git

Introduction to Version control

GitHub

Git gud.

PSA: It's not that hard

Who is this guy?

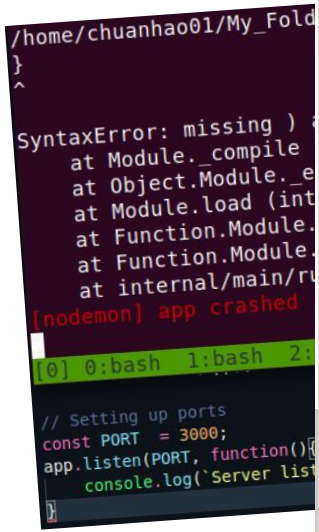
Hi, I'm Chuan Hao

- Year 1 DIT student (DSDA)
- I cannot do the hacking
- I can barely do the AI
- I can maybe do the coding
- I almost didn't do the talk
- Why is the school not teaching this
- I am running out of things to write
- This is a placeholder text

Also I am part of SEED

@chuanhao01

Have you




```
window.onload = function () {

    var s1 = document.querySelector("head").children;
    var s2 = document.querySelector("head").childNodes;
    //console.log(s1);
    //console.log(s2);

    /* var s2 = document.querySelector("ul").children;
    for (let i = 0; i < s2.length; i++) {
        const e = s2[i];
        console.log(e.textContent);
    } */
    var uni = ["Princeton University", "Harvard University", "Columbia University",
"Massachusetts Institute of Technology", "University of Chicago", "Yale
University", "Stanford University", "Duke University"];
    var ul = document.getElementById("university");

    //create new item
    var createme = document.createElement("input");
    ul.parentNode.appendChild(createme);
    var createme_btn = document.createElement("button");
    createme_btn.innerText = "Add";
    ul.parentNode.appendChild(createme_btn);
    createme_btn.addEventListener("click", function () {
        createme_btn.parentNode = alert('Hello')
    })

    //view item
    for (let i = 0; i < uni.length; i++) {
        const element = uni[i];
        //ul.innerHTML += "<li>"+element+"</li>";
        ul.innerHTML += `<li>${element} <span class="removeme">(x)</span> |
```

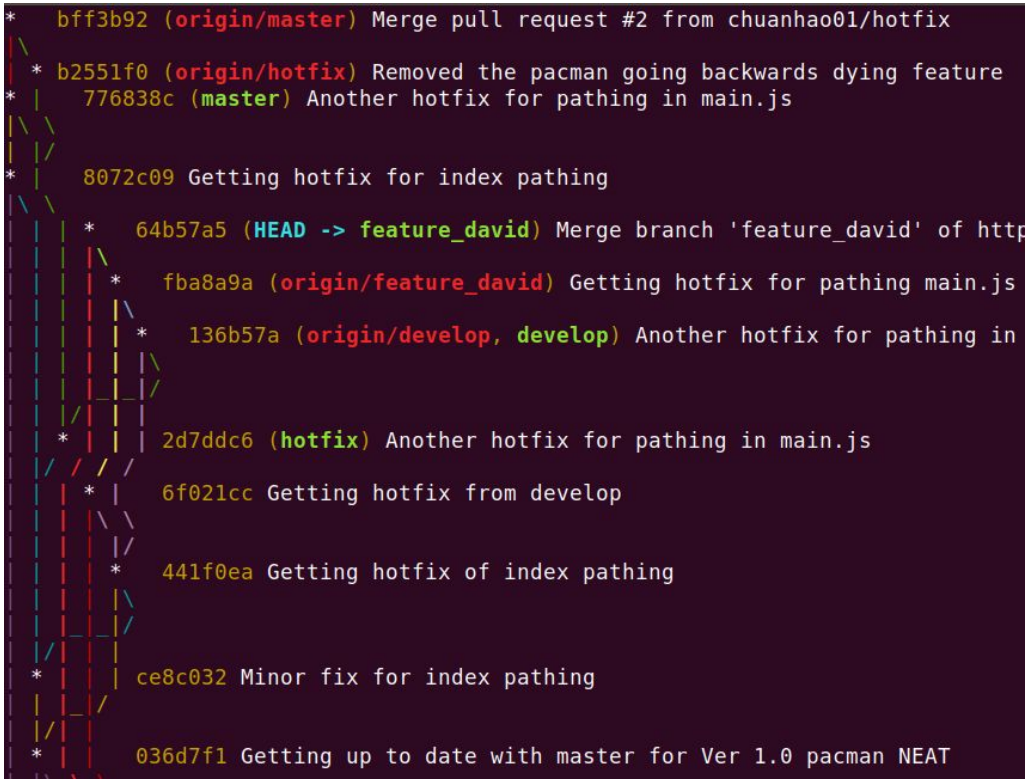
Type a message

e same

What if there was a way to solve this...

- What if you could track all changes on the project?

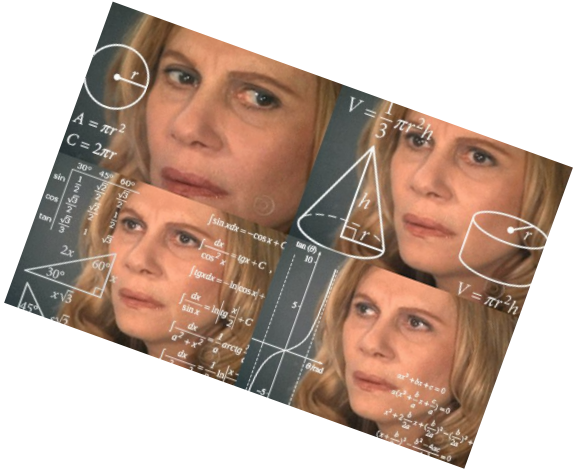
- What if you could properly collaborate on projects, without having to code on the same laptop?



But this looks complicated……

What is this??

```
*   bff3b92 (origin/master) Merge pull request #2 from chuanhao01/hotfix
|\
| * b2551f0 (origin/hotfix) Removed the pacman going backwards dying feature
* |   776838c (master) Another hotfix for pathing in main.js
|\ \
| |/
* |   8072c09 Getting hotfix for index pathing
|\ \
| | | *   64b57a5 (HEAD -> feature_david) Merge branch 'feature_david' of http
| | | |\
| | | | *   fba8a9a (origin/feature_david) Getting hotfix for pathing main.js
| | | | |\
| | | | | *   136b57a (origin/develop, develop) Another hotfix for pathing in
| | | | | |\
| | | |_|_|/
| | |/| | |
| | * | | | 2d7ddc6 (hotfix) Another hotfix for pathing in main.js
| |/ / / /
| | | * |   6f021cc Getting hotfix from develop
| | | |\ \
| | | | |/
| | | | *   441f0ea Getting hotfix of index pathing
| | | | |\
| | | |_|_|/
| | |/| | |
| | * | | | ce8c032 Minor fix for index pathing
| | |_|/
| |/| | |
| | * | |   036d7f1 Getting up to date with master for Ver 1.0 pacman NEAT
```



