

Git

...

April 2024

What is Git?



Git vs. Github

- Git

- version control software on your computer;
- stuff you do on your command line.

- Github

- website that hosts git repositories and adds a few more features;
- stuff you do on github.com.



`git pull origin <branch>`



`git push origin <branch>`

How to create a Git repository

- There are two ways:
 - by using `git init` inside a folder on your computer;
 - by cloning (copying) a repository from github using `git clone`.
- Golden rule:
 - ALWAYS make sure you are not inside a git repository when you create a new one.
 - you can check by typing `git status` on your command line, if you get an error it means you are not inside a git repository and you can create a new one.

The commit

- To commit our changes is to save our changes in the git repository history.
- A commit represents a unit of work, like writing a paragraph in our Google Doc.

How to commit/save your changes

- Two steps:
 - `git add`
 - where you say which changes you want to save;
 - `git commit`
 - where you actually save your changes and give them a label.
- It's a bit like going to the supermarket:
 - first you add products (files) to your basket
 - at the end you pay (commit)

But, what is really a commit?

- A commit contains:
 - a snapshot of the entire repository;
 - who made the changes;
 - when the changes were made;
 - a (meaningful!) label describing the commit;
 - a pointer to the previous commit.
- All this is converted into a unique hash key, e.g. ee2371b.

Your computer

Github

Workspace

Your filesystem, your folders, files, etc.

Where changes are made.

Staging/index

Snapshot of the changes you want to commit (in the current branch).

Local

Your local repository.

Lives in a .git folder.

Contains the entire history of the repository.

Remote

Central server where git repositories can be stored.

Your computer

Github

Workspace

Staging/index

Local

Remote

Folder
hyf-homework/Git/
week1/playground,
contains:

potatoes_file.txt
carrots_file.txt
cabbage_file.txt

Your computer

Github

Workspace

Staging/index

Local

Remote

Folder
hyf-homework/Git/
week1/playground,
contains:

potatoes_file.txt
carrots_file.txt
cabbage_file.txt

carrots_file.txt

```
git add carrots_file.txt
```

Your computer

Workspace

Folder
hyf-homework/Git/
week1/playground,
contains:

potatoes_file.txt
carrots_file.txt
cabbage_file.txt

Staging/index

Local

● 0659bd4

Github

Remote

git commit

Your computer

Workspace

Folder
hyf-homework/Git/
week1/playground,
contains:

potatoes_file.txt
carrots_file.txt
cabbage_file.txt

Staging/index

potatoes_file.txt

cabbage_file.txt

Local



Github

Remote

```
git add potatoes_file.txt cabbage_file.txt
```

Your computer

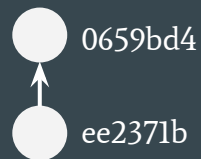
Workspace

Folder
hyf-homework/Git/
week1/playground,
contains:

potatoes_file.txt
carrots_file.txt
cabbage_file.txt

Staging/index

Local



Github

Remote

```
git commit
```

Your computer

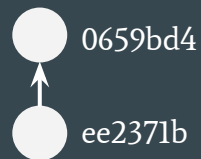
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Staging/index

Local



Github

Remote

Your computer

Workspace

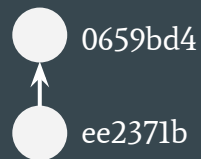
Folder
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week1/playground,
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carrots_file.txt
cabbage_file.txt

Staging/index

cabbage_file.txt

Local



Github

Remote

```
git add cabbage_file.txt
```

Your computer

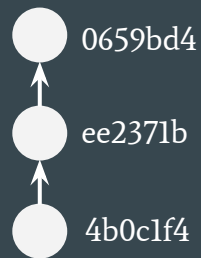
Workspace

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cabbage_file.txt

Staging/index

Local



Github

Remote

`git commit`

Your computer

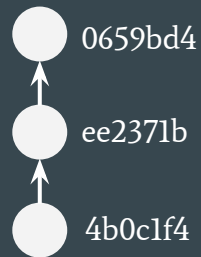
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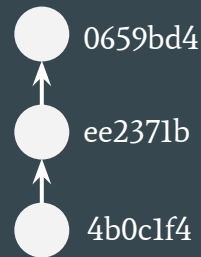
Staging/index

Local



Github

Remote



```
git push origin main
```

Branches in Git

- You create a branch with:
 - `git branch <branch_name>`
- You move to a different branch with:
 - `git checkout <branch_name>`
- You delete a branch with:
 - `git branch -d <branch_name>`
- Your files/modifications only belong to a specific branch after you commit in that branch.

