



Introduction to Linux Systems

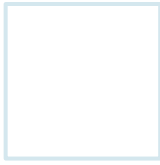
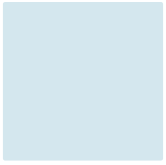
Version Control System: Git

Lab2: Create your Git account and first project

Chia-Heng Tu

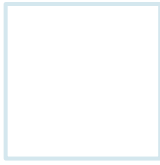
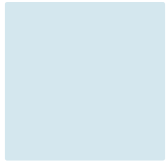
Dept. of Computer Science and Information
Engineering

National Cheng Kung University
Fall 2023



Lab

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



Install git on Linux

```
$ sudo apt install git
```



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



Why GitHub? ▾ Enterprise Explore ▾ Marketplace Pricing ▾

Search GitHub

Sign in

Sign up

Built for developers

GitHub is a development platform inspired by the way you work. From **open source** to **business**, you can host and review code, manage projects, and build software alongside 40 million developers.

Username

Email

Password

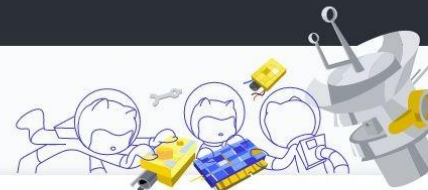
including a number and a lowercase letter. Learn more.

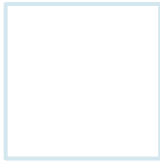
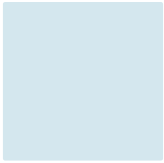
Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our [Terms of Service](#) and [Privacy Statement](#). We'll occasionally send you account related emails.

We suggest **NOT** using your student ID as the username

Get started with





Fork a repository from “<https://github.com/ASRLabCourses/Linux2023Fall>”

ASRLabCourses / Linux2023Fall

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Linux2023Fall Public

Edit Pins Watch 2 Fork 1 Star 0

main 1 branch 0 tags

Go to file Add file Code

brian049 Initial commit 6d12d36 in 7 hours 1 commit

README.md Initial commit now

README.md

Linux2023Fall

About

No description, website, or topics provided.

- Readme
- Activity
- 0 stars
- 2 watching
- 1 fork

Report repository

Releases

No releases published
[Create a new release](#)

Packages



第一種clone方式: 透過 http Copy the URL of forked repo

fork 後的 repo 會是 username / Linux2023Fall (點擊左上貓頭回主頁，於左列找到 <Username>/Linux2023Fall)



注意！是要複製剛剛 fork 的 repo., 而非 <https://github.com/ASRLabCourses/Linux2023Fall.git>

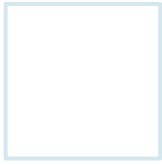
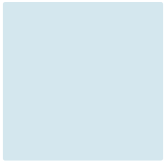


第二種clone的方式: 透過ssh SSH Key - clone repo.

如果選擇使用 ssh key, clone repo. 要選擇 ssh 而非http

提示會說沒有key , 先完成PPT 20-22頁做完key再跳回來繼續做

\$ git clone [git@github.com:<Your username>/Linux2023Fall.git](https://github.com/brian049/Linux2023Fall)



要注意!

如果使用http方式clone repository

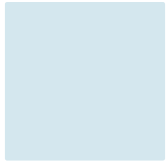
→ 之後的 Authentication 就建議要選用 personal access token

如果使用ssh方式clone repository

→ 之後的Authentication 就建議要選用 ssh key

[補充] 1. 如果要從https 轉到ssh 方式的話可以參考以下網址的最下方指令 [git remote set-url git@github.com:username/dummyrepo.git](#) (最後面改成自己的 clone repository 網址)

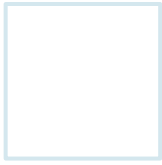
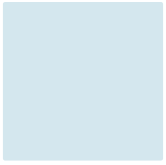
2. 也可 cd 到clone 下來的資料夾內找到.git資料夾→cd .git→vim config，去做更改(改remote...下面那行)。



Clone forked repo to the local

```
$ git clone https://github.com/<Your username>/Linux2023Fall.git
```

```
$ cd Linux2023Fall/
```



