

# Hệ thống quản lý phiên bản phân tán - GIT

## I. Cài đặt GIT trên MacOS

- Bật terminal và gõ câu lệnh bên dưới để cài đặt homebrew  
`/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"`

```
hungvuong — zsh — 139x36
* [new tag]          2.5.7      -> 2.5.7
* [new tag]          2.5.8      -> 2.5.8
* [new tag]          2.5.9      -> 2.5.9
* [new tag]          2.6.0      -> 2.6.0
* [new tag]          2.6.1      -> 2.6.1
* [new tag]          2.6.2      -> 2.6.2
* [new tag]          2.7.0      -> 2.7.0
* [new tag]          2.7.1      -> 2.7.1
* [new tag]          2.7.2      -> 2.7.2
HEAD is now at 6968c199e Merge pull request #10284 from reitermarkus/reinstall-cask-options
==> Tapping homebrew/core
remote: Enumerating objects: 114, done.
remote: Counting objects: 100% (114/114), done.
remote: Compressing objects: 100% (83/83), done.
remote: Total 885995 (delta 74), reused 58 (delta 31), pack-reused 885881
Receiving objects: 100% (885995/885995), 351.07 MiB | 3.38 MiB/s, done.
Resolving deltas: 100% (600344/600344), done.
From https://github.com/Homebrew/homebrew-core
 * [new branch]      master    -> origin/master
Updating files: 100% (5726/5726), done.
HEAD is now at feae7f8dae verilator: update 4.108 bottle.
==> Installation successful!

==> Homebrew has enabled anonymous aggregate formulae and cask analytics.
Read the analytics documentation (and how to opt-out) here:
  https://docs.brew.sh/Analytics
No analytics data has been sent yet (or will be during this `install` run).

==> Homebrew is run entirely by unpaid volunteers. Please consider donating:
  https://github.com/Homebrew/brew#donations

==> Next steps:
- Run `brew help` to get started
- Further documentation:
  https://docs.brew.sh
hungvuong@Hungs-MacBook-Pro ~ %
```

- Gõ lệnh bên dưới để cài đặt git  
`brew install git`

```
hungvuong — zsh — 139x36
##### 100.0%
==> Downloading https://homebrew.bintray.com/bottles/pcre2-10.36.big_sur.bottle.tar.gz
==> Downloading from https://d29vzk4ow07wi7.cloudfront.net/b2edbffaf229fc490843e83b43c4e12feab906fc34270d928c59cac74c6f4536?response-content-type=application%2Ftar-gzip
##### 100.0%
==> Downloading https://homebrew.bintray.com/bottles/git-2.30.0.big_sur.bottle.tar.gz
==> Downloading from https://d29vzk4ow07wi7.cloudfront.net/bd4dd57a4740df3c596377954d45fcf2b08db83f7d8853f5361db1d158a6bdb8?response-content-type=application%2Ftar-gzip
##### 100.0%
==> Installing dependencies for git: gettext and pcre2
==> Installing git dependency: gettext
==> Pouring gettext-0.21.big_sur.bottle.tar.gz
  /usr/local/Cellar/gettext/0.21: 1,953 files, 19.8MB
==> Installing git dependency: pcre2
==> Pouring pcre2-10.36.big_sur.bottle.tar.gz
  /usr/local/Cellar/pcre2/10.36: 230 files, 6.2MB
==> Installing git
==> Pouring git-2.30.0.big_sur.bottle.tar.gz
==> Caveats
The Tcl/Tk GUIs (e.g. gitk, git-gui) are now in the `git-gui` formula.

zsh completions and functions have been installed to:
  /usr/local/share/zsh/site-functions

Emacs Lisp files have been installed to:
  /usr/local/share/emacs/site-lisp/git
==> Summary
  /usr/local/Cellar/git/2.30.0: 1,486 files, 40.5MB
==> Caveats
==> git
The Tcl/Tk GUIs (e.g. gitk, git-gui) are now in the `git-gui` formula.

zsh completions and functions have been installed to:
  /usr/local/share/zsh/site-functions

Emacs Lisp files have been installed to:
  /usr/local/share/emacs/site-lisp/git
hungvuong@Hungs-MacBook-Pro ~ %
```

