Git & GitHub

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Git & GitHub

- what is Git & GitHub
- Basic Git Concepts
- git with vs code GUI
- git project workflow (basic commands)

GIT & GITHUB

Git

- Git is a version control system it helps you track changes in your code, go back to older versions, and work with others easily.

GitHub

- GitHub is a website that hosts your Git repositories online.
- It helps you store, share, and collaborate with other developers using Git.

Basic Git Concepts

- **Repository**: Folder tracked by Git.
- **Working Directory**: Your current files.
- **Staging Area**: Files prepared for committing.
- **Commit**: A saved snapshot of your code.
- **Branch**: A separate line of development.
- **Merge**: Combine changes from different branches.
- **HEAD**: Pointer to your current commit/branch.

Download and Install Git

Go to the official website: https://git-scm.com/downloads

- **Choose your system:**
- **Windows** → download .exe file
- **macOS** → use Homebrew: brew install git
- **Linux** → use terminal: sudo apt install git

- After installation check if Git works: git --version
- Example should show: git version 2.45.1

Configure Git

- You should set config information like username & email
- **Set configuration:**
  - git config --global user.name "ahmeddiab"
  - git config --global user.email "shhth0034@gmail.com"

- **Check configuration:**
  - git config user.name
  - git config user.email

Create a Local Repository

- Go to your project folder: cd path/to/your/project
- Initialize a Git repository: git init

Command	Describtion
git status	Shows changes in your project
git add filename or git add .	Adds files to “staging area”
git commit -m "message"	Saves your changes with a message
git log	Shows commit history

Connect to GitHub

- Link Your Local Repo with GitHub
  - git remote add origin https://github.com/yourusername/my-project.git

- **Check connection**
  - git remote -v

Push Code to GitHub

- git push -u origin main

Pull GitHub

- git pull origin main

Branches in Git

- A branch in Git is like a separate workspace inside your project it lets you work on new features or fixes without affecting the main code.

- Create new branch : git branch feature-login
- Move to it : git checkout feature-login
- Return to main : git checkout main
- Merge new work into main : git merge feature-login

References:

- Big Data by Arabic course : https://www.youtube.com/watch?v=Q6G-J54vgKc&t=600s
- Geeksforgeeks article : https://www.geeksforgeeks.org/blogs/ultimate-guide-git-github/
- W3school article: https://www.w3schools.com/git/git_intro.asp?remote=github

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