Git 與 Github

TYIC 桃高資訊社

Git

Git 是個版本控制系統(Version Control System，VCS)
Git 是由 Linux 之父林納斯·托瓦茲(Linus Torvalds)開發
開發的目的就是用來管理 Linux 的程式碼

版本控制系統，顧名思義，就是能控制版本
每筆提交(commit)都會被紀錄下來，隨時可檢視和復原(revert)
也可以建立分支(branch)，進行獨立修改
並在必要時將分支合併(merge)

Git

Git 的第一版 README(讀我) 中寫道：

Git 的第一版 README

GIT - the stupid content tracker

"git" can mean anything, depending on your mood.

- random three-letter combination that is pronounceable,
and not actually used by any common UNIX command.
The fact that it is a mispronounciation of "get" may or may not be relevant.
- stupid. contemptible and despicable. simple. Take your pick from the dictionary of slang.
- "global information tracker": you're in a good mood, and it actually works for you.
Angels sing, and a light suddenly fills the room.
*- "goddamn idiotic truckload of sh*t": when it breaks*

This is a stupid (but extremely fast) directory content manager.
It doesn't do a whole lot, but what it _does_ do is track directory contents efficiently.

- Linus Torvalds

Github

使用 Git 時，需要有地方可以存放檔案
而當今最常見的就是 Github，網站為 https://github.com
Github 除了提供儲存庫(repository，repo)供檔案存取
還提供了問題(issue)、動作(action)、維基(wiki)
分叉(fork)、拉取請求(pull request，簡稱 PR)等服務
使用 Github 相比直接使用 Git
更著重在一個網路上的第三者參與或貢獻(contribute)該儲存庫
而儲存庫擁有者(owner)則可以很方便的管理他人貢獻

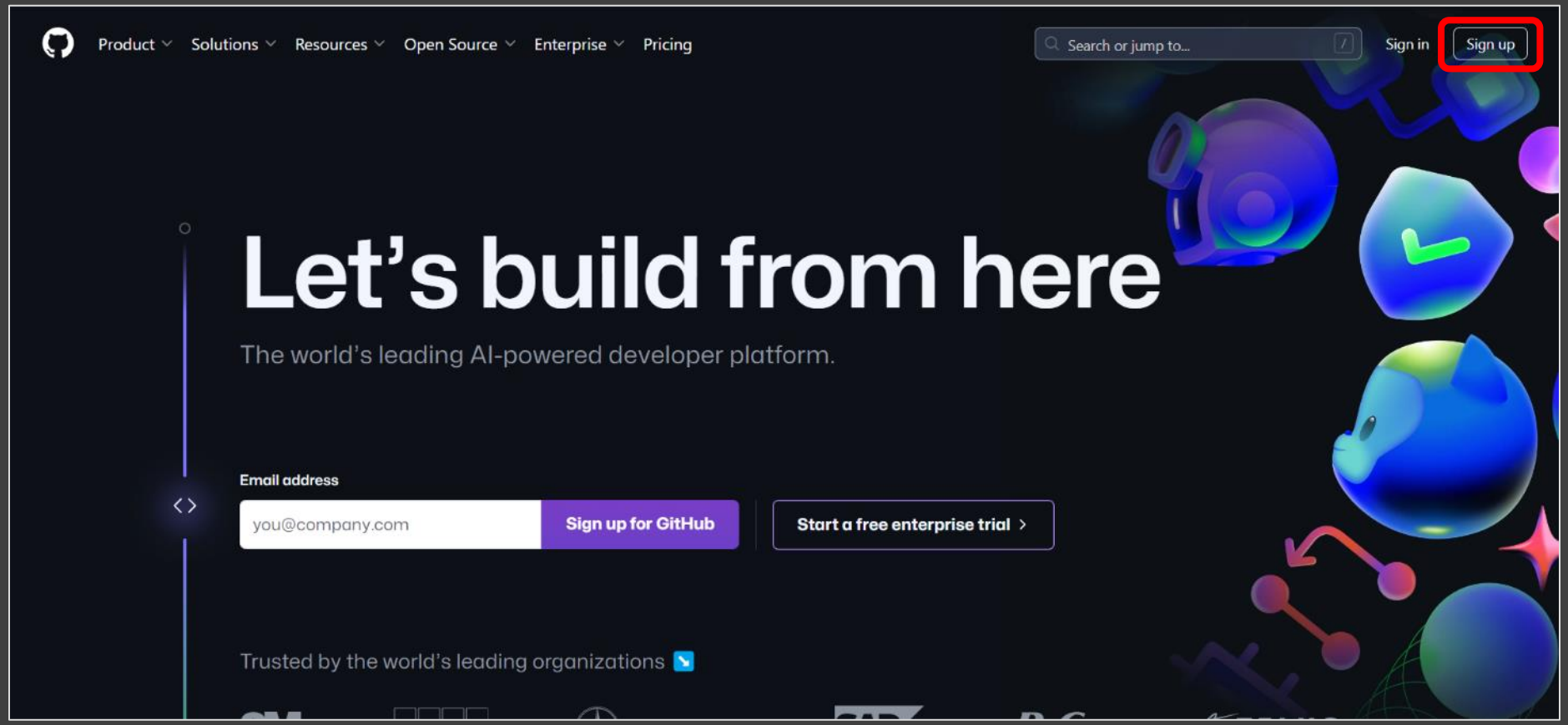
https://guthib.com/

Github 帳號註冊

Github 帳號註冊非常簡單

只要在 https://github.com 首頁右上方選擇 "Sign up"

