

Introduction to Linux Systems

Version Control System: Git

Lab2: Create your Git account and first project

Chia-Heng Tu
Dept. of Computer Science and Information Engineering
National Cheng Kung University
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NCKU National Cheng Kung University

Courtesy of XXX



Lab

- Register the GitHub account
- Fork a repository and clone it to the local
- Practice the GitHub flow

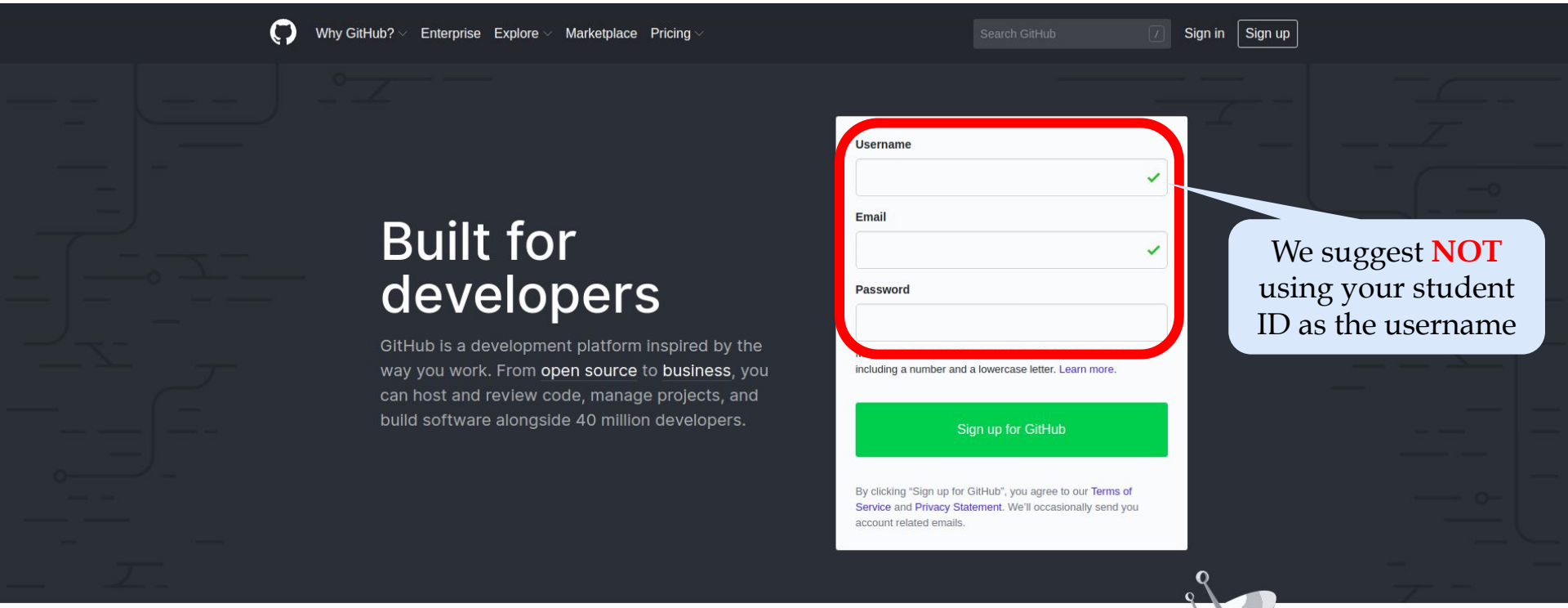


Install git

$ sudo apt install git



Register an account on GitHub (https://github.com/)





Fork a repository from "https://github.com/ASRLabCourses/Linux2021Fall"

ASRLabCourses / **Linux2021Fall** Public

Watch 1 | Star 0 | Fork 0

Code | Issues | Pull requests | Actions | Projects | Wiki | Security | Insights | Settings

master | 1 branch | 0 tags | Go to file | Add file | Code

eecheng87 Init repo. b7c1a5e 5 minutes ago 1 commit

README.md Init repo. 5 minutes ago

README.md

2021 Linux 系統與開源軟體 LINUX SYSTEM AND OPEN SOURCE SOFTWARE

About

No description, website, or topics provided.

