NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Introduction to GIT I

Cloud Infrastructure Engineering

Nanyang Technological University
& Skills Union - 2022/2023

Course Content

- Quick Check-In
- Version Control in General
- Using GIT in github.com
- Using GIT in Terminal (few commands)
- Next - Git Cheat Sheet

Self Study Check-In

Which of the following is NOT a feature of GitHub?

a) Code reviews

b) Version control

c) Social networking

d) Cloud storage

Which command is used to **push** changes from a local repository to a remote repository on GitHub?

a) git clone

b) git pull

c) git commit

d) git push

What is a pull request in GitHub?

a) A request to merge changes from a branch to another branch.

b) A request to delete a branch.

c) A request to clone a repository.

d) A request to create a new repository.

What is the benefit of using Version Control when you are working as a team?

Give short explanation…

Version Control

What is version control?

Version control allows you to **keep track of your work** and helps you to easily **explore the changes** you have made, be it data, coding scripts, notes, etc.

Version control also allows you to collaborate with your colleagues.

Using an online platform like Github to store your files means that you have an online back up of your work, which is beneficial for both you and your collaborators.

What other version control that available other than github?

What are the benefits of using version control?

- Having a GitHub repo makes it easy for you to **keep track of collaborative and personal projects** - all files necessary for certain analyses can be held together and people can add in their code, graphs, etc. as the projects develop.
- Each file on GitHub has a history, making it easy to **explore the changes** that occurred to it at different time points. You can review other people's code, add comments to certain lines or the overall document, and suggest changes.
- For collaborative projects, GitHub allows you to **assign tasks to different users**, making it clear who is responsible for which part of the analysis. You can also ask certain users to review your code.
- For personal projects, version control allows you to **keep track of your work** and easily navigate among the many versions of the files you create, whilst also maintaining an online backup.

What is a repository?

You can think of a repository (aka a repo) as a “main folder”, everything associated with a specific project should be kept in a repo for that project. Repos can have folders within them, or just be separate files.

You will have a local copy (on your computer) and an online copy (on GitHub) of all the files in the repository.

Activity

Instructor demonstrate how to create new repository on Github

Activity Explanation

- Repository Template
  - You can make an existing repository a template, so you and others can generate new repositories with the same directory structure, branches, and files.
- Public repositories are accessible to everyone on the internet.
- Private repositories are only accessible to you, people you explicitly share access with, and, for organization repositories, certain organization members.
- Add a README file.
  - You can add a README file to your repository to tell other people why your project is useful, what they can do with your project, and how they can use it.
- You can configure Git to ignore files you don't want to check in to GitHub using .gitignore
- License
  - Public repositories on GitHub are often used to share open source software. For your repository to truly be open source, you'll need to license it so that others are free to use, change, and distribute the software.

Activity

Let’s spend 5 - 10 mins for Learners to create new repository on their account.

Break 10 mins

GitHub on Your Local Computer

Let’s spend 5 - 10 mins for Learners to install Git on local follow this guidance:

https://github.com/git-guides/install-git

Type ‘git version’ to verify Git was installed on your computer terminal

Git Clone, Git Pull

“git clone” is used for just downloading exactly what is currently on the remote repository and saving it in your machine's folder where that project is placed. **(Only one time)**

“git fetch” is the command that tells the local repository that there are changes available in the remote repository without bringing the changes into the local repository.

“git pull” downloads the changes and merges them into your current branch. **(Can be multiple time if there is new changes on the branch in the repo).**

Activity

Instructor demonstrate how to use git clone and git pull.

- git clone
- create changes directly on readme file on github
- git pull

Activity

Let’s spend 5 - 10 mins for Learners to try git clone, create changes on readme file directly on github and git pull

git add, git commit, git push

git config --global user.email "you@example.com"
git config --global user.name "github_username"

git add .

Stage the all the file for commit to your local repository by the following command.

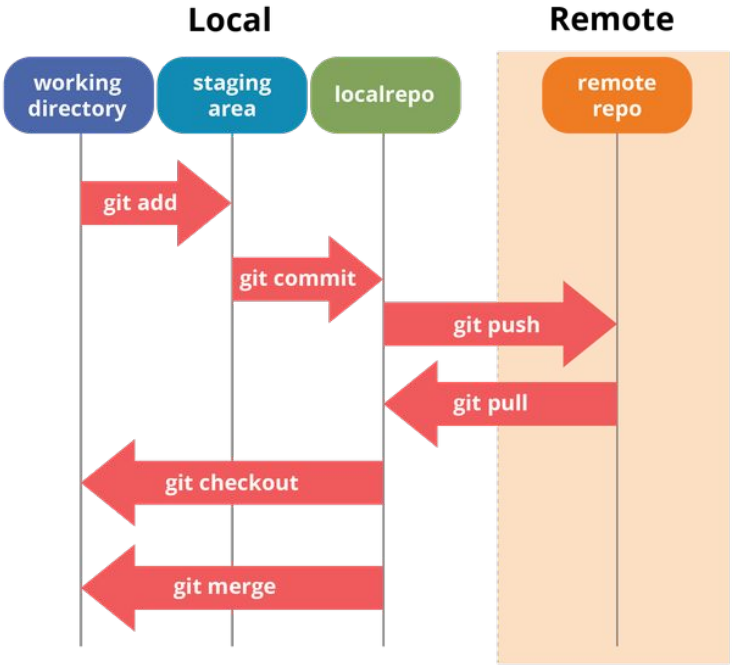
git commit -m "Create changes on README file"

Commit the file that you've staged in your local repository.

git push origin main

Push the changes in your local repository to GitHub.

git add, git commit, git push



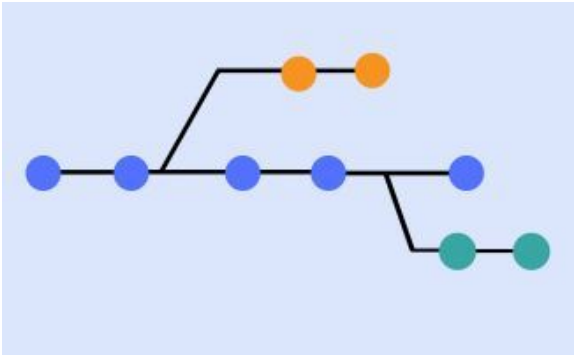
Activity

Let’s spend 5 - 10 mins for Learners to try git add, git commit, git push

git branch

In Git, a branch is a new/separate version of the main repository/ branch source.

Branching is one of the most commonly used features of version control systems which helps you and your team to work on multiple versions of your code in parallel, like Git. In Git, it's a way of keeping your work separate from your master branch, without creating a new branch altogether. While it can also be used as a means of working on different features and different version combinations at the same time, it is also used to collaborate with other developers.



Create new branch on GitHub

git branch

create new branch => **git branch feature2**

Change to the new branch => **git checkout feature2**

create new branch and change to the branch => **git checkout -b <new-branch-name>**

create the changes on local file

git add .

git commit -m “Comment of the changes”

git push --set-upstream origin <new-branch-name>

git push

Activity

Let’s spend 5 - 10 mins for Learners to try git branch, ect.

What’s Next?

https://education.github.com/git-cheat-sheet-education.pdf

Activity

Learner:

- Clean up AWS.
- Remove/delete/terminate all service/ resources that created.

Instructor

- Clean up AWS.
- Remove/delete/terminate all service/ resources that created.
- Check the AWS account after learner clean up.