Software Requirements Specifications
for
MBP

Version 2.0
Date: 4/23/24
Department of Math and Computer Science
Biola University

Revisions Page

Overview

The Software Requirements Specifications document provides a detailed overview of the Meal Budgeting System, its parameters and goals. **The document will gather and analyze the purpose and all ideas that define the system's software requirements, system intent and features in respect to consumers.** It lists the requirements for the development of the project , describing the project's user interface, hardware and software requirements. The document will describe what the system will do, the constraints under which it will operate, and how the system will respond to external stimuli.

In the first section, the document will give an overview of the functionality of the product. It will display the system environment which exhibits the tasks performed by the user, admin and system in the application.

In the second section, External Interface Requirements, the documents will provide an in depth description of the User, Hardware, Software and Communication Interfaces. The User Interface section will display sample screen images of the interfaces between the software product and the user. Each sample image will contain a description and step-by-step Use case. The Hardware Interface section will describe the supported device types. The Software Interface section will describe the database our system will use and the data items coming into and out of the system. The Communication Interface will describe how our system will communicate between client and server.

In the third section, Software Product Features, the document lists the functional requirements, their description and their level of priority.

In the fourth section, Software System Attributes, the document describes the reliability, availability, security, maintainability, portability and performance requirements.

In the fifth section, Database Requirements, the document provides a diagram displaying the database requirements.

Target Audience

The target audience of this document is Computer Science students. This document serves to show the requirements set in order to meet the goals and objectives of the application. The audience will see how we plan to incorporate the functionality and features of the product.

Project Team Members

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Version Control History

Document Owner: Rachel Liu

Version	Author	Description	Date Completed
1.0	Rachel Liu	Document Creation	1/26/2024
1.0	Rachel Liu	Figure 1- System Environment	1/26/2024
1.0	Rachel Liu	Figure 2- Login/Set up Sample Screen	1/26/2024
1.0	Rachel Liu	Figure 3- Meal Preference Selection Sample Screen	1/26/2024
1.0	Rachel Liu	Figure 4- Navigation Bar Sample Screen	1/26/2024
1.0	Rachel Liu	Figure 5- Profile Sample Screen	1/26/2024
1.0	Rachel Liu	Figure 6- Current Meal/ Options Sample Screen	1/26/2024
1.0	Rachel Liu	Figure 7 - Grocery List Sample Screen	1/26/2024
1.0	Rachel Liu	Figure 8- Select Other Meals Sample Screen	1/26/2024
1.0	Oscar Navarro	Table 1: Functional Requirements	1/26/2024
1.0	Oscar Navarro	Database Requirements Chart	1/26/2024

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1 INTRODUCTION

1.1 Product Overview

The product will be an apple application The system aims to provide a weekly meal plan along with its corresponding grocery list based on the user's budget. The system contains a database which provides lists of user accounts, food items and the corresponding average cost and caloric value. The database enables to keep the user's account information, and recipes.

This system will receive personal information including age, height, and weight from the user. It will provide the user with 4 budget options to choose from. The system will allow users to update their information and change budget options. The system will display 10 predetermined meals for each meal time based on the user's budget selection. Here, users can select meal preferences. The system will utilize the meal preferences and randomly distribute them for each day of the week. If not enough meals are selected to cover the 7 days of the week, the system will determine and assign a meal to the schedule based on the preferences. The system will display the recipes and ingredients, along with the meal's caloric value. Additionally, the system will compile a grocery list containing each ingredient in the recipe along with the individual item cost and total cost according to the database. The system will allow users to explore other meal options and swap out the current meal for another meal in the predetermined list.