Configure personal information

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

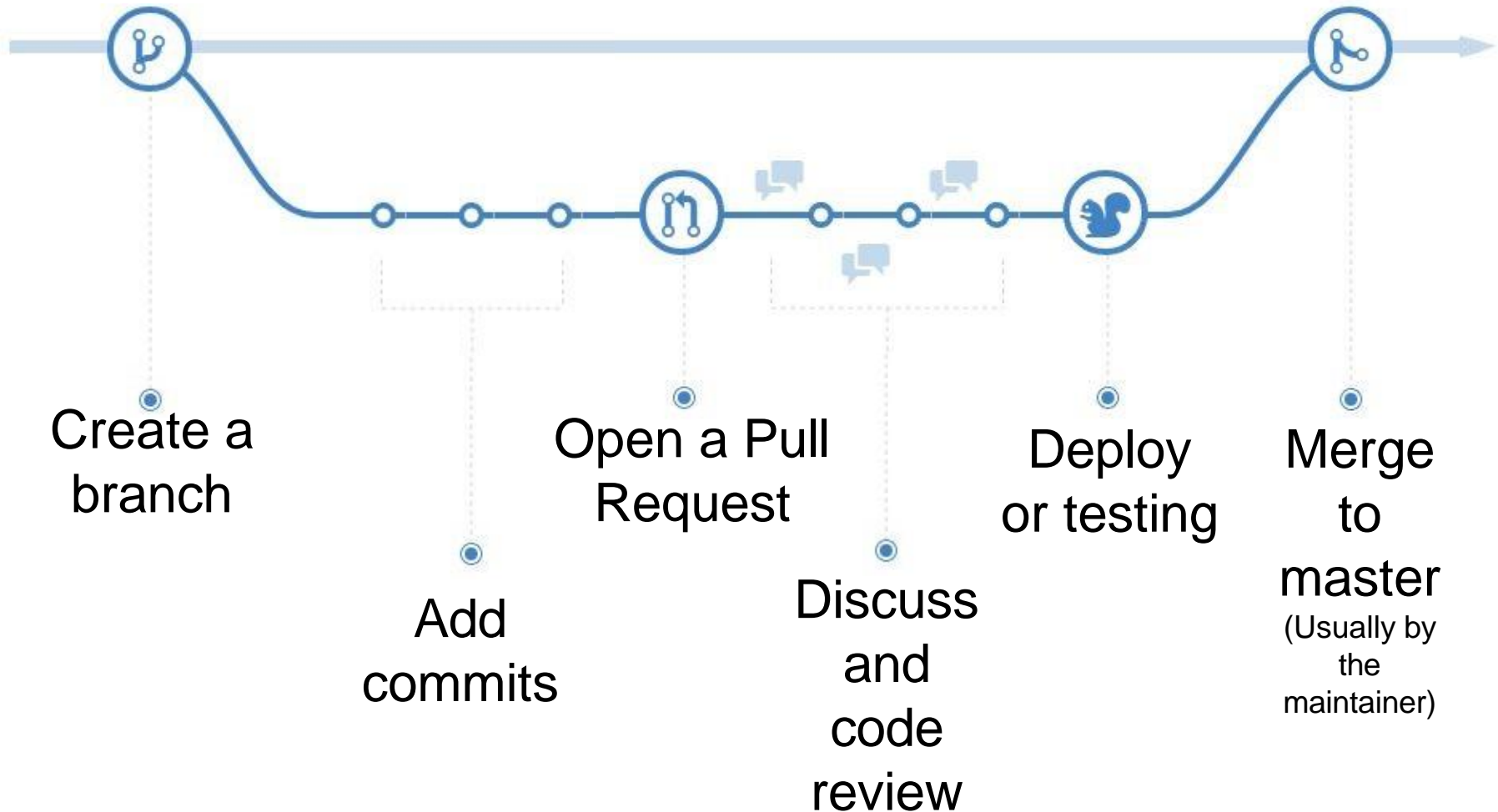
git config -l command 預期輸出

user.email=your_github_email

user.name=your_github_username



GitHub Flow

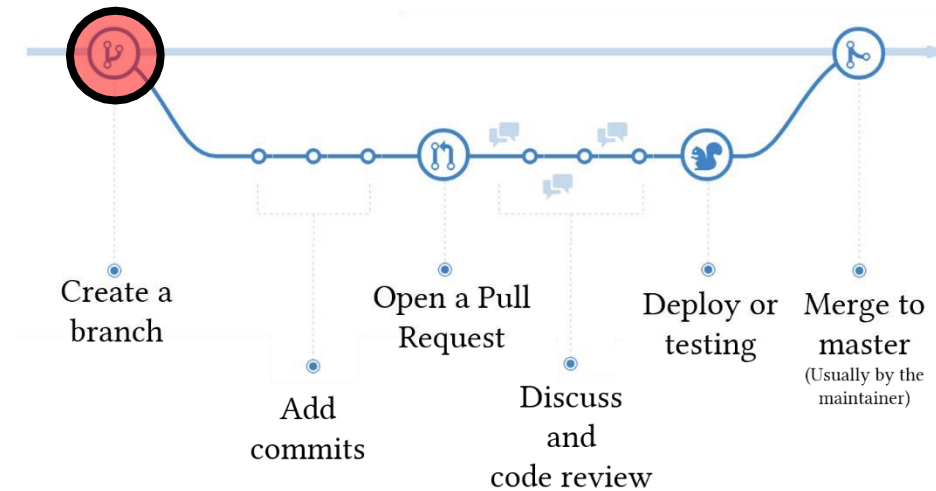


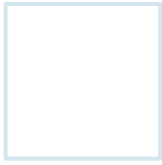
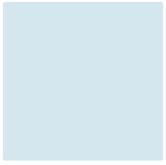


Create a new branch

\$ git checkout -b lab-2-git

可用 \$ git branch 檢查有沒有成功
創建新的 branch





Create a new file with content

```
$ mkdir -p f12345678/lab_2_git
```

```
$ cd f12345678/lab_2_git
```

```
$ echo "first text" > first.txt
```

