

VolunteerHub System Design Report

Full-Stack Web Application for Connecting Volunteers and Nonprofits

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This document provides a comprehensive overview of the VolunteerHub system design, including UML class, sequence, and use case diagrams that illustrate the architecture, data models, and user interactions.

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1. Class Diagram (with Database Schema)

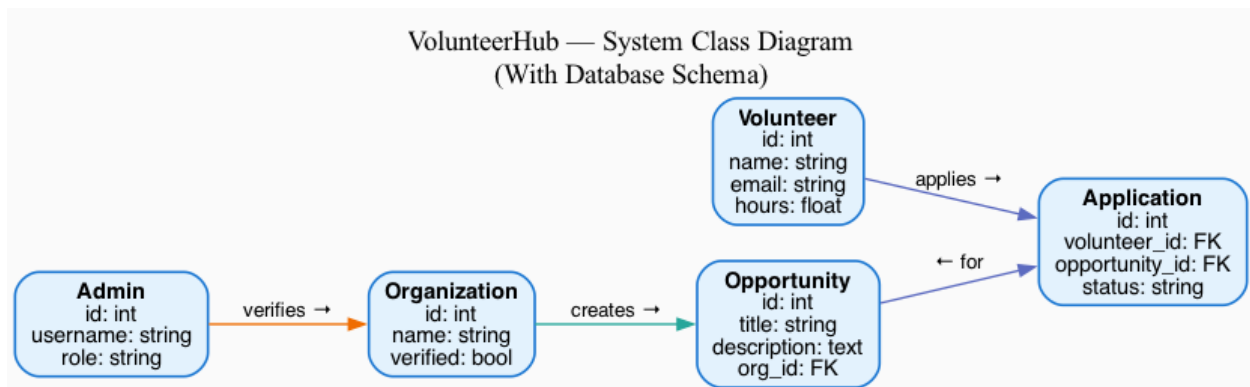


Figure: Expanded UML class diagram showing entities, database tables, and their relationships.

2. Sequence Diagram: Volunteer Applies to Opportunity

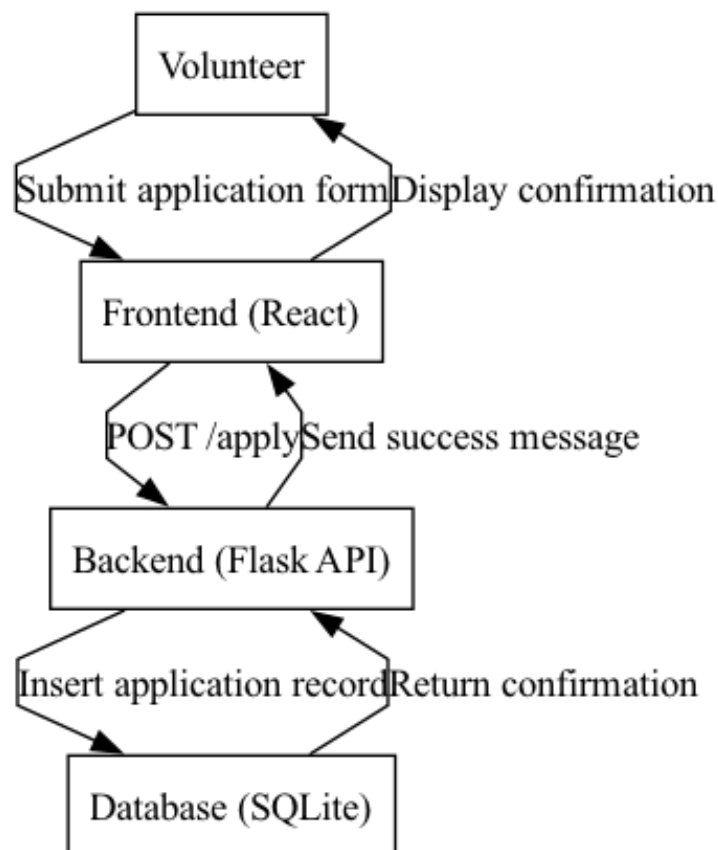


Figure: Illustrates the volunteer application submission process and backend communication flow.

