

Git Tutorial

Tuesday, October 1, 2019

WHat is GIT?

A **Verison Control System** (VCS) for tracking changes in computer files

- Distributed version control
- Coordinates work between multiple developers
- Who made what changes and when
- Revert back at any time
- Local & remote repositories

Concepts of GIT

- Keeps track of code history
- Take "snapshot" of your files
- You decide when to take a snapshot by making a "commit"
- You can visit any snapshot at any time
- You can stage files before comitting

Download & Install GIT

- Download
 - [MacOS](#)
 - [Windows](#)
- Install
 - `git --version`: check git version
 - `git config --global user.name __NAME__`: set the user name so GIT knows who is making changes
 - `git config --global user.email __EMAIL@ADDRESS__`: set the user email
 - `git congfig user.name / user.email`: check if name and email are set correctly

Basics

- repository
 - A container for a project you want to track with GIT
 - As many repository as you want for different projects on computer
- basic commands:

Note: All commands are in terminals (Mac) / cmd (win)

`git init`: Initialize local Git repository

`git add <file>`: add file to staging area to Index

`git status`: check status of working tree

`git commit`: take everything in the staging area, put them into the local repository

`git push`: take local repository, push to remote repository (Github)

`git pull`: pull latest version from remote repository

`git clone`: clone repository into a new directory, download others' to local

Step by Step

- creating a repository
 - `cd Desktop/`: change directory to Folder Desktop/
 - `mkdir mypro`: make a new folder under the current directory
 - `cd mypro/`: change directory to the folder just created
 - `git init`
- Add file to staging area and commit
 - `touch index.html`: create a html file (touch works only in mac)
 - `git status`
 - `git add index.html`
 - `git status`
 - `git rm --cached index.html`: remove file from staging area
 - `git status`
 - `git add .`: add all files to staging area
 - `git status`
 - `git commit -m '__TEXT__'`
 - `git log --oneline`: check all commits you made
- Undo changes
 - checkout commit: safe, just review
 - `git checkout <logID>`: checkout a specific commit
 - `git checkout master`: switch back to the master branch
 - revert commit: not very safe, could change file
 - `git revert <logID>`: revert a specific commit, undo anything in that commit
 - reset commit: danger, use with caution
 - `git reset <logID> --hard`: delete anything after a specific commit, no way back
- Branches
 - Create a copy of master, leave master alone
 - Good for test new feature
 - `git branch <__BRANCH__>`: create a new branch
 - `git branch -a`: check all branches
 - `git checkout <__BRANCH__>`: switch between branches
 - `git branch -D <__BRANCH__>`: delete branch
 - `git checkout -b <__BRANCH__>`: create and switch to a new branch

- Merge
 - merge branch to master
 - need to stay at master
 - `git merge <__BRANCH__>`: merge a specific branch to master
 - Note: don't edit master before merge branches

GitHub

- Online service that hosts projects
- Share code with other developers
- Developers can download the projects and work on them
- They can re-upload their edits and merge them with the main codebase
- CommandLine based
 - `git remote add origin <__LINK__>`: associate remote repository to local
 - `git push origin master`: push local to remote
 - `git pull origin master`: get latest update
 - `git push origin <__BRANCH__>`: push a new branch to the remote repository
- Web based



- - Create new repository

Create a new repository

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

Owner

Repository name *



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/

Great repository names are short and memorable. Need inspiration? How about **jubilant-octo-winner**?

Description (optional)



Public

Anyone can see this repository. You choose who can commit.



Private

Your current plan does not support private repositories. Your organization's owners will need to upgrade to Team.

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

☐ Initialize this repository with a README

This will let you immediately clone the repository to your computer.

Add .gitignore: **None**

Add a license: **None**



Create repository

- Repository name: define a name for repository just created
- Description: Brief sentences to abstract the repository
- Initialize this repository with a README: **recommended**, allows people to know more about the repository. It's **Markdown** based.
- .gitignore: choose affiliation (coding language)
- license: Normally **MIT**

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Manage topics

1 commit 1 branch 0 releases 1 contributor MIT

Branch: master New pull request Create new file Upload files Find File Clone or download

HaoZ94 Initial commit Latest commit 0b9727e 6 minutes ago

LICENSE	Initial commit	6 minutes ago
README.md	Initial commit	6 minutes ago

README.md

Documents

where documents stays

- drag any files you want to commit to the repository. Or use the *Upload files* tab.



Drag additional files here to add them to your repository

Or [choose your files](#)

Git_Tu.md

Commit changes

Add files via upload

Add an optional extended description...

☒ Commit directly to the `master` branch.
 ☐ Create a **new branch** for this commit and start a pull request. [Learn more about pull requests.](#)

Commit changes

Cancel

- you can add more files in this interface
 - commit to the master. Or create a new branch (**recommended** if you not sure about the change you just made)
 - Don't forget to label your change in order to make others to understand*

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2 commits
2 branches
0 releases
1 contributor
MIT

Your recently pushed branches:

HaoZ94-branch1 (1 minute ago)
Compare & pull request

Branch: HaoZ94-branch1
New pull request
Create new file
Upload files
Find File
Clone or download

This branch is 1 commit ahead of master.
Pull request
Compare

HaoZ94 add git tutorial
Latest commit 3f8b057 1 minute ago

Git_Tu.md	add git tutorial	1 minute ago
LICENSE	Initial commit	12 minutes ago
README.md	Initial commit	12 minutes ago

README.md

Documents

where documents stays

- Compare & pull request: request to merge the branch


Conversation 0 Commits 1 Checks 0 Files changed 1 +125 -0

HaoZ94 commented 23 seconds ago Member + 👤 ...
No description provided.

add git tutorial Verified 3f8b057

HaoZ94 commented now Author Member + 👤 ...
good job

Add more commits by pushing to the **HaoZ94-branch1** branch on Poeppe1-Lab/Documents.



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

Merge pull request You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Write Preview AA B *i* “ <> 🔗 ☰ ☷ ☶ @ 📌 ↶

Leave a comment

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

 Close pull request  Comment


Reviewers ⚙️
No reviews

Assignees ⚙️
No one—assign yourself


Labels ⚙️
None yet

Projects ⚙️
None yet

Milestone ⚙️
No milestone

Notifications Customize
 Unsubscribe
You're receiving notifications because you authored the thread.

1 participant

 Lock conversation

- anyone can review the changes in the branch and make comments.
- Once everyone agrees, **Merge pull request**.