

# Git For Collaboration

Tony Cui & Abby Chou

# Agenda

1. Recap: Git and Version Control
  - a. Staging, Commits, Commit log
  - b. Branches
2. Merging and Merge Conflicts
3. Remote Git

# Recap: Making Commits

# Sample Commit



## SingleComment.js

```
47
-const SingleComment = () => {
+const SingleComment = (props) => {
  return (
    <div className="Card-commentBody">
-    { /* TODO (step7): use JSX and props to render comment creator and content */ }
-    </div>
+    <div className="Card-commentBody">
+    <span className="u-bold">{props.creator_name}</span>
+    <span>{" | " + props.content}</span>
+    </div>
+    </div>

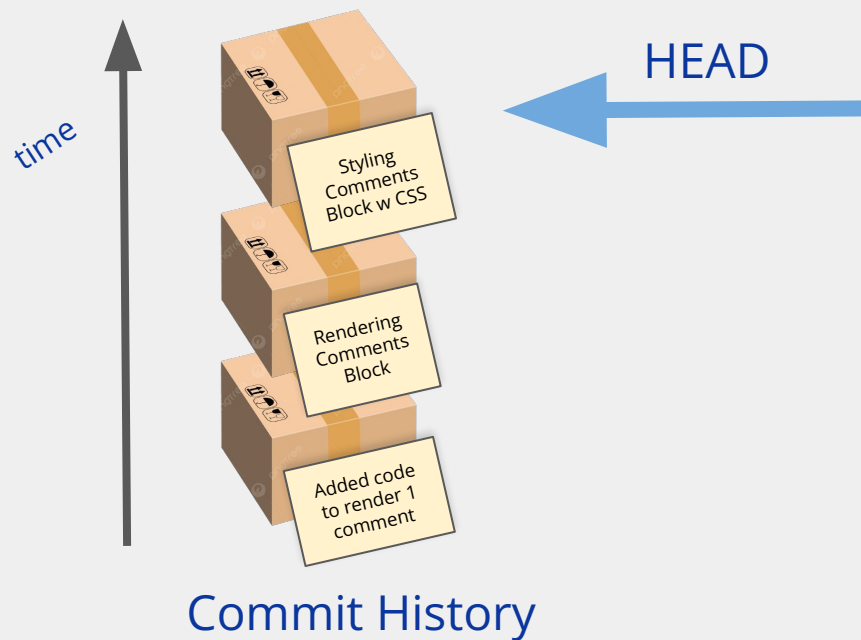
```

## Card.js

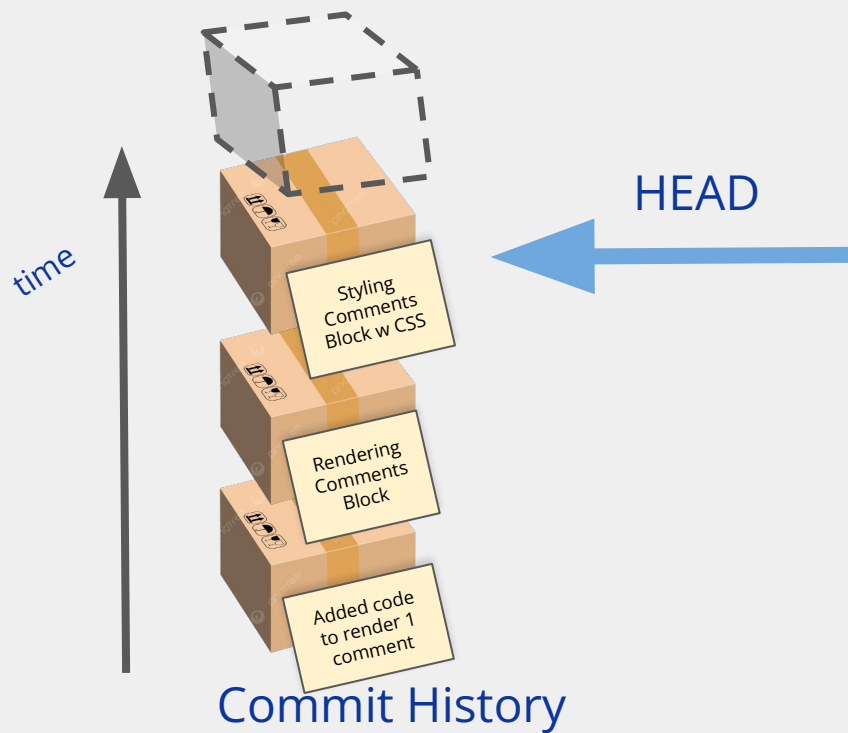
```
48 b/client/src/components/modules/Card.js
@@ -1,7 +1,7 @@
import React, { useState, useEffect } from "react";
import { get } from "../../utilities";
import SingleStory from "../SingleStory.js";
-// TODO (step7): import SingleComment
+import SingleComment from "../SingleComment.js";

```

# Staging & Committing

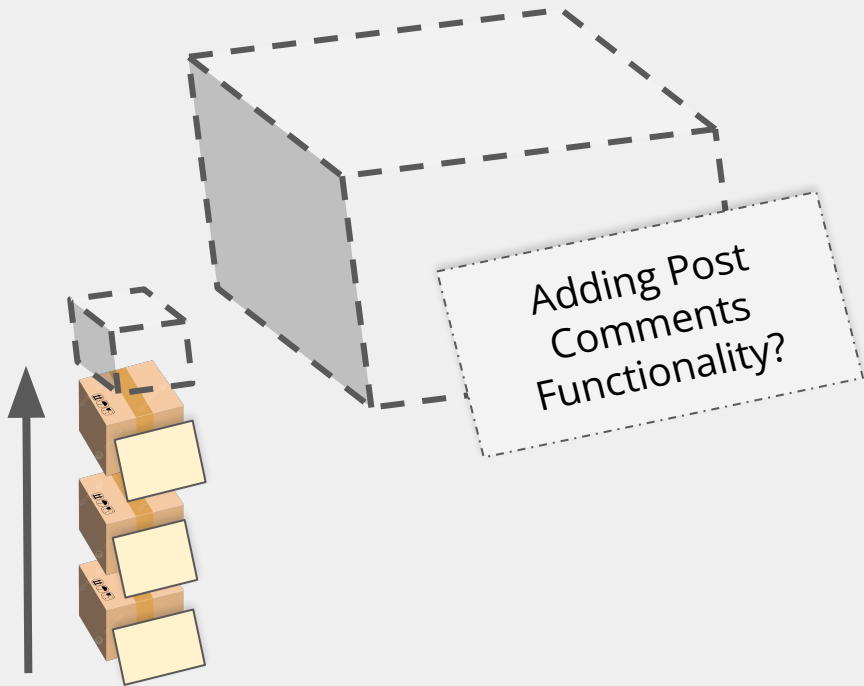


# Staging & Committing

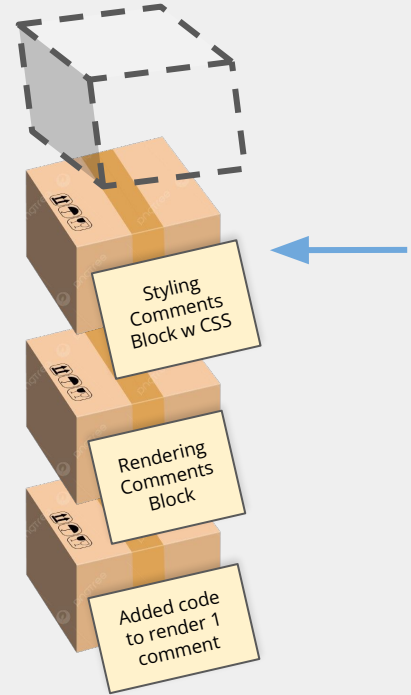


Add a new commit ? 🧑🏻💻

# Staging & Committing



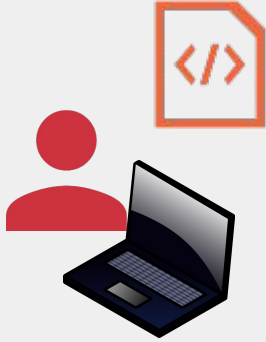
# Staging & Committing



Commit History



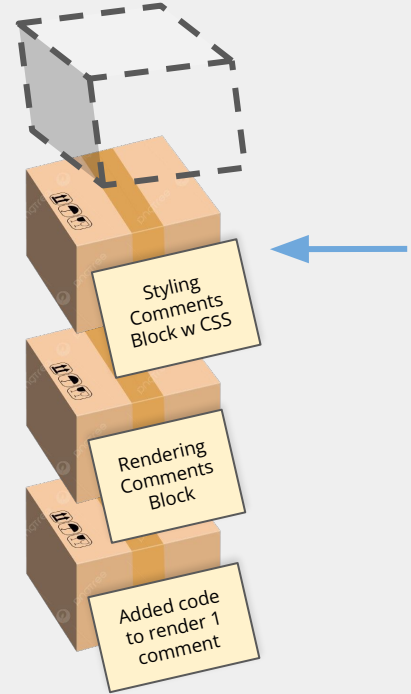
# Staging & Committing Pt 1: Code Changes



```
const NewComment = (props) => {  
  const addComment = (value) => {  
    const body = { parent: props.storyId, content: value };  
    post("/api/comments", body).then((comment) => {  
      // display this comment on the screen  
      props.setNewComment(comment);  
    });  
  };  
};
```

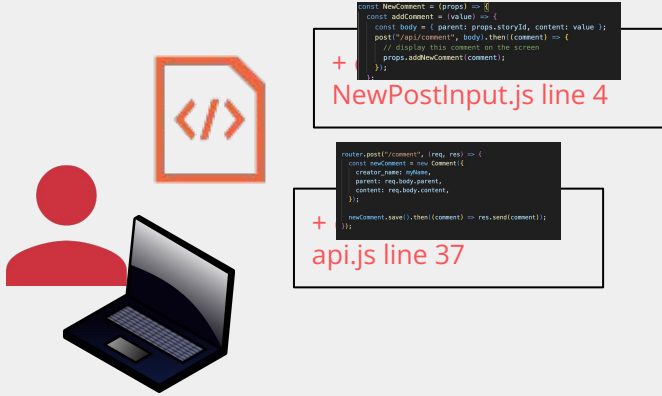
+  
NewPostInput.js line 4

Working copy

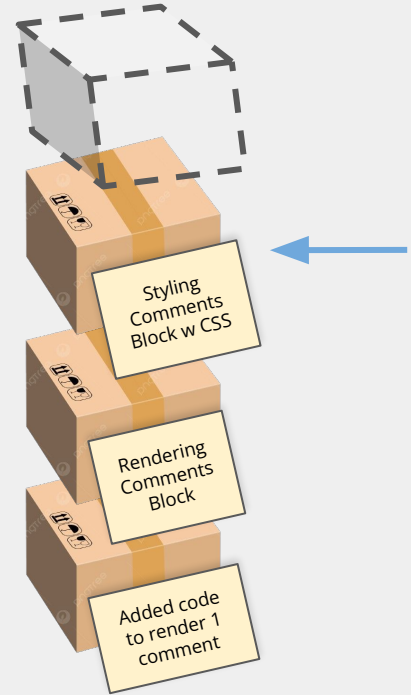


Commit History

# Staging & Committing Pt 1: Code Changes

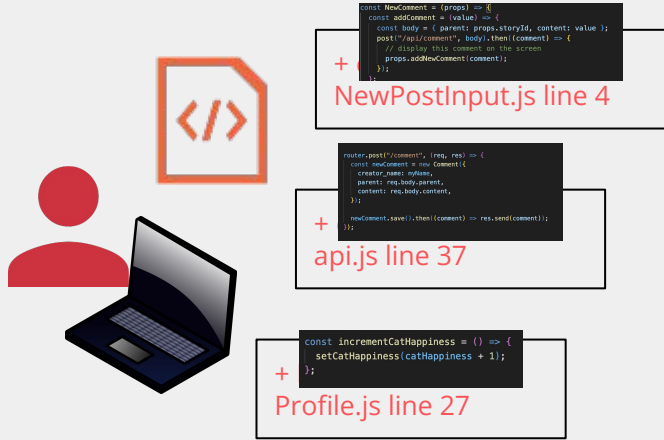


Working copy

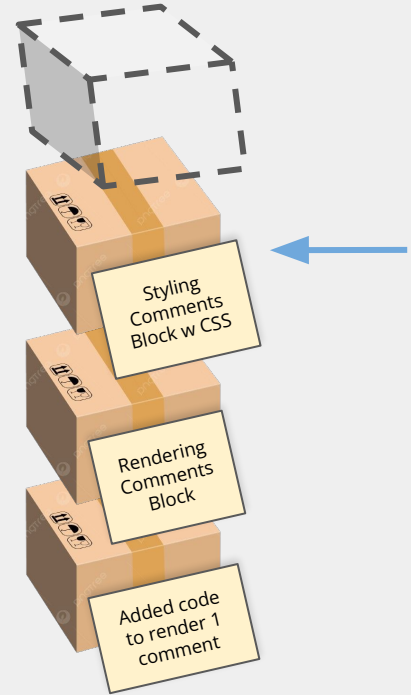


Commit History

# Staging & Committing Pt 1: Code Changes



Working copy

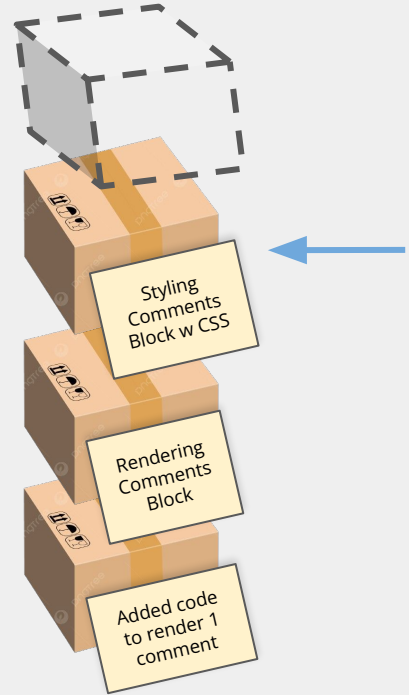


Commit History

# Staging & Committing Pt 1: Code Changes



Working copy



Commit History

# Staging & Committing Pt 2: Staging

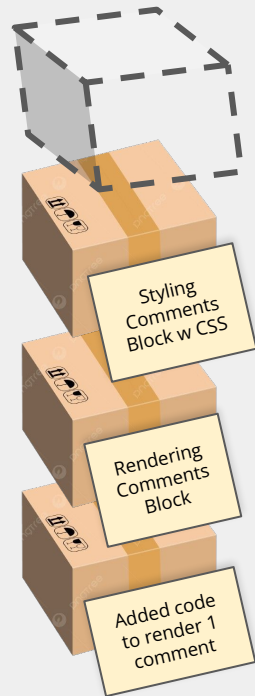


# Staging & Committing Pt 2: Staging

`git add <filepath>`



Staging Area



Commit History

Working copy

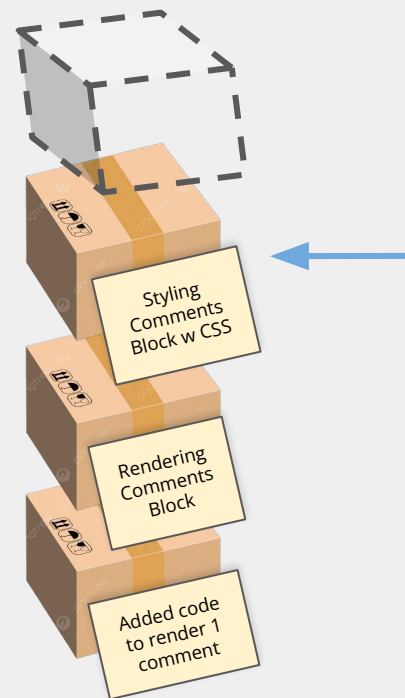
# Staging & Committing Pt 2: Staging

```
git add NewPostInput.js
```



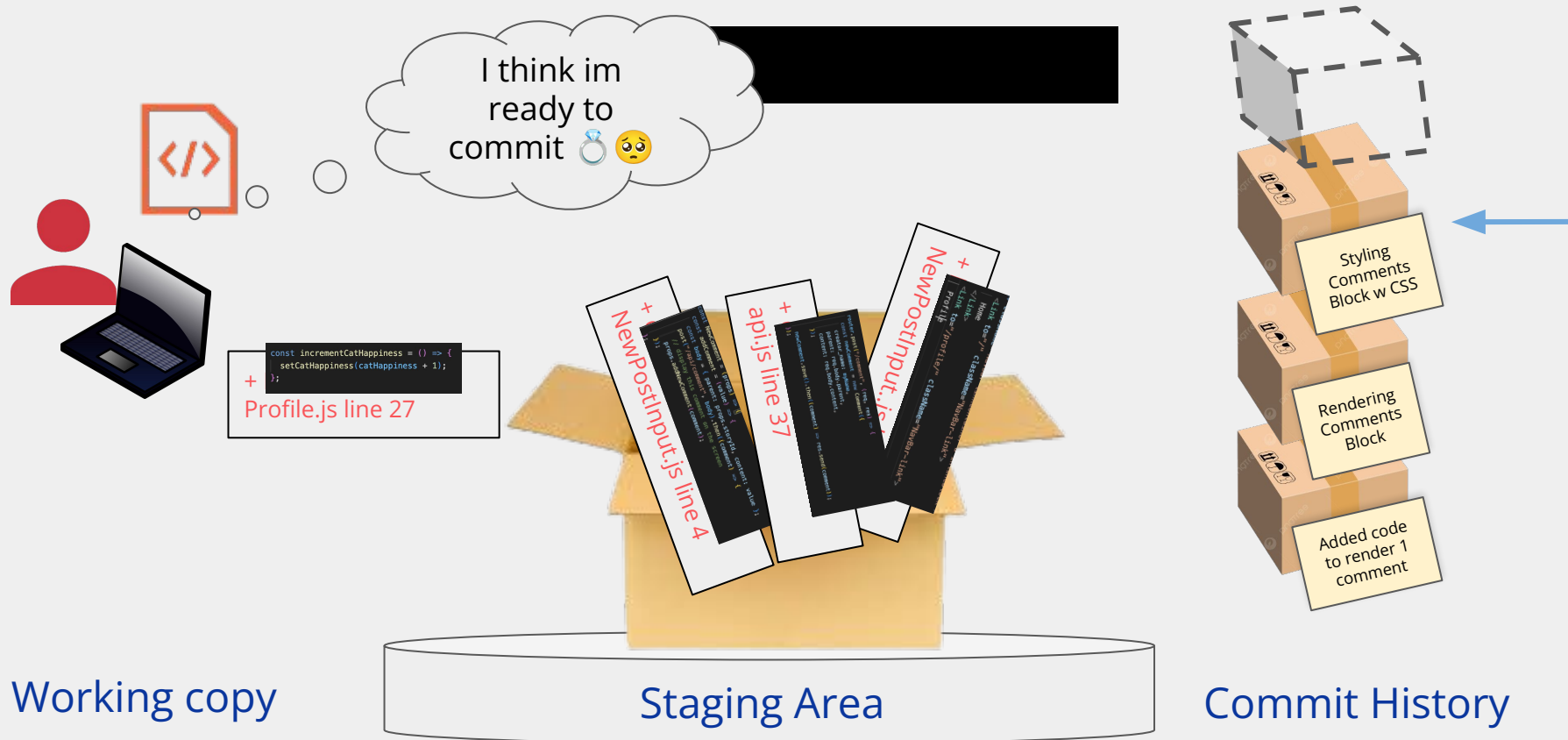
# Staging & Committing Pt 2: Staging

```
git add NewPostInput.js  
git add api.js
```



