

# Lab0-2

## Git - Branch Merge Conflict

本節目的：

- 連結 GitHub Classroom
- 創立新的分支(Branch) Develop。
- 合併(Merge)分支 Develop → Master。
- 了解如何解決分支合併時的衝突(Conflict)。

## 0.1 實戰演練

- 連接 Github Classroom
- 創立新的分支
- 合併(Merge)分支
- 解決分支合併時的衝突(Conflict)

### 0.1.1 連接 Github Classroom

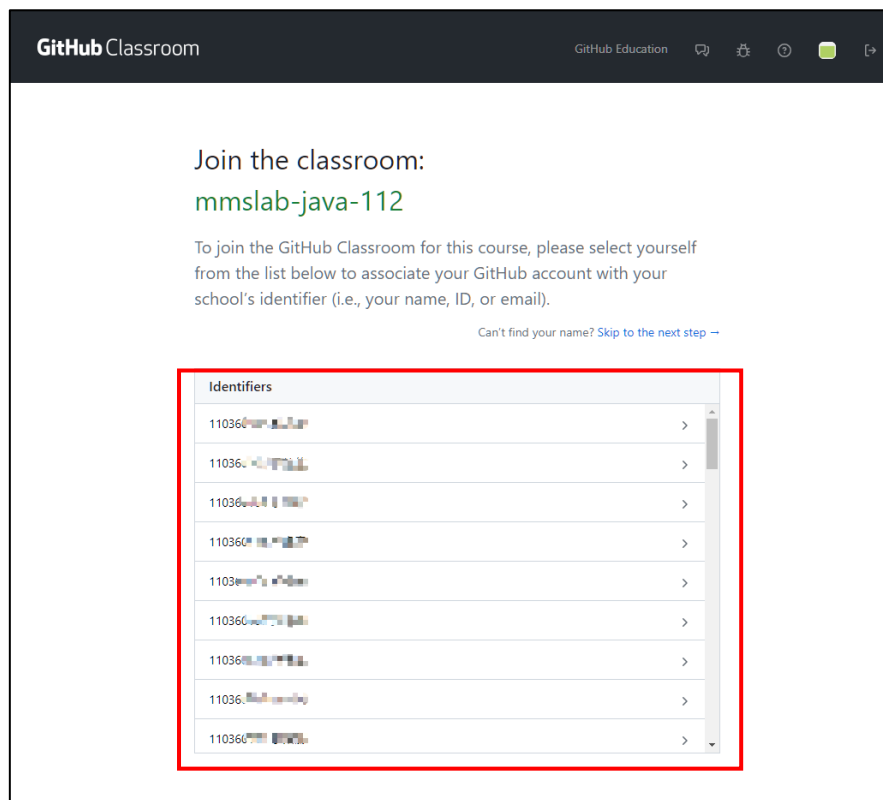
**Step1** 點擊實驗/作業繳交連結

Lab0-2 Github Classroom Assignment: 連結在上課前公布至課堂群組及 <https://7333.italkutalk.com/>

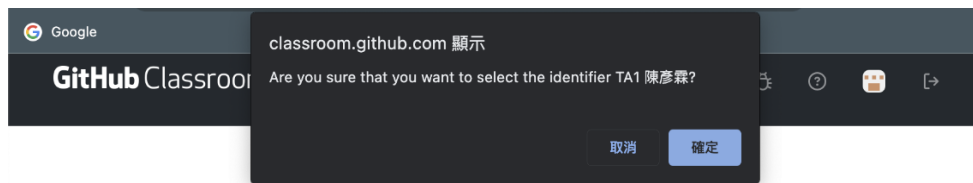
**Step2** 將自己的 Github 帳號與 Classroom 學生連結

