UNIVERSITY *of* WASHINGTON

CSE 583

Version Control I & Submitting Homework

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Survey the room

Raise your hand if…

- You've never used source / version control
- You've used source control, but not Git
- Beginner in Git as an individual (`git add`, `git commit`)
- Moderate/Advanced in Git as an individual (`git rebase`)
- Beginner in Git as collaborative team (`git push, git pull`)
- Moderate/Advanced in Git as collaborative team (PR, hooks)

Agenda

1. Questions from last lecture (Procedural Python)
2. Version Control, Git, and GitHub
3. Hands on practice with Git & GitHub for individuals
4. **On separate video capture:** Turning in homework

Questions from last lecture on Procedural Python?

Why use version control?

Compare writing software with writing a manuscript.

Use <u>undo</u> to revert to a previous state

Use <u>track changes</u> when sharing document with advisor

Still, word processors can still be frustrating.

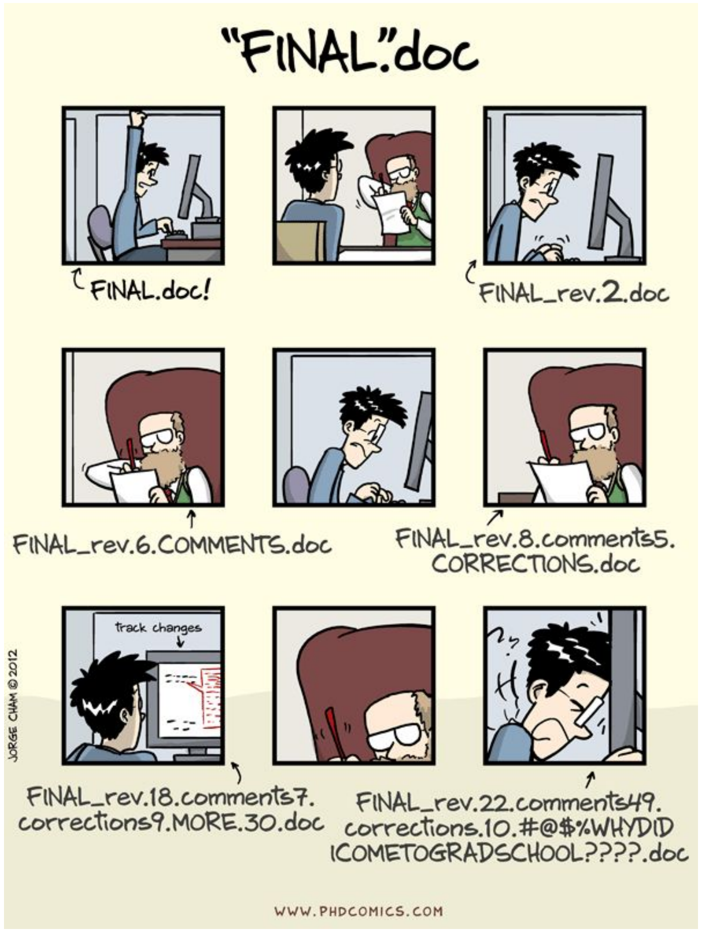
Intelligently <u>combine changes</u> made concurrently

<u>Record reasoning</u> (why? for code, what?) for changes

Efficient use of <u>file storage</u>

Modern version control systems can address all of these.

