

1. GIT :

1.1. There are three stages in Git:

- Repository (the .git directory)
- Working directory
- Staging area

1.2. Three States

Since there are three stages in Git, there are three matching states for a Git file:

- **Committed** - This is the version of the file has been saved in the repository (.git directory).
- **Modified** - The file has changed but has not been added to the staging area or committed to the repository.
- **Staged** - The modified file is ready to be committed to the repository.

1.3. Git propose deux types de référentiels, local et distant :

1.3.1. Référentiel local (local repository):

- Stocké sur le système de fichiers de la machine client.
- Utilisé pour exécuter les commandes Git.

1.3.2. Référentiel distant : (remote repository)

- Stocké ailleurs que sur la machine client, généralement sur un serveur ou un service d'hébergement.
- Optionnel, utilisé pour la collaboration entre plusieurs utilisateurs et machines client dans un projet.

1.4. Git Commands :

1.4.1. Git config :

Pour configurer Git, utilisez l'option --global pour définir les paramètres globaux initiaux.

```
$ git config --global user.name "<user's name>"  
$ git config --global user.email "<user's email>"
```

1.4.2. Create a New Git Repository :

Command: `git init`

1.4.3. Get an Existing Git Repository :

Command : `git clone <repository> [target directory]`

1.4.4. View the Modified Files in the Working Directory :

Command : `git status`

1.4.5. Compare Changes Between Files :

Command : `git diff`

1.4.6. Adding Files to the Staging Area :

- To add a single file to the staging area: `git add <file path>`
- To add multiple files : `$ git add <file path 1> ... <file path n>`
- To add all the changed files to the staging area: `git add .`

1.4.7. Removing Files from the Git Repository :

Command : `git rm`

1.4.8. Updating the Local Repository with the Changes in the Staging Area :

Command : `git commit -m "<message>"`

1.4.9. Updating the Remote Repository :

- update the contents from the local repository to a particular branch in the remote repository : `git push origin <branch name>`
- update the contents from the local repository to the master branch of the remote repository : `git push origin master`

1.4.10. Updating Your Local Copy of the Repository :

- To update the local copy of the Git repository from the parent branch :
`git pull` or `git pull origin`
- To update the local copy of the Git repository from a specific branch :
`git pull origin <branch>`

1.4.11. Creating and Deleting a Branch :

- To create a branch and switch the working directory to that branch :
`git checkout -b <parent branch> <branch name>`
- To delete a branch, use the following command:
`git branch -d <branch name>`

1.4.12. GET A LIST OF ALL BRANCHES

`git branch` or `git branch -list`

1.4.13. Merging Branches :

```
git merge <branch name>
```

1.5.What is a .diff file?

Developers use a .diff file to show how two different versions of a file have changed.

The symbols and meanings in a unified diff file are shown below:

- + : Indicates that the line has been added.
- - : Indicates that the line has been removed.
- /dev/null : Shows that a file has been added or removed.
- or "blank": Gives context lines around changed lines.
- @@ : A visual indicator that the next block of information is starting.
Within the changes for one file, there may be multiple.
- index : Displays the commits compared.