Change f12345678 to
your student ID

```
$ git commit -m "Add F12345678"
```

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

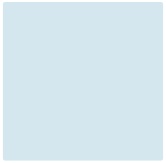




Authentication

以下兩種方式擇一去push 即可

1. Personal Access Token
2. SSH Key
 - Generate ssh key
 - Add ssh key to Github

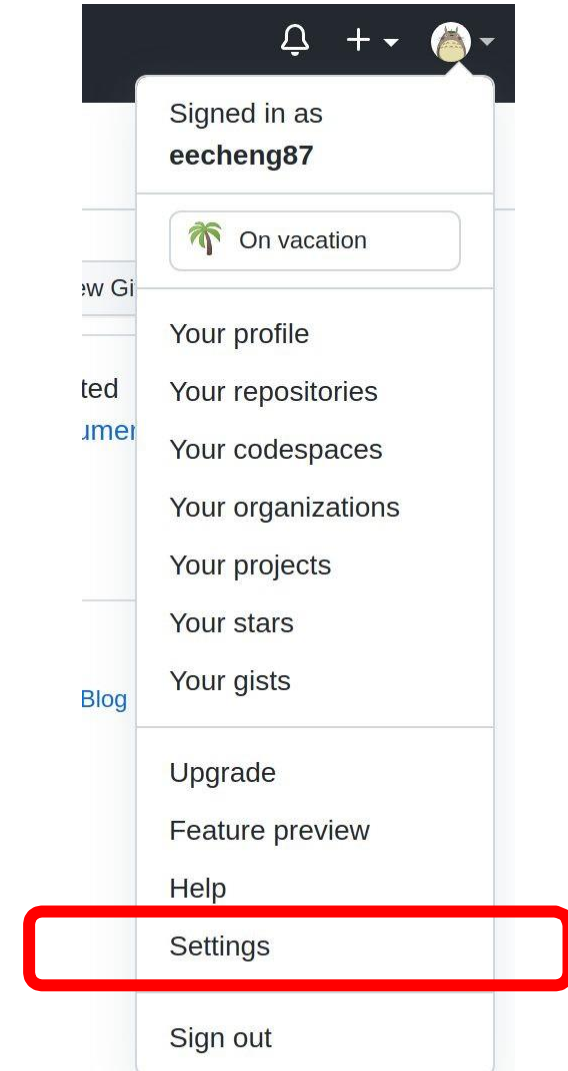


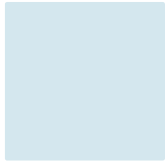
1. Personal access token

Settings -> Developer Settings

-> Personal Access Token

-> Generate new token





1. 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

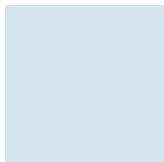


The token will expire on Mon, Oct 25 2021

Select scopes

Scopes define the access for personal tokens. [Read more about OAuth scopes](#).

- | | |
|---|--|
| <input checked="" type="checkbox"/> repo | Full control of private repositories |
| <input type="checkbox"/> repo:status | Access commit status |
| <input type="checkbox"/> repo_deployment | Access deployment status |
| <input type="checkbox"/> public_repo | Access public repositories |
| <input type="checkbox"/> repo:invite | Access repository invitations |
| <input type="checkbox"/> security_events | Read and write security events |
| <input type="checkbox"/> workflow | Update GitHub Action workflows |
| <input type="checkbox"/> write:packages | Upload packages to GitHub Package Registry |
| <input type="checkbox"/> read:packages | Download packages from GitHub Package Registry |



1. Personal access token (cont.)

| | |
|--|--|
| <input type="checkbox"/> read:user | Read ALL user profile data |
| <input type="checkbox"/> user:email | Access user email addresses (read-only) |
| <input type="checkbox"/> user:follow | Follow and unfollow users |
| <input type="checkbox"/> delete_repo | Delete repositories |
