

PSI

Center for Scientific Computing,
Theory and Data

Introduction to GIT

Your first steps into version control

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Agenda

- What problem GIT solves
- What GIT actually is
- GIT Forges
- Authentication
- Operating the time machine

What problem GIT solves



→ shared_project_drive tree

```
.
├── important_production_software
│   ├── sourcecode.py
│   └── v1_final_FINAL_changed.tar.gz
```

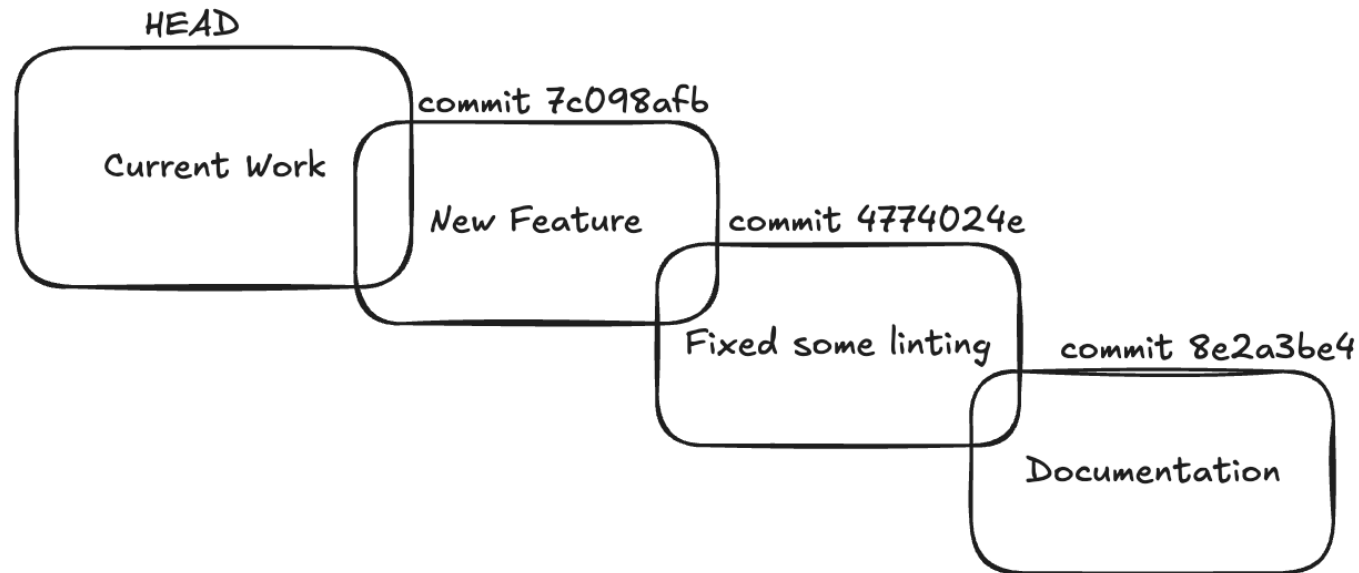
2 directories, 2 files

→ shared_project_drive

- No safety net
- No history
- Only rollback through backups

What GIT actually is

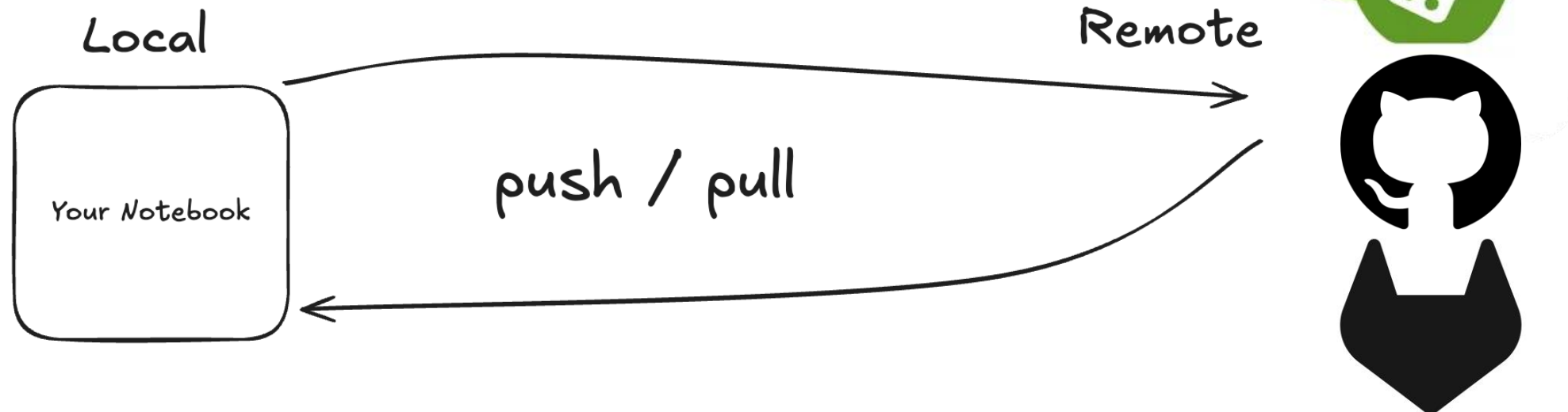
- Git is not about the files, it's about the history of changes



- GIT doesn't store changes like Word — it stores snapshots you can go back to.

GIT Forges

- GIT is the local tool, installed on your personal device
- The GIT Forge is a collaboration platform installed on a remote server
 - Access control
- Nothing you do locally is visible to others until you push
- gitea.psi.ch is the GIT Forge from PSI



- SSH is the preferred way to interact with a GIT Forge
 - You set it up once and “never” have to use a Password again
- `ssh-keygen -t ed25519 -C "you@email"`
`cat ~/.ssh/id_ed25519.pub`
 - Protect the key with a password
- Copy the key to `gitea.psi.ch`
- `ssh -T git@gitea.psi.ch`
- Private key stays local and must be protected at all costs!
- The public key can go on any GIT Forge

Operating the time machine

- Change – Stage - Commit
 - `mkdir -p git/important_production_software/`
 - `cd git/important_production_software/`
 - `git init`
- Creating a File
 - `echo "hello"> sourcecode.py`
- Checking whats going on
 - `git status`
- Changing the file
 - `echo "world" >> sourcecode.py`
 - `git status`
 - `git add sourcecode.py`
 - `git commit -m "finishing code"`



Operating the time machine



- Add a Remote to our Local repository
- Create a remote repository
 - `git remote add origin git@gitea.psi.ch:{USERNAME}/important_production_software.git`
 - `git push -u origin main`

- HTTPS `https://gitea.psi.ch/{USERNAME}/important_production_software.git`

Cheat Sheet



- `git init`
- `git status`
- `git add .`
- `git commit -m "message"`
- `git log --oneline`
- `git remote add origin <url>`
- `git push`
- `git pull`

Questions!

