SPIDROX IMPLEMENTATION OF STUDENT SOCIAL NETWORKING USING QUARKUS & FLUTTER

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Introduction:

- **Description of the Project:** The project aims to create a platform that helps students connect easily with classmates and peers across departments, encouraging both academic and social interactions. It uses Flutter for a responsive user interface and Quarkus for a strong backend system. The platform supports academic collaboration through features like group projects and study sessions, and enables real-time communication with private messaging, group chats, and media sharing. It also connects students with mentors, faculty, and alumni to support career growth and guidance. With secure login, reliable data storage, and scalable design, the platform ensures a safe and smooth user experience while enhancing the overall college community.

- **Technology Used:** The project uses a modern tech stack for performance, scalability, and real-time interaction. Flutter SDK builds a cross-platform frontend, while Quarkus powers a low-latency backend. PostgreSQL manages user data, and Apache Pulsar enables real-time messaging. Docker and Kubernetes handle containerization and orchestration. OAuth 2.0 and JWT ensure secure authentication. After finalizing the stack, the

process starts with Requirement Analysis to define user needs and key features. System Design sets up the Flutter-Quarkus architecture. Frontend Development focuses on a responsive UI, while Backend Development creates RESTful APIs. Integration links the frontend and backend, and Deployment uses cloud platforms for secure hosting. Maintenance includes monitoring and regular updates.

Outcome and Impact

- **Results Achieved:** The Student Social Networking Platform successfully addresses academic collaboration needs by combining real-time communication, mentorship, and resource sharing. Built with a modern tech stack, it ensures high performance, scalability, and security. **Quarkus** offers faster startup and lower memory usage than traditional Java frameworks, while **Apache Pulsar** enables low-latency real-time messaging. **Kubernetes** manages dynamic scaling and uptime, and **PostgreSQL** handles structured and semi-structured data efficiently. **Flutter** ensures a smooth, cross-platform user experience. The platform supports instant messaging, academic content access, and mentorship, backed by secure authentication. Overall, it delivers a scalable, responsive, and cost-efficient solution tailored to academic communities.

- **Future Scope:** The future scope of this project includes several enhancements to enrich the platform and expand its utility. AI-powered recommendation systems can be integrated to offer personalized mentorship, study group suggestions, and tailored academic resources. Support for event and seminar management will enable users to host and participate in webinars, workshops, and technical sessions. Internship and job opportunity modules can be developed to connect students with

companies and recruiters. Collaborative project management tools will allow for team formation, task assignment, and progress tracking. Voice and video calling features can enhance real-time communication, while multi-language support will improve accessibility for a diverse user base.