Tracking versions and efficient storage


"FINAL".doc
FINAL.doc!
FINAL_rev.2.doc
FINAL_rev.6.COMMENTS.doc
FINAL_rev.8.comments5. CORRECTIONS.doc
track changes
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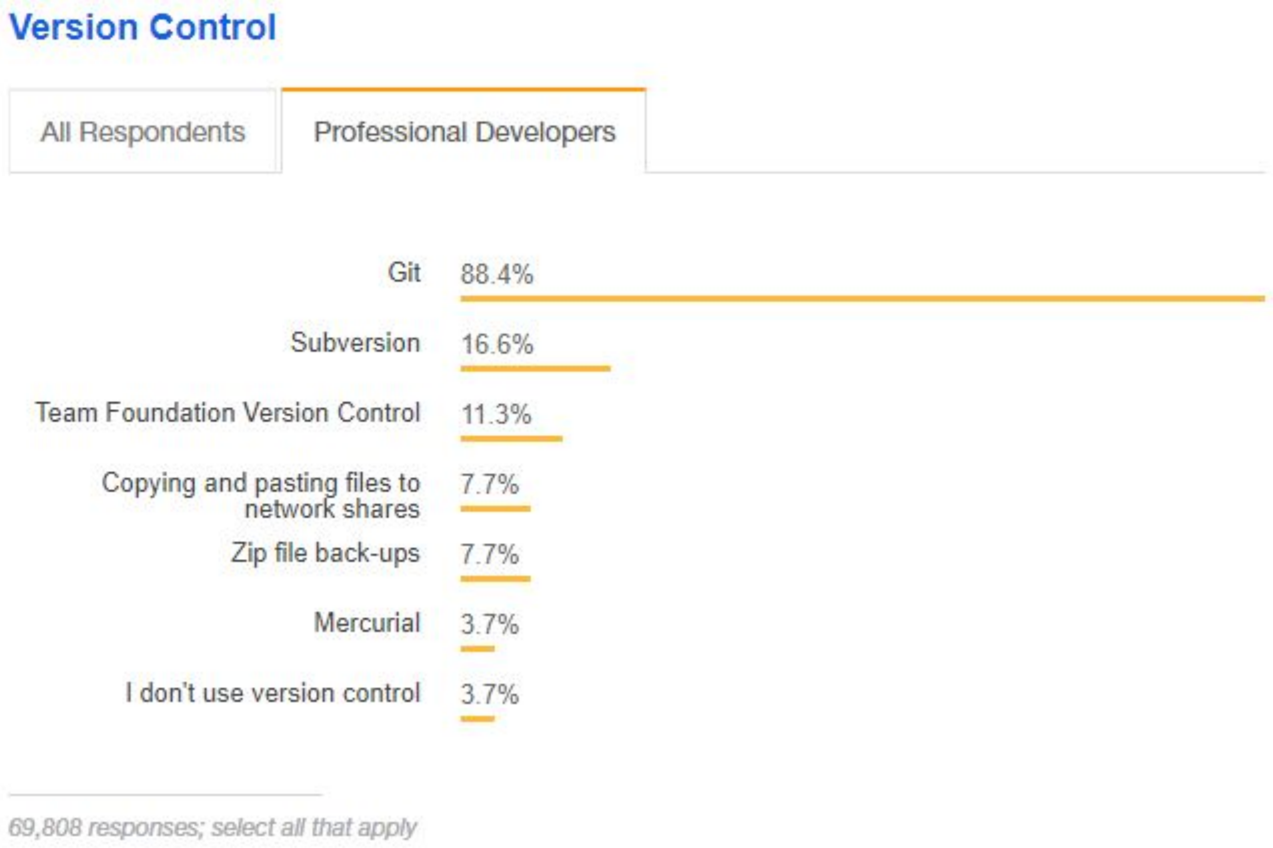
Stack Overflow Developer Survey 2018



Git	88.4%
Subversion	16.6%
Team Foundation Version Control	11.3%
Copying and pasting files to network shares	7.7%
Zip file back-ups	7.7%
Mercurial	3.7%
I don't use version control	3.7%

69,808 responses; select all that apply

Git is a de facto standard for VCS

Benefits (**++++++**)

- **Performance:** operations in Git are optimized and fast
- **Flexibility:** doesn't require use of a particular workflow
- **Security:** protection against untraceable changes
- **Popularity:** employment, available on many platforms
- **Distributed:** can be used offline, no need for server

Downsides (**-**)

