Version Control Systems

September 29, 2022

Version control

"Piled Higher and Deeper" by Jorge Cham www.phdcomics.com

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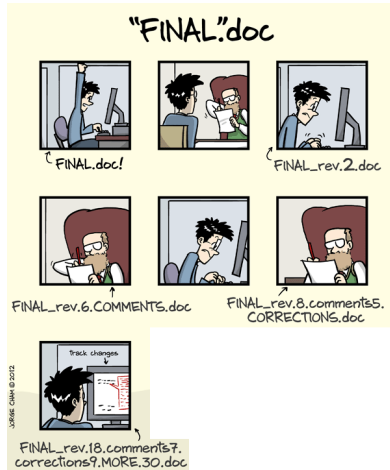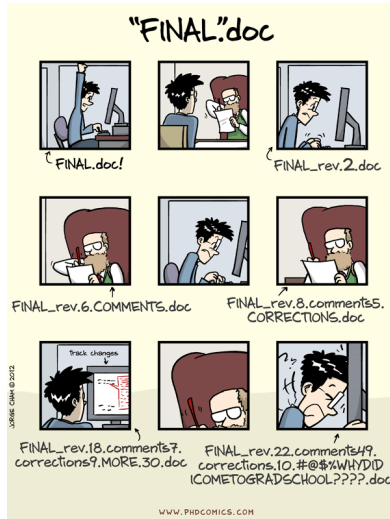
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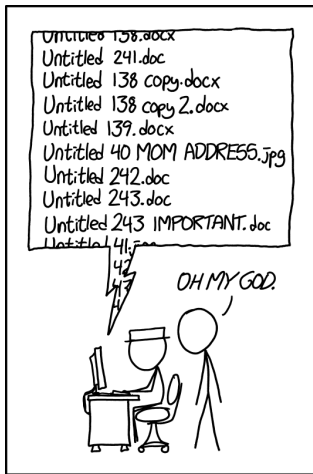
Image credits by XKCD – Randall Munroe

- Complex projects/documents, built up over time
- Multiple collaborators
- Multiple (parallel) versions (e.g., testing a new algorithm while the main branch of development is focused on other things)
- Reproducibility (e.g., bug hunting, etc.)

Version control systems features

A VCS provides:

- **Consistent labeling of revisions**
- Track changes/differences
- Metadata (date, authors, etc.)
- Consistent **point-in-time revisions**
- Multiple developers, one code-base
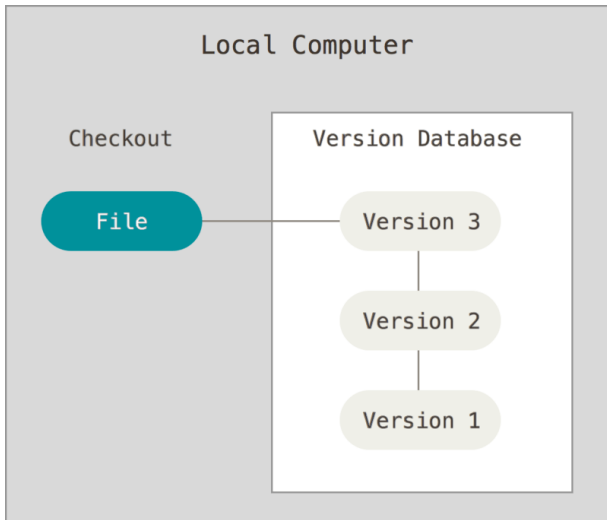- Branches, merges

A local version control system

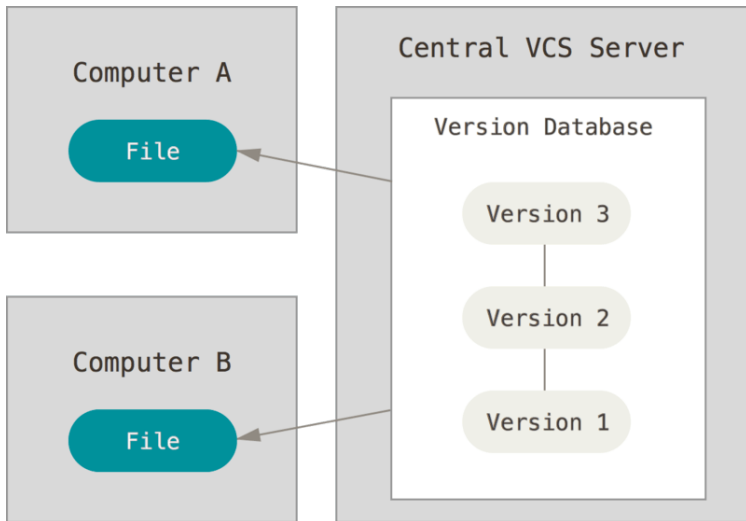Image credits by Pro Git book contributors

