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Git, GitHub, and Terminal

An Introduction

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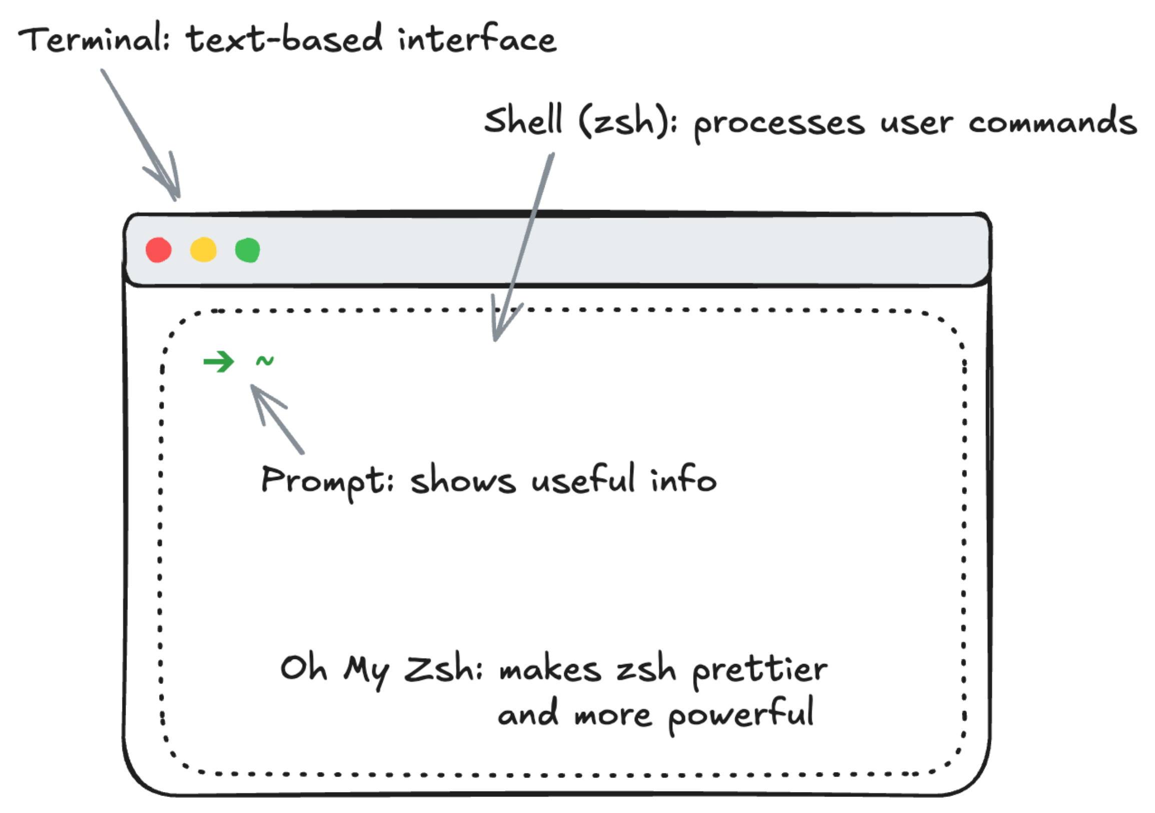
Terminal

Surviving in the terminal:

- `pwd`
- `ls -l`
- `mkdir <directory>`
- `cd <path>`
- `touch <file>`
- `rm <file> # rm -r <directory>`
- `mv <from> <to>`


Terminal: text-based interface
Shell (zsh): processes user commands
→ ~
Prompt: shows useful info
Oh My Zsh: makes zsh prettier and more powerful

Python

pyenv

We used pyenv to install and manage multiple Python versions.