| <input type="checkbox"/> write:discussion | Read and write team discussions |
| <input type="checkbox"/> read:discussion | Read team discussions |
| <input type="checkbox"/> admin:enterprise | Full control of enterprises |
| <input type="checkbox"/> manage_billing:enterprise | Read and write enterprise billing data |
| <input type="checkbox"/> read:enterprise | Read enterprise profile data |
| <input type="checkbox"/> admin:gpg_key | Full control of public user GPG keys (Developer Preview) |
| <input type="checkbox"/> write:gpg_key | Write public user GPG keys |
| <input type="checkbox"/> read:gpg_key | Read public user GPG keys |

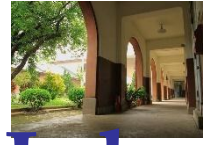
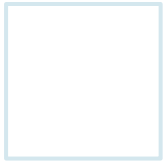
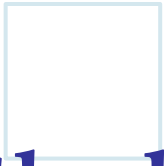
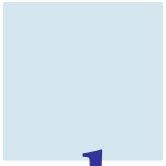
Generate token

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



1. Push the branch to GitHub (Personal Access Token)

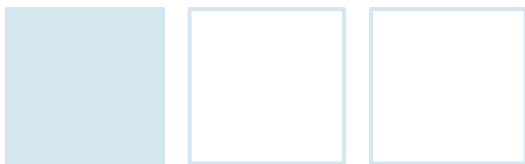
\$ git push origin lab-2-git

remote

branch

分別輸入你的帳號和剛得到的 token

```
brian@brian-System-Product-Name:~/Linux2023Fall/[redacted]/lab_2_git$ git push origin lab-2-git
Username for 'https://github.com': brian049
Password for 'https://brian049@github.com':
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (5/5), 384 bytes | 192.00 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/brian049/Linux2023Fall/pull/new/lab-2-git
remote:
To https://github.com/brian049/Linux2023Fall.git
 * [new branch]      lab-2-git -> lab-2-git
```



這一頁到23頁為ssh push的方式
用的是personal access token 的同學可以跳至投影片24頁
最前面有generate ssh key過的跳到23頁

2. SSH Key - Generate ssh key

```
$ ssh-keygen
```

一直按 enter 用預設即可

```
$ cat ~/.ssh/id_rsa.pub
```

預期會得到 ssh-rsa XXXXXXXX (一串token), 接著請複製這串
token (ssh-rsa XXXXXXXX)



