Workshop on Version Control with Git

Edith Scheifele (B7, Z2)

24-01-2020

Plan for today

- get to know git
- download and configure git
- use basic functions: git init, git add, git commit, git status, git log
- create an Github account
  - clone the repository with the slides for today

Introduction

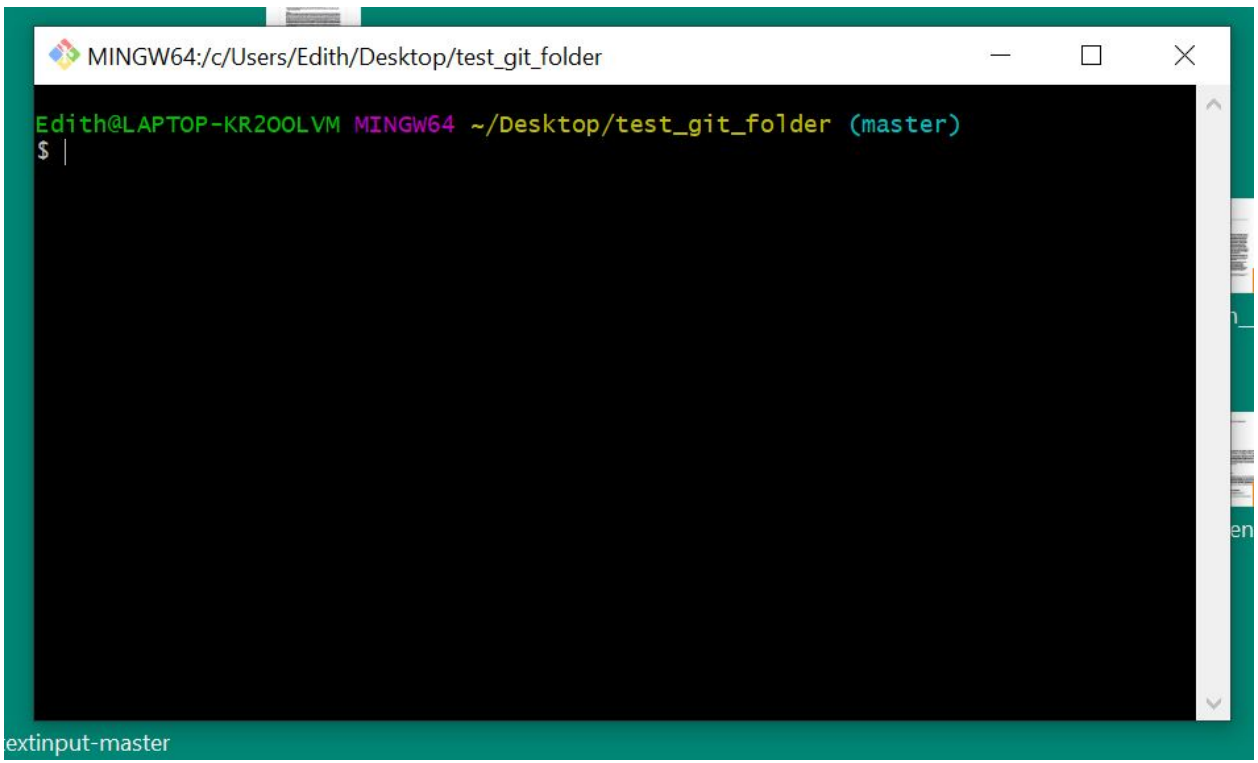
- created 2005 by Linus Torvalds (the creator of Linux) for the development of the Linux Kernel
- system for recording changes and documenting them
- facilitates collaboration
- What are your reasons?