PSA: It’s rarely like that

Most of the time your version control would look something like this

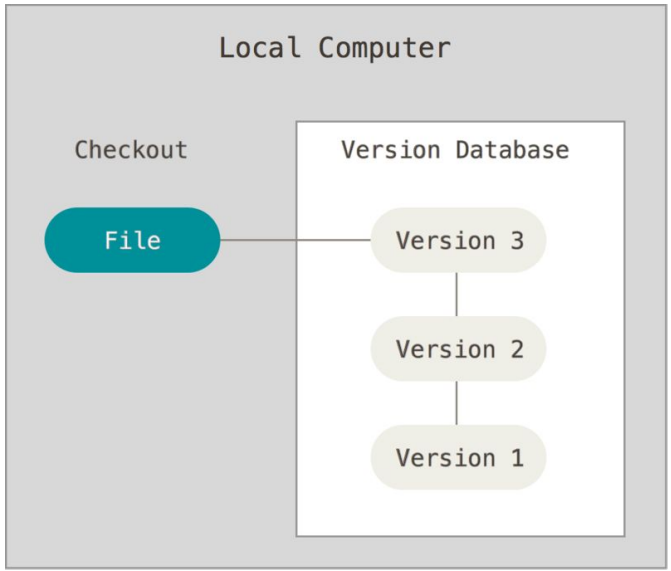
```
* 318576c Removing old code from previous
* 5911490 Fixed account creation and login so no duplicate username
* 7dabe43 Changed get queries to search only for non-deleted
* 623f204 Added view product button
* 413c7ef Deleting listing works
* f3cf0c4 Added semi-working view all listings
* 63fe81b BED Finished Q10
* 4cc5820 BED Finished Q9
* ade7396 BED Finished Q8
* 2f68340 BED Finished Q7
* e114451 BED finished Q5 and Q6
* f6a6358 Able to add a listing by a user
* 3989d36 Adding in page and request for adding a listing
* 24d58c1 Chaning parentDir format
* 709903e BED PUT /users/:id
* 4a02b97 BED changed files to new promise format
* ea9e86f BED Fixed POST /user db to create a user
* 38807f8 Final promise format
* 53d7b31 Added jwt expire, fixed format of usersDB
* 042e6b2 BED added GET /users/:id
* e1dcde3 Successfully added /post USERS
* 774fbf0 Fixed creation status error code from 200 to 201
```

So, what is version control?

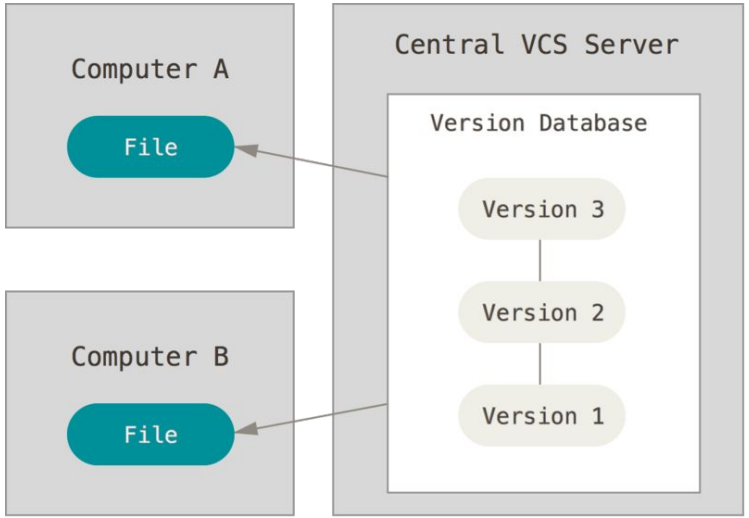
"Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later."

— *Git*

For single users/personal projects



For multiple people. (Not covered today)



So it's time to **Git gud**

Me: Oh, no, I accidentally `git commit --amend` over a big commit!

My Source Control:

Now how do I --amend this?!

Git

- This is the version control software that we are going to use today
- Benefits
  - Free
  - Works on most Operating Systems(OS)
  - Integration with other cloud based git services (Github, Gitlab, Bitbucket, etc.)
  - A lot of people use it

