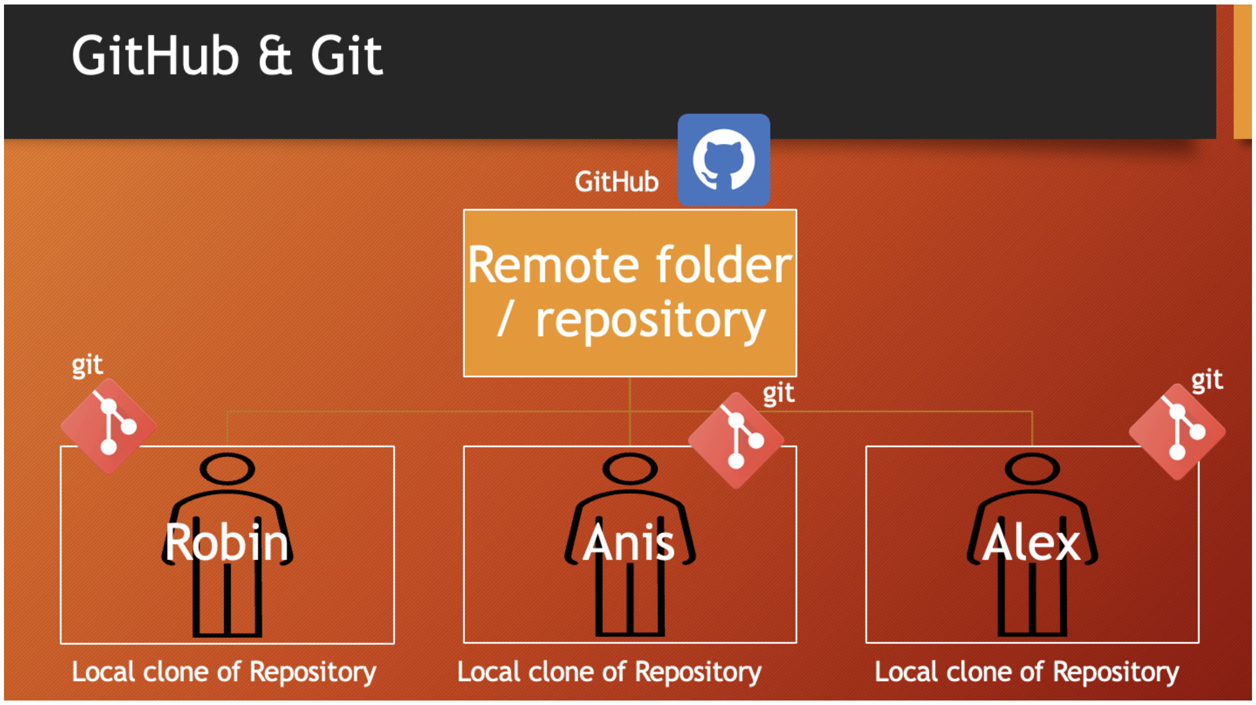
Git & GitHub Documentation

Lesson 2. Introduction to git and GitHub

1. git?
    - git is a version control software
    - It keep track of code changes
    - It helps to collaborate in a project
    - It is installed and maintained locally
    - It provides Command Line Interface (CLI)
    - Released in April 7, 2005
    - Developed by Linus Torvalds & Junio C Hamano
2. github?
    - GitHub is a hosting service where we can keep our git repositiory/folders
    - It is maintained on cloud/web
    - It provides Graphical User Interface (GUI)
    - Founded in 2008


GitHub & Git
GitHub
Remote folder / repository
git
git
git
Robin
Anis
Alex
Local clone of Repository
Local clone of Repository
Local clone of Repository

Lesson 3. How to set git environment and configuration

- Download and install git on your pc: https://git-scm.com/
- check git version: open terminal or cmd then use the command `git --version` to find out whether git is installed or not. if git is installed it will return a version number of git.

git configuration

1. check all configuartion options: `git config`
2. set global user name and user email for all repository/git folders (if you want to set different username and email for different git repository then remove --global)
   - set global user name: `git config --global user.name "anisul-islam"`
   - set global user email: `git config --global user.email "anisul2010s@yahoo.co.uk"`
3. list all git configuration:
   - list all the configuration: `git config --list`
   - list user name: `git config user.name`
   - list user email: `git config user.email`
4. change global username & email
   - change global user name: `git config --global user.name "PUT_NEW_USER_NAME_HERE"`
   - change global user email: `git config --global user.email "PUT_NEW_USER_EMAIL_HERE"`

Lesson 4. creating git repo and adding new files

1. creating a git folder

ls -a : list all files inside of a directory

```
mkdir DIRECTORY_NAME_HERE
cd DIRECTORY_NAME_HERE
git init

Example:
mkdir notes
cd notes
git init
```

```
ls -a
```

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2. adding new files in git folder

git status : displays the state of the working directory and staging area

```
ls -a
touch fileName.extension
open fileName.extension
git status

Example:
touch day1.txt
open day1.txt
write something inside the file
```

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- Git is aware of the file but not added to our git repo
- Files in git repo can have 2 states – tracked (git knows and added to git repo), untracked (file in the working directory, but not added to the local repository)
- To make the file trackable stagging or adding is required

Lesson 5. how to add files in staging area & remove files

1. adding files to stagging area:

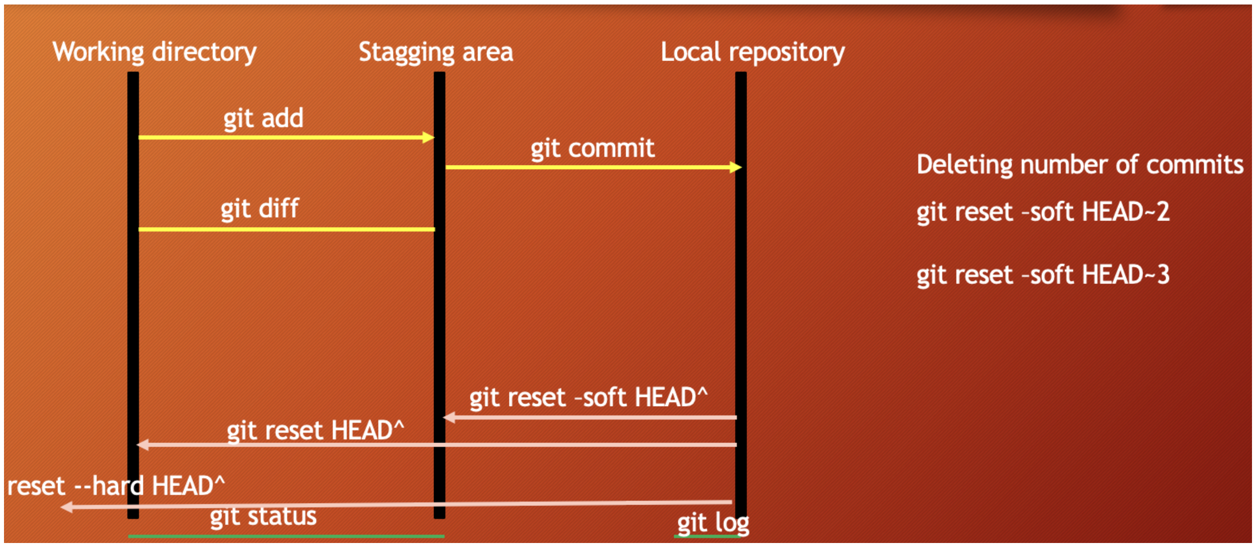
- `git add fileName` add a file in staging area / index
- `git add .` add all files of directory to stagging area not subdirectory
- `git add -A` add all files of directory and subdirectory to stagging area
- `git rm --cached fileName` unstage a file from staging area
- `git diff` - checking the differences of a staged file
- `git restore fileName` - restore the file

Lesson 6. practice-1

Lesson 7. commit & uncommit

- `git commit -m "message"` move the file to local repository from stagging area
- `git log` check the commit history

- `git reset --soft HEAD^` uncommit the commit in HEAD and move to staging area
- `git reset HEAD^` uncommit the commit in HEAD and move to unstaging / working area
- `git reset --hard HEAD^` uncommit the commit in HEAD and delete the commit completely with all the changes



Lesson 8. git HEAD and undo theory

- `git log --oneline`
- `git show`
- `git show HEAD^`
- `git show commit-id`
- `git checkout commit-id`
- `git checkout master`

Lesson 9. git HEAD and undo practical

Lesson 10. git revert

Lesson 11. git ignore

- create a .gitignore file and add the things you do not want to add in the stagging area
- Inside .gitignore we can keep secret files, hidden files, temporary files, log files
- `secret.txt` secret.txt will be ignored
- `*.txt` ignore all files with .txt extension
- `!main.txt` ignore all files with .txt extension without .main.txt
- `test?.txt` ignore all files like test1.txt test2.txt
- `temp/` all the files in temp folders will be ignored

Lesson 12. how to create github repository and commits

- sign in to your github account
- create a git repo

Lesson 13. README.md

- Everything you need to know about README.md is discussed in the video.
- 6 heading levels: number of hashes define heading levels. check the following examples:
  - `# heading 1 level text is here`
  - `## heading 2 level text is here`
- bold syntax: `__text goes here__`
- italic syntax: `_text goes here_`
- italic syntax: `_text goes here_`
- strikethrouh syntax: `~this is~~`
- single line code syntax: `` place code inside backticks
- multiple line code syntax: ``` place code inside three open and closing backticks
- multiple line code syntax: ```html for specific lanaguage use language name when starting; not closing
- for more please check the video by clicking the link given above

Lesson 14. Connecting local repo to remote repo

- check remote connection: `git remote` or `git remote -v`
- `git remote add name <REMOTE_URL>` example: git remote add origin http://...

Lesson 15. push and pull

- push a branch `git push -u origin branch_name`
- push all branches `git push --all`
- pull from a repo: `git pull` which is equivalent to git fetch + git merge

Lesson 16. branching and merging

- Branch is a new and separate branch of master/main repository
- create a branch `git branch branch_name`
- List branches `git branch`
- List all remote branches `git branch -r`
- List all local & remote branches `git branch -a`
- move to a branch `git checkout branch_name`
- create and move to a branch `git checkout -b branch_name`
- delete a branch: `git branch -d branch_name`

merge branches:

```
git checkout branchName
git merge branchName
```

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- `git log --oneline --all --graph`

Lesson 18. git and GitHub practice - 2

Lesson 19. GitHub Issues

Lesson 20. 2-way and 3-way merges

- Reeference:
  - https://www.tutorialspoint.com/what-is-a-fast-forward-merge-in-git
  - https://www.tutorialspoint.com/what-is-3-way-merge-or-merge-commit-in-git
  - https://medium.com/@koteswar.meesala/git-fast-forward-merge-vs-three-way-merge-8591434dd350

Lesson 21. Merge Conflicts

- https://www.tutorialspoint.com/what-is-merge-conflict-in-git-how-to-handle-merge-conflicts