

Department of Computer Science and Engineering
University of Nevada, Reno

Project Part #3: Design
Project Title: AIChef
(AI Powered Grocery and Meal Planner)

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Abstract

The AIChef system helps users plan their grocery lists and meal plans to promote efficiency. The system is able to eliminate waste by combining users pantry items, diet preferences, allergies, and shopping windows in order to have a simple guided process with the least amount of hustle and budget. Users enter their existing ingredients, set goals, choose their planning timeline, then Ai takes over and generates a customized grocery list that is directly correlated to the list of meals that reduce waste and save time. The system focuses on a simple flow that keeps planning fast and minimizes cognitive effort. The interface only collects the most important and simplest information needed to prepare a useful plan. Then user is presented with the result that is well organized and easy to follow.

Changes from your P2

The main idea and feature set from Project Part 2 were kept the same in this design. The Level 1, Level 2, and Level 3 requirements and their priorities were kept unchanged and this document focuses on showing those functions look and behave in the interface.

A few small adjustments were made to improve clarity and flow of the system for users experience. The main steps were grouped into clear pages such as Home, Enter Pantry Items, Set Diet Goals and Allergies, Timeline, AI Generation, Results, Cheaper Store Suggestions, and Save Preset. This was done to more closely match the use cases and requirements from Part 2.

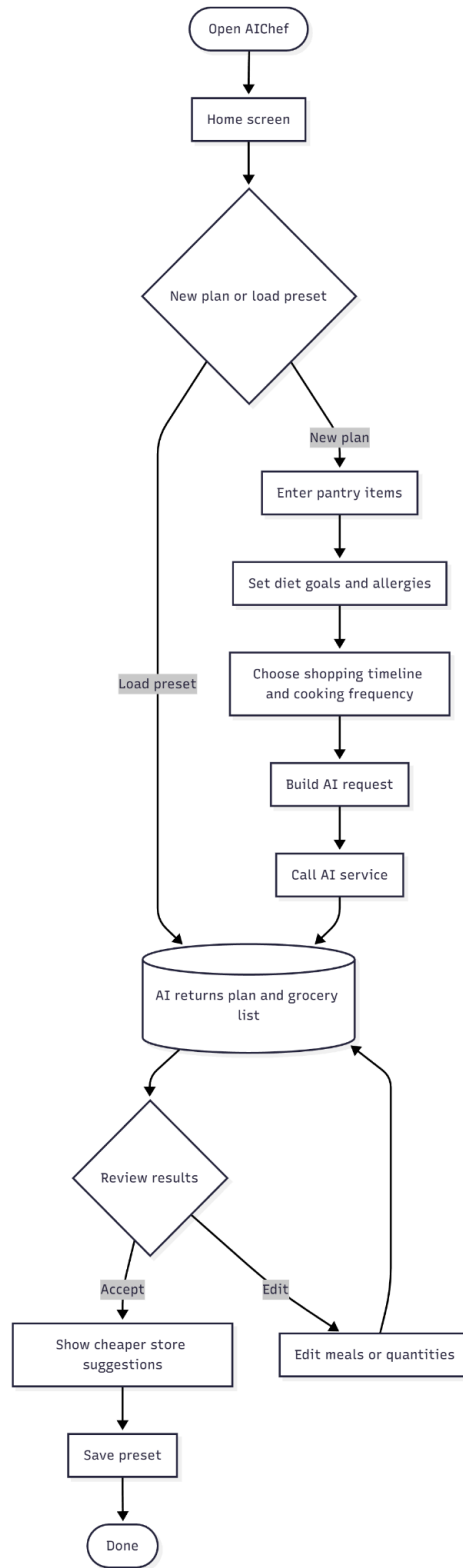
An alternative multi step card layout has been explored and dropped because it required more scrolling and made it easier to miss steps.

High level design

This section showcases behavior of the system from the users opening the app to AI generated plan is returned to the user. This behavioral diagram shows complete interactive flow without the need to know the details about the algorithm. From Project Part 2 main features are displayed including pantry, diet and allergy entries, planning timeline, AI generation, cheaper store suggestions, and saving presets.

On the first attempt user begins a new plan, they have the option to input pantry items, choose diet preferences, and set their timeline and cooking frequency. The system combines these inputs into a structured request and sends it to the AI service. AI gives a responds with a grocery list and a meal plan that avoid waste and uses up all ingredients. The user is then given a choice to reviews the results and make changes also there is an option to see cheaper store suggestions. All the choices can be saved for future attempts.