同一門課程 Github Classroom 的作業或實驗僅需連結一次 (若曾經連結過，可以略過此步驟)。

在學生清單中，會列出本門課程尚未被連結的學生，請找到並點擊自己的學號/姓名



點擊後會跳出確認提示，確認無誤點擊確定。

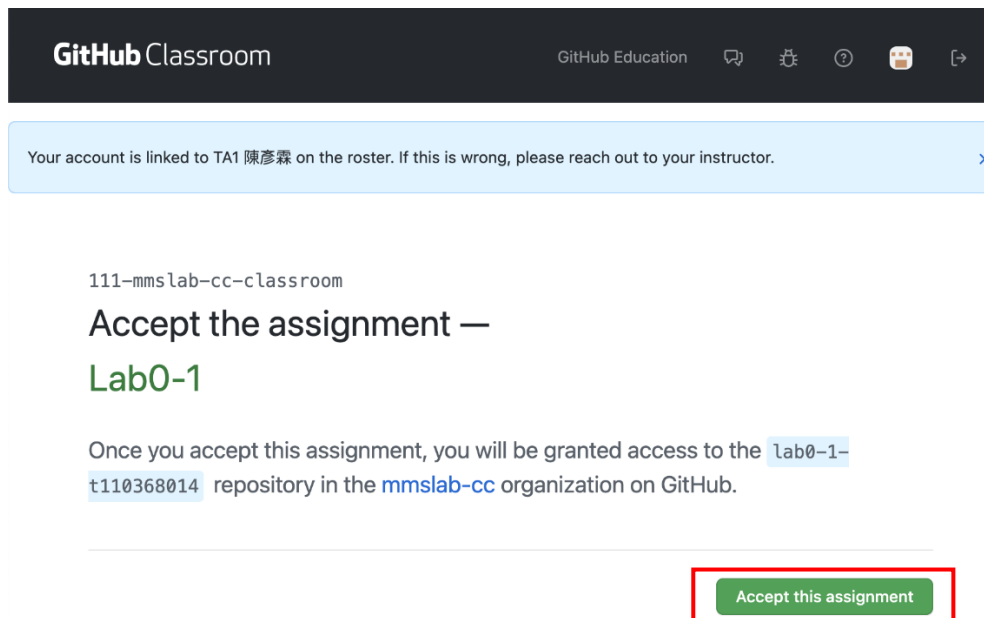


如果遇到以下問題：

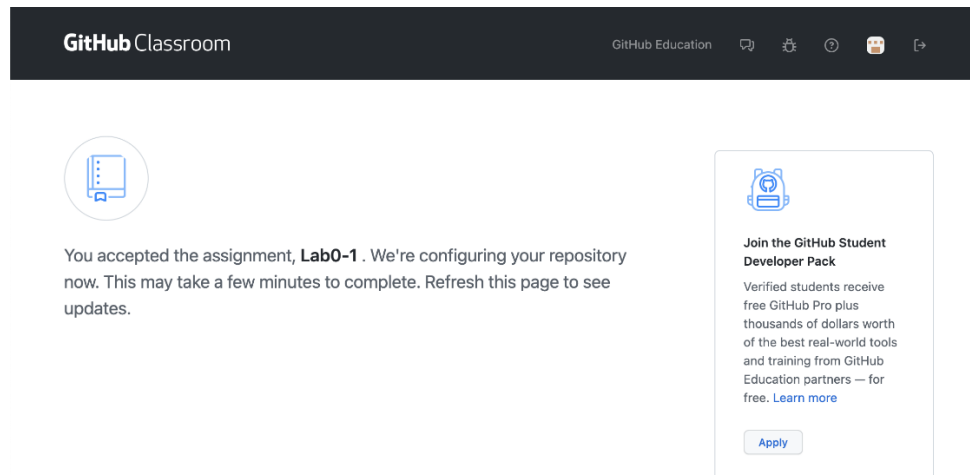
1. 名單中找不到自己的學號姓名
2. 選擇錯人
3. 學號姓名錯誤

請與課堂助教反應，助教將會協助處理。

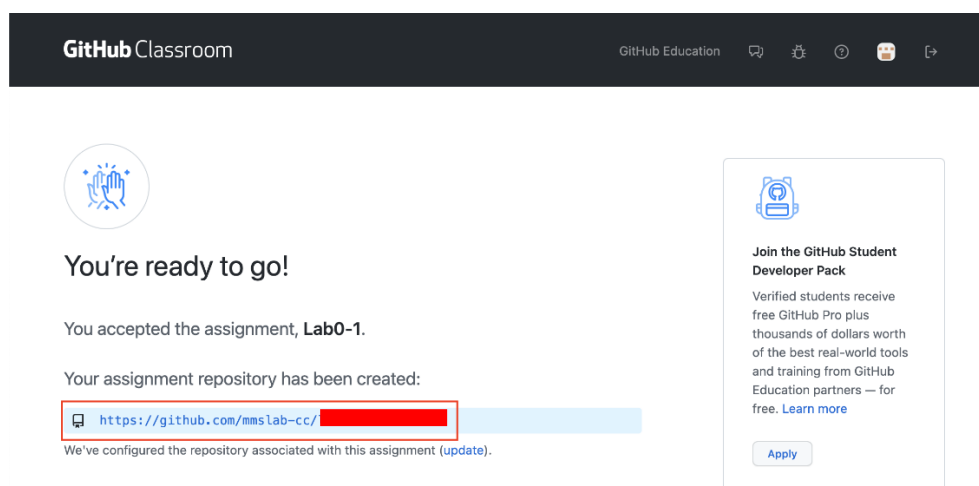
**Step3** 接受 Assignment，點擊 Accept this assignment



接受 Assignment 後，Github classroom 會幫你建立專屬的 repository，而建立專屬的 repository 需要一段時間，請等 10 秒左右刷新此頁面



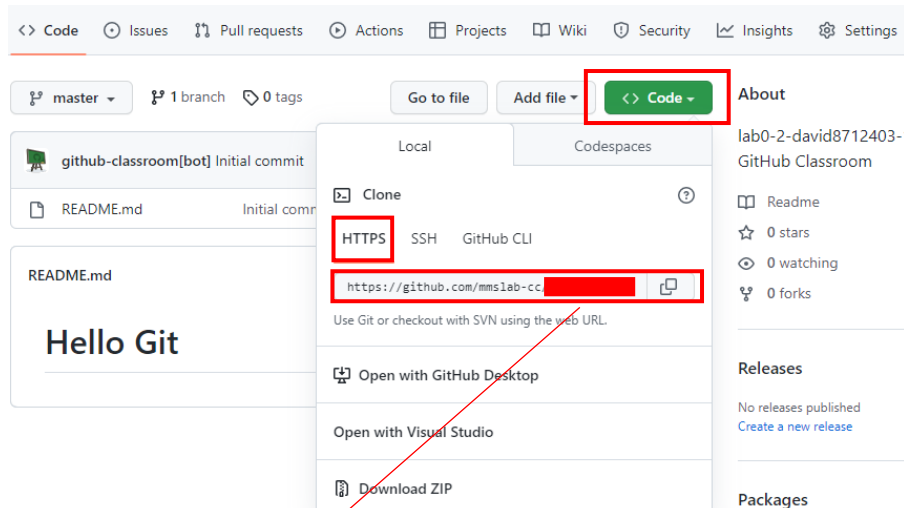
刷新頁面後，將會看到屬於自己的 repository 連結，並點擊該連結。



**Step4** 將專案 Clone 到自己電腦  
到桌面開啟 Git Bash



複製專案在遠端資料庫的位置，並在 Git bash 輸入指令進行下載專案(命令列  
點擊右鍵可以選貼上)