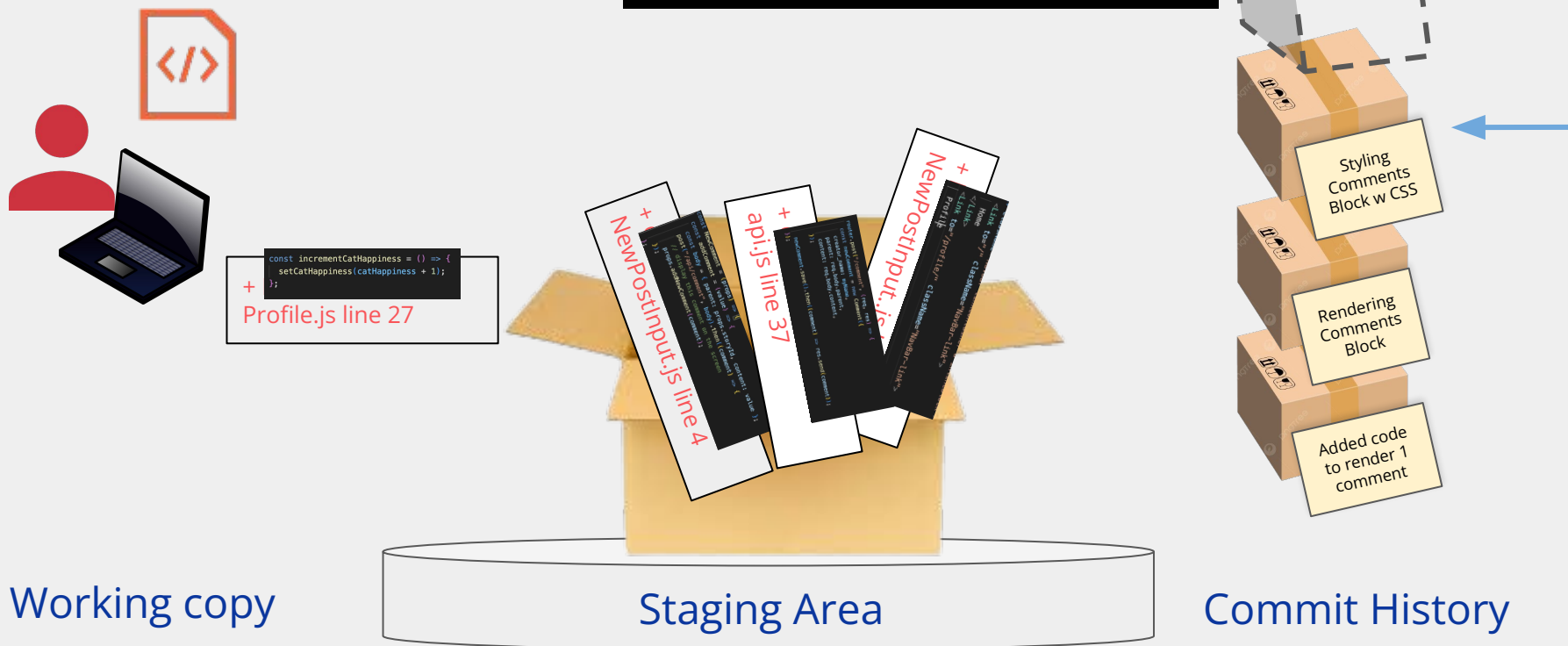


# Staging & Committing Pt 3: Commit



# Staging & Committing Pt 3: Commit

```
git commit -m <commit msg>
```



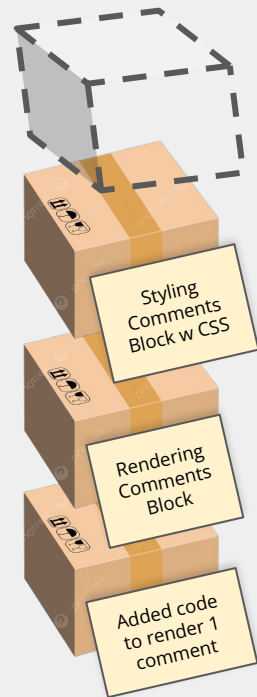
# Staging & Committing



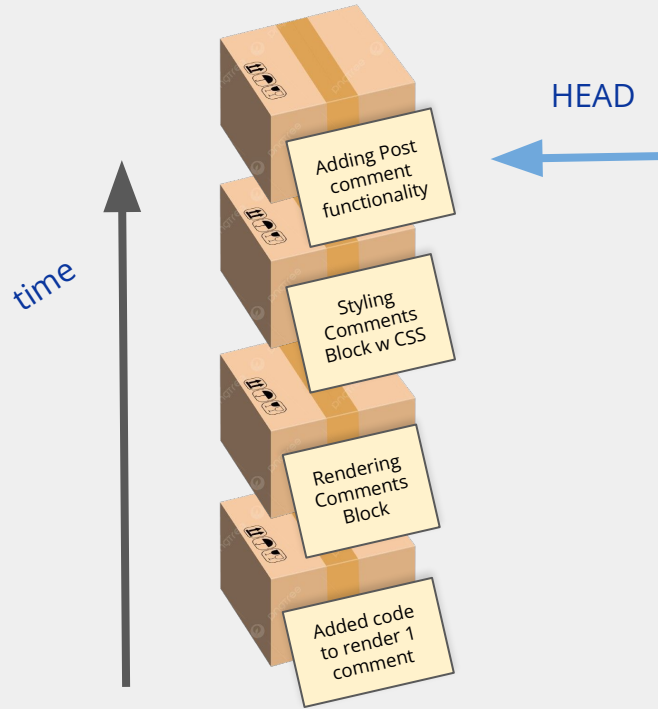
# Staging & Committing Recap



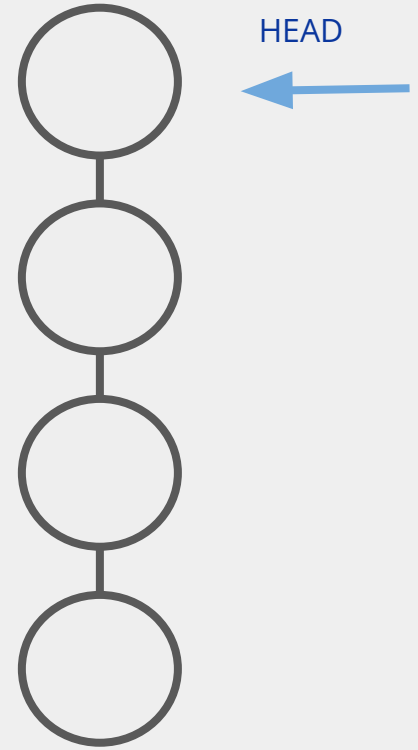
Staging Area



# Commit History -> Object Graph

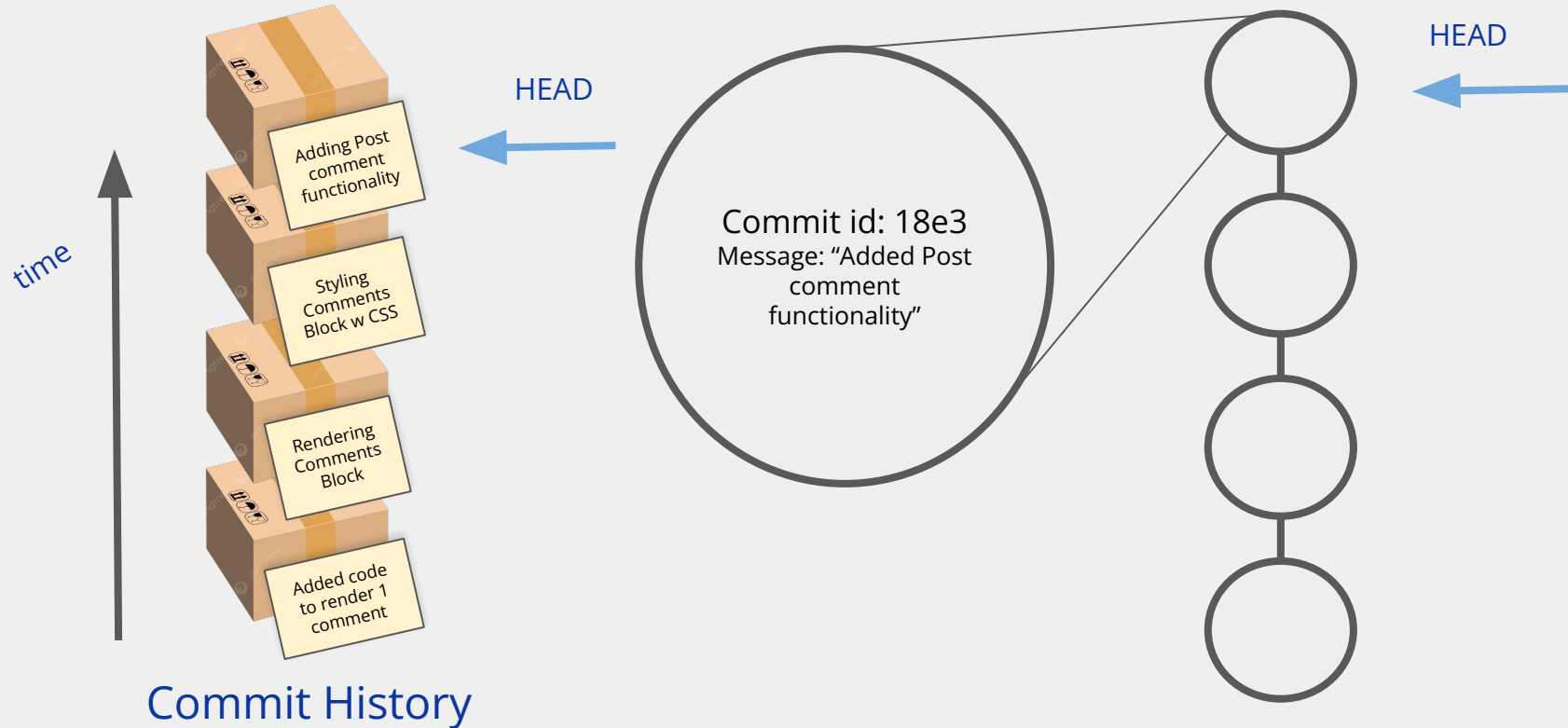


Commit History



Object Graph

# Commit History -> Object Graph



# Branching

# The need for branching and merging

tony: "vibing working on my new and improved home page "

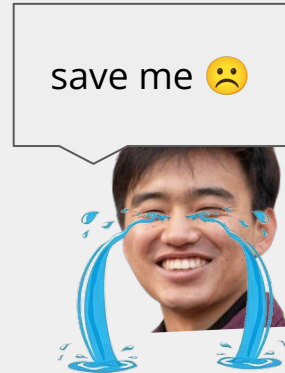
andrew: "can u help me fix this bug on the home page"

tony: "anything for u bb 🥰"

boss abby (who got dumped recently 😞) : "tony we need a weblab-tinder feature TOMORROW and u hav to do it"

tony: "bruh"

**How do we work on multiple features at once?**





# The need for branching and merging

tony: **task A**: \*Needs to work on his project\*

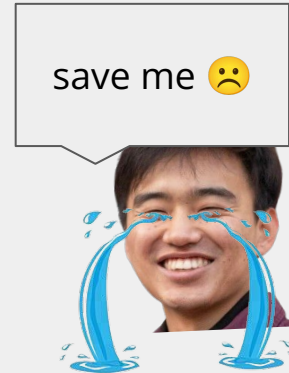
andrew: "can u help me"

tony: **task B**: \*Needs to help Andrew\*

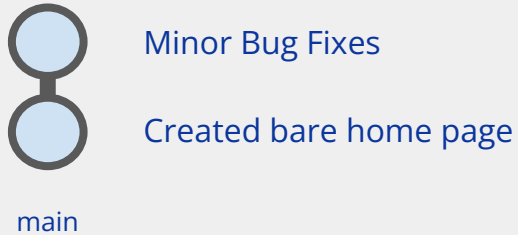
Abby: "tony do this for me"

tony: **task C**: \*cries\*

**How do we work on multiple features at once?**



# Commits and Branches



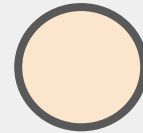
Legend:



Task A



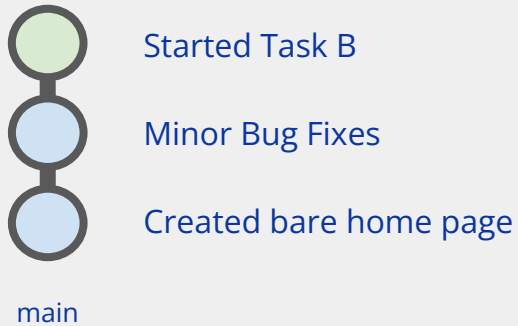
Task B



Task C



# Commits and Branches



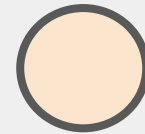
Legend:



Task A



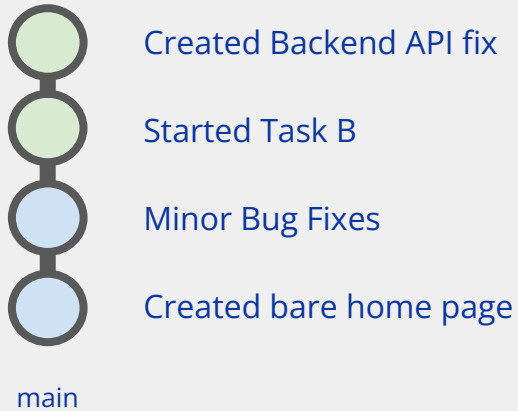
Task B



Task C



# Commits and Branches



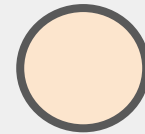
Legend:



Task A



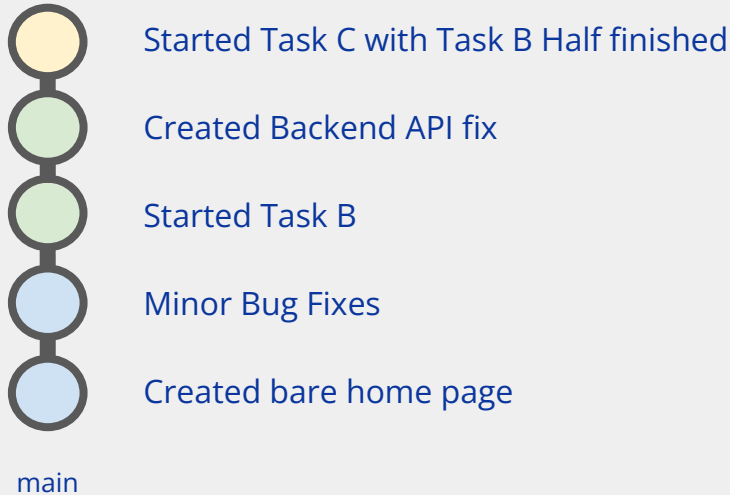
Task B



Task C



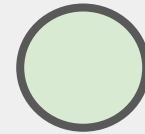
# Commits and Branches



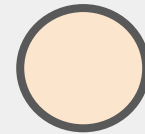
Legend:



Task A



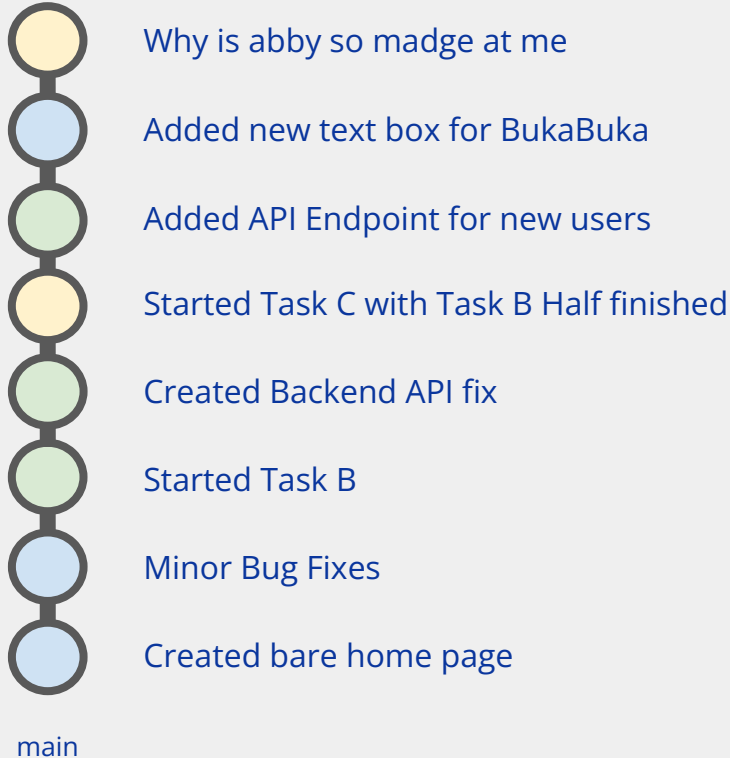
Task B



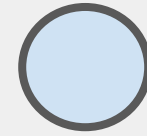
Task C



# Commits and Branches



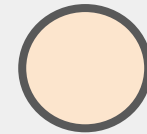
Legend:



Task A



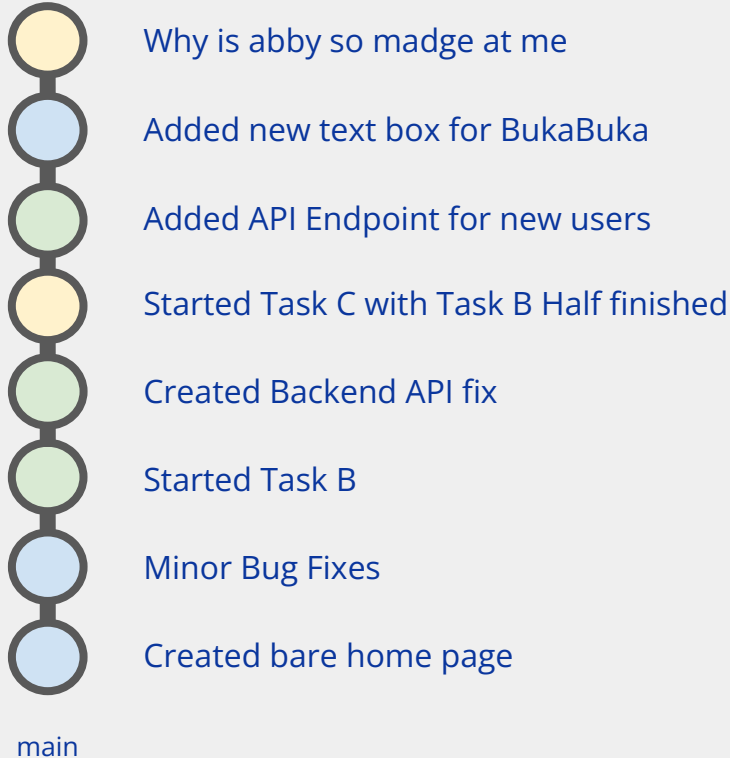
Task B



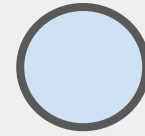
Task C



# Commits and Branches



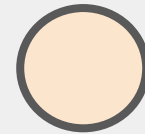
Legend:



