

Knight Foundation School of Computing and Information Sciences

Fall 2025 Senior Design Project

Duo Sync Auth : This project implements a secure authentication flow and real-time data synchronization architecture

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Problem

In the modern enterprise landscape, traditional single-factor authentication (username and password) is no longer sufficient due to the prevalence of phishing, credential stuffing, and data breaches.

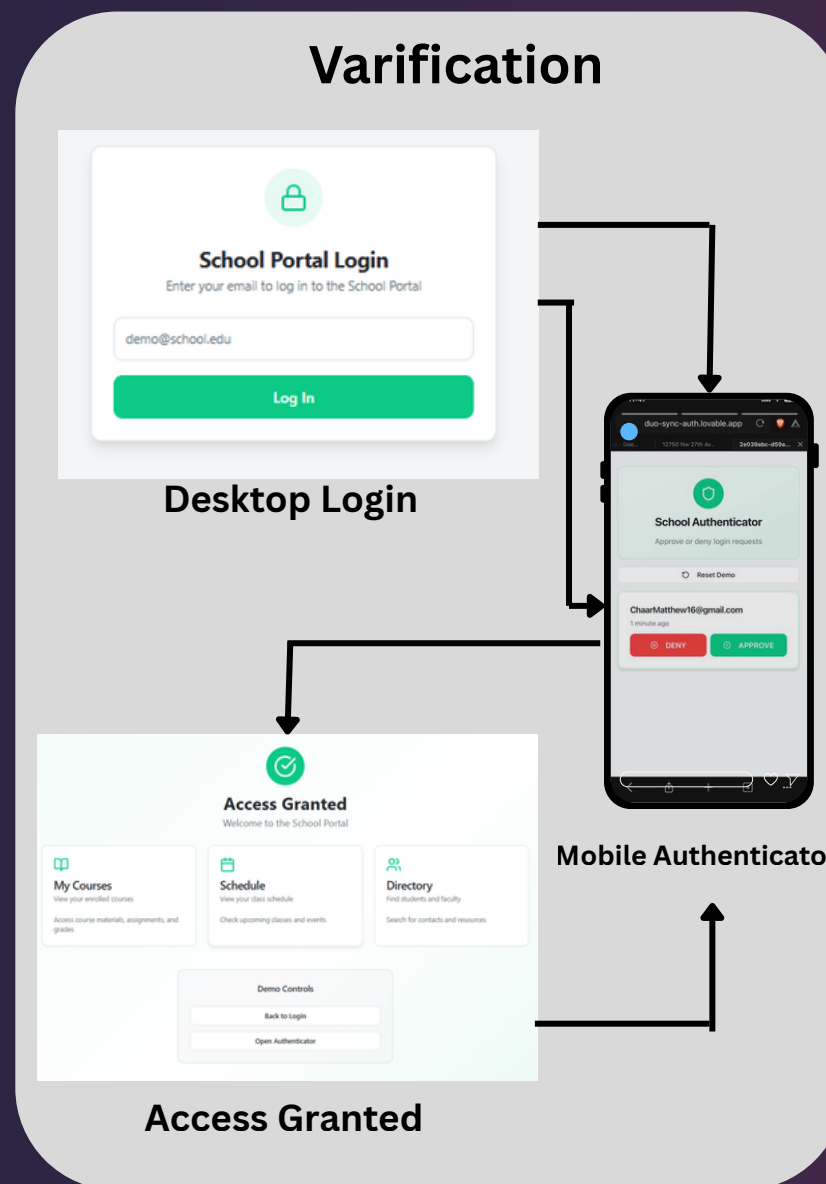
Industry best practices now mandate Two-Factor Authentication (2FA) to establish trust. While SMS and TOTP codes exist, Push-based Authentication (like Duo Security) has become the gold standard for balancing high security with a seamless User Experience (UX).

Summary

The goal of this capstone project was to engineer a full-stack web application that accurately simulates a real-time, push-based 2FA workflow. The project demonstrates competency in:

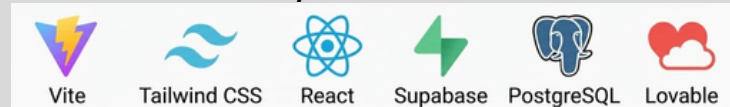
- Modern Frontend Development: Building responsive, distinct user interfaces for different device roles.
- Real-Time Data Synchronization: Eliminating traditional server polling in favor of instant, event-driven updates.
- Enterprise UX Design: Creating a clean, trustworthy interface using industry-standard design patterns.

Varification

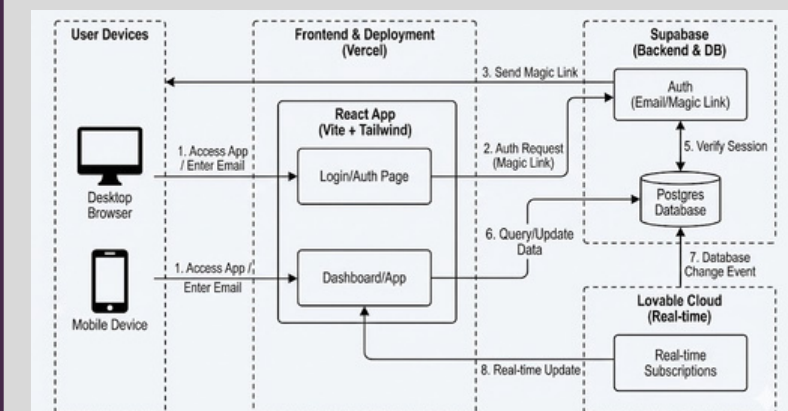


Technical Architecture

Requirrments



System Design



Implementation

This project is built on a modern foundation of best-in-class tools:

- Frontend Framework: [React](#) (v18+)
- Language: [TypeScript](#) for static typing and code safety.
- Build Tool: [Vite](#) for lightning-fast HMR and bundling.
- Styling: [Tailwind CSS](#) for utility-first styling.
- UI Components: [shadcn/ui](#) for accessible, reusable component patterns.
- Backend & Auth: [Supabase](#) (PostgreSQL, GoTrue, Realtime).