接著依照指示即可完成註冊



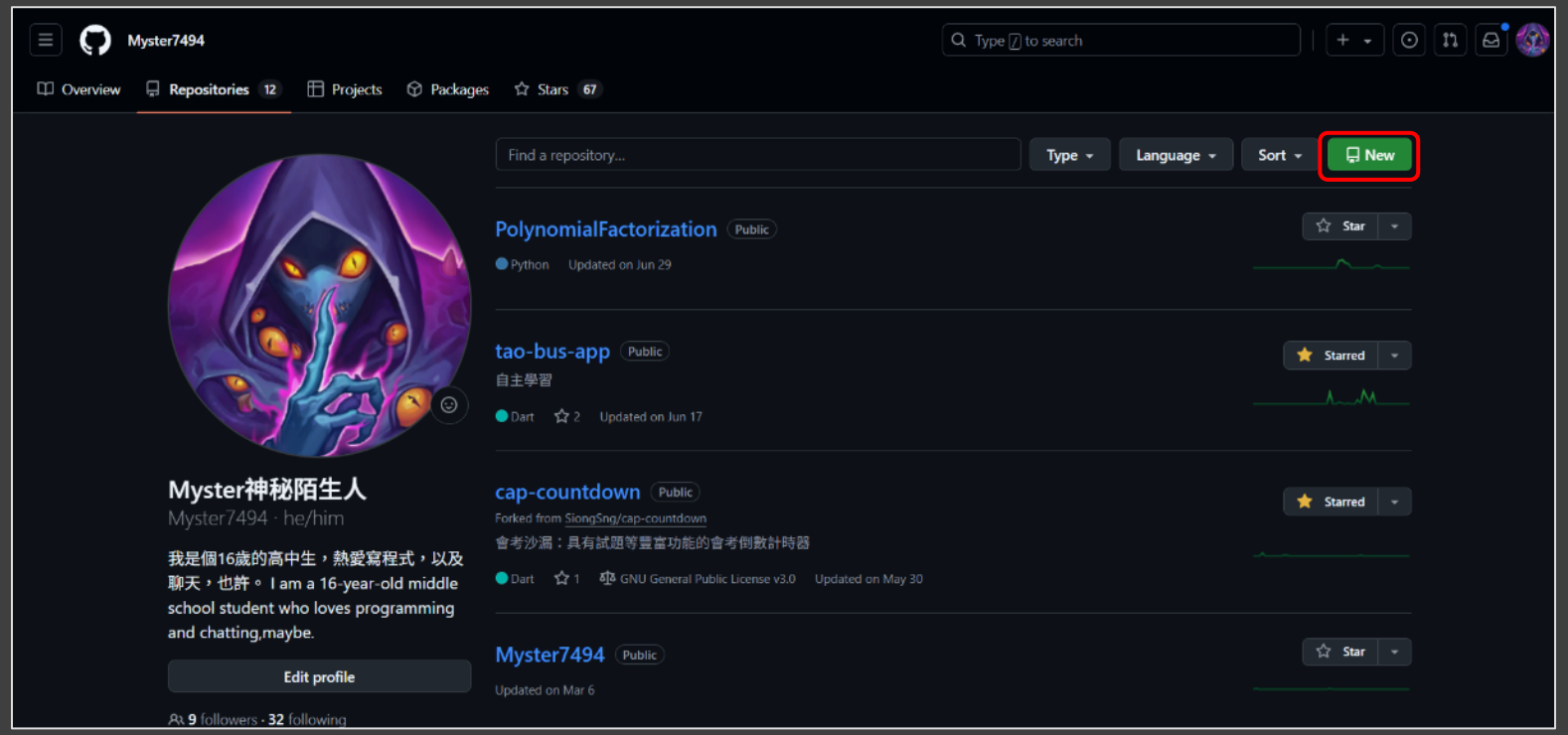
儲存庫

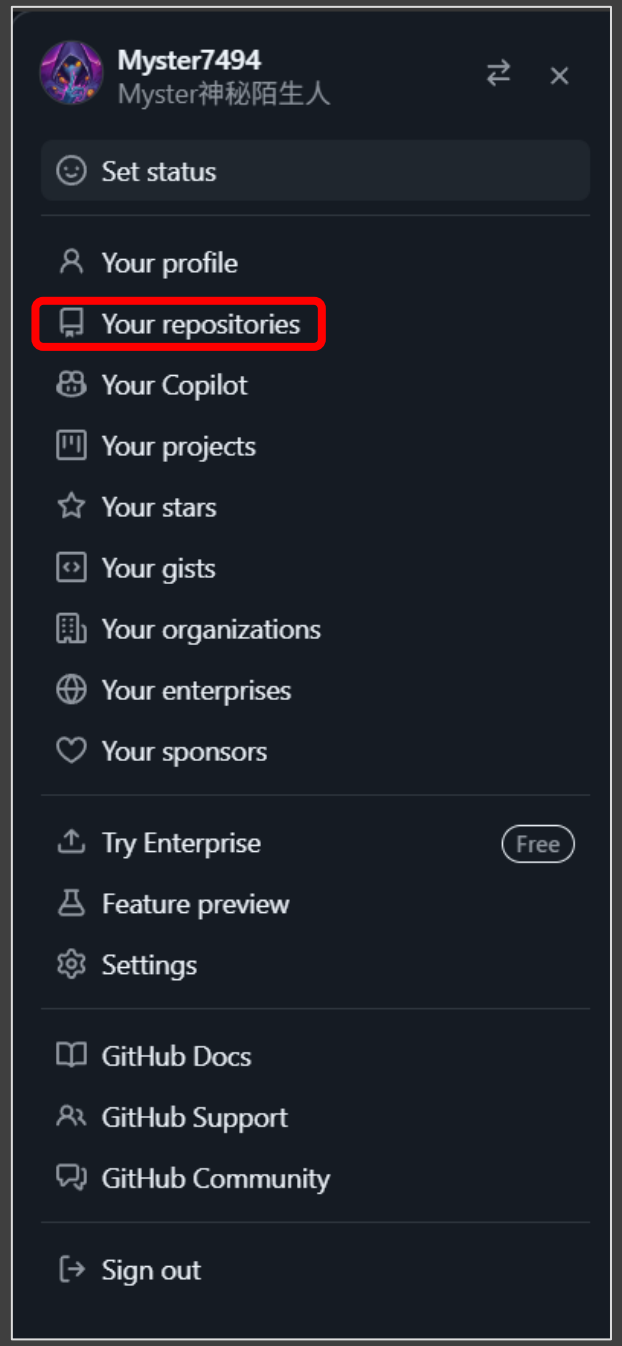
點選右上方頭像即會出現右方導覽欄

從右方導覽欄點選 "Your repositories"

即會顯示自己的所有儲存庫

點擊右上方 "New" 即可開始創建新儲存庫





創建儲存庫

按照說明填寫即可

星號(*) 表示必填

這些欄位或選項

在創建儲存庫後也可以更改

唯獨儲存庫名稱須謹慎填寫

創建後再更改儲存庫名稱

可能會造成一些問題

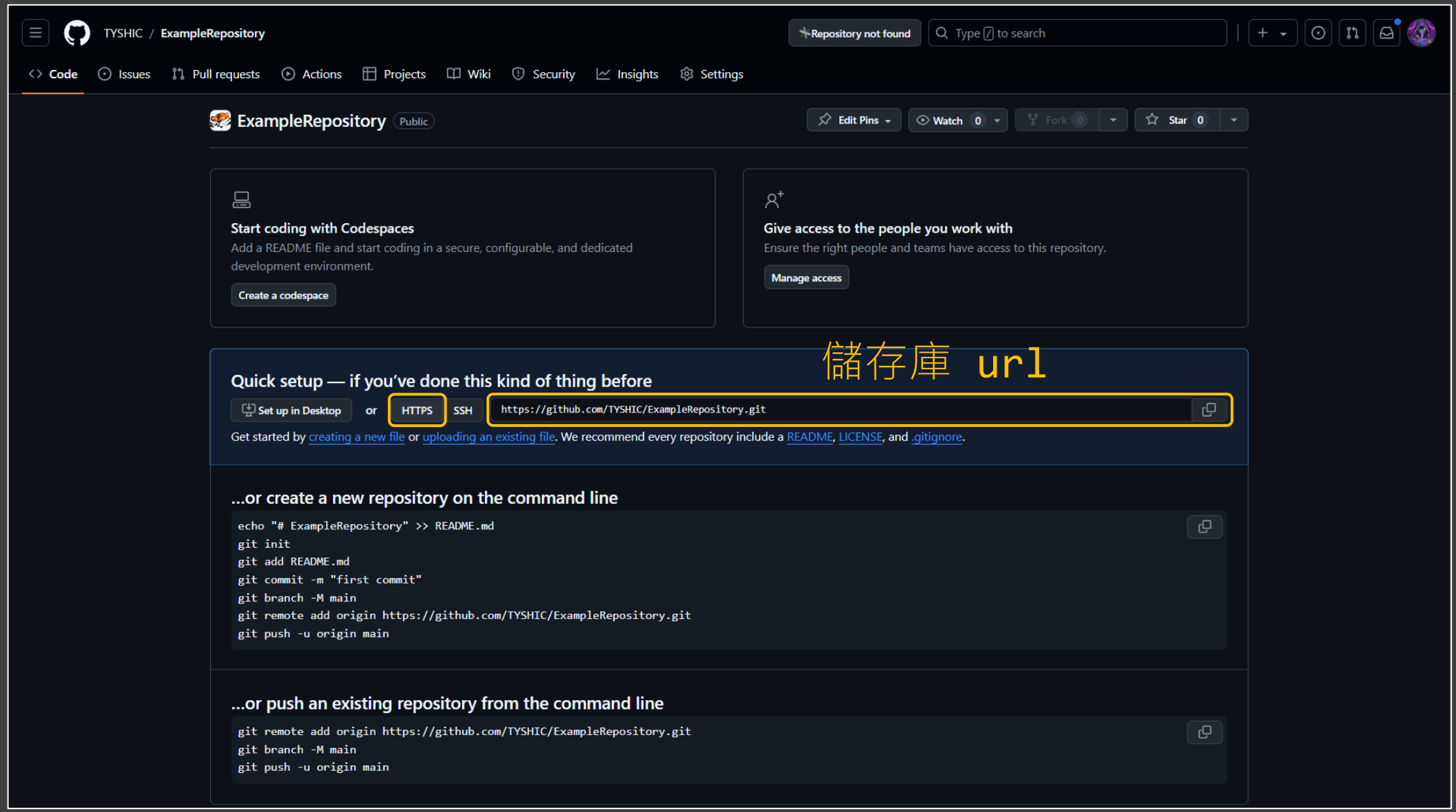
創建儲存庫

同樣按照說明填寫即可

內容填寫完成後
點擊右下角
"Create repository"
即完成創建儲存庫

創建儲存庫

創建好後會跳轉到該頁面



Git 登入

在第一次使用 Git 之前，我們必須先告訴 Git 我們是誰
使用下方 Git 指令用 Github 登入 Git：

```bash
git credential-manager github login
```

接著會彈出一個視窗
選擇 "Sign in with your brower"
然後在瀏覽器中登入 Github
或進行 Github 帳號授權

使用 Git

有了儲存庫之後，我們便可以開始上傳檔案
但要使用 Git 上傳檔案之前
電腦需要先與
在 Github 上的遠端儲存庫(remote repo)建立連線
使用 Git 指令建立連線最簡單的方式就是：

1. 複製(clone)遠端儲存庫到本地(local)
2. 進入複製下來的本地儲存庫(local repo)
3. 直接連線遠端儲存庫

複製遠端儲存庫

欲使用 Git 複製遠端儲存庫，須使用該 Git 指令：

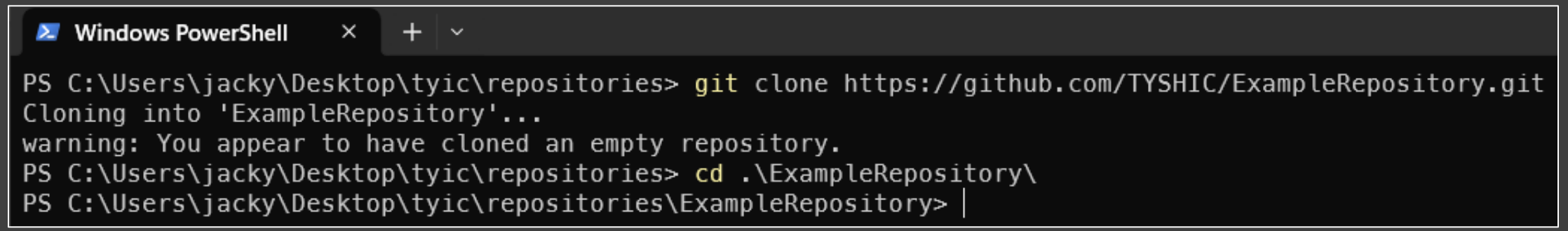
```bash
git clone 儲存庫url
```

使用該指令後會在
工作目錄(working directory)
出現一個新資料夾(folder)
名稱與儲存庫相同
即為本地儲存庫

進入本地儲存庫

欲進入本地儲存庫，須在本地儲存庫內開啟新的 bash
或在剛剛的 bash 中使用該 Windows / Unix 指令
該指令會切換當前 bash 的工作目錄至指定資料夾

```bash
cd 資料夾名稱
```



連線遠端儲存庫

在複製的本地儲存庫中
輸入下方 **Git** 指令即可直接連線遠端儲存庫：

```bash
git remote
```

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git remote
origin
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

Git 檔案狀態

Git 有四種檔案狀態：未追蹤(untrack)、未修改(unmodified)、未暫存(unstaged、Changes not staged for commit)、已暫存(staged、Changes to be committed)

可通過下方 Git 指令來查看當前的檔案狀態：

```bash
git status
```

提交時只會提交已暫存的檔案，且已暫存檔案提交後會變回未修改

而欲將未追蹤或未暫存的檔案變為已暫存，須使用下方 Git 指令：

特定資料夾或檔案：

```bash
git add 資料夾或檔案
```

所有檔案：

```bash
git add -A
```

所有已修改檔案：

```bash
git add -u
```

Git 檔案狀態

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main

No commits yet

nothing to commit (create/copy files and use "git add" to track)
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> echo "# 範例倉庫" > README.md
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README.md

nothing added to commit but untracked files present (use "git add" to track)
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git add .\README.md
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   README.md

PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

提交與推送

提交就是將本地儲存庫的變更變為新版本

每個提交都有一個編號

使用下方 Git 指令進行提交：

```bash
git commit -m "提交訊息"
```

提交只會儲存在本地儲存庫，不會自動推送(push)到遠端儲存庫

要推送提交到遠端儲存庫，須使用下方 Git 指令：

```bash
git push
```

Git 小遊戲

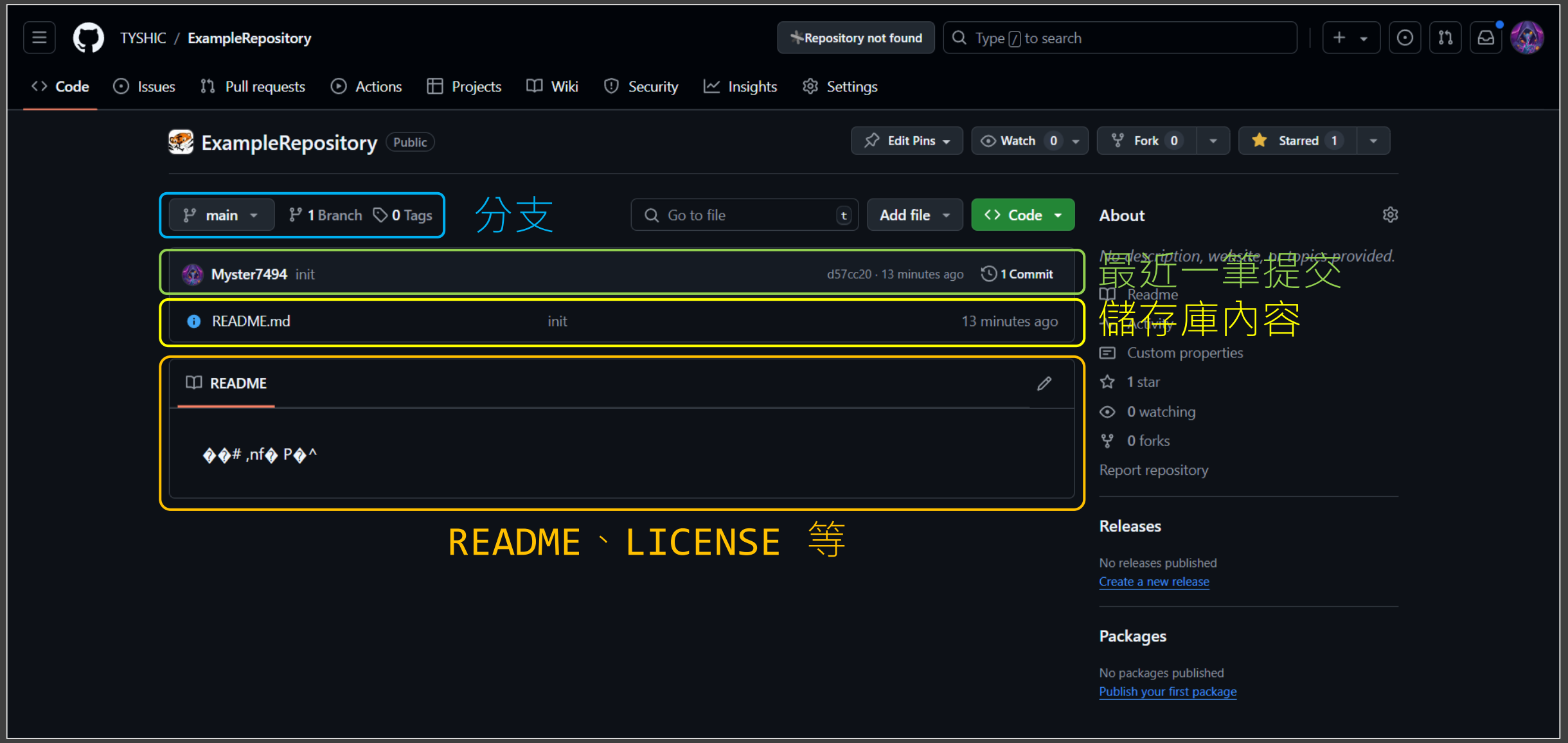
提交與推送

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git commit -m "init"
[main (root-commit) d57cc20] init
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 README.md
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git push
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 232 bytes | 232.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/TYSHIC/ExampleRepository.git
 * [new branch]      main -> main
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

提交訊息

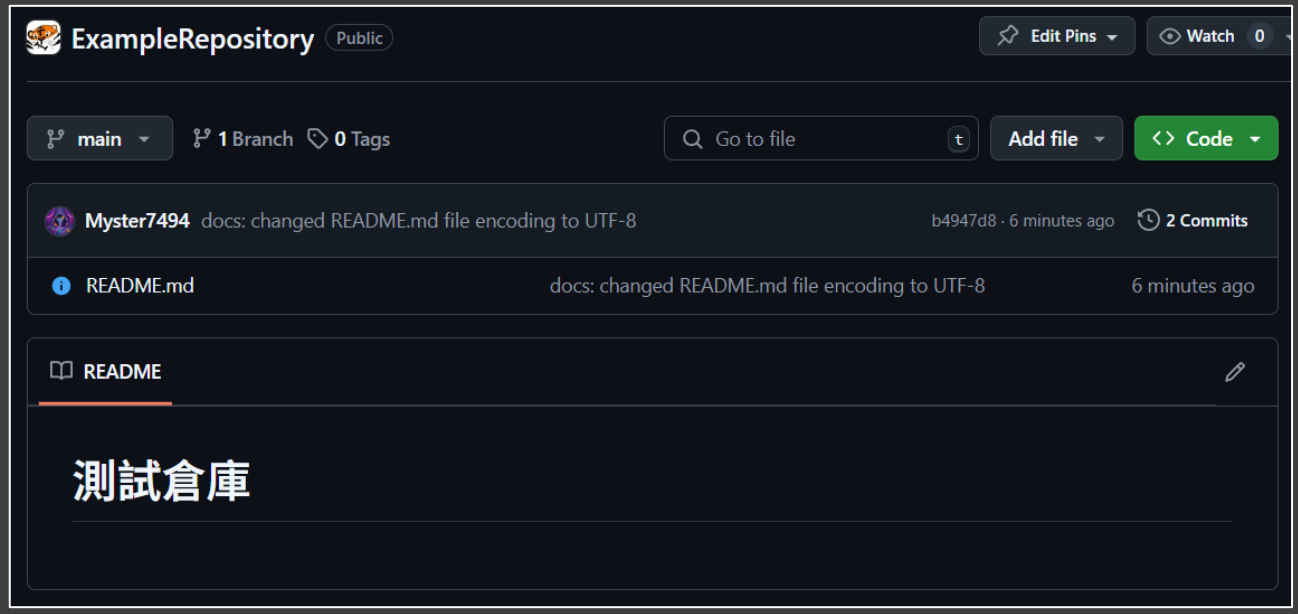
提交訊息最好要寫清楚該提交到底做了什麼
但也必須保持精簡
常見的寫法是 "提交種類: 簡單說明"
提交種類有：feat(feature，新功能)、fix(修復錯誤)
docs(documentation，更新說明)、style(格式變更)
refactor(重構)、chore(雜項)、revert(撤回提交) 等
但在首次提交，常常使用 "init" 或 "initial commit"

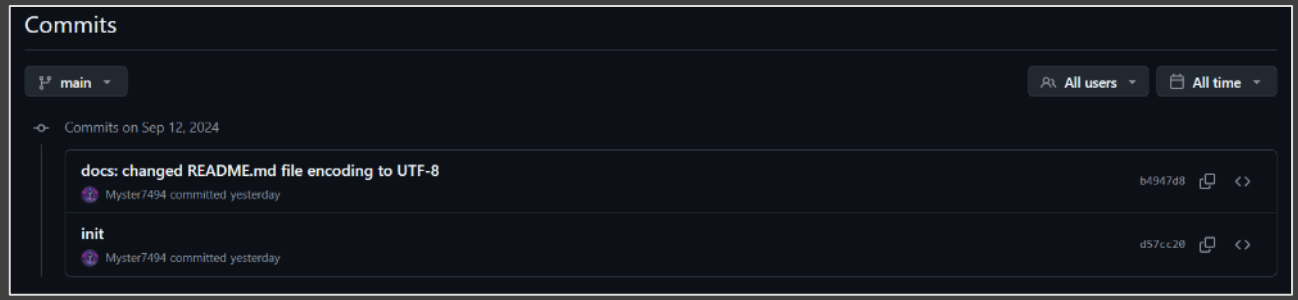
提交與推送


TYSHIC / ExampleRepository
Repository not found
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
ExampleRepository
Public
Edit Pins
Watch 0
Fork 0
Starred 1
main
1 Branch
0 Tags
分支
Go to file
t
Add file
Code
Myster7494 init
d57cc20 · 13 minutes ago
1 Commit
README.md
init
13 minutes ago
README
最近一筆提交
儲存庫內容
README、LICENSE 等
About
No description, website, or topics provided.
Readme
Activity
Custom properties
1 star
0 watching
0 forks
Report repository
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package

提交與推送

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git add -u
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   README.md

PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git commit -m
"docs: changed README.md file encoding to U
TF-8"
[main b4947d8] docs: changed README.md file encoding to UTF-8
 1 file changed, 0 insertions(+), 0 deletions(-)
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 296 bytes | 296.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/TYSHIC/ExampleRepository.git
   d57cc20..b4947d8  main -> main
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```





分支

分支是一個指標，指向某個提交(版本)

在某個分支上做的修改和提交不會影響到其他分支

每個儲存庫至少要一個分支

通常名稱為 "main" 或 "master"