- Gõ lên git —version để kiểm tra git đã cài đặt

```

hungvuong — -zsh — 139x36
==> Downloading from https://d29vzk4ow07wi7.cloudfront.net/b2edbfaf229fc498843e83b43c4e12feab906fc34270d928c59cac74c6f4536?response-content-type=application/octet-stream
##### 100.0%
==> Downloading https://homebrew.bintray.com/bottles/git-2.30.0.big_sur.bottle.tar.gz
==> Downloading from https://d29vzk4ow07wi7.cloudfront.net/bd4dd57a4740df3c596377954d45fcf2b08db83f7d8853f5361db1d158a6bdb8?response-content-type=application/octet-stream
##### 100.0%
==> Installing dependencies for git: gettext and pcre2
==> Installing git dependency: gettext
==> Pouring gettext-0.21.big_sur.bottle.tar.gz
  /usr/local/Cellar/gettext/0.21: 1,953 files, 19.8MB
==> Installing git dependency: pcre2
==> Pouring pcre2-10.36.big_sur.bottle.tar.gz
  /usr/local/Cellar/pcre2/10.36: 230 files, 6.2MB
==> Installing git
==> Pouring git-2.30.0.big_sur.bottle.tar.gz
==> Caveats
The Tcl/Tk GUIs (e.g. gitk, git-gui) are now in the `git-gui` formula.

zsh completions and functions have been installed to:
  /usr/local/share/zsh/site-functions

Emacs Lisp files have been installed to:
  /usr/local/share/emacs/site-lisp/git
==> Summary
  /usr/local/Cellar/git/2.30.0: 1,486 files, 40.5MB
==> Caveats
==> git
The Tcl/Tk GUIs (e.g. gitk, git-gui) are now in the `git-gui` formula.

zsh completions and functions have been installed to:
  /usr/local/share/zsh/site-functions

Emacs Lisp files have been installed to:
  /usr/local/share/emacs/site-lisp/git
hungvuong@Hungs-MacBook-Pro ~ % git --version
git version 2.24.2 (Apple Git-127)
hungvuong@Hungs-MacBook-Pro ~ %

```

## II. Cấu hình GIT

- Bật terminal gõ lệnh bên dưới để cấu hình local account
- ```
git config --global user.name "username"
```
- ```
git config --global user.email "youremail@email.com"
```

```

hungvuong@Hungs-MacBook-Pro ~ % git config --global user.name "hungvuong.work"
hungvuong@Hungs-MacBook-Pro ~ % git config --global user.email "hungvuong.work@gmail.com"

```

## III. Lệnh tạo Repo mới

- Bật terminal gõ lệnh bên dưới để tạo repo mới "git init"

```

example01 — -zsh — 80x24
hungvuong@Hungs-MacBook-Pro example01 % git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /Users/hungvuong/Documents/Hutech/CCPM/Lab-02/example01/.git/
hungvuong@Hungs-MacBook-Pro example01 %

```


## IV. Clone repo từ GitHub về máy:

### - Tạo một repo trên GitHub

#### Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Owner \*

 hungvuongwork ▾

Repository name \*

tuong-tac-git ✓

Great repository names are short and memorable. Need inspiration? How about [curly-succotash](#)?

Description (optional)

☐



Public

Anyone on the internet can see this repository. You choose who can commit.

☒



Private

You choose who can see and commit to this repository.

#### Initialize this repository with:

Skip this step if you're importing an existing repository.

☒ Add a README file

This is where you can write a long description for your project. [Learn more](#).

☐ Add .gitignore

Choose which files not to track from a list of templates. [Learn more](#).

