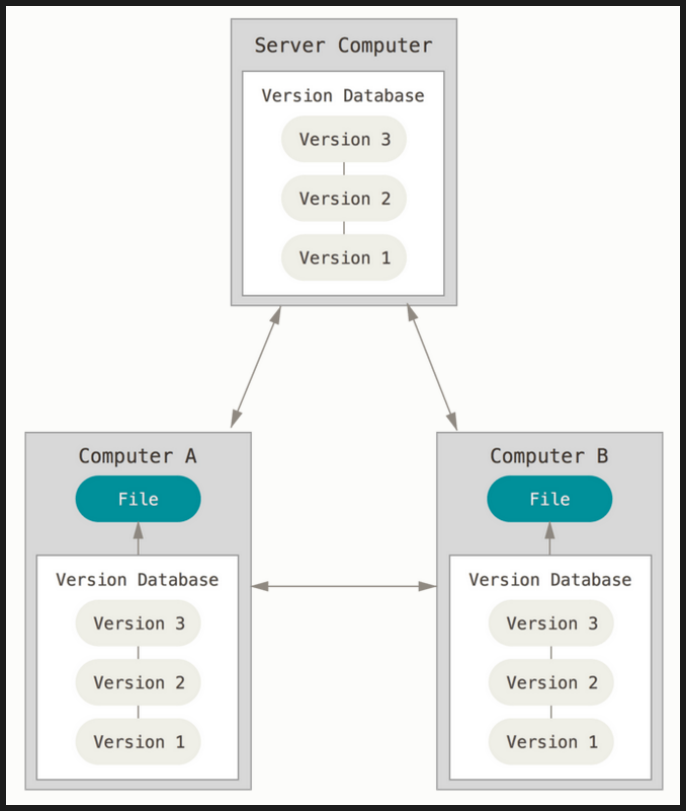
Local version control



Centralized version control



Distributed version control



Git, Mercurial, SVN, etc..

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

