



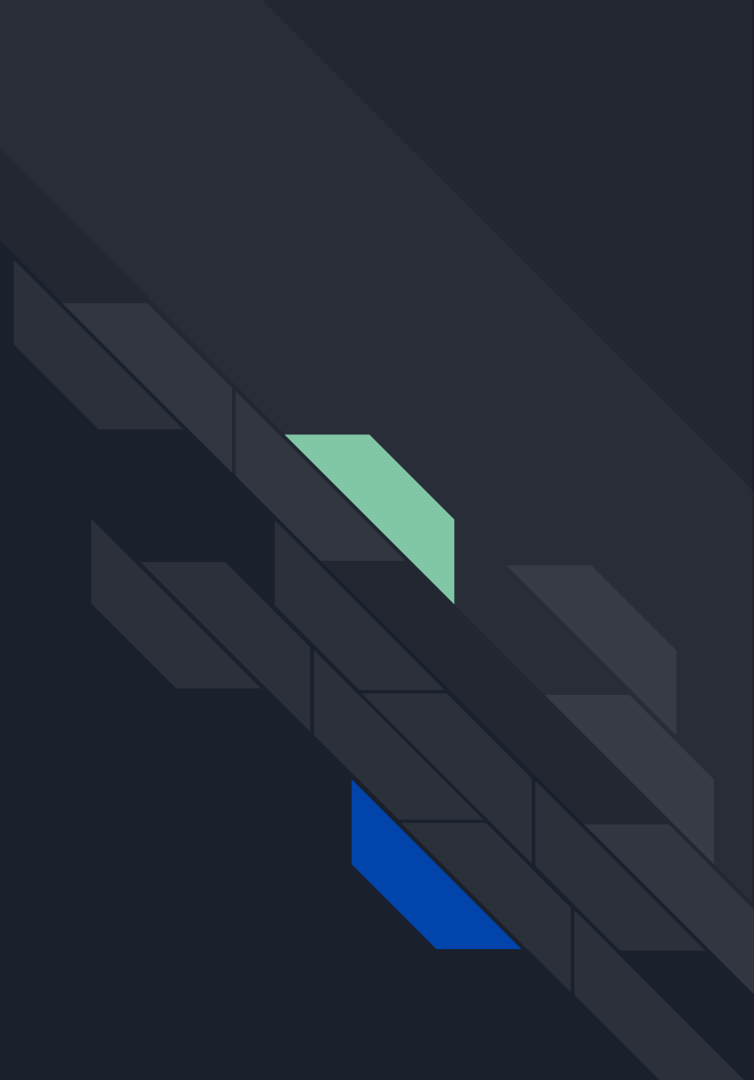
Git and GitHub

Penn State IEEE FA21
Led by Will McGloughlin

Make a GitHub account!
You'll need it for the interactive portion



Why use version control?





Why use version control?

- Log changes in a codebase
- Revert back to working code
- Organize collaboration

What is Git?





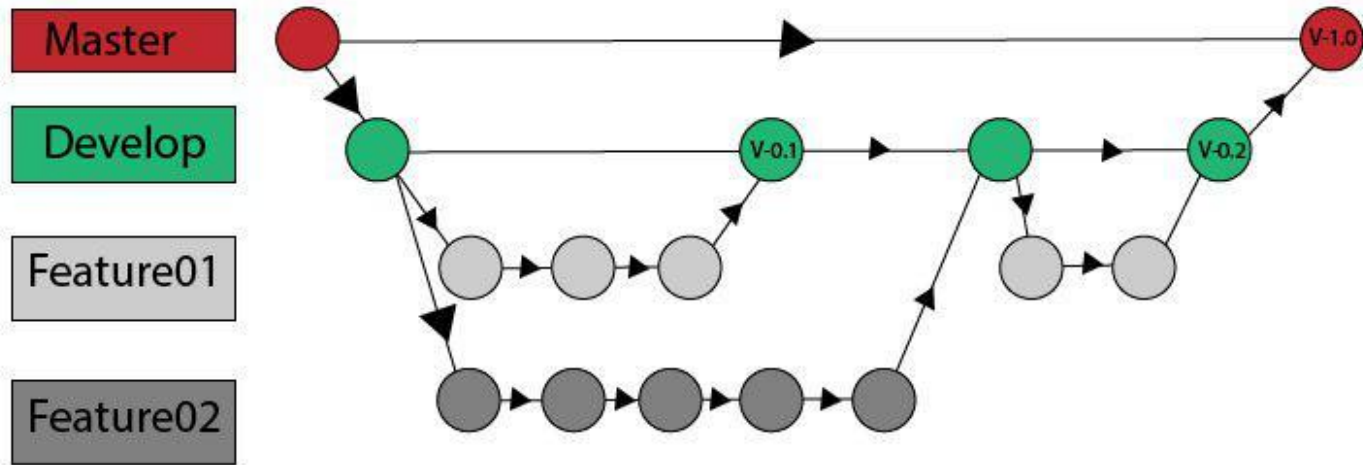
What is Git?

- Created by Linus Torvalds in 2005 for Linux kernel development
- The most popular VCS today
- Command line tool you'll use for most online services (ie. GitHub, GitLab, etc.)



git

Key terms





Key terms

- Push
 - Upload your staged commits to the web
- Pull
 - Download any updates from the parent branch
- Fork
 - Copy an entire repository to your account
- Pull Request (PR)
 - Ask the project maintainer to add changes from a branch/fork to another branch



How do we get Git?

