# Github basics

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&

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Code Coffee

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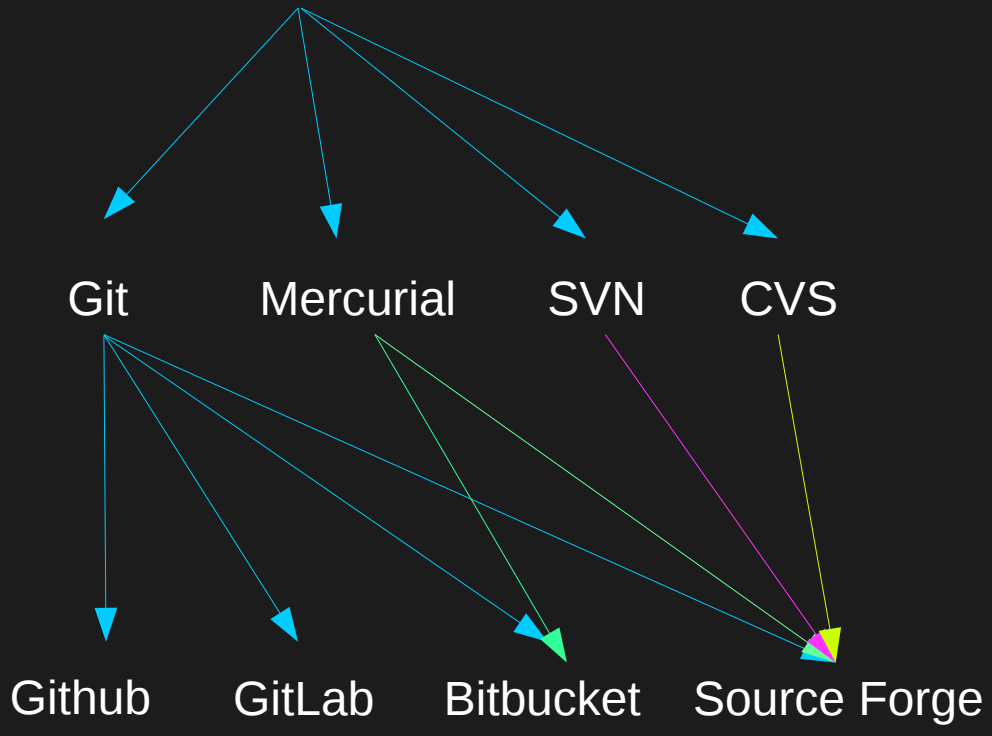
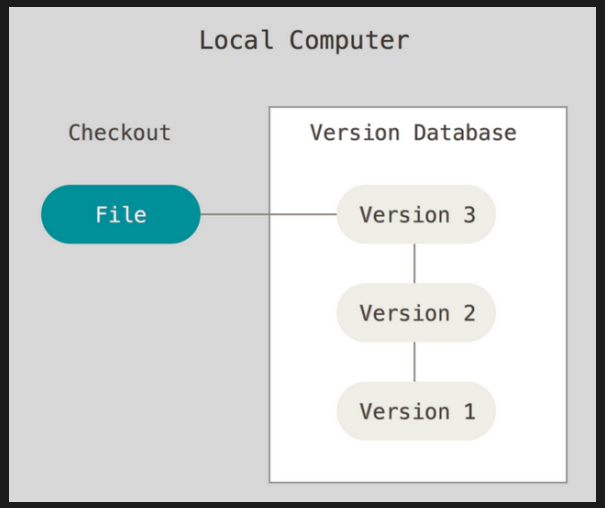
# Version control: *software that do management of changes to documents*