Task A



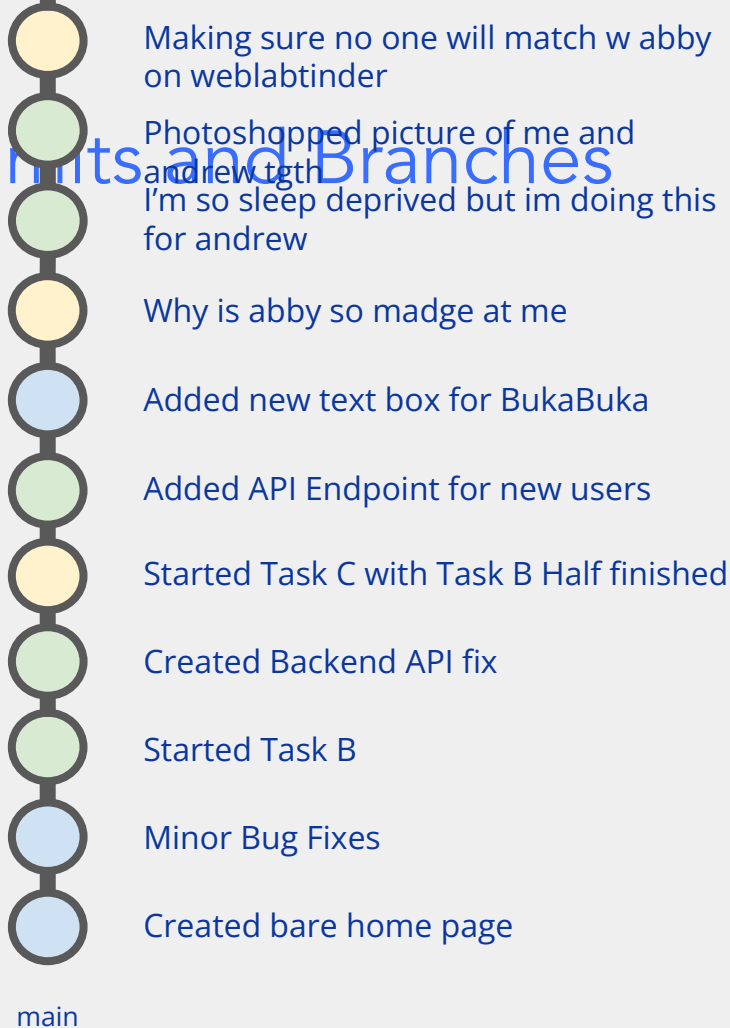
Task B



Task C



# Commits and Branches



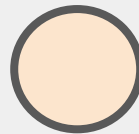
Legend:



Task A



Task B



Task C





# Commits and Branches

- Making sure no one will match w abby on weblabtinder
- Photoshopped picture of me and andrew tgth
- I'm so sleep deprived but im doing this for andrew
- Why is abby so madge at me
- Added new text box for BukaBuka
- Added API Endpoint for new users
- Started Task C with Task B Half finished
- Created Backend API fix
- When did bug #6 start on Task C?
- Mine & Fixes
- Created bare home page

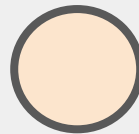
Legend:



Task A



Task B



Task C



# Commits and Branches

Making sure no one will match w abby  
on weblabtinder

Photoshopped picture of me and  
andrew togh  
I'm so sleep deprived but im doing this  
for andrew

Why is abby so madge at me

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Added API Endpoint for new users

Started Task C with Task B Half finished

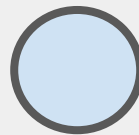
Created Backend API fix

When did bug #6  
start on Task C?

Mine & Fixes

Created bare home page

Legend:



Task A



Task B



Task C



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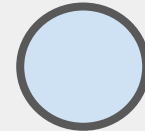
Created bare home page



Legend:



Task A



Task B



Task C



# Commits and Branches

Making sure no one will match w abby  
on weblabtinder

Photoshopped picture of me and  
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I'm so sleep deprived but im doing this  
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Mine & Fixes

Created bare home page

Legend:



Task A



Task B



Task C



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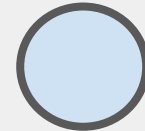
Minor fixes

Created bare home page

Legend:



Task A



Task B



Task C



# Commits and Branches

Making sure no one will match w abby  
on weblabtinder

Photoshopped picture of me and  
andrew tgth  
I'm so sleep deprived but im doing this  
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Added API Endpoint for new users

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Created Backend API fix

When did bug #6  
start on Task C?

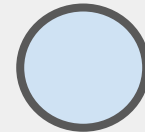
Mine & Fixes

Created bare home page

Legend:



Task A



Task B



Task C



# Commits and Branches



Making sure no one will match w abby  
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Mine & Fixes

Created bare home page



Legend:



Task A



Task B



Task C

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Created bare home page

Legend:



Task A



Task B

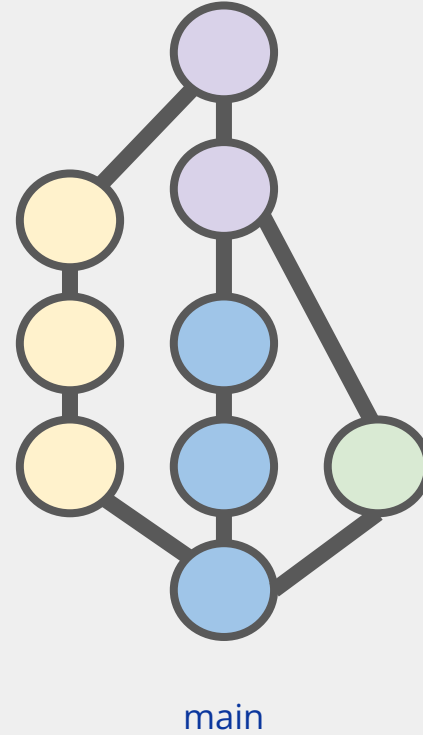
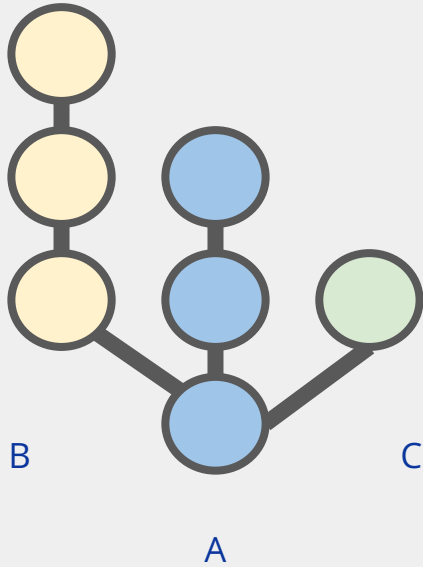


Task C





# The need for branching and merging

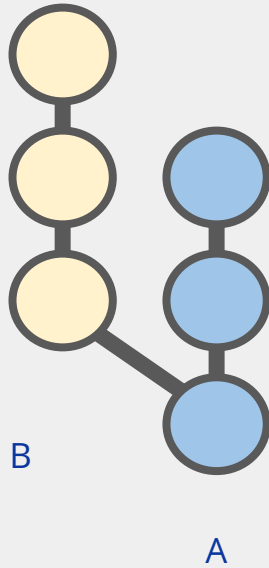


Merging \*but good

Very smooth merge

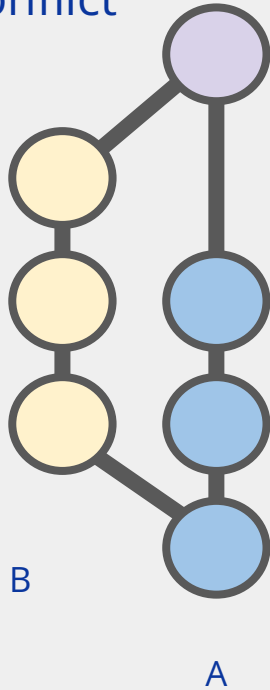
# Merging \*but bad

Merge conflict



# Merging \*but bad

Merge conflict



# Merging \*but bad

Merge conflict



A



remote

```
git clone <link>
```



main



main



Remote Server (github)

main



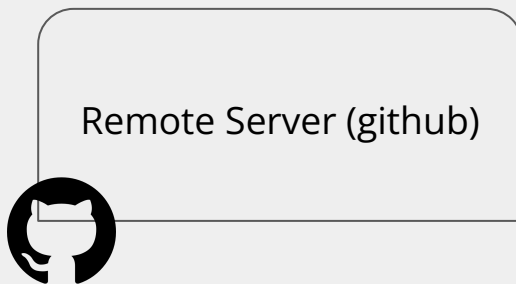
```
git clone <link>
```



main

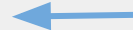


main



main

HEAD





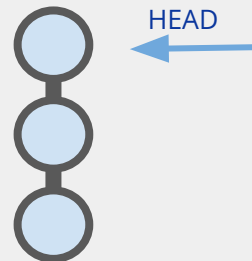
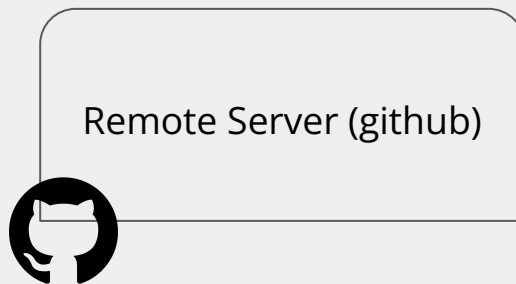
```
git add <file>  
git commit -m "message"
```



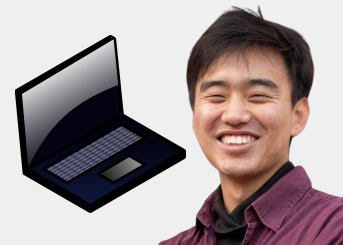
main



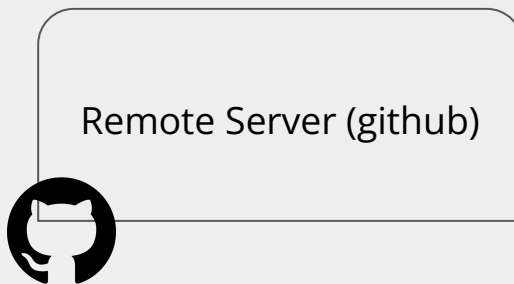
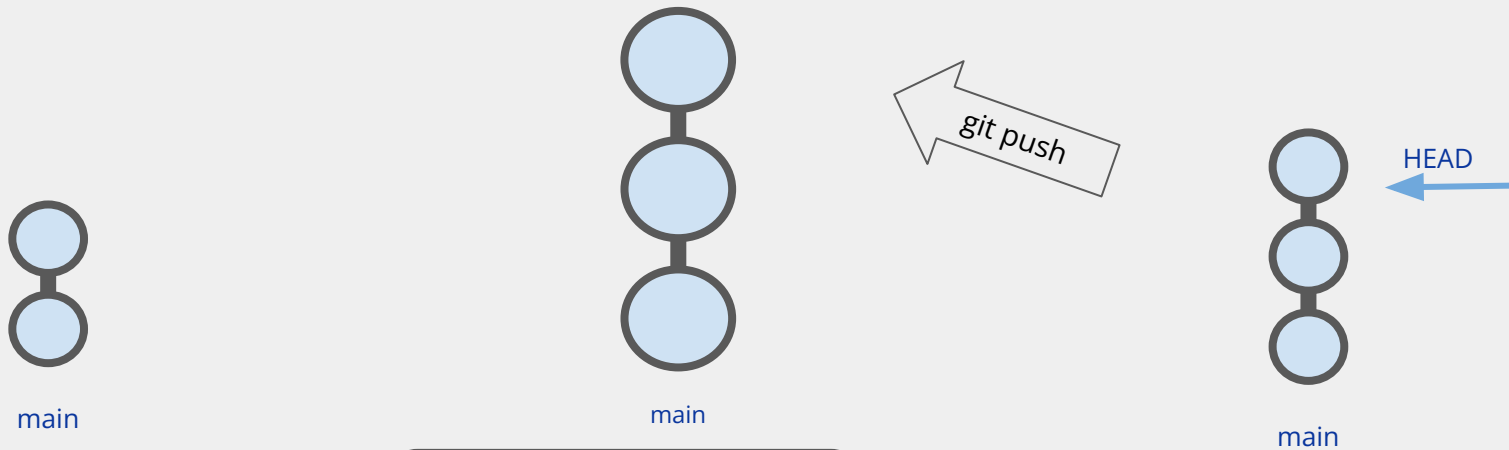
main



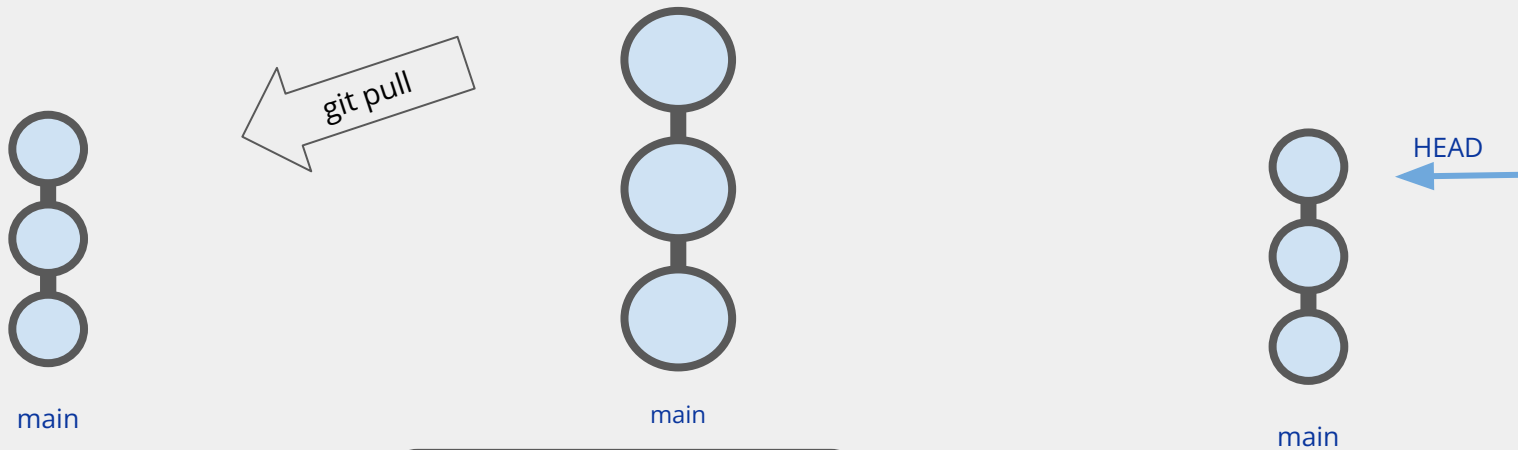
main



git push



git pull

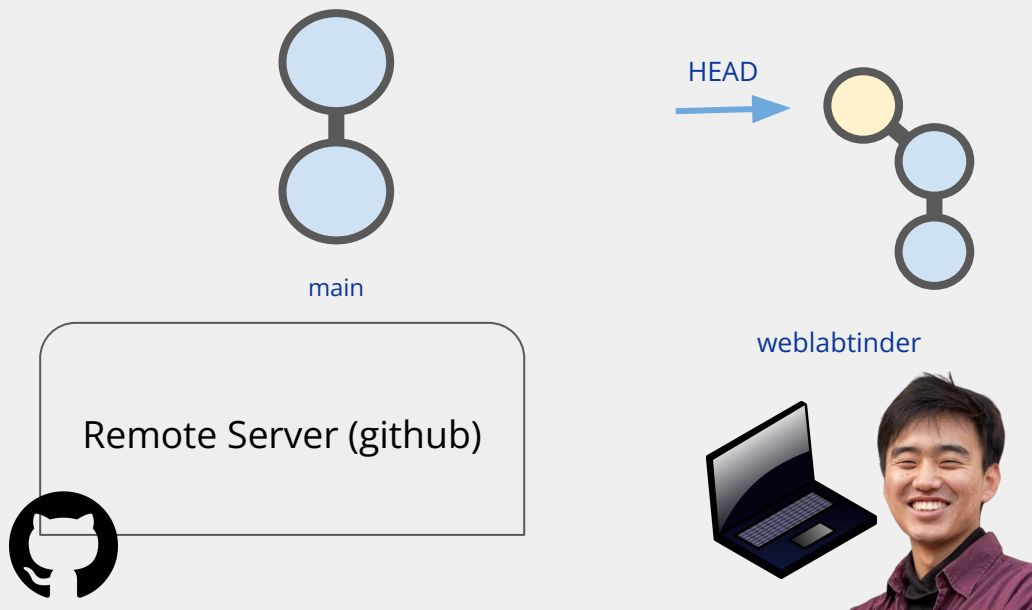


# Basic Workflow with Remote

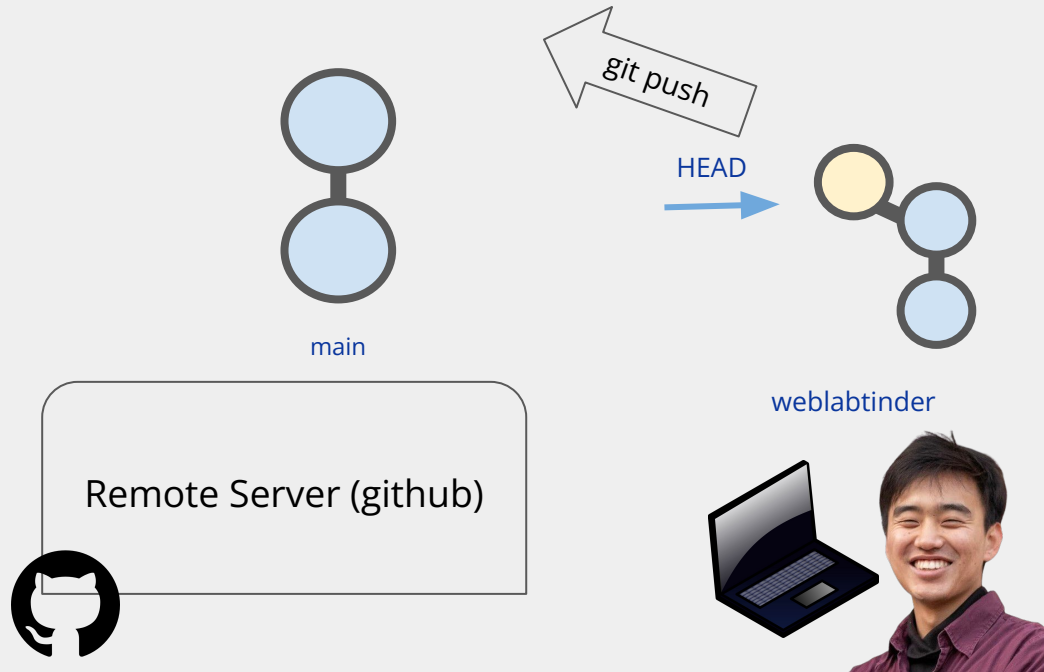
1. Pull
2. Work on stuff/add/commit
3. Pull again
4. Push

