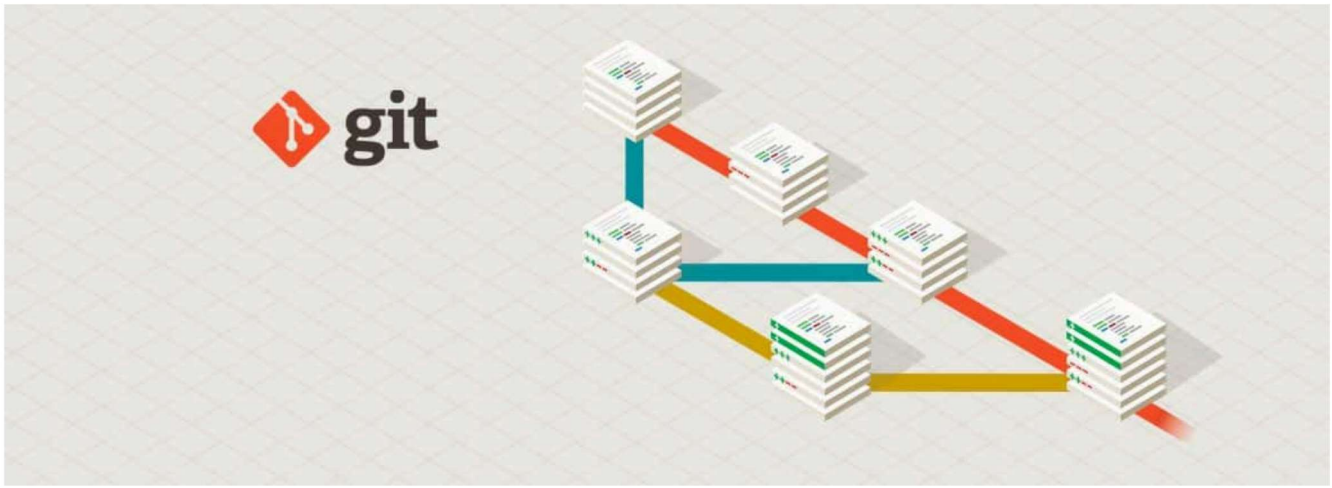
Git Tutorial. Basic manual with examples step by step

Categorías: Web Autor: Diego C Martin



Hi there! In this tutorial, I'll be guiding you through the use of Git version control step by step. You'll see examples with screenshots showing the information that Git displays every time you execute a command. Plus, I'll write out each command so that you can easily copy and paste it to apply it to your own project.

To get started with Git, you'll need a terminal from which to execute the command line instructions, as well as the installed application. You can download the latter from the official website.

Índice de contenidos del artículo [ocultar]

Git Basics

- Git is based on snapshots (snapshots) of the code in a certain state, which is given by the author and the date.
- A *Commit* is a set of changes saved to the *Git* repository and has a unique *SHA1* identifier.
- *Branches* can be thought of as a timeline of *commits* . There is always at least one main or default branch called *Master* .
- *Head* is the pointer to the last commit on the active branch.
- *Remote* refers to sites that host remote repositories such as GitHub.