Your computer

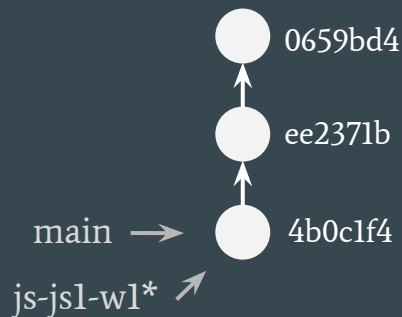
Workspace

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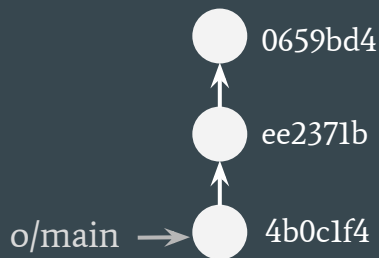
Staging/index

Local



Github

Remote



```
git branch js-js1-w1
git checkout js-js1-w1
```

Your computer

Workspace

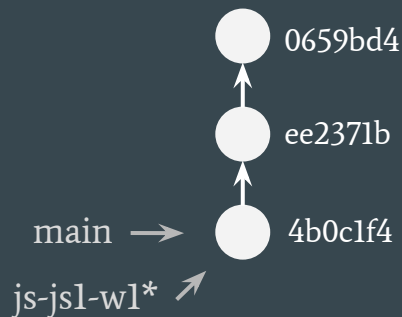
Folder
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js_homework1.js

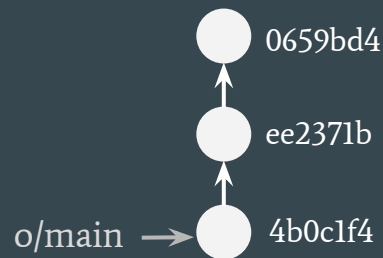
Staging/index

Local



Github

Remote



Your computer

Workspace

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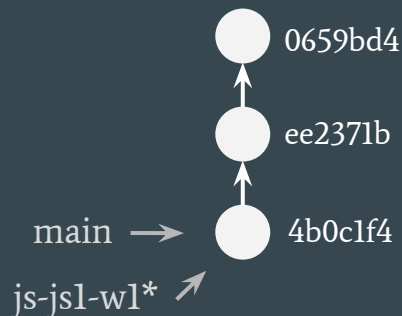
potatoes_file.txt
carrots_file.txt
cabbage_file.txt

js_homework1.js

Staging/index

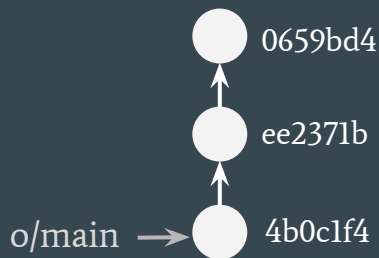
js_homework1.js

Local



Github

Remote



git add js_homework1.js

Your computer

Workspace

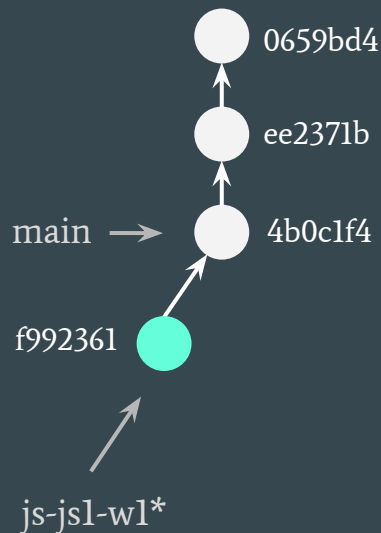
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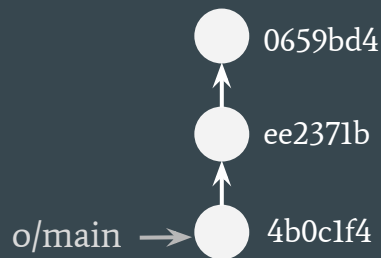
Staging/index

