



PantryPal

Group Members:

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Project Objective

The objective of Pantry Pal is to create a user-friendly and effective app that aids users with arranging their pantry. Pantry Pals goal is to help people when creating grocery lists, updating their pantry (whether it be manually or by scanning their receipts), and removing items. The project works to make it easier for users to track what is in their pantry, create shopping lists based on the contents of their pantry, and receive updates on what needs to be restocked.



Cost Estimations

Hardware Products Costs: \$6,808.84

- Dell XPS 13 Laptop [5] (10 Laptops): \$6,000
- ASUS- RT AX88U [6] (1 Router): \$260.84
- Different phones [7] (1 IOS & 1 Android for testing): \$548

Software Products Costs: \$315

- Github (Git): Free
- React Native (Mobile App Framework): Free
- ZXing (Barcode scanning API): Free
- Receiptful (Receipt scanning API): Free
- Testing tools (JUnit): Free
- Microsoft Azure [4] (Server): \$315
- Total: \$315

Estimated Total Costs: \$144,752



Timeline

Project Schedule Estimation: Nov. 15, 2023 - April 12, 2024

Planning and Requirements Gathering (2 weeks): This phase involves detailing the project plan, gathering software requirements, and creating mockups. (November 15, 2023 - November 29, 2023)

Design and Prototyping (4 weeks): Developing the app's architecture, UI/UX design, and creating initial prototypes. (November 30, 2023 - December 29, 2023)

Development (12 weeks): Implementing features, functionalities, database integration, and iterative improvements based on feedback. (January 2, 2024 - March 8, 2024)

Testing and Quality Assurance (3 weeks): Rigorous testing, bug fixing, performance optimization. (March 9, 2024 - March 29, 2024)

Deployment and Finalization (2 weeks): Preparing for app submission, final checks, and launch preparation. (March 30, 2024 - April 12, 2024)



Functional Requirements

User Registration and Login: PantryPal should provide a user registration process, collecting essential user information, and ensuring secure login for registered users and have password recovery options.

Inventory Management: PantryPal enables manual input and camera scanning for adding food items to the inventory, with automatic categorization and sorting for easy retrieval.

Notification and Expiry Alerts: PantryPal sends users customizable notifications for impending food item expirations, allowing them to set timing and frequency preferences.

Recipe Recommendations: Based on the items in the user's inventory, PantryPal should be capable of suggesting recipes that can be prepared using those ingredients.



Non-Functional Requirements

Usability Requirements: Intuitive and user-friendly interface

Dependability requirements: Should ensure high system availability

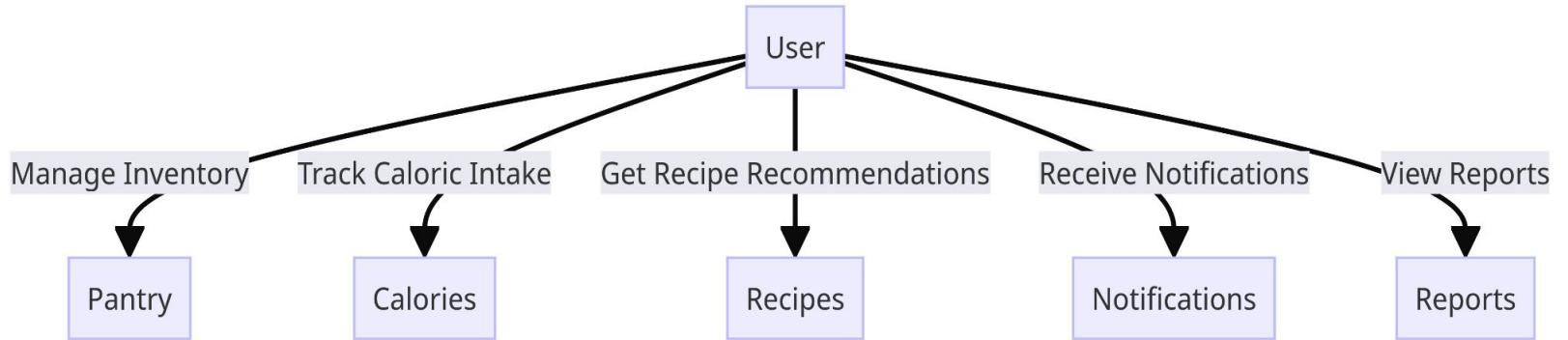
Operational requirements: The system should operate 24/7 with reliable data backup.