1.2 System Environment

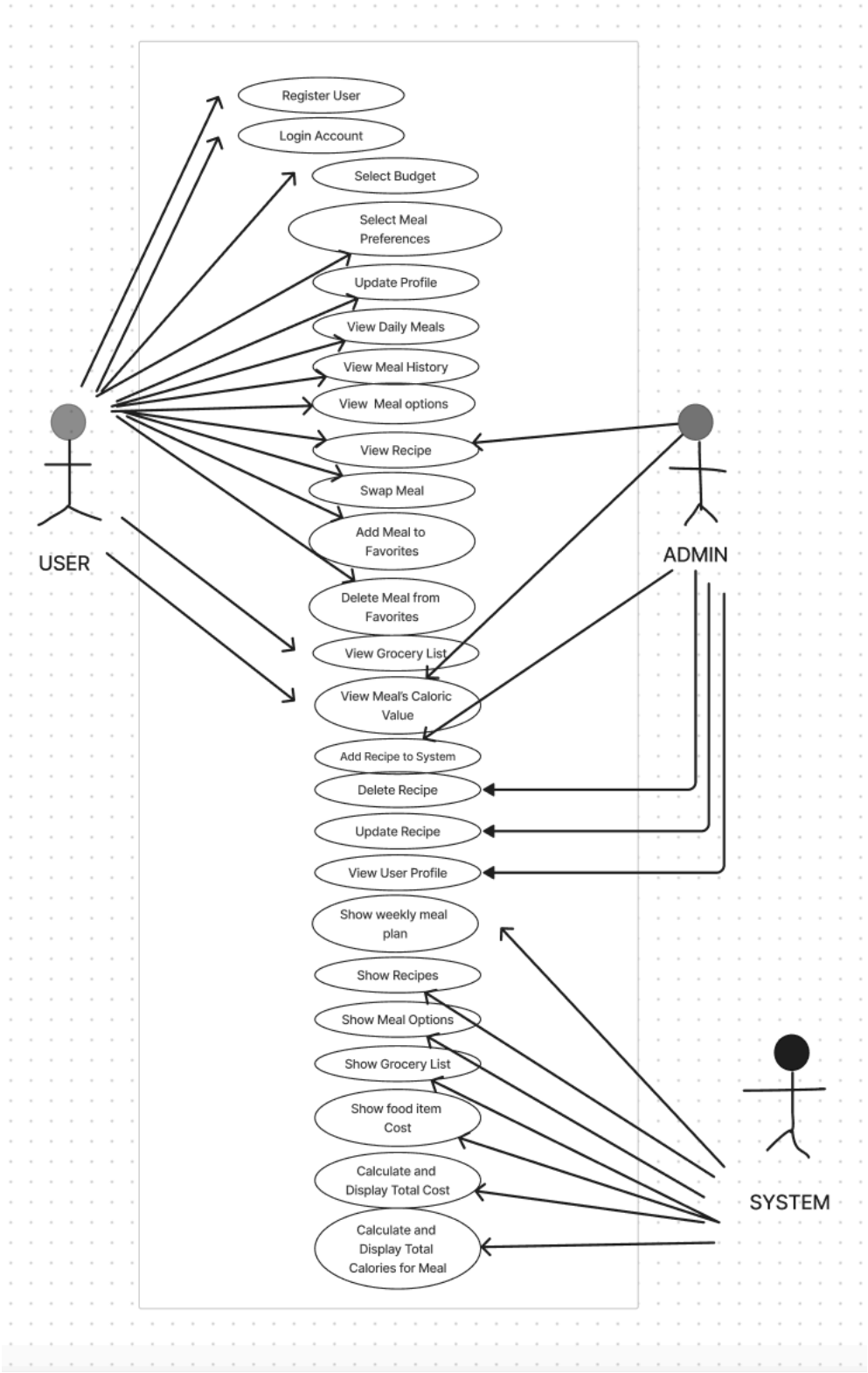


Figure 1- System Environment

The Meal Budget Plan system aims at facilitating the selection of meals that fit within a specific budget. It aims to simplify grocery shopping and meal planning with a limited budget. The system has two actors and one system which produces meal options, displays recipes, displays grocery lists, individual food item cost, calculates the total cost of groceries and calculates the total calories of meals. In this system, users play an active role and the application is personalized to their preferences. Admin and System have limited tasks.