Git workflow

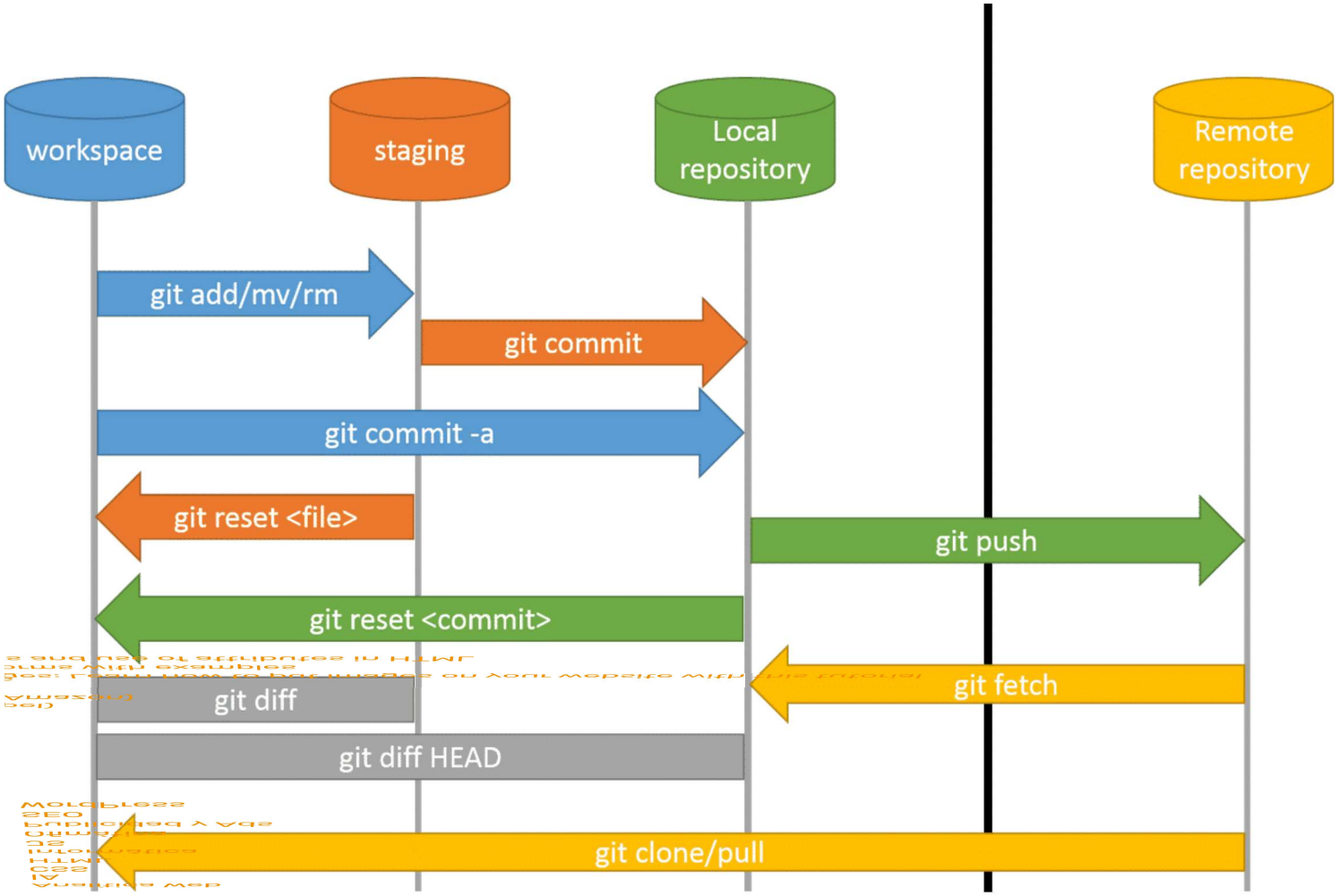


Image obtained from blog.podrezo.com

If we work locally (we start in the image on the left), we initialize the working directory (working directory). We can work (edit files) in the working directory.

With the *Git add* command we send the changes to *staging* , which is an intermediate state in which the files to be sent in the *commit* are stored. Finally with *commit* we send it to the local repository.

If we want to collaborate with others, with *push* we upload the files to a remote repo and with *pull* we could bring the changes made by others remotely to our working directory.

