

Git intro and Basic use

FHICT

What is Git?

Git is created to have distributed version control. Serious software development is not possible without using some sort of version management. It allows you to get back to a specific version and it enables people to work together on 1 software system.

This Chapter gives first time users a short intro into git. For a lot more info please look at the very good book <https://git-scm.com/book/en/v2> which is free to download.



Figure 1.1 git

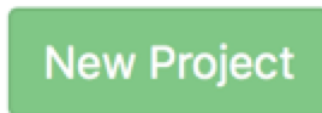


Figure 1.2 new project



Figure 1.3 git https

Create a repository

A repository is a place (typically online) where your code and all previous versions of it are stored. We will now create a repository at the so-called *git-lab* environment at FHICT (only available for FHICT-students; An alternative would be creating a repository at *GitHub.com*, which is very similar)

Use a browser to go to <https://git.fhict.nl> and create a git repository. Copy the https-url to your clipboard, we need it in a few minutes.

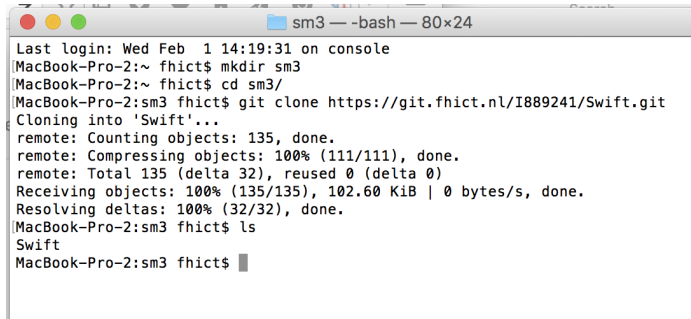
In Git you typically have a repository on a network somewhere where all files of your project are stored, including the history of commits to those files. Furthermore you have a local repository with all source code versions which you regularly synchronize (using push and pull) with the remote repository on a server. Other people in your team sync with the same remote repository.

Advanced uses like branching and tagging we will not use in this course.

Clone the repository

Next step is creating a so-called clone locally on your laptop. This will be your workspace where you can develop. By keeping it up to date with the server (pushing your changes to the server and pulling the changes of other developers from the server) you can work together with other developers.

You can choose between several tools to do the pulling and pushing, some created to be easy to use and some more advanced. We will use the *command line*: the advantages being that **all** git-functionality is available from the command line and virtually every user using git has this commandline installed. The syntax shown here is that of a Unix-command line (terminal or

A screenshot of a macOS terminal window titled 'sm3 - bash - 80x24'. The terminal shows a sequence of commands and their outputs: 'Last login: Wed Feb 1 14:19:31 on console', 'MacBook-Pro-2:~ fhict\$ mkdir sm3', 'MacBook-Pro-2:~ fhict\$ cd sm3/', 'MacBook-Pro-2:sm3 fhict\$ git clone https://git.fhict.nl/I889241/Swift.git', 'Cloning into 'Swift'...', 'remote: Counting objects: 135, done.', 'remote: Compressing objects: 100% (111/111), done.', 'remote: Total 135 (delta 32), reused 0 (delta 0)', 'Receiving objects: 100% (135/135), 102.60 KiB | 0 bytes/s, done.', 'Resolving deltas: 100% (32/32), done.', 'MacBook-Pro-2:sm3 fhict\$ ls', 'Swift', and 'MacBook-Pro-2:sm3 fhict\$'.

```
sm3 - bash - 80x24
Last login: Wed Feb 1 14:19:31 on console
MacBook-Pro-2:~ fhict$ mkdir sm3
MacBook-Pro-2:~ fhict$ cd sm3/
MacBook-Pro-2:sm3 fhict$ git clone https://git.fhict.nl/I889241/Swift.git
Cloning into 'Swift'...
remote: Counting objects: 135, done.
remote: Compressing objects: 100% (111/111), done.
remote: Total 135 (delta 32), reused 0 (delta 0)
Receiving objects: 100% (135/135), 102.60 KiB | 0 bytes/s, done.
Resolving deltas: 100% (32/32), done.
MacBook-Pro-2:sm3 fhict$ ls
Swift
MacBook-Pro-2:sm3 fhict$
```

Figure 1.4 bash

bash), which is the same for every Unix, Linux or Mac user. If you only have MS-Windows you could install *cygwin* or adjust the commands a little.

Start a *terminal* or *bash* shell. Go to the directory (*folder*) where you want your workspace to be. How? Suppose you want to create a directory (*mkdir* means *make dir*) *myProject* in your *Documents* directory you type the commands:

```
[ cd Documents
  mkdir myProject
  cd myProject
```

cd is short for *Change Dir*. Most of the time you don't have to type whole names like *Documents*: just type *Doc* and press the *tab* key and probably the *shell* will complete the name.

In the terminal *clone* the git-repository from the server to your local directory by typing:

```
[ git clone <pasteYourGitUrlHere>
```

After that (you will be asked for your *username/password*) you now have a local copy (*clone*) of the entire history of this repository (for a just created project this is still empty of course).

To go inside the local *repository-directory*, which after a *clone* contains the *latest* version of the files, use

```
[ cd <dirname>
```

Typing *git status* tells you that (at this moment) there's nothing to commit (which means you don't have made local changes to the repository).

These are only the basics of *git*. In my experience most students use it to commit and push their changes right from their IDE. Most *IDEs* and *editors* nowadays have built-in *git*-functionality. Say for example you use Xcode:

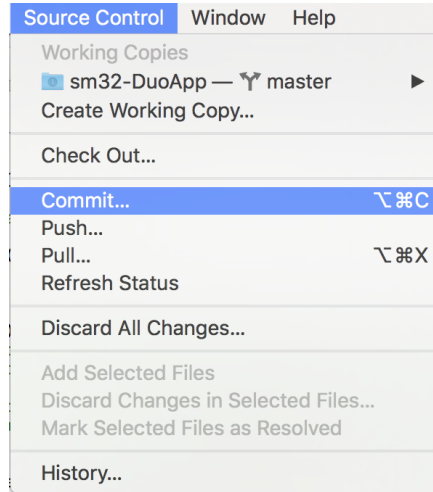


Figure 1.5 git from xcode



Figure 1.6 git gud

see xcode-menu 'Source Control': when you succeeded with the above doing the same from xcode should be a piece of cake! Good luck!

For more info about git please look at the very good book <https://git-scm.com/book/en/v2> which is free to download.