Local



Github

Remote



git commit

Your computer

Workspace

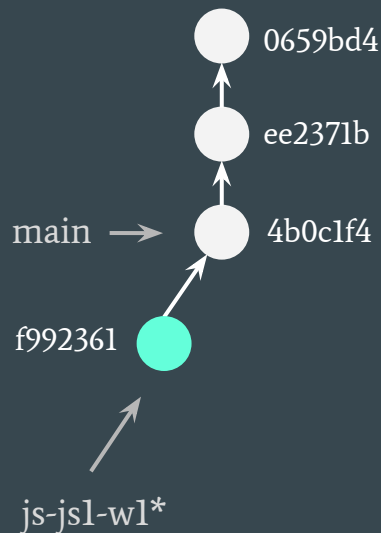
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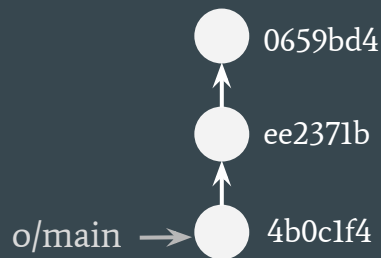
Staging/index

Local



Github

Remote



Your computer

Workspace

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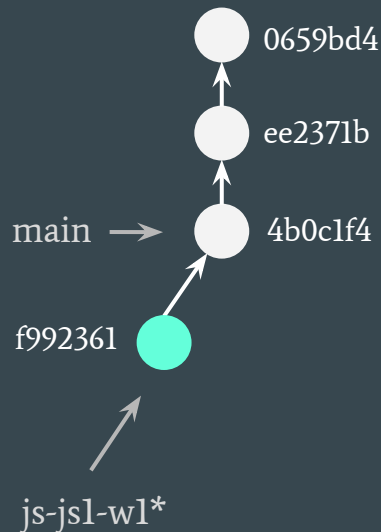
potatoes_file.txt
carrots_file.txt
cabbage_file.txt

js_homework1.js

Staging/index

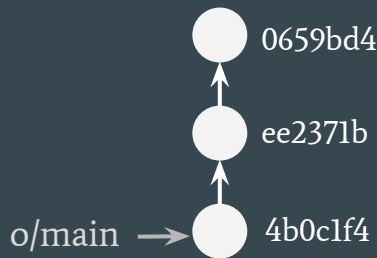
js_homework1.js

Local



Github

Remote



```
git add js_homework1.js
```


Your computer

Workspace

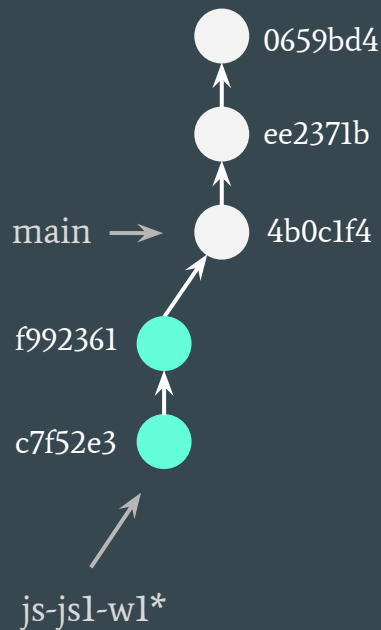
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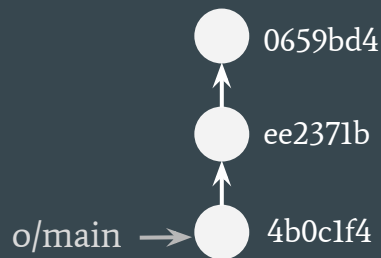
Staging/index