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:

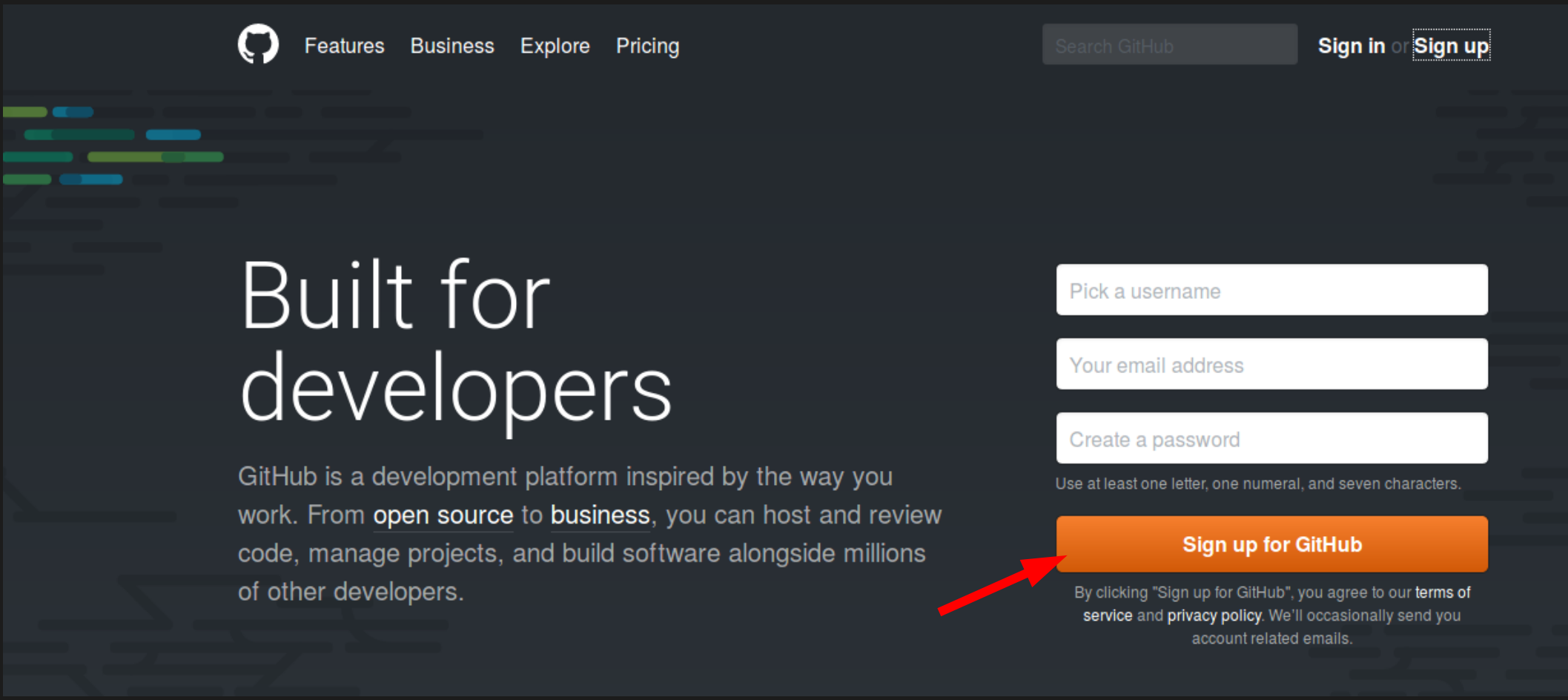
- NASA, LSST, DESI etc ..
- Astropy: https://github.com/astropy/astropy

