Version Control with Git/GitHub

Datanomics Academy
Phase 2

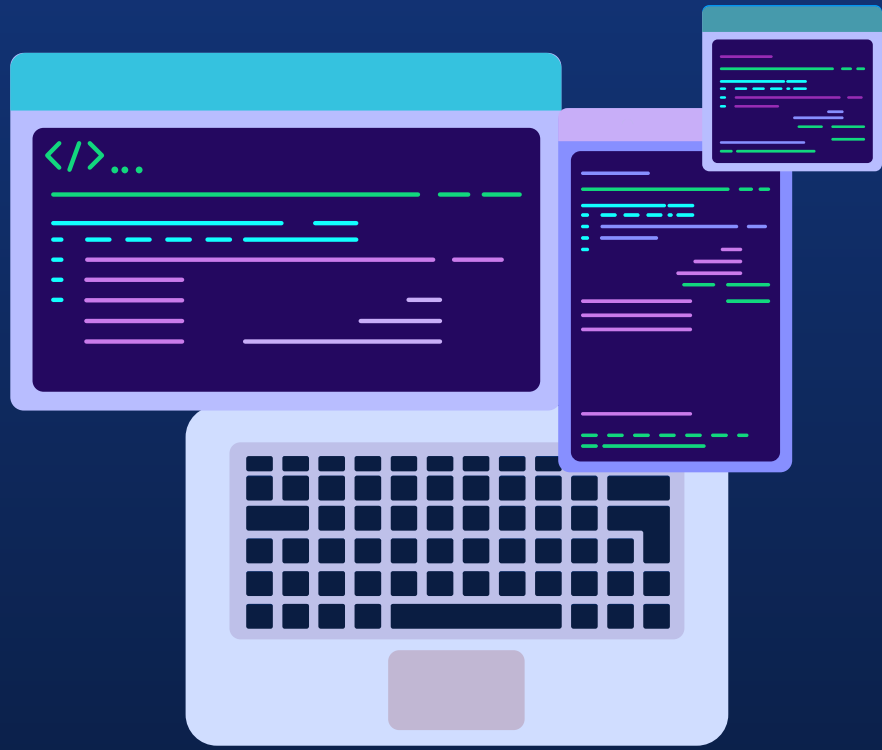


TABLE OF CONTENTS

01

What's Version Control?

Version control is also known as source control

02

Why Use Version Control?

Useful for tacking and collaborating on coding projects

03

What's Git?

Git is popular version control system

04

How Git Works

Here you could describe the topic of the section

05

Getting Started with Git

Git is popular version control system

06

Getting Started with GitHub

GitHub is a website for hosting your git repositories

01

What’s Source Control?

Source/Version Control

- Version control, also known as source control, is the practice of tracking and managing changes to software code.
- Version control systems or software tools help software teams manage changes to source code over time
- Version control software keeps track of every modification to the code in a special kind of database. If a mistake is made, developers can turn back the clock and compare earlier versions of the code to help fix the mistake while minimizing disruption to all team members.

Instead, version control lets developers safely work through **branching** and **merging**.

BRANCHING

developer duplicates part of the source code (called the repository).developer can then safely make changes to that part of the code without affecting the rest of the project

MERGING

Then, once the developer gets his or her part of the code working properly, he or she can merge that code back into the main source code to make it official.

All of these changes are then tracked and can be reverted if need be.

02

Why Use Version Control?

Version Control Systems(VCS)

VCS are also known as Source Code Management (SCM)

One of the most popular VCS tools in use today is called Git. Like many of the most popular VCS systems available today, Git is free and open source. Regardless of what they are called, or which system is used, the primary benefits you should expect from VCS are as follows.

- A complete long-term change history of every file
- Branching and merging
- Traceability

03

Git

git

What's Git?

