

Small overview about the functions of git and the most used commands.

All covered commands start with git

## Getting Started

### init

initialize a repository

optional flag: `--bare` causing to have a repository without a working tree where you push from other repositories

### clone 'url'

calls `init` but copies an existing repository

### remote add origin 'url'

specify a remote repository electively on a website like `github.com` or `gitlab.com`

### config --global user.name "Name"

sets an username for all local git repositories

### config --global user.email E-mail

sets an E-Mail-address for all local git repositories

### config --list

shows all set configurations for the called repository

## Basic commands

### status

gives informations about the current working tree, as un-/staged files and branch

### add 'filename'/'path'

add a file to index

optional: by `'*'` adding all tracked files

### commit

commit current contents of index. You will be asked for a commit-message in which you describe changes

common way: `-m " 'commit message' "` - one line commit

### fetch

downloads from remote without any merges on local files

### pull

download the newest commit from remote and tries to merge conflicts automatically

### push

upload the newest commit to remote

### checkout

switches branches if appended by `'branchname'` or: removes a staged file from commit if appended by `'filename'`

### branch

creates a new branch pointing on the same commit as the master  
used for having a independent working tree, i.e. for an experimental build

### log

information about the last commits  
optional: `--stat` gives detailed information of commits as changed lines per file

### merge

updates a branch to the state of an different one, by default with recursive auto-merging

## Advanced/Specific commands

Some commands you probably only need in a very distinct situation

### update-index assume-unchanged 'filename'

in case to untrack a file which already has been added to the git repository

## SSH management

it is possible to use ssh to log in into your chosen remote website. Create a new ssh key by `ssh-keygen -t rsa -b 4096 -C "your_email@example.com"`, copy it to clipboard and paste it in settings → SSH and GPG keys.

### cherry-pick

apply chosen commits to branch instead of all (like with merge)

### blame

used to see which contributor changed which line

## Useful knowledge

Useful features of git and knowledge about common problems

### The ".gitignore" file

file to exclude specific file types from being tracked.  
i.e. `"*.log"` not to have LaTeX log files in the repository

### Merge Conflict

`<<<<<<< HEAD` - start of conflict

`your changes`

`=====` - separator

`changes in other branch`

`>>>>>>> BRANCH-NAME` - end of conflict

To resolve the conflict delete the three added lines and decide with lines to keep, delete the others. After that commit.