2. SSH Key - Add ssh key to Github

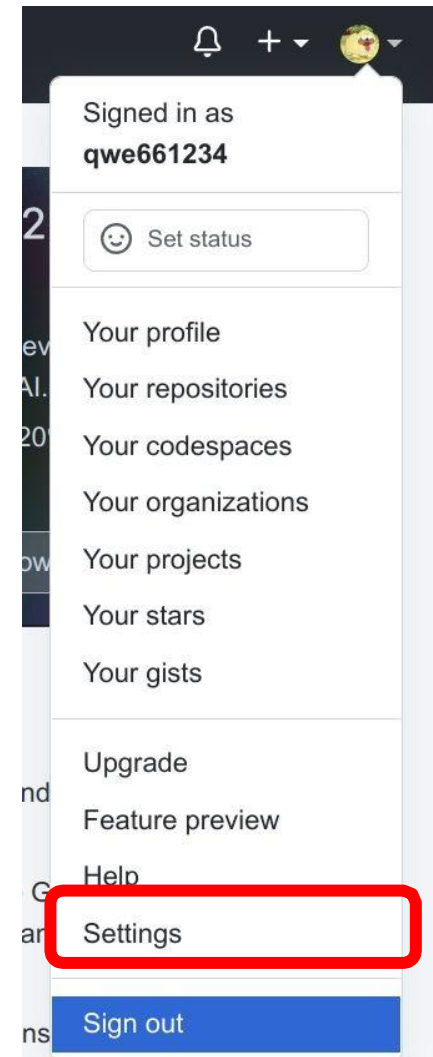
Settings -> SSH and GPG keys

-> New SSH key

SSH keys

This is a list of SSH keys associated with your account. Remove any keys that you do not recognize.

New SSH key





2. SSH Key - Add ssh key to Github

SSH keys / Add new

Title

自定義 ssh key 的 title

Key type

Authentication Key ▾

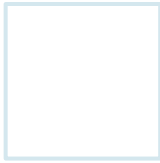
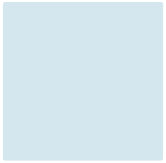
貼上剛剛複製的那串 ssh token

Key

Begins with 'ssh-rsa', 'ecdsa-sha2-nistp256', 'ecdsa-sha2-nistp384', 'ecdsa-sha2-nistp521', 'ssh-ed25519', 'sk-ecdsa-sha2-nistp256@openssh.com', or 'sk-ssh-ed25519@openssh.com'

Add SSH key

新增成功後 SSH keys 會新增剛剛輸入的 Title 的 Authentication Keys



2. Push the branch to GitHub (SSH

Key)

\$ git push origin lab-2-git

remote

branch

```
[qwe661234@qwe661234-linux-2023:~/Linux2023Fall/f12345678$ git push origin lab-2-git
```

```
Enumerating objects: 5, done.
```

```
[Counting objects: 100% (5/5), done.
```

```
Delta compression using up to 64 threads
```

```
Compressing objects: 100% (2/2), done.
```

```
Writing objects: 100% (4/4), 333 bytes | 333.00 KiB/s, done.
```

```
Total 4 (delta 0), reused 0 (delta 0)
```

```
remote:
```

```
remote: Create a pull request for 'lab-2-git' on GitHub by visiting:
```

```
remote:      https://github.com/qwe661234/Linux2023Fall/pull/new/lab-2-git
```

```
remote:
```

```
To github.com:qwe661234/Linux2023Fall.git
```

```
* [new branch]      lab-2-git -> lab-2-git
```




Create pull-request on the web UI (optional)

Linux2023Fall Public
forked from ASRLabCourses/Linux2023Fall

lab-2-git had recent pushes 8 minutes ago

[Compare & pull request](#)

main 2 branches 0 tags

Go to file Add file <> Code

Your main branch isn't protected
Protect this branch from force pushing or deletion, or require status checks before merging. [Learn more](#)

Protect this branch

This branch is up to date with ASRLabCourses/Linux2023Fall:main.

