



Git & GitHub



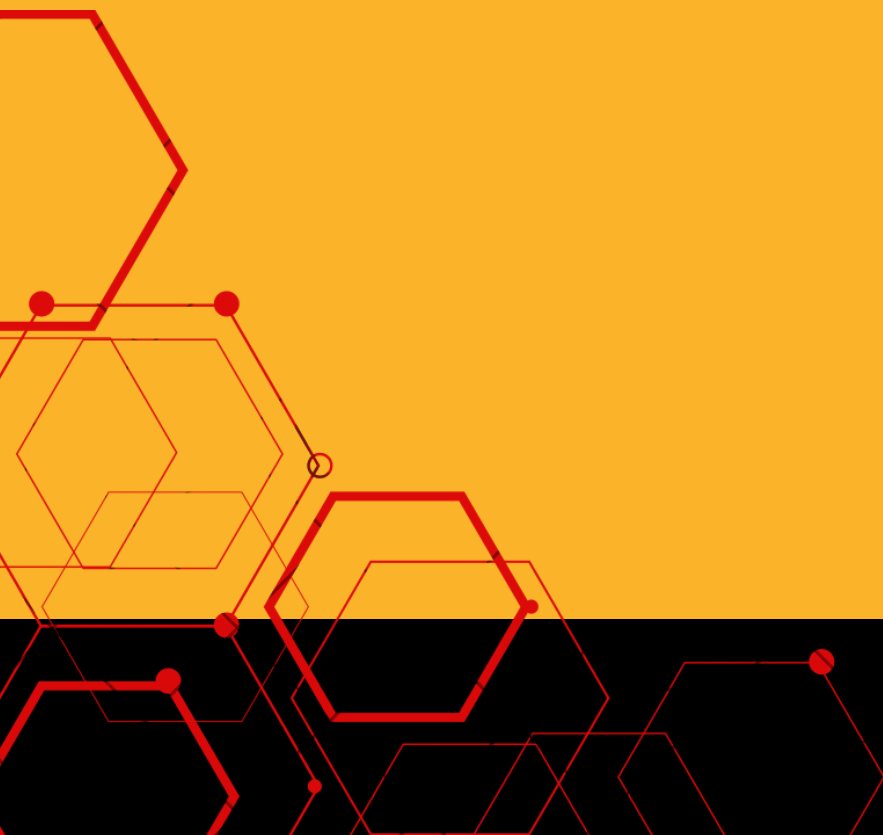
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Git & GitHub

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





Git

- 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
<code>git status</code>	Shows changes in your project
<code>git add filename</code> or <code>git add .</code>	Adds files to “staging area”
<code>git commit -m "message"</code>	Saves your changes with a message
<code>git log</code>	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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