Readme

Releases

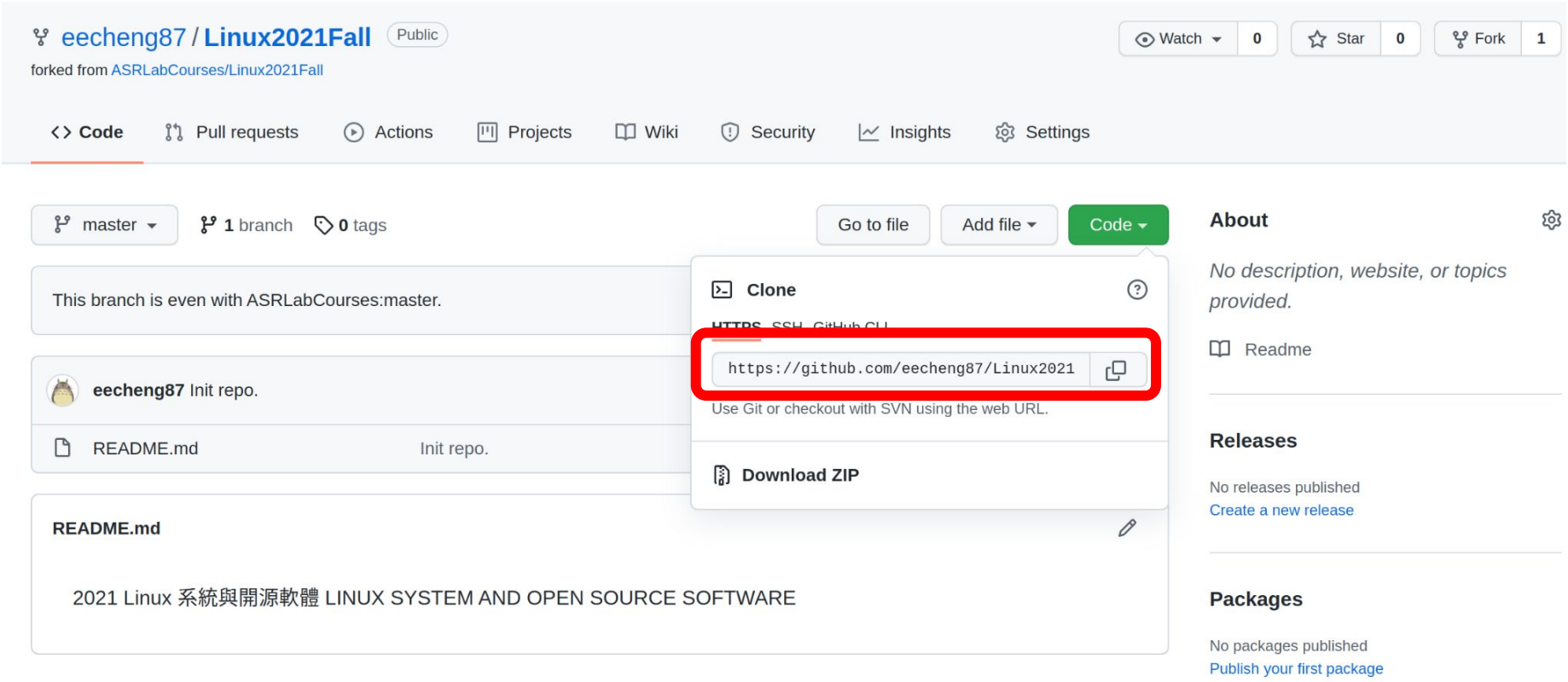
No releases published
Create a new release

