A gentle intro to the basics of git and GitHub

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ES 292 Fall 2025

University of California Merced

Announcements

Oct 14 Project Proposal due

Oct 21 Guest Lecture (probably?) – Michelle Thornton & Rupesh Shrestha, ORNL DAAC

Discussion

How do you want to approach Open Science 101 materials?

- Erin pose discussion questions for class?
- Lesson/Module leads summarize and lead discussion?
- Crowd source/Group work on quiz answers?
- Other ideas?


Now, some version control

"FINAL".doc

https://swcarpentry.github.io/git-novice/01-basi

The importance of version control....

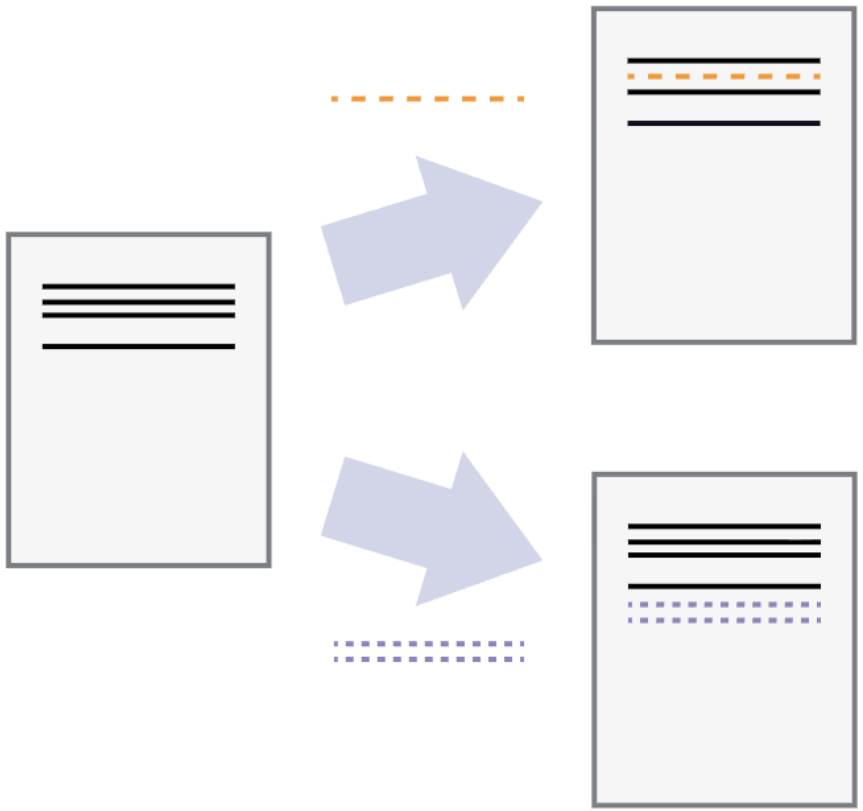
Imagine you drafted an excellent paragraph for a paper you are writing, but later ruin it. How would you retrieve the *excellent* version of your conclusion? Is it even possible?

Imagine you have 5 co-authors. How would you manage the changes and comments they make to your paper? If you use LibreOffice Writer or Microsoft Word, what happens if you accept changes made using the Track Changes option? Do you have a history of those changes?