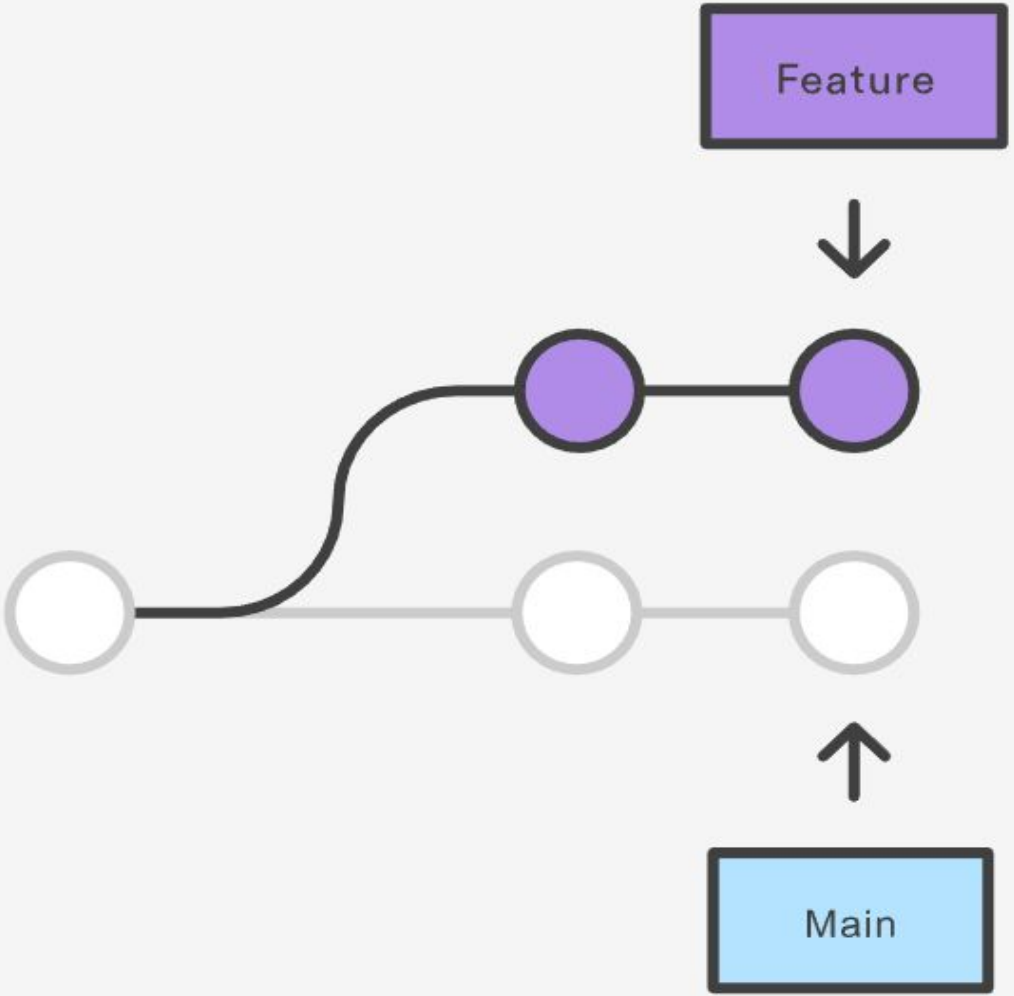
- By far, the most widely used modern version control system in the world today is Git.
- Git is installed locally and the commands are run on the shell, or terminal
- Git is a mature, actively maintained open source VCS and is the most broadly adopted tool of its kind
- Git has the functionality, performance, security and flexibility that most teams and individual developers need.