\$ git clone https://github.com/xxx/xxx.git (記得改成自己的資料庫連結網址)

輸入指令情況：

```
Jdway@DESKTOP-GBM49C1 MINGW64 ~/Desktop
$ git clone https://github.com/XXXXXXXXXXXXXXXXXXXX.git
Cloning into 'XXXXXXXXXXXX'...
remote: Counting objects: 7, done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 7 (delta 0), reused 7 (delta 0), pack-reused 0
Unpacking objects: 100% (7/7), done.

Jdway@DESKTOP-GBM49C1 MINGW64 ~/Desktop
$ |
```

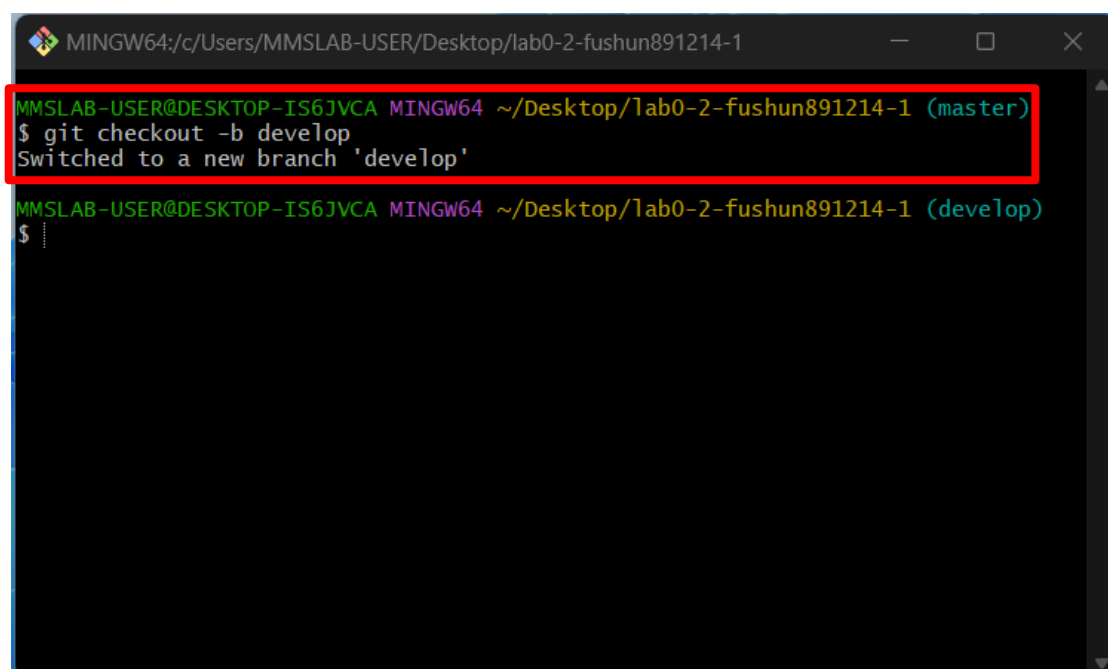
完成下載專案後請到桌面開啟剛下載的專案資料夾，再開啟一次 Git Bash 繼續下面演練。



## 0.1.2 創立新的分支

**Step1** 開啟剛剛 clone 下來的專案資料夾，並開啟 Bash，輸入指令新增分支，並切換到新分支，如圖 0-1 所示。

```
$ git checkout -b develop
```



```
MINGW64:/c:/Users/MMSLAB-USER/Desktop/lab0-2-fushun891214-1
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git checkout -b develop
Switched to a new branch 'develop'
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$
```

圖 0-1 新增分支並切換

**Step2** 用記事本開啟 README，並修改內容後儲存，如圖 0-2 所示。

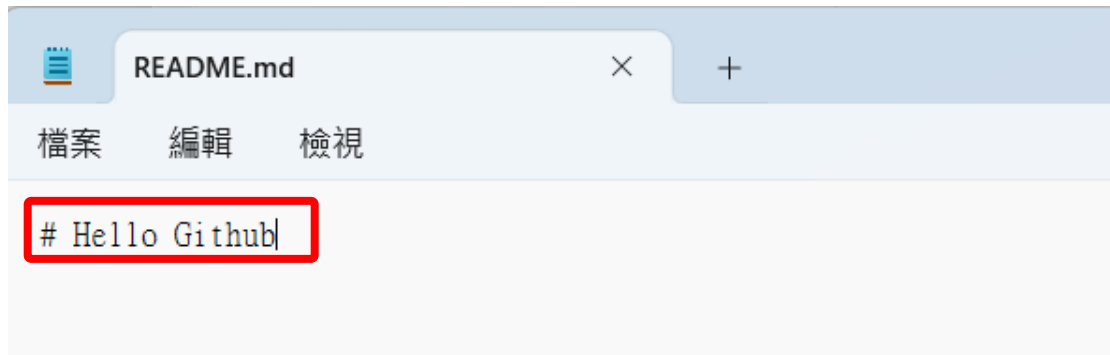


圖 0-2 修改 README 檔

**Step3** 檢查資料狀態，有一個修改的檔案，如圖 0-3 所示。

```
$ git status
```

A screenshot of a terminal window with a black background and green text. The window title is 'MINGW64:/c/Users/MMSLAB-USER/Desktop/lab0-2-fushun891214-1'. The terminal shows the following commands and output:

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git checkout -b develop
Switched to a new branch 'develop'

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git status
On branch develop
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")

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$
```

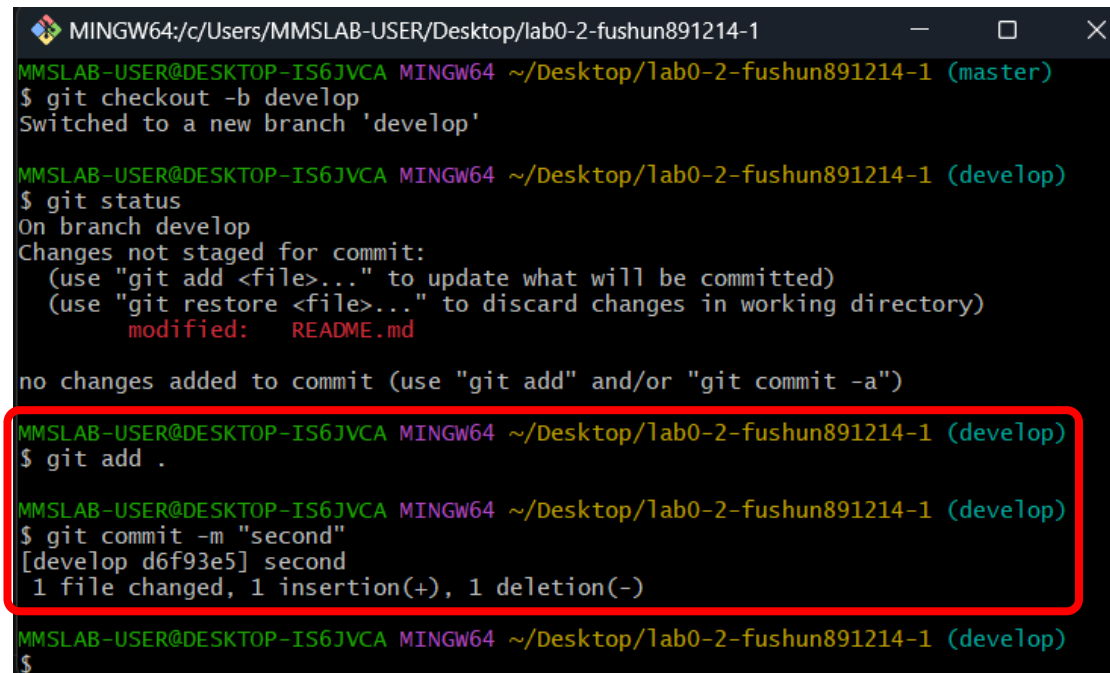
The output of the 'git status' command is highlighted with a red rectangular box.

圖 0-3 檢查資料狀態

**Step4** 將檔案加入提交名單並提交，如圖 0-4 所示。

```
$ git add .
```

```
$ git commit -m "second"
```



```
MINGW64:/c/Users/MMSLAB-USER/Desktop/lab0-2-fushun891214-1
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git checkout -b develop
Switched to a new branch 'develop'

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git status
On branch develop
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")

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git add .

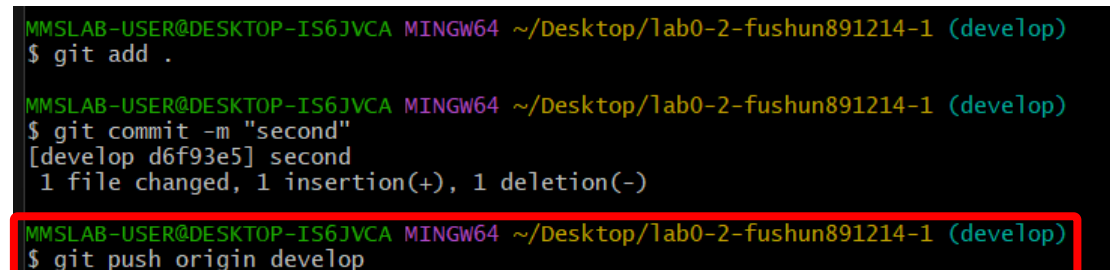
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git commit -m "second"
[develop d6f93e5] second
1 file changed, 1 insertion(+), 1 deletion(-)

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$
```

圖 0-4 加入並提交

**Step5** 提交到遠端資料庫（GitHub）上，如圖 0-5 所示。

```
$ git push origin develop
```



```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git add .