- Pre-installed on Macs and most Linux distros
 - Check with command line: *git --version*
 - “*git version #.#.#*”
- Windows
 - Surprise! Going to have to install something
 - <https://git-scm.com/download/win>
 - Check with command line: *git --version*
 - “*git version #.#.#.windows.#*”

```
wymcg@DESKTOP-EFMFPPS:~$ git config --global user.name "your_username" _
```

```
wymcg@DESKTOP-EFMFPPS:~$ git config --global user.email "github_email" _
```

```
wymcg@DESKTOP-EFMFPPS:~$ git config --global --list
```

[Pulls](#)[Issues](#)[Marketplace](#)[Explore](#)

psuieee / projects2021

Public

Unwatch ▾

1

Star

0

Fork

1

<> Code

Issues

Pull requests

Actions

Projects

Wiki



main ▾

Go to file

Add file ▾

Code ▾

About



wymcgr Added slides ...

13 days ago 44



fall2021

Added slides

13 days ago



.gitignore

Added 3-gbdev .gb files to gitignore

24 days ago



LICENSE

Initial commit

2 months ago



README.md

Update README.md

13 days ago

Penn State IEEE

workshops from the fall
2021 and spring 2022
semesters

education

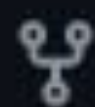
workshop

archive

ieee

pennstate

psuieee



wymcg / projects2021

Public

forked from [psuieeee/projects2021](#)

Getting around
in your terminal



```
wymcg@DESKTOP-EFMFPPS:~$ git clone https://github.com/YOUR_USERNAME/projects2021_
```



Uh, so now what?

- Now you have a fork of the projects2021 repo on your PC!
 - Why aren't you cheering?
- Make changes to projects2021/fall2021/2-git/CHANGEME.txt
 - Keep it PG-13 and one line, please
 - Remember that these changes are all public
- Once everyone has made a change, we will move on

```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git status
```

```
On branch main
```

```
Your branch is ahead of 'origin/main' by 1 commit.
```

```
(use "git push" to publish your local commits)
```

```
Changes not staged for commit:
```

```
(use "git add <file>..." to update what will be committed)
```

```
(use "git restore <file>..." to discard changes in working directory)
```

```
modified:   CHANGEME.txt
```

```
no changes added to commit (use "git add" and/or "git commit -a")
```



```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git add *
```

OR

```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git add /PATH/TO/FILE_
```

```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git add *
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   CHANGE_ME.txt

wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ _
```

```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git commit -m "Made a change to CHANGE ME.txt"
[main 123aa74] Made a change to CHANGE ME.txt
 1 file changed, 1 insertion(+)
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git status
On branch main
Your branch is ahead of 'origin/main' by 2 commits.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
```

Now, let's push!

```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git push
Username for 'https://github.com': wymcg
Password for 'https://wymcg@github.com':
remote: Support for password authentication was removed on August 13, 2021. Please use a personal access token instead.
remote: Please see https://github.blog/2020-12-15-token-authentication-requirements-for-git-operations/ for more information.
fatal: Authentication failed for 'https://github.com/wymcg/projects2021/'
```

oh

🔔 + 👤

Signed in as **wymcg**

😊 Set status

Your profile

Your repositories

Your codespaces

Your organizations

Your projects

Your stars

Your gists


Upgrade

Feature preview

Help

Settings

Sign out

 **wymcg**
Your personal account

Account settings

Profile

Account

Appearance

Account security

Billing & plans

Security log

Security & analysis

Sponsorship log

Emails

Notifications

Scheduled reminders

SSH and GPG keys

Repositories

Developer settings

Owned repositories

Applications

Developer settings

Moderation settings

Blocked users

Interaction limits

GitHub Apps

OAuth Apps

Personal access tokens

Generate new token

New personal access token

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).

Note

|

What's this token for?

Expiration *

30 days




The token will expire on Thu, Oct 14 2021


```
wymcg@DESKTOP-EFMFPPS:~/projects2021/fall2021/2-git$ git push
Username for 'https://github.com': wymcg
Password for 'https://wymcg@github.com':
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Delta compression using up to 8 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (9/9), 926 bytes | 926.00 KiB/s, done.
Total 9 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To https://github.com/wymcg/projects2021
    0593596..123aa74  main -> main
```



wymcg / projects2021 Public


forked from psuieeee/projects2021


<> Code


 Pull requests


 Actions


 Projects


 Wiki


 Security

 Insights

 Settings

 main ▾

 5 branches


 0 tags


Go to file

Add file ▾

Code ▾

This branch is 3 commits ahead of psuieeee:main.

 Contribute ▾

 Fetch upstream ▾



base repository: psuieeee/projects2021 ▼

base: 2-git ▼



head repository: wymcg/projects2021 ▼

compare: main ▼



base repository: psuieeee/projects2021 ▼

base: 2-git ▼



head repository: wymcg/projects2021 ▼

compare: main ▼

✓ **Able to merge.** These branches can be automatically merged.

Discuss and review the changes in this comparison with others. [Learn about pull requests](#)

Create pull request

3 commits

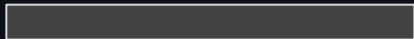
1 file changed

0 comments

2 contributors



Commits on Sep 14, 2021

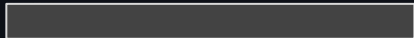


bbc676a



Made a change to CHANGEME.txt

123aa74



Verified

a8447b3



base repository: psuieeee/projects2021 ▼

base: 2-git ▼



head repository: wymcg/projects2021 ▼

compare: main ▼

✓ Able to merge. The



2-git Workshop Changes

Write

Preview

H

B

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🔗

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≡

☑

@

📎

↶

Made changes for the Git/Github workshop

Attach files by dragging & dropping, selecting or pasting them.



☒ Allow edits by maintainers ⓘ

Create pull request