Local



Github

Remote



git commit

Your computer

Workspace

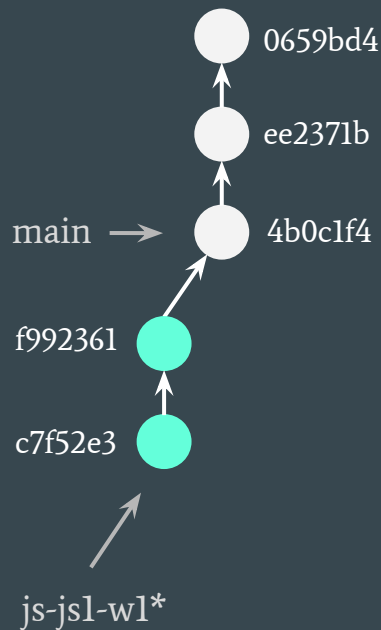
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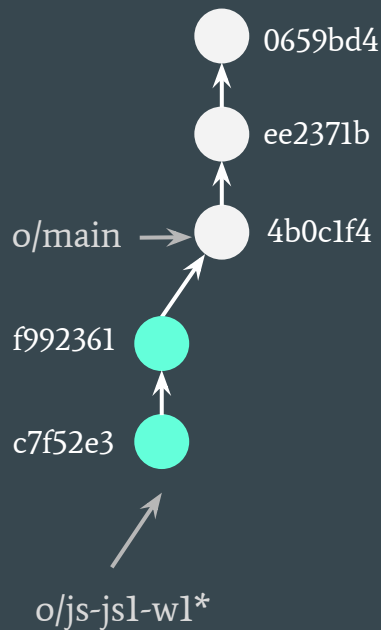
Staging/index

Local



Github

Remote



```
git push origin js-jsl-wl
```

Your computer

Workspace

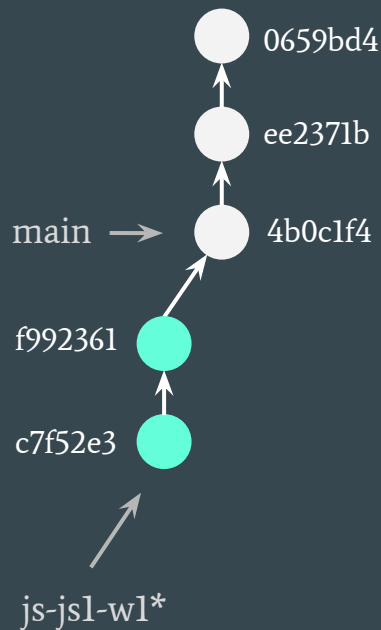
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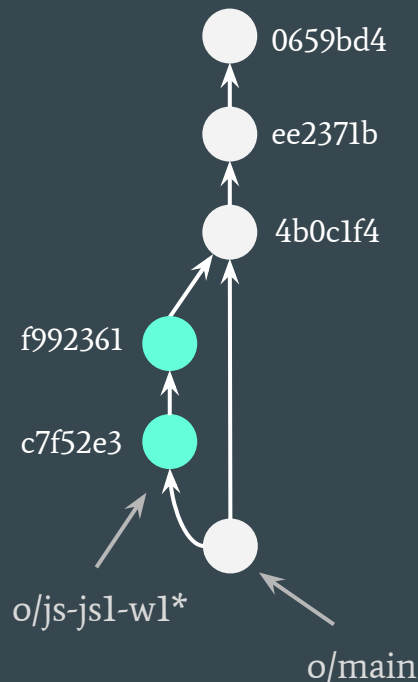
Staging/index

Local



Github

Remote



after your pull request (PR) is merged with main

Your computer

Workspace

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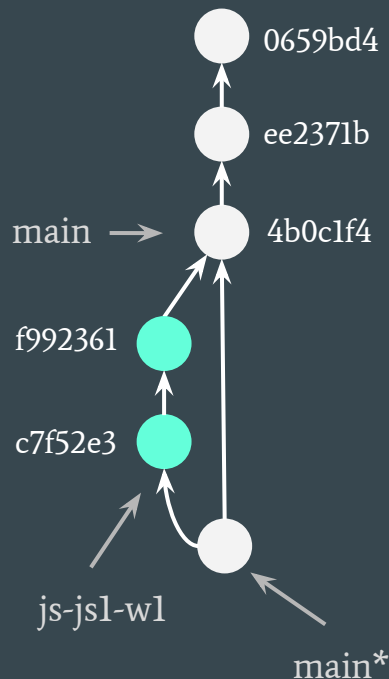
js_homework1.js

Staging/index

```
git checkout main
git pull origin main
```

Github

Local



Remote

