Spartan Cove

Abstract

The proposed project, "Spartan Cove," is a real-time decentralized chat application tailored specifically for the students, faculty, & staff of San Jose State University (SJSU). This application aims to provide a secure, efficient, and feature-rich communication platform that integrates seamlessly with the existing university infrastructure and enhances overall campus connectivity.

Real-time Communication

The core of this project is built on a robust database architecture, ensuring data redundancy, resilience, and privacy. The application supports real-time messaging, allowing users to send and receive messages instantaneously.

SJSU-Specific Features and Google SSO Integration

Spartan Cove is exclusive to SJSU, requiring users to sign up and log in using their SJSU email via Google Single Sign-On (SSO). This integration not only streamlines the login process but also ensures that only authenticated members of the SJSU community can access the platform. Once logged in, users can access a comprehensive directory of all SJSU students and faculty, facilitating easy search and initiation of conversations.

End-to-End Encryption and Security

Security is a major concern for any communication platform. Spartan Cove employs end-to-end encryption (E2EE) to ensure that messages remain private and secure, accessible only to the intended recipients. This means that even the application administrators cannot read the messages, ensuring complete confidentiality.

Advanced Communication Features

In addition to one-on-one messaging, Spartan Cove supports group chats, allowing users to create and participate in group discussions. Multimedia sharing is another key feature, enabling users to share images, videos, and documents seamlessly within conversations. The application also includes a message scheduling feature, allowing users to compose messages and schedule them to be sent at a later time, enhancing convenience and productivity.

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Notifications and Informative Bot

Spartan Cove will send email notifications upon sign-up and for other significant activities to keep users engaged and informed. Additionally, leveraging the SAMMY API, the application will include an informative bot that can provide users with useful information about campus events, schedules, and other relevant updates.

Project Milestones

Aug 23, 2024 - Team Formation

Sep 18, 2024 - Idea & Abstract Submission

Sep 29, 2024 - Requirements Freeze

Oct 6, 2024 - Architecture & Design Implementation

Nov 17, 2024 - Development Complete

Nov 24, 2024 - System Testing

Dec 1, 2024 - Deployment to Production

Dec 5, 2024 - Project Presentation

Project Challenges and Risks

While Spartan Cove offers numerous benefits, it also presents several challenges and risks:

- **Data Security and Privacy**: Ensuring robust end-to-end encryption and safeguarding user data across a database to have real-time communication poses significant technical challenges. Any vulnerabilities could lead to data breaches and privacy issues.
- **Integration with Google SSO**: Seamlessly integrating Google SSO while maintaining high-security standards requires careful planning and execution to prevent unauthorized access.
- **Scalability**: The application must handle a potentially large number of users and high volumes of messages, necessitating a scalable infrastructure to ensure consistent performance.
- **User Adoption and Engagement**: Encouraging the SJSU community to adopt a new communication platform involves extensive user training and continuous engagement strategies.

- **Maintenance and Support**: Ongoing maintenance, updates, and support are crucial to addressing bugs, introducing new features, and adapting to evolving user needs and technological advancements.

Project Requirements

To align with the professor's requirements for the Enterprise Software Platform course, Spartan Cove will also incorporate the following features and deliverables:

1. **Single Sign-On (SSO) / AD Authentication with SSL/TLS Encryption**: Implement secure authentication to ensure only verified SJSU users can access the application.
2. **Application/Web Portal for Viewing/Browsing Enterprise Employee Data with SSO Roles**: Enable users to view and browse sample enterprise employee data, incorporating role-based access controls.
3. **GitHub Integration (Optional)**: Integrate the GitHub repository with SSO for streamlined code management and version control.
4. **Jenkins Integration**: Integrate Jenkins with SSO and GitHub for continuous integration and continuous deployment (CI/CD) processes.
5. **Additional Integrations/Features for Higher Grade**: Consider integrating additional features such as layered security, social media integration, document repository, and Salesforce integration.

Project Deliverables

1. **Project Plan**: A detailed project plan in .docx format, outlining the scope, objectives, timeline, and resources required for the project.
2. **Project Presentation**: A comprehensive project presentation in .pptx format, highlighting key aspects of the project.
3. **Project Report**: A detailed project report in .docx format, including design patterns, diagrams, use/test cases, screenshots, and references.
4. **Live Project Presentation**: A 15-minute live presentation where each team member presents a portion of the project.
5. **Code Repository**: RAYR_Spartan_Cove: CMPE-272 Project (github.com)

By addressing these requirements and deliverables, Spartan Cove will not only meet the academic criteria but also provide a robust, secure, and user-friendly communication platform for the SJSU community.

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Conclusion

Spartan Cove is designed to foster a more connected and secure campus environment. Integrating essential features such as real-time messaging, end-to-end encryption, multimedia sharing, and advanced user directory capabilities aims to provide a comprehensive and user-friendly communication tool for the entire SJSU community. Including innovative features like message scheduling and an informative bot further enhances its utility, making it an indispensable part of the university's digital ecosystem. However, careful consideration of the associated challenges and risks is essential to ensure successful implementation and sustained usage.