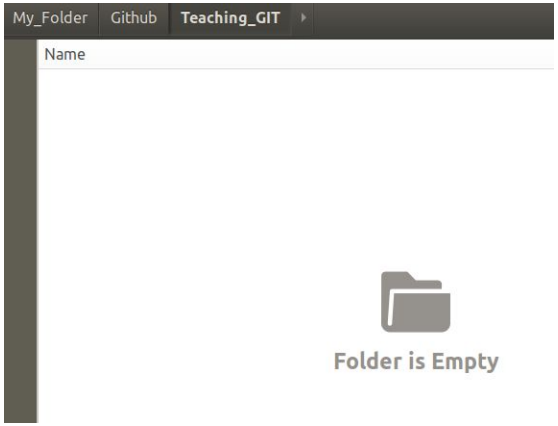
PS: We will get to github later on

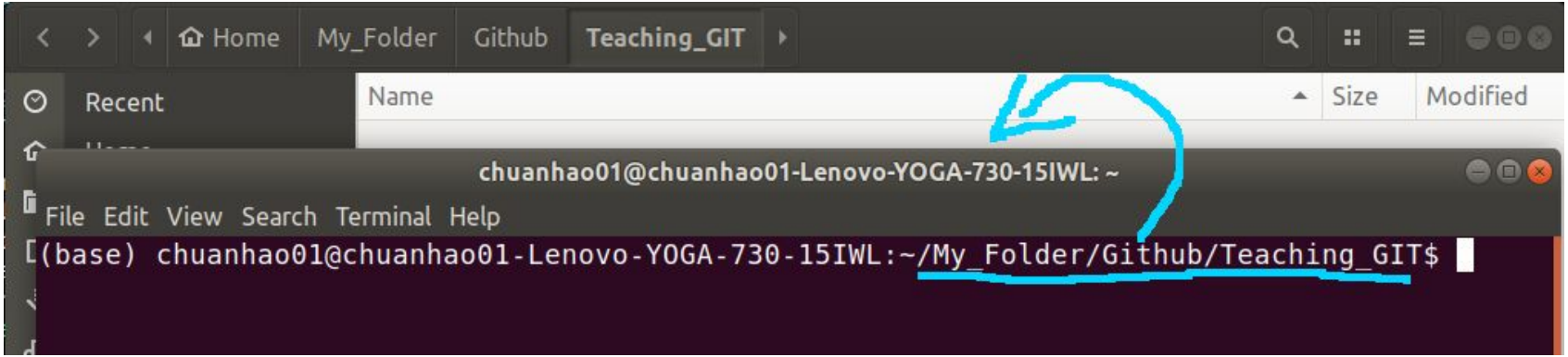
Installation process

1. Go to https://git-scm.com/downloads
2. Download the corresponding git version for your OS
3. Install Git.

Setup

1. Now make a new folder where you will be playing with git.
2. Make sure you open a git bash terminal in the folder.



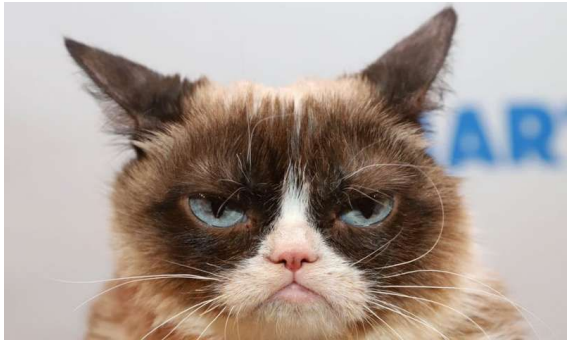


The command to watch them all

git status

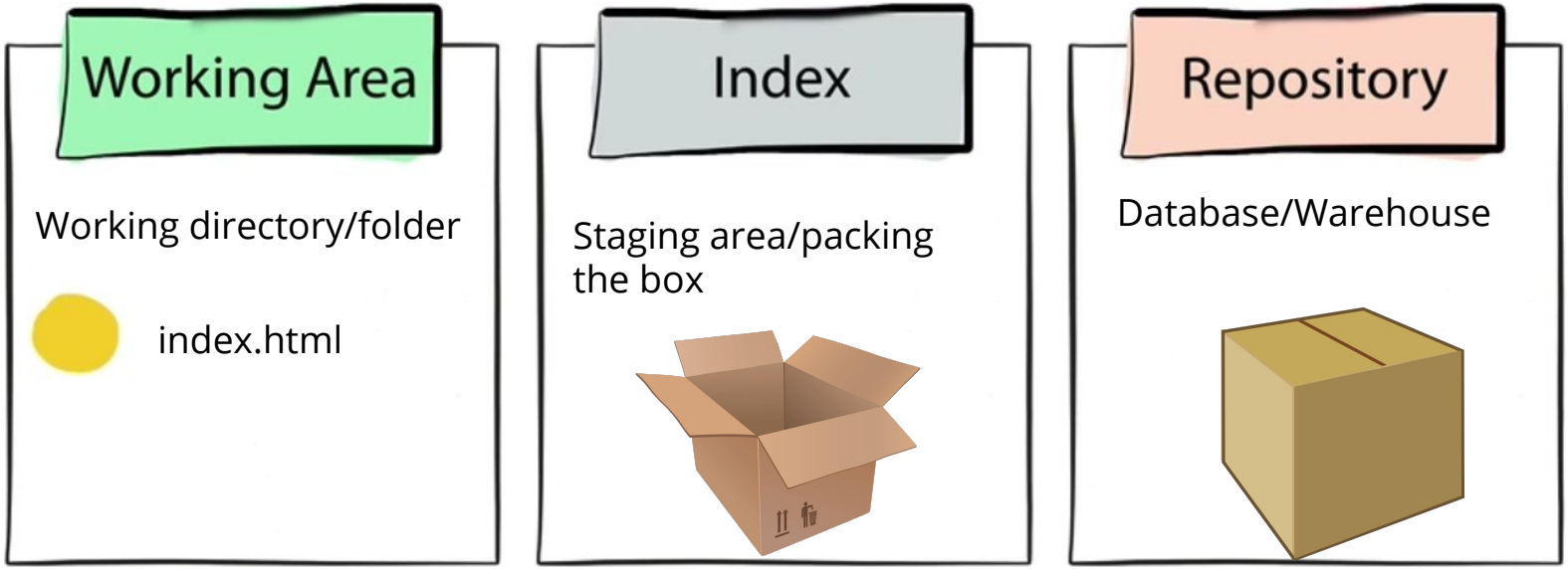
Like getting the status on anything, it tells you what is currently going on in git.

I don’t know how to make this funny or really more entertaining so here are some cats

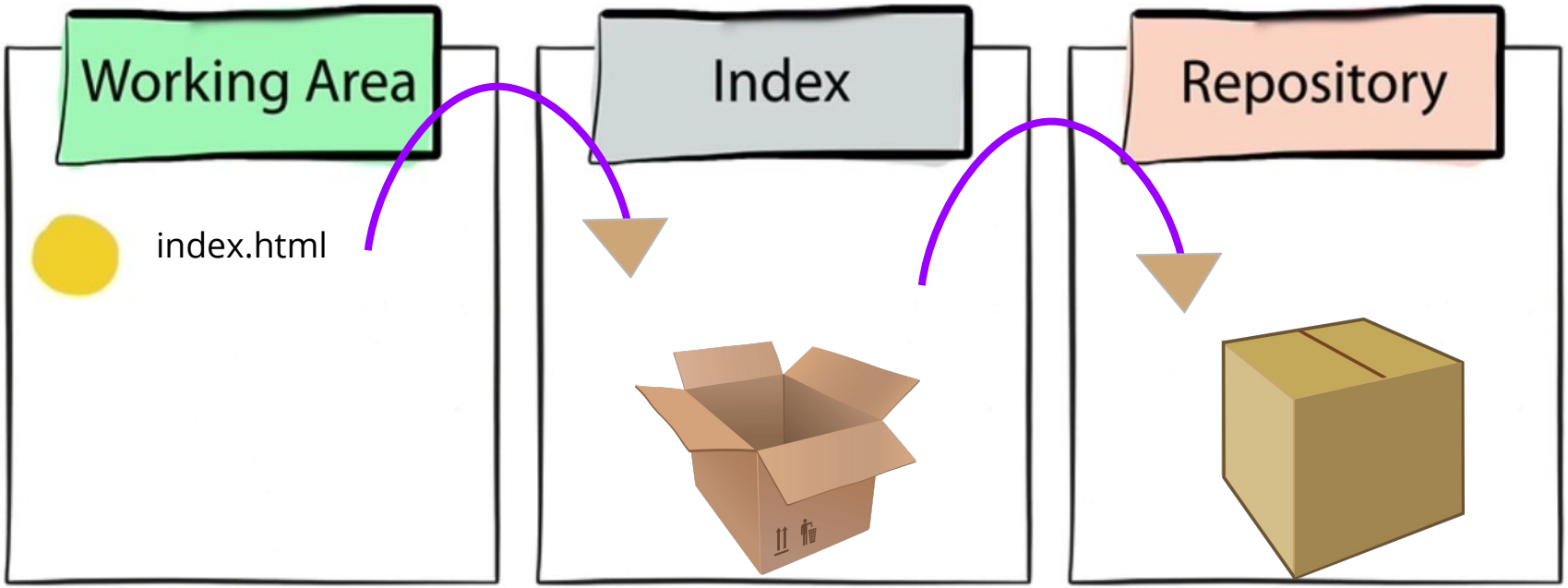


But wait, before we go

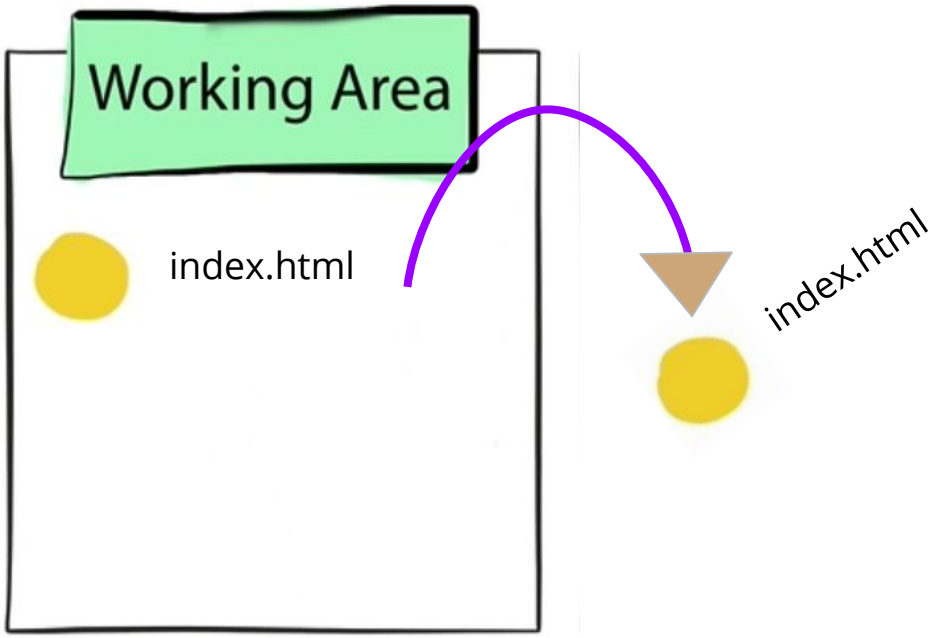
Some fundamental theory is needed:



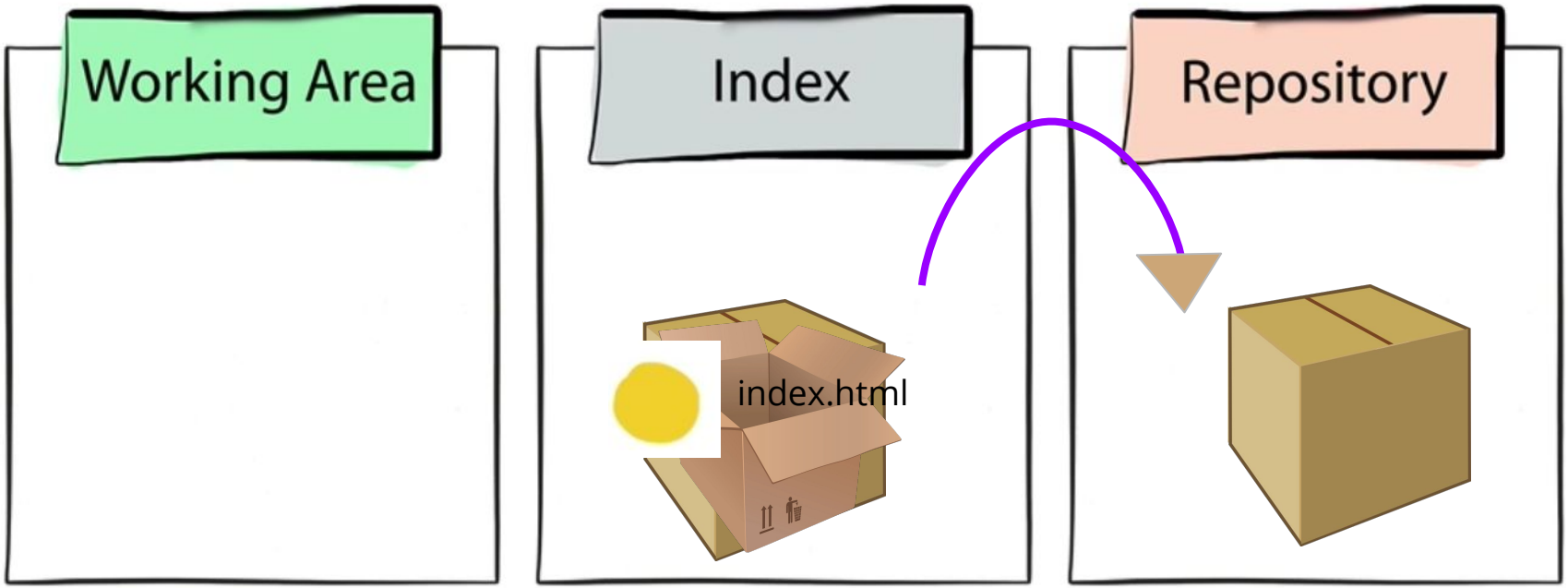
Fundamental theory (adding code)



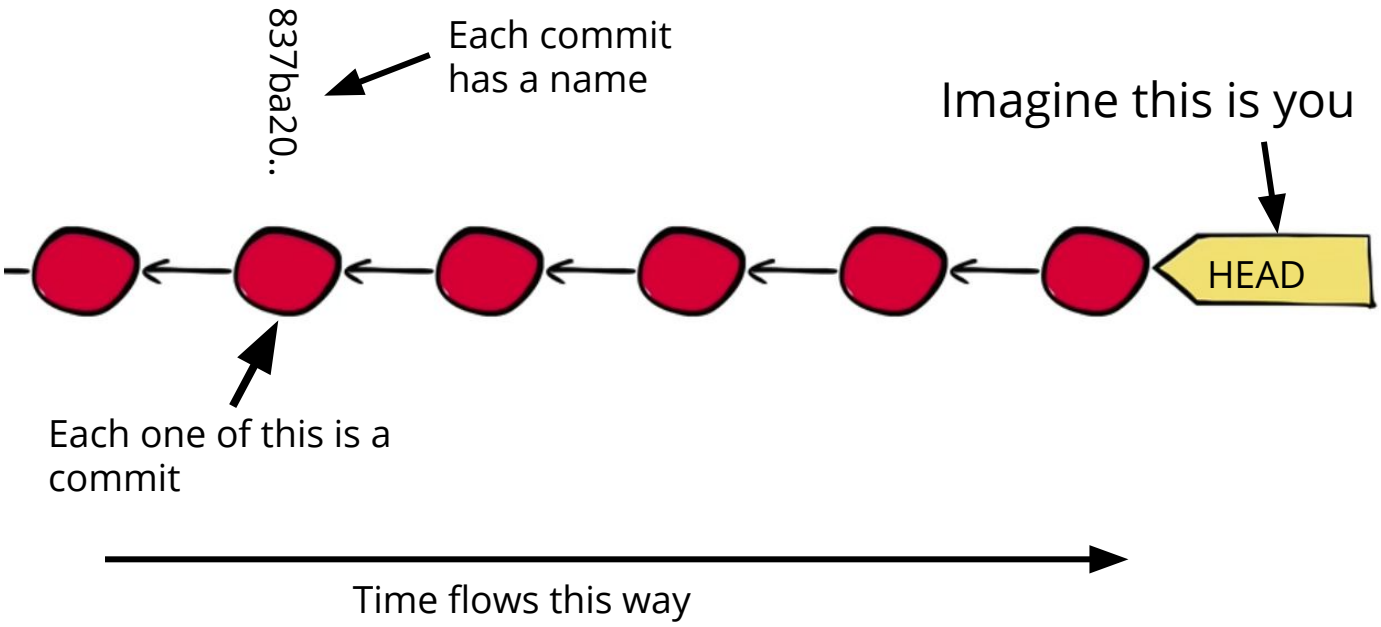
Git Add



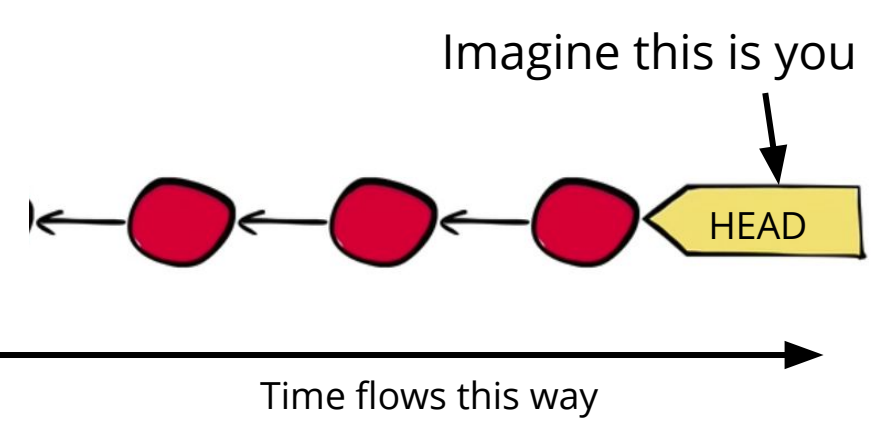
Git commit



Fundamental theory (Looking at commits)

