

Nut.rio

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Executive Summary

Due to the current pandemic, people are beginning to face food shortages and insecurities. In our various interviews with family and friends, we learned that people have rushed to the store to purchase essential food items in bulk and have no idea how to cook new, innovative, or creative recipes for their families or themselves. Our goal is to help people organize and keep track of their basic food items and turn them into simple, healthy, palatable meals. We conducted numerous interviews including that with Dr. Nimali Fernando, the creator of the website *Dr. Yum Project* —a site with numerous recipes and features that help people create and plan their own meals. We also interviewed Gayle Curcio, the Community Coordinator at Northfield Township & Food Pantry, to help us better understand what food items most families have access to. We then distributed a survey asking participants to browse Dr. Fernando's site and answer basic questions about their experience and household. We learned that the site provided enough variety in meals and the recipes were quick and easy to prepare, but there were some issues including site-navigation and people's ability to prepare recipes calling for non-essential products like spices and condiments. We used this information to develop our design concept and future development ideas which include the usage of a barcode scanning system that allows users to track pantry contents and expiration dates. We also would like to implement printables or pamphlets for easy distribution, more storage suggestions for users, and the ability to translate the site into other languages. This in turn will help people learn how to use everything they already have, and not risk their health by repeatedly visiting the grocery store.

Introduction & Problem Statement

This quarter, our team was tasked with discovering a current problem and proposing a solution to it. We decided to focus on minimizing food waste. Due to the current crisis, people are now facing limitations in how often they can go to the store and how much they can get from it. Primary research led the team in a variety of directions; however, an interview with Dr. Nimali Fernando pushed the team towards finding ways to advance her website, *Dr. Yum Project*. This non-profit organization aims to bring children into the kitchen while also finding ways to educate families about topics such as meal preparation and nutrition. Her website also provides numerous recipes and recommendations for families, as well as features that allow for meal-planning and building custom meals based on what you already have. However, difficulties in navigation sometimes obscure these resources as well as some recipes' requiring unconventional ingredients. The website also lacks a place for people to keep track of what they are buying and how quickly it goes to waste. Therefore, a solution that addresses these concerns is necessary. *Design Concept and Rationale* explores the issues with cooking complex recipes and the concept of a barcode scanning system that allows to track pantry contents and expiration dates while also listing other recommendations for the website. *Future Developments* explores further suggestions for improvement, while *Conclusions* examines the design's implications.

Users & Requirements

The users for this project are single-families with minimal access to groceries. Other potential users are people without families, and people generally looking to minimize their food waste and get creative in the kitchen.

In order to be successful, this project has to fulfill the following major requirements:

Requirement	Rationale
Organization	The primary purpose of these recommendations are to better organize the <i>Dr. Yum Project</i> website. The biggest issue users faced when exploring the website was finding intuitive ways to get to the plethora of resources available. The addition of a barcode scanning system must merge smoothly with the current website, otherwise it will be seen as an unnecessary component.
Educational Opportunity	This project should aim to elevate the educational components of the <i>Dr. Yum Project</i> and cater them to not just kids, but adults as well. Through our app we will also educate people on shelf-life and accurate expiration dates. Also, we can educate people on how to cook old/rotten foods.
Accessibility	This system must be something that can be easily understood by a variety of people from a variety of backgrounds (different languages, different family sizes, different cuisines, etc.). It should be able to transcend barriers, such as language. We can also make the app accessible on the internet/incorporated into Dr. Fernando's site.
Personalization	This project should be something users can easily tailor to their own needs. Depending on the user's settings, the app can memorize activity and allow people to favorite food items/recipes.
Habit Forming	Overall, the main purpose of the <i>Dr. Yum Project</i> is to promote healthy nutritional habits within its user base. This project must encourage users to continue to actively use it and incorporate it into their everyday lives.

Table 1: Design Requirements

Design Concept & Rationale

Nutr.io is an app (Figure 1) that allows users to easily keep track of products that the user owns, their expiration dates and products that should be bought in the future. The user can view owned items and add more manually or by scanning the barcodes in the “My Pantry” (Figure 2) section. Based on the products present in the pantry the user can find recipes in the online database (“Browse Recipes”) to use soon-to-expire items. Moreover, the user can track and update the shopping lists within the app. The “Shopping lists” section (Figure 3) will be synchronised with Dr. Yum Menu Planner and Saved Recipes Shopping List from Dr.Yum website.



Figure 1

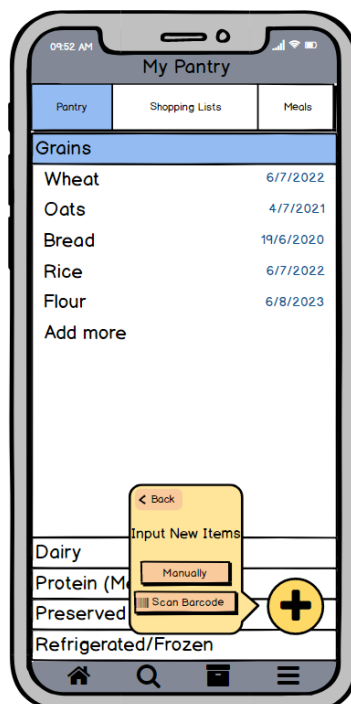


Figure 2



Figure 3

The following sections (Tables 2-4) describe the features of the app as well as the rationale for each feature.