- `pyenv versions`
- `pyenv install <version>`
- `pyenv global <version>`

virtualenv

- `pyenv virtualenvs`

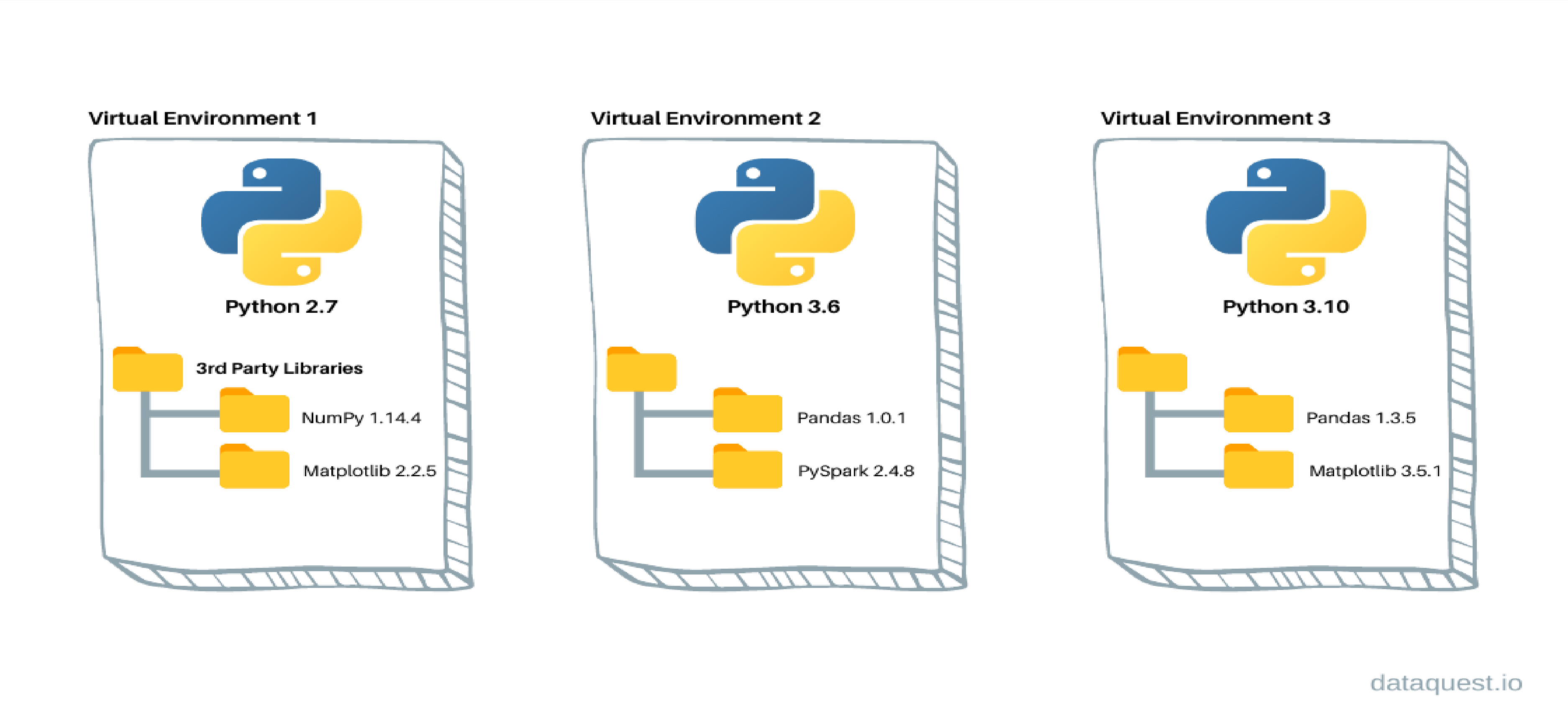
A safe place to `pip install <package>` without interfering with other tools.

Real situation:

Suppose you have Project A depending on pandas==1.4.4 and Project B on pandas==2.2.3, what can we do?

You can isolate those dependencies in two different virtualenvs.

