

Ram Logic | Web Application for Voiland Food Pantry

Project Report



SPONSORS

Washington State University
Frank Innovation Zone

PREPARED FOR

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I. PROJECT DESCRIPTION

I.1 Introduction

The Voiland Food Pantry & Wellness Center serves as a critical resource for Washington State University students, providing access to food, hygiene products, and wellness support. With increasing demand and a growing variety of inventory, maintaining accurate records of pantry usage, tracking inventory levels, and collecting meaningful data has become a key operational challenge. Manual data entry processes are prone to errors and can make it difficult to quickly generate reports, limiting the pantry's ability to analyze trends and make informed decisions regarding procurement and volunteer scheduling.

The Data Tracker project is intended to address these challenges by designing and implementing an integrated system that collects, stores, and visualizes pantry data in a reliable and efficient manner. The system will include a database that records client check-ins, item distribution, and volunteer activity. Hardware peripherals such as a barcode scanner or card reader will be integrated to streamline check-in and inventory management processes, reducing manual input and improving accuracy.

Accurate and timely data collection is vital for the pantry's mission. Usage statistics can inform decisions about stocking patterns, predict surges in demand (e.g., during midterms or finals), and provide justification for continued funding and expansion. By presenting data in a centralized, easy-to-use interface through a WordPress-based web application, the system aims to empower pantry staff and volunteers to monitor operations in real time and generate reports for stakeholders.

This project is positioned within the domain of information systems for community services, combining database design, hardware integration, and web development to improve service delivery. The database team, newly assembled for this project, is responsible for developing the system from the ground up, beginning with the creation of an Entity-Relationship diagram to define key data relationships. The resulting platform will not only support the day-to-day operation of the pantry but also contribute to its long-term sustainability and impact on student well-being.

I.2 Background and Related Work

The pantry's current system is based on paper lists and spreadsheets, as well as disjointed digital methods, to organize pantry inventory and volunteer sign-ups. These methods are susceptible to human error, not very scalable, and lack analytics for data-driven decision-making. Food pantry programs usually require dedicated software systems that handle either inventory management or volunteer coordination but integrated solutions that manage both functions comprehensively remain scarce. Our front-end system will be developed on WordPress because it supports established web technologies and allows us to build a customized solution that meets the pantry's requirements.

The system to be constructed will operate together with the pantry's newly acquired and function-tested hardware components comprising a card reader and barcode scanner. These devices will support both inventory tracking and client registration processes for the pantry.

I.3 Project Overview

The core Food Pantry Data Tracker project is underway, with key specifications defined and an initial Entity-Relationship diagram created for the database. The team has selected WordPress as the platform for the web application and confirmed that hardware peripherals (barcode scanner and card reader) are available and functional. Key development areas include the following:

1. Database implementation and integration with WordPress
2. Front-end interface design with client-focused default view and volunteer sign-in option
3. Hardware integration for automated check-in and inventory management
4. Real-time data visualization and reporting capabilities
5. User interface refinements for accessibility and ease of use
6. Development of documentation, tutorials, and user guidance

By completing these tasks, this project aims to improve the accuracy, efficiency, and reliability of pantry operations, enabling staff to make data-driven decisions and better serve the student community.

I.4 Client and Stakeholder Identification

The project sponsor is the Voiland Food Pantry & Wellness Center represented by Maynard Siev. A data management system consisting of both software and hardware

components is needed by the pantry to manage food distribution operations alongside volunteer scheduling and client support functions.

The pantry is a part of the larger operation of nonprofit and community needs resource management. Food banks, resource pantries, wellness centers, and similar entities typically have similar needs to track their services, volunteers, and client interactions. By having a solution that meets the specified use cases of barcode scanning, role-based interfaces, and database-powered reporting, this system can be applied to larger or similar efforts within the community.

Pantry customers, volunteers, and administrators are stakeholders that depend on the resource availability and can help guide its use. The use cases of inventory management, volunteer availability, client-facing availability, and recent hardware interface should provide a platform that is scalable, reliable, and easy to use in a broader context of nonprofits and similar use cases.

II. TEAM MEMBERS & BIOS

Include an entry in a narrative form for each of your team members. The goal is to demonstrate the team's skills and project coverage. This is not just a pasted in resume, but a summary of your involvement in the project, and your technical interests. Feel free to lift from your Team Inventory to include:

- Name
- Degree plan
- Project role - which aspects you're responsible for
- General areas of experience and technical interests

Example:

Aaron Crandall is a computer science student interested in artificial intelligence, satellite development, and clock making. His prior projects have included smart homes, radio controlled dirigibles, and programming clocks. Aaron's skills include C/C++, Python, RabbitMQ, Genetic Algorithms, and delinting. For this project, his responsibilities include developing the Gamma Module, leading user experience feedback, and delivering sandwiches.