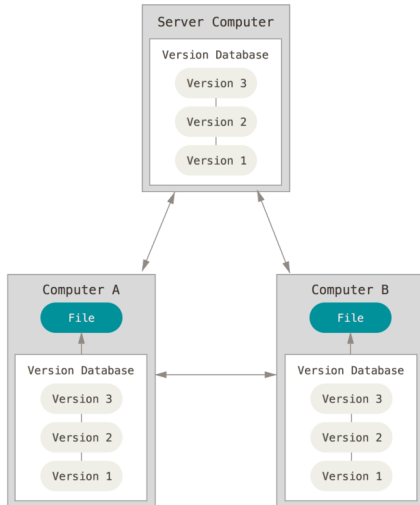Image credits by Pro Git book contributors

Distributed version control system

Image credits by Pro Git book contributors

What about... **Dropbox/Google Drive/OneDrive**??

Dropbox/Google Drive/OneDrive

- No concept of "consistent point in time"
- Track changes is difficult/impossible
- No branching/merging capabilities
- Few metadata

They are similar, but they solve a different problem: synchronization!

Let's forget about them, and concentrate on version control.

Basic VCS terms

Working copy

All project files (on your PC) tracked by the VCS.

Commit

A "snapshot" of the repository at a specific moment.

Commit 6dca5afc authored 8 months ago by **Enrico Bassetti**

Add Linux desktop support and AppImage build scripts

parent bfe945a5 add-desktop-support

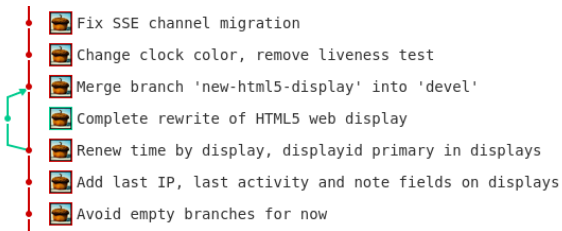# Branch

A line of development. It's an ordered set of commits.

Add unmanage seat constant
Fixture update
Add DICEA map
Kubernetes deployment config, fixtures
Adapt the project to the new skeleton
Remove ipfilter externa library - close #3
Build for internal registry, k8s deploy config
Rotate Boaga map

Merge

The action of fusing two or more branches.

```
Fix SSE channel migration
Change clock color, remove liveness test
Merge branch 'new-html5-display' into 'devel'
Complete rewrite of HTML5 web display
Renew time by display, displayid primary in displays
Add last IP, last activity and note fields on displays
Avoid empty branches for now
```

Tag

A custom label attached to a commit.

v1.14.0
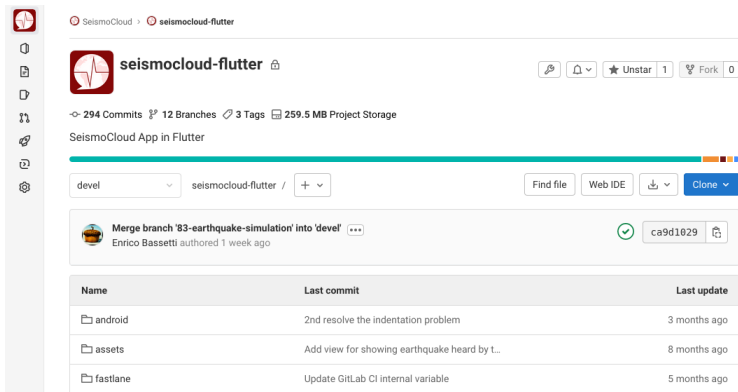
amacneil released this Feb 04, 2022   · 14 commits to main since this release   ⬭ v1.14.0   ⟜ 519f186

Changed

- Make status command read only (#242)

Repository

A set of commits, branches, and tags (usually for the same project).

Fork

A new repository that is a copy of an existing one.

Pull/Merge request

A request to merge code from a fork or branch back to the parent repository/branch.

Resources

Links

- https://en.wikipedia.org/wiki/Version_control
- https://www.atlassian.com/git/tutorials/what-is-version-control
- https://about.gitlab.com/topics/version-control/