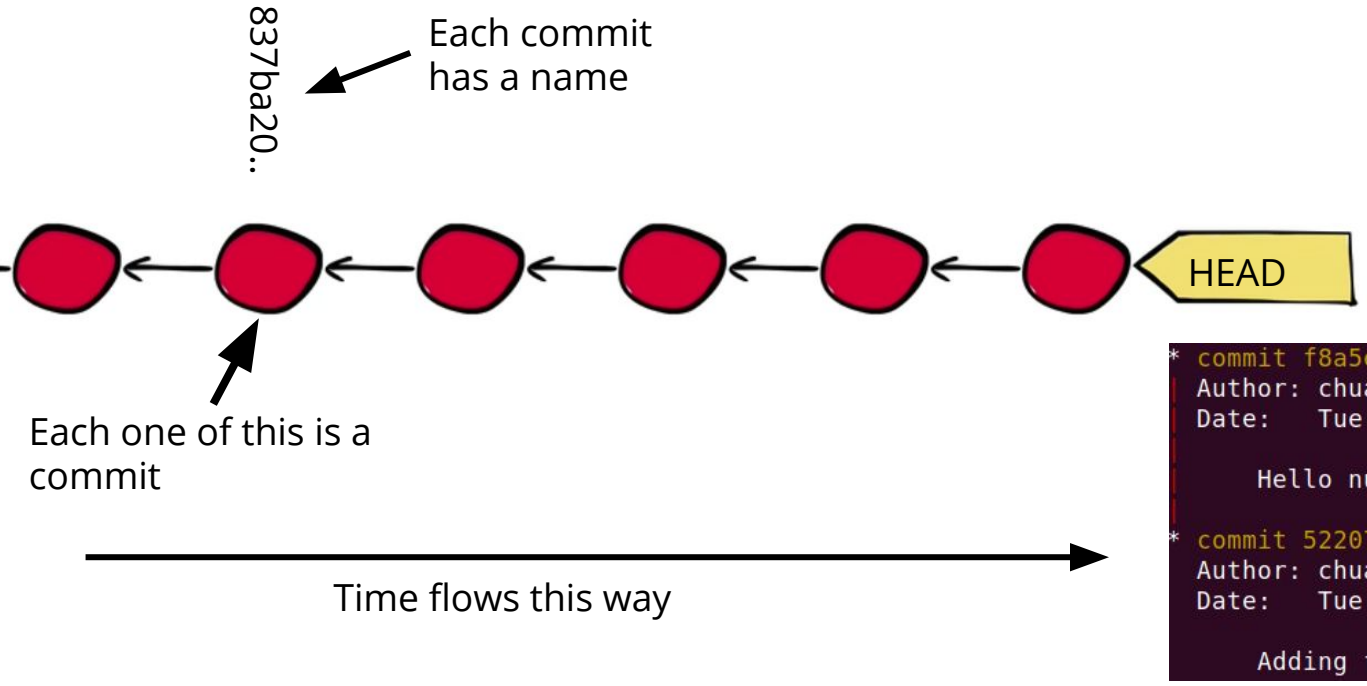


Fundamental theory (Looking at commits)



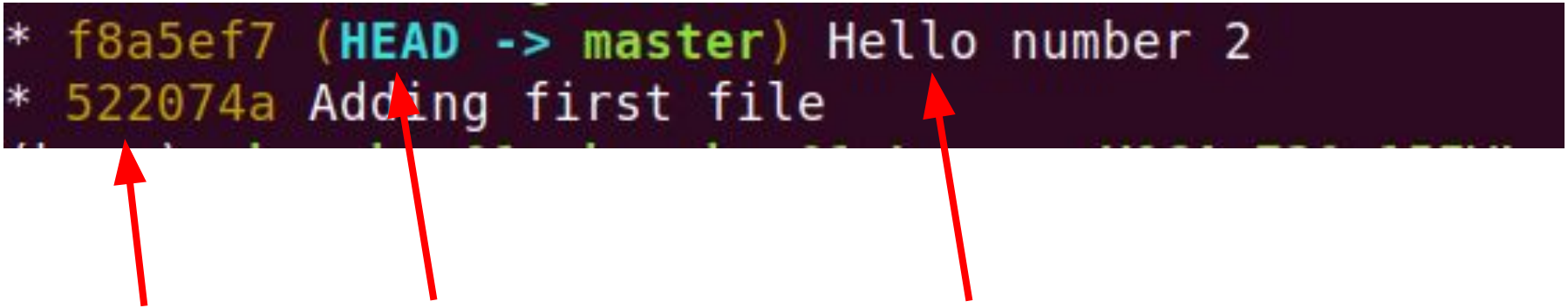

```
* commit f8a5ef7d23c5c6ab28353a82c80b2b4cdaefab64 (HEAD -> master)
| Author: chuanhao01 <chuanhaolim@gmail.com>
| Date:   Tue Jan 14 14:49:22 2020 +0800
|
|     Hello number 2
|
* commit 522074ab52d1de4f4733fb99dccafd8f6e0b331c
  Author: chuanhao01 <chuanhaolim@gmail.com>
  Date:   Tue Jan 14 14:49:05 2020 +0800

      Adding first file
```

Fundamental theory (Looking at commits)

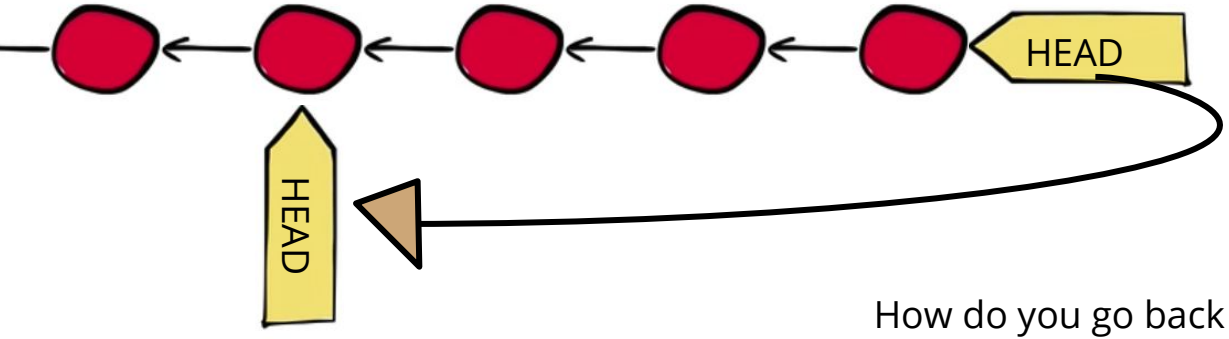



```
* commit f8a5ef7d23c5c6ab28353a82c80b2b4cdaefab6
  Author: chuanhao01 <chuanhaolim@gmail.com>
  Date:   Tue Jan 14 14:49:22 2020 +0800

      Hello number 2

* commit 522074ab52d1de4f4733fb99dccafd8f6e0b331
  Author: chuanhao01 <chuanhaolim@gmail.com>
  Date:   Tue Jan 14 14:49:05 2020 +0800

      Adding first file
```

The magical command **git log --graph --oneline**



Now how do we go back in time?



How do you go back and see how the code was back then?

Checking out those commits **git checkout <commit name>**

Now you can go back in time to look at those commits.

You can check them out!