Packages

No packages published
Publish your first package



Copy the URL of forked repo



注意！是要複製剛剛 fork 的 repo.，而非 https://github.com/ASRLabCourses/Linux2021Fall.git



Clone forked repo to the local

$ git clone https://github.com/<Your username>/Linux2021Fall.git

$ cd Linux2021Fall/

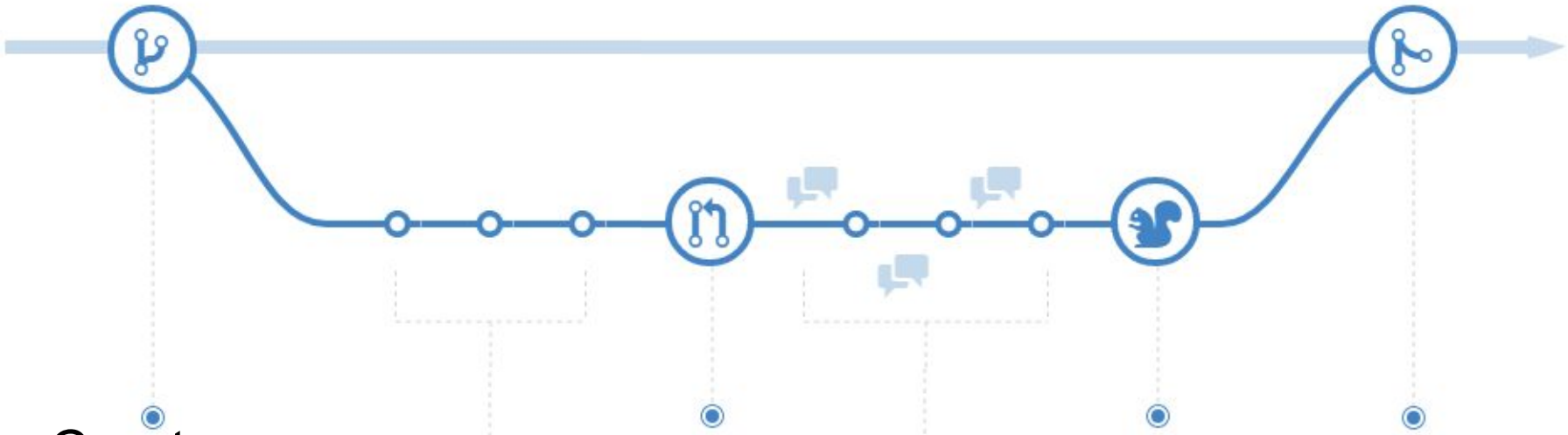


Configure personal information

```
$ git config --global user.name "your_github_username"
$ git config --global user.email "your_github_email"
$ git config -l
```



GitHub Flow



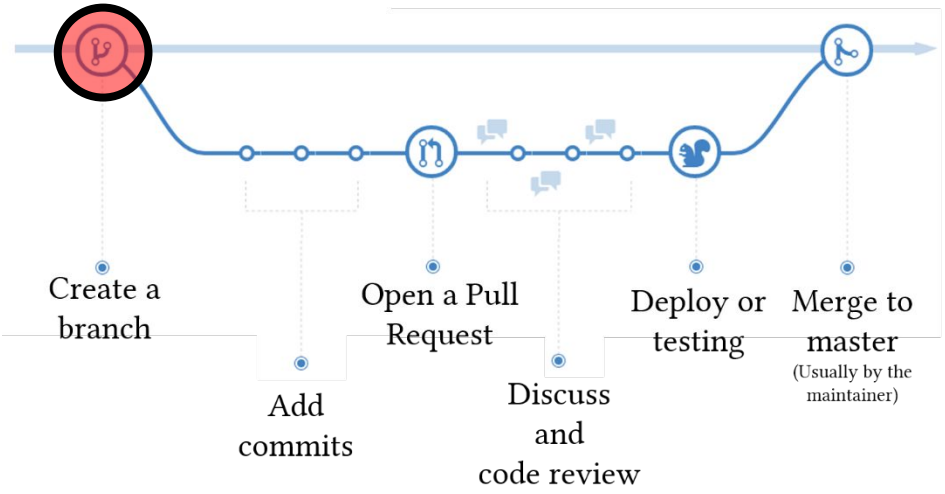
https://guides.github.com/introduction/flow/