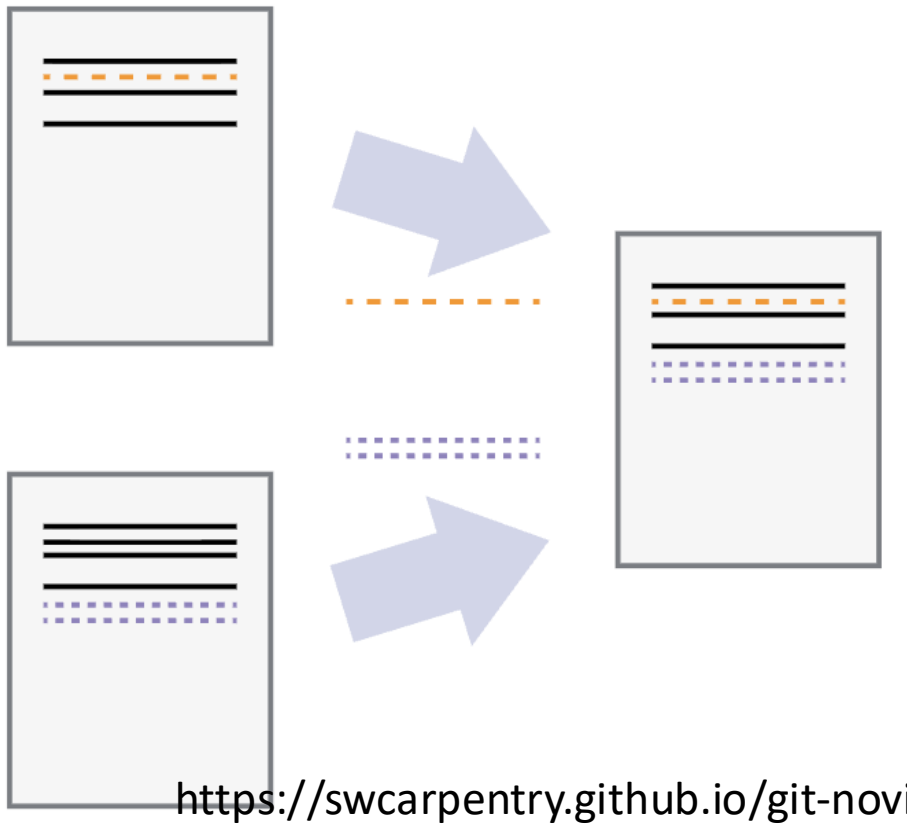
Version control is like an unlimited “undo” *and* allows many people to work in parallel!

Record your progress

Two users make independent changes – “conflict”



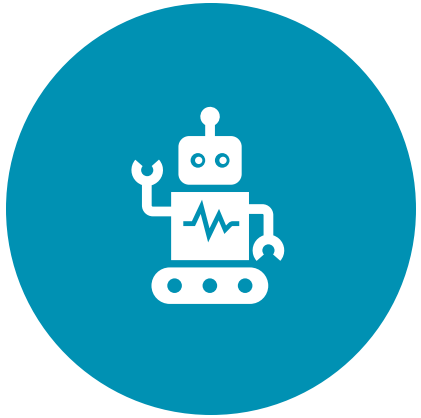
Incorporate two sets of changes into same base document