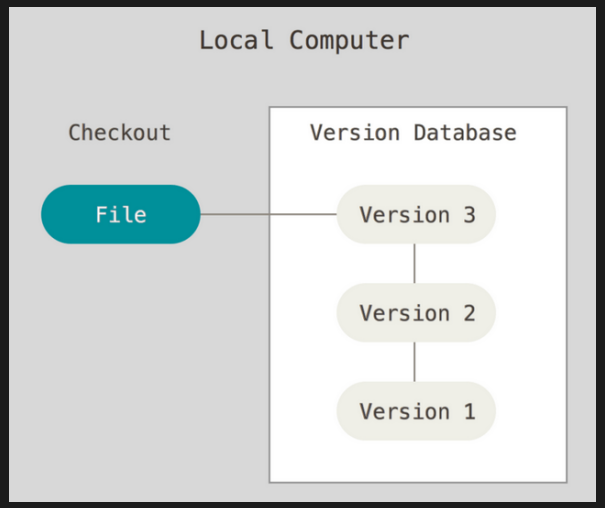

***Web-based hosting service for source code.***

# Local version control

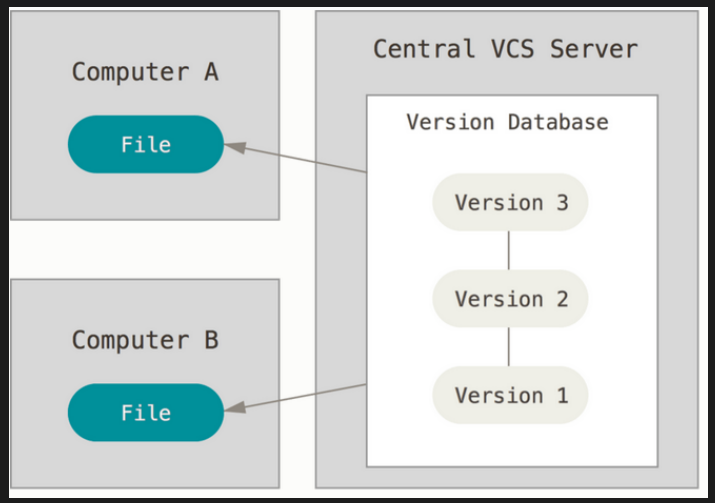



Credit: https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control

## Local version control




## Centralized version control

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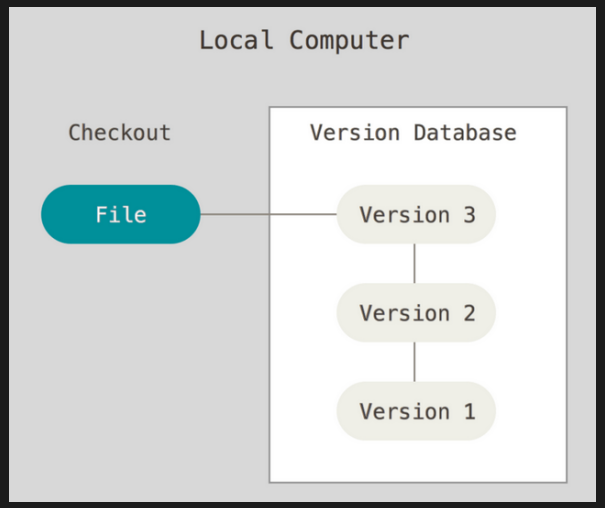
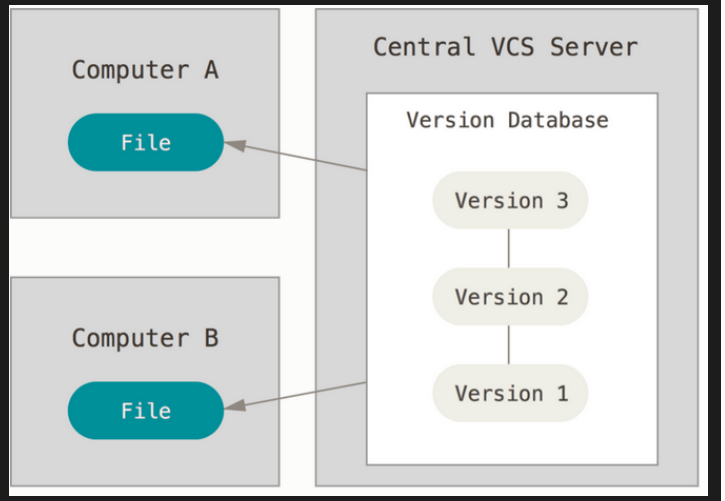
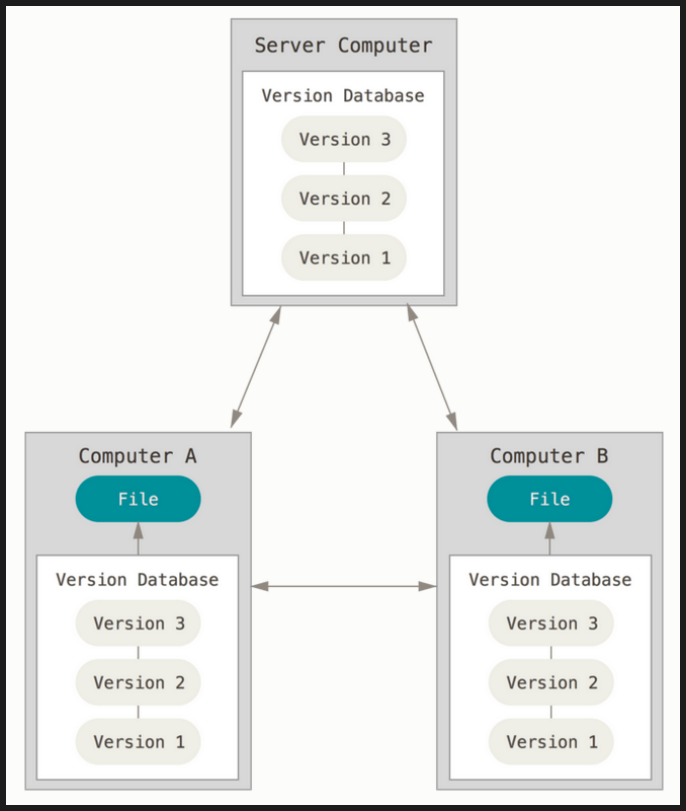
## Local version control




