Understanding and Mastering Git and GitHub

Beginner to Expert

Duration: 3 days (8hrs/day)

Prerequisites: N/A

Course Objective: This comprehensive course aims to equip participants with a robust understanding of version control systems, specifically focusing on Git and GitHub. Participants will gain hands-on experience in installing, configuring, and utilizing Git for effective source code management. The course covers fundamental and advanced Git operations, branch management, remote repository collaboration, pull requests, forking, and contribution workflows. Additionally, participants will explore advanced topics such as Git tags, rebasing, GitHub issues, labels, and actions. By the end of the course, participants will be proficient in using Git and GitHub for efficient version control in software development. Also, we will be using different tools like **SourceTree** or **GitHub Desktop** to visualize better.

Git Version: Latest, **Tools Used:** Git, SourceTree, VSCode, GitHub Desktop

Lab Requirement: Koenig-DC

Chapter 1 - Introduction to Version Control Systems

What is Version Control System

Types of Version Control Systems

Chapter 2 - Introduction to Git and GitHub

What is Git & GitHub?

Chapter 3 - Installation of Git and Configuration of Shell

Lab: Installing Git

Lab: Basic Git Configuration

Chapter 4 - Basic Shell Commands

Lab: Basic Shell Operations – like cd, mkdir etc

Lab: Working with Command Line

Lab: Using Help in Git commands

KOENIG
step forward

Chapter 5 - Working of Git

Types of Logical Spaces in Git

Working Architecture of Git

Chapter 6 - Basic Git operations

Lab: Initializing Git Repository

Lab: Adding Files in Staging Area

Lab: Creating Commits

Lab: Removing files from Staging Area

Chapter 7 - Git branches and HEAD

Understanding Branches

Lab: Creating Branches

Understanding HEAD

Lab: Moving Between Branches and Tracking HEAD

Chapter 8 - Merging Branches

Understanding Merging of Branches

Types of Merging

Lab: Merge Branches

Chapter 9 - GitHub and remote repository

Lab: Creating GitHub Account

Lab: Creating Empty Remote Repository on GitHub

Lab: Adding Remote Repository to Local Repo

Chapter 10 - Git Fetch, Git pull and Git push

Lab: Pushing Changes from Local Repo to GitHub

Lab: Pulling Changes from Remote to Local

Lab: git fetch vs git pull

KOENIG
step forward

Chapter 11 - Cloning, Exploring and modifying public repository

Lab: Cloning Remote Repository

Lab: Exploring Remote Repository Options

Lab: Protecting Branches

Chapter 12- Pull Requests

Lab: Creating Pull Requests

Lab: Setting Approvals for Pull Requests

Lab: Merging Pull Requests

Chapter 13 - Forking and contribution to public repository

Lab: Forking Public Repository

Lab: Making Changes and Creating Pull Requests for Public Repository

Chapter 14 - Git Tags and Rebasing

Understanding Uses of Tags

Types of Tags

Use-Cases of Rebasing

Lab: Creating tags and Pushing tags to remote repo

Lab: Rebasing Branches

Chapter 15 - GitHub Issues and Labels

Understanding use of GitHub Issues and Labels

Lab: Creating GitHub Issues and Labels

Chapter 15 - Watch, Star, Raw, Blame and History of file on GitHub

Understanding Features like Watch, Star, Raw & Blame on GitHub

Lab: Using Features like Watch, Star, Raw & Blame on GitHub

Chapter 16 - Ignoring files in Git

Use-Cases of Ignoring Files

Lab: Ignore Files and Folders in Local Repo

Lab: Formats to be used in .gitignore file

Chapter 17 - Detached HEAD

Use-Cases of Detached HEAD

Lab: Using Detached Head

Chapter 18 - Advanced Git

Lab: Advance Git Logging Filters

Understanding Git Reset and Git Revert

Understanding Git Stash

Lab: Using Git Reset and Git Revert

Lab: Stashing Git Data

Types of Objects in Git

Internal Working of Git

Lab: Reading Git Objects

Chapter 19 - GitHub pages

Lab: Deploying Static HTML Website Using GitHub Pages

Chapter 20 - Git Hooks

Understanding Git Hooks

Lab: Creating Git Hook to do execution before commit