Lab 2 – LivelyShelfs Product Specification

Andrew Benham

Old Dominion University

CS411W

Prof. Sarah Hosni

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Table of Contents

Listing of Figures

1 Introduction

1.1 Purpose

Our product, LivelyShelfs, will be an application that will allow our users to share food with their friends and manage food within their household through guest accounts. Our application will be able to give users resources to users to help educate them on methods to prevent food waste. The product will track the expiration statuses of food that the user has. And will allow users to share food between each other.

Key features that we want the application to have is Grocery Spoilage tracking, provide informational resources, food recommendations for the users. We want to help users keep track of when their groceries will spoil by using information that the uses have inputted into. The application's inventory the application will track how fresh item is. We will use a web crawler to gather information online and the information found will be stored in our database to be used for our application. The information gathered will be available to the user to explore their options on how to better manage their food so that it does not get wasted. Our product will make recommendation to the users based off what groceries that the user has in their inventory and other factors such as expiration date and the type of grocery it is. We will base our recommendations based on statistics that we have gathered on the user themselves and the data that we have stored on other members of their community. From there we will recommend whether the user should consider sharing their food and what they can do to not waste their food. The application will also make recipe recommendations based on the items that the users have in their inventory.

1.2 Scope

The LivelyShelfs prototype will help individuals and the heads of households who want to manage their food but do not have the time or energy to.

The prototype will allow users to input the groceries that they have purchased into their inventory. The application will send notifications to the user when their food is close to expiration and will give suggestions on what to do with the food. The application will also allow users to share their food with their Shelf Friends. These features will show how the prototype will be useful in preventing food waste.

1.3 Definitions, Acronyms, and Abbreviations

API: Also known as "Application Programming Interface" it is a protocol that allows for different software applications to communicate with one another.

Community Hub: A part of LivelyShelfs that helps bring the community together and allows user interaction to share sustainable habits and tips.

Database: An organized collection of information stored electronically.

Food Insecurity: Not having access to enough food to meet one's needs or not being able to access quality food to meet one's needs.

Food Waste: Food that isn't used for its intended purpose or is not used before spoiling.

GitHub: A service that allows developers to collaborate on the development of projects and provides version control.

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JUnit: A testing framework for Java.

Landfills: A site where waste is disposed of, typically the waste is covered by soil.

Spoilage Calendar: An efficient and intuitive calendar provide by LivelyShelfs that notifies users of when their food is going bad

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Sustainability: A goal to avoid actions that harm the environment or deplete natural resources while still meeting one's needs.

Trello: A service that helps with project management and planning.

Lab 1: LivelyShelfs Team Bronze 5

VSCode: Also known as "Visual Studio Code" it is a development environment used by the team that is compatible with many different languages.

Web Application Framework: Software platform intended to help developers in building web applications, providing access to pre-built tools and libraries.

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1.5 Overview

This product specification provides the hardware, software, and features of the LivelyShelfs prototype. These following sections will provide descriptions of key features and the requirements for the prototype's implementation.