Python



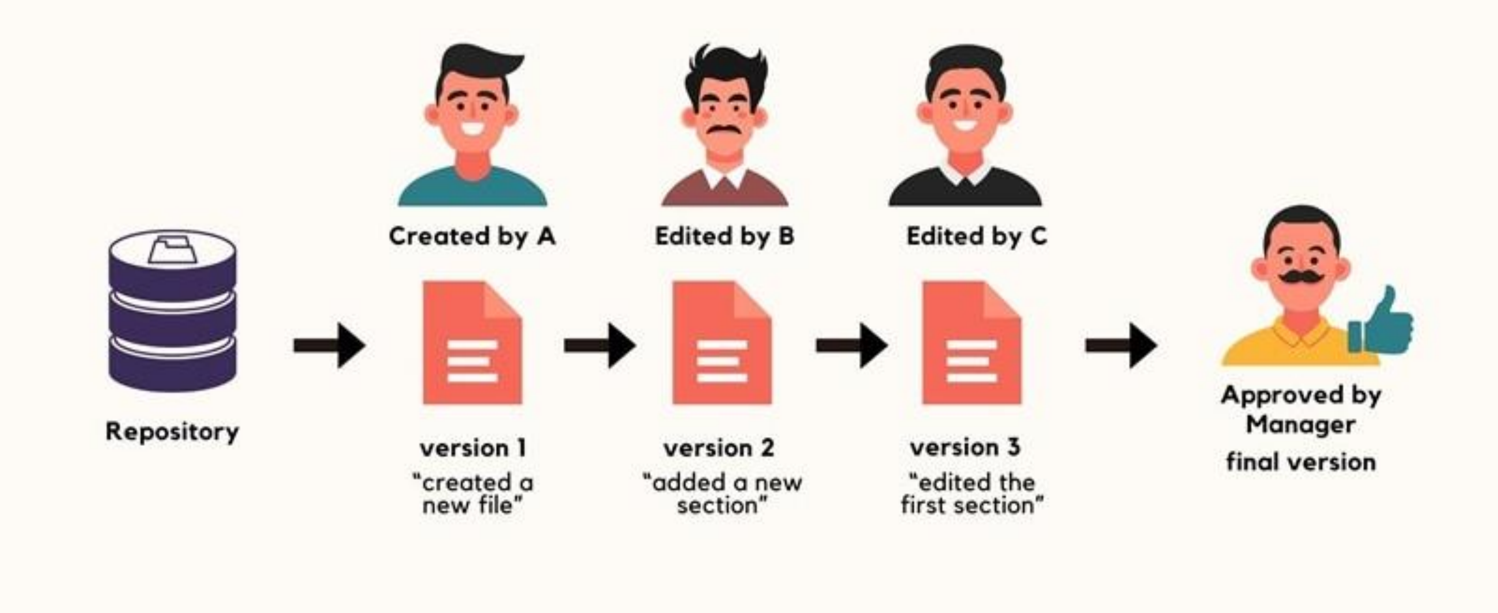
dataquest.io

- In the first weeks we'll use only one virtual environment called ai.
- It will be set by default when starting a new shell.

What Is Version Control?

- **Version Control** is a system that tracks changes to files over time.
- It's like a smart tool that helps people work together on projects, especially on computer programs.

- **Why it is important:**
  - Keeps history of changes
  - Allows reverting to previous versions
  - Supports collaboration
  - Prevents accidental data loss



