Some GIT Basics

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Content

Introduction

Introduction

- “Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency. ”
- Version control systems track changes to files and allow you to go back to earlier versions thus creating backups as well.
- Git is not the first or only available version control system (VCS): CVS, Bitbucket, and Subversion are wellknown
- Git was developed by the Linux creator Linus Torvalds to maintain the Linux kernel

Centralized versus Distributed VCS

- Subversion is a centralized vcs, it uses a central server. Only this server has the full history of all files
- All developers get special snapshots from this server.
- Backing up the server is essential!
- Git is a distributed vcs, so all clients (developers) have the complete repository on their machines.
- I personally used Subversion for a long time (and still use it for some projects) but mostly have migrated to Github.
- Github = a central platform where I can put my projects, but not the “central server” like with Subversion

Working with Git

In the following we will look as various use cases for working with Git

- Create new repositories[1]
- Add files to the repository
- Making changes to the repository
-

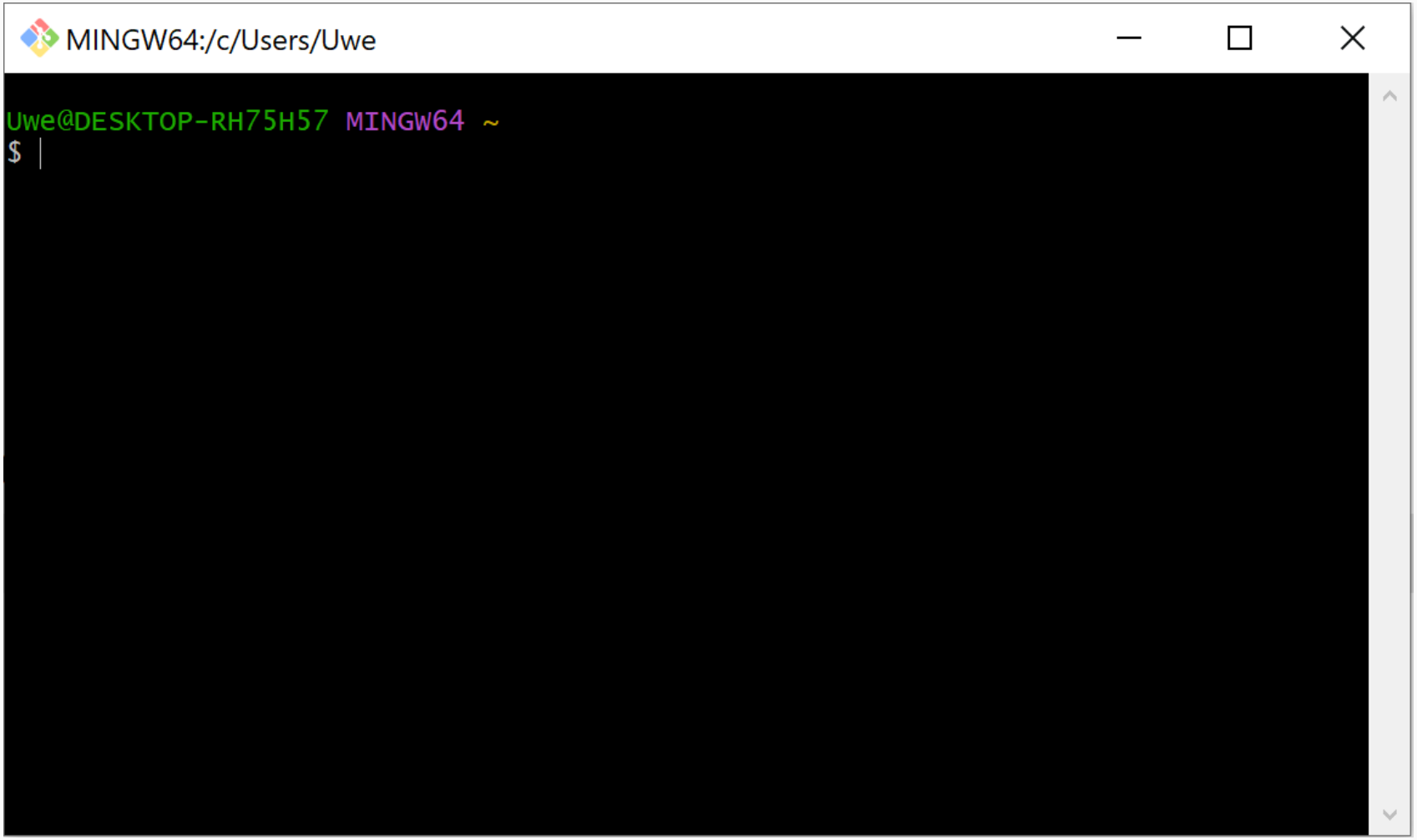
Remark: Git can be quite complex, normally you need only a few commands.

[1] The project structure you manage with Git

MinGW Basics

Running Git

- You find Git 2.28 on your desktop
- When you start it you land here:



MinGW

- MinGW = Minimal GNU[2] for Windows
- A shell that ports many Unix/Linux tools to Windows
- This is not Git, Git is just a commandline tool that can be used within MinGW
- It contains a few Linux tools as well
- To move in this MinGW environment you need to use Linux commands

[2] “GNU is not Unix” = Open-Source stuff

Basic MinGW commands

pwd	In which directory are we?
ls	List all files and folders
cd	go to some specific directory
mkdir	create a new directory

Remarks:

- There are no drive letters in MinGW
- `/` is the root directory
- Windows drive letters are (invisible) directories below this root directory
- so `cd /c` takes you to the C:\directory

Git

Create new Repositories

Create a directory, change to that directory and init the repository. The directory may already contains some files

```
cd /e # go to the e: drive

mkdir myfirstgitrepo # create empty directory

cd myfirstgitrepo #  go to the directory

git init . # create repo (with a 'master' branch)
```

git status

Use `git status` whenever you want to know something about the current state of the repository

```
Uwe@DESKTOP MINGW64 /e/myfirstgitrepo (master)
$ git status
On branch master

No commits yet

nothing to commit (create/copy files and use
"git add" to track)
```

Adding files to the Repository 1

```
$ touch README.MD # creates an empty file

$ git status
On branch master

No commits yet

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 track)
```

Adding files to the Repository 2

```
$ git add README.MD # add file to staging area

$ git add -A # add all files to staging area
# not added to repository

$ git reset # remove everything from the
# staging area

$ git commit -m "My message" # Don't forget!!!
```

Adding files to the Repository 3

```
$ git commit -m "Initial commit"
Author identity unknown

*** Please tell me who you are.

Run

  git config --global user.email "you@examp.de"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this
repository.

fatal: unable to auto-detect email address (got
'Uwe@DESKTOP-RH75H57.(none)')
```

Adding files to the Repository 4

```
Uwe@DESKTOP MINGW64 /e/myfirstgitrepo (master)
$ git config --global user.email "ziegenhagen@gmail.com"

Uwe@DESKTOP MINGW64 /e/myfirstgitrepo (master)
$ git config --global user.name "Uwe Ziegenhagen"

Uwe@DESKTOP MINGW64 /e/myfirstgitrepo (master)
$ git commit -m "Initial commit"
[master (root-commit) acb9d75] Initial commit
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 README.MD

Uwe@DESKTOP MINGW64 /e/myfirstgitrepo (master)
$ git status
On branch master
nothing to commit, working tree clean
```

Now we have a file under version control!