2 SPECIFIC REQUIREMENTS

2.1 External Interface Requirements

2.1.1 User Interfaces

2.1.1.1 Login/ Account Set Up

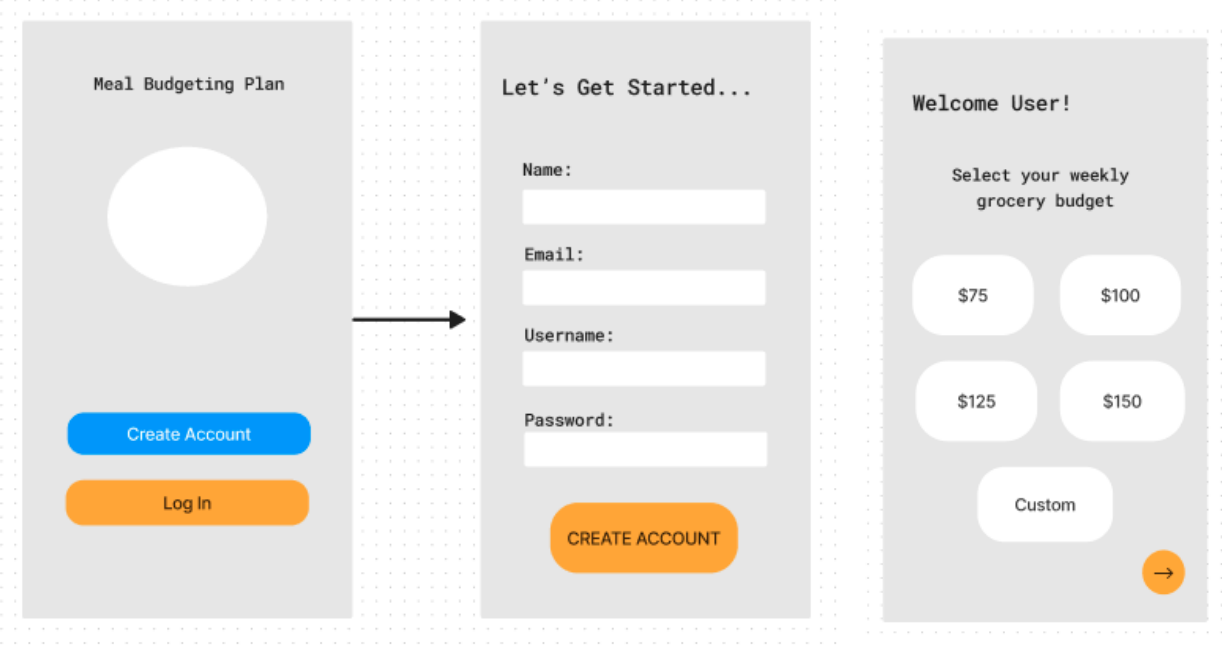


Figure 2: Login/ Account Set Up

Brief Description:

Users can log in to the system or register system. When registering in the system, users will have the ability to choose from 4 budget options and submit a custom budget. However, the system will prevent users from entering an unrealistic budget, any budget below $60. After budget selection, users will press the arrow button to proceed. The system will ensure security through user-authentication and password reset.

Step-by- Step Description:

1. If User does not have an account, user will select Create Account button
2. The user enters their personal information
3. The user selects a budget option
4. If custom budget is selected, the system will prevent users from entering an unrealistic budget, any amount below $60

