

CS 101: HELLO WORLD!

Lab 01 - CS 411 @
Boston University

\$ WHOAMI

- Waterford, VA
- Pursuing a BA/MS in CS
- Incoming Staff @ JHU/APL

\$./INTERESTS

- Computers & Tech (duh!)
- Reading (Non-fiction)
- International Relations



SOFTWARE ENGINEERING
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PROGRAMMING

Programming

The act of programming, in its simplest definition, is giving computers instructions to do something with some *input* in order to produce some *output*.

Software Engineering

The act of engineering software is about designing, writing, testing, and maintaining computer programs with the purpose of solving problems for many users. It is about creating robust and safe solutions that will withstand the test of time and will work for some of the unknown problems around the original obvious ones.

```
git commit -m "the #1 distributed vcs"
```

GIT 101: THE BASICS

WHAT IS GIT/GITHUB?

Decentralized VCS

- Each developer has a copy of the code base
- Concurrent work on a file is possible
- Local versions (called *branches*) are embraced

Advantages

- No locking of files
- Concurrency
- Simple branching

Disadvantages

- Local branches must be merged
- History can get complex

SETTING UP GIT/GITHUB

**Let's build
from here,
together.**

The complete developer platform to build,
scale, and deliver secure software.

Email address

Sign up for GitHub

- Head to <https://github.com/> and create an account if you don't already have one
 - *Use your BU email for free access to GitHub Pro*

<https://github.com/git-guides/install-git>

Use *git version* to verify if git is/was installed

```
$ git --version
```

<https://docs.github.com/en/authentication/connecting-to-github-with-ssh>

Setup an SSH Key

git add [file]

- Stages content (file/folder) to current commit
- Stages files as they are at the time... NOT a reference
- Further changes must be re-added
- E.g., *git add main.py*

`git commit -m ["message"]`

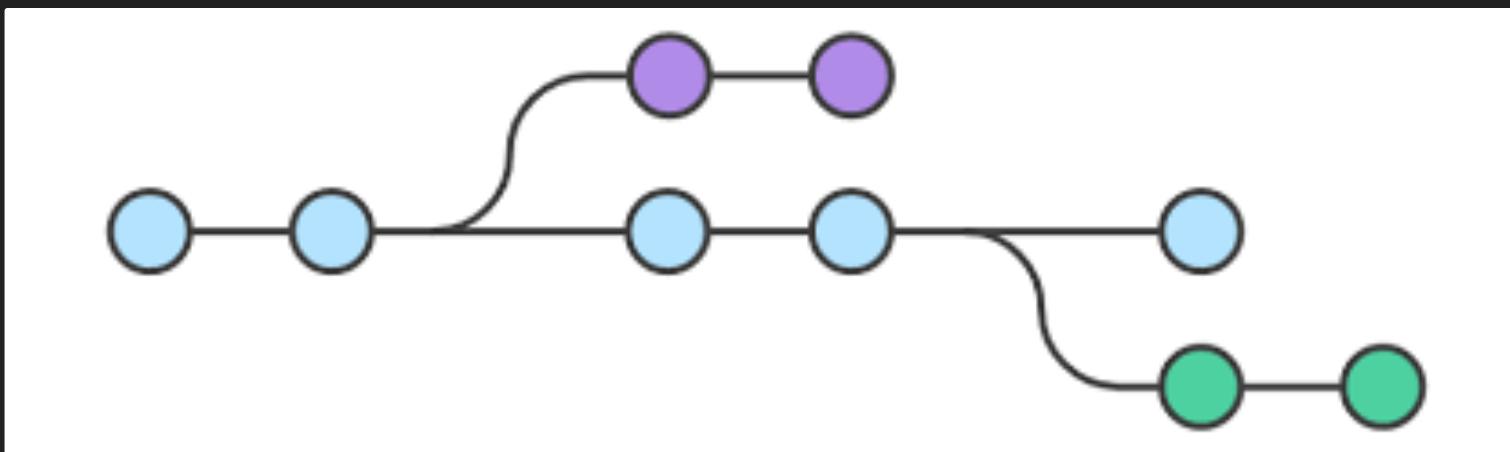
- Git only records changes when explicitly told to
- Saves the changes to the current local branch
- Commit records the changes with a message detailing changes

git push [alias] [branch]

- Pushes local branch changes to a remote branch
- Typically: *git push origin master*
or *git push origin main*

git checkout

- Moves you from the branch you're currently on to the one specified
- Make sure your changes are staged before checking out

