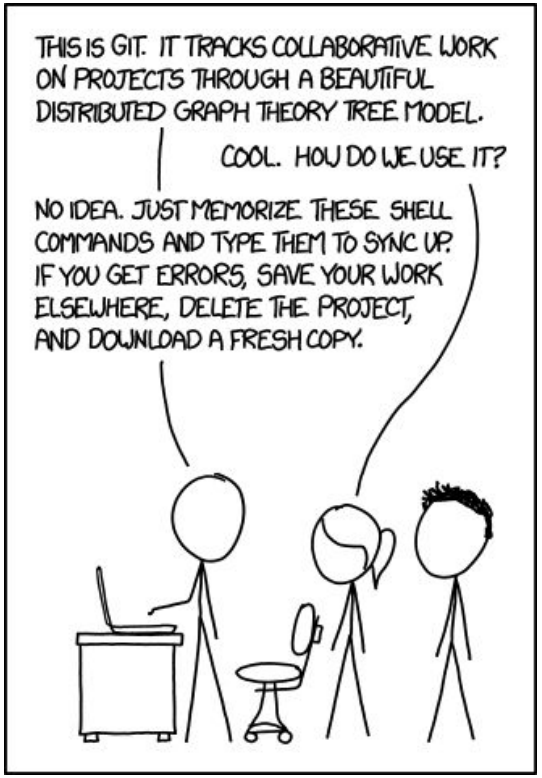
CSCI 104

Lab 1: Git

(a.k.a. the longest damn lab ever)



Getting Started

- Intro to 104 labs
- Intro to Git

These steps are set up for the rest of the semester and are therefore REQUIRED. Make sure to complete this.

Lab Policies

Format

- Lecture (~10-20 mins):
  - The lab instructor will review this week's lab content, which involves a combination of covering new tools (e.g. Git, Makefiles, GDB) and reviewing lecture materials in more detail.
- Work Time:
  - After we cover all necessary content, you are free to work on the lab assignment.
  - If you get stuck, ask for help!
- Checkoff:
  - Before you leave lab, you must ask to see a CP and demonstrate your finished assignment. They will check you off and give you credit. We look for effort in labs, not success.

Checkoffs

- To get checked off, we'll have you demonstrate your code, and sometimes ask review questions.
    - Then we will mark you off and you'll get credit for the lab.
- If you don't finish by the end of lab, and we can see that you have been working the whole time and made an attempt, then we will also check you off.
- *If you sit around idly for 2 hours and don't demonstrate an effort, you will not get checked off.*
- Checkoffs will be done through a Google form that you will access on a CP's computer; you will receive a confirmation email upon completion.

Policies

- Labs are mandatory. You **must** attend the lab you are registered for **in person**, and you MUST get checked off before the end of the lab session.
- **You may miss 1 lab session without penalty.** This excused absence should ONLY be used in the case of illness and not just a busy week. Contact your lab leader(s) ASAP if you were ill and missed lab session.
- If you are ill and have already missed a lab, then contact Bridget Bell (bgbell@usc.edu) through email or Piazza to attend another section.
- **Labs are graded CR/NC.**
- https://bytes.usc.edu/cs104/labs/

Introduction to Git

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- It helps solve two common problems in software engineering:
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- Git works on (essentially) a client-server model.
  - The Git server (GitHub) stores a master copy of the code.
  - The clients, your computers, download a copy of the code in a “clone” operation.
  - Clients can then update their copies in a “pull” operation, and can push their own changes using a “push” command.

Commands

- `cd your_directory`
  - `cd ..` to backtrack
- `git init` to create a repository.
- `git add filename` to stage changes to the repo.
  - You must explicitly tell git to stage changes to your repo!
  - Allows the user to choose which changes to push
  - `git add .` tells git to automatically stage all changes it detects.
- `git commit –m “your message”` to create a commit.
  - A commit represents a set of changes to files in the repository
    - E.g. “Add a new file X, change 3 characters on line 8 of file Y”
  - The commit only includes changes you have staged!

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Working with GitHub

- GitHub stores your repository the same way you store a repository on your local machine.
- When you clone a repo from GitHub, you copy the whole repo from GitHub onto your computer.
  - `git clone git@github.com:username/repo_name.git`
- When you pull from GitHub, you download all the commits that are present on GitHub but not in your local repo.
  - `git pull`
- When you push to GitHub, you upload all commits present in your local repo but not on GitHub.
  - `git push`

`.gitignore`

- **`.gitignore`** is a file that contains a list of filenames.
- If git sees a file with `.gitignore` in a directory, it will ignore the files listed when you do "`git add .`"
- You can use "`*`" as a wildcard to match multiple files
  - e.g. "`*.txt`" would ignore all files with the "txt" extension
- You can put "/" at the end of a name to ignore entire directories
  - e.g. "`ignored/`" would ignore all directories named "ignored"

GitHub Cheat Sheet

1. Do **NOT** run **ANY** git commands in Docker. This is easy to forget, but this is the #1 problem that we notice.
    a. Put a sticky note on your computer! Set a reminder! Anything!! Just don't do this!
2. ***OUTSIDE*** of Docker, here are basically the only git commands you need:
    a. `Git pull`
    b. `Git add .`
    c. `Git commit -m “message explaining your changes”`
    d. `Git push`