

Group Assignment: Collaborative Development with Git - Calculator or Text File Analyzer

Objective:

This group assignment aims to enhance teamwork in software development using Git. Each team member will contribute a unique feature or improvement to a shared base project—a simple calculator or text file analyzer. The assignment involves using Git branches for individual work and pull requests for code integration and review.

Group Size:

Each team should consist of 4 members.

Project Options:

Simple Calculator: A basic command-line calculator that performs arithmetic operations.

Text File Analyzer: A tool that analyzes text files to provide statistics or information.

Other: Consult with the instructor.

N.B. The project can be as simple or as complex as you want. The goal is to practice collaborative development with Git – you will be evaluated based on successful integration of changes and following best practices, not novelty or complexity of the tool.

Suggested Features:

For Simple Calculator:

- Basic Arithmetic Operations: Addition, Subtraction, Multiplication, Division.
- Advanced Mathematical Functions: Trigonometric functions, logarithms, square root.
- History Feature: Keeping track of past calculations.
- File I/O: Allowing users to input calculations from a file and output results to a file.

For Text File Analyzer:

- Word Count: Count the total number of words in a text file.
- Frequency Analysis: Find the frequency of specific words or phrases.
- Readability Score: Calculate a readability score indicating the text complexity.
- Text Summary: Generate a summary of key points or topics in the text.

Tasks:

Part 1: Project Setup

Initialize the Project:

- One team member creates a new Git repository and adds a skeleton code for either the calculator or text file analyzer.
- Commit the initial version to the main branch and share the repository with the team.

Feature Planning:

- As a team, decide which features each member will work on and document these in an issues.md file.

Part 2: Feature Development

Branching for Features:

- Each team member creates a branch for their feature from the main branch.
- Members work independently on their branches to develop their features.

Part 3: Integration and Review

Creating Pull Requests:

- Team members open pull requests for their features against the main branch.
- Each pull request should clearly describe the added feature.

Code Reviews and Merging:

- The team reviews each pull request, providing constructive feedback.
- After addressing any feedback, merge the feature into the main branch.

Part 4: Documentation and Reflection

Update Documentation:

- Collaboratively update the README.md file, detailing the functionality of the calculator or text file analyzer and instructions for use.

Reflective Team Report:

- Write a collaborative report reflecting on the development process, challenges faced, and lessons learned.

Submission Guidelines:

- Submit the link to the Git repository with all members' contributions.
- Include the team reflection report within the repository.

Evaluation Criteria:

- Successful implementation and integration of features.
- Effective use of Git for version control and collaboration.
- Constructive participation in code reviews.
- Quality and clarity of documentation.
- Insightfulness of the team reflection report.

Deadline:

Submit the assignment by [deadline].