Pantry Tracker

Specifications and Use	Rationale
<p><i>Categorized list of owned products:</i> All products are sorted by categories (“Grains”, “Dairy”, “Proteins”, “Preserved Foods”, “Frozen Foods” etc.). By clicking at each category the user can access a list of items within the category and their expiration dates listed next to item names.</p>	<p>After interviewing several families it was clear that the main contributor to the food waste and spoilage is lack of organization. This feature will help users to be well aware of all items they have at the moment. The items are sorted by category to simplify search for an ingredient. The categories were inspired by the way that Northfield Food Pantry organizes their items.</p>
<p><i>Barcode Scanner:</i> Choosing to use the barcode scanner takes the user to a camera that recognizes the barcode and instantly categorises the item by expiration date, type and quantity.</p>	<p>Barcode Scanner allows to save time inputting products to the pantry list, it is simple in use and intuitive. Most people own a phone with a camera, so it is also accessible by most possible users.</p>
<p><i>Manual Add:</i> if camera or internet is not accessible to the user at the moment, they may use manual add, where they will have to input expiration date, type and quantity of the product by hand.</p>	<p>Manual Add can be the user’s back-up option in case: (a) the user does not own a camera phone; (b) the user is temporarily disconnected from the internet; (c) the item cannot be scanned (for example fresh produce bought at the farmers’ market).</p>
<p><i>Expiration Date Tracker:</i> It shows best-before dates next to the item name, sends notifications if one of the items is about to expire and offers to browse recipes containing this ingredient.</p>	<p>Since the main concern is the food spoilage, this feature ensures that the user is well aware of approaching expiration dates and more importantly knows what to cook with the expiring item.</p>

Table 2

Recipe Suggestions

Specifications and Use	Rationale
<p><i>Recipes based on approaching best-by date:</i> Once the notification is sent about an expiring item, the app will suggest to search recipes with this ingredient. If the users chooses to browse relevant recipes, the tab opens which already started search with an ingredient tag. The Recipes Database is synchronized with Dr.Yum's recipes section of the Dr. Yum's website.</p>	<p>Many users complained that they tend to overcook certain dishes and get bored with their diet. This tool simplifies search for recipes and helps to diversify the diet. Moreover it will ideally offer the recipes which only/mostly contain the products already in pantry, so no additional purchases will be required.</p>

Table 3

Shopping Lists

Specifications and Use	Rationale
<p><i>Creating personal Shopping lists</i> A tool that allows users to add “items to buy” either manually (just as manual pantry add) or from products that were added to the pantry earlier. The user would be able to input the quantity of each desired item as well.</p>	<p>The key idea of the app is to keep everything pantry-related in one space, to help organise food usage process. Looking at the current pantry content and browsing recipes users gain ideas on which items to purchase next. With this feature they can make their plans with a couple of taps.</p>
<p><i>Saved Recipes Shopping List</i> The ingredients from added recipes appear automatically on the list in necessary quantities.</p>	<p>This feature of Dr. Yum's website was one of the most popular among the users during the User Testing. It is directly connected to the recipe database and allows users to plan grocery shopping one or more weeks ahead. This way the users can go shopping less and avoid too much contact with people in the current pandemic.</p>

Table 4

Future Developments

The key objective for the further prototype development is enhanced personalisation. The app can be advanced by the following features:

1. Offers from the app to add often bought products to the shopping list; this way the users can save more time creating the shopping lists.
2. Expiration date reminders in the form of push-notifications.
3. A tool to remove or change the quantity of added items.
4. A tool for adding favorite recipes.
5. A setting that would let the user choose between browsing recipes with owned pantry only and recipes that require additional purchases. It could be a tag next to a recipe that would alert the user if additional purchase is required. After the recipe is read by the user, it can be either added to the shopping list or to favorites.
6. A feature that would automatically remove a quantity of products after a recipe is cooked. This way the user will not have to manually go back to the pantry list to remove used items.
7. A survey within the app to help collect feedback from the users on a regular basis and keep improving the app. This is the main solution to our safety and failure consideration outlined in Appendix A.

Conclusion

To summarize, our design meets the key needs of families and other individuals who will use this app and website. The design uses a combination of:

- a barcode scanner to help make entries and tracking easy
- Recipe suggestions
- a shopping list feature to make grocery shopping easy and efficient

Our design helps people easily keep track of and cook with the food items they have available. This design is accessible to anyone with internet access and able to be personalized to your own specific diet.

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Appendices