Regulatory requirements (Assumption): PantryPal is expected to comply with data protection regulations, like GDPR.

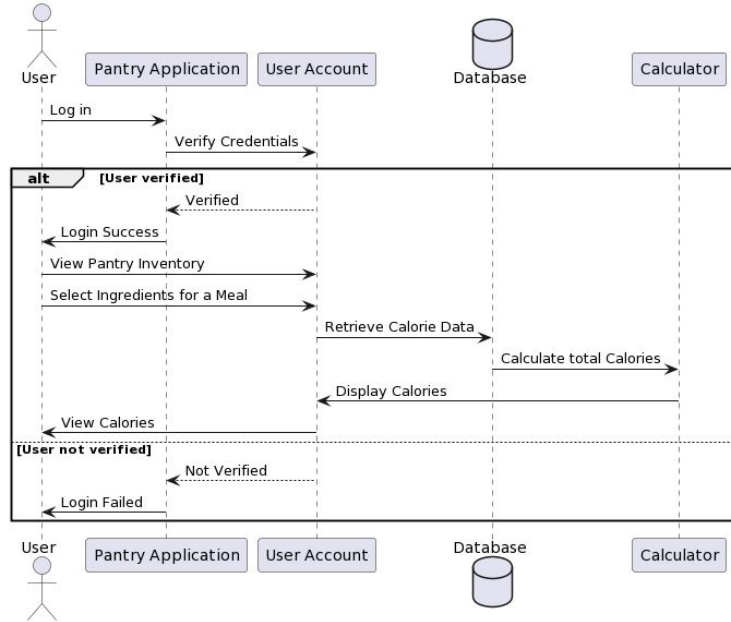
Ethical requirements (Assumption): PantryPal should promote responsible food management.

Development requirements: Should follow industry-standard software development practices, including version control, code review, and testing, to ensure software quality and maintainability.

