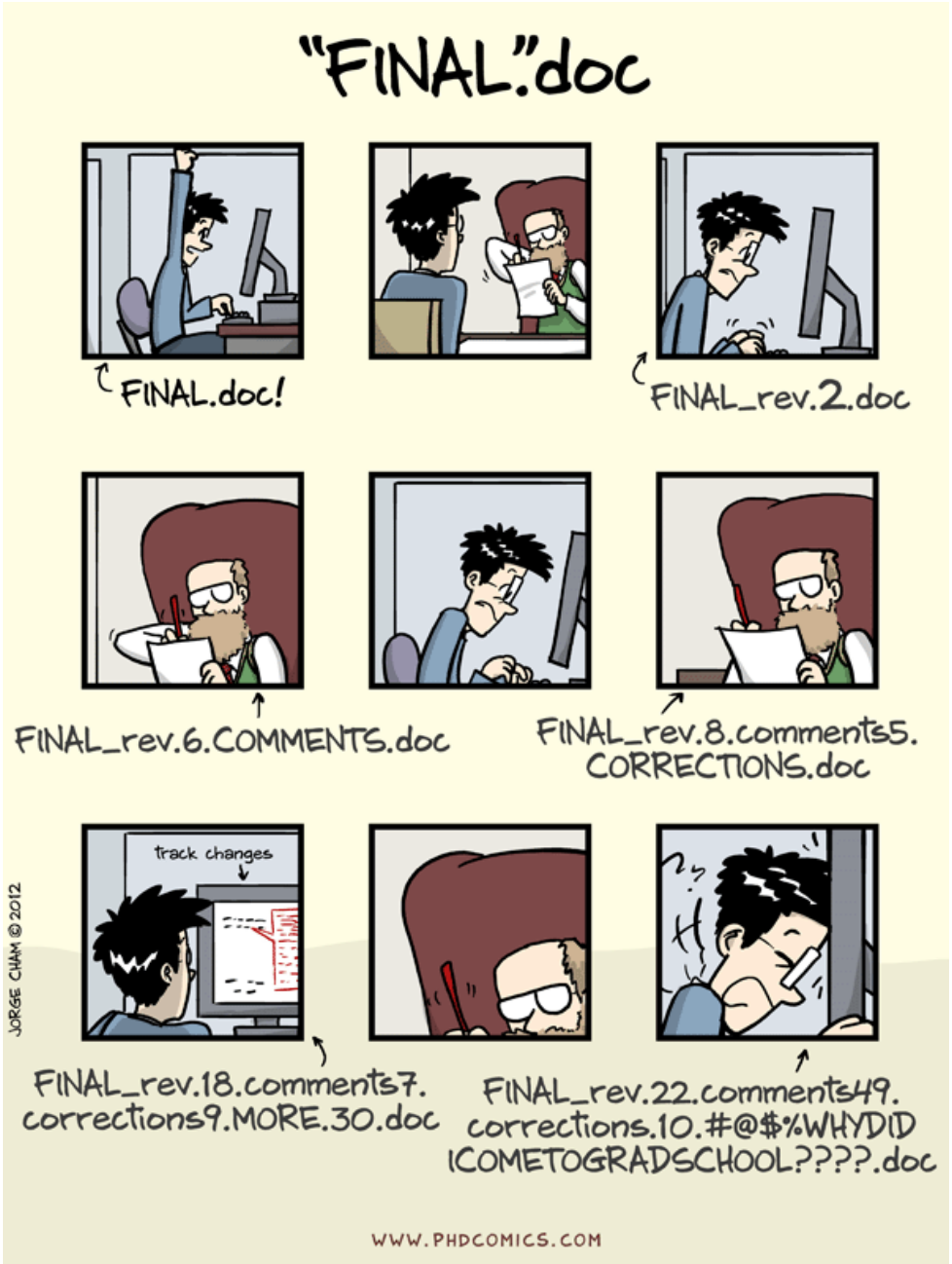
VERSION CONTROL AND GIT

Some material reused and adapted from Version Control with Git by the Software Carpentry Foundation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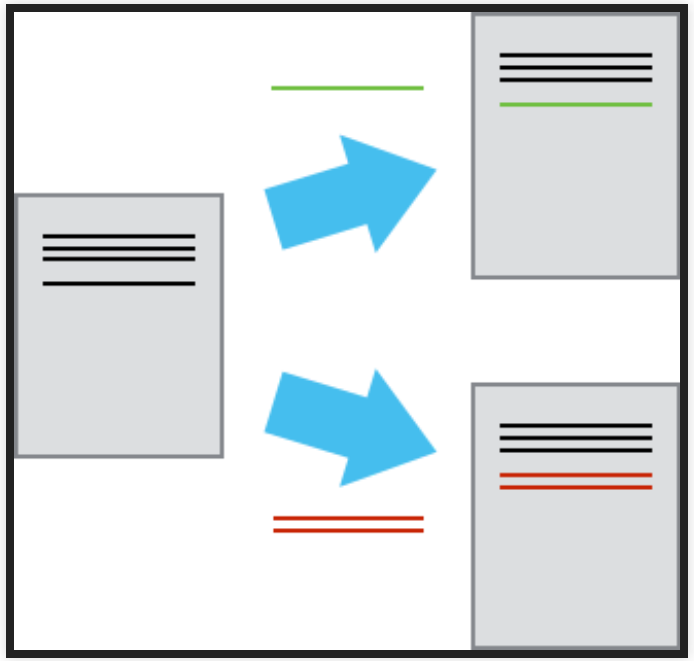
WWW.PHDCOMICS.COM

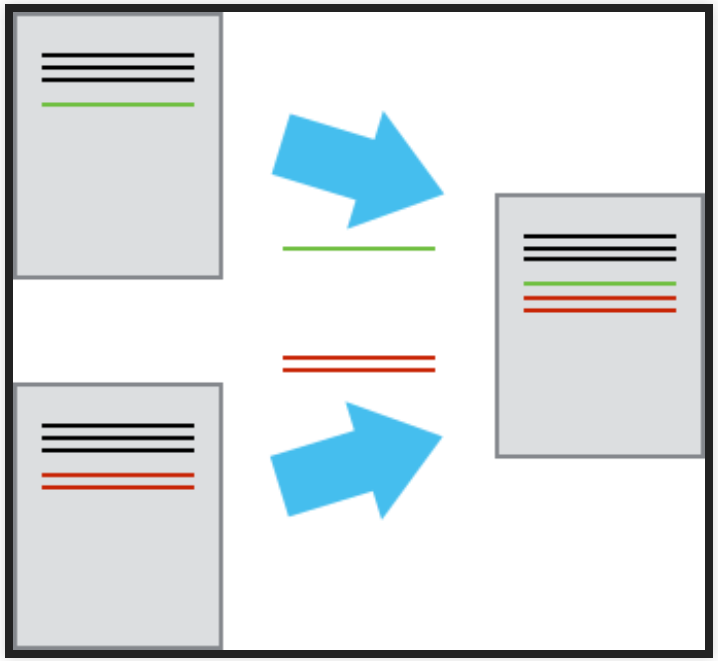
“Piled Higher and Deeper” by Jorge Cham
http://www.phdcomics.com)

LINEAR HISTORY

MULTIPLE AUTHORS



MERGING CHANGES



VERSION CONTROL SOFTWARE

- Revision Control System (RCS)
- Concurrent Versions System (CVS)
- Microsoft Word Track Changes
- Subversion
- git

ALL ABOUT GIT

- Distributed version control system
- Developed by Linus Torvalds and others to manage the Linux kernel
- Linus named it after himself
- Designed to be fast
- Very widely used in academia and industry

THE LINUX KERNEL DEVELOPMENT UNDER GIT

Visualised with gource

GIT UNDER THE HOOD

- Different from earlier systems such as RCS, CVS and Subversion: no diffs
- Originally developed under Linux, but available elsewhere
- No central repository, but can synchronise with remotes
- Cloud-hosted repository servers: github; gitlab; bitbucket

Recommend you use github with education: free private repositories

KEY CONCEPTS IN GIT

- A **file** (in a path)
- A **commit**: a snapshot of a collection of files at a particular time
- A **branch**: a linear sequence of commits
- A **repository**: (possibly) many branches of a project
- A **remote**: another place where a repository is stored

KEY COMMANDS IN GIT

Working on the command line

```
git init
git add
git status
git commit
git push
```

GIT INIT

Creates a directory `.git` where everything is stored

You may also want to do `git config` at this stage

Think about adding a `.gitignore` file

GIT ADD

Puts the current working version of a file into the staging area

Preparing for a commit

Check what will be committed with `git status`

GIT COMMIT

Makes a commit based on currently staged files

Will start an editor (see git config)

Consider `git commit -m "message"` to avoid editor

GIT PUSH

Pushes a branch to a remote repository

```
git push origin master
```

`origin` defined by `git remote add origin` or `git clone`

SEE ALSO

- Summary of main commands
- Useful tutorials in particular Getting Started and Collaborating
- Git from the bottom up an explanation of how git works