Web Programming Lab Project Synopsis

Cohorto: A Student-Driven Freelancing Platform – Technical Abstract

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Abstract:

Cohorto is a web-based freelancing platform designed to connect businesses with verified student freelancers and teams. It offers an intuitive and efficient environment for collaboration, secure transactions, and streamlined project management, facilitating short-term project hiring with a focus on affordability, trust, and ease of use. The platform's core architecture is built using **Next.js 14** with **App Router** for efficient **server-side rendering**, **TypeScript** for enhanced **type safety**, **React Server Components** for optimized **client-side performance**, and **Tailwind CSS** with **shadcn/ui** for a responsive design.

The backend and data layer leverage **Supabase PostgreSQL** with **real-time subscriptions**, ensuring seamless **data synchronization**. Security is enforced through **Row Level Security (RLS)** for **data access control**, while authentication is managed through a **JWT-based authentication flow**. Additionally, **edge runtime** is employed to optimize **API performance**. For **state management** and **data flow**, Cohorto utilizes the **Context API** with **custom hooks**, **Server Actions** for **type-safe mutations**, **optimistic updates** for enhanced **user experience**, and **middleware** for **route protection**.

To enhance performance, the platform implements **selective rendering strategies**, including **Incremental Static Regeneration (ISR), Static Site Generation (SSG), and Server-Side Rendering (SSR)**, alongside **dynamic imports**, **code splitting**, **image optimization**, and **client-side caching**. **Security measures** such as **PKCE authentication**, **HTTP-only cookies**, **rate limiting**, and **CSRF protection** further strengthen **user data protection**.

Cohorto follows a robust **CI/CD pipeline** with **automated testing** via **GitHub Actions**, seamless **deployment on Vercel**, **environment configuration management**, and **error tracking** using **Sentry**. Its **scalable architecture** ensures **high availability** and **performance**, supporting **real-time collaboration** among **team members** and **clients**. The platform is designed to **empower student freelancers** by providing **built-in tools for project management** and **team coordination** while maintaining a **secure** and **efficient user experience**.