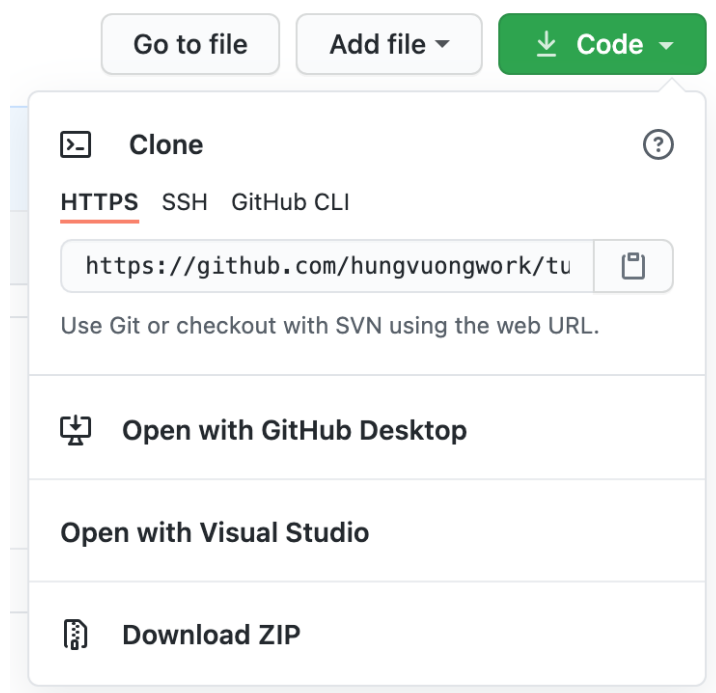
☐ Choose a license

A license tells others what they can and can't do with your code. [Learn more](#).

This will set  main as the default branch. Change the default name in your [settings](#).

Create repository

### - Copy đường dẫn repo



- Bật terminal, trở tới đường dẫn tập tin muốn chứa repo, gõ lệnh bên dưới để clone repo về máy (Nếu clone lần đầu, Git yêu cầu nhập email và password):  
git clone <https://github.com/hungvuongwork/tuong-tac-git.git>

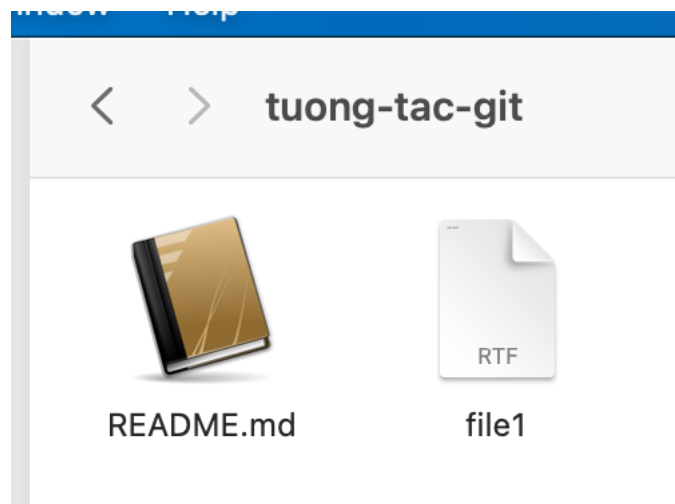
```

example01 — -zsh — 80x24
[hangvuong@Hungs-MacBook-Pro example01 % git clone https://github.com/hungvuongwo
rk/tuong-tac-git.git
Cloning into 'tuong-tac-git'...
Username for 'https://github.com': hungvuong.work@gmail.com
[Password for 'https://hungvuong.work@gmail.com@github.com':
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
hangvuong@Hungs-MacBook-Pro example01 %

```

## V. Commit file

- Tạo ra một file cần commit



- Bật terminal gõ lệnh bên dưới để đánh dấu tất cả các file thay đổi cho lần commit tới.

```

tuong-tac-git — -zsh — 80x24
[hangvuong@Hungs-MacBook-Pro tuong-tac-git % git add .
hangvuong@Hungs-MacBook-Pro tuong-tac-git %

```

- Gõ lệnh commit -m “ghi chú” để commit tất cả file đánh dấu lên staging.

```

[hangvuong@Hungs-MacBook-Pro tuong-tac-git % git commit -m "up file1"
[main dc2a6c2] up file1
1 file changed, 8 insertions(+)
create mode 100644 file1.rtf
hangvuong@Hungs-MacBook-Pro tuong-tac-git %

```

## VI. Push file lên remote repo:

- Bật terminal, gõ lệnh git push để đẩy toàn bộ file đã commit trong stage lên remote repo.

```
-----
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 532 bytes | 532.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/hungvuongwork/tuong-tac-git.git
a5fc994..dc2a6c2 main -> main
hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

## VII. Phục hồi về một phiên bản trước:

- Kiểm tra danh sách các phiên bản bằng câu lệnh: "git log"



