

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?



A man and a child are sitting on a dark grey couch. The man, on the left, is wearing a blue denim shirt and khaki pants. He is holding a small black remote control in his right hand. He is wearing a cardboard robot costume that has a large rectangular head with two black eye cutouts, a yellow crown on top, and a red mouth. The child, on the right, is wearing blue jeans and is also wearing a cardboard robot costume. This costume has a yellow head with a red mouth, a green circular nose, and a yellow body with green circular buttons. Both costumes have cardboard wings. The couch has two red pillows. In the foreground, there is a white round coffee table. The background is a plain white wall.

Now, some version control

"FINAL".doc



FINAL.doc!



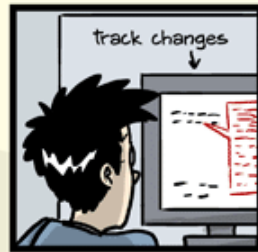
FINAL_rev.2.doc



FINAL_rev.6.COMMENTS.doc



FINAL_rev.8.comments5.
CORRECTIONS.doc



FINAL_rev.18.comments7.
corrections9.MORE.30.doc



FINAL_rev.22.comments49.
corrections.10.#@\$%WHYDID
ICOMETOGRADSCHOOL????.doc

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?



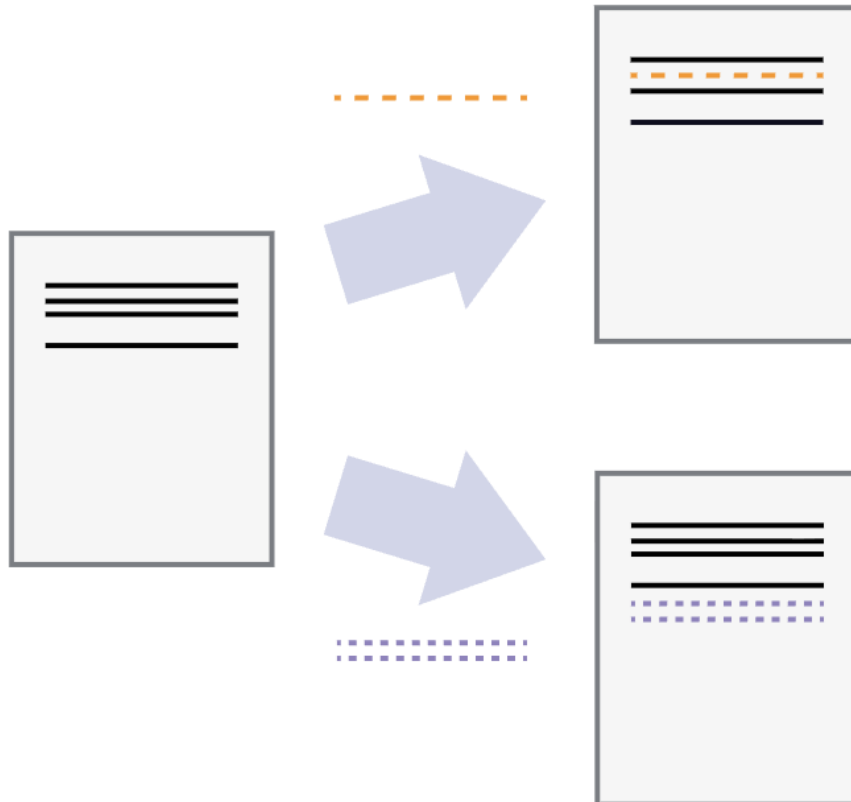
Imagine you have 5 co-authors. How would you manage the changes and comments they make to your paper? If you use LibreOffice Writer or Microsoft Word, what happens if you accept changes made using the Track Changes option? Do you have a history of those changes?