## 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:

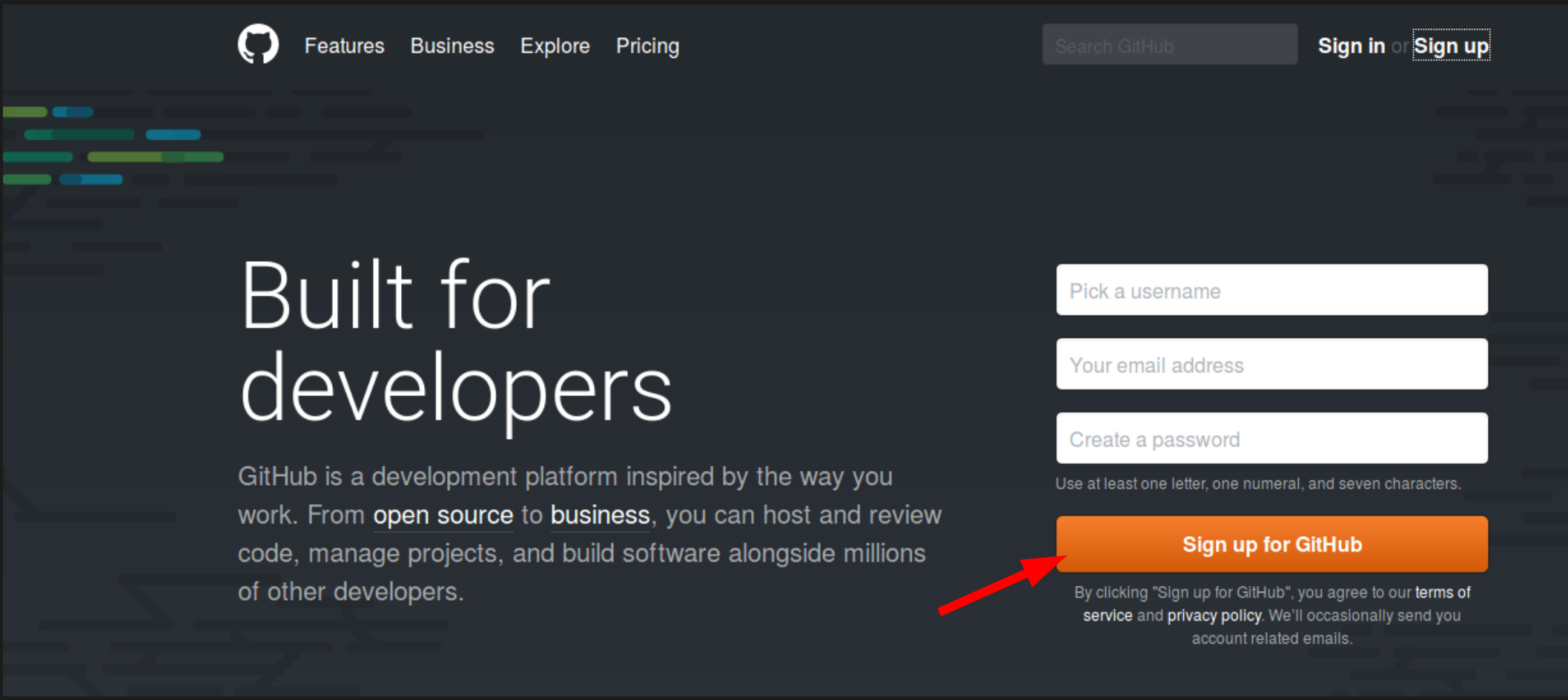
- NASA, LSST, DESI etc ..
- Astropy: https://github.com/astropy/astropy