git

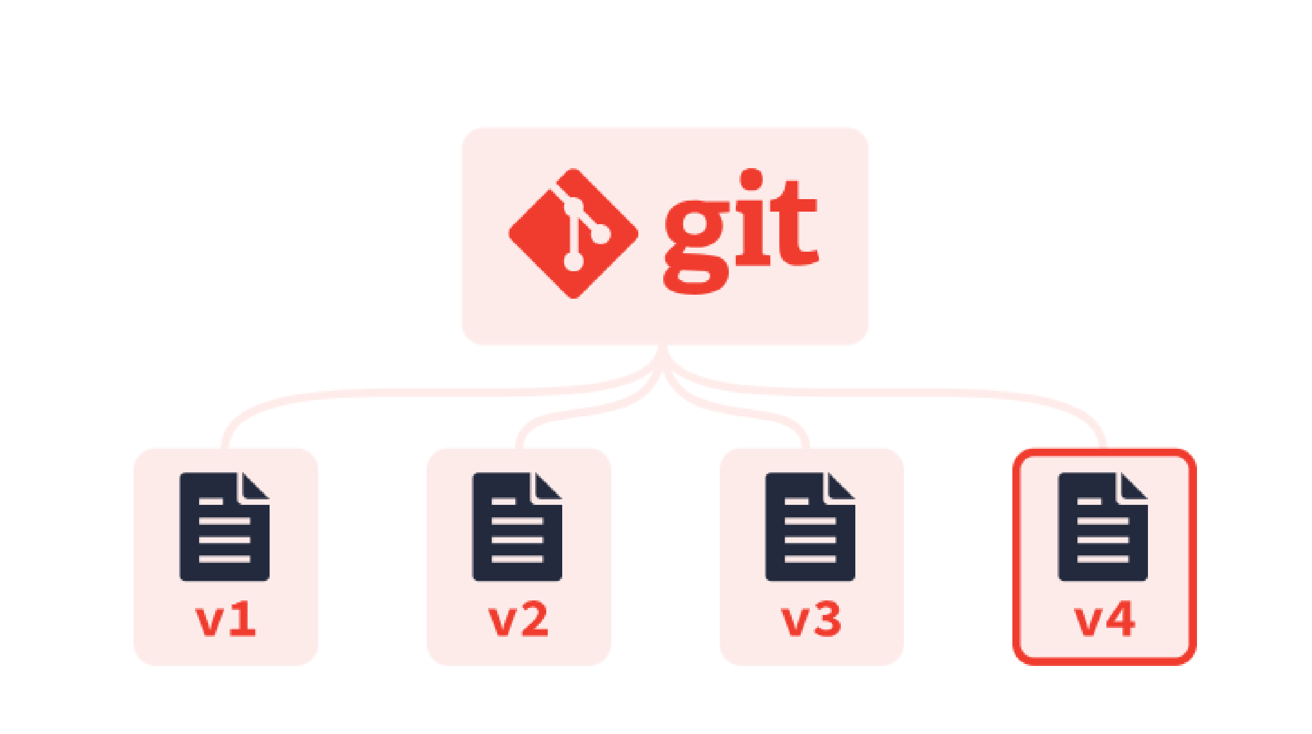
!=

GitHub

What Is Git?

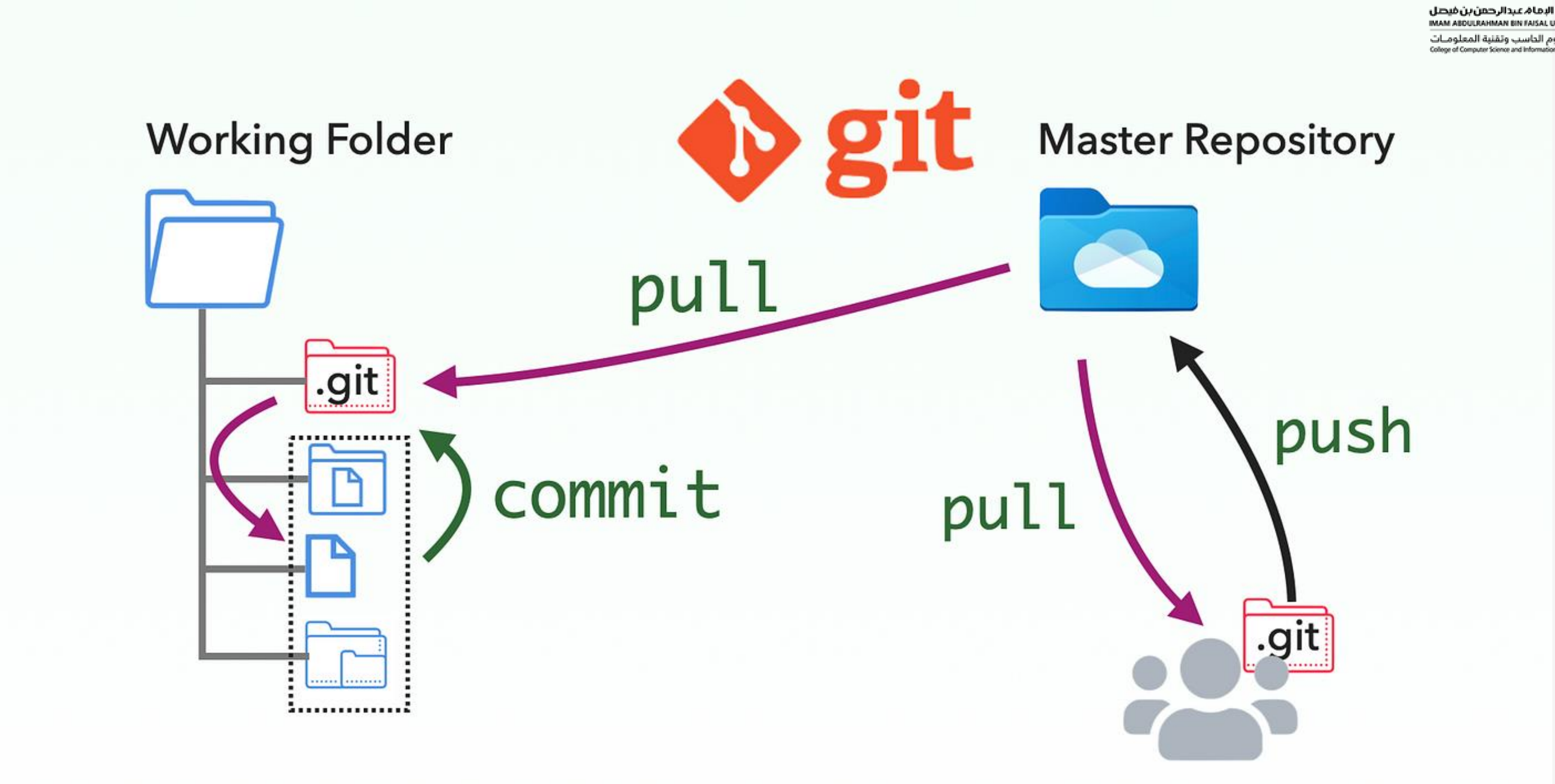
Git is a distributed version control system.