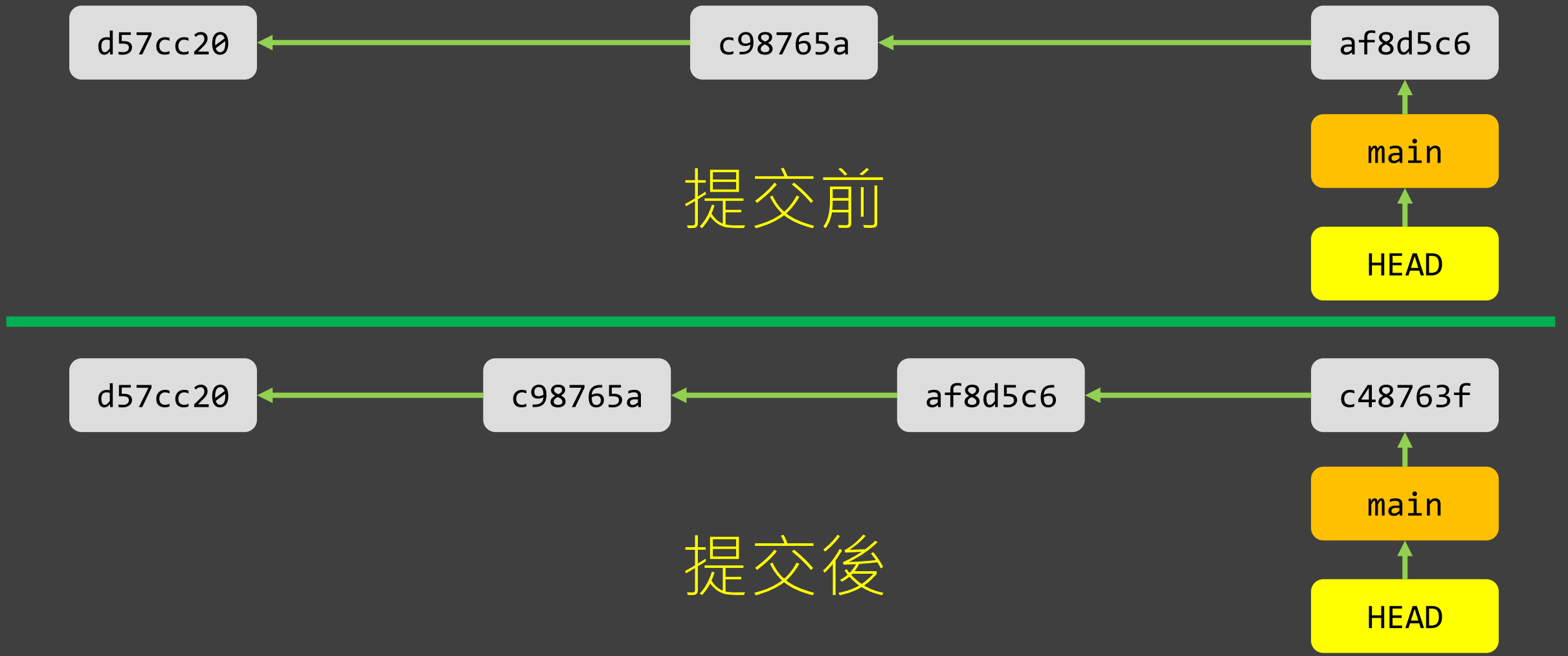
在分支出現新提交後，分支會指向新提交

"HEAD" 是一個指標，指向某個分支

指向的分支即成為當前分支

提交只會提交到當前分支上

單分支

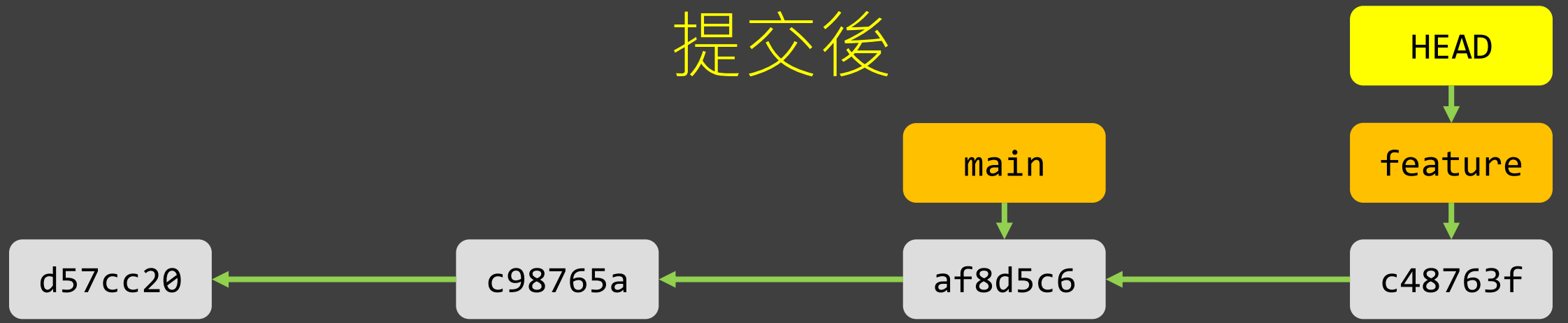

d57cc20
c98765a
af8d5c6
main
HEAD
提交前
d57cc20
c98765a
af8d5c6
c48763f
main
HEAD
提交後

多分支

提交前


HEAD
feature
d57cc20
c98765a
af8d5c6
main

提交後


HEAD
main
feature
d57cc20
c98765a
af8d5c6
c48763f

新建與切換分支

欲新建分支，須使用下方 Git 指令：

```bash
git branch 新分支名稱
```

該指令會新建一個分支，且指向當前分支指向的提交

HEAD 不會自動指向新分支，即新分支不會自動成為當前分支

欲使 HEAD 指向某個分支，即讓某個分支成為當前分支

也就是切換分支，須使用下方 Git 指令：

```bash
git checkout 目標分支名稱
```

或

```bash
git switch 目標分支名稱
```

切換分支之後，資料夾內的檔案都會被替換成該分支的檔案

推送與刪除分支

在推送本地儲存庫的未追蹤的分支或新分支到遠端儲存庫時
需在推送時加上 "-u" 引數：

```bash
git push -u origin 分支名稱
```

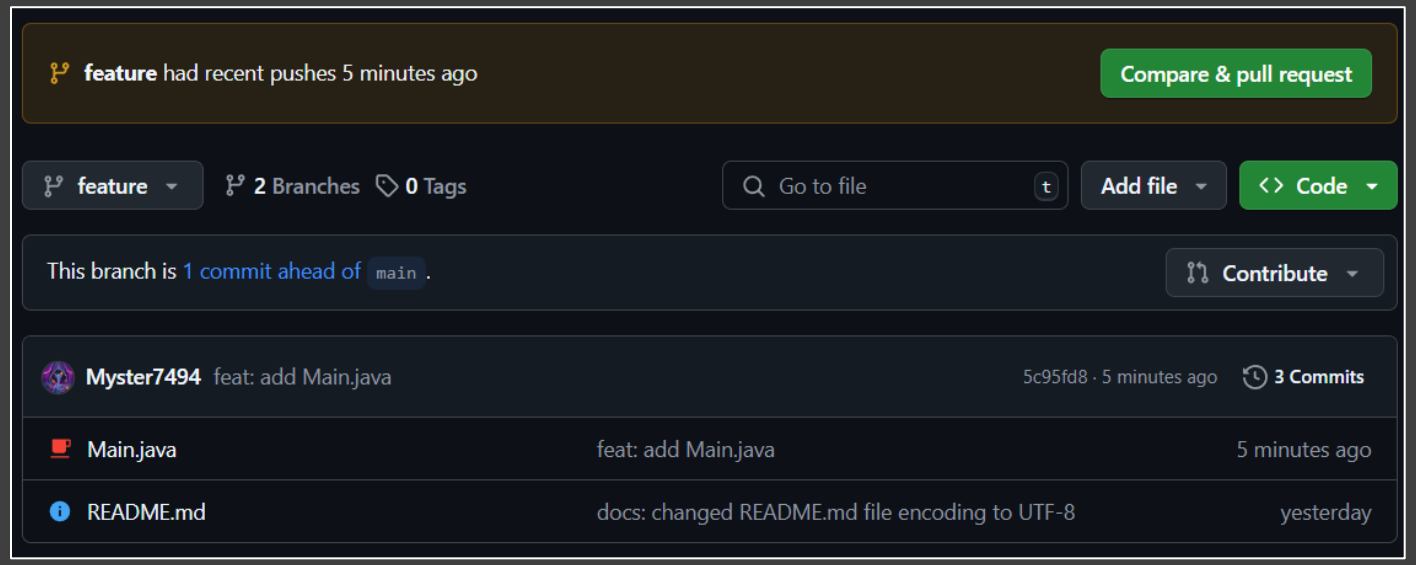
這會使得本地儲存庫的分支追蹤遠端儲存庫的分支
若在遠端儲存庫上沒有此分支，則會在遠端儲存庫上創建該分支