  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.

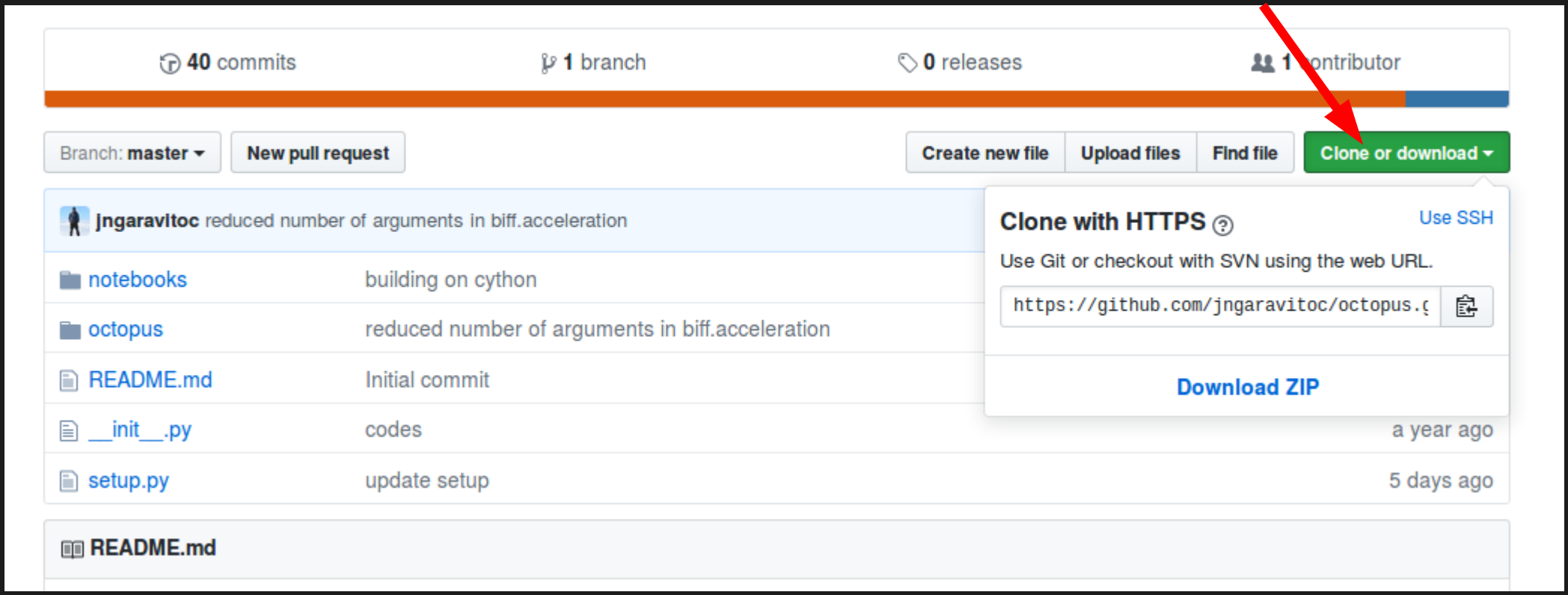
From github:

