Programming fundamentals with Python Session 2 - Git and Github

Pepe García jgarciah@faculty.ie.edu

2021-10-06

At this point, everybody should have an account on Github. If you haven't yet created one, please go ahead and create one (you can follow the instructions in the second link of the bibliography).

Let's create a repository on Github!

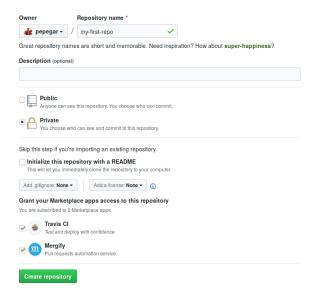
Let's create a repository on Github!

Log into your github.com account

Let's create a repository on Github!

- Log into your github.com account
- Create a new repository

Github - create a new repository



Github - linking our local repo with Github

Now that we have created this repo, it's identified with a unique URL, we'll use the **https** url to link our local and remote repositories.



Github - linking our local repo with Github

In order to link our local repo with Github, we will need to **set a new remote** in our local repository:

\$ git remote add origin https://github.com/popogor/my-first-repo.git

This will tell **git** where is the **remote repository** to which we will upload our changes.

Github - pushing code!

Now that we have everything set, we're ready to **push** our code to Github!

```
$ git push origin master

Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 608 bytes | 608.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/popogor/my-first-repo.git
  * [new branch] master -> master
```

git push sends changes from the local repository to the remote one. It's the way we have to *upload* code to github.

Git

Interlude - branches

As you've seen, the latest parameter that we passed to push is **master**. That's the name of the default **branch** in git.

Branches are a way of being able to work in parallel features on the same repository. We're not going to use them in this course, but if you're interested, there's a link in the bibliography.

Github - pulling

The reverse of **pushing** is **pulling**, and that will allow us to bring all changes **from the remote repository to our local repository.**

\$ git pull origin master

Conflicts occur naturally when coding. Mostly when we do collaborate with others.

Let's introduce a conflict and fix it ourselves!

First, in our local copy of **my-first-repo**, let's change the function we had to:

```
def func(a, b):
    return a - b
```

A simple change, just modify it so it substracts instead of adding.

And then **git add** and **git commit** it.

```
$ git add file.py
$ git commit -m "change function and make it substract"

[master ae46fc3] change function and make it substract
1 file changed, 1 insertion(+), 1 deletion(-)
```

Now let's simulate the changes someone else would make in github.

```
Then, in our local repository, let's git pull
$ git pull origin master
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/popogor/my-first-repo
* hranch
                    master -> FETCH_HEAD
  4c659b6..e441a78 master -> origin/master
Auto-merging file.pv
CONFLICT (content): Merge conflict in file.py
Automatic merge failed; fix conflicts and then commit the result.
```

First of all, we need to see the conflicts

```
$ git diff
diff --cc file.py
index 64ad20f,84e4d51..0000000
--- a/file.py
+++ b/file.py
000 -1,3 -1,3 +1,7 000
  def func(a, b):
++<<<<<< HFAD
      return a - b
++======
     return a * b
++>>>>> e441a78ff5f91b986f0da3afddbb7a7a01ee1859
```

As you've seen in the last **git diff**, there are incompatible changes in our function. We need to make a decission, let's say that we want to keep the multiplication.

We finish the process by doing **git add** and **git commit** after solving the conflict, telling git we're happy with the result.

```
$ git add file.py
```

```
$ git commit -m "merged conflict in file.py"
[master labfd41] merged conflict in file.py
```

```
$ git log
```

commit 1abfd4151a6d44e3268c59b56065730676e545db (HEAD -> master)

Merge: ae46fc3 e441a78

Author: Pepe García <pepe@pepegar.com> Date: Tue Nov 12 01:55:00 2019 +0100

merged conflict in file.py

commit e441a78ff5f91b986f0da3afddbb7a7a01ee1859 (origin/master)

Author: popogor <46658846+popogor@users.noreply.github.com>

Date: Tue Nov 12 01:38:13 2019 +0100

change function and make it multiply

Github classroom

Github classroom is the software we will use in this term to handle, submit, and review assignments. You will receive links like this one, and you'll need to accept the assignments:

Section 2

https://classroom.github.com/a/w5ZSPW16

Section 3

https://classroom.github.com/a/Meo0vyLF

Github classroom

When we accept an assignment in Github classroom, a new repository gets created automatically in our Github profile. It gets

Cloning a project

```
$ git clone https://github.com/pepegar/my-first-repository.git

Cloning into 'my-first-repository'...

remote: Enumerating objects: 16, done.

remote: Total 16 (delta 0), reused 0 (delta 0), pack-reused 16

Unpacking objects: 100% (16/16), done.
```

we use git clone to copy a repository to our local computer.

Bibliography

Images and inspiration drawn from

- How to teach Git
- Codecademy get started with Git and Github
- Learn git concepts, not commands
- Using branches
- Switch git branch

My old set of slides:

https://slides.com/pepegar/pfp-9