Create a new branch

$ git checkout -b lab-2-git

可用 $ git branch 檢查有沒有成功





Create a new file with content

```
$ mkdir f12345678/lab_2_git -p
$ cd f12345678/lab_2_git
$ echo "first text" > first.txt
```

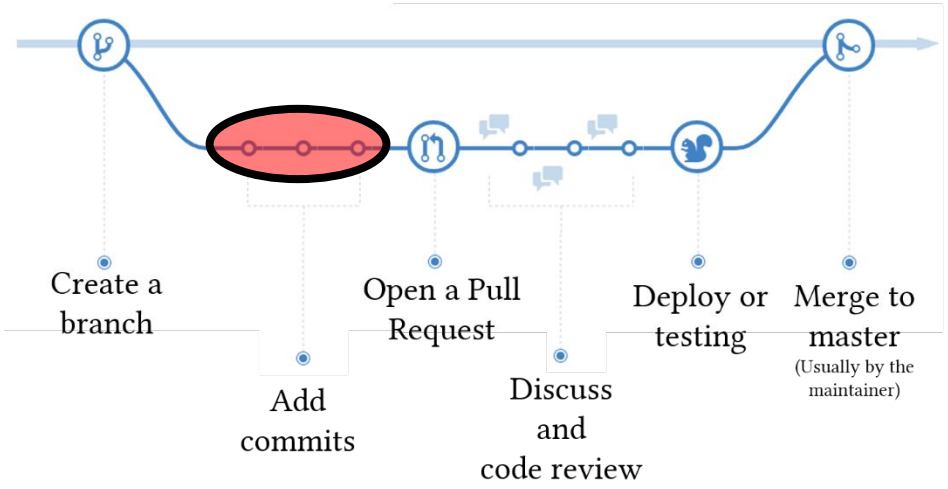
Change f12345678 to your student ID



Track the modification

$ git add first.txt

$ git commit -m “Add F12345678"



Set the **name** and **email** of the user first by git config (p15) before commit command.