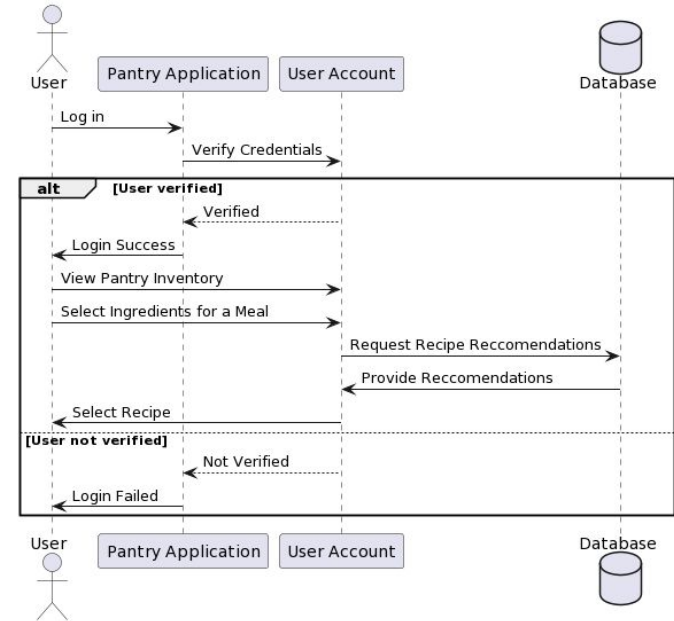
Use Case Diagram



Sequence Diagram

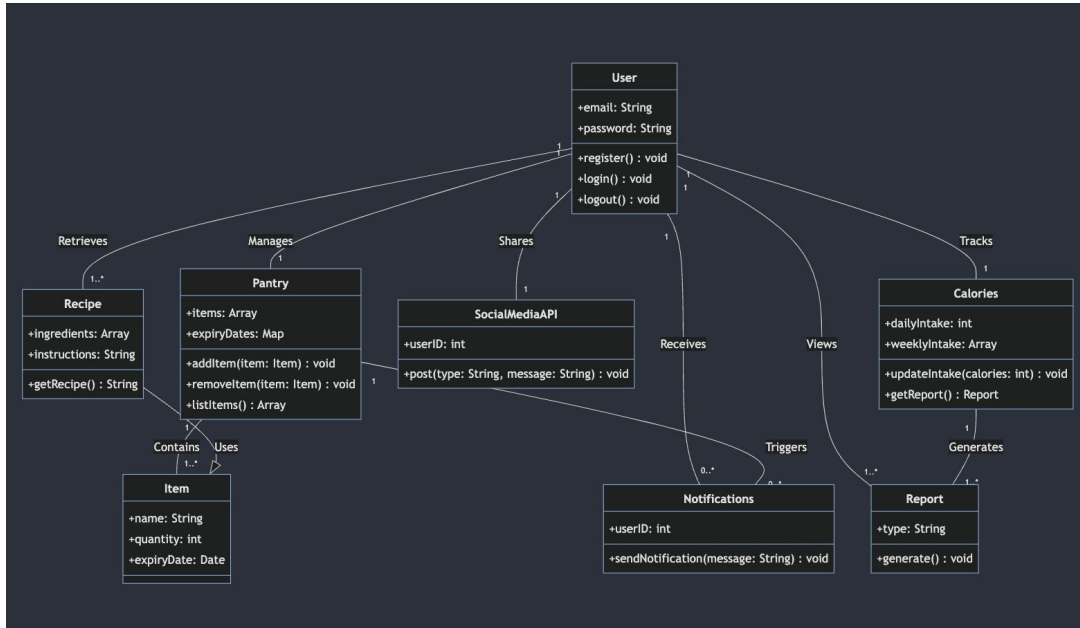


Track Caloric Intake



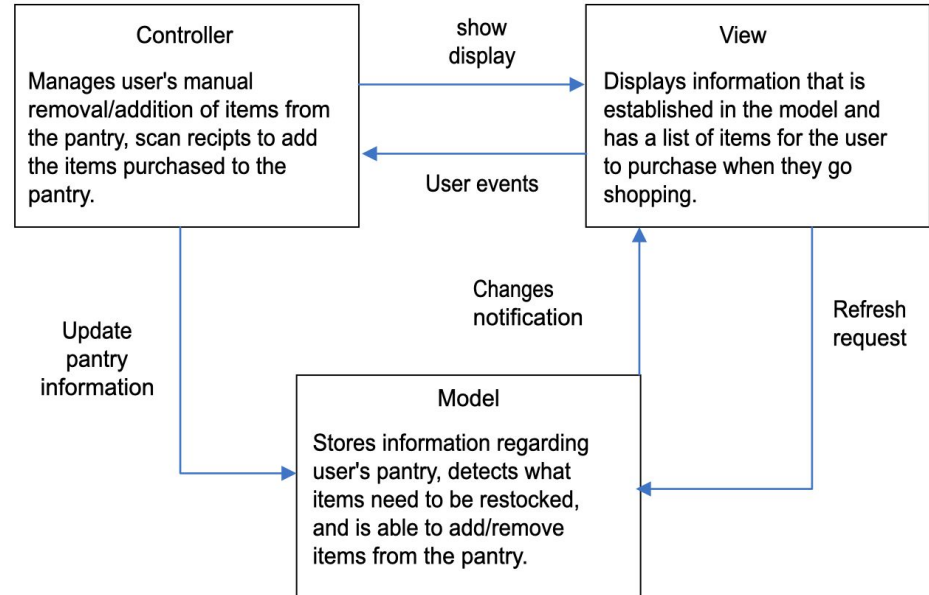
Get Recipe Recommendations

Class Diagram



Architectural Design

Our team chose MVC since we are building an app for individual use where most of the core logic can be computed on the user's device.