Remote + local branches

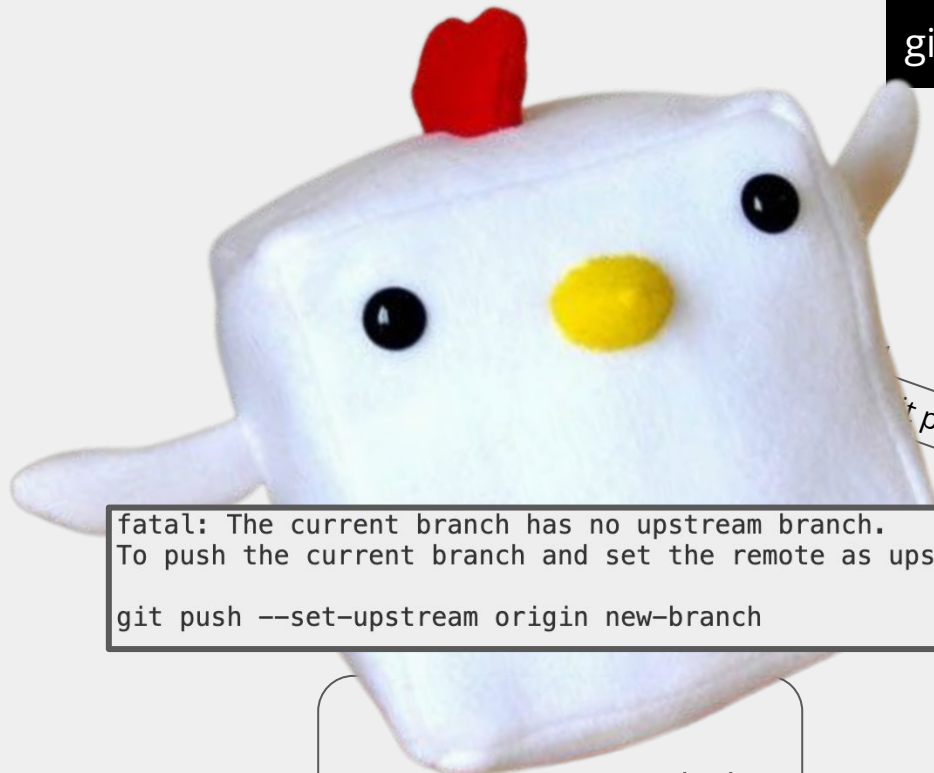
```
git checkout -b weblabtinder  
git add weblabtinder.js  
git commit -m "added tinder"
```



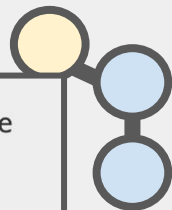
git push



git push



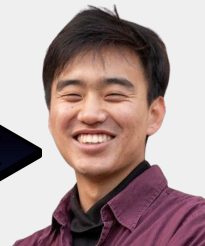
```
fatal: The current branch has no upstream branch.  
To push the current branch and set the remote as upstream, use  
git push --set-upstream origin new-branch
```



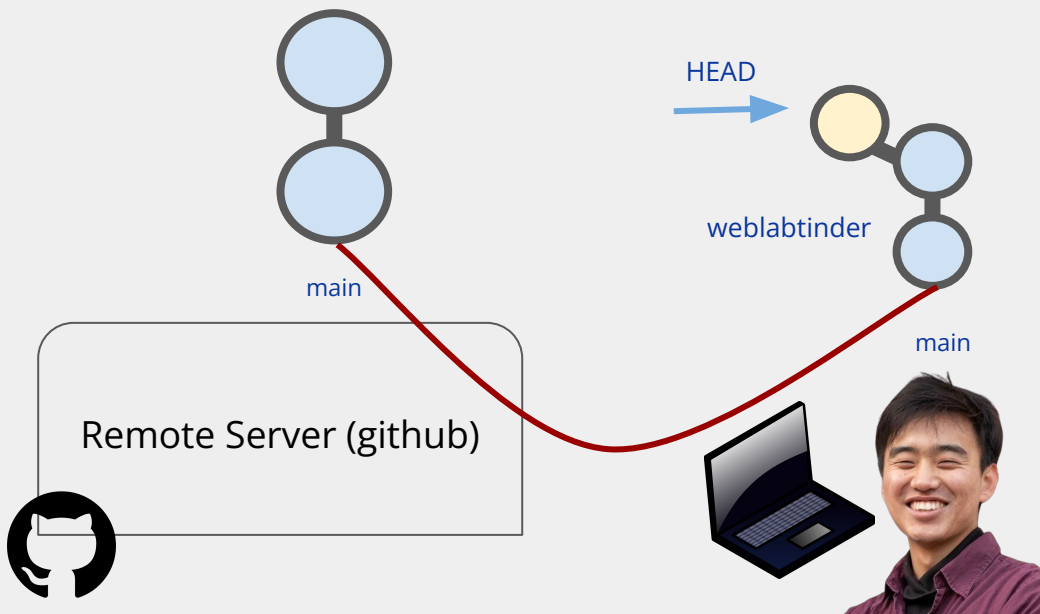
Remote Server (github)



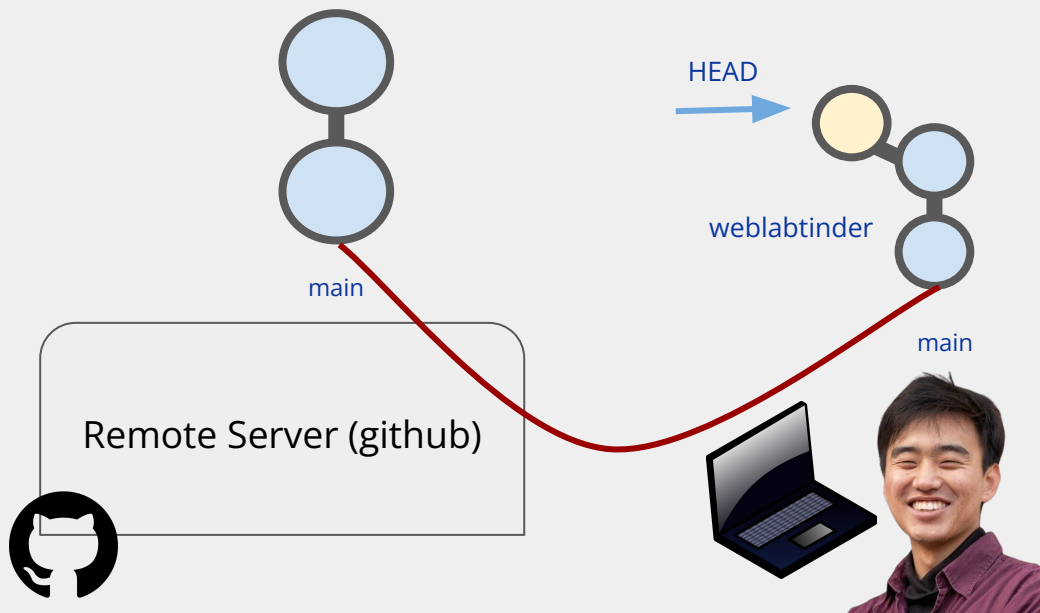
weblabtinder



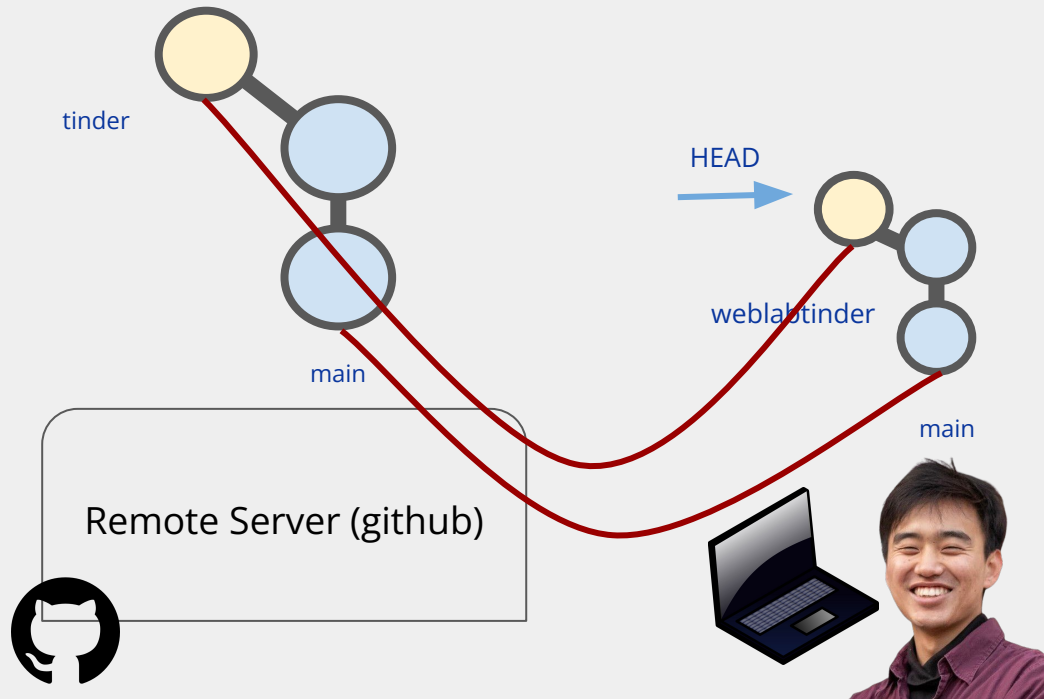


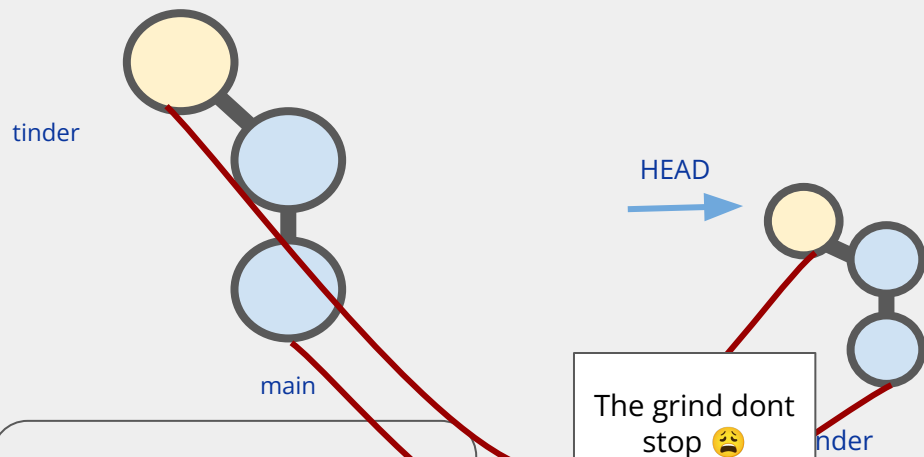


```
git push --set-upstream origin <new-branch>
```



`git push --set-upstream origin tinder`

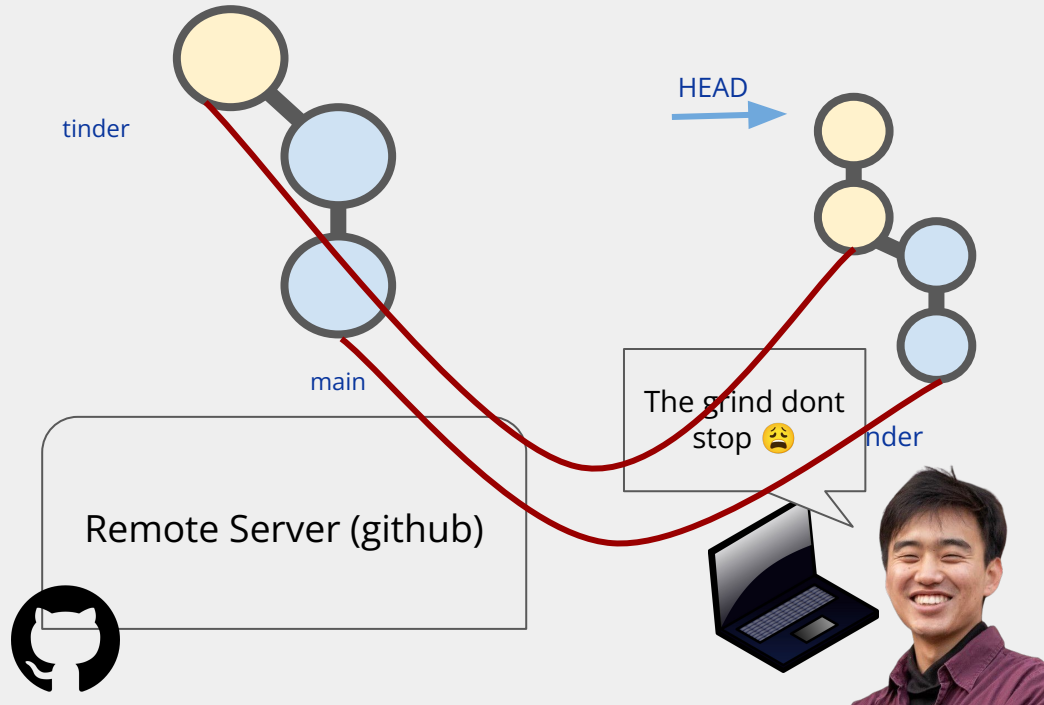




The grind dont stop 🥲



```
git add tinder_profile.js  
git commit -m "profile"
```



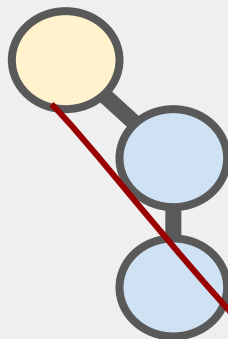
```
git add tinder_profile.js
git commit -m "profile"
git add tinder_algo.js
git commit -m "imported LP"
```



main



tinder

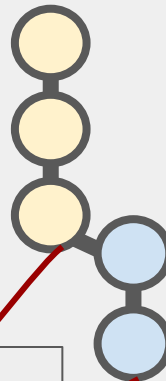
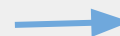


main

Remote Server (github)

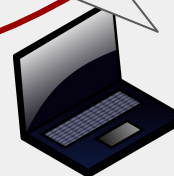


HEAD



tinder

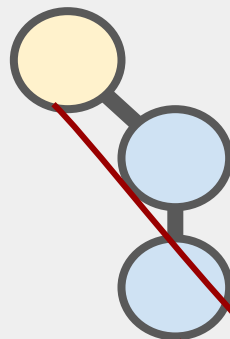
The grind dont  
stop 🙄



```
git add tinder_profile.js
git commit -m "profile"
git add tinder_algo.js
git commit -m "imported LP"
```



main

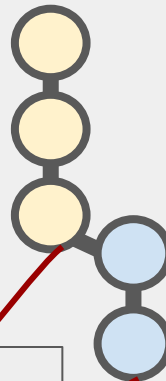
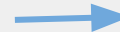


main

Remote Server (github)

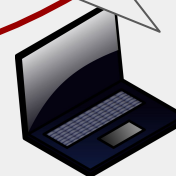


HEAD

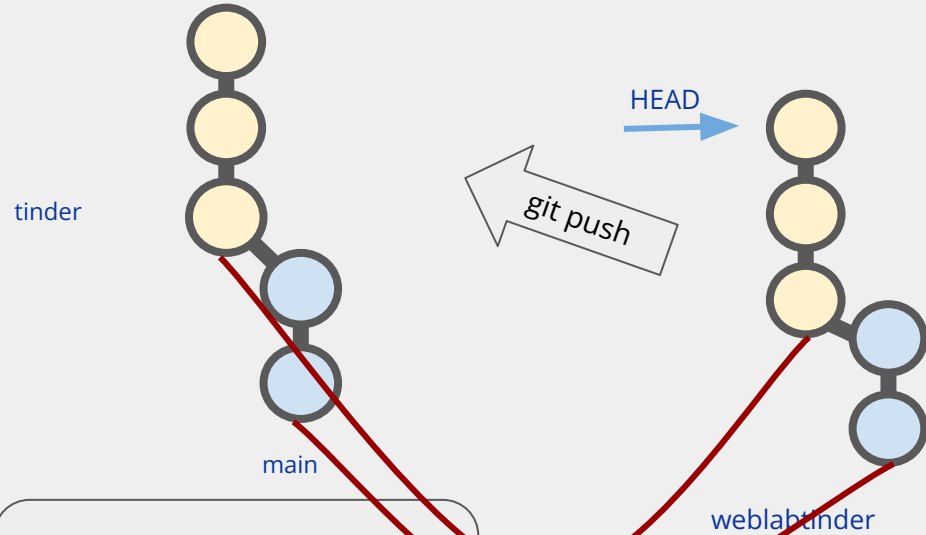


tinder

The grind dont  
stop 😞



git push

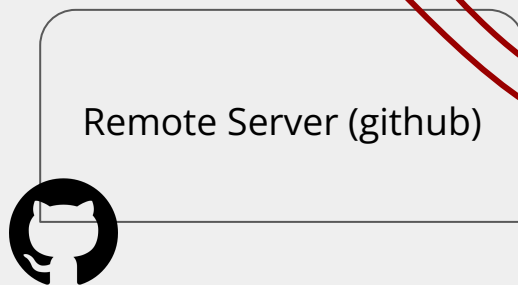
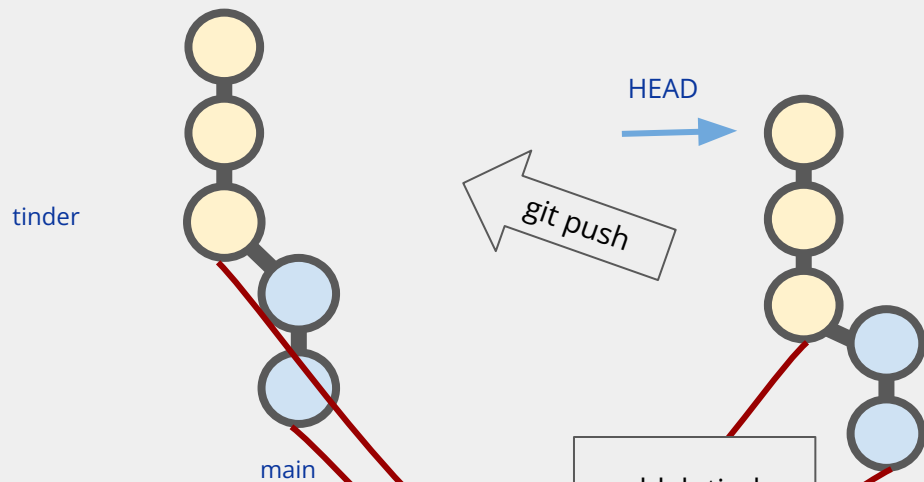