Contribute Sync fork

brian049 Initial commit 6d12d36 1 hour ago 1 commit

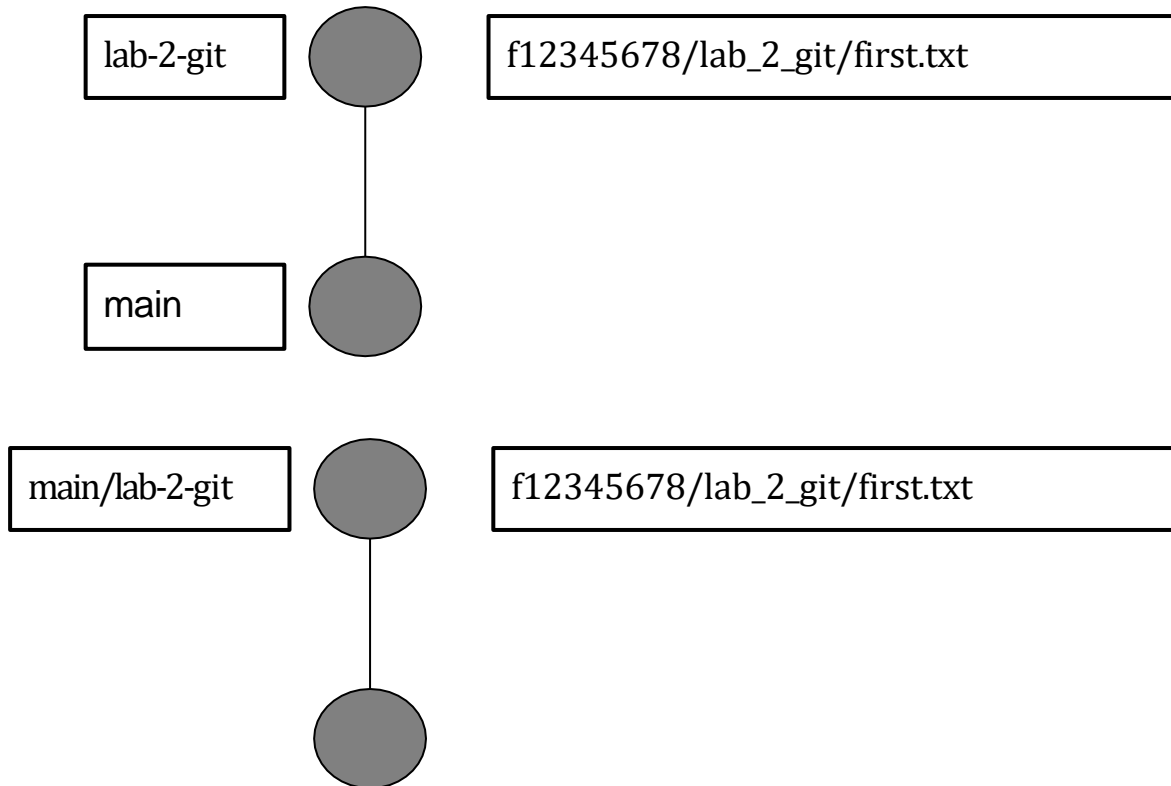
README.md Initial commit 1 hour ago

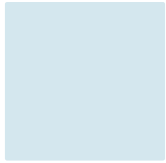
README.md

Linux2023Fall



Merge your branch in local and push to remote





Merge your branch in local and push to remote

\$ cd ../..

\$ git checkout main

\$ git branch

```
lab-2-git
* main
```

\$ git merge lab-2-git

\$ git push

```
qwe661234@qwe661234-linux-2022:~/Linux2022Fall$ git merge lab-2-git
Updating 5e16546..e78304b
Fast-forward
 f12345678/lab_2_git/first.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 f12345678/lab_2_git/first.txt
```

```
qwe661234@qwe661234-linux-2022:~/Linux2022Fall$ git log --graph
* commit e78304ba2a55837f7531e9144070e9a77816f210 (HEAD -> main, origin/main, origin/lab-2-git, origin/HEAD, lab-2-git)
 | Author: qwe661234 <qwe661234@gmail.com>
 | Date: Mon Sep 19 21:20:29 2022 +0800
 |
 | Add F12345678
 |
* commit 5e16546d91784e4b52e36d38839b7f3884dba46b
 | Author: waysimdrop <48278026+qwe661234@users.noreply.github.com>
 | Date: Mon Sep 19 15:44:16 2022 +0800
 |
 | Initial commit
```



