git

- Created by Linus Torvalds for managing the development of the Linux kernel (> 18 millions line of code)
- It is a software for version control focused on developing code with other people

git
For a physicist

- Convenient way to backup personal scripts, reports, programs
- Convenient way to share them
- Convenient way to write collaborative code and papers
- (Forget about Dropbox's and Drive's, duplicate files)

git
Basics

- git works in repositories, not necessary online
- A repo contains all the history of a project and it is update only when the coder wants with only what he wants
- The act of updating a repo is called commit
- The act of choosing what to commit is called adding
- Commits are incremental (no need to save a whole file if only one line is changed, only the diff is saved) and usually are submitted with logs that explain the changes (self documentation)

git
Basics

- Two repos can be synchronized, if one of them is online this provides a way to perform a backup
- The act of updating an online repo with a local one is called pushing
- The act of updating a local repo with an online one is called pulling
- GitHub, GitLab, Bitbucket offer free online repos

git workflow
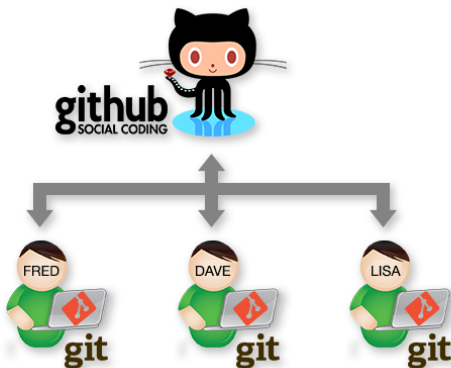
Example: Fred develops a program and push it to GitHub, Dave and Lisa pull it, Dave add a feature and push to GitHub, Fred and Lisa can pull the new version and have on their laptop the latest release

git
Basics

- A single repo can have many branches where code is developed independently, for example one branch for every developer or one for every version
- Branches can be merged
- If there are no conflicts the merge proceeds automatically
- If there are conflicts someone has to review them manually
- On online repos it is possible to fork other's repos and work on them and then ask for merging with the master one. This is done with a pull request (the same when merging two branches)

git workflow

Example

Git as a lazy physicist


```
$ git add files
$ git commit
$ git push origin master
```