SYNOPSIS

Project Title:

Git Bash & GitHub Hands-On Project: Personal Portfolio Website

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Session: 2025

Title of the Project

Development and Version Control Management of a Personal Portfolio Website

Introduction

This project involves the development of a personal portfolio website to showcase academic and professional achievements. However, the primary focus of this undertaking is not merely the web development aspect, but the rigorous application of Version Control Systems.

The project will utilize Git Bash for local repository management and GitHub for remote repository hosting. The workflow simulates a real-world software development lifecycle, utilizing branching strategies, commit history management, and conflict resolution to ensure code integrity and collaboration readiness.

Objectives of the Project

The primary objectives of this project are:

- To design a functional HTML/CSS personal portfolio page.
- To demonstrate proficiency in Git Bash commands
- To implement a robust branching strategy including feature, test, bugfix, and experimental branches.
- To simulate and resolve merge conflicts to understand code divergence.
- To synchronize local development with a remote GitHub repository.
- To document the development process using Markdown.

Problem Statement / Need of the Project

In modern software development, managing changes to source code is critical. Without a version control system, developers face issues such as:

- Loss of code due to accidental deletion.
- Inability to revert to previous working states after introducing bugs.
- Difficulty in working on new features without breaking the main codebase.
- Lack of a backup on a remote server.

This project addresses these needs by establishing a structured Git workflow, ensuring that every change is tracked, reversible, and backed up remotely.

Scope of the Project

- **Functional Scope:** Creation of a Landing Page, About Section, and Contact Section using HTML5.
- **Technical Scope:**
  - Initialization of a local Git repository.
  - Execution of minimum 10 meaningful commits.
  - Creation and management of 4 specific branches: feature/add-css, test/validation, bugfix/typo-fix, and experiment/dark-mode.
  - Demonstration of merging and conflict resolution.
  - Remote connectivity via GitHub.
- **Documentation Scope:** A comprehensive README.md file detailing the commands used, challenges faced, and screenshots of the operations.

Methodology / Tools Used

Tools:
- **Git Bash:** Command-line interface for executing Git commands.
- **GitHub:** Cloud-based hosting service for the remote repository.
- **VS Code:** Text editor for writing HTML/Markdown.
- **Markdown:** For project documentation.

Methodology:
1. **Initialization:** Set up the project directory and run git init.
2. **Iterative Development:** Build the website structure incrementally, ensuring frequent commits with descriptive messages.
3. **Branching Workflow:**
   - Create a feature branch to add styling.
   - Create a test branch to validate links.
   - Create an experiment branch to try new layouts.
   - Create a bugfix branch to correct intentional errors.
4. **Conflict Simulation:** Intentionally modify the same line of code in two different branches and merge them to trigger and resolve a conflict.
5. **Remote Synchronization:** Use git remote add origin to connect to GitHub and push the final codebase.

Expected Outcomes

Upon completion of this project, the following deliverables will be achieved:

- A live GitHub repository containing the source code.
- A clear commit history showing the evolution of the project.
- Evidence of successful branch management and merge operations.
- A professional README.md file serving as project documentation.
- Practical mastery of Git CLI operations.

Project Timeline

- **Phase 1:** Project selection and Directory setup.
- **Phase 2:** Repository initialization and initial commits .
- **Phase 3:** Branch creation and Feature implementation.
- **Phase 4:** Conflict simulation and resolution.
- **Phase 5:** GitHub Remote setup and Final Push.
- **Phase 6:** Final Documentation and Submission.

References

- Official Git Documentation (git-scm.com).
- GitHub Guides (https://www.google.com/search?q=guides.github.com).
- Course Lecture Notes on Version Control Systems.