04

How Git Works

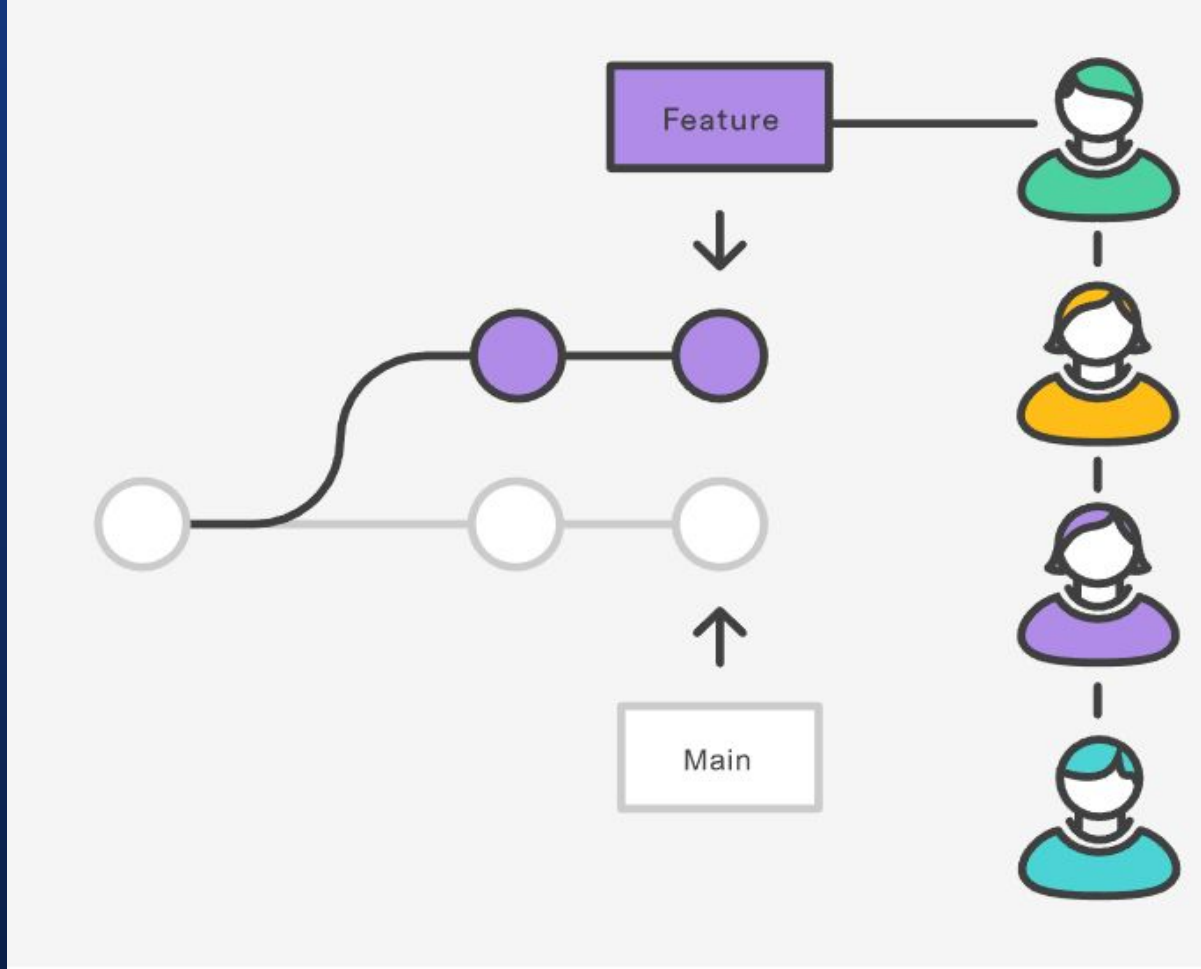
Git Feature Branching

Feature branches provide an isolated environment for every change to your codebase. When a developer wants to start working on something—no matter how big or small—they create a new branch. This ensures that the main branch always contains production-quality code.



Pull Request

A pull request is a way to ask another developer to merge one of your branches into their repository.



05

Getting Started with Git

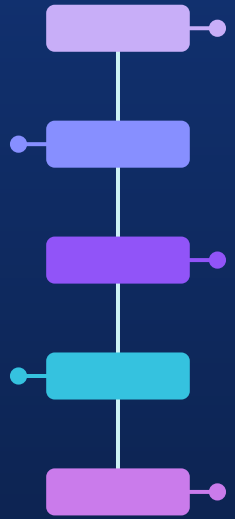
Git Workflow

Clone

An existing Git Repo

Commit

a modified version of a file to the repo



Initialize

New Git Repository

Stage

Mercury is the closest planet to the Sun

Configure

Git repo for remote collaboration

GIT REPO

is a virtual storage of your project. It allows you to save versions of your code, which you can access when needed.

Basic CLI Commands

`pwd`
Output the current directory that you are in

`ls`
List the content of the current directory

`pwd`
Output the current directory that you are in

`mkdir <foldername>`
Create a new folder <foldername>

`cd <foldername>`
Change the working directory to <foldername>

`Cd ..`
Go up a directory

Basic Git Commands

`git init`
one-time command you use during the initial setup of a new repo

`git clone`
used to create a copy or clone of remote repositories.

`git add`
add the changes so far to the repository staging area

`git commit`
used to create a copy or clone of remote repositories.

`git push`
sends the committed changes of master branch to your remote repository.

`git pull`
fetches and merges changes on the remote server to your working directory.

Staging

`git add .`
Saving a draft of your work progress in a staging area

It is like placing a letter in an envelope

Committing

`git commit -m “log message“`
Saving files and updating the repo

It is like placing the envelope in a mailbox

Staging

Committing

Working Directory

Staging Area

.git Directory
(Permanent Storage)

report.md

staged

staged

staged

staged

staged

committed

committed

06

GitHub

What's GitHub?

- **GitHub** is a website and cloud-based service that helps developers store and manage their code, as well as track and control changes to their code.

- **GitHub** is a for-profit company that offers a cloud-based Git repository hosting service. Essentially, it makes it a lot easier for individuals and teams to use Git for version control and collaboration.

- Git has the functionality, performance, security and flexibility that most teams and individual developers need.