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git commit -m "second"
[develop d6f93e5] second
1 file changed, 1 insertion(+), 1 deletion(-)

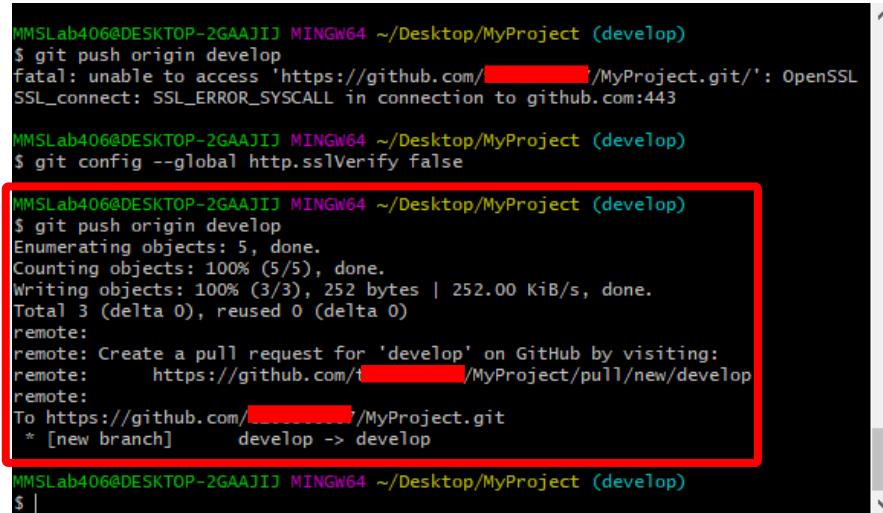
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git push origin develop
```

圖 0-5 提交到遠端資料庫



**Step6** 檔案成功推至遠端的 GitHub，如圖 0-6 所示，若遇到 unable to access 的問題，請輸入以下指令，再執行一次 Step5。

```
$ git config --global http.sslVerify false
```



```
MMSLab406@DESKTOP-2GAAJ1J MINGW64 ~/Desktop/MyProject (develop)
$ git push origin develop
fatal: unable to access 'https://github.com/[redacted]/MyProject.git/': OpenSSL
SSL_connect: SSL_ERROR_SYSCALL in connection to github.com:443

MMSLab406@DESKTOP-2GAAJ1J MINGW64 ~/Desktop/MyProject (develop)
$ git config --global http.sslVerify false

MMSLab406@DESKTOP-2GAAJ1J MINGW64 ~/Desktop/MyProject (develop)
$ git push origin develop
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 252 bytes | 252.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
remote:
remote: Create a pull request for 'develop' on GitHub by visiting:
remote:   https://github.com/[redacted]/MyProject/pull/new/develop
remote:
To https://github.com/[redacted]/MyProject.git
 * [new branch]      develop -> develop

MMSLab406@DESKTOP-2GAAJ1J MINGW64 ~/Desktop/MyProject (develop)
$ |
```

圖 0-6 檔案上傳成功

**Step7** 回瀏覽器，F5 重新整理 GitHub 的頁面，並切換到 develop 分支，可以看到剛剛上傳的檔案，如圖 0-7 所示。

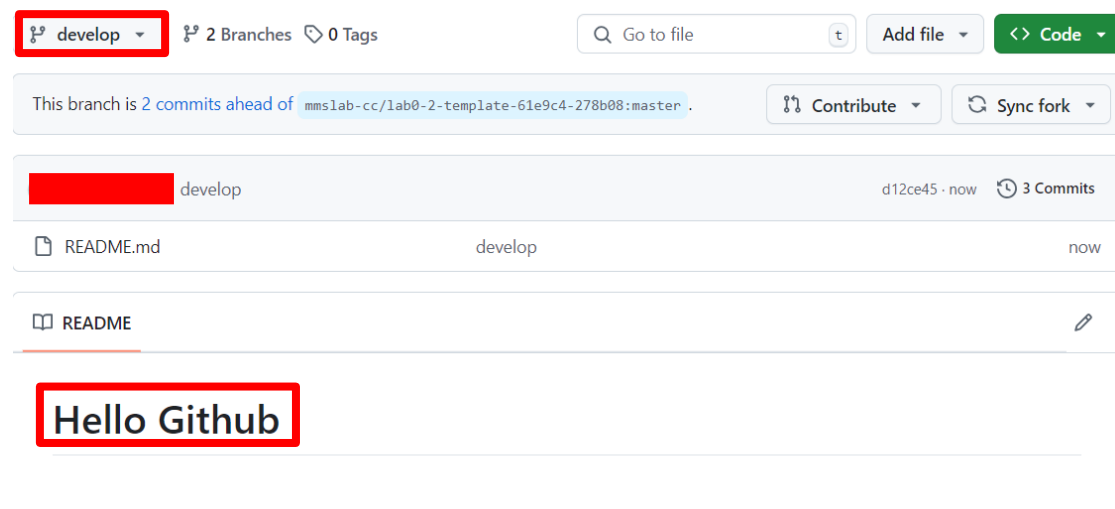


圖 0-7 查看 GitHub 上的專案

### 0.1.3 合併(Merge)分支

**Step1** 切換分支從 develop 到 master，如圖 0-8 所示。

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$
```