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
```

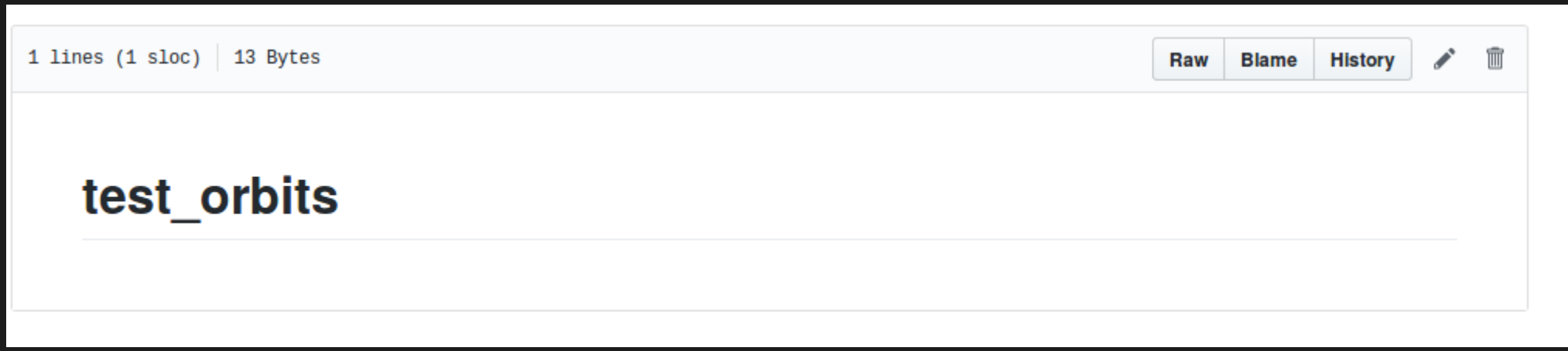
Remove a file:

```
$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
```

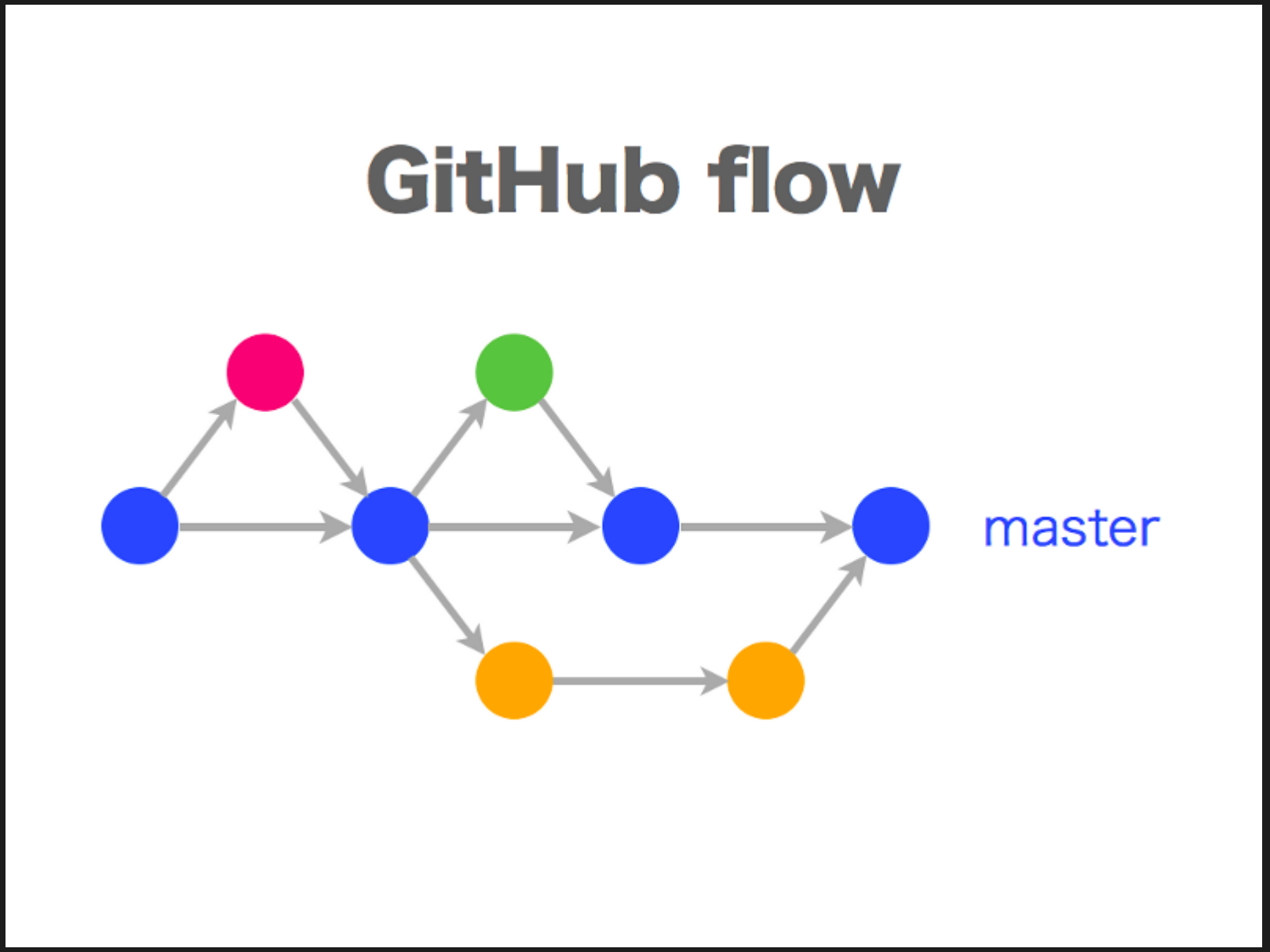
***Definitions*:**

***Branch:*** Temporary version of your code in which you can do tests of a new feature.

***Fork / Pull request***: Your own copy of a repository, that you can edit and merge changes back (with permission), and you can receive changes from the master repository.

***Clone:*** Local copy of a repository you can’t merge back (unless you own the repository) but you can receive changes from the master repository.

# 8. Branches



## Creating a branch:

```
$ git branch branch-name  #Create new branch
$ git checkout branch-name #Move to new branch
$ git branch # Tells you which branch
```

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

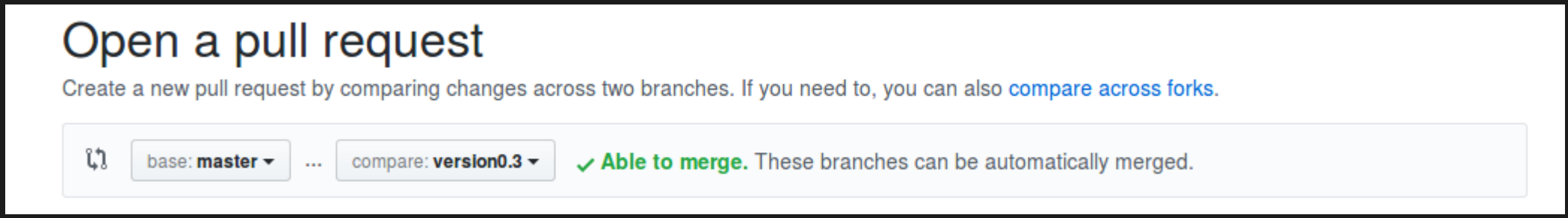
```
$ git add debugged_code.py
$ git commit -m ‘fixed bug in ... ’
$ git push origin branch-name
```

## Merging the editing branch with the master branch:

```
$ git checkout master #Move to master branch
$ git merge branch-name # Merge branches
$ git push
$ git branch -d branch-name #Delete branch-name
$ git push origin --delete branch-name
```

# 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