若要刪除分支，須切換到其他分支，並使用下方 Git 指令：

```bash
git branch -d 分支名稱
```

分支

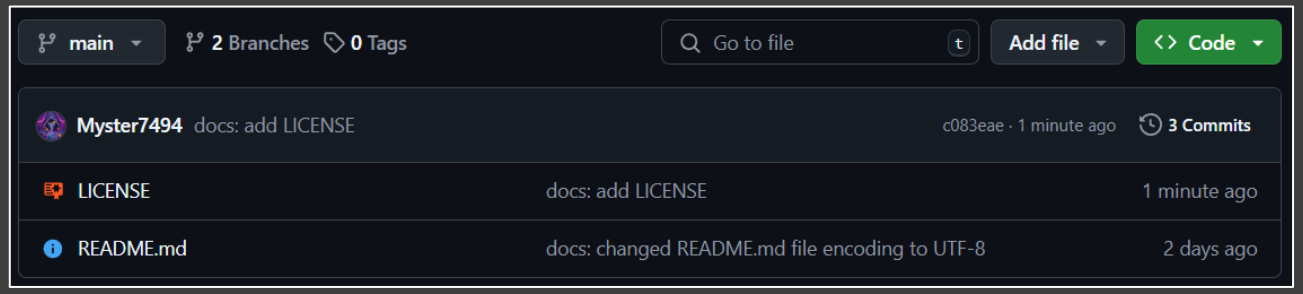
```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> dir


    目錄: C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        2024/9/12  下午 11:32             16 README.md


PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git branch feature
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git switch feature
Switched to branch 'feature'
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> dir


    目錄: C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        2024/8/15  下午 02:05            326 Main.java
-a----        2024/9/12  下午 11:32             16 README.md


PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git add Main.java
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git commit -m "feat: add Main.java"
[feature 5c95fd8] feat: add Main.java
 1 file changed, 11 insertions(+)
 create mode 100644 Main.java
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git push -u origin feature
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 20 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 538 bytes | 134.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'feature' on GitHub by visiting:
remote:      https://github.com/TYSHIC/ExampleRepository/pull/new/feature
remote:
To https://github.com/TYSHIC/ExampleRepository.git
 * [new branch]      feature -> feature
branch 'feature' set up to track 'origin/feature'.
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

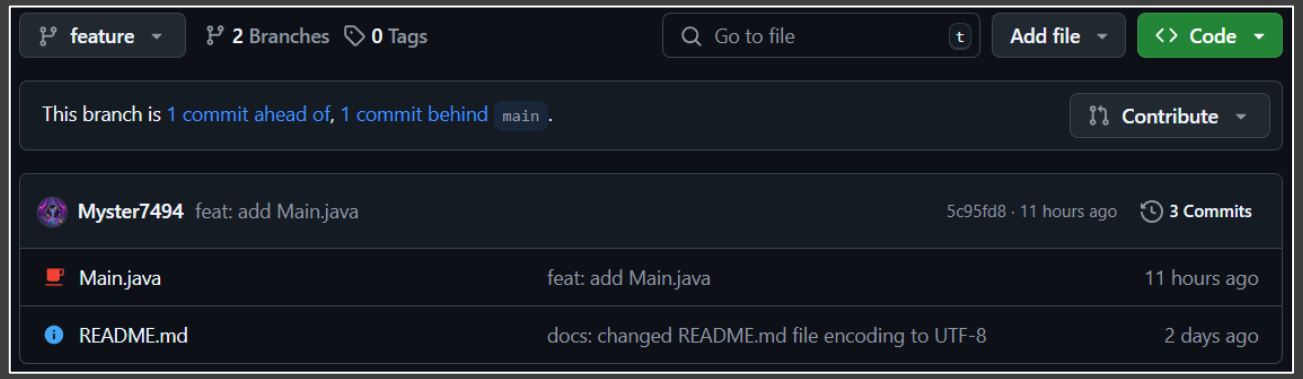



```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git switch main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> dir


    目錄: C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        2024/9/12  下午 11:32             16 README.md


PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

分支

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> dir


    目錄: C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        2024/9/12  下午 11:32             16 README.md


PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git add -A
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   LICENSE

PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git commit -m "docs: add LICENSE"
[main c083eae] docs: add LICENSE
 1 file changed, 32 insertions(+)
 create mode 100644 LICENSE
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 20 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 1.15 KiB | 1.15 MiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/TYSHIC/ExampleRepository.git
   b4947d8..c083eae  main -> main
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```





合併

若想將兩個分支合在一起，可以考慮合併(merge)

使用下方 Git 指令進行合併：

```bash
git merge 合併分支名稱 -m "提交訊息"
```

這會將合併分支的修改添加到當前分支，並自動提交

若當前分支為合併分支的親代提交

則只會將當前分支指向合併分支，而不會進行產生新提交

但若合併的兩個分支對同一處都進行了修改

就會發生合併衝突(merge conflict)，合併中止

需要手動修改有衝突的地方並手動提交，才能順利完成合併

補充：合併衝突解決

在發生衝突時，打開發生衝突的檔案，會發現下方區段：

```text
<<<<<<< HEAD:衝突檔案
當前分支的衝突內容
=======
合併分支的衝突內容
>>>>>>> 合併分支:衝突檔案
```

將這整段文字刪除，並改為想要的內容

編輯完成後，再使用下方 Git 指令標記解決：

```bash
git add 衝突檔案
```

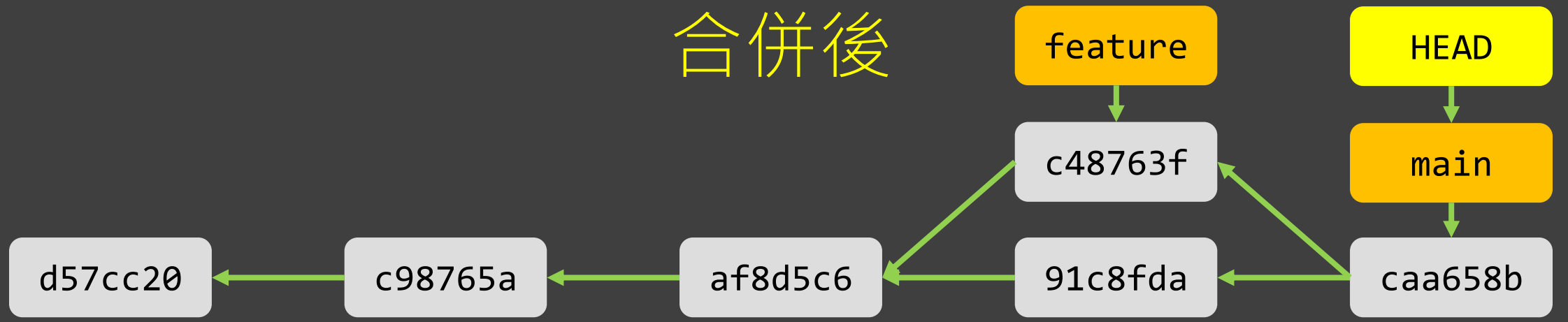
解決衝突後再手動提交即可完成合併

合併

合併 feature 到 main

合併前

合併後



合併

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git merge feature  -m "Merge branch 'feature' into main"
Merge made by the 'ort' strategy.
 Main.java | 11 ++++++++++
 1 file changed, 11 insertions(+)
 create mode 100644 Main.java
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 20 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 343 bytes | 343.00 KiB/s, done.
Total 2 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/TYSHIC/ExampleRepository.git
   c083eae..7f70e34  main -> main
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

拉取

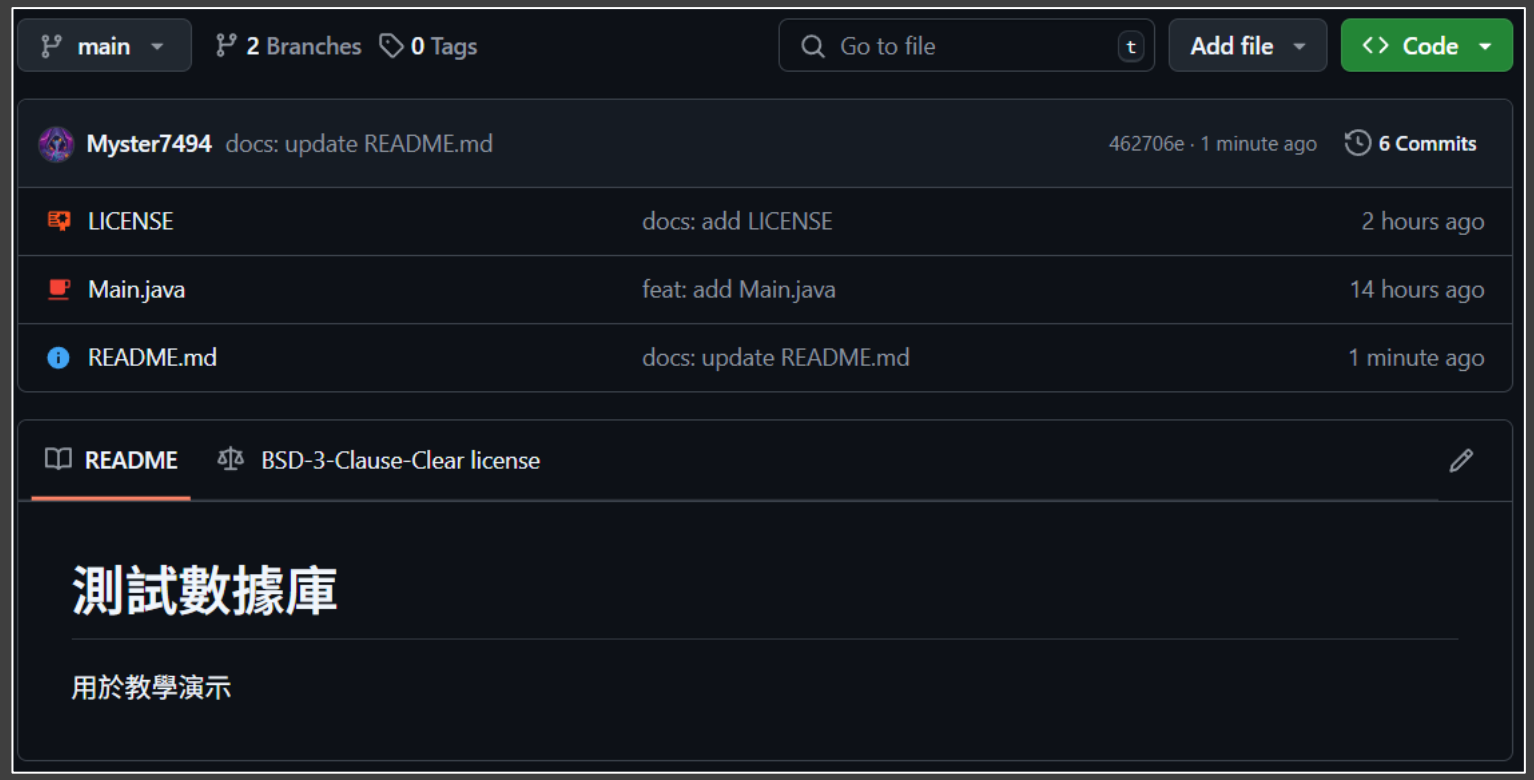
如果當前分支在遠端儲存庫有了新提交
本地儲存庫就必須拉取(pull)當前分支的新提交
使用下方 Git 指令來拉取新提交：

```bash
git pull
```