But don’t forget to go back to your master

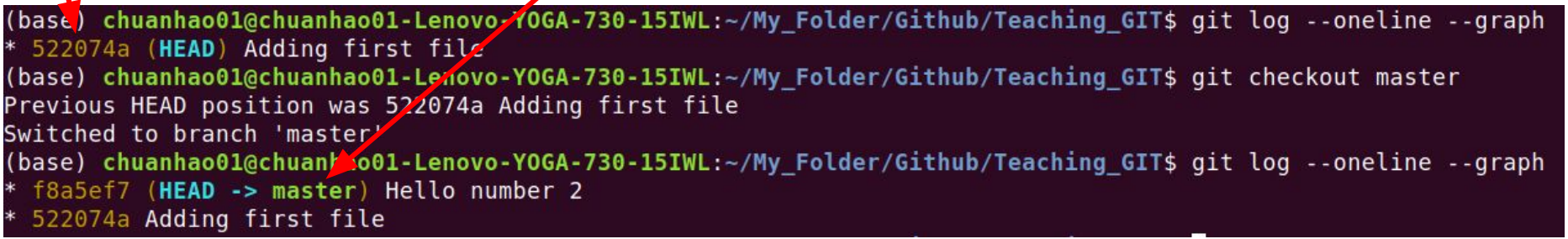
```
* f8a5ef7 (HEAD -> master) Hello number 2
* 522074a Adding first file
(base) chuanhao01@chuanhao01-Lenovo-YOGA-730-15IWL:~/My_Folder/Github/Teaching_GIT$ git checkout 522074a
Note: checking out '522074a'.

You are in 'detached HEAD' state. You can look around, make experimental
changes and commit them, and you can discard any commits you make in this
state without impacting any branches by performing another checkout.

If you want to create a new branch to retain commits you create, you may
do so (now or later) by using -b with the checkout command again. Example:

  git checkout -b <new-branch-name>

HEAD is now at 522074a Adding first file
```

Going back to the present **git checkout master**

Just like how you wanted a blast from the past, you still have to go back to your master.

Was checking out another commit

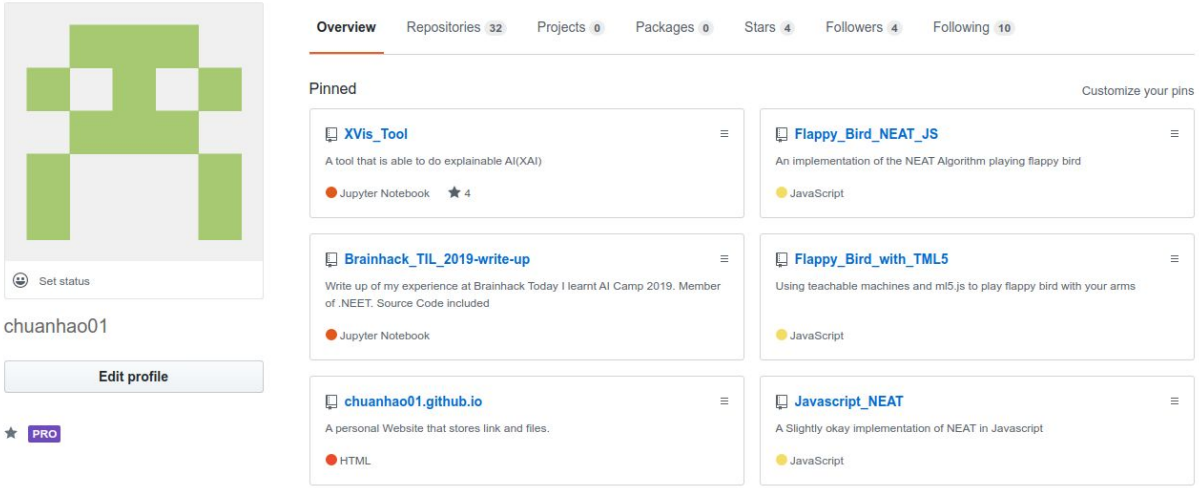
Back to master



The cloud, git cloud, wait I mean github

Now that we can add, commit and checkout stuff in git, how do we share and save code on the cloud?

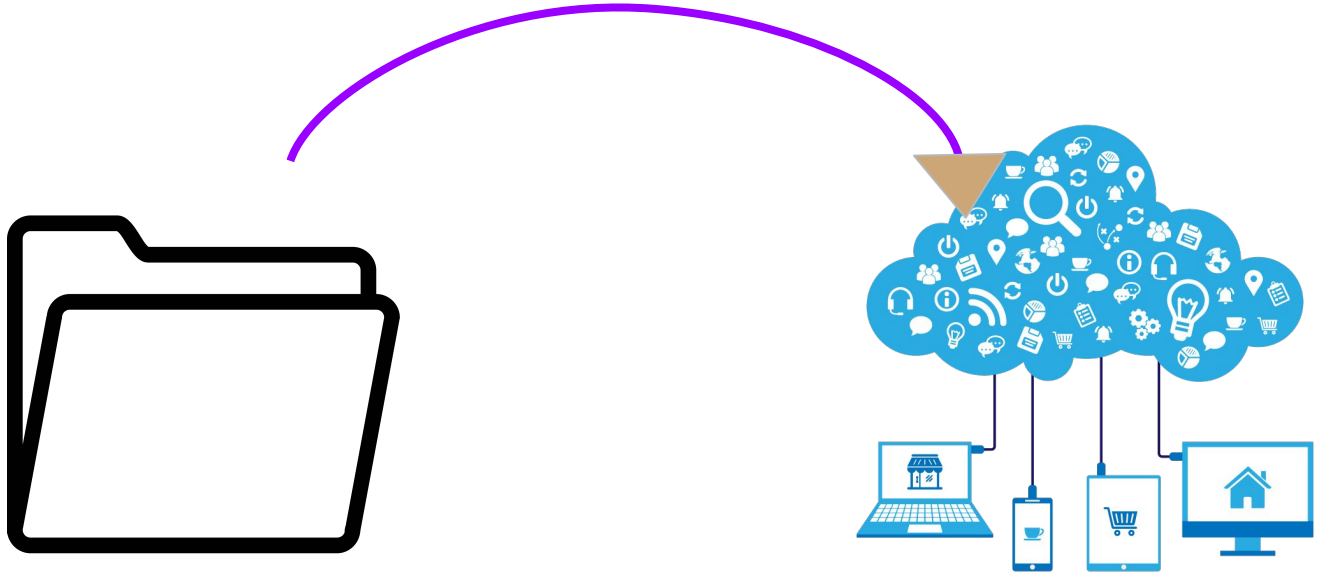
The answer: **Github** (Told you we would get here)



Github and its magical cloud storage

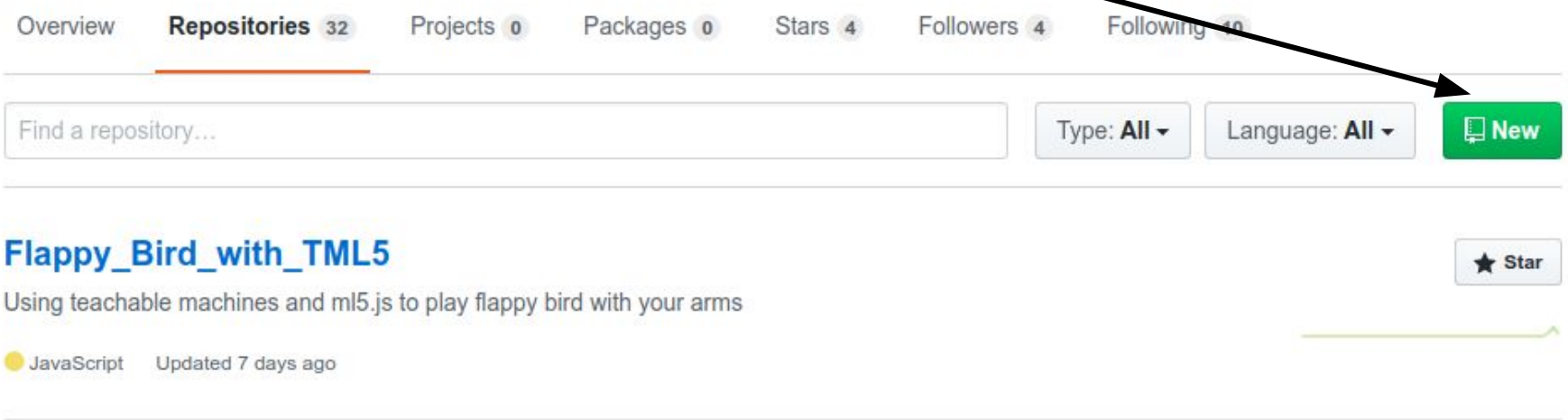
You can think of github as a cloud version of your projects.