Demo

```
import java.util.ArrayList;
import java.util.List;

public class Pantry {
    private List<Item> items;

    public Pantry() {
        this.items = new ArrayList<>();
    }

    public Item addItem(String name, int quantity, String expiryDate) {
        if (quantity <= 0) {
            throw new IllegalArgumentException(s:"Quantity must be a positive integer");
        }
        if (name.isEmpty()) {
            throw new IllegalArgumentException(s:"Item name cannot be empty");
        }

        Item item = new Item(name, quantity, expiryDate);
        items.add(item);
        return item;
    }

    public List<Item> getItems() {
        return items;
    }
}
```

```
public class Item {
    private String name;
    private int quantity;
    private String expiryDate;

    public Item(String name, int quantity, String expiryDate) {
        this.name = name;
        this.quantity = quantity;
        this.expiryDate = expiryDate;
    }

    public String getName() {
        return name;
    }

    public int getQuantity() {
        return quantity;
    }

    public String getExpiryDate() {
        return expiryDate;
    }
}
```



Similar Works

Out of Milk: Out of Milk is a shopping list and pantry management app. Users can create shopping lists, track the items in their pantry, and share the list with friends and family. It also offers barcode scanning to find products, which will be added to the users shopping list [1].

OurGroceries: OurGroceries focuses on sharing lists with others. It allows users to edit the same lists, and updates lists instantly for all users. Users can add items to the list, and pantry, using barcodes, and pictures [2].

Bring! Shopping List: Bring! Shopping List allows for collaboration on shopping lists in the app. Users can create and share shopping lists with family or friends. It, like PantryPal, has features for managing pantry items and organizing lists by categories[3].



Conclusion

In conclusion, the PantryPal project, while challenging, has been an enriching experience for our team. We have not only managed to stay true to our core idea but have also succeeded in enhancing the application with significant improvements, especially in user experience. These enhancements, particularly in the social feed and pantry management features, have added substantial value to the app, making it not just a tool for food management but a platform for community building and shared culinary experiences. As we present PantryPal, we are confident that it embodies our vision and will make a meaningful impact in the realm of food management and nutritional tracking.



References

- [1] "The Grocery Shopping List App," Out of Milk, <https://www.outofmilk.com/> (accessed Nov. 16, 2023).
- [2] "The easiest-to-use grocery list app!," OurGroceries, <https://www.ourgroceries.com/overview> (accessed Nov. 16, 2023).
- [3]"Bring! Shopping List App for iOS & Android," *www.getbring.com*.
<https://www.getbring.com/en/home> (accessed Nov. 16, 2023).
- [4]Microsoft, "Cloud Computing Services | Microsoft Azure," *azure.microsoft.com*.
<https://azure.microsoft.com/en-us>
- [5]"Inspiron 16-inch Laptop with AMD Ryzen™ 7000 series Processor | Dell USA," *Dell*.
<https://www.dell.com/en-us/shop/cty/pdp/spd/inspiron-16-5635-laptop> (accessed Nov. 16, 2023).
- [6]Amazon, "Amazon.com: Online Shopping for Electronics, Apparel, Computers, Books, DVDs & more," *Amazon.com*, 2023.
<https://www.amazon.com>
- [7]"Unlimited Plans, Cell Phones, Evolving 4G & 5G Coverage | T-Mobile," *www.t-mobile.com*. <https://www.t-mobile.com>