Remote Server (github)



weblabtinder



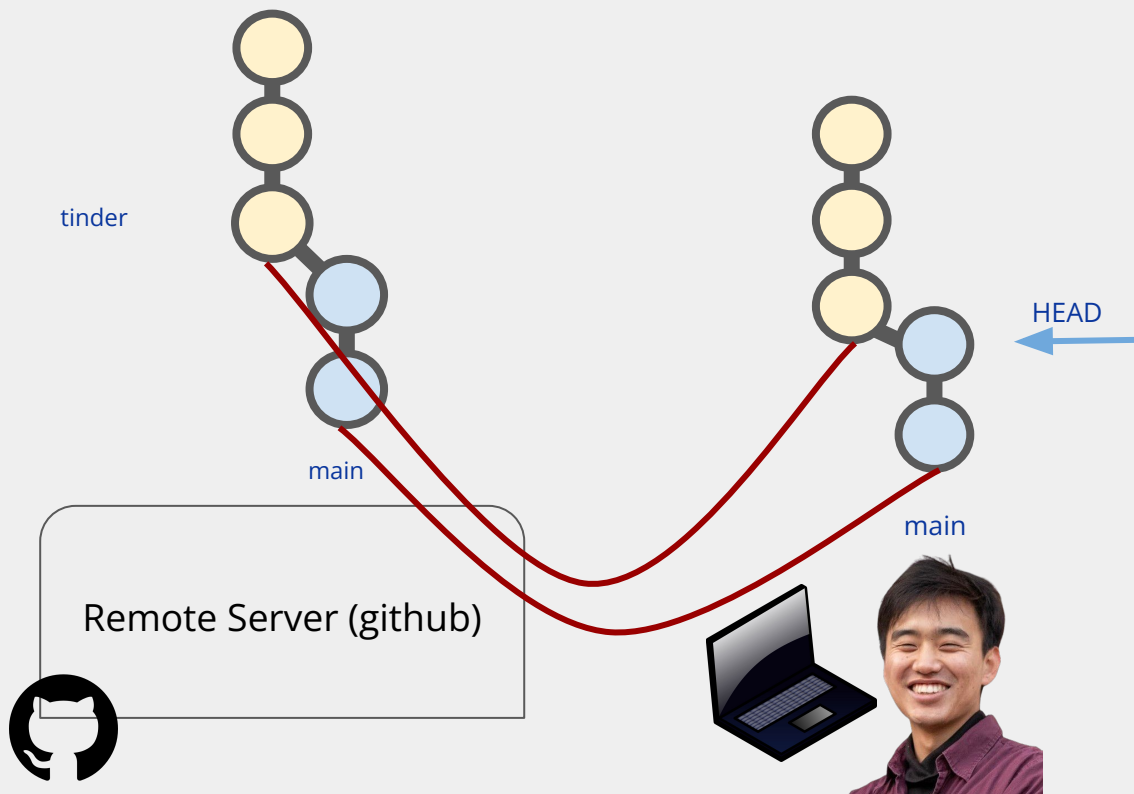


weblab tinder  
is ready 🤔

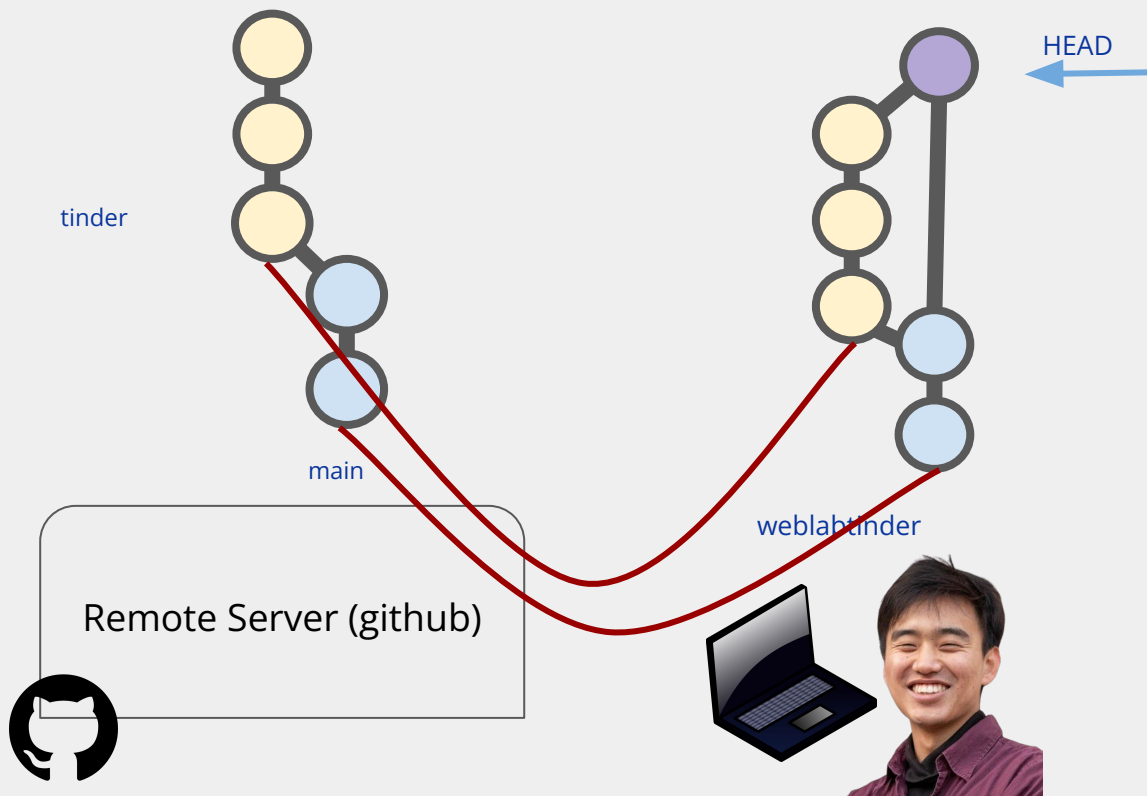


# Merging a Local + Remote Branch

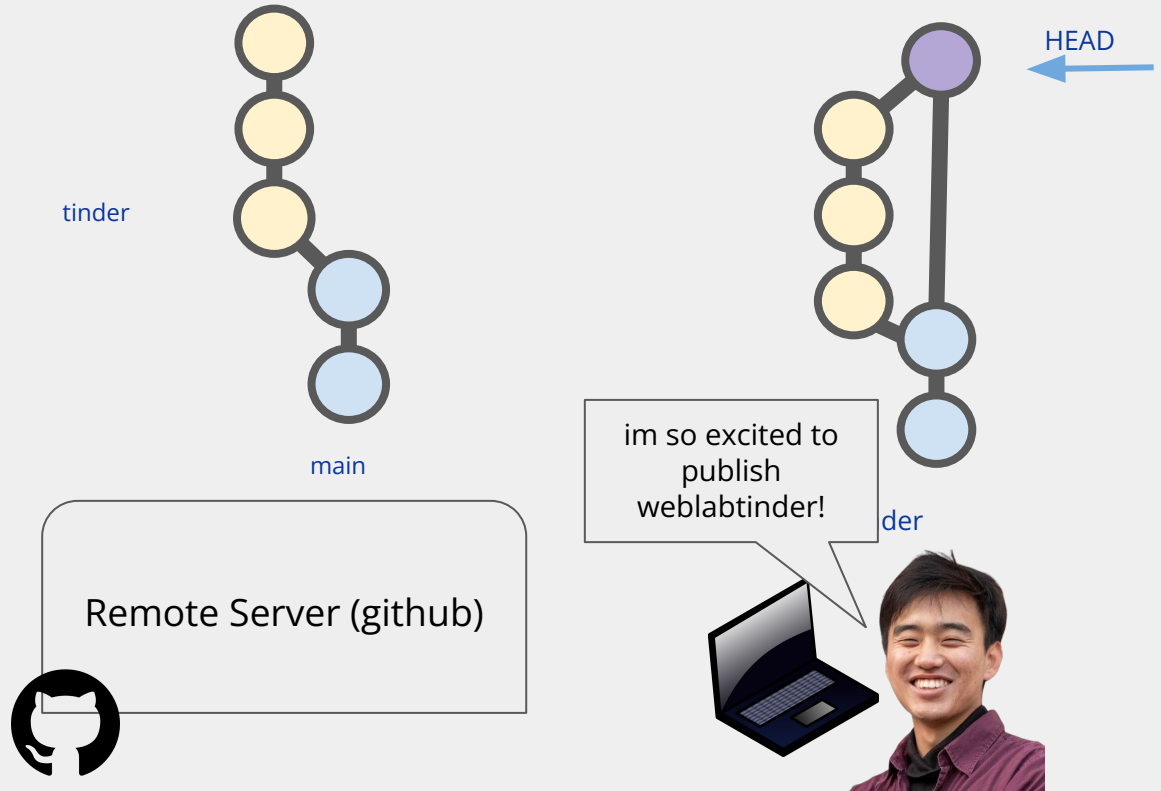
git checkout main



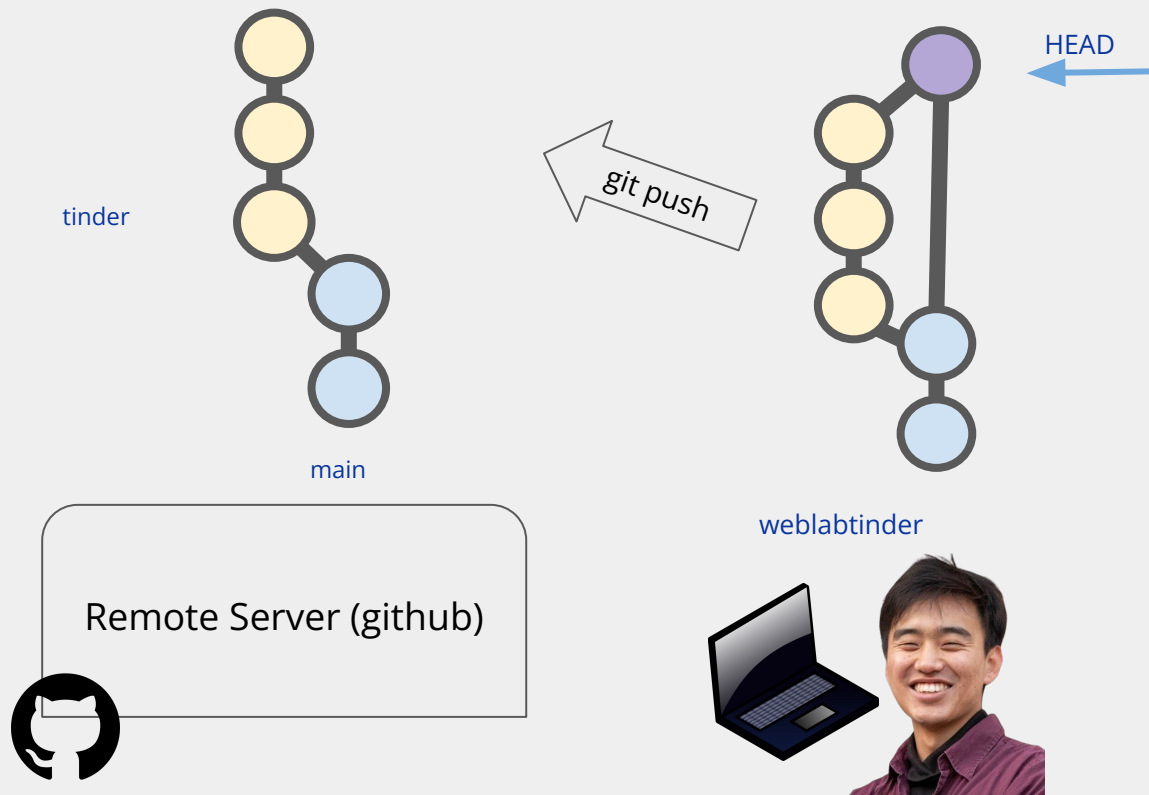
```
git checkout main  
git merge weblabtinder
```



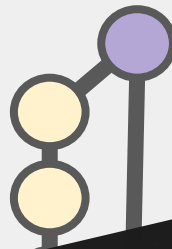
```
git checkout main  
git merge weblabtinder
```



```
git checkout main  
git merge weblabtinder  
git push
```



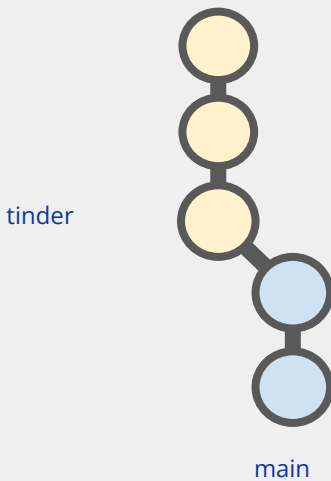
```
git checkout main  
git merge weblabtinder  
git push
```



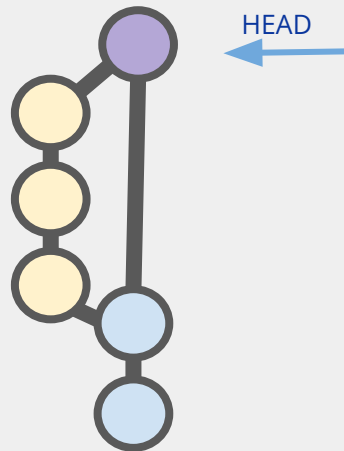
```
to https://github.com/tcui37/weblab-git-example.git  
! [rejected]  
error: failed to push some refs to 'https://github.com/tcui37/weblab-git-example.git'  
hint: Updates were rejected because the remote contains work that you do  
hint: not have locally. This is usually caused by another repository pushing  
hint: to the same ref. You may want to first integrate the remote changes  
hint: (e.g., 'git pull ...') before pushing again.  
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
```



```
git checkout main  
git merge weblabtinder  
git push
```

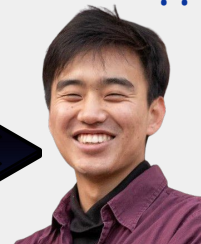


Remote Server (github)



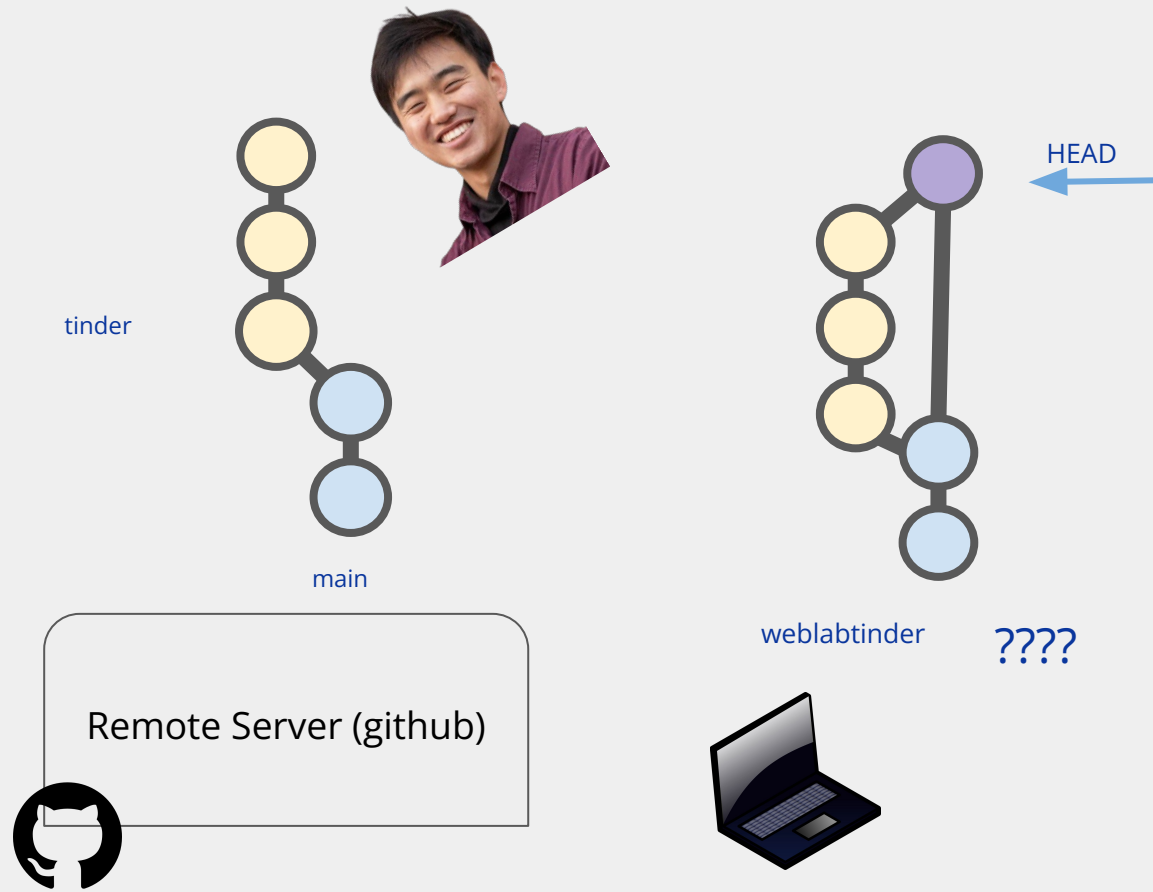
weblabtinder

????