```
tuong-tac-git - zsh - 80x24
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git log
commit dc2a6c24b8e4401c073753e8367cc2f4ab6bc659 (HEAD -> main, origin/main, origin/HEAD)
Author: hungvuong.work <hungvuong.work@gmail.com>
Date: Mon Jan 11 15:54:06 2021 +0700

    up file1

commit a5fc9948bbd5655f259d2c8e526d124209f22be9
Author: Hung Vuong <hungvuong.work@gmail.com>
Date: Mon Jan 11 13:54:45 2021 +0700

    Initial commit
hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

- Dùng câu lệnh "git revert HEAD" để revert lại phần commit trước hoặc có thể check git log lấy mã commit để revert theo mã commit

```
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git revert HEAD
Removing file1.rtf
[main 1877aad] Revert "up file1"
1 file changed, 8 deletions(-)
delete mode 100644 file1.rtf
hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

## VIII. Tạo nhánh:

- Bật terminal dùng lệnh: “git branch <tên nhánh>” để tạo một nhánh mới:

```
tuong-tac-git — -zsh — 80x24
Last login: Tue Jan 12 11:56:55 on ttys000
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git branch dev
[hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

- Gõ lệnh “git branch” để kiểm tra các nhánh có trong repo. Nếu trước tên nhánh có màu khác và có dấu \* thì hiểu là đang thao tác trên nhánh đó.

```
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git branch
dev
* main
[hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

## IX. Chuyển đổi nhánh:

- Để chuyển sang nhánh làm việc, ta dùng lệnh: “git checkout <tên nhánh>”

```
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git checkout dev
Switched to branch 'dev'
[hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

- Gõ lệnh “git branch” để kiểm tra:

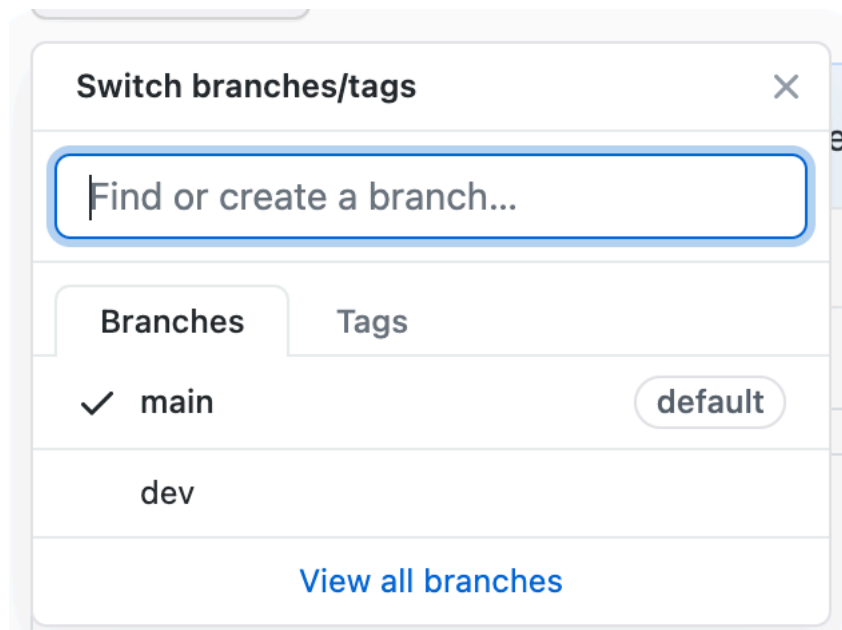
```
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git branch
* dev
main
[hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

## X. Đẩy local branch lên remote repo:

- Để thực hiện đẩy nhánh từ local repo lên remote repo, dùng lệnh “git push -u origin <tên nhánh>”

```
Switched to branch 'dev'
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git push -u origin dev
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'dev' on GitHub by visiting:
remote:   https://github.com/hungvuongwork/tuong-tac-git/pull/new/dev
remote:
To https://github.com/hungvuongwork/tuong-tac-git.git
 * [new branch]      dev -> dev
Branch 'dev' set up to track remote branch 'dev' from 'origin'.
[hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

- Kiểm tra nhánh đã push lên GitHub:



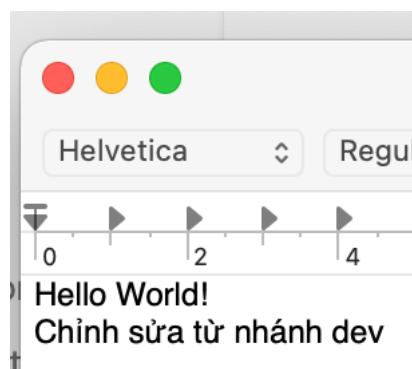
## XI. Merge nhánh:

- Giả thiết, repo có nhiều nhánh đang hoạt động, để thực hiện merge từ nhánh khác, dùng lệnh “git merge <tên nhánh muốn merge>”

```
[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git merge main
Updating 1877aad..0c9fd0c
Fast-forward
 file1.rtf | 8 ++++++++
 1 file changed, 8 insertions(+)
 create mode 100644 file1.rtf
hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```

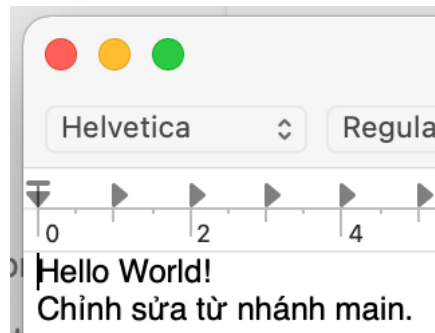
## XII. Xử lý conflict giữa các nhánh:

- Giả thiết, có 2 nhánh: **main** và **dev**. Ở nhánh **dev**, ta thực hiện chỉnh sửa file1.rtf. Sau đó thực hiện commit.





- Ở nhánh **main**, ta thực hiện chỉnh sửa file1.rtf.



- Sau khi chỉnh sửa, ta thực hiện merge từ nhánh **dev**. Lúc này, git sẽ thông báo bắt buộc phải commit file đã chỉnh sửa ở nhánh **main**.

```

hungvuong@Hungs-MacBook-Pro tuong-tac-git % git merge dev
Updating 0c9fd0c..e3eafc2
error: Your local changes to the following files would be overwritten by merge:
    file1.rtf
Please commit your changes or stash them before you merge.
Aborting
hungvuong@Hungs-MacBook-Pro tuong-tac-git %

```

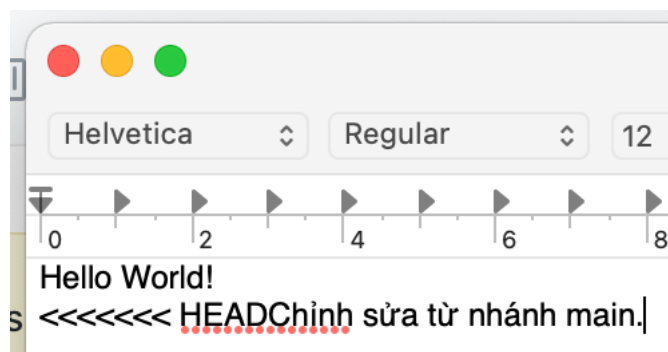
- Sau khi commit chỉnh sửa từ nhánh main, ta thực hiện merge lại file từ nhánh dev. Lúc này, git sẽ thông báo xung đột ở file1.rtf.

```

[hungvuong@Hungs-MacBook-Pro tuong-tac-git % git merge dev
Auto-merging file1.rtf
CONFLICT (content): Merge conflict in file1.rtf
Automatic merge failed; fix conflicts and then commit the result.
[hungvuong@Hungs-MacBook-Pro tuong-tac-git %

```

- Ta tiến hành chỉnh chỉnh sửa file1.rtf





- Sau khi chỉnh sửa, ta thực hiện commit và push lên remote repo:

```
hungvuong@Hungs-MacBook-Pro tuong-tac-git % git add .
hungvuong@Hungs-MacBook-Pro tuong-tac-git % git commit -m "update sau conflict tu nhanh main"
[main 230b07f] update sau conflict tu nhanh main
hungvuong@Hungs-MacBook-Pro tuong-tac-git % git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 341 bytes | 341.00 KiB/s, done.
Total 2 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/hungvuongwork/tuong-tac-git.git
  319cc3e..230b07f  main -> main
hungvuong@Hungs-MacBook-Pro tuong-tac-git %
```