- Tracks changes in files
- Fast and Reliable
- Works Offline
- Used Via Command Line or tools like GitHub Desktop



Key Git Concepts

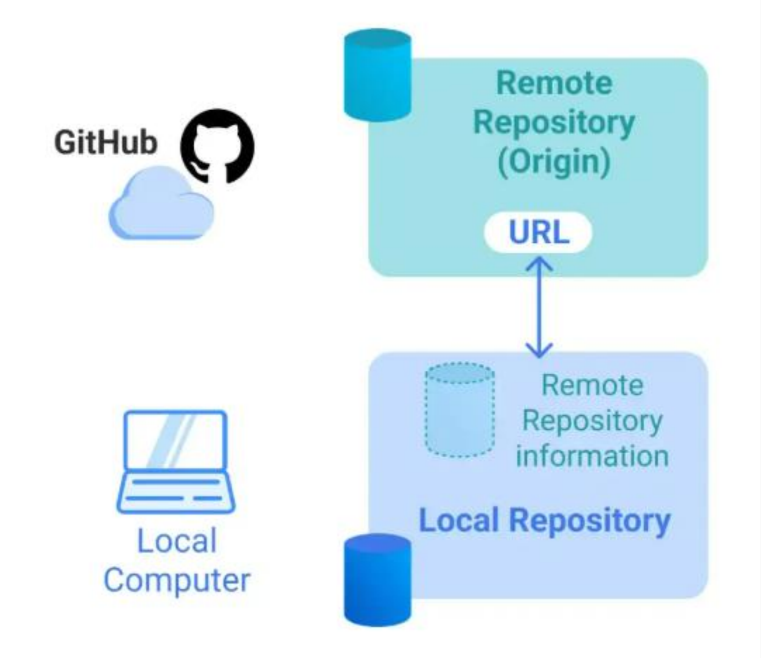
- **Repository (Repo):** Project folder
- **Commit:** Saved snapshot of changes
- **Branch:** Separate line of development
- **Merge:** Combine branches
- **Clone:** Copy a repository
- **Push:** Upload changes
- **Pull:** Download changes


git
Working Folder
Master Repository
.git
pull
commit
pull
push
.git

Repository (Repo)

