

Git

See also:

- <https://swcarpentry.github.io/git-novice>
- <http://rogerdudler.github.io/git-guide/>

Setup

Set global configuration

```
git config --global user.name "John Doe"
git config --global user.email "mail@example.com"
git config --global color.ui "auto"
```

List all configured values

```
git config --list
```

Creating a Repository

First we create a new directory, then we initialize it as a repository

```
mkdir paper
cd paper
git init
```

Verify that it is indeed a repository

```
git status
```

Tracking Changes

Create a file called `article.md`

```
nano article.md
```

and enter the following text

```
# Report about some interesting findings
```

Verify that git noticed some changes with

```
git status
```

Add the changes to the staging area

```
git add article.md
```

Again check with

```
git status
```

Now commit the changes to the repository and provide a message

```
git commit -m "Start writing article about my findings"
```

Re-check `git status`. Have a look in the log

```
git log
```

We will now introduce some changes. Open the file again with `nano article.md` and add a second line

```
## Introduction
```

Use `git status` again. To see the introduced changes use

```
git diff
```

Add and commit the new content

```
git add article.md
git commit -m "Add introduction section"
```

Repeat the above steps as often as you want. You can check your commits with `git log` at any time.

Exploring History

Introduce some changes with `nano article.md` and do not add or commit them. Explore your changes against the current and previous versions

```
git diff HEAD article.md
git diff HEAD~1 article.md
git diff HEAD~2 article.md
```

Explore all changes in comparison to a specific version, first find the hash sum for your desired commit using `git log` and then

```
git diff <hash-sum> article.md
# for example (this will probably not work for you)
git diff 373e6b6e9d86dab310b95642660e7b4c07054c1e article.md
# this can be shortened as long as the beginning of the hash sum is unique
git diff 373e6b6 article.md
```

Revert the changes you have not yet added or committed

```
git checkout HEAD article.md
# or just
git checkout -- article.md
```

Ignoring things

Create some files you don't want to track

```
mkdir results
touch a.dat b.dat c.dat results/a.out results/b.out
```

Check `git status` Ignore the files by creating a special file `nano .gitignore` with the content

```
*.dat
results/
```

Check again with `git status`. Add `.gitignore` and commit your changes.

Remote repositories

To work with remote repositories, e.g. on GitLab important commands are

```
# Clone a repository to your local machine
git clone git@github.com:swcarpentry-wuerzburg/2017-07-03-Software_Carpentry_Wuerzburg_Teaching_Material
# Get changes from the server
git pull
# Publish your local changes on the server
git push
```