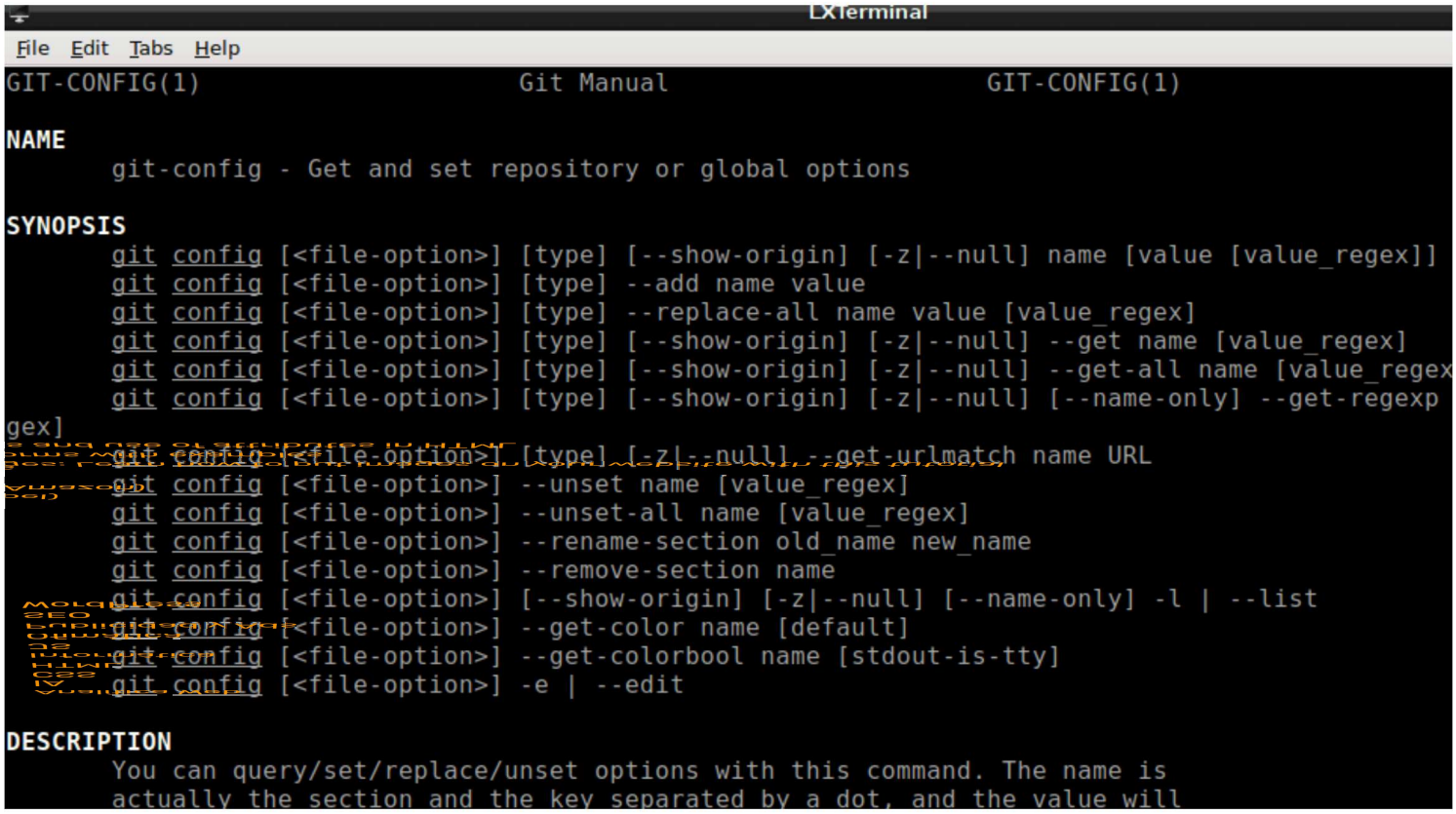
If we start working remotely, the first thing we do is clone the information in the local directory.

Git Help

With *git help* in the terminal we get help.

Let's look at the configuration help with

```
#git help config
```



Git Configuration

At a minimum we must configure the name and email in the application with the following commands:

```
git config --global user.name "Tu nombre aquí"
```

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

```
root@debian:/home/diego# git config global user.name diego
fatal: not in a git directory
root@debian:/home/diego# pwd
/home/diego
root@debian:/home/diego# git config --global user.name diego
root@debian:/home/diego# git config --global user.email diemarm4@gmail.com
root@debian:/home/diego#
```

To check we can use:

```
git config --global -list
```

What the system does is create a text file called .gitconfig, so we can display it with cat as well if we're using a Linux system:

```
cat ~/.gitconfig
```

Git tutotial. How to get started with Git

Work on a new project with Git

We place ourselves in the folder in which we want to work. We make sure with pwd, to know where we are.