2.1.1.2 Meal Preference Selection

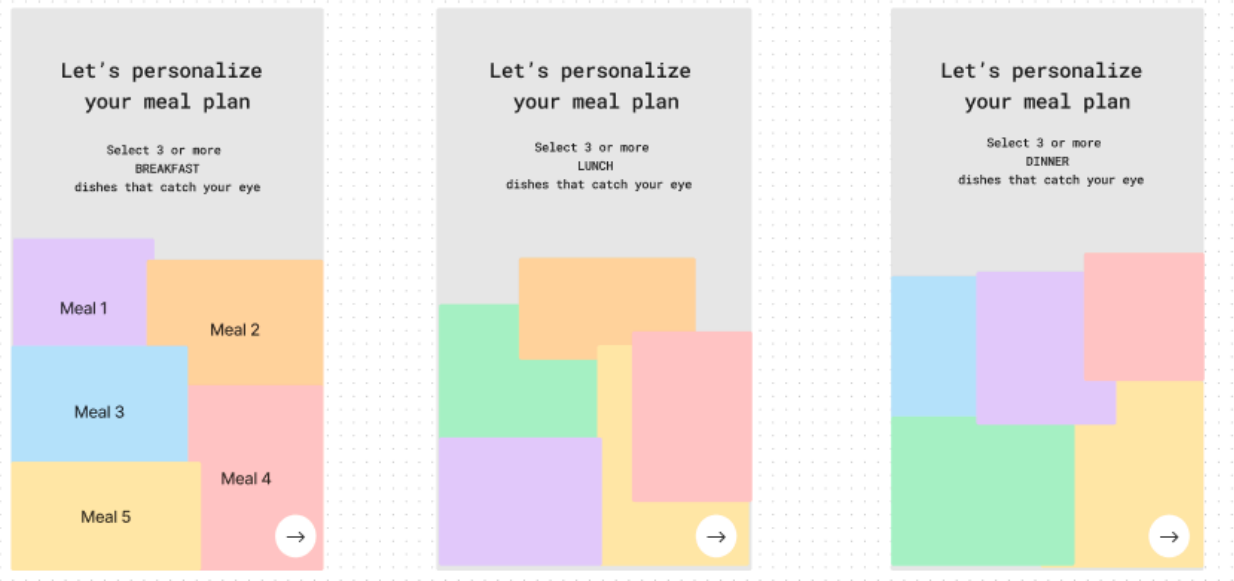


Figure 3: Meal Preference Selection

Brief Description:

Based on the previously selected budget, the system will display five potential meal options each for breakfast, lunch and dinner. Users can select all or none and can click the arrow button to proceed.

Step- By Step:

1. The user selects meals that interest them from the list of breakfast options in the system, press arrow button to continue
2. The user selects meals that interest them from the list of lunch options in the system, press arrow button to continue
3. The user selects meals that interest them from the list of dinner options in the system, press arrow button to continue

2.1.1.3 Navigation Bar

Figure 4: Navigation Bar

Brief Description:

This navigation bar will appear on every screen after log in/ account set up. User's can view the grocery list, view additional meal/ recipe options, view their current meals for the week, view their weekly budget, and view their profile to modify information

Step-by- Step:

1. User clicks on grocery list button, user will view their current grocery list
2. User click on explore button, users can view the additional meal options
3. User clicks on My Meals button, users can view the current meals for the week
4. User click on Budget button, users can view their budget tracking over the weeks

2.1.1.4 Account Profile/ Edit Profile

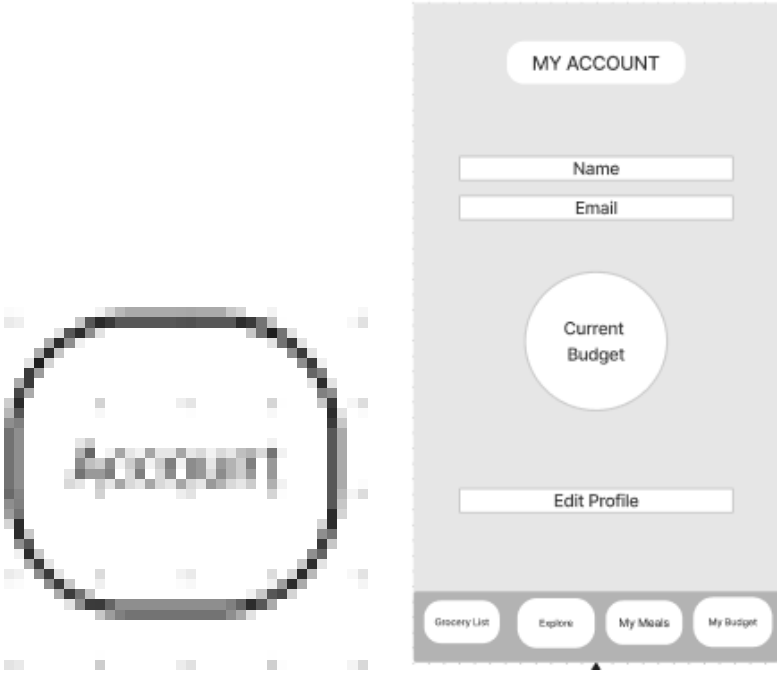


Figure 5: Profile

Brief Description:

This Account button will be featured at the top right corner of every main page (the navigation bar pages) Users can access their profile information and edit their profile and budget selection by clicking this button

Step-by-Step:

1. User clicks on the account icon in the top right corner of the page
2. User view their account information including their name, email and current budget
3. User clicks on edit profile button to modify their personal information, budget, password
4. Once modification is complete, users will press the Checkmark button and the system will update their information

2.1.1.5 View Recipes/ Modify Meal Selection

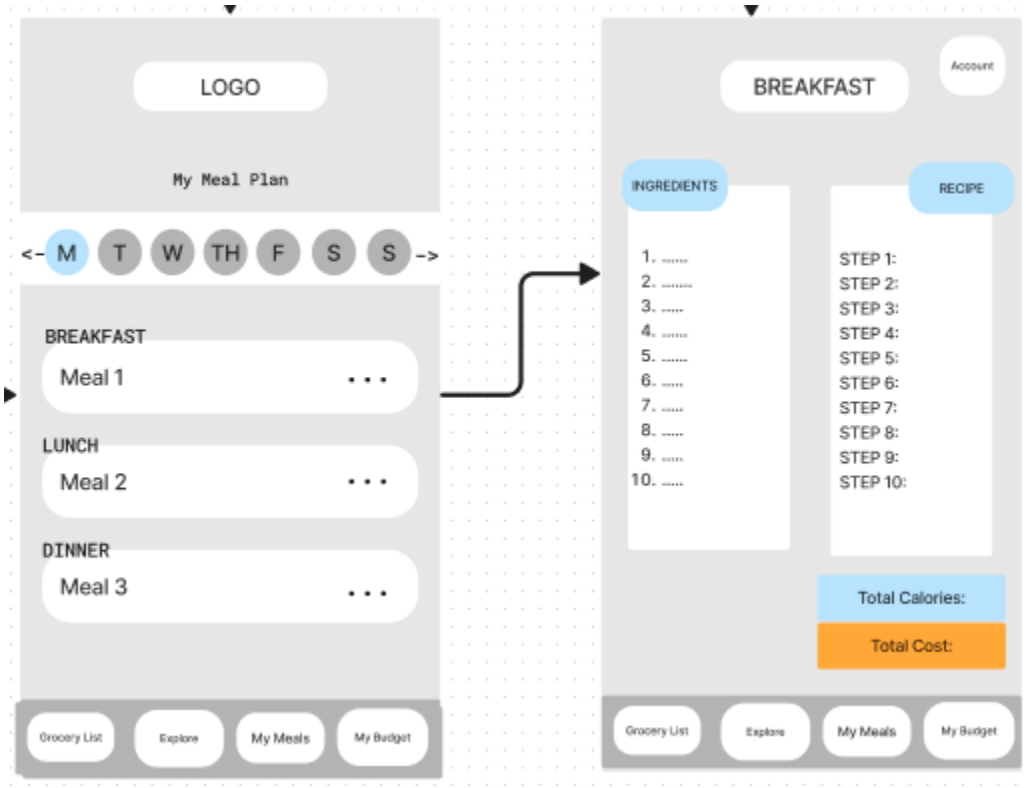


Figure 6: View/ Modify Meal

Brief Description:

Users can view the recipes and ingredients for the meal. Users can view the total calories and cost for the meal. Users can also select any day of the week by clicking on the button to view the meals for that day. Users can also view previous and future meals by selecting arrow buttons to scroll through the weeks

Step- By Step:

1. Users will select the My Meals button (default page when after sign in)
2. Users will select the day they want to view from the row of days
3. Users can select the arrow buttons to view other weeks
4. Users will select the meal they want to view (breakfast, lunch of dinner)
5. Users will see the ingredients, recipe, total calories and total cost for that meal
6. Users can return to the My Meals page through the back arrow button

2.1.1.6 View Grocery List

Figure 7: View Grocery List

Brief Description:

From the navigation bar, users can press the grocery button and see their grocery list. The grocery list is organized by item type to ensure efficient grocery shopping. The grocery list will also display the total amount

Step-by-Step:

1. Users will press the grocery list button on the navigation bar
2. Users will be able to view their grocery list, categorized by type
3. Users will be able to see individual item costs and the total costs

2.1.1.7 View Other Meals and Swap

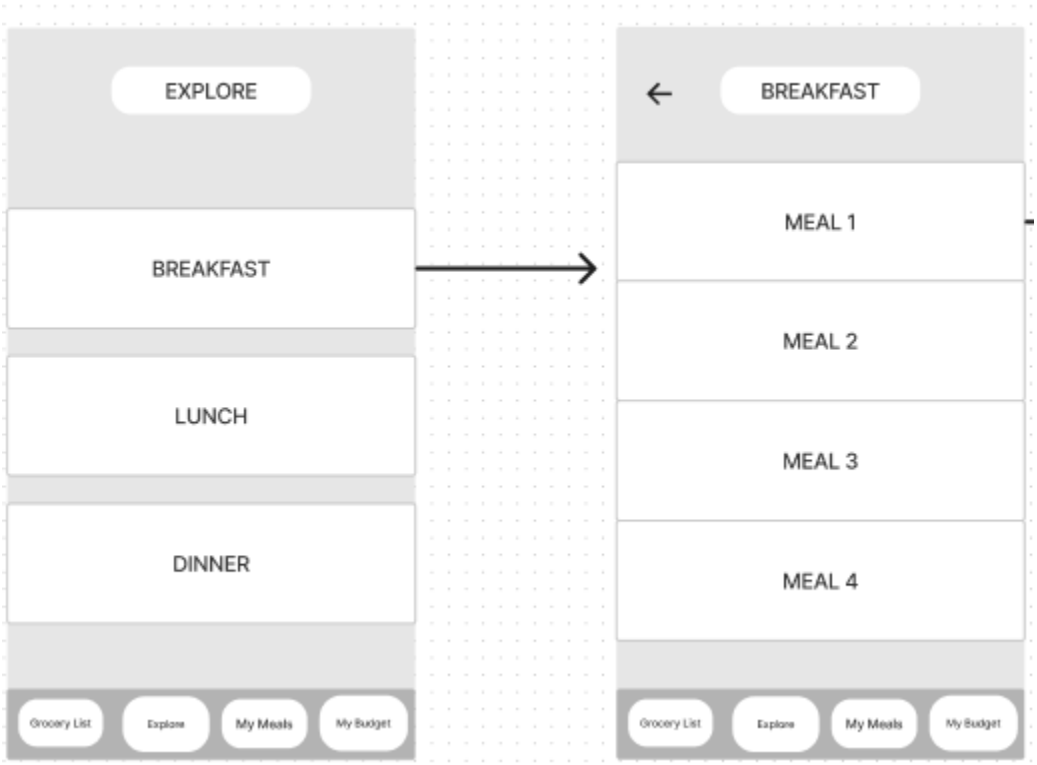


Figure 8: View/ Select Other Meals

Brief Description:

Users can view other meals that are stored in the system's database. If they see a meal they like, they can choose to swap a current meal out for it. They can do this for all meal types, breakfast. Lunch and dinner.

Step-by-Step:

1. Users will click on the explore page, or the "..." on the view recipes page in section 2.1.1.5.
2. Users will select which meal category they want to explore
3. Users will see the list of meal options for that category
4. Users can select a meal from the list to view its recipe and ingredients
5. Users can choose to replace a current meal with the selected meal by clicking on a "Swap Meal" bottom
6. Users will choose the day they want to place the meal
7. Application will alert user that the grocery list will change, users can cancel or continue
8. If user cancels, they will be returned to the recipe page
9. Users can click the back arrows in the top left corner to return to the previous page

2.1.2 Hardware Interfaces

The app will first be available on these iOS devices through the App Store. In the future, we may expand for Android devices where the app will be available in the Google Play Store.