Download and Configuration

- download git from: `https://git-scm.com/downloads`
- install it

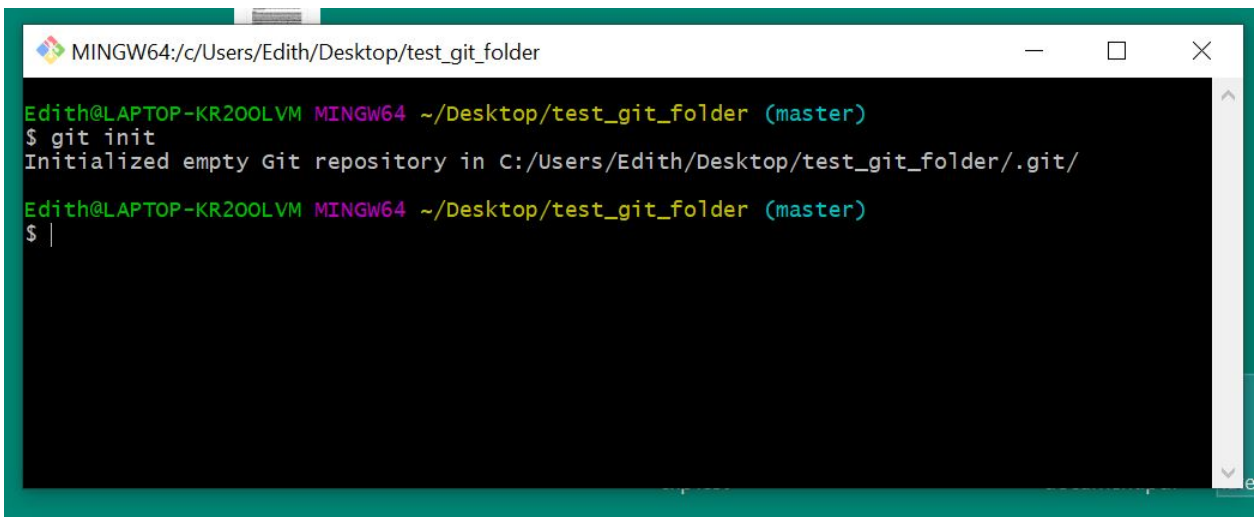
Git bash

- we will use the bash shell that comes with git



Repositories

- create a folder on your desktop called test_git_folder
- this will become your Git **repository (repo)**
- right click on it > Git Bash Here
- initialize the repository by typing *git init* into the shell



Basic functions

- every git function is prepended with *git*
- the core functions are:
  - git init
  - git add
  - git commit -m “some infos”
  - git
- also very useful:
  - git status
  - git log

git status & git log

- **git status**: shows the status of your project

Task:

- type *git status* into the command line to view the status of your project
- **git log**: shows the commit logs (history of your changes)

Task:

- type *git log* into your command line

git logic

- three main stages of a file: *untracked* - *tracked* / *staged* - *commited*
- if you start your project with *git init*, git becomes active (it creates a hidden directory *.git*)
- if you place a file into your folder, git becomes aware of it as *untracked*

Task:

- create a txt file (e.g., myfile.txt) with only one line of text and save it into your folder
- now type *git status* again. Can you see your file under *Untracked files*?

git add

- to add the file to the so called staging area, type *git add myfile.txt*
- git now deposits it into it so called index

Task:

- do this for your txt file, then do *git status*

git commit -m “some infos”

- to actually record your changes, type: *git commit -m “describe the change you made”*
- do this for your txt file, then do *git status* and *git log*

Task

- write a second line into your txt file
- re-do the git process above with *git add*, *git commit*, *git status* and *git log*

See your changes: *git show [SHA1 hash]* and *git diff*

- write a third line into your file
- do *git add myfile.txt*
- then type *git diff myfile.txt* to see the change you made
- then commit the change
- every commit has its own unique SHA1 hash key (the very long string of numbers and letters)
- by typing *git show [SHA1 hash]* you can see the commited change
- be careful: STRG + C / V don't work in the shell, use the menue

Github

- `https://github.com/`
- online platform for your projects
- free and open source
- facilitates collaborating with others

Github: Create an Account & Clone a repo

- create an account at Github
- navigate to: `https://github.com/EdithScheifele/Workshop_2020_git`
- clone the repo
  - copy the https link
  - go to the desktop and open a bash shell
  - type *git clone [https link]*

Wrap-up

- basic git commands: init, add, commit, status, log
- we are able to add and commit a change we made to a file
- we are able to review the change in the staged and commited stage
- we have a Github account and we are able to get our own copy of a repo

Next steps

- use git for your projects (*practice makes perfect*)
- read the first chapters of the free book *Pro Git* (link provided below)

Resources

`https://git-scm.com/`

`https://git-scm.com/book/en/v2`

Loelinger, Jon & McCullough, Matthew (2012): Version control with git.