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

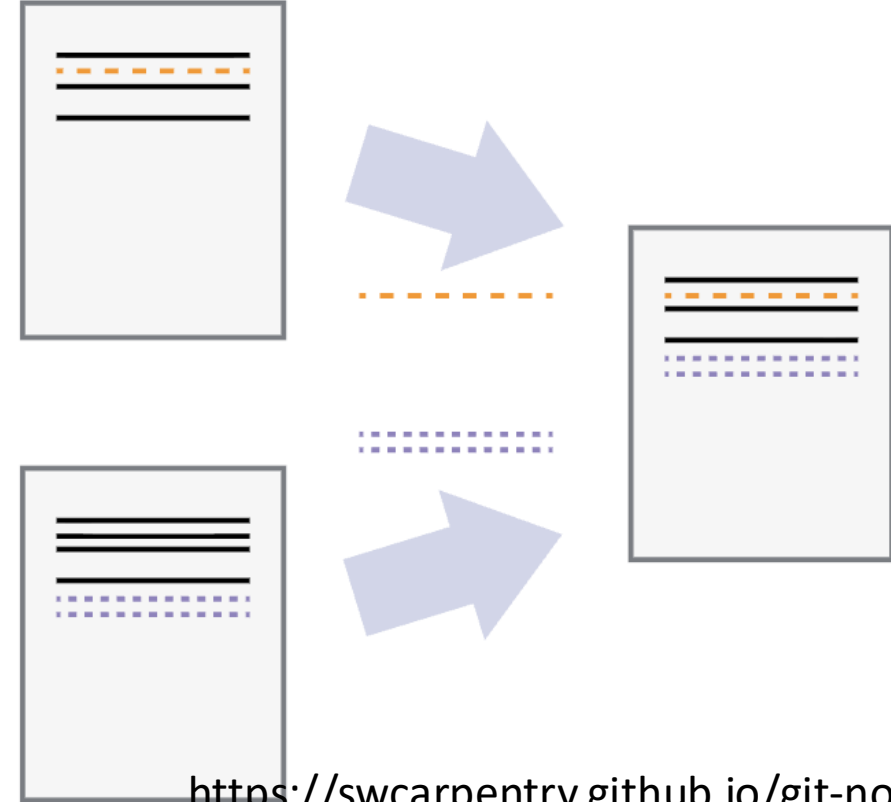
Record your progress



Two users make independent changes – “conflict”



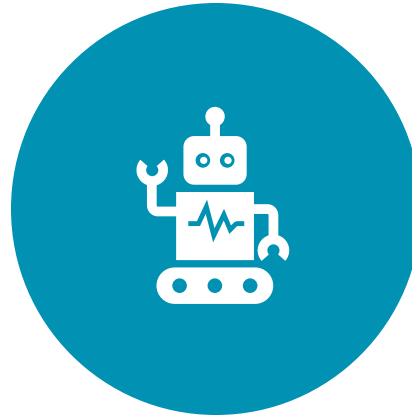
Incorporate two sets of changes into same base document