<Your username>/Linux2023Fall

brian049 / Linux2023Fall

<> Code

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

Linux2023Fall Public

Pin Watch 0

main ▾ 2 branches 0 tags

Go to file

Add file ▾

<> Code ▾

Your main branch isn't protected
Protect this branch from force pushing or deletion, or require status checks before merging. [Learn more](#)

Protect this branch ×

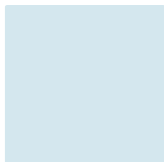
This branch is 1 commit ahead of ASRLabCourses:main.

Contribute ▾ Sync fork ▾

brian049 Add P76121322 6376527 in 7 hours 2 commits

P76121322/lab_2_git Add P76121322 now

README.md Initial commit now

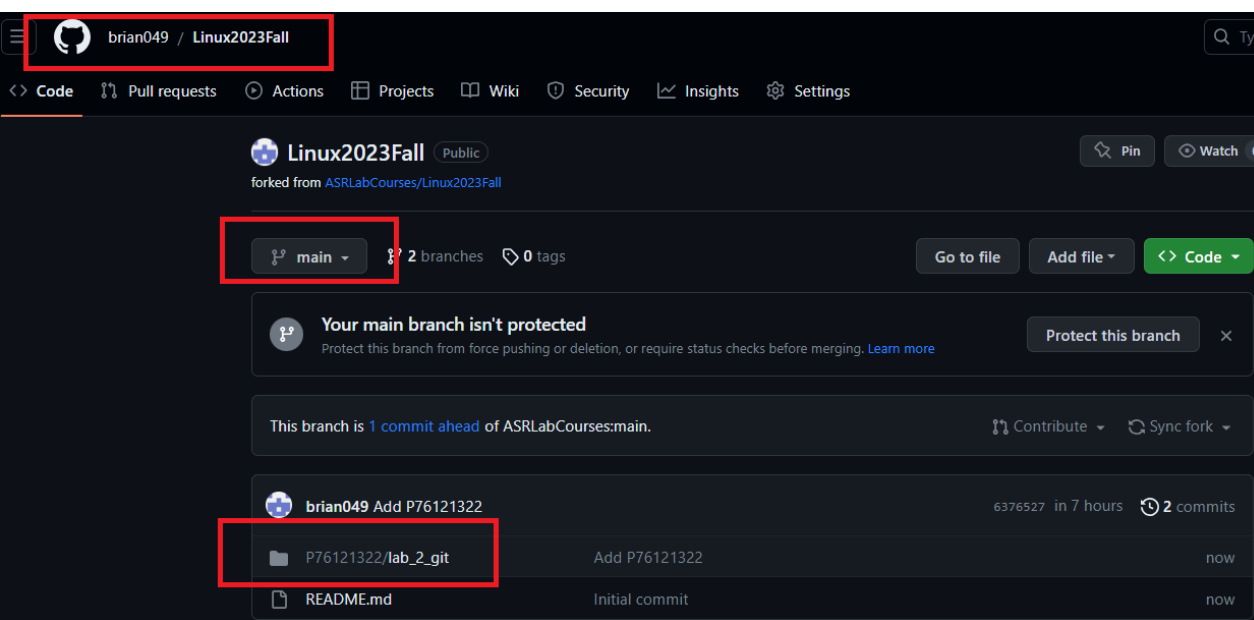


Demo



截圖檢查項目

1. 為 fork 的 repo.
2. 為 main 分支且 repo. 內有檔案



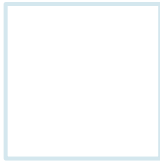
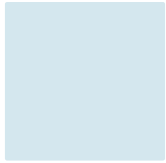
繳交方式：截圖上傳至 moodle，須包含以上兩項檢查項目

僅供參考



Ref.

- Reusing a merged branch, good practice?
- Why Delete Old Git Branches?
- How can I save username and password in Git?
- SSH key tutorial: <https://ithelp.ithome.com.tw/articles/10205988>
- Step by step:
<https://aben20807.github.io/posts/20190421-github-flow-2/>



QUESTIONS