圖 0-8 切換分支

**Step2** 打開資料夾確認 README 目前的資料，如圖 0-9 所示。

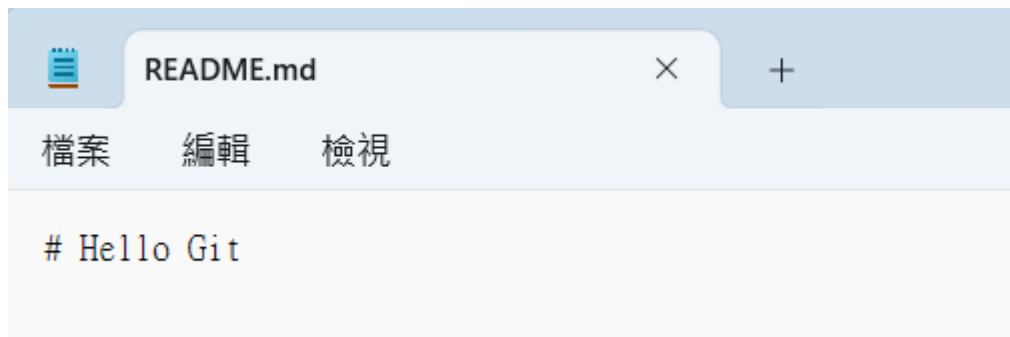


圖 0-9 確認目前資料

**Step3** 合併分支、提交版本、上傳到遠端資料庫，如圖 0-10 所示。

```
$ git merge develop
```

```
$ git push
```

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git merge develop
Updating 51a1437..1e36b08
Fast-forward
 README.md | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
```

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git push
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/[REDACTED]/lab0-2-fushun891214-1
 51a1437..1e36b08 master -> master
```

圖 0-10 合併、提交、上傳

**Step4** 打開資料夾確認 README 目前的資料，會發現已經變成 develop 分支的資料，這就是將 develop 合併到 master，如圖 0-11 所示。

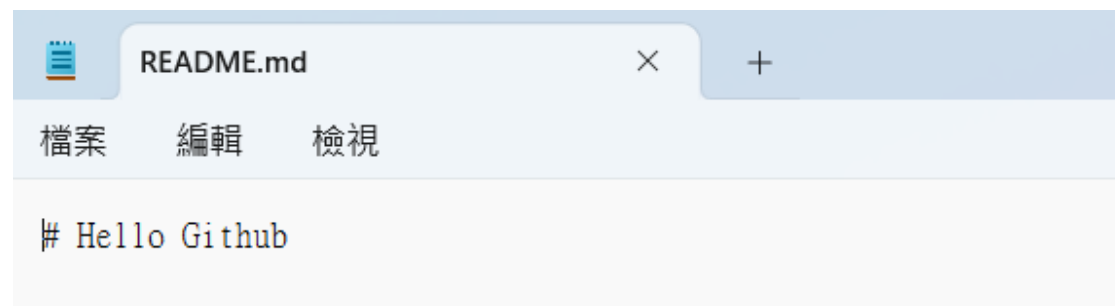


圖 0-11

### 0.1.4 解決分支合併時的衝突(Conflict)

**Step1** 打開資料夾修改 README 的資料並儲存，如圖 0-12 所示。

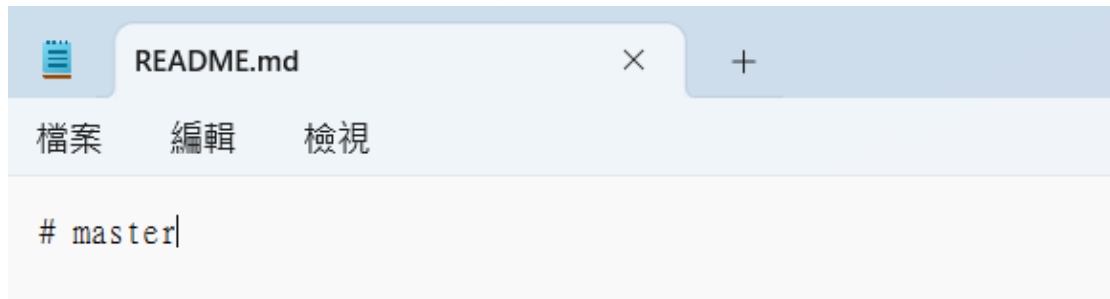


圖 0-12 修改資料

**Step2** 檢查狀態、加入提交名單、提交，如圖 0-13 所示。

```
$ git status

$ git add .

$ git commit -m "master"
```

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

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")

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git add .

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git commit -m "master"
[master 14a66f9] master
1 file changed, 1 insertion(+), 1 deletion(-)
```

圖 0-13 檢查、加入、提交

**Step3** 切換分支到 develop，如圖 0-14 所示。

```
$ git checkout develop
```

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

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")

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git add .

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git commit -m "master"
[master 14a66f9] master
1 file changed, 1 insertion(+), 1 deletion(-)

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git checkout develop
Switched to branch 'develop'
```

