

# Restaurant Inventory

*An app for maintaining inventory for  
restaurants*

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## **Team One**

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## **I. Introduction**

Some restaurants face significant challenges in effectively managing food inventory. For food, the most important thing is whether the food has expired and how much is available in storage. We found that some of the restaurants still use printed labels to record the production date of food. Inventory management inefficiencies can easily arise with printed labels because all food items would need to be checked daily to ensure they are not expired. Inefficient inventory management can lead to food waste, increased costs, and compromised food safety. Based on this problem, the team will develop a restaurant inventory management application that records the shelf life of products through programs, which can improve efficiency and avoid food waste that may be caused by carelessness.

Food waste is a big problem in America, especially in restaurants. By developing an application that will keep track of inventory and expiration dates of food in inventory, food waste will be brought to a minimum. This will also help combat serving bad food to customers, which can shut a business down.

## **II. Background and Related Work**

The domain of this project is inventory management for restaurants, which involves managing inventory levels, and ensuring food safety through monitoring expiration dates. Effective inventory management is crucial for restaurants to maximize the efficiency of the purchased food, minimize waste, and ensure the safety and quality of the food provided to customers. Given the recent acquisition of a tablet, the solution needs to leverage mobile technology to streamline these processes.

Current state-of-the-art solutions in inventory management for restaurants include a range of digital systems and advanced technologies. For instance, Food Rescue Hero employs a mobile app to connect food donors with recipients, incorporating real-time tracking of donations and volunteer assignments. This system highlights the effectiveness of mobile applications in coordinating and tracking food donations. Similarly, Fishbowl Inventory is a robust warehouse management system that integrates with various business platforms to manage inventory across multiple locations, offering features such as barcode scanning, inventory tracking, and comprehensive reporting. This underscores the importance of integrating inventory systems with existing business platforms for effective tracking and reporting.

Another significant advancement is the use of blockchain for food safety, exemplified by IBM Food Trust. This blockchain-based solution provides transparency and traceability throughout the food supply chain, ensuring that all participants can access reliable data about the origins and handling of food products. This technology emphasizes the role of advanced methods like blockchain in ensuring food safety and transparency. Additionally, Zoho Inventory offers both web and mobile interfaces, enabling users to manage stock, orders, and deliveries on the go. This system supports multi-channel selling and integrates with other Zoho applications, demonstrating the practicality and benefits of having a unified system accessible via both mobile and web platforms.

Our work aims to build upon these existing solutions by integrating several best practices and technologies observed in the field. The proposed system will leverage mobile app integration to enhance the accessibility and efficiency of tracking deliveries and managing inventory, similar to the approach used by Food Rescue Hero and Zoho Inventory. It will support comprehensive reporting capabilities by pulling data from multiple sources to generate insightful reports, like the

functionalities provided by Fishbowl Inventory. Implementing accounts-based access control will ensure that sensitive information is only accessible to authorized users, maintaining data integrity and security.

To successfully complete this project, a range of new technical knowledge and skills will be essential. Proficiency in Swift will be crucial for developing the mobile application, as Swift is the chosen coding language. Additionally, understanding relational and NoSQL databases, and learning how to design and integrate these databases with mobile applications, will be vital. Moreover, skills in data analytics and reporting will be important for extracting, transforming, and loading data from various sources to create comprehensive reports. Understanding data visualization tools like Tableau or Power BI will also be beneficial for this aspect of the project.

By exploring and integrating these technologies and methodologies, our project aims to contribute to the field by providing a comprehensive, secure, and user-friendly inventory management solution tailored to the unique needs of food restaurants.

### **III. Project Overview**

The goal of this application is to efficiently track inventory levels and expiration dates. The application will be developed using Swift. Swift was chosen as the language to develop on due to it being the premier language for iOS development. In order to accomplish this, all team members will spend some time on their own learning how to develop with Swift. We will also need to learn how mobile development differs from web development. For Swift development, all team members will need to be able to code with XCode, which is Apple's Integrated Development Environment. Team members with Macbook's will be able to use this natively on their machines, for those with Windows machines, a virtual environment will have to be set up in order to use XCode.