- **Distributed:** not ideal for large files, merging changes

Version control in the cloud, GitHub

A working copy of your repository stored on GitHub's servers connected and accessible via the internet

- Others can download and use your code
- Online repository is suitable as central repository
- Social features, i.e. issue tracker, comments, notifications

Alternatives: Atlassian's BitBucket, GitLab, SourceForge

Hands on Git / GitHub practice I

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*(and some GitHub)

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>git init
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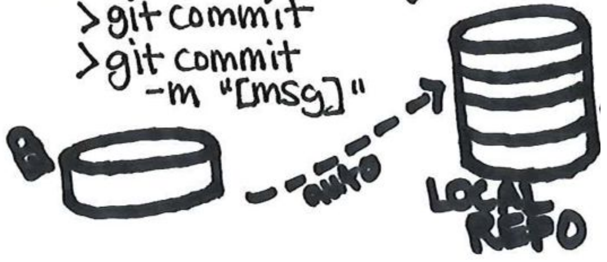

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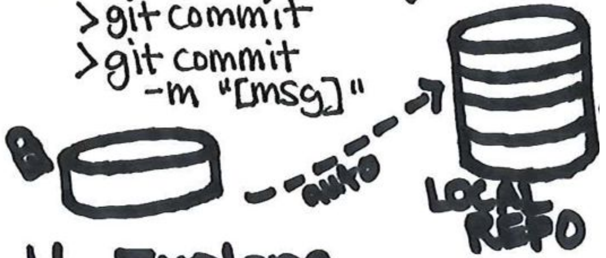