Like google drive, but cooler

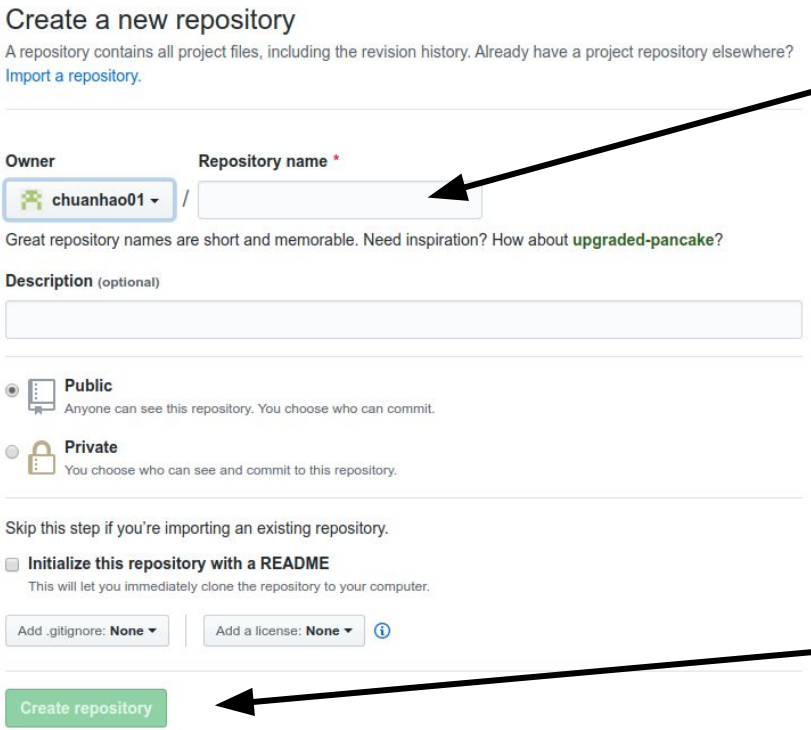


The github repository

Making your first repo



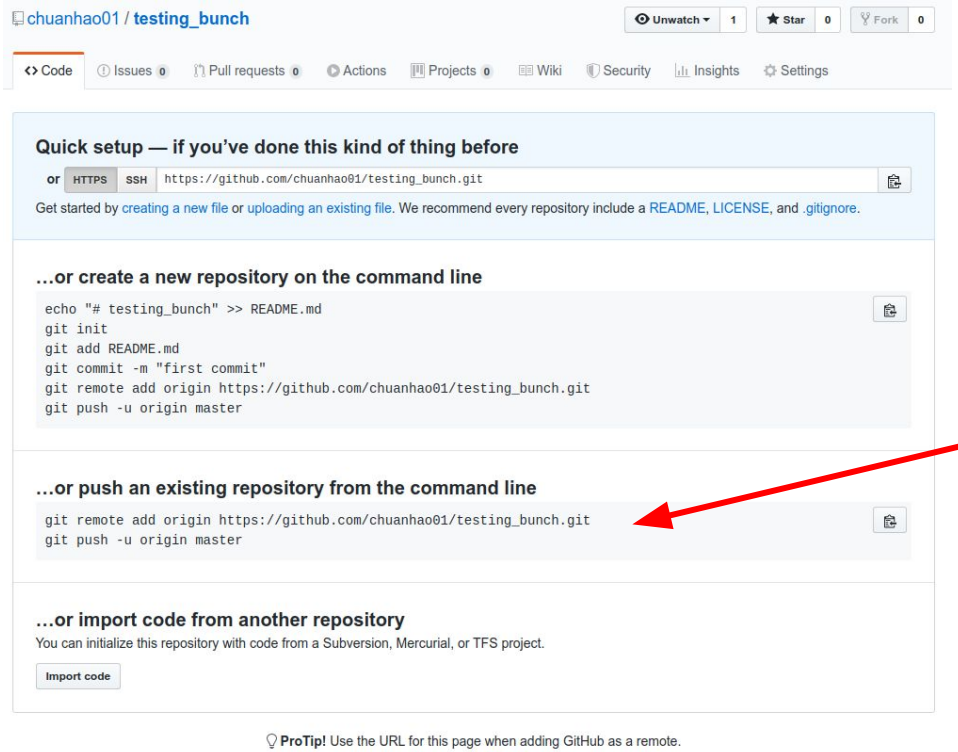
The github repository



Pick a name for your first repository. This can be different from your file name.

Then create the repository

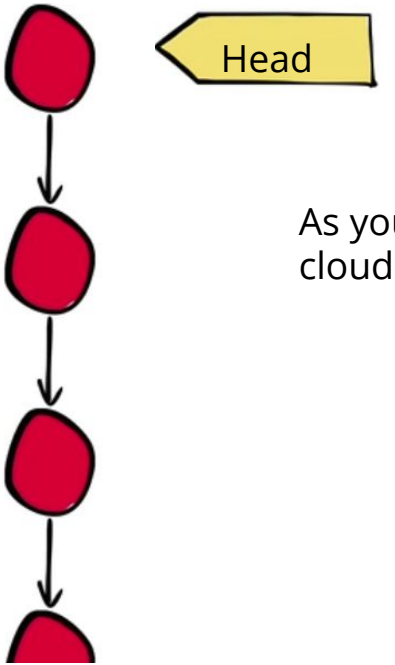
The github repository



Now this is all you have to follow to connect the repositories

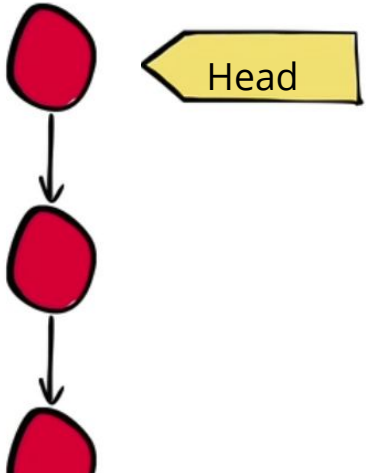
How the cloud works

On your computer



As you make more commits, the cloud may not be updated.