In terms of the application itself, we have a few things we would like to implement. Firstly, the app will play out as follows. When one opens the application, they will be greeted with a welcome page with a sign in or sign up button. When clicking the sign up button, they will be informed to input a username and password and when done, it will return to the main page. When the sign in button is clicked, the application will take the user to a page that will allow them to enter their sign in details. If entered correctly, the application will bring them to a 2 factor authentication page. Here they will enter a code they will receive from another source. If entered correctly, they will be taken to the main dashboard of the application. In this dashboard, they will have an icon for inventory management where they can see and edit their inventory levels of their food. The dashboard will also have an icon for expiration dates as well.

In terms of features for the application, the team would like to implement a 2 factor authentication system. This system will improve security for the data stored in the application. We will also like the basic sign in and sign up features that come standard in most applications. In the main homepage of the application, once the user is signed in, we want a simple homepage with icons the user can click on to reach certain pieces of data such as inventory levels, expiration dates etc. Furthermore, we would like all data to be entered at once to save time for the user. Once the user wants to add a piece of food to the application, they will enter in all relevant details at once. This includes price, expiration date, quantity, etc. The team will also like to store all the data in an online database, this way the user can log in from any device and have all their data available. A potential database that will be used is PostgreSQL which is an

open source database system that uses SQL as its language. Another feature we would like to have is a good way to see inventory levels and expiration dates. We are also considering adding a cost tracking feature as well, however this is not final.

For Sprint 1, the team would like to have weekly meetings setup, and some understanding of the language being used to code and some knowledge of mobile development. We will also like to have some visuals that show how the application will look like. We will also like to have some skeleton code set up to get the team started for Sprint 2. We also want the GitHub repository fully setup as well, with every member knowing how to use it.

For Sprint 2, the team is aiming for 90% code completion with a working demo video as well. The remaining 10% will be minor features that are not the most important to the application.

For Sprint 3, the team is aiming for full completion of the application. This includes completed bug testing, all features implemented, and a full demo video.

#### **IV. Client and Stakeholder Identification and Preferences**

Our clients and stakeholders will be restaurant owners, managers, and staff. For owners and managers, their demand will be more efficient inventory management and accurate inventory data, thereby reducing food loss and reducing costs, and their preferences will be a user-friendly interface that can detect all food information to ensure the freshness of the food. For restaurant staff, their demand will be a simple operation process, relatively easy system control, intuitive food classification for easy information entry, and quick operation of large amounts of food to improve efficiency, and their preference will be a system suitable for mobile phone operation, which makes it easier to enter information and ensures that daily data can be quickly entered and organized.

## V. Glossary

“2 Factor Authentication” : a feature used by many applications to improve security.

“Swift”: A coding language used to create programs

“XCode”: The application used to develop using the Swift language on MacOS.

## VI. References

“Fishbowl Inventory - #1 Inventory Management Software for QuickBooks.” *Fishbowl Inventory - #1 Inventory Management Software for QuickBooks*, [www.fishbowlinventory.com/](http://www.fishbowlinventory.com/). Accessed 17 May 2024.

*Food Rescue Hero*, 29 Apr. 2024, [foodrescuehero.org/](http://foodrescuehero.org/).

“IBM Supply Chain Intelligence Suite - Food Trust.” *IBM*, [www.ibm.com/products/supply-chain-intelligence-suite/food-trust](http://www.ibm.com/products/supply-chain-intelligence-suite/food-trust). Accessed 17 May 2024.

“Online Inventory Management Software: Zoho Inventory.” *Inventory Management Software | Online Inventory Management for US Businesses - Zoho Inventory*, [www.zoho.com/us/inventory/](http://www.zoho.com/us/inventory/). Accessed 17 May 2024.