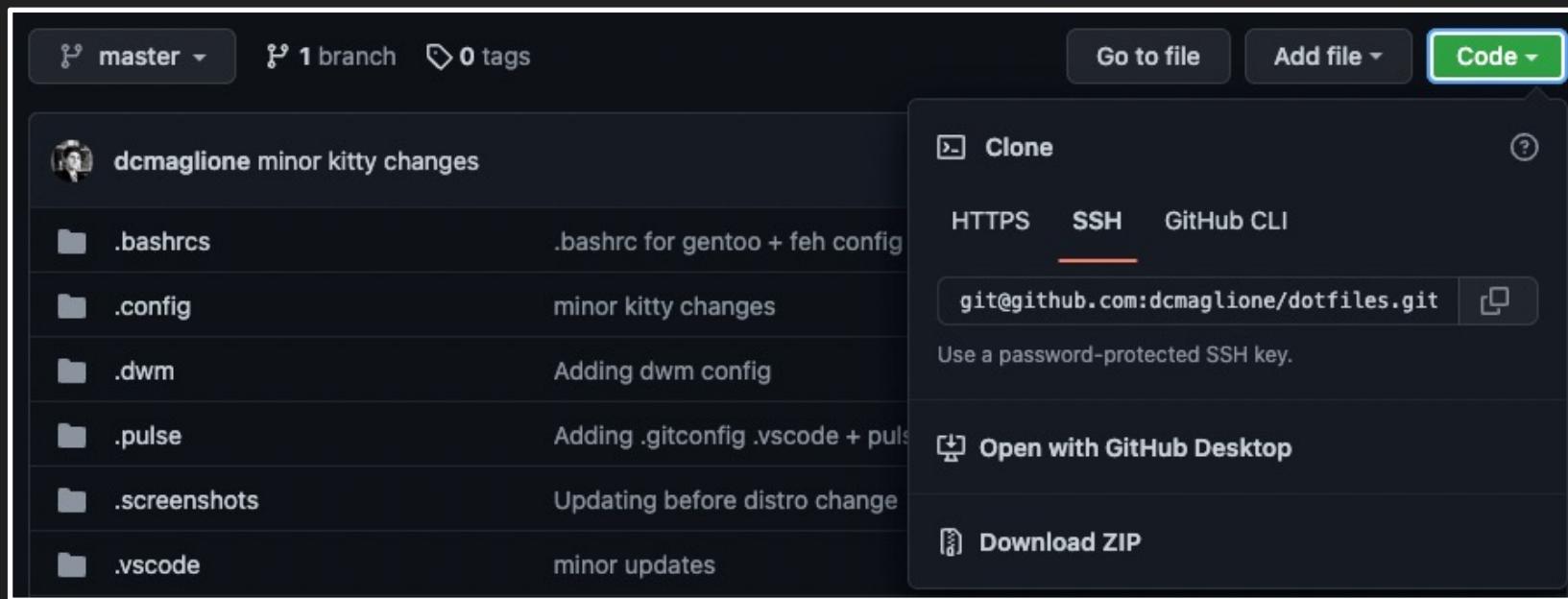


git status

- Your best friend in git - sanity check
- Typically used before commits/pushes
- Prints a log of:
 - Current branch
 - Staged changes (files added)
 - Unstaged changes (files that have not been added)

git clone [url]

- Clones' full repository to your local machine
- Should be used in directory where you want to store repository

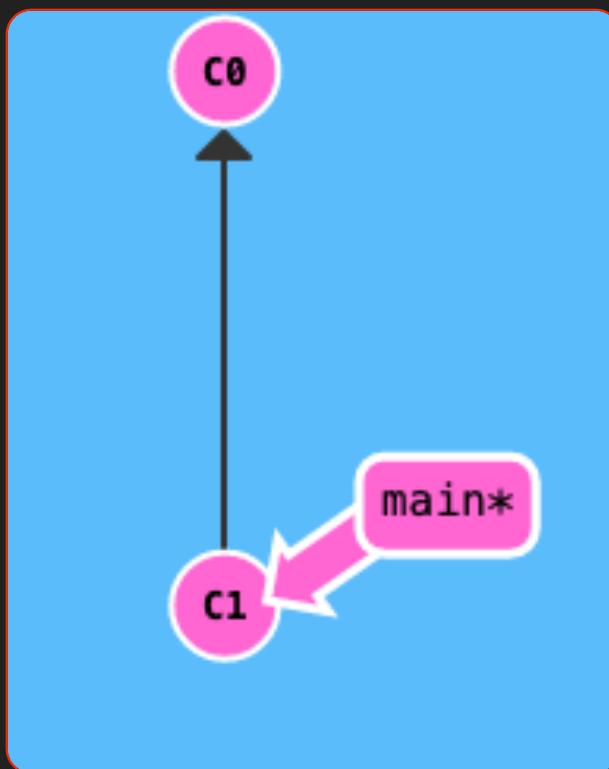


git pull

- Adds changes from a remote repository into the current local branch
- Should be used throughout the development process for incorporating teammate's code changes together
- Kind of like cloning the repository but only adds files/lines of code that have been changed

ENOUGH TALKING
LET'S GET
SOME PRACTICE

TODAY'S ASSIGNMENT



- We will be using an online sandbox at <https://learngitbranching.js.org> to explore git and solve some simple problems.
 - Don't worry, I'll work through the first few with you all!
- There are four problems in Parts 1 and 2, and two in Part 3
 - Read the instructions (trust me it's helpful!)
 - Solve the problem
 - Copy the commands you type in whatever way you want (Google Docs, Word, Notepad, Emacs, idc)
 - **Part 1: Problem 1**
`git commit`
`git commit`
 - You can include an image here of the fun little complete message if you want, but you don't need to



GIT RESOURCES

<https://education.github.com/git-cheat-sheet-education.pdf>

```
git add lab01.txt  
git commit -m "complete"  
git push origin master
```

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