在當前分支未拉取前
無法將本地儲存庫變更提交到遠端儲存庫
若本地儲存庫已有新提交才進行拉取
則會將本地儲存庫新提交的親代提交變為遠端儲存庫的新提交
並且可能會出現合併衝突

拉取

遠端儲存庫
更改 README.md
本地儲存庫
拉取該提交

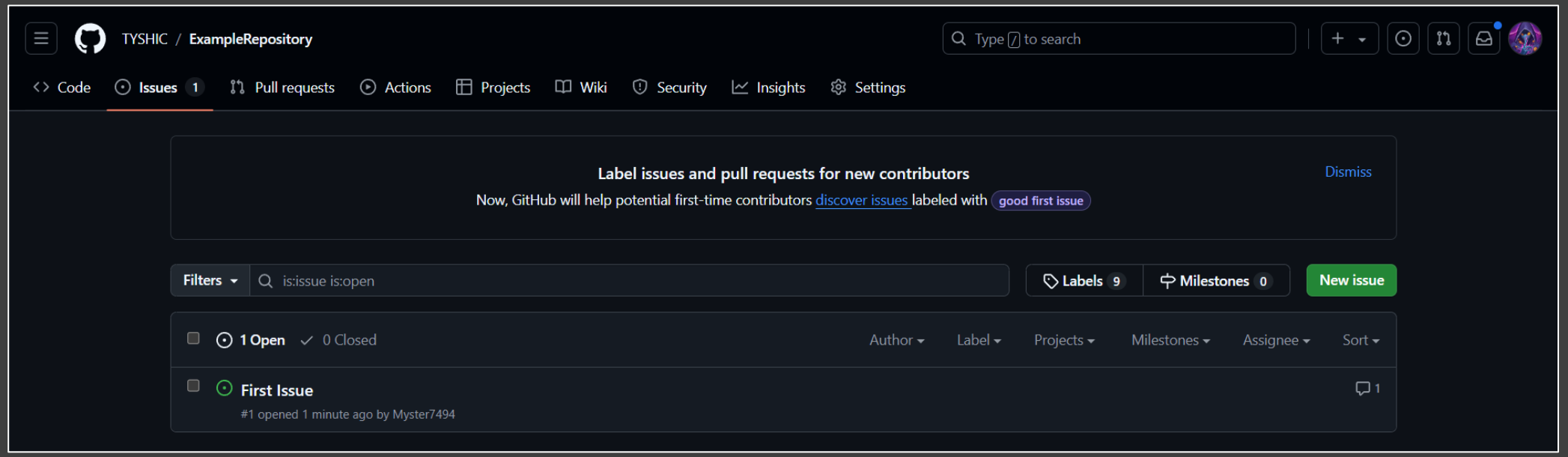


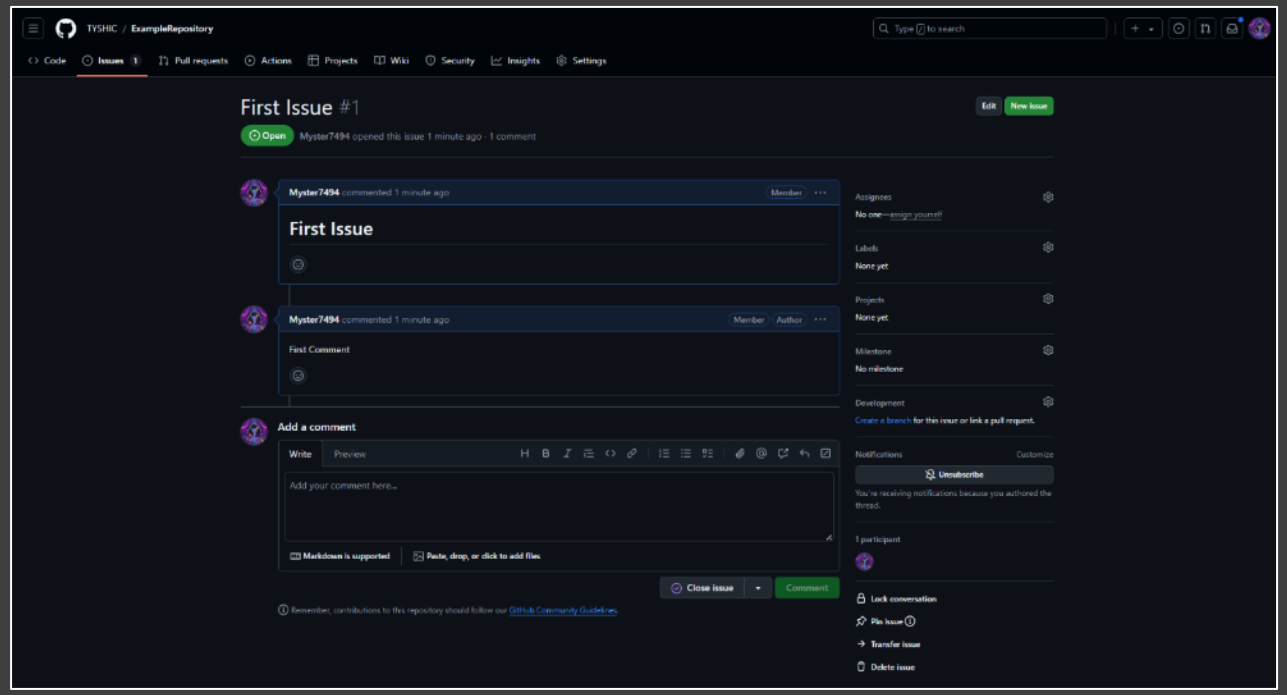

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 983 bytes | 245.00 KiB/s, done.
From https://github.com/TYSHIC/ExampleRepository
   7f70e34..462706e  main       -> origin/main
Updating 7f70e34..462706e
Fast-forward
 README.md | 4 +++-
 1 file changed, 3 insertions(+), 1 deletion(-)
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```

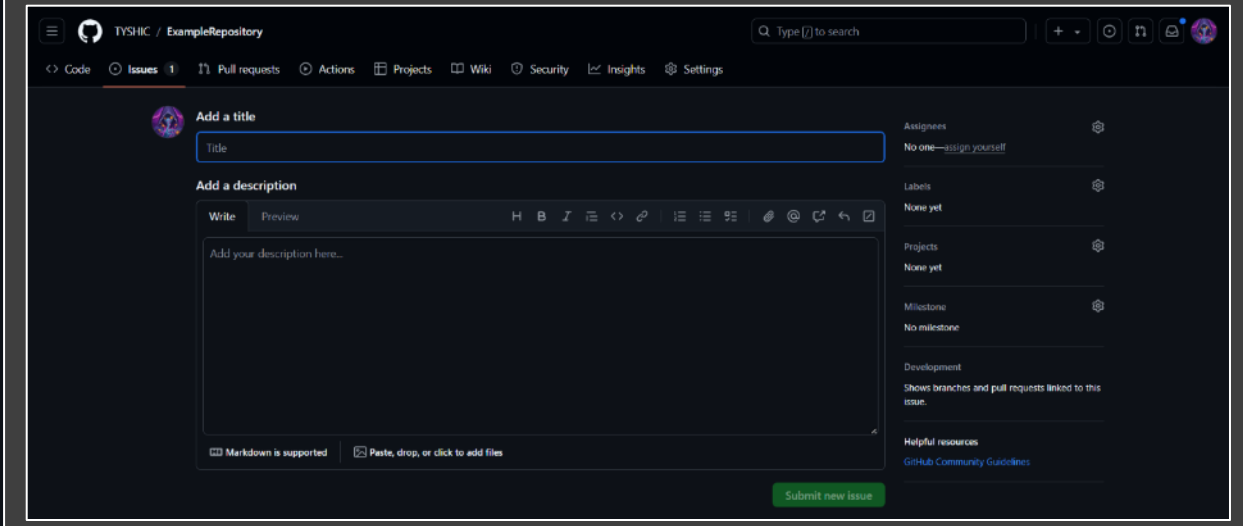
Github 功能


問題
動作
維基
設定
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Type / to search
程式碼
拉取請求
洞察
分叉
星星
Public
Edit Pins
Watch 0
Fork 0
Starred 1
main
2 Branches
0 Tags
Go to file
t
Add file
Code
About
關於
No description, website, or topics provided.
Myster7494 docs: update README.md
462706e · 37 minutes ago
6 Commits
LICENSE
docs: add LICENSE
3 hours ago
Main.java
feat: add Main.java
14 hours ago
README.md
docs: update README.md
37 minutes ago
README
BSD-3-Clause-Clear license
Readme
BSD-3-Clause-Clear license
Activity
Custom properties
1 star
0 watching
0 forks
Report repository

問題


TYSHIC / ExampleRepository
Type / to search
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Label issues and pull requests for new contributors
Dismiss
Now, GitHub will help potential first-time contributors discover issues labeled with good first issue
Filters
is:issue is:open
Labels 9
Milestones 0
New issue
1 Open
0 Closed
Author
Label
Projects
Milestones
Assignee
Sort
First Issue
#1 opened 1 minute ago by Myster7494
1


First Issue #1
Open
Myster7494 opened this issue 1 minute ago · 1 comment
Edit
New issue
Myster7494 commented 1 minute ago
Member
First Issue
Myster7494 commented 1 minute ago
Member
Author
First Comment
Add a comment
Write
Preview
Add your comment here...
Markdown is supported
Paste, drop, or click to add files
Close issue
Comment
Assignees
No one—assign yourself
Labels
None yet
Projects
None yet
Milestone
No milestone
Development
Notifications
Customize
Unsubscribe
1 participant
Lock conversation
Pin issue
Transfer issue
Delete issue


TYSHIC / ExampleRepository
Type / to search
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Add a title
Title
Add a description
Write
Preview
Add your description here...
Markdown is supported
Paste, drop, or click to add files
Assignees
No one—assign yourself
Labels
None yet
Projects
None yet
Milestone
No milestone
Development
Shows branches and pull requests linked to this issue.
Helpful resources
GitHub Community Guidelines
Submit new issue

分叉

分叉(fork)就是
把別人的儲存庫
複製一份變成自己的
點擊右上角
"Fork" 按鈕
即可分叉該儲存庫

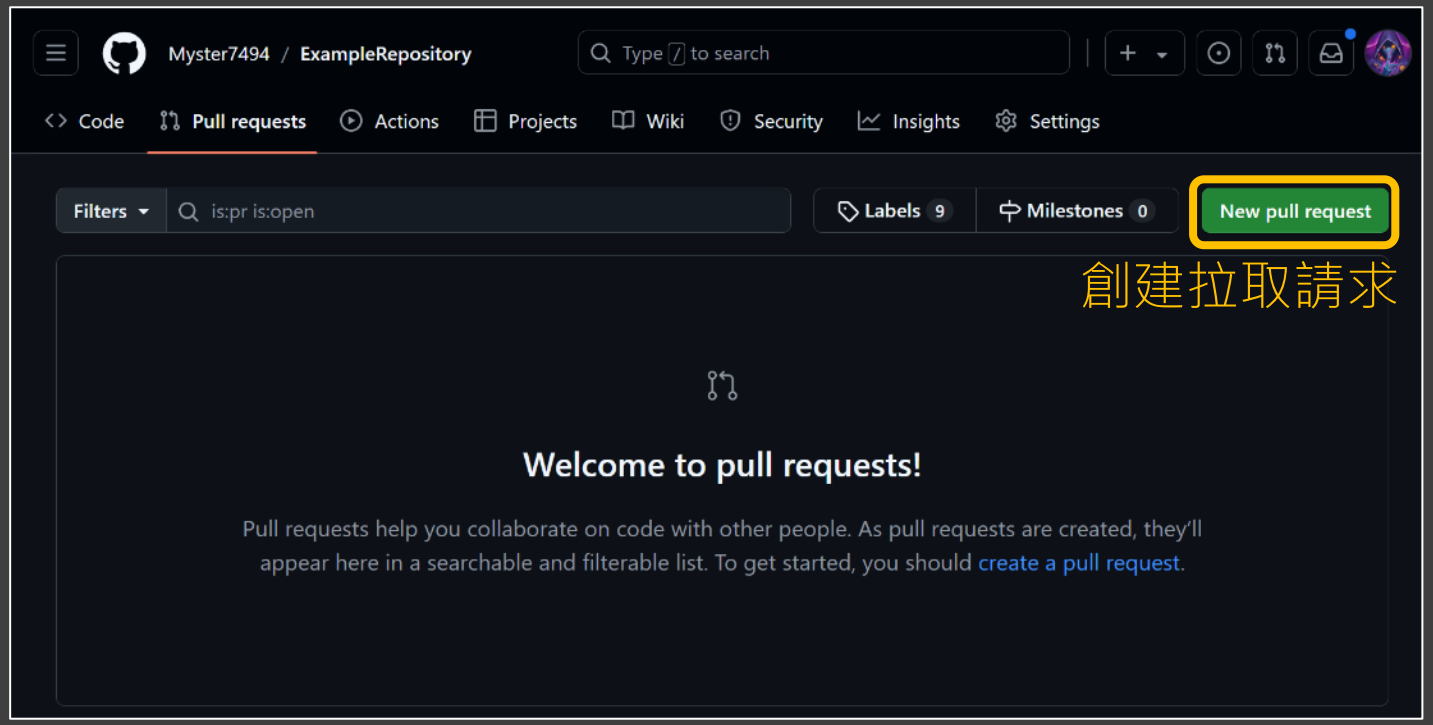
拉取請求

拉取請求(pull request，簡稱 PR)與拉取沒什麼大關係

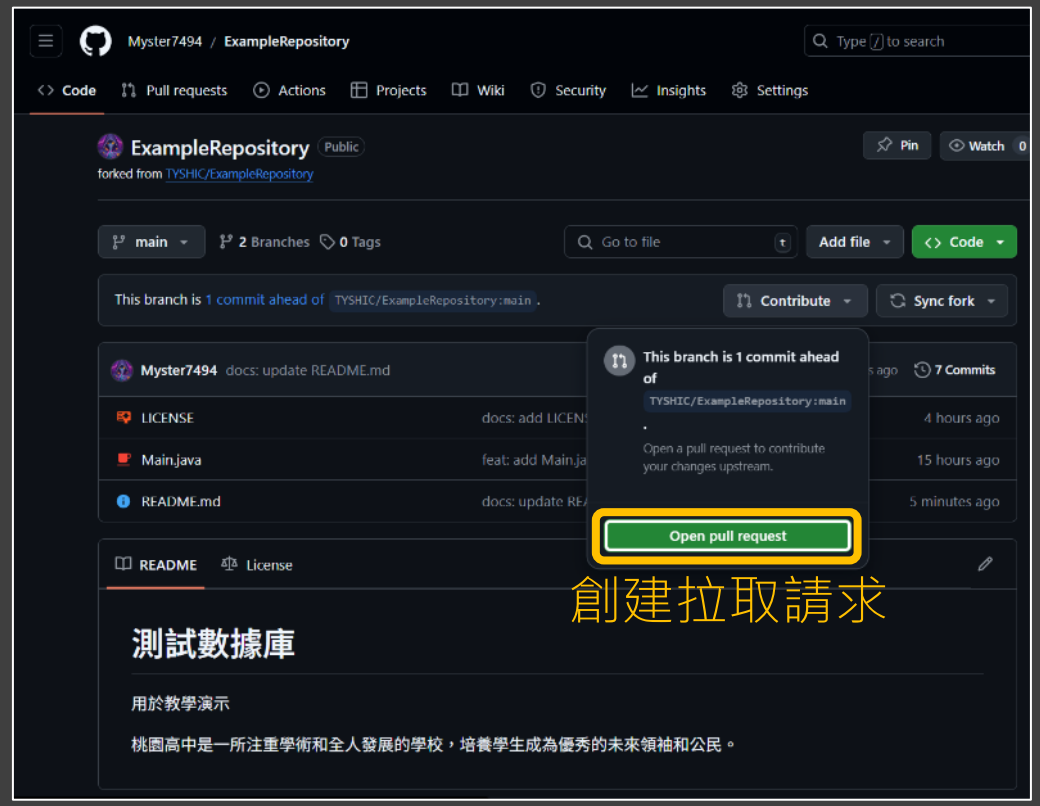
實際上就是請求(request)儲存庫擁有者合併某個分支

包括該儲存庫的分支或是分叉儲存庫的分支

可在拉取請求頁面或分支創建拉取請求

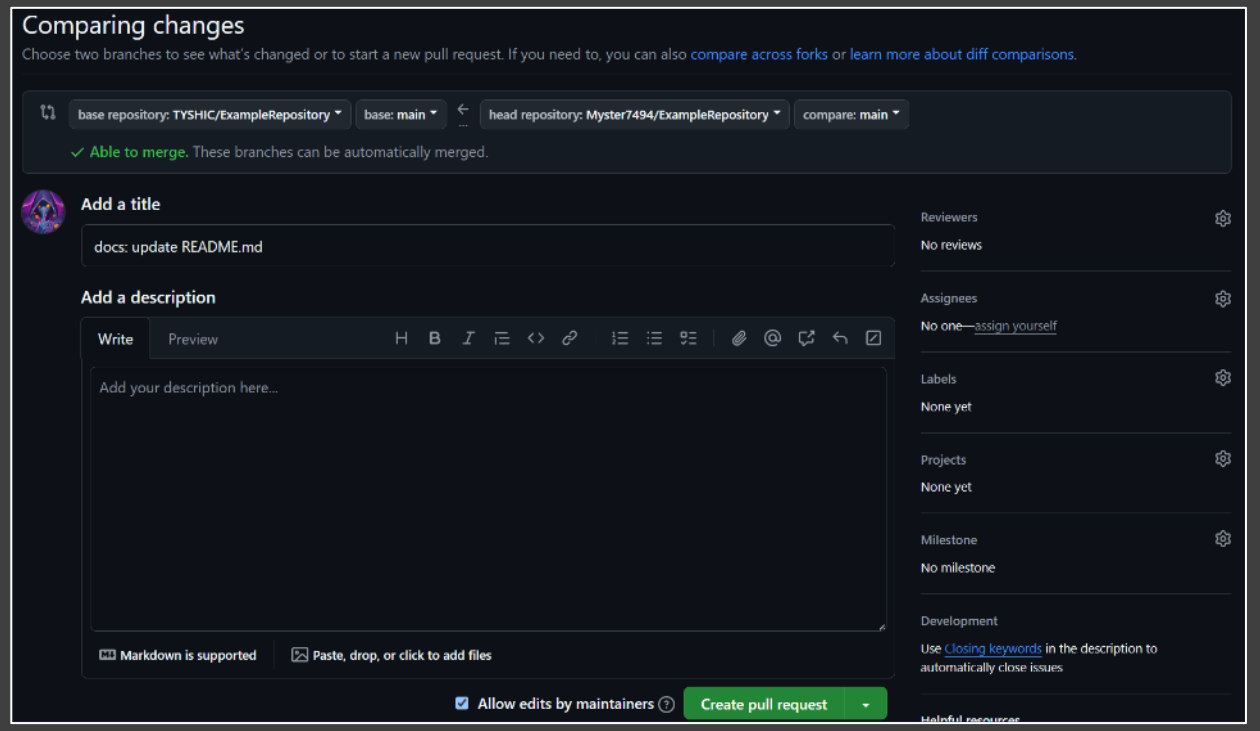


創建拉取請求



創建拉取請求

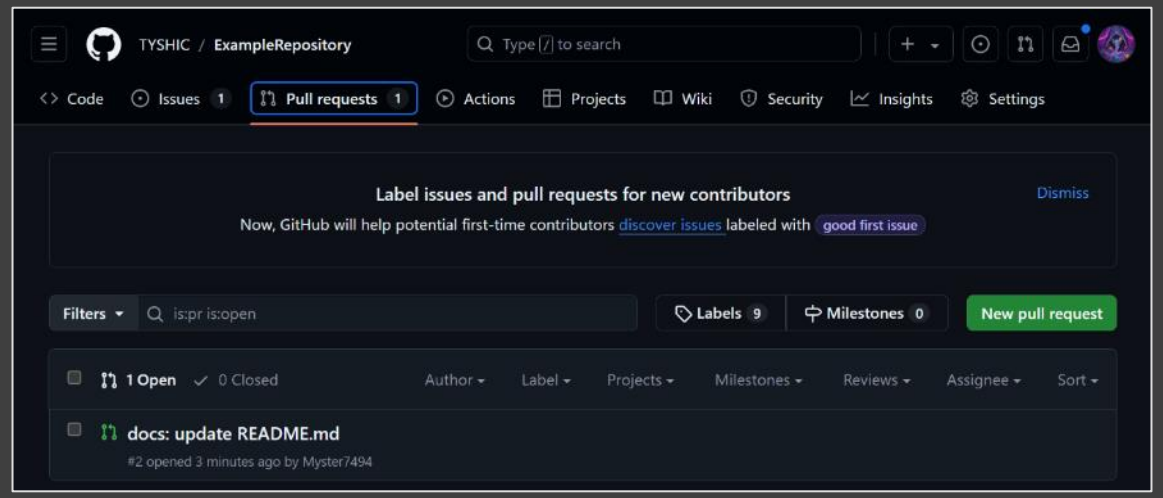
創建拉取請求

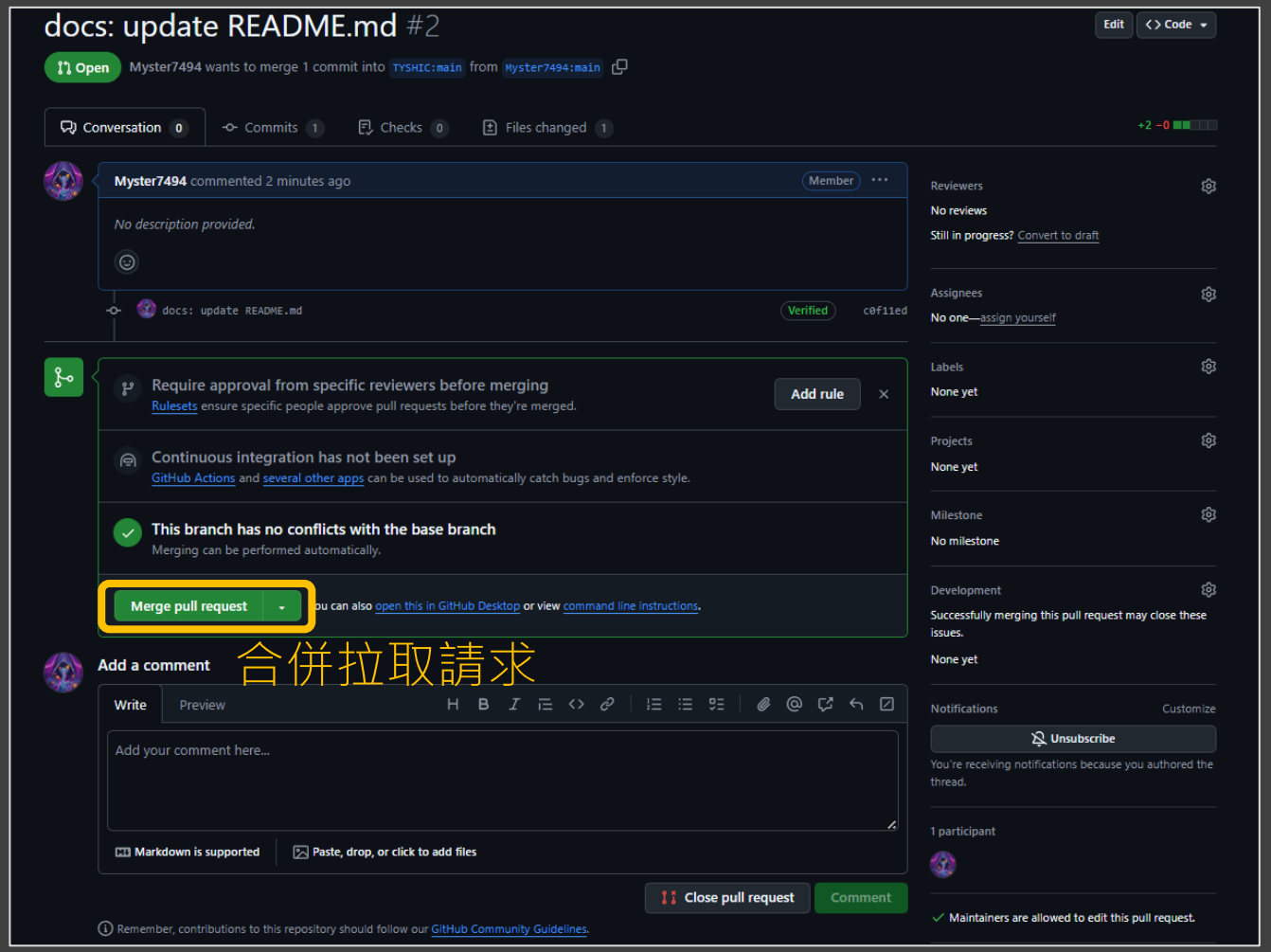

Comparing changes
Choose two branches to see what's changed or to start a new pull request. If you need to, you can also compare across forks or learn more about diff comparisons.
base repository: TYSHIC/ExampleRepository
base: main
head repository: Myster7494/ExampleRepository
compare: main
✓ Able to merge. These branches can be automatically merged.
Add a title
docs: update README.md
Add a description
Write
Preview
Add your description here...
Markdown is supported
Paste, drop, or click to add files
Allow edits by maintainers
Create pull request
Reviewers
No reviews
Assignees
No one—assign yourself
Labels
None yet
Projects
None yet
Milestone
No milestone
Development
Use Closing keywords in the description to automatically close issues


1 commit
1 file changed