3. Sequence Diagram: Organization Publishes Opportunity

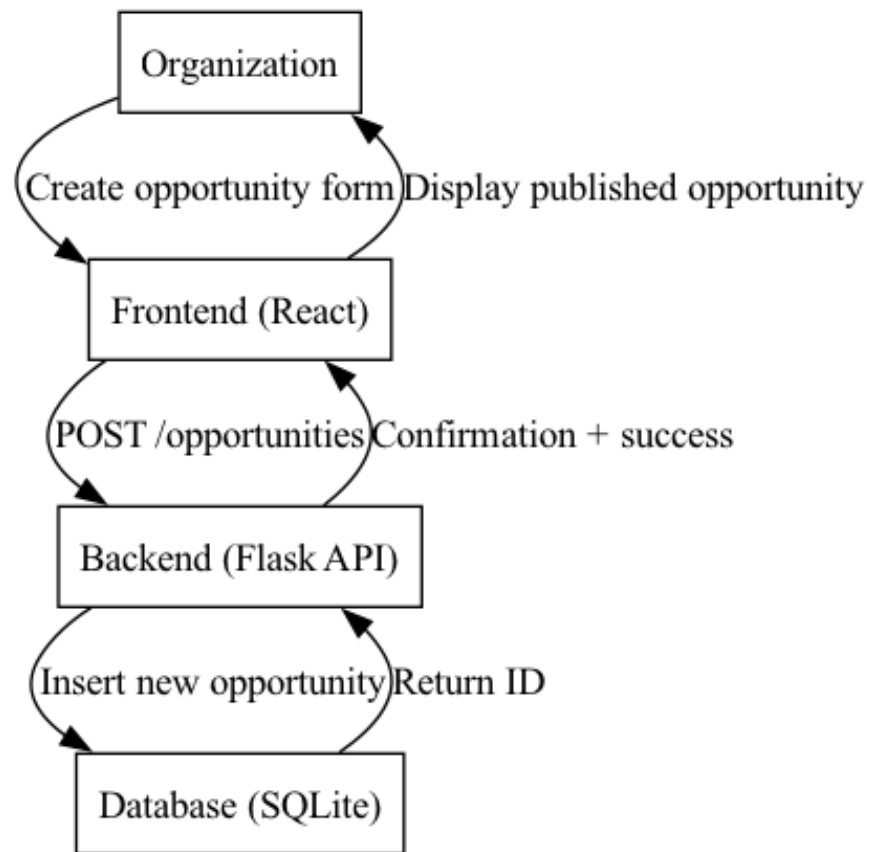


Figure: Shows how organizations create and publish new opportunities to the platform.

4. Sequence Diagram: Admin Verifies Organization

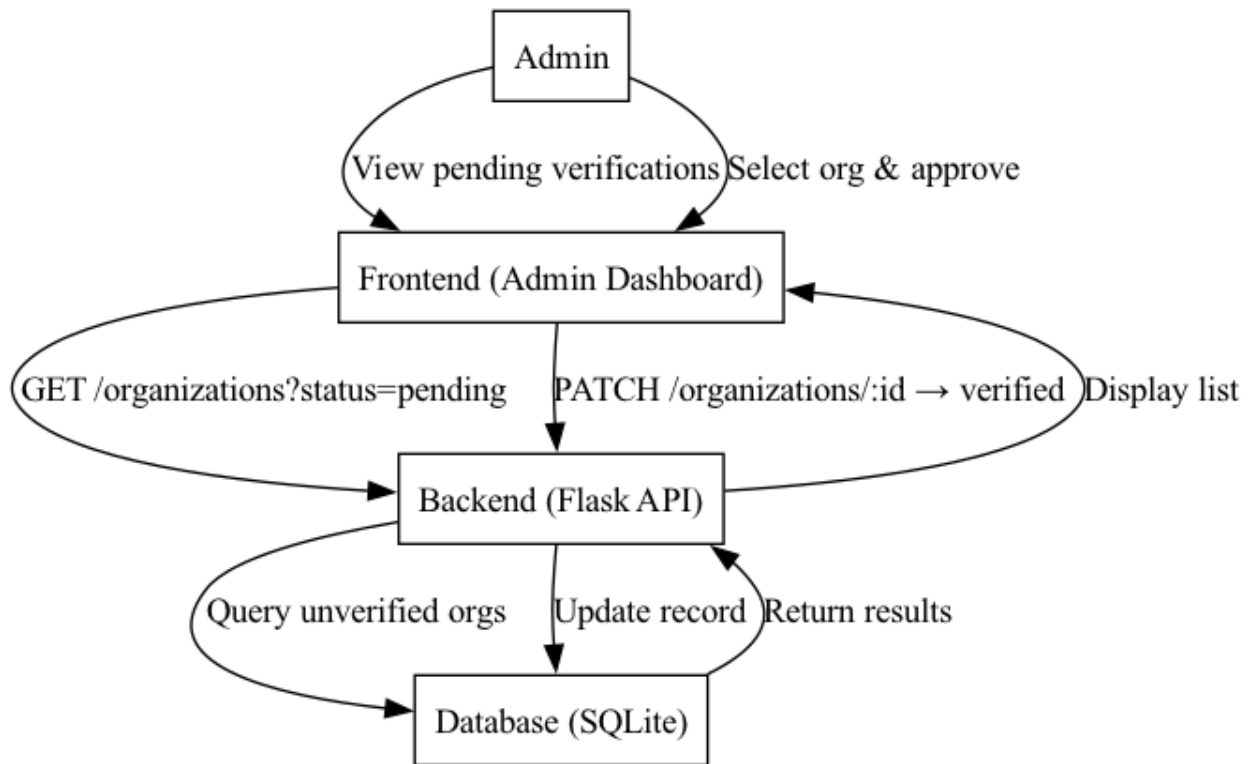


Figure: Depicts how administrators verify and approve registered organizations.