Authentication

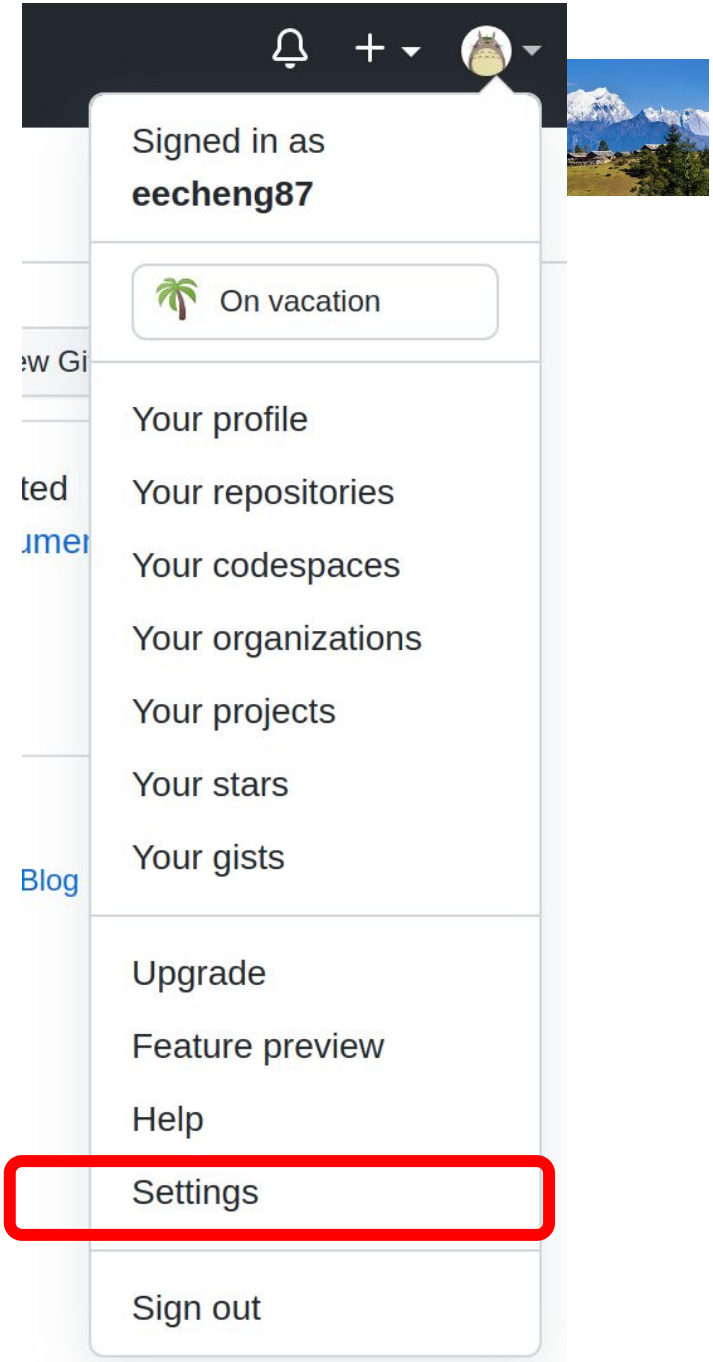
1. Personal access token
2. ssh key

Personal access token

Settings -> Developer Settings

-> Personal Access Token

-> Generate new token





Personal access token (cont.)

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 Mon, Oct 25 2021

Select scopes

Scopes define the access for personal tokens. Read more about OAuth scopes.

repo	Full control of private repositories
repo:status	Access commit status
repo_deployment	Access deployment status
public_repo	Access public repositories
repo:invite	Access repository invitations
security_events	Read and write security events
workflow	Update GitHub Action workflows



Personal access token (cont.)

☐	read:user	Read ALL user profile data
☐	user:email	Access user email addresses (read-only)
☐	user:follow	Follow and unfollow users
☐	**delete_repo**	Delete repositories
☐	**write:discussion**	Read and write team discussions
☐	read:discussion	Read team discussions
☐	**admin:enterprise**	Full control of enterprises
☐	manage_billing:enterprise	Read and write enterprise billing data
☐	read:enterprise	Read enterprise profile data
☐	**admin:gpg_key**	Full control of public user GPG keys (Developer Preview)
☐	write:gpg_key	Write public user GPG keys
☐	read:gpg_key	Read public user GPG keys

