Course Outline

ProTech Professional Technical Services, Inc.

protechtraining.com

Comprehensive Git and GitHub

Course Summary

Description

Whether new to version control or just needing a thorough explanation of Git and GitHub, this class will help you grasp the concepts of distributed version control and effectively begin using the GitHub suite of tools. Explore both Git concepts and typical GitHub workflows through practical demonstrations. Building upon your foundational knowledge of Git and GitHub, we'll help you leverage command line Git interaction skills as well as using Git within IntelijJ. This class will showcase traditional collaboration workflows, branching and merging, undoing mistakes, and connecting with multiple remotes in a distributed working environment.

The training involves moving beyond the basics to delve into Git architecture, configuration and important team functionality. In addition, discussions will cover strategies for effectively using Git, including the trade-offs from one strategy over another. It explores the internals of the Git file structure and how to track down changes and recover from unwanted changes. It explains when and how to do a three-way merge. It also explains how to choose the correct merge strategy in different scenarios.

Objectives

At the completion of this course, Students will be able to:

- Understand basic Git and GitHub concepts
- Effectively use GitHub tools
- Work in a distributed environment
- Understand Git management concepts
- Track and recover changes
- Identify and apply correct merging strategies

Topics

- Introduction to Git
- Introduction to the GitHub Platform
- Distributed Git
- Distributed Workflows
- Branching
- Merge Strategies
- Git Internals and Infrastructure
- Local and Global Configuration
- Git Collaboration

Audience

This course is designed for developers who need to learn how to work with Git.

Prerequisites

Familiarity with the SDLC (software development lifecycle) is a prerequisite for this course.

Duration

Three Days

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically

Course Outline

Comprehensive Git and GitHub

Course Outline

I. *Introduction to Git*

A. Familiarization with Git
B. Distributed Version Control System (DVCS) Concepts
C. Directory Structure
D. Versions
E. File States
F. Commit
G. Staging Area
H. Operations
I. Installation
J. Command Line
K. Git GUIs
L. Configuration
M. Working with Repositories

II. *Introduction to the GitHub Platform*

A. What is GitHub?
B. GitHub Desktop
C. Repository creation on the web and desktop
D. Repository Explorer

III. *Distributed Git*

A. Document versioning with local and remote repositories
B. Distributed version control synchronization
C. Git Bare
D. Synching with Remote
E. Workflow
F. Rebase
G. Merge
H. Branching in GitHub

IV. *Distributed Workflows*

A. Collaboration patterns and workflows
B. Project management and repository integration
C. Centralized Workflow
D. Integration Manager Workflow
E. Benevolent Dictator Workflow
F. Merging Changes

V. *Branching*

A. Commits and establishing versions on the command line
B. File change review and comparison
C. Branching strategies for local and collaborative work

VI. *Merge Strategies*

A. Merge and Pull
B. Merging
C. Conflict resolution
D. Merge options

VII. *Multiple Remotes and Forks*

A. History review and assessment
B. Multiple remotes and Fork maintenance

VIII. *Git Internals and Infrastructure*

A. Prerequisites
B. What this course covers
C. Git infrastructure in detail
D. Repository size
E. File System Check
F. Pruning
G. Filter-branch
H. Garbage Collection

IX. *Local and Global Configuration*

A. Configuration
B. Customization
C. Finding Content
D. Debugging
E. Client Hooks and strategies
F. Server Hooks and strategies

X. *Git Collaboration*

A. Rebase
B. Dry-runs
C. Configuring remotes
D. Refspecs
E. Archives (send & receive)
F. Patching
G. Sub-modules
H. Cherry-Picking

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically