

## Git: Mastering the Local Repository

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### Course Summary

#### Description

This course is for those who have the basics in Git but want to deepen their skills. With a focus on the local repository, this course looks into important commands to provide students the experience to leverage Git to their advantage. The local repository, home to Git objects, is a fundamental component in Git and its management is the responsibility of each team member. However, finding and reading the objects can be difficult. In this training students will learn useful commands to navigate the Git system, to gain experience with managing git objects. Another common challenge faced by Git users centres on updating branches through the process of merging. There are various merge strategies from which to choose, as well as potential merge conflicts to resolve. Merge strategies will be discussed with an emphasis on minimizing conflicts and leveraging the available options to maximize efficiency. Rounding out the session, the day will conclude with a number of key commands selected to empower the students with the ability to organize and manage commits to ensure their local repository is team worthy.

#### Objectives

At the end of this course, students will be able to:

- Minimize the number of commits to optimize collaboration tasks
- Understand merge strategies to appropriately choose the best to employ
- Minimize merge conflicts
- Find and read Git objects
- Keep the repository clean by editing and undoing commits
- Identify issues and apply techniques to fix problems

#### Topics

- Managing Branches
- Managing Commits
- Troubleshooting
- Working with Commits

#### Audience

One day

This course is designed for developers regularly using Git who want to deepen their skills to keep their local repository clean.

#### Prerequisites

Foundational Git experience and knowledge are required including:

- core concepts of how git works
- creating and adding files to the local repository
- creating and navigating branches

Familiar with how to run git commands is assumed

Comfortable working in bash (unix shell) is highly beneficial

#### Duration

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### Course Outline

- I. Managing Branches*
  - A. Navigating Branches
  - B. Activity: Work with Git Stash
  - C. Updating Branches
  - D. Activity: Recursive Merge With Options
- II. Managing Commits*
  - A. Finding Commits
  - B. Activity: Using Rev List
  - C. Activity: Using Reflog
  - D. Activity: Using Log
  - E. Reading Commits
  - F. Activity: View Git Objects
- III. Troubleshooting*
  - A. Debugging
  - B. Activity: Troubleshoot a Problem
  - C. Cherry-Picking
  - D. Activity: Cherry-pick to Move a File
- IV. Working with Commits*
  - A. Altering Commits
  - B. Activity: Amend a Commit
  - C. Undoing Commits
  - D. Activity: Fix Reverting
  - E. Activity: Undo a Reset