圖 0-14 切換分支

**Step4** 打開資料夾修改 README 的資料並儲存，如圖 0-15 所示。

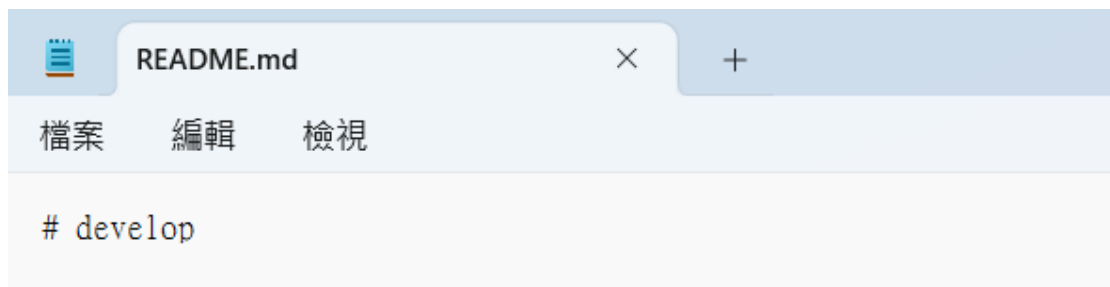


圖 0-15 修改資料

**Step5** 檢查狀態、加入提交名單、提交，如圖 0-16 所示。

```
$ git status

$ git add .

$ git commit -m "develop"
```

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git status
On branch develop
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")

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git add .

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git commit -m "develop"
[develop 6b2f797] develop
1 file changed, 1 insertion(+), 1 deletion(-)
```

圖 0-16 檢查、加入、提交

**Step6** 切換分支到 master 並合併 develop，會產生衝突，因為不同的分支修改了相同的地方，這時就需要解開衝突，保留必要的資料，如圖 0-17 所示。

```
$ git checkout master

$ git merge develop
```

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git add .

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git commit -m "develop"
[develop 6b2f797] develop
1 file changed, 1 insertion(+), 1 deletion(-)

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (develop)
$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git merge develop
Auto-merging README.md
CONFLICT (content): Merge conflict in README.md
Automatic merge failed; fix conflicts and then commit the result.

MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master|MERG
ING)
$
```

圖 0-17 產生衝突

**Step7** 打開資料會有衝突標籤，可以看到不同分支衝突的範圍，如圖 0-18 所示。

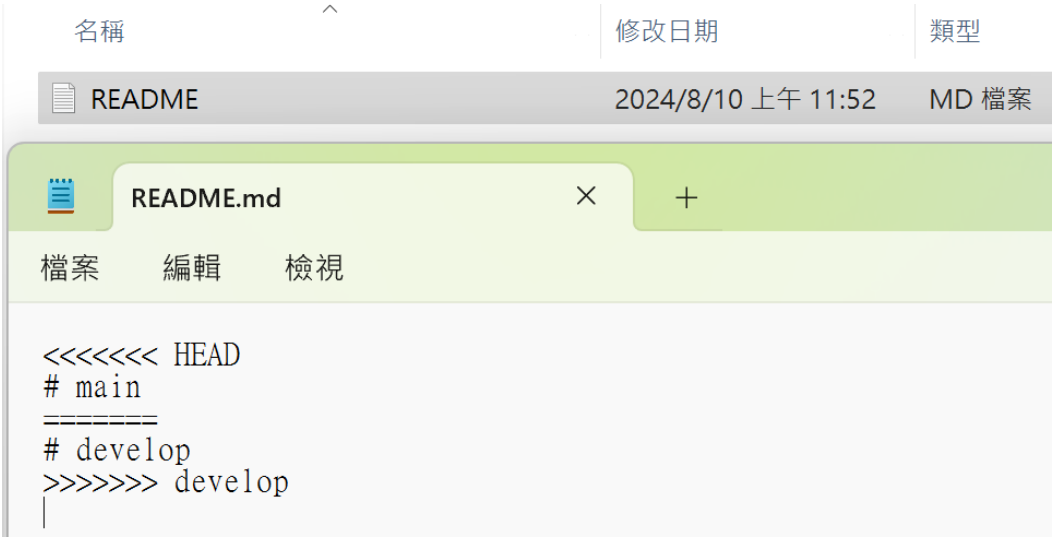


圖 0-18 衝突標籤

**Step8** 解決衝突保留 develop 的資料並儲存，如圖 0-19 所示。

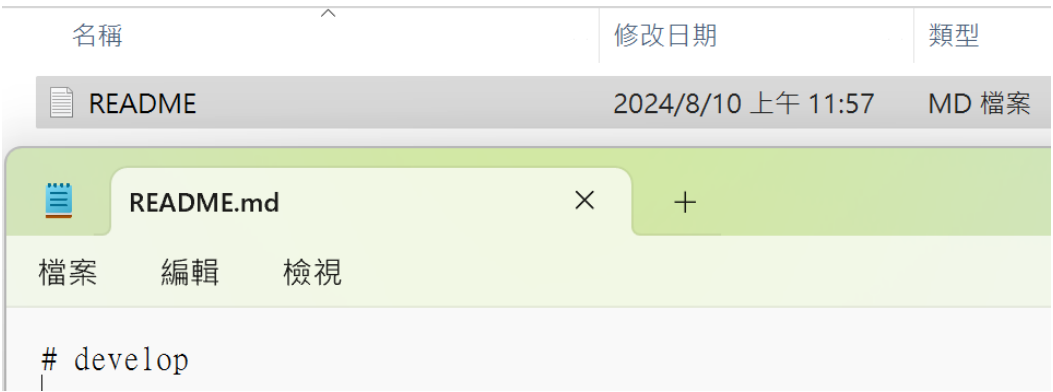


圖 0-19 解決衝突

**Step9** 檢查狀態、加入提交名單、提交，如圖 0-20 所示。

```
$ git status
```

```
$ git add .
```

```
$ git commit -m "resolve conflict"
```

```
Your branch is ahead of 'origin/master' by 1 commit.
(use "git push" to publish your local commits)

You have unmerged paths.
(fix conflicts and run "git commit")
(use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)
    both modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master|MERG
ING)
$ git add .
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master|MERG
ING)
$ git commit -m "resolve conflict"
[master 51a13f1] resolve conflict
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$
```

圖 0-20 檢查、加入、提交

**Step10** 檔案推至遠端的 GitHub，如圖 0-21 所示。

```
$ git push origin master
```

```
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$ git push origin master
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 20 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (9/9), 649 bytes | 649.00 KiB/s, done.
Total 9 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/[REDACTED]/lab0-2-fushun891214-1
   1e36b08..51a13f1  master -> master
MMSLAB-USER@DESKTOP-IS6JVCA MINGW64 ~/Desktop/lab0-2-fushun891214-1 (master)
$
```

圖 0-21 檔案上傳成功



**Step11** 回瀏覽器，F5 重新整理 GitHub 的頁面，可以看到剛剛上傳的檔案，如圖 0-22 所示。

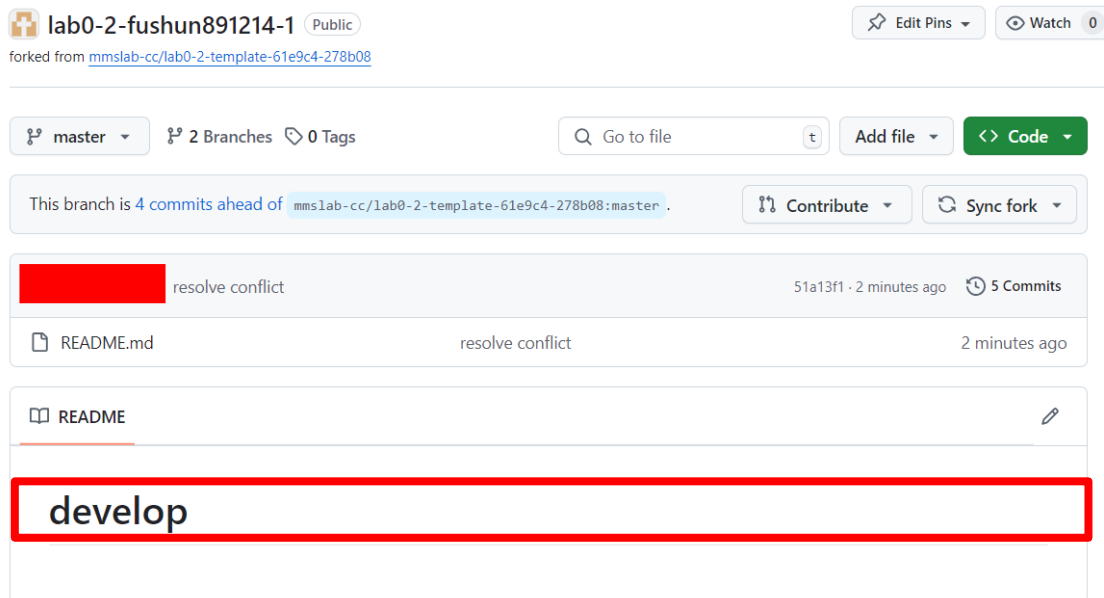


圖 0-22 查看 GitHub 上的專案

**Step12** 請開啟分支圖讓助教檢查，如圖 0-23 所示。

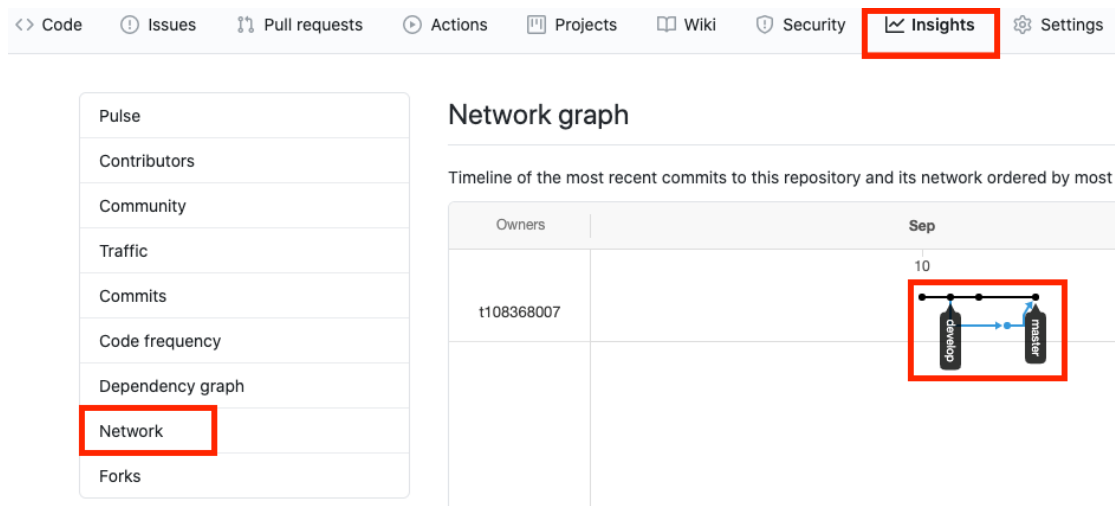


圖 0-23 查看分支圖