  Matplolib, scikits-learn, emcee, and many many more.
- Help science to be reproducible.

Hands-on

1. Create a github account:

go to github.com



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
```

For Windows:

http://git-scm.com/download/win

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.

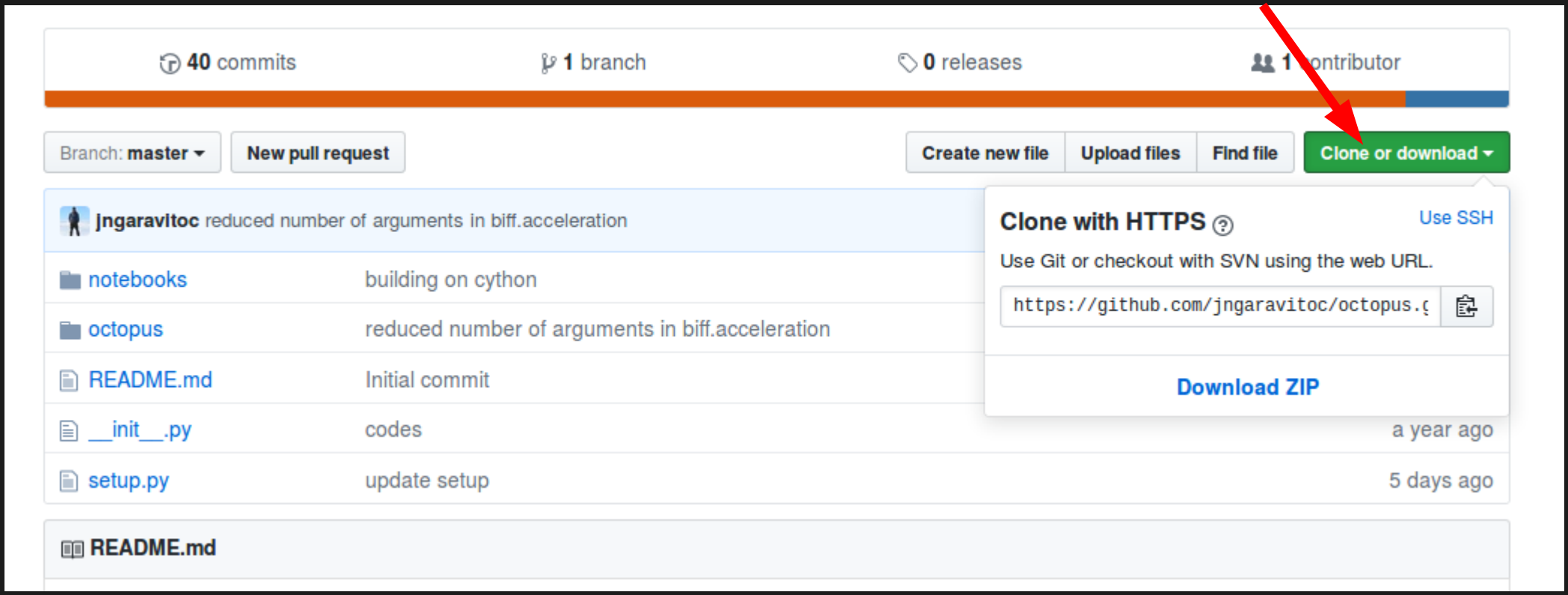
From github:

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.




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

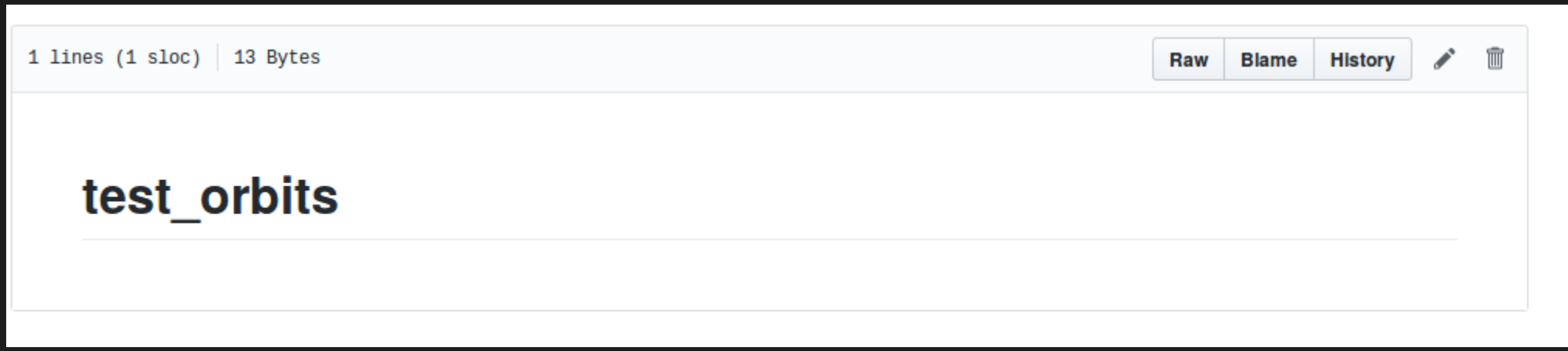
Remove a file:

```
$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.