Generate token Cancel

接著畫面會跳轉，會出現類似一串

`ghp_sFhFsSHhTzMDreGRLjmks4Tzuzgthdvfsrta`

的 token，記得保存好，因為它只會出現一次



Generate ssh key to GitHub account



push the branch to GitHub

$ git push origin lab-2-git

remote

branch

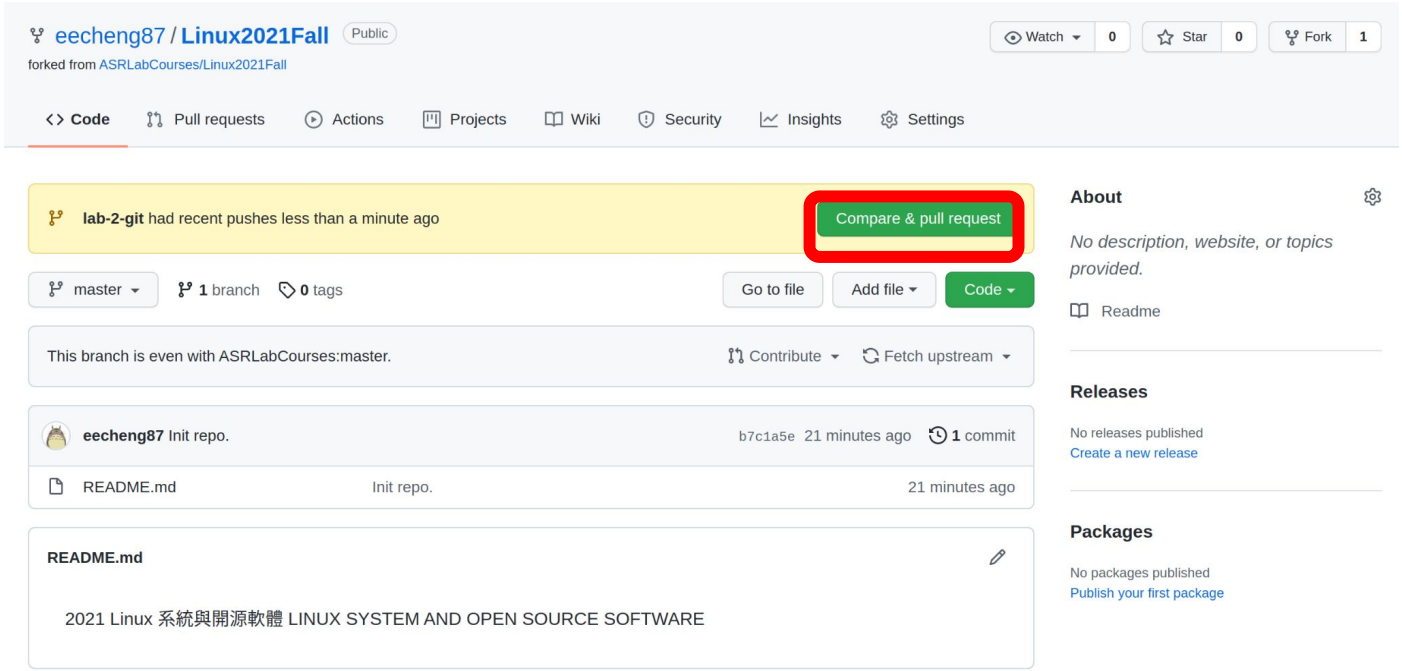
分別輸入你的帳號和剛剛得到的 token

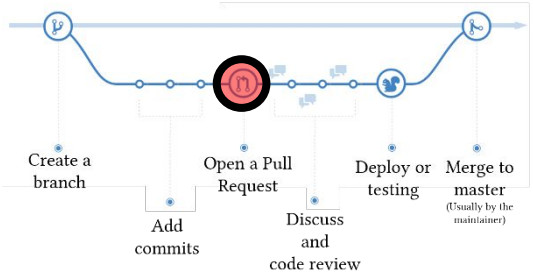
```
ros@ros-VirtualBox:~/LSOSS-2020/f12345678/lab_3_git$ git push origin lab-2-git
Username for 'https://github.com': f740x
Password for 'https://f740x@github.com':
Counting objects: 5, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (5/5), 377 bytes | 377.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0)
remote:
remote: Create a pull request for 'lab-2-git' on GitHub by visiting:
remote:      https://github.com/f740x/Linux2021Fall/pull/new/lab-2-git
remote:
To https://github.com/f740x/Linux2021Fall
 * [new branch]      lab-2-git -> lab-2-git
```

如果怕麻煩，可以用 git config credential.helper store 來避免每次都要輸入帳號密碼，但是這個方法不安全



Create pull-request on the web UI







Confirm PR

Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also compare across forks.

base repository: ASRLabCourses/Linux2021Fall ▾ | base: master ▾ | head repository: eecheng87/Linux2021Fall ▾ | compare: lab-2-git ▾

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

Add F12345678

Write | Preview

Leave a comment

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

Allow edits by maintainers

Create pull request

Reviewers
No reviews

Assignees
No one—assign yourself

Labels
None yet

Projects
None yet

Milestone
No milestone



Wait the code review

Add F12345678 #1

Edit | Open with

Open | **eecheng87** wants to merge 1 commit into `ASRLabCourses:master` from `eecheng87:lab-2-git`

Conversation 0 | Commits 1 | Checks 0 | Files changed 1 | +1 −0

eecheng87 commented 30 seconds ago — Member

No description provided.