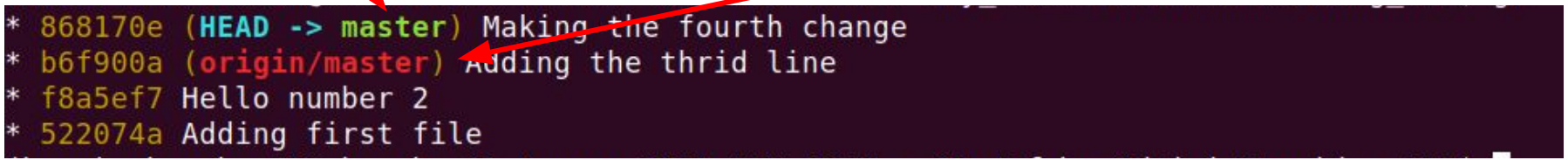
In the cloud



How it looks like in the code

Your local repo is ahead

You can see here that the github repo is behind

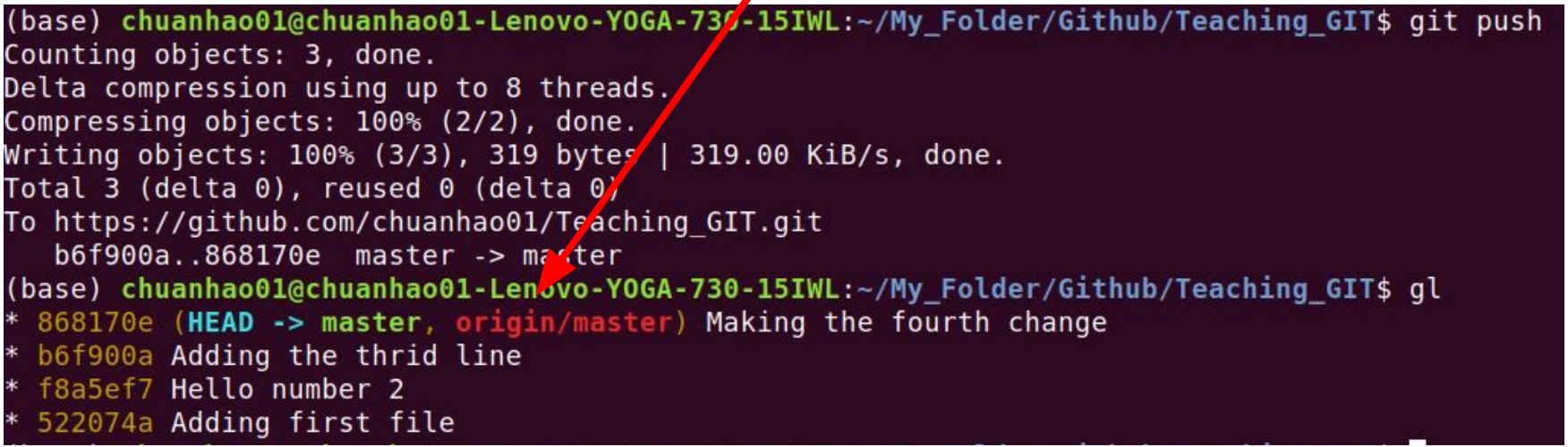


Pushing to the cloud **git push**

You have to push the code up to the cloud to update.

Keep on pushing

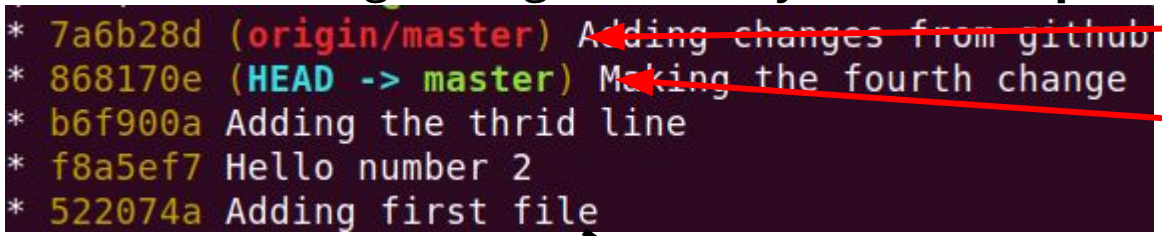
Now its updated



When you push, you can also pull

git pull

If there are changes on github and you want to **pull** them down.



Github

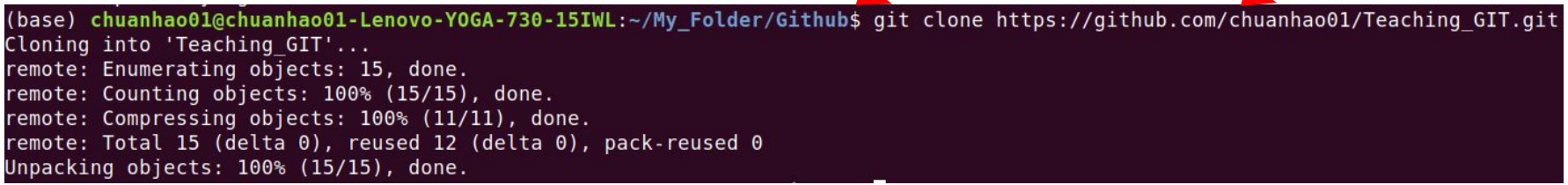
You

```
(base) chuanhao01@chuanhao01-Lenovo-YOGA-730-15IWL:~/My_Folder/Github/Teaching_GIT$ git pull
Updating 868170e..7a6b28d
Fast-forward
 hi | 2 ++
 1 file changed, 2 insertions(+)
```

Kage Bunshin no Jutsu (Cloning technique)

Now say your friend wants to **clone** the repo on github to play around with the code. You can clone it!

git clone <link>

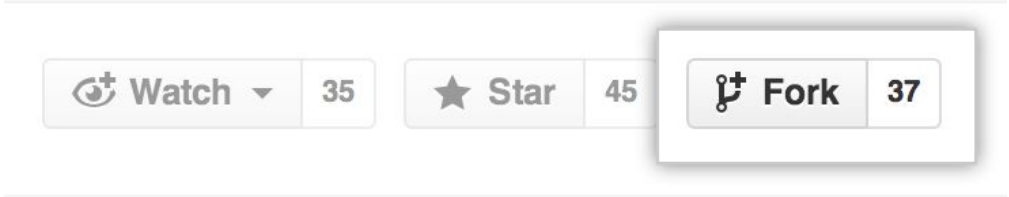


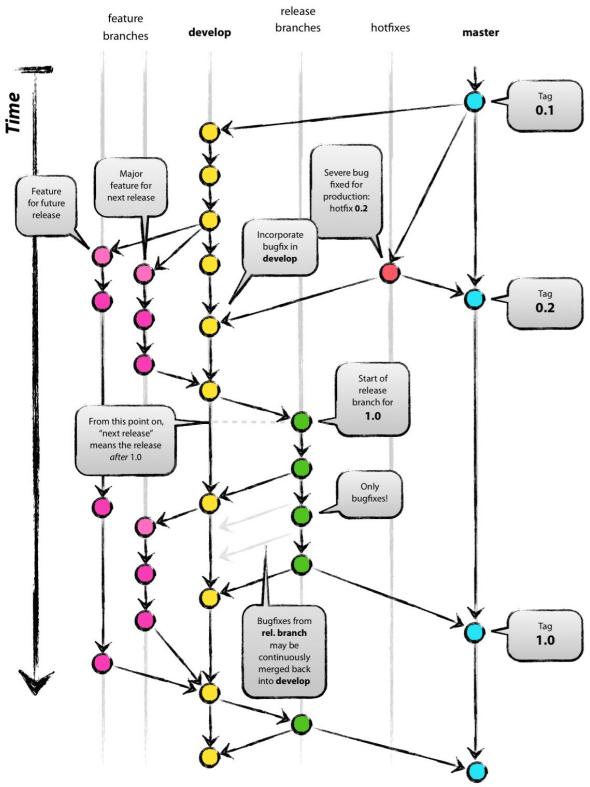
Some extra cool stuff

- Creating from git clone
- Basic branching
- Basic collaboration
- Going back in time

da future

- Git a friend (Advanced git and github workshop)
  - Git branches
  - Collaboration
  - Git flow (How to set up workflows and some best practices)
  - Github forks and remotes





How do you end a presentation again? Do I click the button over here?