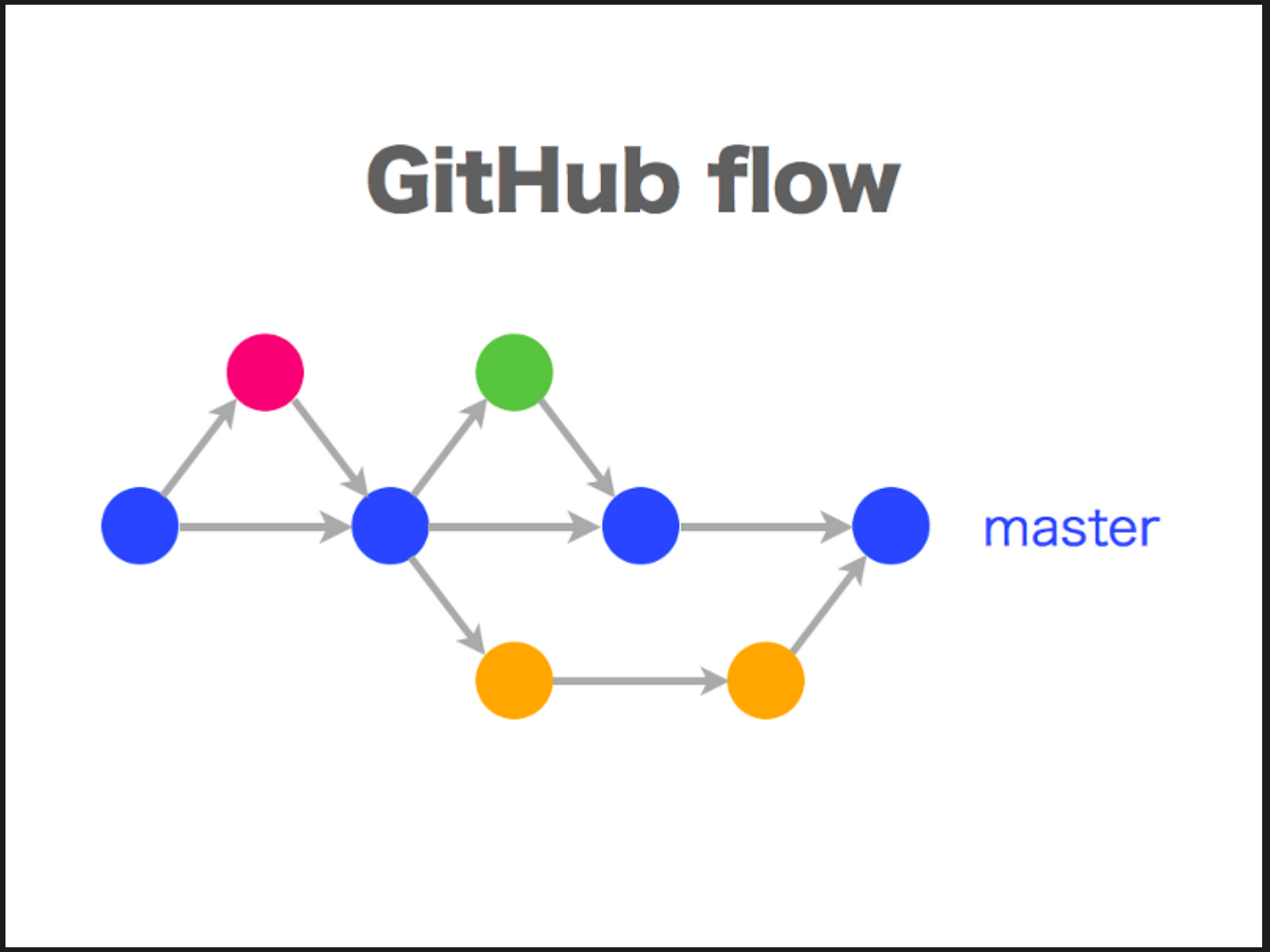


Pull your web page commits to your laptop.

On your repository type:

```
$ git pull
```

8. Branches



Creating a branch:

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

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

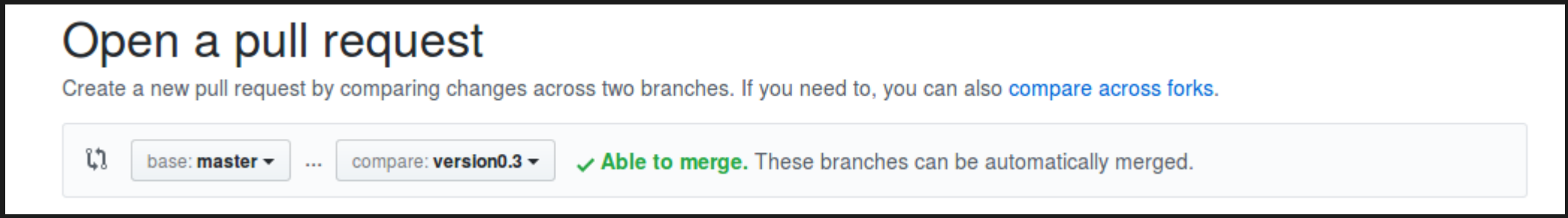
```
$ git add debugged_code.py
$ git commit -m ‘fixed bug in ... ’
$ git push origin editing
```

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



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
- Merging issues:

  used git mergetool:
  https://www.git-scm.com/docs/git-mergetool