https://swcarpentry.github.io/git-novice/01-basics

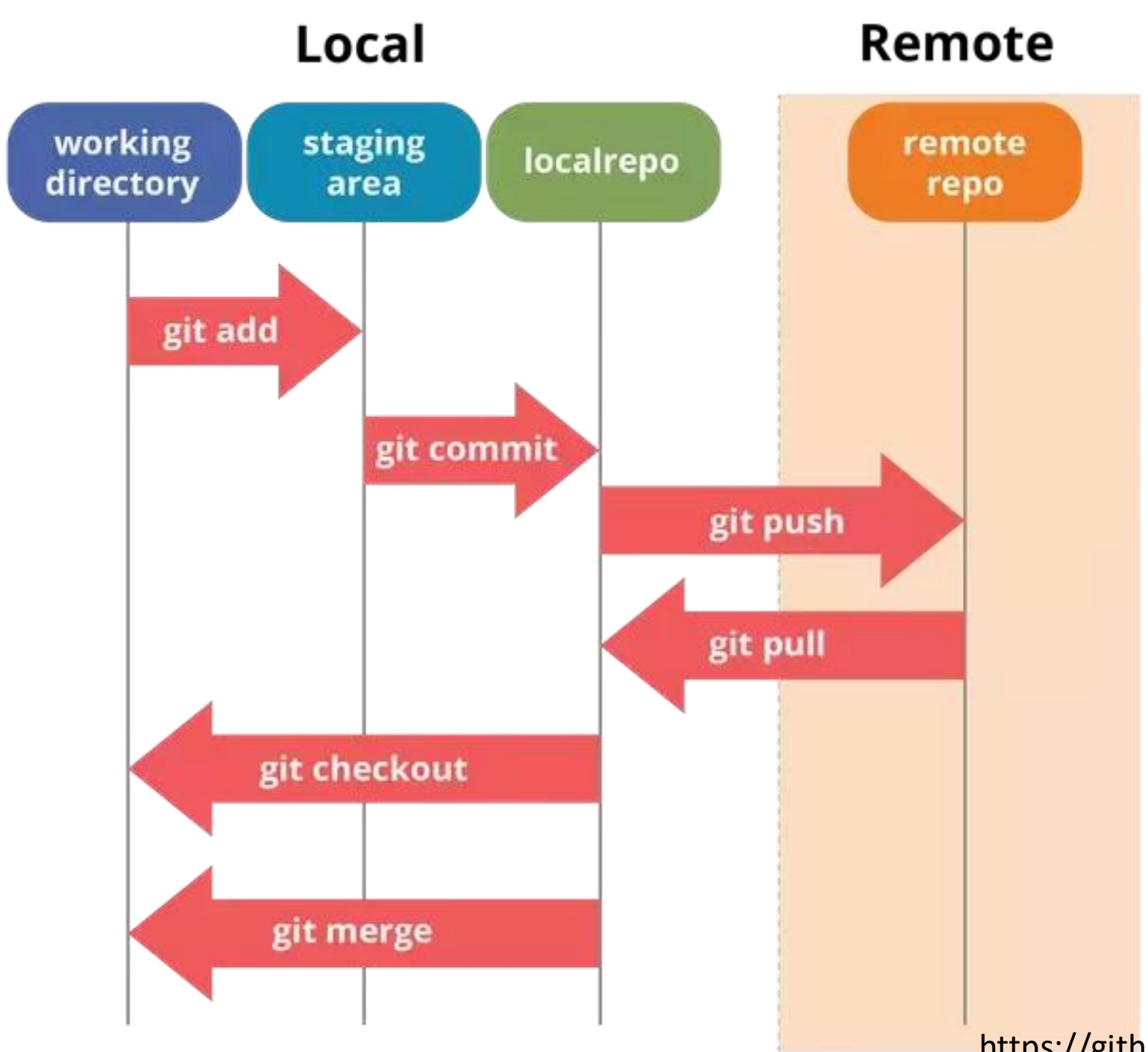
Some definitions

VERSION CONTROL – A SYSTEM FOR KEEPING SNAPSHOTS OF YOUR WORK



GIT – VERSION CONTROL SOFTWARE

GITHUB – ONE OF SEVERAL CLOUD-BASED SYSTEMS FOR WORKING WITH GIT

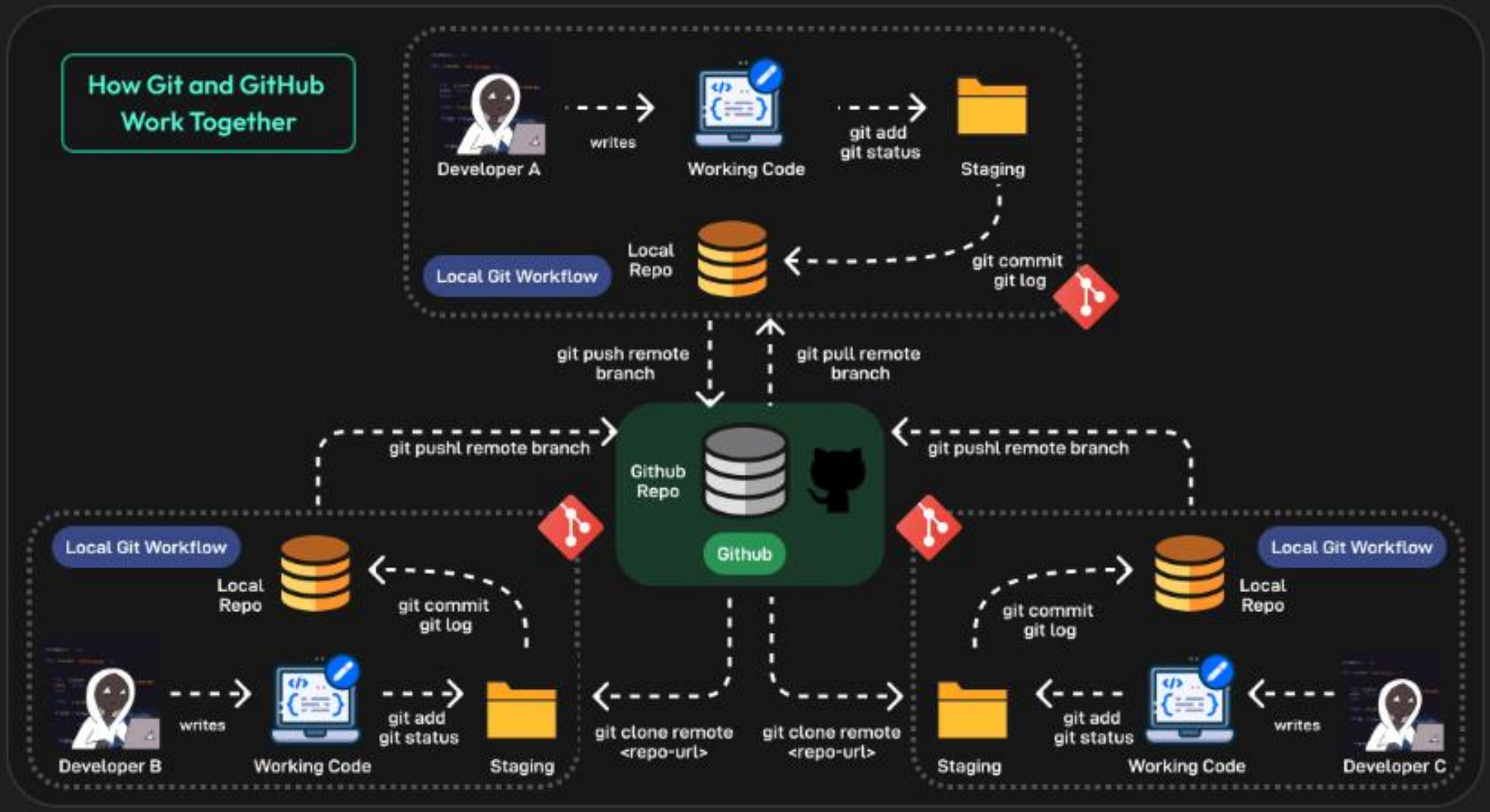


https://github.com/WilcoxAPCS/intro

https://bytebytego.com/guides/git-vs-github/

Git versus GitHub

ByteByteGo



https://bytebytego.com/guides/git-vs-g

Git vs GitHub Comparison

	Git	GitHub
Type	Git is a free, open-source version control tool	GitHub is a cloud-based, pay-for-use service that runs Git in the cloud
Installation	Git is installed locally on a developer's machine	GitHub is hosted in the cloud
Ownership	Git is maintained by the Linux Foundation	GitHub is owned by Microsoft
Use	Tool to manage different versions of edits, made to files in a git repository	It is a space to upload a copy of the Git repositor
Features	Version control and source code management	Hosting code, collaboration, and project manageme
Tools	Minimal external tool configuration	Active marketplace for tool integration

Brief practice with GitHub

Let’s try something basic

Resources

The world is your oyster! But here are a few to get you started:

git

https://github.com/danrs/git-practice

GitHub

https://docs.github.com/en

git + GitHub

https://swcarpentry.github.io/git-novice/index.html

Rstudio + git/GitHub

https://happygitwithr.com/

Jupyter Notebooks + git/GitHub

https://blog.reviewnb.com/github-jupyter-notebook/

Google Colab + GitHub

https://medium.com/analytics-vidhya/how-to-use-google-colab-with-github-via-google-drive-68efb23a42d