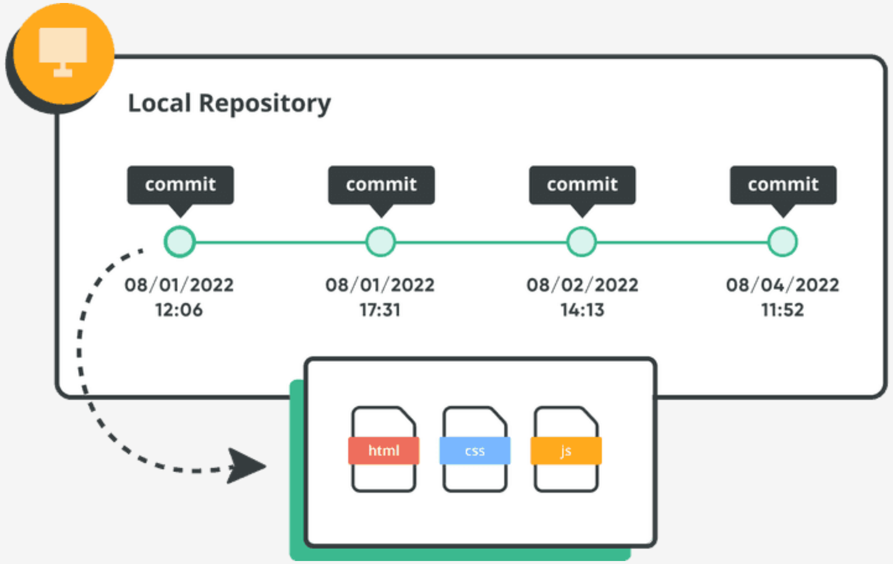
- **A repository** is a central project folder where all files, folders, and their complete change history are stored.
- Contains source code, documents, and configuration files

- **Local Repository:** on your computer
- **Remote Repository:** on GitHub



Commit

- A **commit** is a saved snapshot of changes made to files in the repository at a specific point in time.
- Records what was changed, when, and by whom
- Includes a commit message describing the changes
- Helps restore previous versions if needed

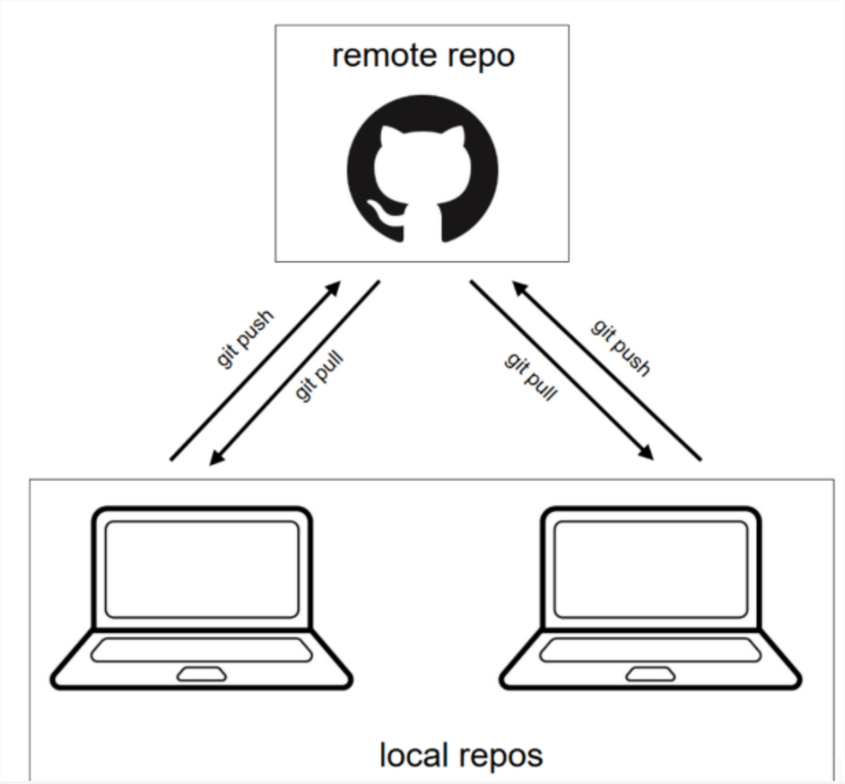


Clone

- A **clone** creates a local copy of a remote repository on your computer.
- Downloads all files and version history
- Allows offline work
- Keeps connection to the remote repository for updates

Push

- A **push** uploads committed changes from a local repository to a remote repository.
- A **pull** downloads and integrates changes from a remote repository into your local repository.



What Is GitHub?