Some definitions



VERSION CONTROL – A SYSTEM
FOR KEEPING SNAPSHOTS OF
YOUR WORK



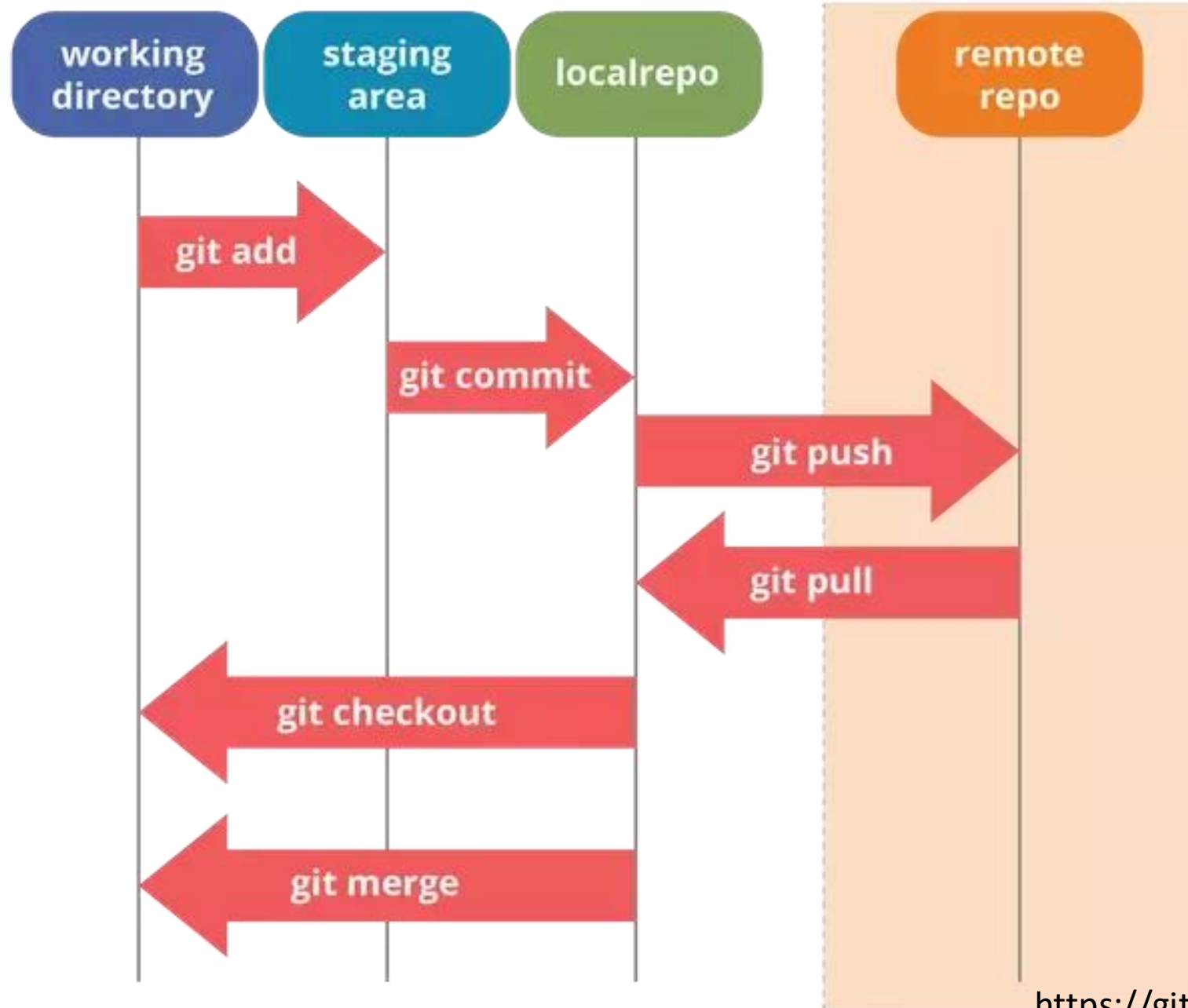
GIT – VERSION CONTROL
SOFTWARE



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

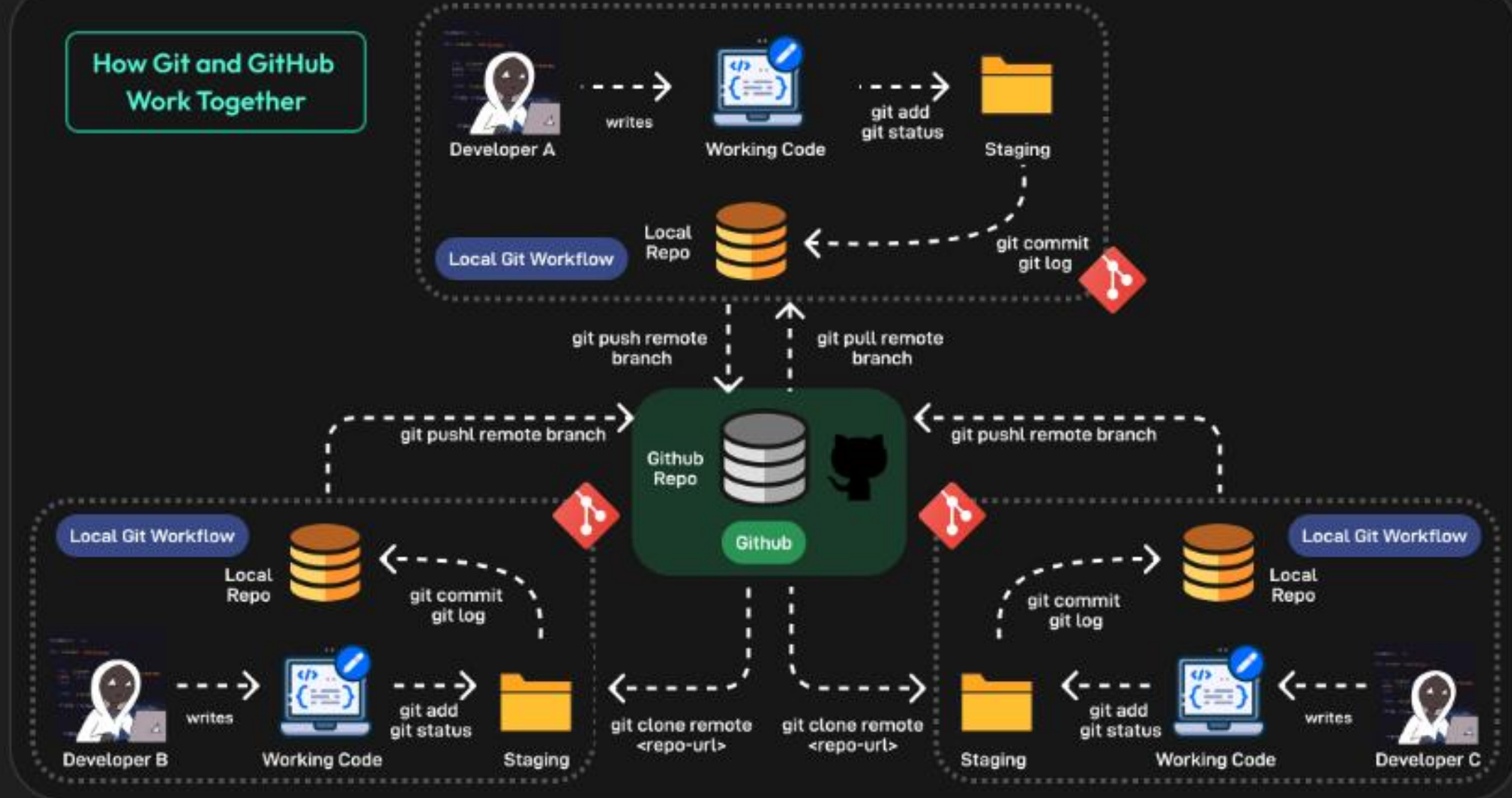
Local

Remote



Git versus GitHub

How Git and GitHub Work Together



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 repository

Features

Version control and source code management

Hosting code, collaboration, and project management

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>