TECHNOCATION FREELANCING TRAINING INSTITUTE & SOFTWARE HOUSE

Professional Git & GitHub Course Outline

Module 1: Introduction to Git & Version Control

- What is Version Control?
- Introduction to Git and Why It's Important
- Installing Git on Windows, macOS, and Linux
- Configuring Git (User, Email, Editor)

Module 2: Git Basics – Working with Repositories

- Initializing a Git Repository (`git init`)
- Cloning a Repository (`git clone`)
- Basic Git Workflow (`add`, `commit`, `status`, `log`)
- Understanding the Working Directory, Staging Area, and Commit History

Module 3: Branching and Merging in Git

- Understanding Branches and Why They Matter
- Creating, Listing, and Switching Branches (`git branch`, `git checkout`, `git switch`)
- Merging Branches (`git merge`)
- Handling Merge Conflicts

Module 4: Working with Remote Repositories (GitHub)

- Introduction to GitHub and Remote Repositories
- Connecting Local Repos to GitHub (`git remote add`, `git push`)
- Pulling Changes from Remote (`git pull`, `git fetch`)
- Forking and Cloning Repositories

Module 5: Collaborative Development with GitHub

- Understanding GitHub Pull Requests
- Code Reviews and Merging PRs
- Handling Issues and Discussions
- Using GitHub Actions for CI/CD

Module 6: Advanced Git Techniques

- Rebasing vs. Merging (`git rebase` vs. `git merge`)
- Stashing and Cleaning (`git stash`, `git clean`)
- Cherry-picking Commits (`git cherry-pick`)
- Rewriting History with `git reset` and `git reflog`

Module 7: Git Best Practices and Workflow Strategies

- Understanding Git Workflows (Feature Branch, GitFlow, Trunk-Based Development)
- Writing Meaningful Commit Messages
- Handling Large Repositories and Files (Git LFS)
- Secure and Efficient Git Usage

Module 8: Open Source and GitHub Advanced Features

- Contributing to Open Source Projects
- Managing Releases and Tags (`git tag`)
- Automating Workflows with GitHub Actions
- Using GitHub Projects for Agile Development

Final Module: Capstone Project & Certification

- Setting Up a Real-World Git & GitHub Project
- Team Collaboration Simulation
- Final Presentation and Code Review
- Course Completion Certification