- **GitHub is a cloud-based platform for hosting Git repositories.**
- Stores code online
- Enables collaboration
- Provides issue tracking
- Supports project management
- Widely used in open-source projects

Git vs GitHub

Git	GitHub
Version control tool	Hosting platform
Runs locally	Runs online
Tracks file changes	Shares and manages repos
Command-line based	Web interface

GitHub Features

- Repositories
- Pull Requests
- Issues
- Actions (CI/CD)
- Forking
- Collaboration tools

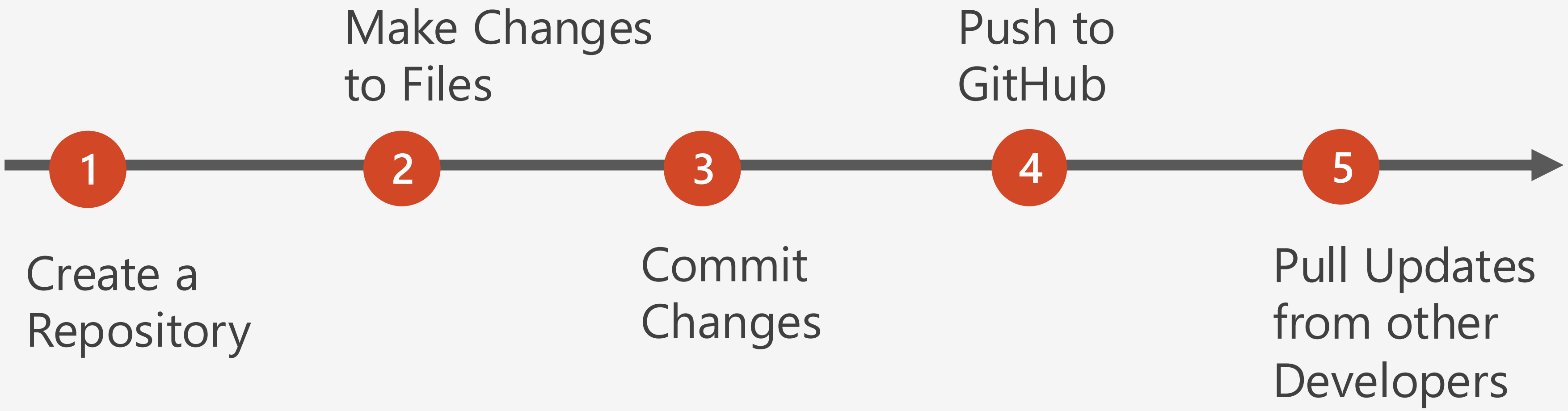
Forking

- **Forking** is the process of creating a personal copy of someone else's repository under your own GitHub account.

- It allows you to freely experiment with changes without affecting the original project.

Forking	Cloning
Creates a copy on GitHub	Creates a copy on your computer
Used for contributing to others' projects	Used for local development
Independent repository	Linked to a remote repository

Basic Git Workflow



1 Create a Repository

2 Make Changes to Files

3 Commit Changes

4 Push to GitHub

5 Pull Updates from other Developers

Git

Surviving with git:

- `cd ~/code/<YOUR_GITHUB_NICKNAME>`
- `git clone <ssh_url> # From GitHub, e.g. github.com/rfalnsari/git`
- `cd <repo>`

Working on master:

- `git status # Should be clean before you start working`
- `code . # Working in VS Code on those files`

- `git status # What files were added/removed/changed since last commit?`
- `git diff # What lines were added/removed since last commit?`

- `# Creating a new commit (2-step process)`
- `git add <file1> <file2>`
- `git commit -m "A MEANINGFUL MESSAGE"`

- `# Pushing commit to GitHub`
- `git push origin master`

Advanced Git Topics

The following Git concepts will be introduced later in the course, during the project weeks, when you will be working in teams:

- Pull
- Merge
- Branches & GitHub Flow
- Resolving merge conflicts

Set Up Your Device:

macOS: https://www.notion.so/Setup-instructions-for-mac-2e75ea763bc88012a4c9f59b5bd92739?source=copy_link

Windows: https://www.notion.so/Setup-instructions-for-Windows-2f15ea763bc880228a34c81ea20380bc?source=copy_link

Resources

GitHub Docs

GitHub Skills

GitHub Deskstop

Markdown Language