

# Version control with Git and GitHub

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# Contents

Version control systems

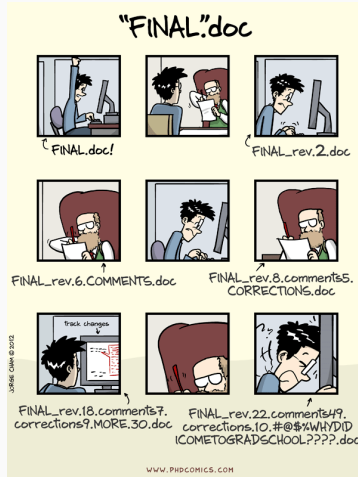
Git

GitHub

# Version control systems

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# What is version control?



From *PHDComics.com*

# What is version control?

A version control system (VCS) allows you to...

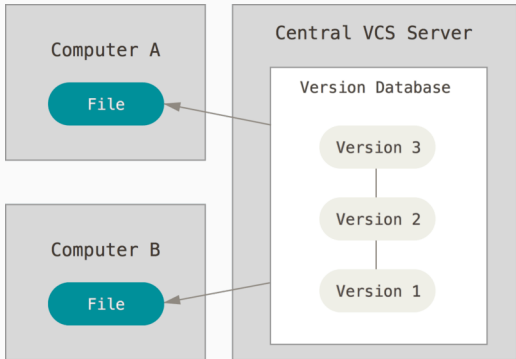
- **Records changes** to files
- **Revert back** to a previous state
- **Compare changes** over time and contributors

## Types

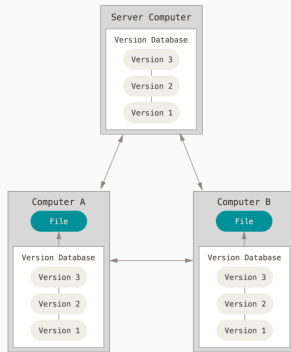
- **Centralised** VCS: CVS and Subversion (SVN)
- **Distributed** VCS: Git and Mercurial

# What is version control?

## Centralised VCS



## Distributed VCS



From *Pro Git*

# What are Git and GitHub?

## Git

- Distributed VCS
- Free and open-source
- Originally developed by Linus Torvalds
- Repositories, branches, commits, merges, ...

## GitHub

- Company
- Provides Git hosting
- Web interface
- Issue tracker, pull requests, wikis, ...

# Git

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# Some terminology

## **Repository (or 'repo')**

A set of tracked files

## **Commit**

Record changes to the repository (create a 'snapshot')

## **Push/pull**

Update remote/local repository using local/remote repository

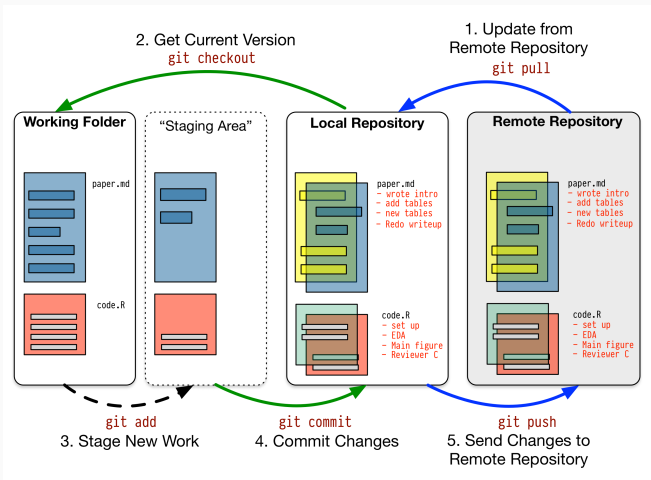
## **Branch (fork)**

Different version of a repository (stored in a different account)

## **Merge**

Join two development histories (branches/forks) together

# Git workflow



From *The Plain Person's Guide to Plain Text Social Science*

# Commit messages



	COMMENT	DATE
○	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
○	ENABLED CONFIG FILE PARSING	9 HOURS AGO
○	MISC BUGFIXES	5 HOURS AGO
○	CODE ADDITIONS/EDITS	4 HOURS AGO
○	MORE CODE	4 HOURS AGO
○	HERE HAVE CODE	4 HOURS AGO
○	AAAAAAA	3 HOURS AGO
○	ADKFJSLKDFJSDKLFJ	3 HOURS AGO
○	MY HANDS ARE TYPING WORDS	2 HOURS AGO
○	HAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT  
MESSAGES GET LESS AND LESS INFORMATIVE.

From *xkcd.com*

# GitHub

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# Making your repository available on GitHub

- Not needed if you only want to keep track of your code locally
- Good idea for **collaborative work**, or if you want to...
  - Showcase to the world what you're working on
  - Share projects that might be of interest to others
  - Contribute to open-source software
- Other Git hosting options exist (e.g. GitLab)

# Pushing, pulling, and cloning

## Push

```
1 git push <remote> <local_branch>  
2 git push origin master
```

## Pull

```
1 git pull <remote>  
2 git pull origin
```

## Clone

```
1 git clone https://github.com/<username>/<repository>
```