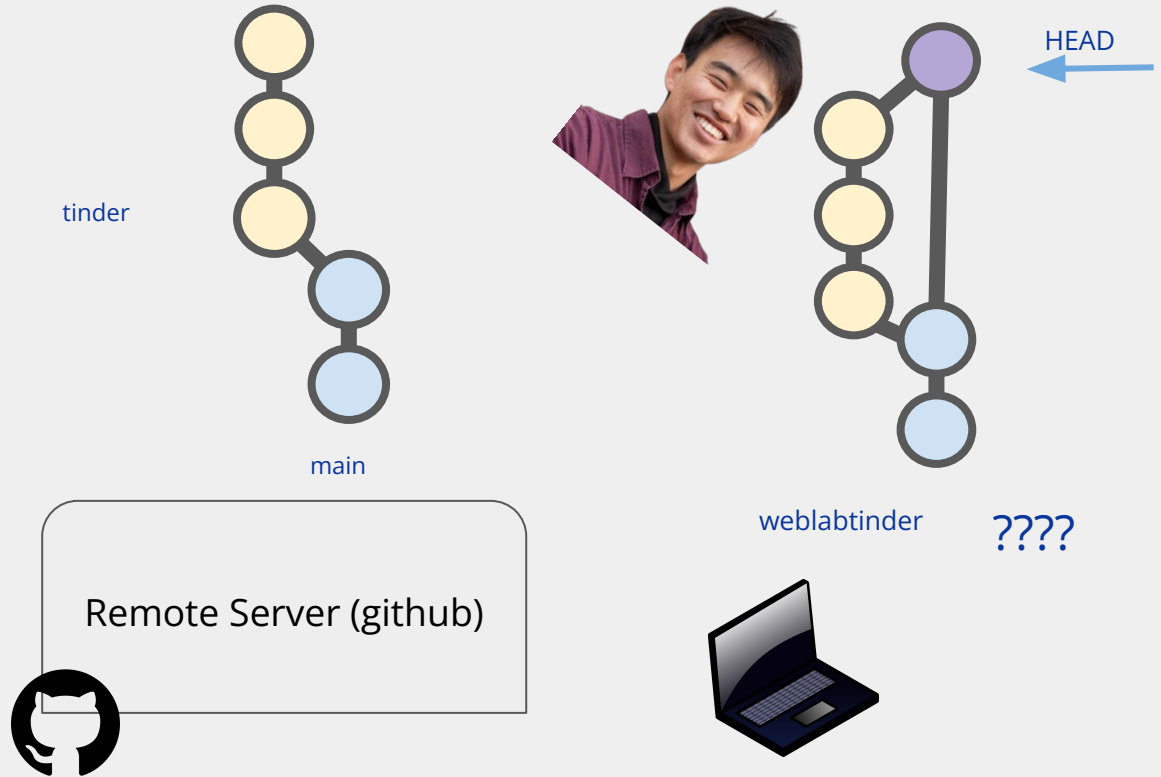




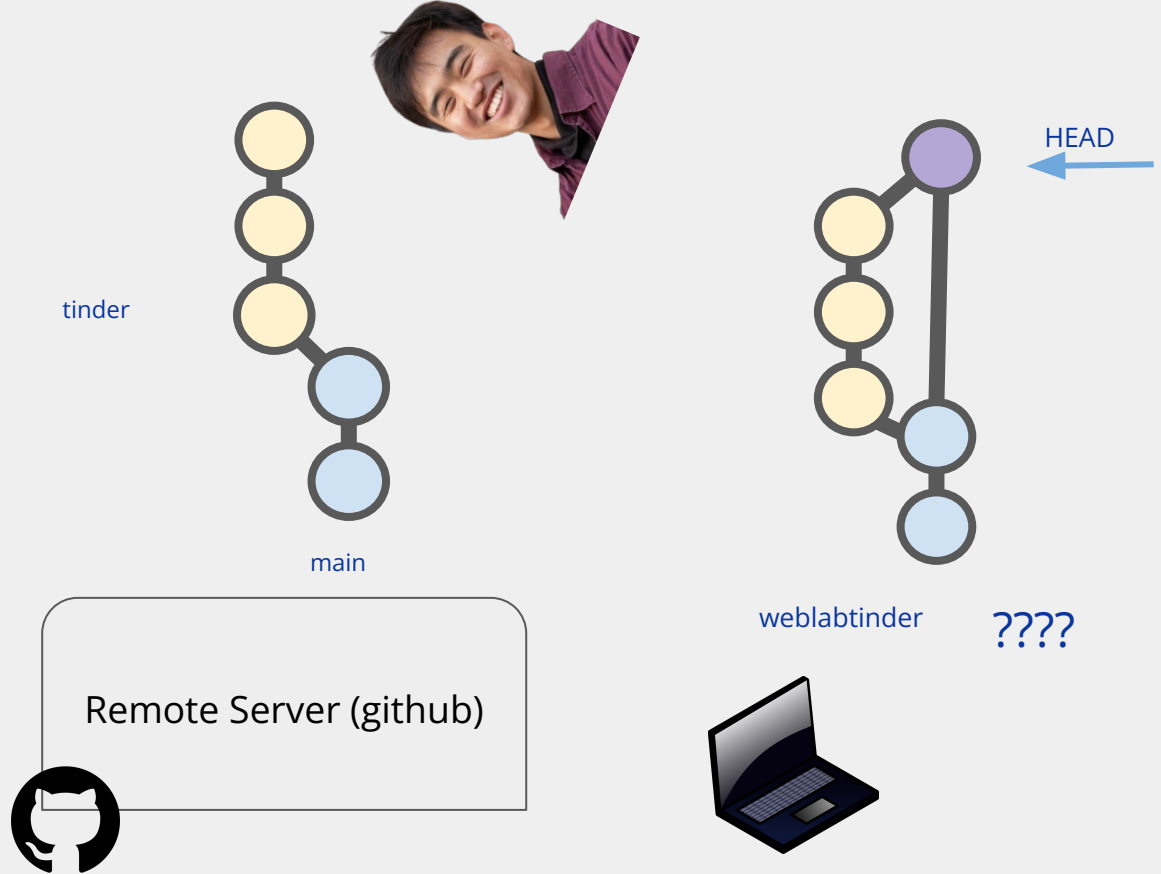
# git fetch



# git fetch



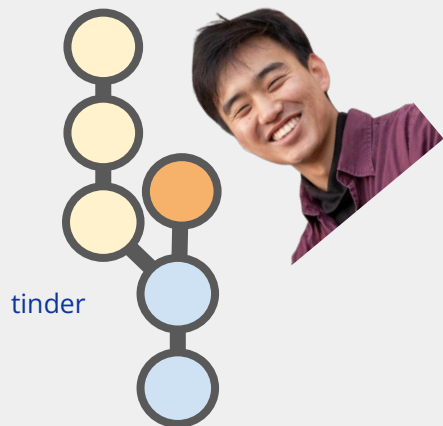
git fetch



git fetch

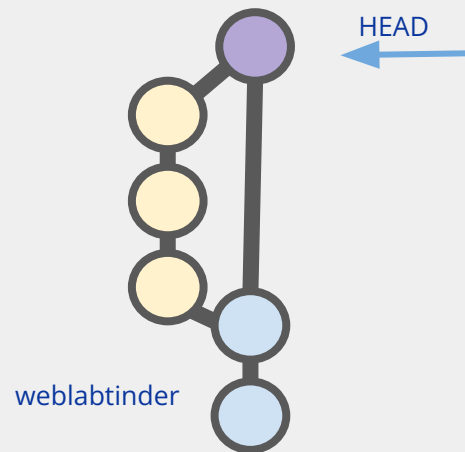


main



tinder

main



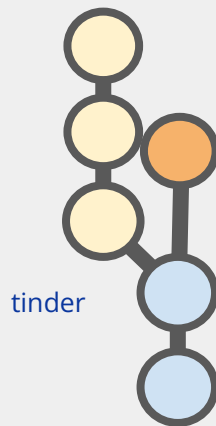
weblabtinder

main



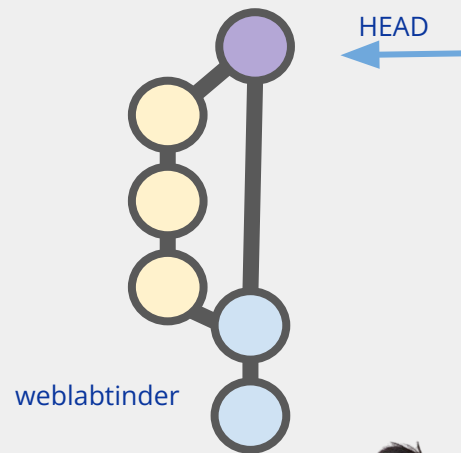
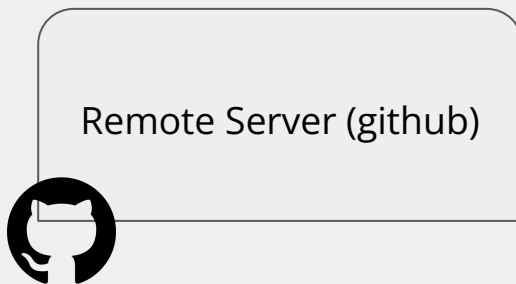


main



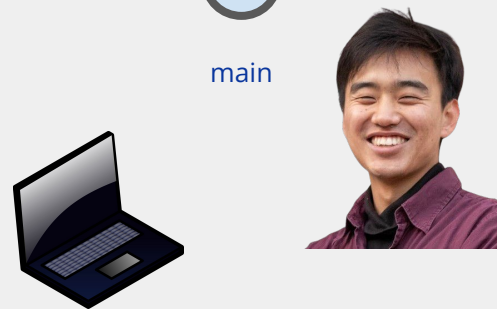
tinder

main

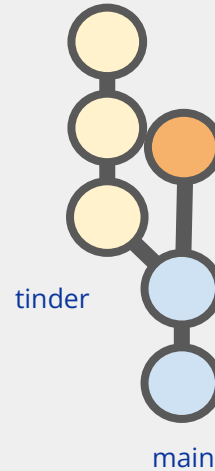


HEAD

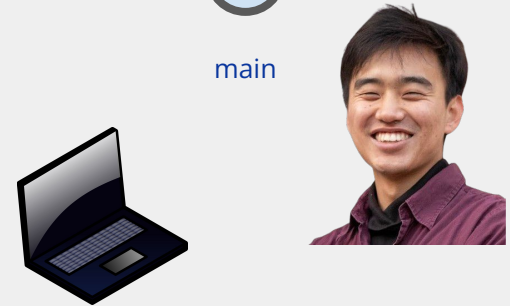
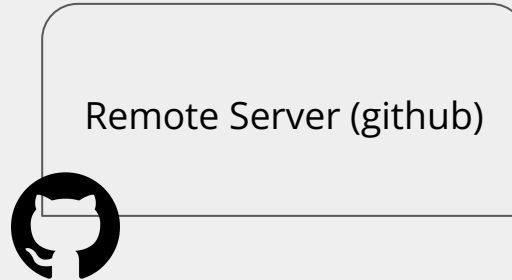
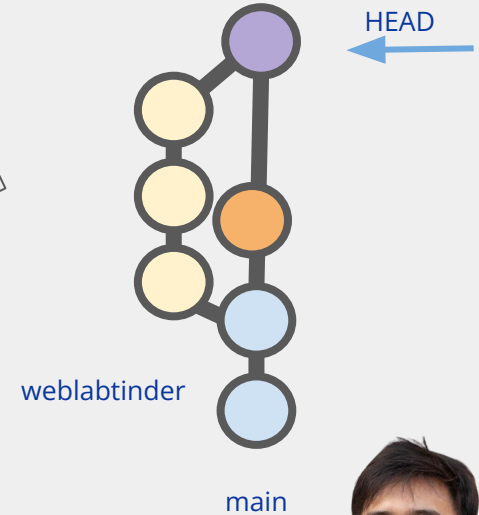
main



```
git checkout main  
git merge weblabtinder  
git push  
*on local main* git pull
```



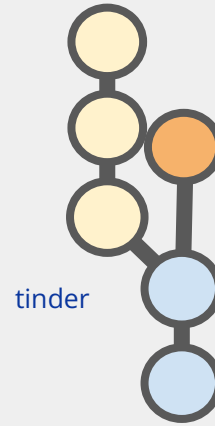
git pull



```
git checkout main
git merge weblabtinder
git push
*on local main* git pull
```



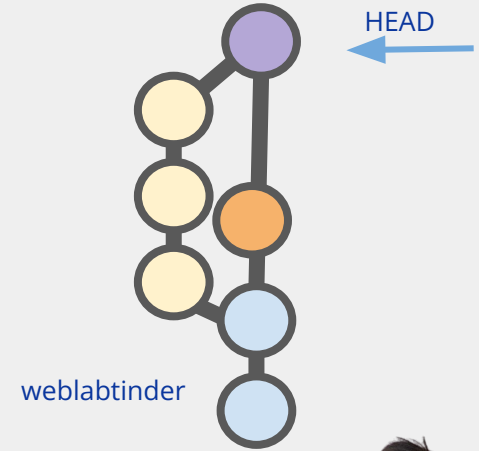
main



tinder

main

Remote Server (github)



HEAD

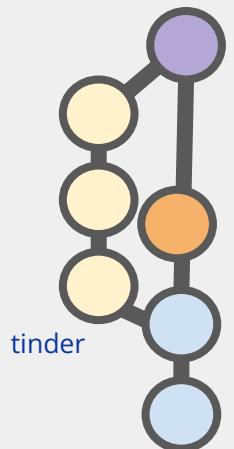
main



```
git checkout main
git merge weblabtinder
git push
*on local main* git pull
git push
```

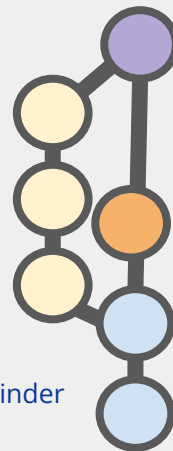


main



tinder

main



weblabtinder

main

HEAD  
←

Remote Server (github)

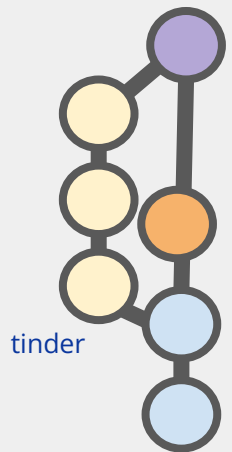




```
git checkout main  
git merge weblabtinder  
git push  
*on local main* git pull  
git push
```



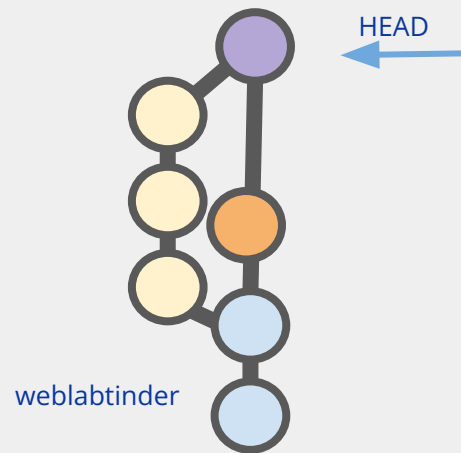
main



tinder

main

Remote Server (github)



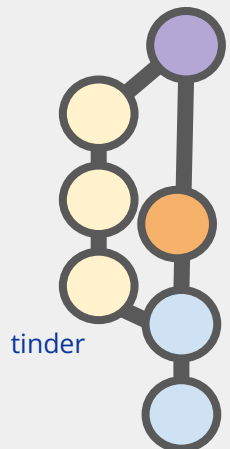
main



```
git checkout main
git merge weblabtinder
git push
*on local main* git pull
git push
git branch -d weblabtinder
```

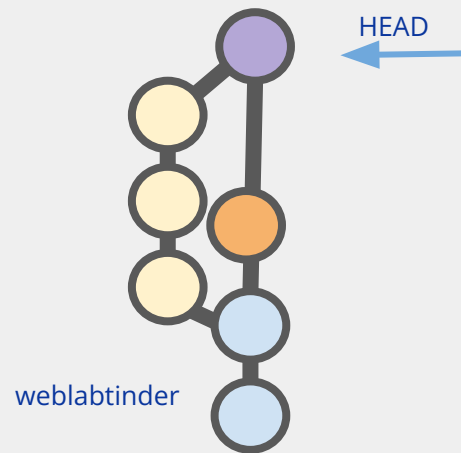


main



main

Remote Server (github)



main

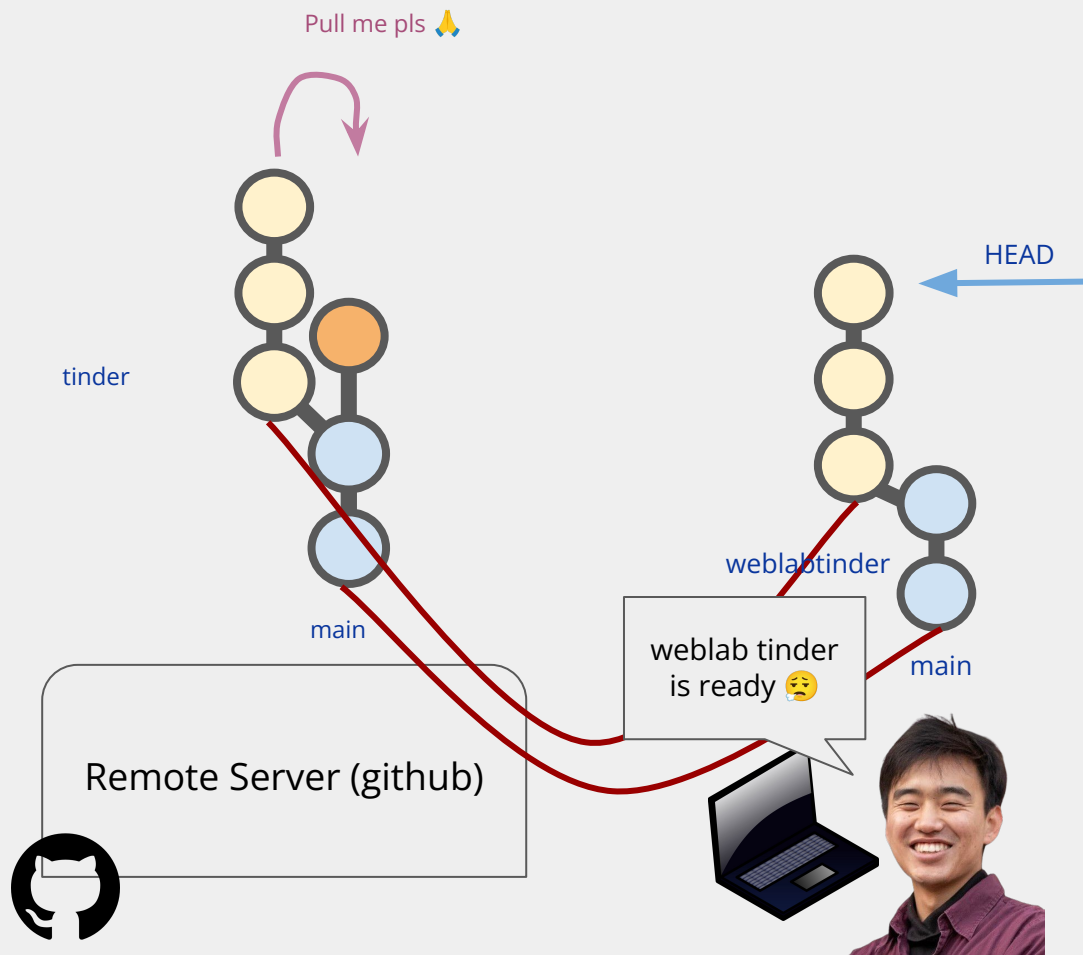


# Workflow with Local + Remote Branch

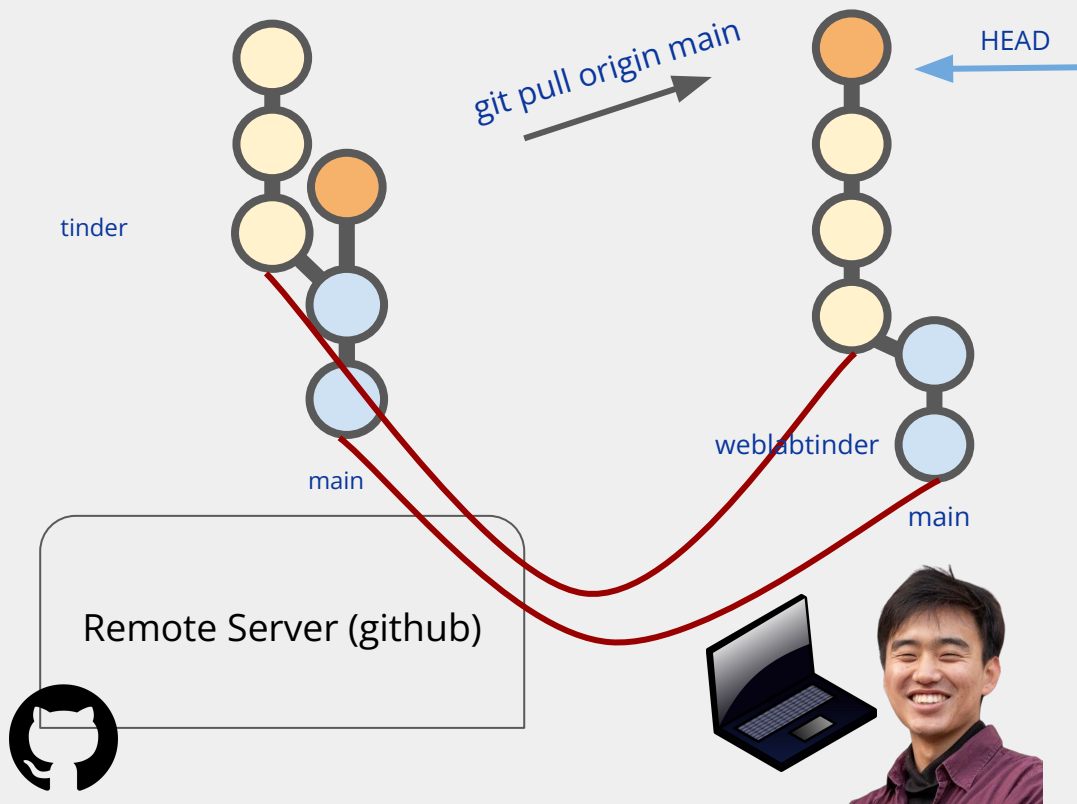
To add a new feature to your weblab project...