Now with git init and the project name, we create a new project:

```
git init prueba01
```

```
root@debian:/home/diego/Proyects# pwd
/home/diego/Proyects
root@debian:/home/diego/Proyects# git init prueba01
Initialized empty Git repository in /home/diego/Proyects/prueba01/.git/
root@debian:/home/diego/Proyects# ls
prueba01
root@debian:/home/diego/Proyects# cd prueba01/
root@debian:/home/diego/Proyects/prueba01# ls
root@debian:/home/diego/Proyects/prueba01# ls -a
.  ..  .git
root@debian:/home/diego/Proyects/prueba01#
```

This creates a folder with the same name and inside it, we can see with ls -a that a hidden .git subfolder is created for the control and management of the tool.

Work on an existing project with Git

We use Initializr to download a demo project, put it in a folder, go into it and just run git init.

```
root@debian:/home/diego/Proyects# ls
prueba01  Web
root@debian:/home/diego/Proyects# cd Web/
root@debian:/home/diego/Proyects/Web# ls
404.html              crossdomain.xml  humans.txt  js          tile-wide.png
apple-touch-icon.png  css              img         robots.txt
browserconfig.xml     favicon.ico      index.html  tile.png
root@debian:/home/diego/Proyects/Web# git init
Initialized empty Git repository in /home/diego/Proyects/Web/.git/
root@debian:/home/diego/Proyects/Web# ls -a
.                     browserconfig.xml  .git        index.html  tile-wide.png
..                    crossdomain.xml    .htaccess   js
404.html              css                humans.txt  robots.txt
apple-touch-icon.png  favicon.ico        img         tile.png
```

Your First commit

Now we are going to create some file in the first of the projects. I have created a README.md file with the content: #Git Demo.

Now, in the project folder we execute

```
git status
```

```
diego@debian:~/Proyects$ cd prueba01/
diego@debian:~/Proyects/prueba01$ ls
README.md
diego@debian:~/Proyects/prueba01$ git status
On branch master

Initial commit

Untracked files:
  (use "git add <file>..." to include in what will be committed)

        README.md

nothing added to commit but untracked files present (use "git add" to trac
k)
diego@debian:~/Proyects/prueba01$
```

We can see the details. We are located in the master branch and we have a file that has not been added yet.

The first thing we are going to do is add it to the staging, also called the Git Index, using the git add command:

```
git add README.md
```

```
diego@debian:~/Proyects/prueba01$ git add README.md
diego@debian:~/Proyects/prueba01$ git status
On branch master

Initial commit

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

        new file:   README.md
```

Now we see that the file is already waiting to be committed to the repo.

When executing commit we do not specify which files will be committed. All those in staging are sent. Let's add the -m option to add a message to the commit, for example "initial commit":

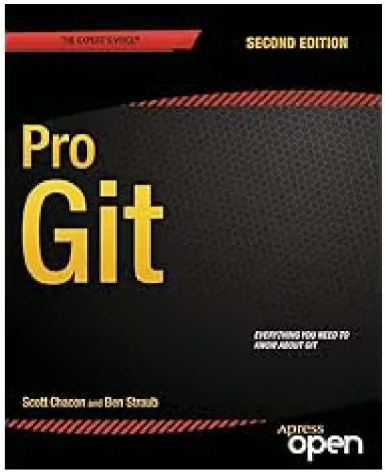
```
git commit -m “commit inicial”
```

```
1 file changed, 1 insertion(+)
create mode 100644 README.md
```

We will see a message similar to this:

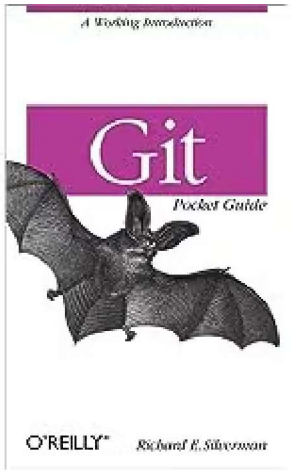
If we do a status now we will see that the staging area is empty and there is no pending commit.

