

Dr. D. Y. Patil Unitech Society's
Dr. D. Y. Patil Arts, Commerce and Science College, Pimpri, Pune - 18
Department of Computer Science
2024-2025
B.Sc.(CA) and M.Sc.(CA)

Project Synopsis

Class: T.Y.B.C.A. (Science) Sem-VI

Project Title: Next-Gen Version Control System for Modern Development

Enter Member details:

Roll No	Team members Name	Contact No
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Project Details:

1. Scope of the Project: – (Explanation of the project in short)

This project aims to develop a next-generation version control system, addressing key challenges faced by modern development teams on GitHub. It focuses on improving workflow efficiency, enhancing collaboration, and ensuring better code quality and management, tackling issues like poor issue management, navigating large repositories, and code review fatigue.

2. Hardware requirement:

1. Server/Cloud Infrastructure: Quad-core processor, 8 GB RAM, 100 GB storage.
2. Development Machines: Dual-core processor, 4 GB RAM, Windows/macOS/Linux OS.
3. Networking: Reliable internet connection, suitable bandwidth for data synchronization and file transfers.

3. Software requirement:

1. Server: Node.js v22.12.01 LTS, MongoDB Atlas (8.0.4-current)
2. Frontend: React 19.0.0, HTML5, JavaScript (ES14), Tailwind CSS 3.4.15
3. Database Query Language: MongoDB Query Language (MQL) with JavaScript-like syntax

Scope of the Project: -

Next-Generation Version Control System Project Overview

Primary Goal:

The primary goal of this project is to develop a next-generation version control system that addresses key challenges faced by modern development teams with Github. The focus will be on improving workflow efficiency, enhancing collaboration, and ensuring better code quality and management. This system will target and resolve key issues such as poor issue management practices, difficulty navigating large repositories, and code review fatigue.

Existing System Problems:

1. **Poor Issue Management Practices:** Unclear issue descriptions and lack of proper labeling lead to inefficient tracking and resolution.
2. **Difficulty Navigating Large Repositories:** Large codebases create challenges in locating specific files or areas, leading to reduced productivity.
3. **Potential for Code Review Fatigue:** Manual conflict resolution, unclear PR prioritization, and inconsistent review practices contribute to reviewer exhaustion.

Proposed System Solutions:

1. **Improved Issue Management:**
 - Introduce templates, labels, and tags to ensure clear tracking of issues.
 - Implement better notification systems to keep all stakeholders updated on issue progress.
2. **Enhanced Repository Navigation:**
 - Utilize modular codebase structures, advanced search tools, and analytics to simplify navigation within large repositories.
3. **Efficient Code Review:**
 - Introduce PR (Pull Request) prioritization, automated conflict resolution, and standardized review templates to reduce code review fatigue and improve productivity.

By implementing these solutions, the system aims to foster improved collaboration, streamline workflows, and ensure higher code quality and better management practices for modern development teams.

Hardware Requirements:-

1. Server or Cloud Infrastructure:

- A reliable server or cloud environment for hosting the version control system.
- Minimum specifications:
 - CPU: Quad-core processor or equivalent.
 - RAM: 8 GB or more.
 - Storage: 100 GB or more for code storage and databases.
- Optional: High-performance storage solutions like SSDs for faster access to large repositories.

2. Hardware Requirements:-

- Development machines for contributors.
- Minimum specifications:
 - CPU: Dual-core processor or equivalent.
 - RAM: 4 GB or more.
 - Operating System: Windows, macOS, or Linux.

3. Networking:

- Reliable internet connection for access to repositories and continuous integration systems.
- Suitable bandwidth for data synchronization and file transfers.

Software Requirements:-

- **Server:** Node.js v22.12.01 LTS
 - JavaScript(ES14)
- **Database:** mongodb-atlas (8.0.4-current)
 - **MongoDB Query Language (MQL)**, which is based on JavaScript-like syntax.
- **FrontEnd Framework:** React 19.0.0
 - HTML5
 - JavaScript(ES14)
 - **FrontEnd Framework:** tailwind css Stable release: 3.4.15
 - Css3

Submission Date:

Student sign: 1._____