Add F12345678 adeb6d9

Add more commits by pushing to the **`lab-2-git`** branch on **eecheng87/Linux2021Fall**.

Continuous integration has not been set up
GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

This branch has no conflicts with the base branch
Merging can be performed automatically.

Merge pull request | or view command line instructions.

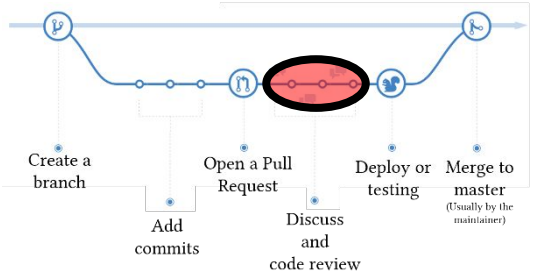
Reviewers
No reviews
Still in progress? Convert to draft

Assignees
No one—assign yourself

Labels
None yet

Projects
None yet

Milestone
No milestone





Wait the merging

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Notifications | Star 0 | Fork 0

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Add F12345678 #1

New issue

Merged **eecheng87** merged 1 commit into `ASRLabCourses:master` from `eecheng87:lab-2-git` 2 days ago

Conversation 0 | Commits 1 | Checks 0 | Files changed 1 +1 −0

eecheng87 commented 2 days ago — Contributor

No description provided.

Add F12345678 adeb6d9

eecheng87 merged commit `f32a5fb` into `ASRLabCourses:master` 2 days ago

Sign up for free **to join this conversation on GitHub**. Already have an account? Sign in to comment

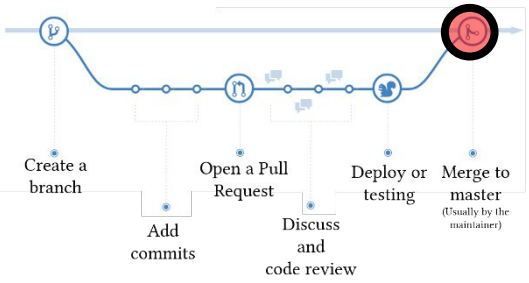
Reviewers
No reviews

Assignees
No one assigned

Labels
None yet

Projects
None yet

Milestone
No milestone





Check your patch

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Watch 1 | Star 0 | Fork 1

Code | Issues | Pull requests | Actions | Projects | Wiki | Security | Insights | Settings

master | 1 branch | 0 tags | Go to file | Add file | Code

eecheng87 Merge pull request #1 from eecheng87/lab-2-git ... `f32a5fb` 43 seconds ago | 3 commits

f12345678/lab_2_git	Add F12345678	7 minutes ago
README.md	Init repo.	26 minutes ago

README.md

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Add upstream as fetch resource

f740x will be your username

```
$ git remote -v
origin      https://github.com/f740x/Linux2021Fall.git (fetch)
origin      https://github.com/f740x/Linux2021Fall.git (push)

$ git remote add upstream https://github.com/ASRLabCourses/Linux2021Fall.git
$ git remote -v
origin      https://github.com/f740x/Linux2021Fall.git (fetch)
origin      https://github.com/f740x/Linux2021Fall.git (push)
upstream    https://github.com/ASRLabCourses/Linux2021Fall.git (fetch)
upstream    https://github.com/ASRLabCourses/Linux2021Fall.git (push)
```

$ git fetch upstream master

```
ros@ros-VirtualB  ~/Linux2021Fall  git fetch upstream master
remote: Enumerating objects: 1, done.
remote: Counting objects: 100% (1/1), done.
remote: Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (1/1), done.
From https://github.com/nckuasrlab/Linux2021Fall
 * branch            master     -> FETCH_HEAD
 * [new branch]      master     -> upstream/master
```



Change to master branch

$ cd ../..