5. Use Case Diagram



Figure: Summarizes all user roles and the key use cases they interact with on the platform.

6. Workflow: Volunteer Login & Authentication

- 1 Volunteer submits credentials via the `/auth/login` endpoint.
- 2 Backend validates the user, performs password hash comparison, and issues access plus refresh tokens.
- 3 Tokens are returned to the SPA, stored in volatile storage, and appended to subsequent API requests.
- 4 Refresh workflow issues new access tokens before expiry to maintain a secure session.

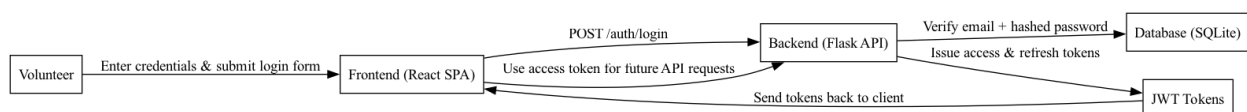


Figure: Details credential submission, validation, token issuance, and session renewal for volunteers.

7. Workflow: Organization Confirms Hours & Issues Volunteer Certificates

- 1 Volunteer submits documented hours for a completed opportunity through the portal.
- 2 Organization representative reviews the submission, adjusts hours if needed, and confirms completion.
- 3 System optionally notifies administrators for policy-based oversight before final approval.
- 4 Upon approval, a digital completion certificate is generated and delivered to the volunteer.

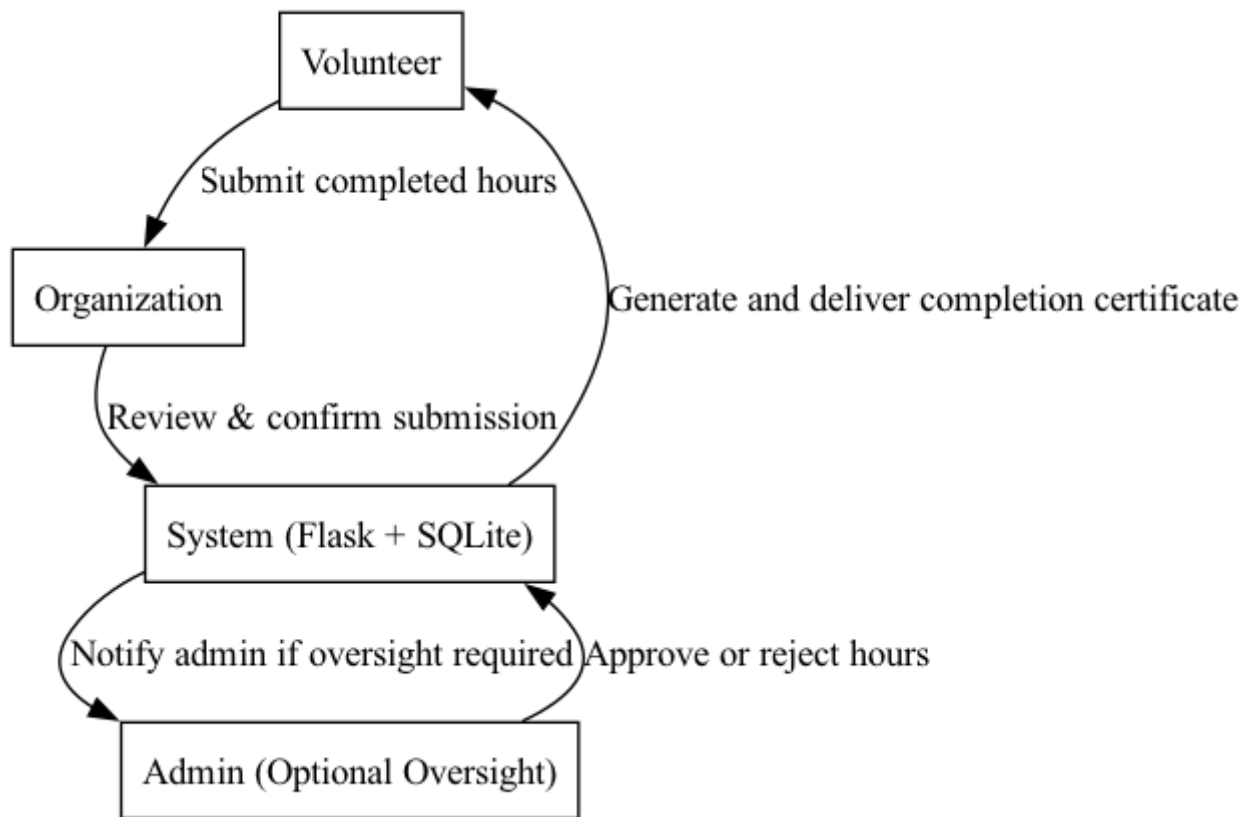


Figure: Outlines the organization review of submitted hours, administrative confirmation, and certificate delivery.