4. Explore

```
>git status
>git log [options]
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(Repeat 1-4 as desired.)

Time to remember your GitHub logins

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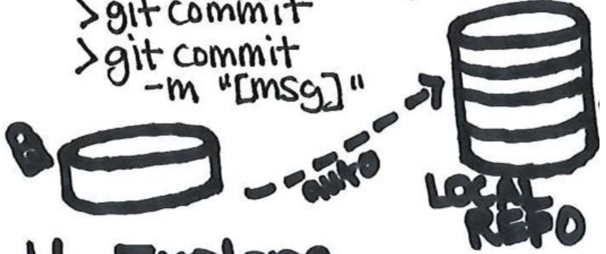

REMOTE REPO

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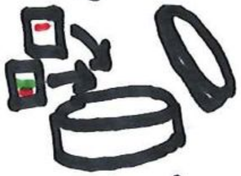

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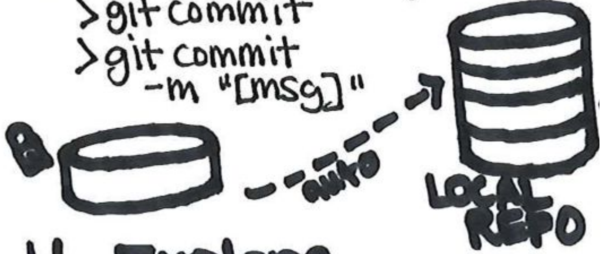

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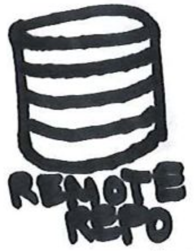

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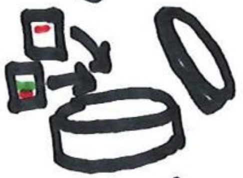

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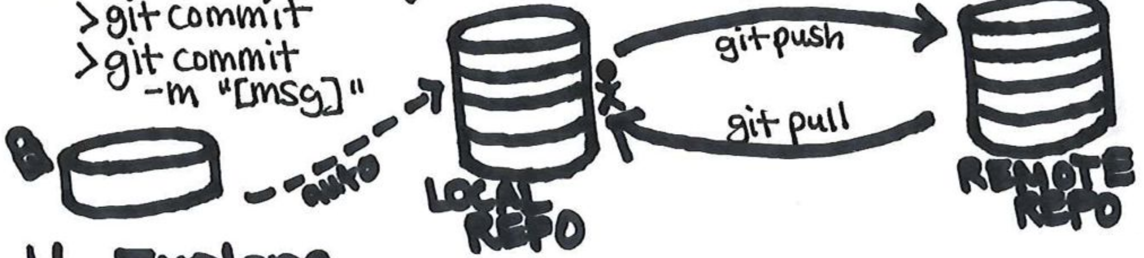

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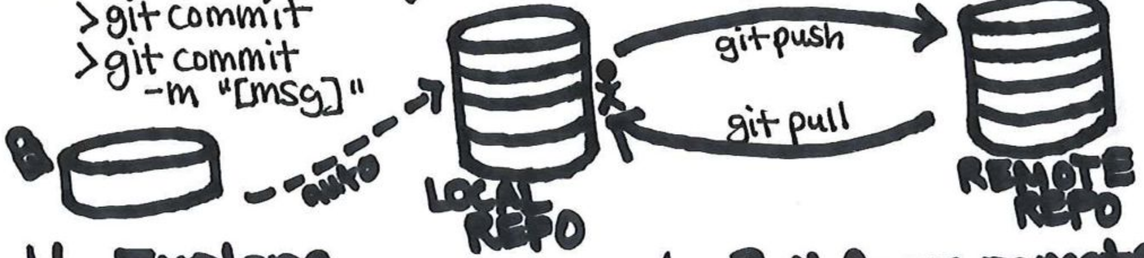

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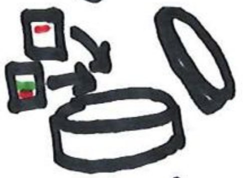

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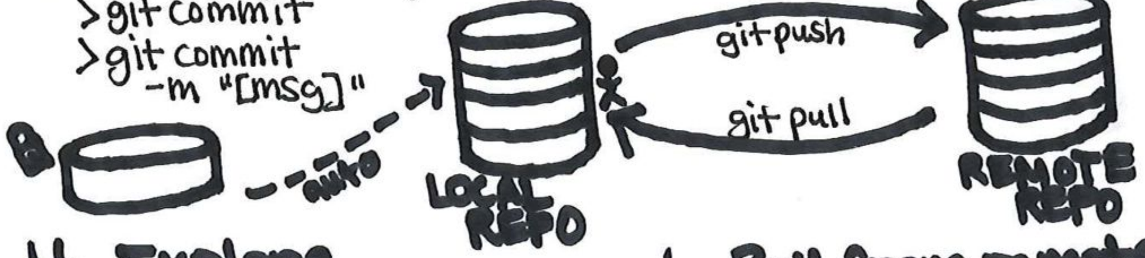

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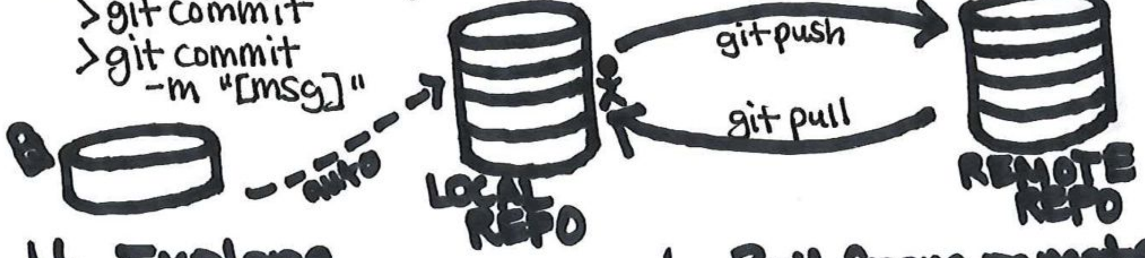

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BONUS: Conflicts

TIP: pull before commit to minimize conflicts!

```
>git merge
```

Questions on version control?

(Note that some topics will be covered in later VCS sessions)