The best books on GIT. Recommended bibliography



Pro Git. Scott Chacon, Ben Straub. 4,5 ⭐ +2682 reviews.

Go to Amazon



Git : Pocket Guide. Richard Silverman. 4,6 ⭐ +271 reviews.

Go to Amazon

Working with Git locally

Now we are going to add more content to the README file and do a status.

We will see that now the system tells us that there are changes not sent to staging:

```
diego@debian:~/Proyects/prueba01$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory
)

        modified:   README.md

Untracked files:
  (use "git add <file>..." to include in what will be committed)

        README.md~

no changes added to commit (use "git add" and/or "git commit -a")
diego@debian:~/Proyects/prueba01$
```

With the same procedure as before, we add (add) and make a new commit:

```
diego@debian:~/Proyects/prueba01$ git commit -m "2 commit agregando txt"
[master 8608d3f] 2 commit agregando txt
 1 file changed, 1 insertion(+), 1 deletion(-)
diego@debian:~/Proyects/prueba01$
```

We can also do the add and commit in one step with:

```
git commit -a
```

As recommended by Git itself in the screenshot above. If we also want to add the message, it would be

```
git commit -am “msj”
```

We can make some more changes and add another file, for example an index.html to the project.

```
diego@debian:~/Proyects/prueba01$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory
)

        modified:   README.md

Untracked files:
  (use "git add <file>..." to include in what will be committed)

        README.md~
        index.html

no changes added to commit (use "git add" and/or "git commit -a")
```

In this case we are going to add the modified or new files to the staging recursively with

```
git add .
```

```
diego@debian:~/Proyects/prueba01$ git add .
diego@debian:~/Proyects/prueba01$ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   README.md
        new file:   README.md~
        new file:   index.html
```

A new commit:

```
diego@debian:~/Proyects/prueba01$ git commit -m "nuevo archivo y algunos c
ambios en Readme"
[master 689e0e5] nuevo archivo y algunos cambios en Readme
 3 files changed, 94 insertions(+), 1 deletion(-)
 create mode 100644 README.md~
 create mode 100755 index.html
diego@debian:~/Proyects/prueba01$
```

We're going to make some change again and add it to the staging. If we look at the capture of the previous add operation, the system tells us that we can take a file out of the stage with git reset HEAD and the name of the file. We tried it with README:

```
git reset HEAD README.md
```

```
diego@debian:~/Proyects/prueba01$ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   README.md
        modified:   README.md~

diego@debian:~/Proyects/prueba01$ git reset HEAD README.md
Unstaged changes after reset:
M       README.md
```

A new status will indicate that there is one staging and another to be added:

```
diego@debian:~/Proyects/prueba01$ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   README.md~

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory
)

        modified:   README.md
```

As we can see, we can also discard the changes in the working directory with checkout:

```
git checkout -- README.md
```

This returns our readme file to the previous state.

> Remember that you can consult the help to see more options and commands. Here you can some additional examples .

History of operations in Git. the log

With git log we can see the history of operations that we have done:

```
git log
```

We can see that the commits have been made in reverse chronological order with the different users and that each one has its associated key and date.

With git help log we can see the options that exist. An example of a compact and colorful view would be:

```
git log --oneline --graph --decorate --color
```

How to Delete files from Git repository

Let’s imagine that one of the files that is already in the git repository after a commit we don’t want there. We can use the remove rm command and the file name:

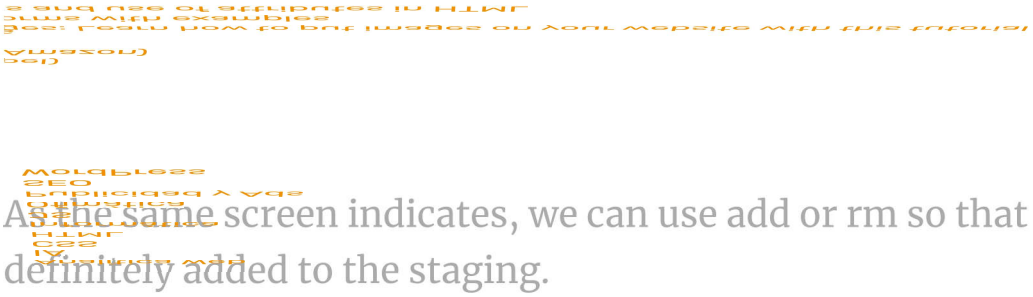
```
git rm index.html
```

We can see that the status indicates that the change executed for the file to be deleted is in staging. To remove it we must make a new commit:

We will now see that the index file is no longer in the working directory.