$ git status

On branch lab-2-git

nothing to commit, working tree clean

$ git checkout master

$ git status

On branch master

Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean



Current status

1. 目前在 master
2. 已經 fetch upstream 的 master
3. master 目前沒有 upstream 的更新內容 (PR)



Merge and Push to your forked repo

$ git merge upstream/master　讓本地 master 出現 remote/master 的更新

```
ros@ros-VirtualBox:~/Linux2021Fall$ git merge upstream/master
Updating fcbd858..c88fbe5
Fast-forward
 f12345678/lab-2-git/first.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 f12345678/lab_3_git/first.txt
```

$ git push origin master　讓 origin/master 出現本地 master 的更新

```
ros@ros-VirtualBox:~/Linux2021Fall$ git push origin master
Username for 'https://github.com': f740x
Password for 'https://f740x@github.com':
Total 0 (delta 0), reused 0 (delta 0)
To https://github.com/f740x/Linux2021Fall.git
   fcbd858..c88fbe5  master -> master
```



Current status

1. 目前仍在 master
2. master 有 upstream 的更新內容 (PR)
3. GitHub 上自己的 repo. 也可以看到 master 已經有內容的更新



Open

https://github.com/<Your username>/Linux2021Fall/tree/master/<Your student ID>/lab_2_git

eecheng87 / **Linux2021Fall** Public

forked from ASRLabCourses/Linux2021Fall

Watch 0 Star 0 Fork 1

Code | Pull requests | Actions | Projects | Wiki | Security | Insights | Settings

master | Linux2021Fall / f12345678 / **lab_2_git** / | Go to file | Add file | ...

This branch is even with ASRLabCourses:master. | Contribute | Fetch upstream

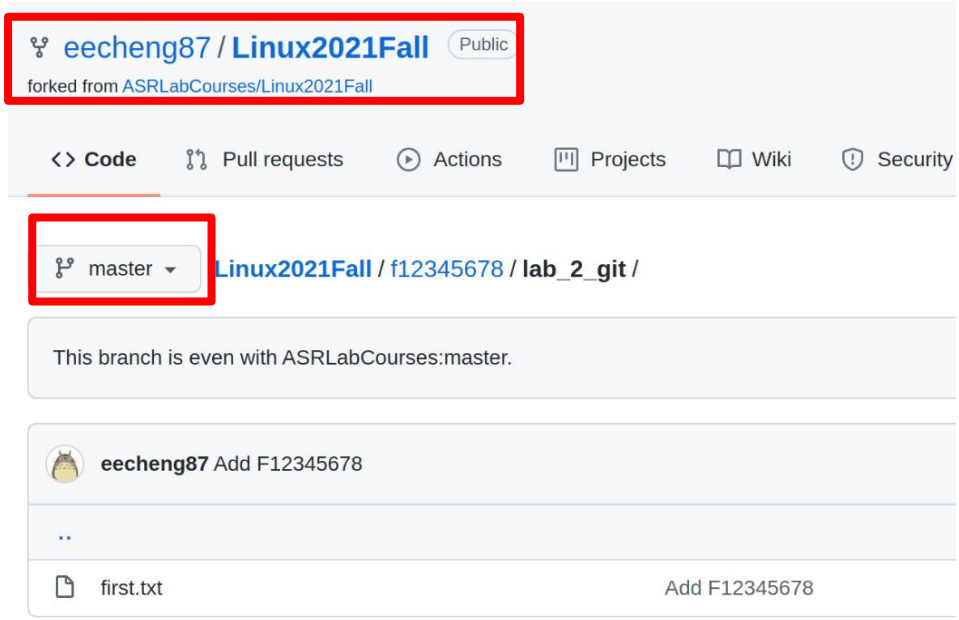
eecheng87 Add F12345678 adeb6d9 19 minutes ago **History**

..

first.txt Add F12345678 19 minutes ago



Demo



僅供參考

截圖檢查項目

1. 為 fork 的 repo.
2. 為 master 分支
3. repo. 內有檔案

繳交方式：截圖上傳至 moodle，須包含以上三樣檢查項目



Ref.

- Reusing a merged branch, good practice?
- Why Delete Old Git Branches?
- How can I save username and password in Git?

- Step by step: https://aben20807.github.io/posts/20190421-github-flow-2/



QUESTIONS