2.1.3 Software Interface

The application will contain a database to store information. It will utilize Firebase Realtime Database. In the database, the information to be stored will include the user's personal information and inputs into the app. The database will store the user's budget selection, grocery spendings, meal preferences and meal options according to the budget. The database will contain all the meal options for each meal category and each budget option. With the meal options, the application can determine which meals to provide as options for the user. It will also contain the costs and calories for each food item allowing the system to calculate the total cost of groceries and total calories for meals. The software is available for devices that can operate on iOS.

2.1.4 Communication Interface

Internet access is required to download the app. Using cellular data or connection to WiFi is needed to have access to the app and all of the pages. The app currently will not work offline. The software interface will communicate via the HTTPs protocol and JSON for transmitting data from the server to client and vice versa.

2.2 Software Product Features

Functional Requirements	Description	Priority
General App Design	Create a guideline for app buttons, icons, menu, images, and colors	High
Record user information into customer database	Create link between application and database to store customer information upon their registration	High
Budget Options	User will be provided with 4 different budget options to select from ranging from	High

Functional Requirements	Description	Priority
	$75 to $150	
Meal and Ingredient implementation		High
Meals will include a cost, and caloric information	Each meal will have attached to it the estimated cost based on the ingredients and the total calories in the meal	Moderate
Grocery list function	Based on the meals the user will be given a list of ingredients that they need to buy that week.	Moderate
Grocery Cost	The app will give the user an estimation based on the average national price for the total cost of the groceries	High
User Settings	Allow for user customization of options such as their budget settings	Low
Meal Flexibility	Allow the user to substitute meals for different meal in database	Moderate
Recipe	The user will be given a simple recipe to follow to make their meal	High
Help Settings	Guides to help the user navigate through the app and FAQs for app users	Low
Authenticate User	Have proper security to ensure safe log in by verifying user identity	High

Table 1: Functional Requirements

Description:

The table shows all of the functional requirements for the system. They are categorized by priority level with High being the highest priority and Low being the lowest priority. The team plans to complete the high priority requirements before continuing to the others.

2.3 Software System Attributes

2.3.1 Reliability

Internet access and connection is required to open the app. With internet connection, the app will open and be ready to use. Power in the device is required to run the application.

2.3.2 Availability

The application is expected to work while the device is connected to the internet. If connection is unavailable or unsuccessful, the application will not open past log in. Currently, there are no offline modes for the application.

2.3.3 Security

The system will have database security for sensitive data. The exchanges between client and server that include private data will only occur at the highest available level of secure connection. Additionally, security for the user's account will be implemented by requiring passwords created by the user to be a minimum of 8 characters long and a maximum of 25 characters. Passwords will require at least 1 uppercase letter, 1 lowercase letter, 1 digit and a special character. The user's information will be secured and can only be accessed by authorized personnel.

2.3.4 Maintainability

The application is set to release with the base functions. The team plans on implementing future updates for bug fixing and adding features. The team will follow best practices for fixing bugs within the application. Additionally, the database will need to be frequently updated to maintain accuracy of prices for ingredients which change over time and depend on location.

