
# CODE VERSION CONTROL SYSTEM

## Project Report

**Submitted by**

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### Introduction

This project implements a basic Code Version Control System using Java, inspired by Git. It provides branch and commit management with a client-server architecture and data persistence via serialization.

### Objectives

- Manage branches and commits.
- Enable client-server interaction for collaboration.
- Ensure repository state is saved and restored.

**Features**

1. Branch Management: Create and switch branches.
2. Commits: Add and view commit history.
3. Client-Server Model: Send commands from clients to a central server.
4. Persistence: Save repository state using serialization.

**Architecture**

• **Client**: Sends user commands.

• **Server**: Handles commands and manages repository operations.

• **Classes**:

- Repository: Manages branches and commits.
- Branch: Stores commits.
- Commit: Links changes in a chain.

**Challenges and Solutions**

- Concurrency: Managed multiple client connections using thread pools.
- Data Persistence: Implemented serialization for saving repository states.

**Conclusion**

This system demonstrates a simplified version control process. It provides foundational functionality, with potential for advanced features like branch merging and distributed repositories.