Now we are going to add a new file, add it to staging and commit. We are going to remove it manually from the OS file system, not from Git.

Now I delete the file humans.txt and we do a status:



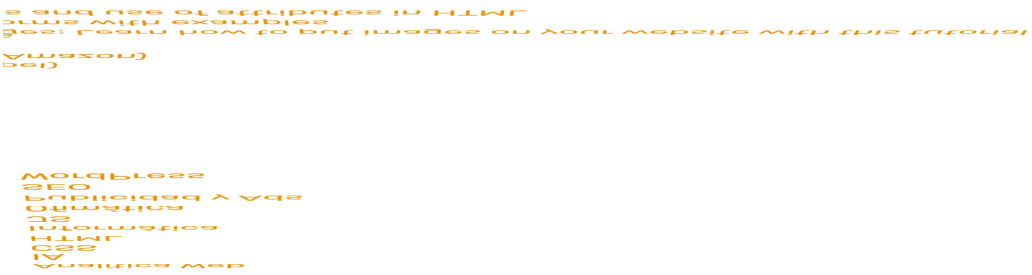
As the same screen indicates, we can use add or rm so that the changes are definitely added to the staging.

In this case an *add* has been used and after a *commit* the deletion has been executed in the repo.

How to move files in Git

We are going to create a new “ *style* ” folder to host a new css style file which is now in the root folder of the project and already in the repository.

Let’s first try to manually move the file:



In this case we are going to run git commit -a to add to the staging and commit with a single operation:

Eye! If we do a *status* again we will see that the *styles* folder has not been updated correctly. We’ll have to make it recursive with git add . and then the *commit* .

How to ignore files in Git

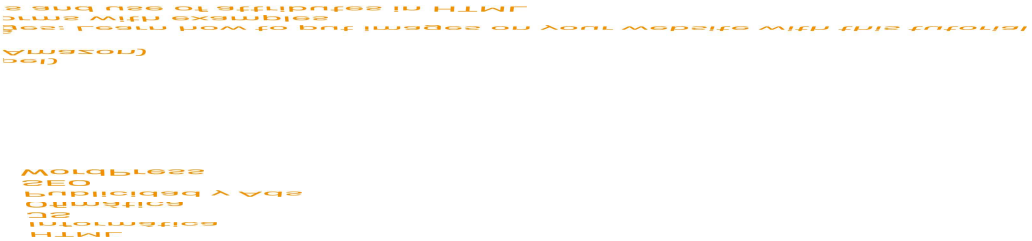
Now we have a file that we never want to be added to the repo, for example a log file.

In Debian Linux, with the nano command we can edit a file in a text editor in the terminal.

Let’s edit the .gitignore file, in which we specify the files to ignore on separate lines.

And in the file, which will appear empty, we add in the first line *.log. We save and exit.

Now we do a status and we will see the .gitignore file to add to *staging* :



We have also made a new *commit* .

The best books on GIT. Recommended bibliography

Pro Git. Scott Chacon, Ben Straub. 4,5 ⭐ +2682 reviews.

Go to Amazon

Git : Pocket Guide. Richard Silverman. 4,6 ⭐ +271 reviews.

Go to Amazon

Working with Git Remotely

Configuring a key for SSH connection and authentication on GitHub

The first thing is to create the SSH authentication. We go to the user root folder, create a folder called .ssh. We move to it and through the shh-keygen command we create a key associated with the email account. We are going to use an RSA type key, so that the command would be:

```
ssh-keygen -t rsa -C “correo@dominio.com”
```

It asks us where we want to save the file with the key. We can select the default option.

With ls -al we can see in detail the new files generated in the operation.

The .pub file is the public key, which we'll push to GitHub. To do this we must open the document and copy its content.

The Nano editor can be a bit complex to use for these operations. Here are other alternatives for Linux: How to open a particular file from a terminal? . I will use

```
xdg-open nombre_archivo
```

Now we log in to GitHub and go to Settings à SSH Keys and create a new one, indicating a descriptive name, remember that this is associated with the computer from which we work, and the public key that we have previously copied.

Now we execute

```
ssh -T git@github.com
```

And we should authenticate correctly:

Working with a remote repository on GitHub

Let's first create a new repository from the GitHub web app while logged in.

Once created, on the next screen we click on SSH at the top to see the command line submission instructions.

Now we move to the project we want to work with. We see that the status is nothing pending and we execute the first command. Using after...

```
git remote -v
```

The *remote* command is used to see the associated remote repositories. with the -v option we see the URL:

The URLs that we see in the previous screenshot are of the SSH type, indicating that we could send. We can also add repositories of other users to receive with the command *git remote add*[nombre][url] .

> Example: $ git remote add pb git://github.com/paulboone/ticgit.git

To receive the files from one of these repositories from another user, we use the *fetch* command followed by the name that we have put in the previous command.

> Example: git fetch bp

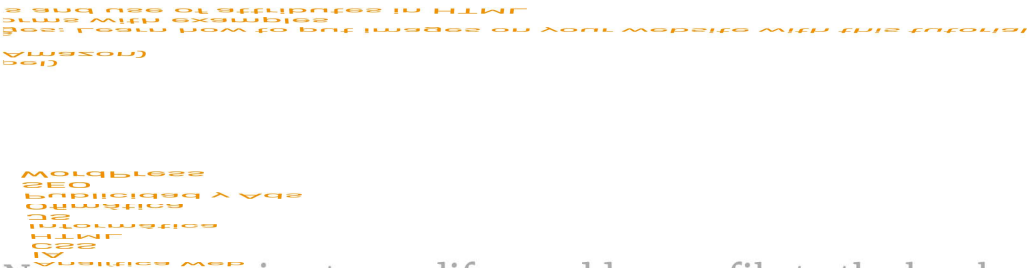
Now we are going to send the files locally to the remote repo with push and the -u option to establish a link between them, also specifying the remote repository (origin) and the working branch (master), leaving:

```
git push -u origin master
```

Once the link is established, it will not be necessary to use the -u option, leaving the instruction to update the changes in the remote repository as follows:

```
git push origin master
```

Now we can see the updated repository on GitHub:



Now we are going to modify or add some file to the local repo and update the remote one again.

If we see the status now, it tells us that there are changes pending to be synchronized with the remote:

Although I am working alone now, the logical thing is to request the latest changes through a pull, before sending ours with a push, to avoid conflicts with other team members. So we run:

```
git pull origin master
```

```
git push origin master
```

We can already see the new changes in the remote repository.

When doing *pull* , the system retrieves and tries to merge the remote branch with the local one, while with the *fetch* command that we saw before it does not. More info in the official documentation .

Means

- Official website
- Description on Wikipedia

Git is a very powerful version control system. It's not as straight-forward as Subversion or Perforce, but it does allow for a lot more flexibility. Setting up Git can be a little intimidating at first, but if you take the time to learn the commands it becomes second nature. In this tutorial I guide you through the use of Git version control step by step. You can easily copy avery command to apply it to your own project.

Leave a Reply

Your email address will not be published. Required fields are marked *

Name *

Email *

Website

☐ Sí, agrégame a tu lista de correos

POST COMMENT

Artículos de la misma categoría

The importance of SEO search intent to improve your SEO

What are KPIs? Complete guide with examples to measure performance in your company

I celebrate joining as a partner and CTO in AREA10 Marketing What does CTO mean? Know the roles and responsibilities

Learn how you can create your own web portfolio and use it to present your skills, experience and achievements in an engaging and professional way.