1. Create a local branch: `git checkout -b <branchname>`
2. Do some work, make some commits on your local branch
3. Create a remote branch that corresponds to your local branch: `git push -set-upstream origin <what you want to name remote branch>`
4. Continue doing work + making commits on your local branch, using `git push` to update the corresponding remote branch
5. When you're ready to merge your branch into main, checkout to local main and `git pull` to pull in any new commits from main (and resolve merge conflicts if necessary)
6. Still on local main, `git push` your new merge commit to remote main

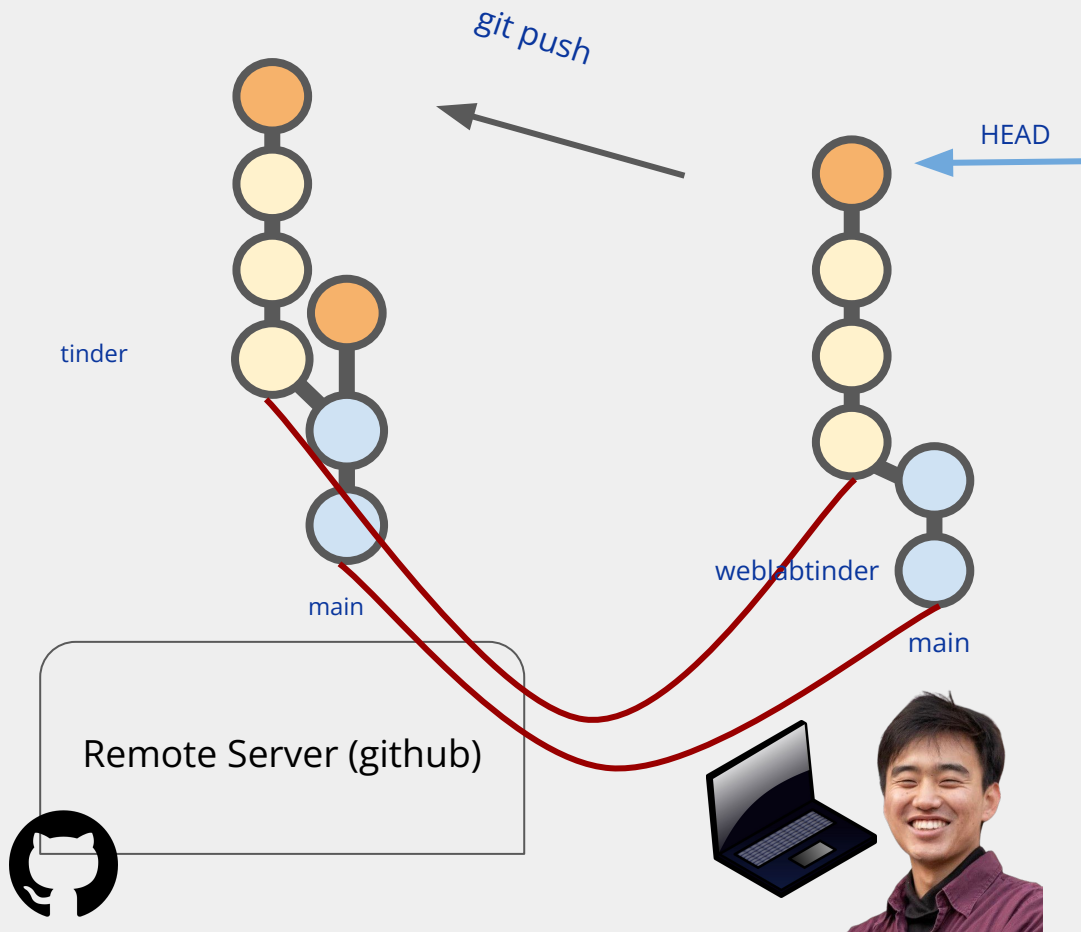
\*Pull Requests



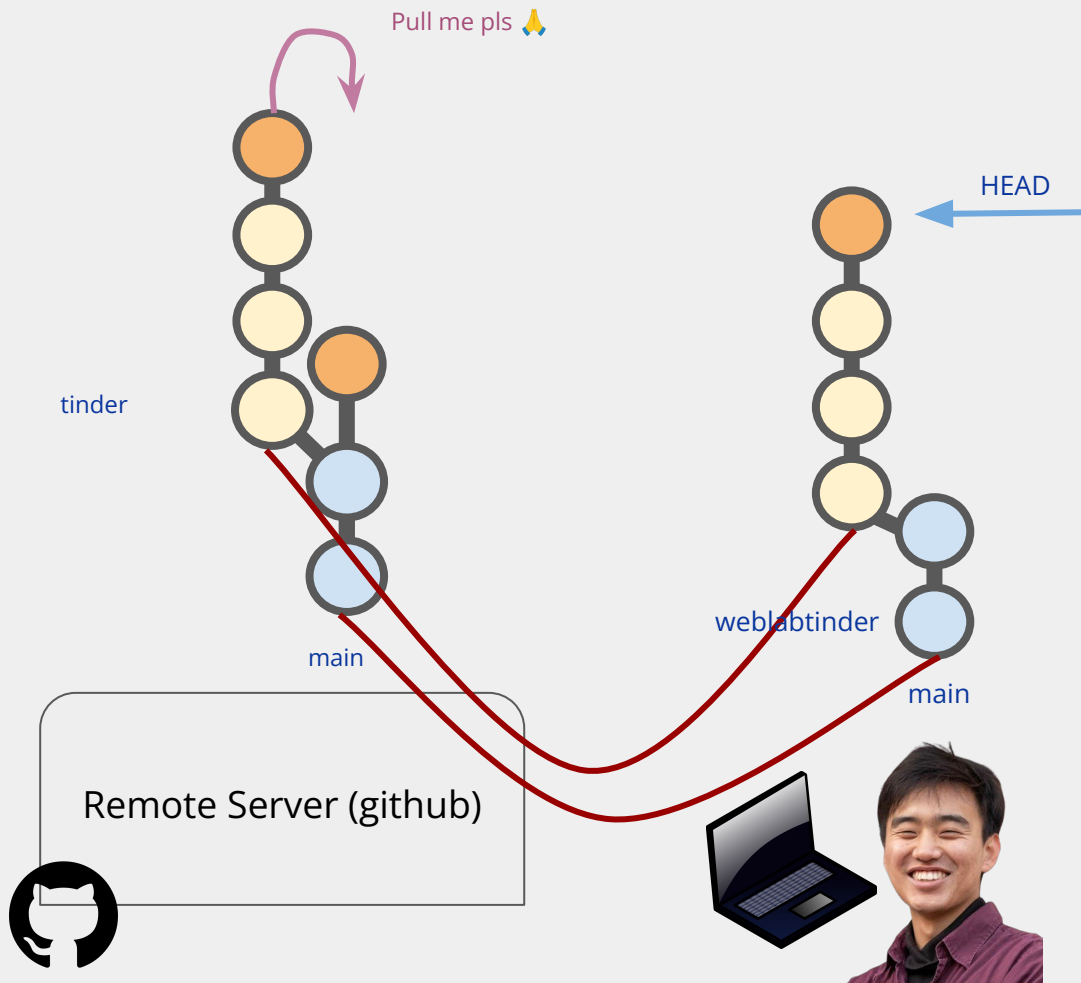
git pull origin main



```
git pull origin main  
git push
```



```
git pull origin main  
git push  
*go online and make a PR*
```



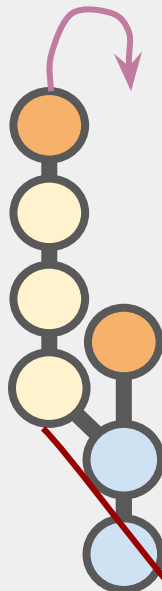


git pull origin main  
git push  
\*go online and pull



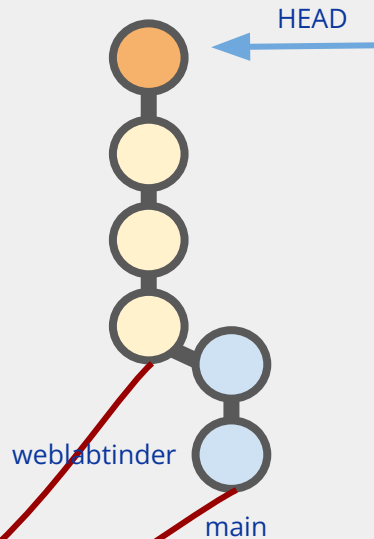
tinder

Pull me pls 🙏



main

Remote Server (github)

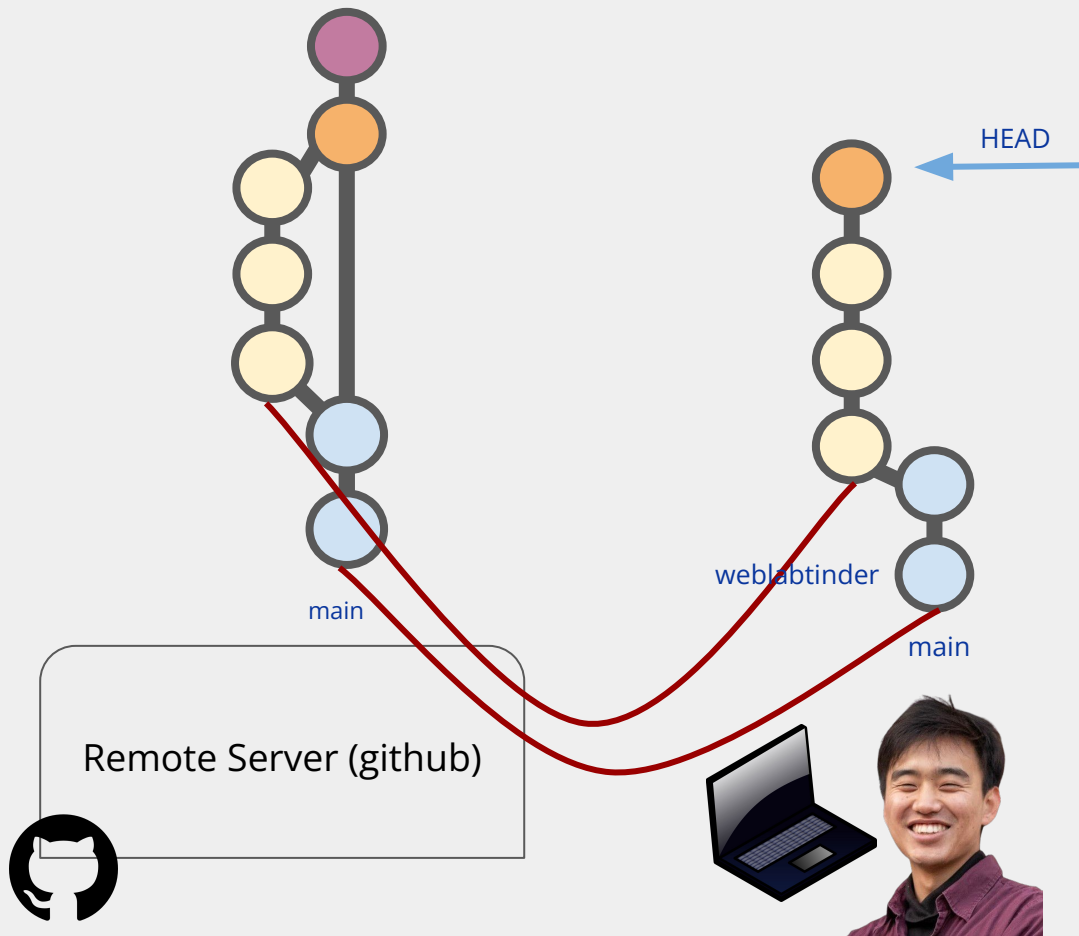


weblabtinder

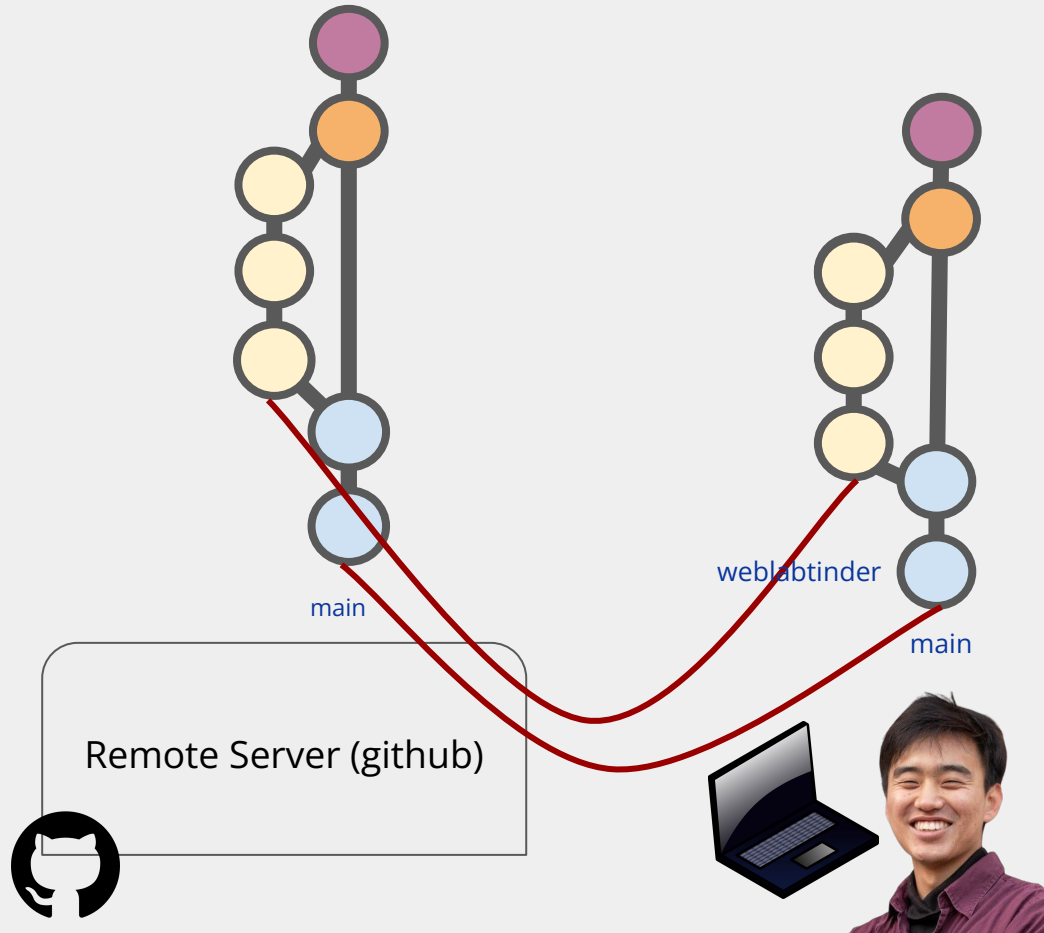
main



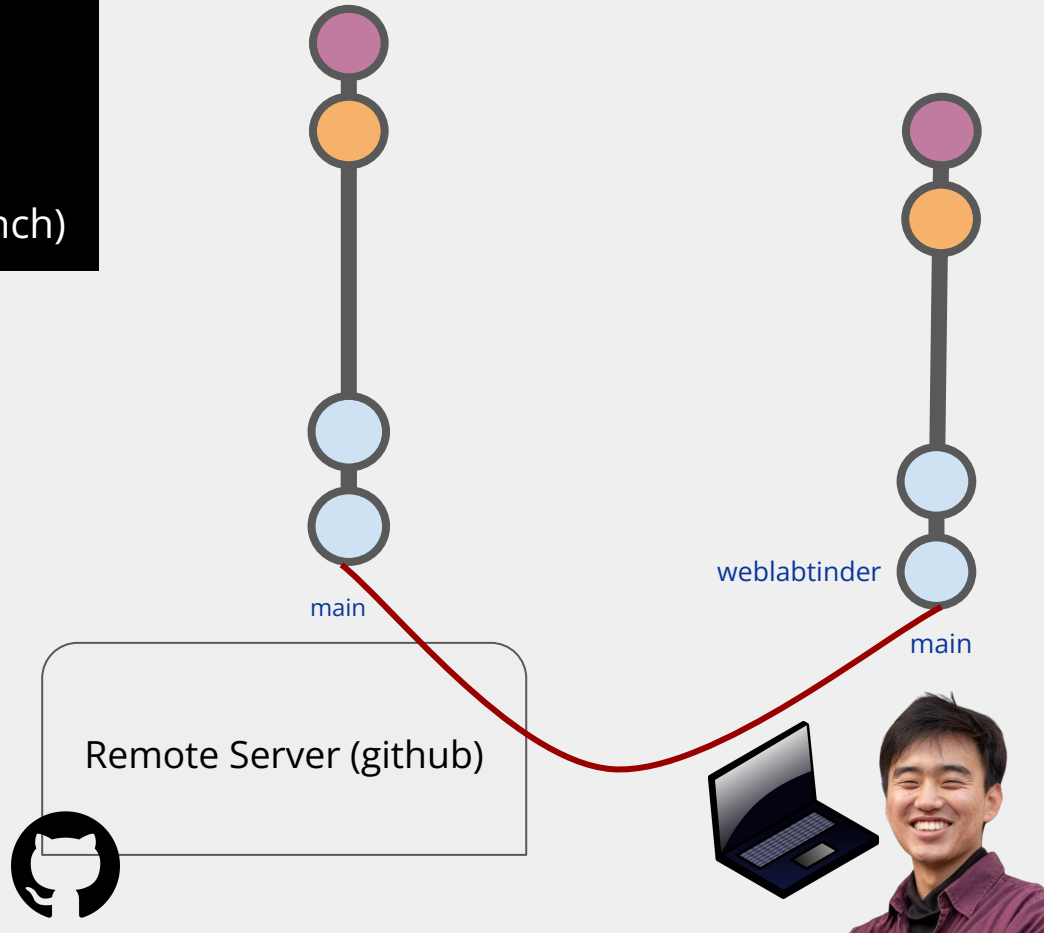
```
git pull origin main  
git push  
*go online and make a PR*
```



```
git pull origin main  
git push  
*go online and make a PR*  
*on local main branch* git pull
```



```
git pull origin main  
git push  
*go online and make a PR*  
*on local main branch* git pull  
git branch -d weblabtinder  
*go online and delete tinder branch)
```

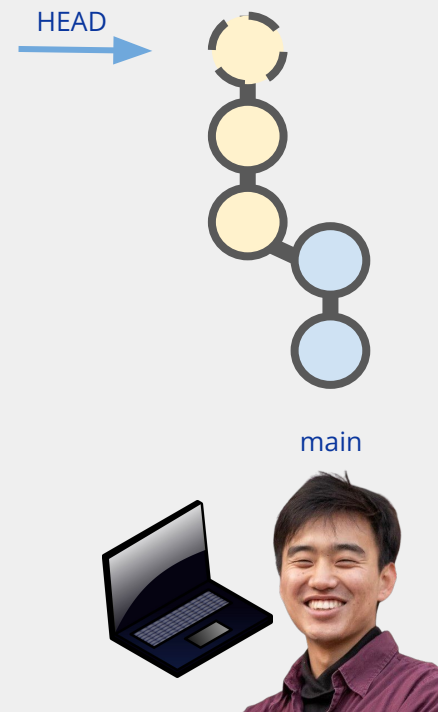
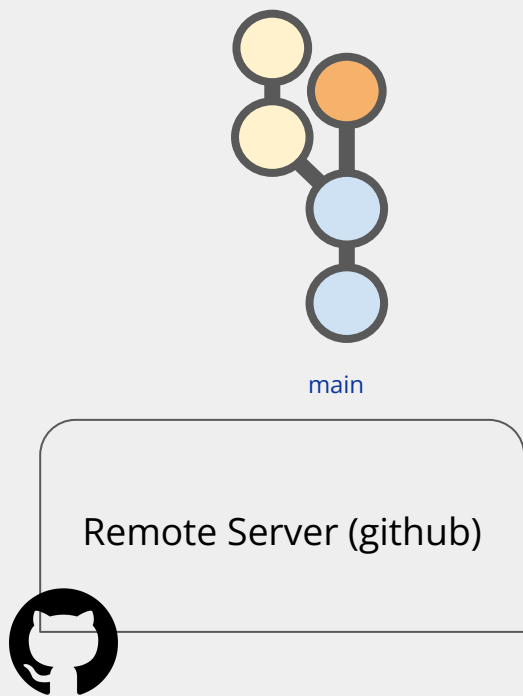
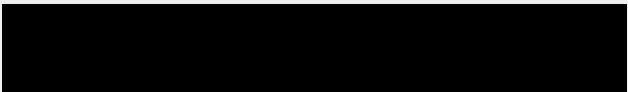


# Workflow In Industry

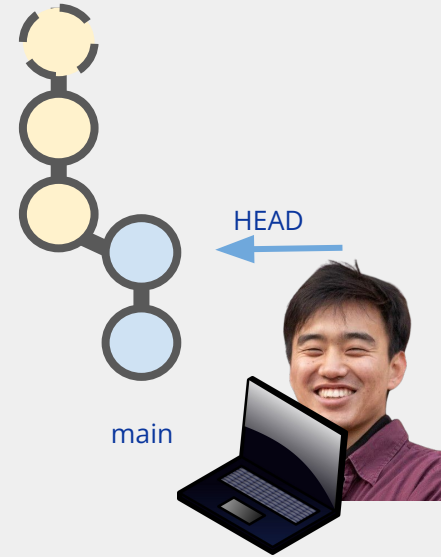
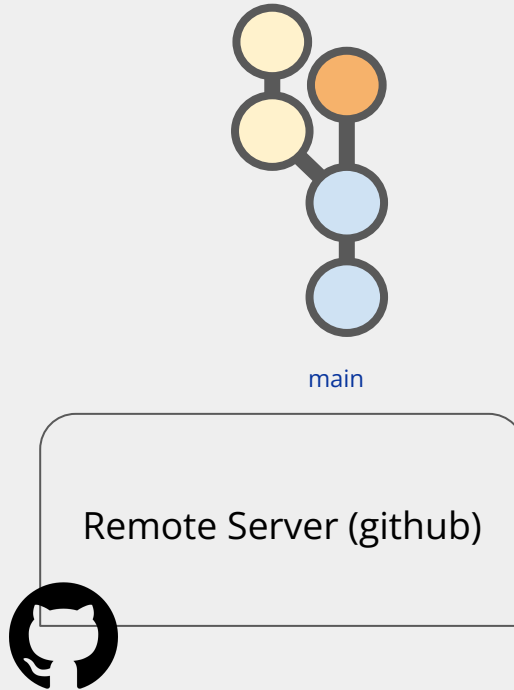
To add a new feature in industry...

