UC-201 Halo: A Volunteer Management Application

INTRODUCTION

Angels Among Us (AAU) is a pet rescue organization that needed an application to manage and update their complex volunteer information. Our solution was to design a 3-tier full stack web application to better manage and maintain these records..

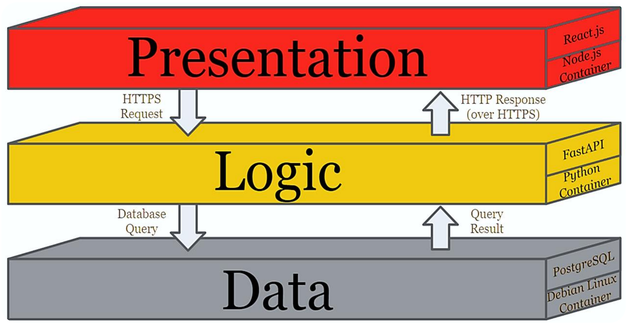

Fig.1 Abstraction of the three-layer software architecture created in the first project plan.

METHODOLOGY

Our capstone focused on building a secure, user-friendly application to manage complex volunteer and team data. Core features included importing records from their iShelters database, designing a PostgreSQL schema, and creating a frontend UI for authorized data entry. To ensure scalability, we deployed the application with Docker containers.

We used an Agile methodology with weekly sprints, meeting regularly with the client for updates and adjustments. The project concluded with thorough user testing to confirm functionality and usability.

RESULTS

Our team developed a secure, containerized application that enables AAU to efficiently manage and enrich volunteer and team data. The implemented features allow users to import records, apply detailed search and filtering, and export customized lists, meeting AAU's requirements for usability and data accuracy. Additionally, the new system supports smooth data migration and syncing from existing sources and provides a solid foundation for ongoing volunteer management tasks.

Halo is a productivity tool developed to simplify the management and organization of a database of animal rescue volunteers.

docker FastAPI React PostgreSQL

GOOGLE SIGN-ON INTEGRATION

Halo integrates Google Sign-On, allowing volunteers to use a single login for all Google-connected apps. It uses encrypted JSON Web Tokens (JWTs) to validate Google login credentials, issuing tokens for secure user identification in all application requests. Each token contains encrypted user-specific data, ensuring secure access across endpoints.

Extract Transfer and Load (ETL)

The ETL script extracts 35 attributes from 7 tables in AAU's MySQL database of around a thousand volunteers. It then transforms the records into a format acceptable to Halo's PostgreSQL database and loads them into HaloDB.

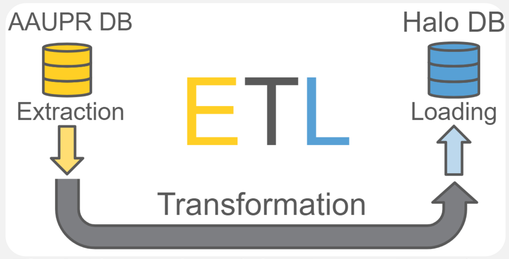

Fig.2 Abstraction of the Extract, Transfer, and Load script

WEBSITE DESIGN

The Halo Volunteer Management Application (VMA) features a clean, user-friendly interface refined for quick searches and advanced filtering of volunteer and team lists. Real-time dynamic searching ensures lists update instantly, providing a significant improvement over the previous system, which relied on a series of inputs, checkboxes, and spreadsheets, and was much slower to process. Users can view, update, and enrich information for individual volunteers and teams, with options to export entire or filtered lists based on any applied criteria. Administrators have dedicated access to the Users page for managing users and assigning roles. This design emphasizes usability and efficiency, providing optimized record management.

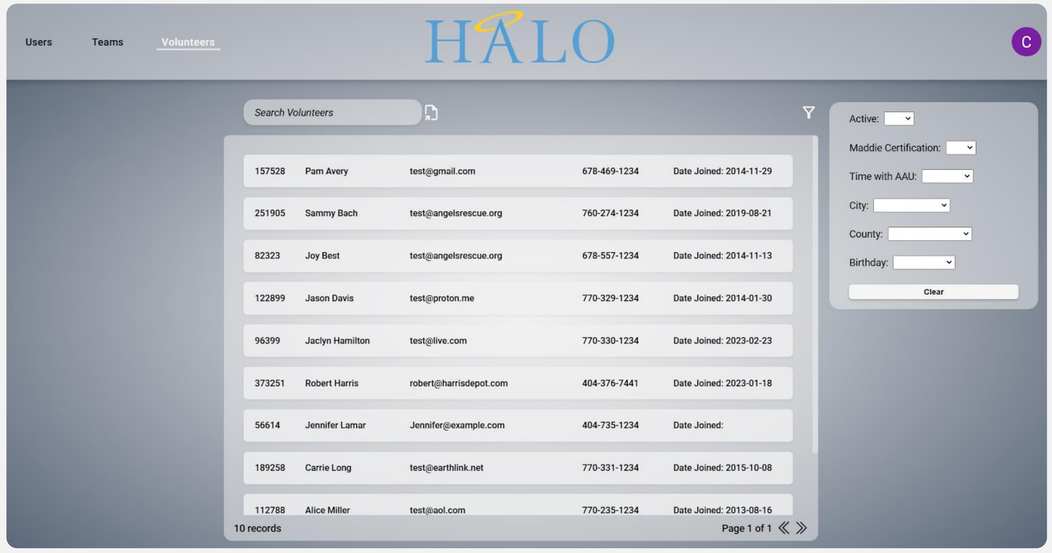

Fig.3 Volunteers screen with filtering options opened

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