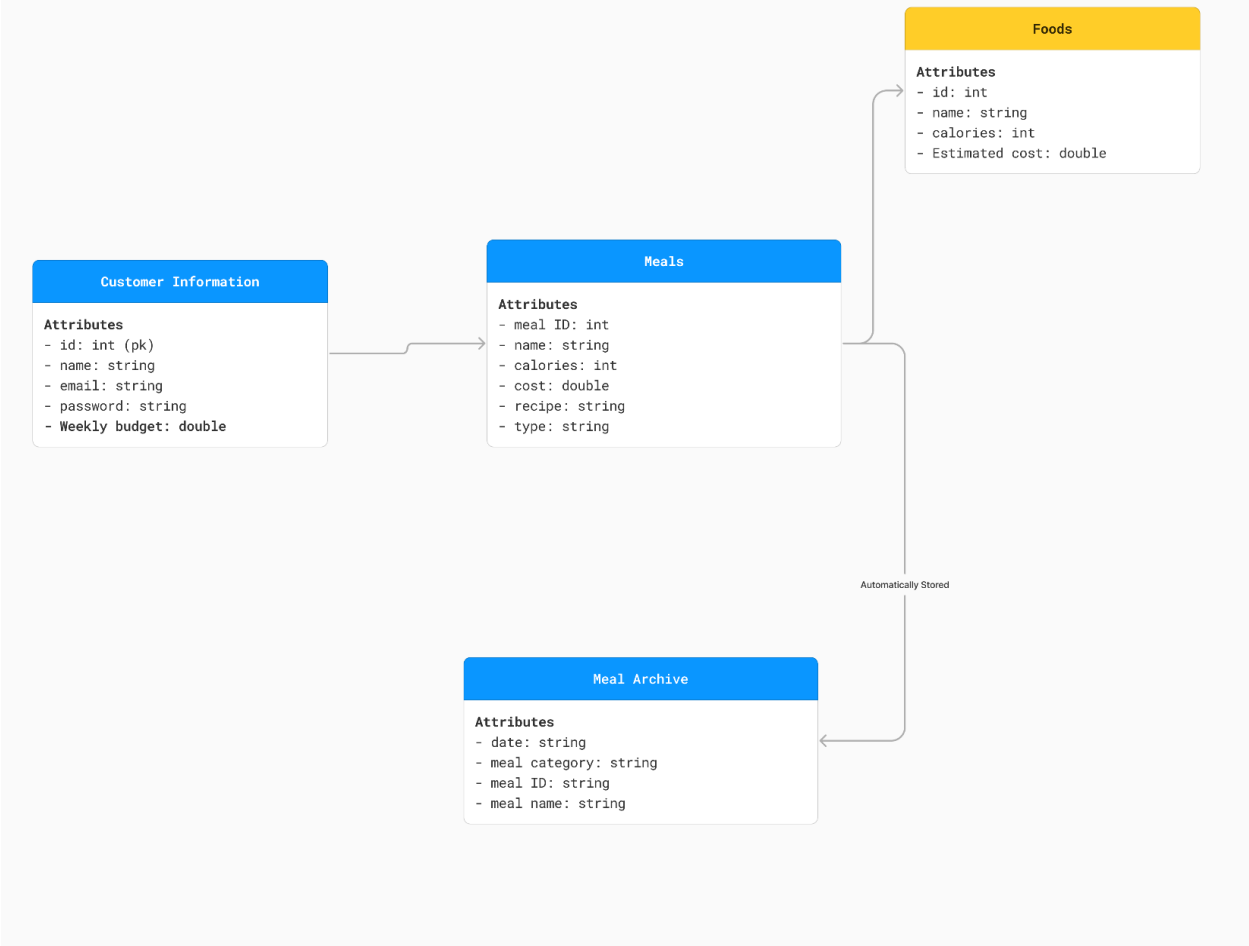
2.3.5 Portability

The product is designed for mobile app users, specifically iOS users. As a mobile application, the app will be available for access anywhere if there is internet connection.

2.3.6 Performance

The application will be fast acting. Majority of the time in its performance will be for loading texts and images. It will have a small application size and low memory usage, making the application quick in terms of performance. Information exchange between the database of meal recipes and application back to the user will be reliable and fast.

2.4 Database Requirements



Description:

The chart above displays the database requirements. The database will contain 4 main entities. First is the customers, where the database will store and track registered users and personal information including the name, email, password and weekly budget. Next, each user will be given a selection of various meals based on their budget selection. The database will contain the meals and information regarding its name, calorie amount, cost and recipe. The meals are automatically stored in the meal archive for the user to view previous meals. From the meals, the database will also store each food item in each meal, containing the information regarding the name, calories and estimated cost of the item.

3 Additional Material

3.1 Definitions and Acronyms

- MBP - Meal Budget Plan
- SQL - Standard Query Language
- iOS - iPhone Operating System
- HTTP - Hypertext Transfer Protocol
- JSON - JavaScript Object Notation

3.2 References

i. Apple HIG: https://developer.apple.com/design/human-interface-guidelines/designing-for-ios

Modern database management 13th Edition by Jeffrey A. Hoffer et al.