1. Create a local branch: `git checkout -b <branchname>`
2. Make some commits on your local branch
3. Create a remote branch that corresponds to your local branch: `git push -set-upstream origin <what you want to name remote branch>`
4. Continue doing work + making commits on your local branch, using `git push` to update the corresponding remote branch
5. If needed, pull commits from remote main into your branch with `git pull origin main` (on your local branch) and then `git push` the pulled commits to your remote branch
6. Create a Pull Request online

Useful tool: stash!



git checkout main

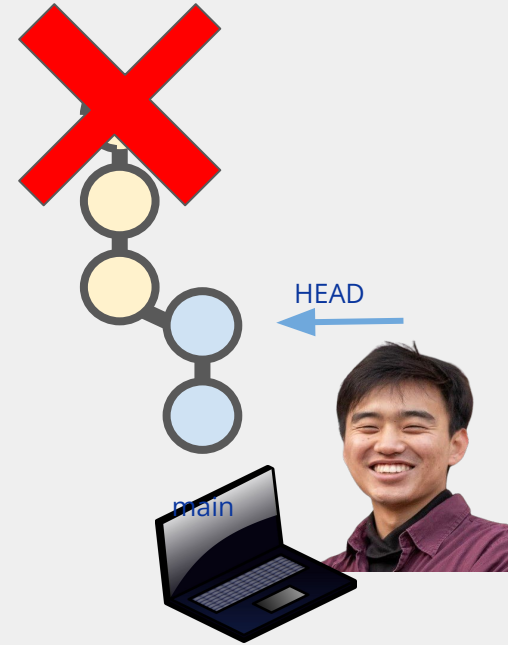
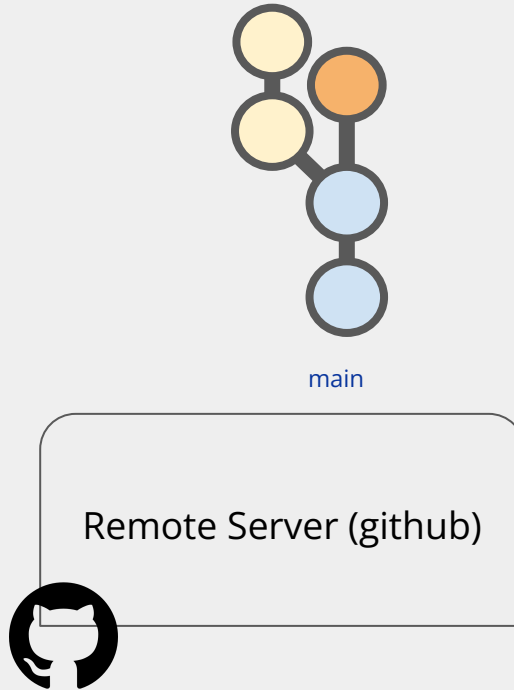




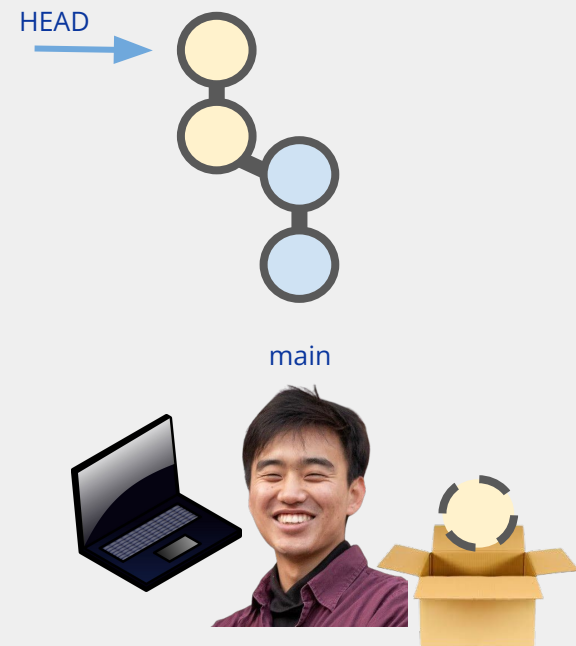
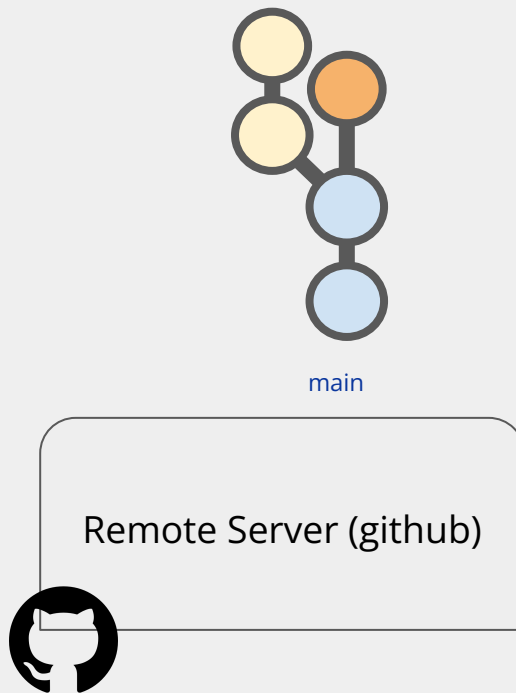
git checkout main



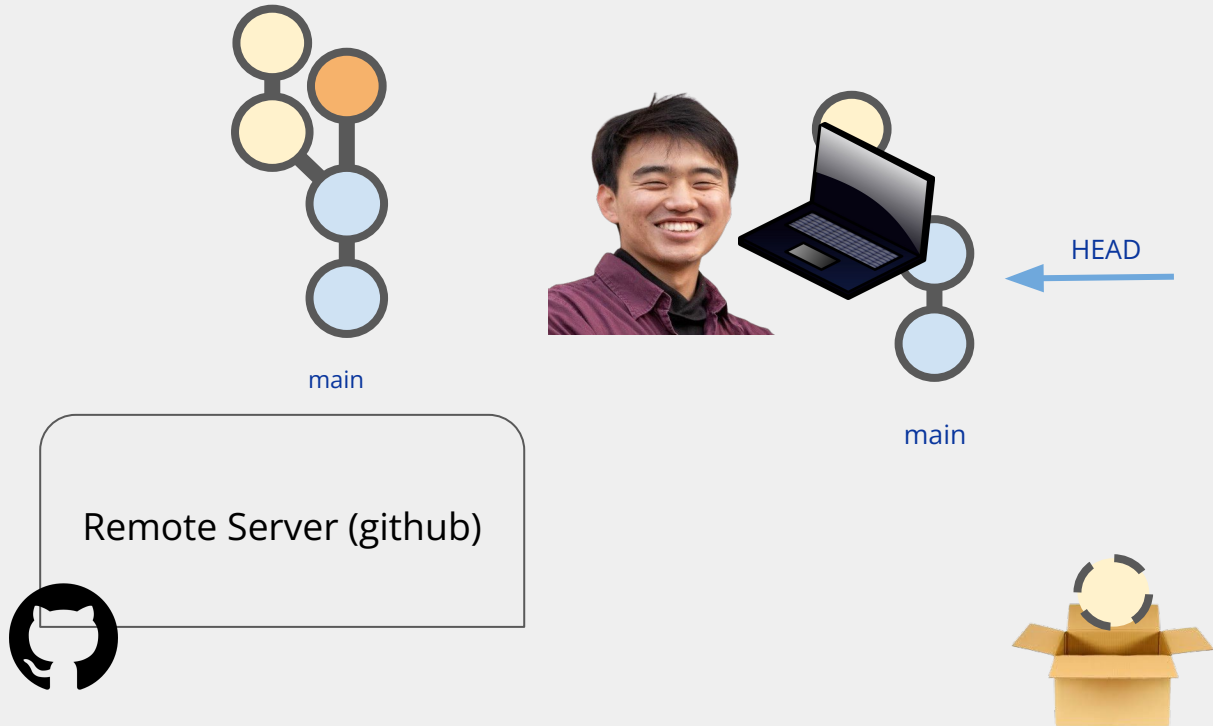
## git checkout



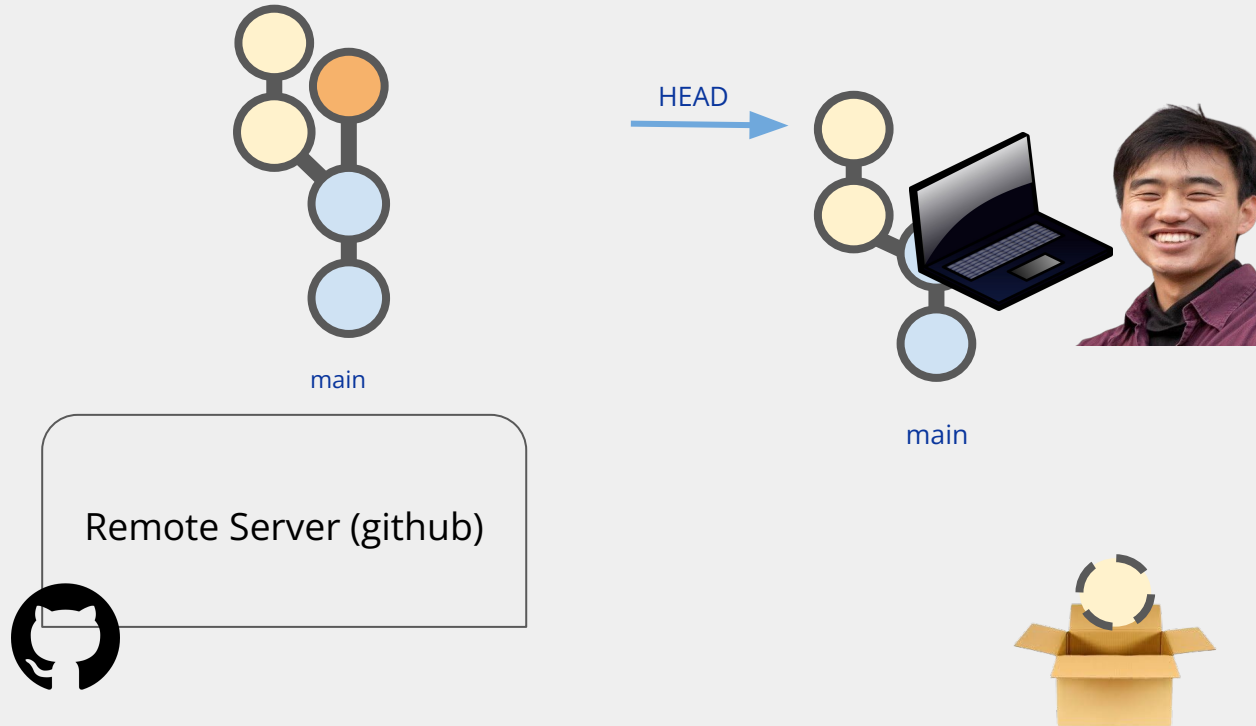
# git stash



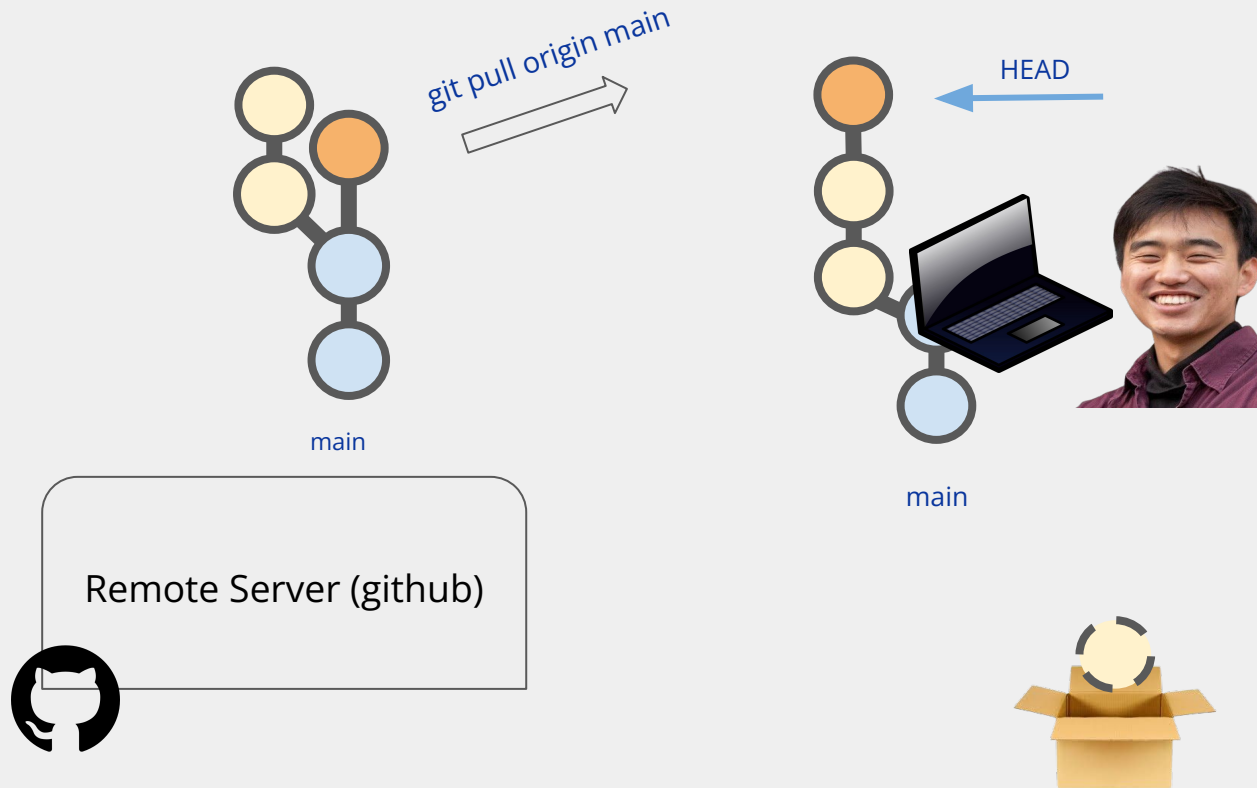
git checkout main



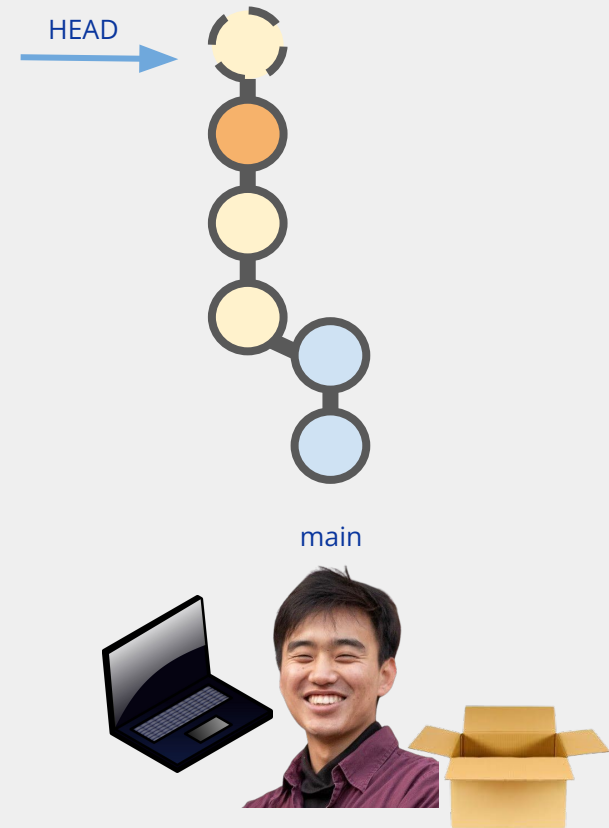
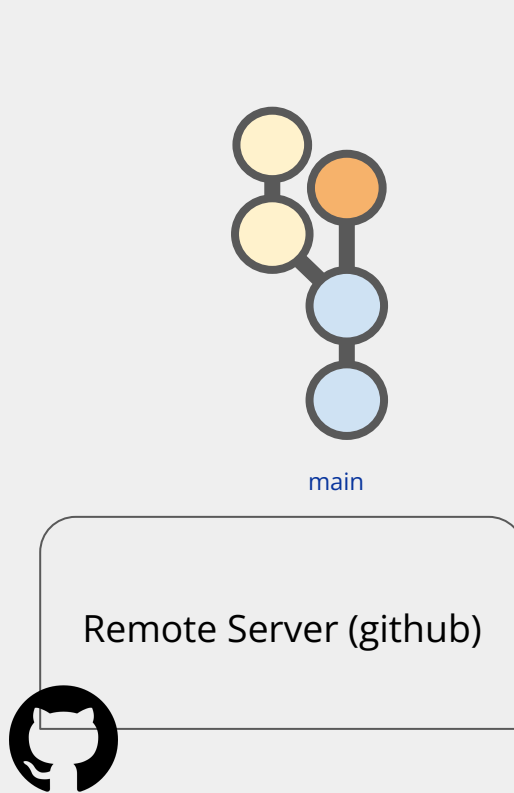
git checkout otherbranch



```
git pull origin main
```



# git stash pop



# Workflow with stash

1. `git stash`
2. Do anything (checkout with other branches, `git pull`)
3. `git stash pop`



# Recap

## Terminology

- Staging : Indicating you want to commit a set of changes in a file.
- Commit : a group of code changes that correspond to a certain task
- Branch : making a commit history diverge, often to group commits together for developing features
- Remote/Origin : The version of your repo that is on the internet (Github)
- Upstream : The corresponding remote branch for a local branch (aka tracking)

## General Workflows

- Create new local branch
- Set upstream (Create corresponding remote branch)
- Create commits, pull & push often
- Merge into main (either directly or Pull Request)

# Git resources

Good Git practice: [Learn Git Branching](#)

Git Cheat sheet: [Cheatsheet](#)

# Announcements

- Please give us feedback! 👉👉 [weblab.is/feedback](https://weblab.is/feedback)
  - Thank you all for the really helpful feedback both here and on milk and cookies!
- Informal Office Hours/Recitation now till 5pm 🧠
- **Milestone 1 signups due tonight!**
- Workshop 3 re-record coming soon :))
- 🦴 Project skeleton at [weblab.is/skeleton](https://weblab.is/skeleton)
  - Includes some stuff we haven't learned yet (google auth)