2 Overall Description

2.1 Prototype Architecture

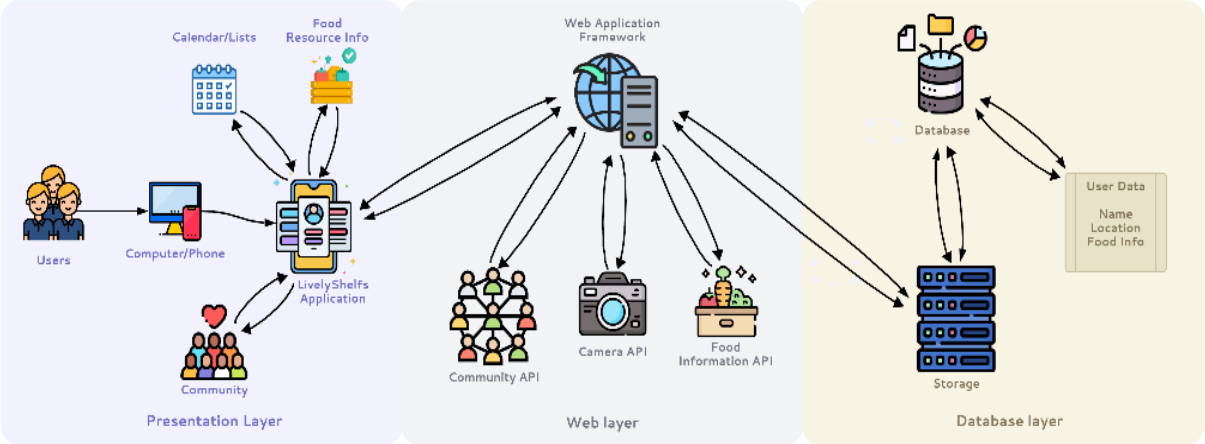

Figure 1: Major Functional Components Diagram

The LivelyShelfs prototype will be a web application with a database that is hosted on a server. It will have two main methods of interface either through a website on a computer or on an app on the user's phone. Most of our functional components will be implemented in the prototype but some of the data collection will be simulated.

We will use a Three-tier Architecture for our program. The three main layers we will have are the presentation layer, the Web layer, and the database layer. Our presentation layer is where the users are able to interact with the application. The users will user this layer to look at their inventory and recommendations that are given to them by our programs. The Web Layer will be where all the different components of our product will interact with each other. The information that is inputted by the users in the presentation layer will be sent to the Web layer, and the

information will be sent to the appropriate API's to be analyzed and then sent back to the web layer to be sent to the database layer for storage. The web layer will also be where data from the database layer will be sent for our analysis API's to then send to the users on the presentation layer to keep them informed, so that they better understand their food use. The Database Layer is where all data will be stored and hold the information for our database schema. This layer will interact with web layer so the API's will have the appropriate data to make calculations on the data of the users.

2.2 Product Functions

The main features of the real-world product will be implemented as seen in the table below. For the users we will fully implement the spoiling tracking, shelf friends sharing, and predictive waste analysis proportions of the real-world product. As seen bellow there are various parts that we will partially implement. The reason for those being either they are more complicated parts to get working like the web crawlers or they are basic functionality like logging in. The main features that we are choosing to implement into the prototype will be the data analytics and visualization, because we believe that it is what sets our product different from other on the market.

Category	Features	Real World Product	Prototype	Reasoning
Account Management	Login/ Authenticate	Fully Functional	Partially Implemented	Limited time will not be dedicated to basic functionalities
	Location Usage	Fully Functional	Partially Implemented	Limited time will not be dedicated to basic functionalities
	Account Creation / Deletion	Fully Functional	Partially Implemented	Limited time will not be dedicated to basic functionalities
	Add / Remove Friend	Fully Functional	Fully Functional	
	Add / Remove Member	Fully Functional	Eliminated	Limited time will not be dedicated to basic functionalities
Inventory Management	Add / Remove Item	Fully Functional	Partially Implemented	Implement manual input, implement camera if we have time
	Track Item Expiration	Fully Functional	Fully Functional	
	Mark Items Shareable	Fully Functional	Fully Functional	
	Quantity Viewing	Fully Functional	Fully Functional	
	Purchase History	Fully Functional	Eliminated	Limited time and not an innovated feature
	Inventory History	Fully Functional	Eliminated	Limited time and not an innovated feature
Proactive Waste Management	Predictive Waste Analysis	Fully Functional	Fully Functional	Limited test data
	Shelf Friends Sharing	Fully Functional	Fully Functional	
	Recipe Recommendations	Fully Functional	Partially Implemented	Limited time will not be dedicated to web crawler functionalities
	Incentives	Fully Functional	Partially Implemented	Limited time will not allow for full reward
	Data Visualization	Fully Functional	Partially Implemented	Limited test data
	Sharing Analytics	Fully Functional	Partially Implemented	Limited test data

2.3 User Characteristics

N/A

2.4 Constraints

Some constraints that we could possibly run into is obeying privacy laws that are set by governments. There could be a lack of user engagement.

2.5 Assumptions and Dependencies

Some frameworks and APIs that our product will depend on are Node.js, Express.js, React, Vite.