1 contributor
Commits on Sep 14, 2024
docs: update README.md
Myster7494 committed 13 minutes ago
Verified
c0f11ed
Showing 1 changed file with 2 additions and 0 deletions.
Split
Unified
2 README.md
@@ -1,3 +1,5 @@
# 測試數據庫
用於教學演示
測試數據庫
用於教學演示
+
+ 桃園高中是一所注重學術和全人發展的學校，培養學生成為優秀的未來領袖和公民。

同意拉取請求

創建拉取請求後
儲存庫擁有者便可在拉取請求頁面
看到該拉取請求
並可選擇合併拉取請求或其他動作





.gitignore

若有些檔案只想留在本地儲存庫
而不想被上傳到遠端儲存庫
可以創建 .gitignore 檔案
其就是一個名稱為 ".gitignore" 的文字文件
可以在其中定義排除的路徑(path)，路徑可為檔案或目錄
但須注意，.gitignore 檔案只能排除未追蹤的檔案
已追蹤的檔案是無法被排除的

.gitignore

.gitignore 檔案的格式如下：

1. 以 '#' 開頭行為註解，否則為排除路徑
2. 路徑以 '/' 開頭表示路徑相對於此 .gitignore 檔案
   否則該路徑可以相對於任何位置
4. 路徑中間的 '/' 用於分隔目錄
5. 路徑以 '/' 結尾表示只會排除目錄
6. '*' 可以表示任何不包含 '/' 的文字
7. '?' 可以表示任何不包含 '/' 的字元(一個字)
8. "[]" 可以表示中括號內的任一字元(一個字)
9. 路徑以 "**/" 開頭表示該路徑可以相對於任何位置
10. 路徑以 "/**" 結尾表示該路徑指向的目錄內的任何東西
11. 路徑中間的 "/**/" 表示中間可以有任意多層任意目錄

```
# gradle
.gradle/
build/
out/
classes/

# eclipse
*.launch

# idea
.idea/
*.iml
*.ipr
*.iws

# vscode
.settings/
.vscode/
bin/
.classpath
.project

# macos
*.DS_Store

# fabric
run/

# java
hs_err_*.log
replay_*.log
*.hprof
*.jfr
```

.gitignore

.gitignore

```
# .gitignore file
/hi.txt
```

.gitignore

```
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> dir


    Directory: C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----          2024/9/9  下午 10:58           1722 LICENSE
-a----         2024/9/14  下午 12:28            326 Main.java
-a----         2024/9/14  下午 03:05             41 README.md


PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> dir


    Directory: C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----         2024/9/15  下午 05:45              7 .gitignore

-a----         2024/9/15  下午 05:45              2 hi.txt

-a----          2024/9/9  下午 10:58           1722 LICENSE

-a----         2024/9/14  下午 12:28            326 Main.java

-a----         2024/9/14  下午 03:05             41 README.md



PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository> git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .gitignore

nothing added to commit but untracked files present (use "git add" to track)
PS C:\Users\jacky\Desktop\tyic\repositories\ExampleRepository>
```