



Git & GitHub



Instructor: Ahmed Diab





Git & GitHub

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





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
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- 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 | Description |
|-------------------------------|-----------------------------------|
| 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`

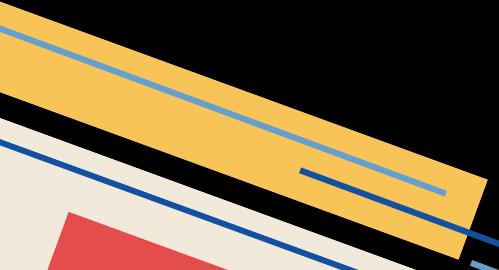


Push Code to GitHub

- `git push -u origin main`

Pull GitHub

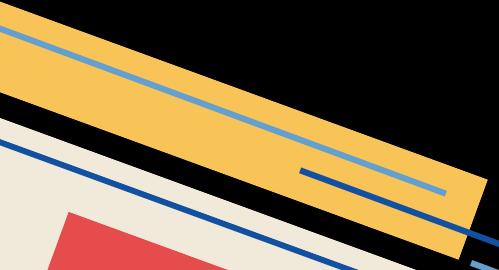
- `git pull origin main`





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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