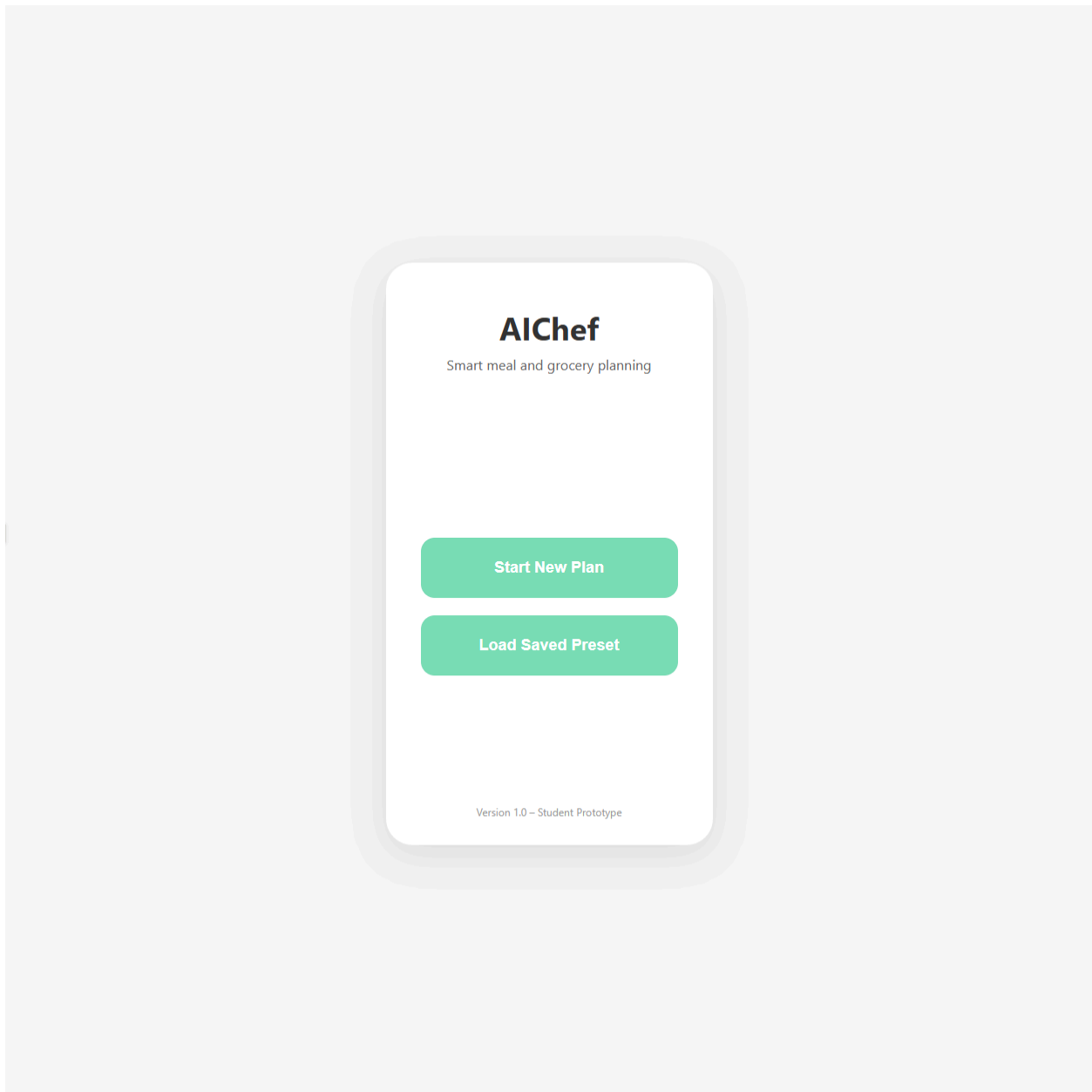
System-level behavioral diagram



Static interface design

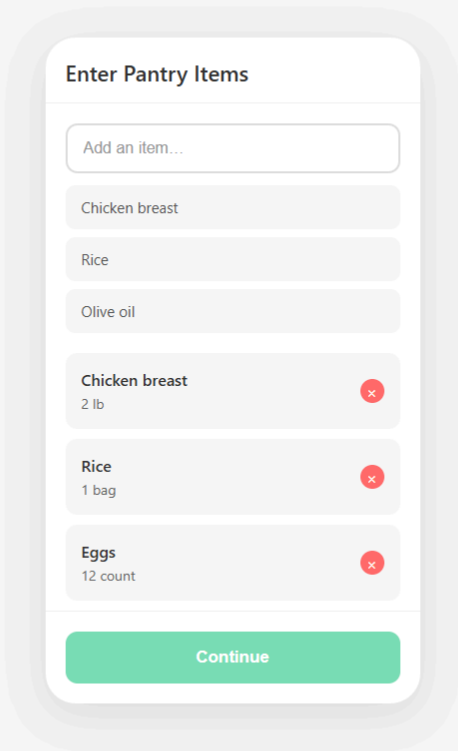
The main screens of AIChef interface show the flow from entering pantry ingredients to reviewing the final generated results. Each screen aligns with the Level 1 and Level 2 requirements from P2. The design keeps the interactions simple and effort minimal for the users.

1. Snapshot 1: Home Screen



Description: First screen that the user gets to see, they get to start a new plan or load saved preset. The screen is simple with only 2 options to be quick to understand and navigate.

2. Snapshot 2: Enter Pantry Items



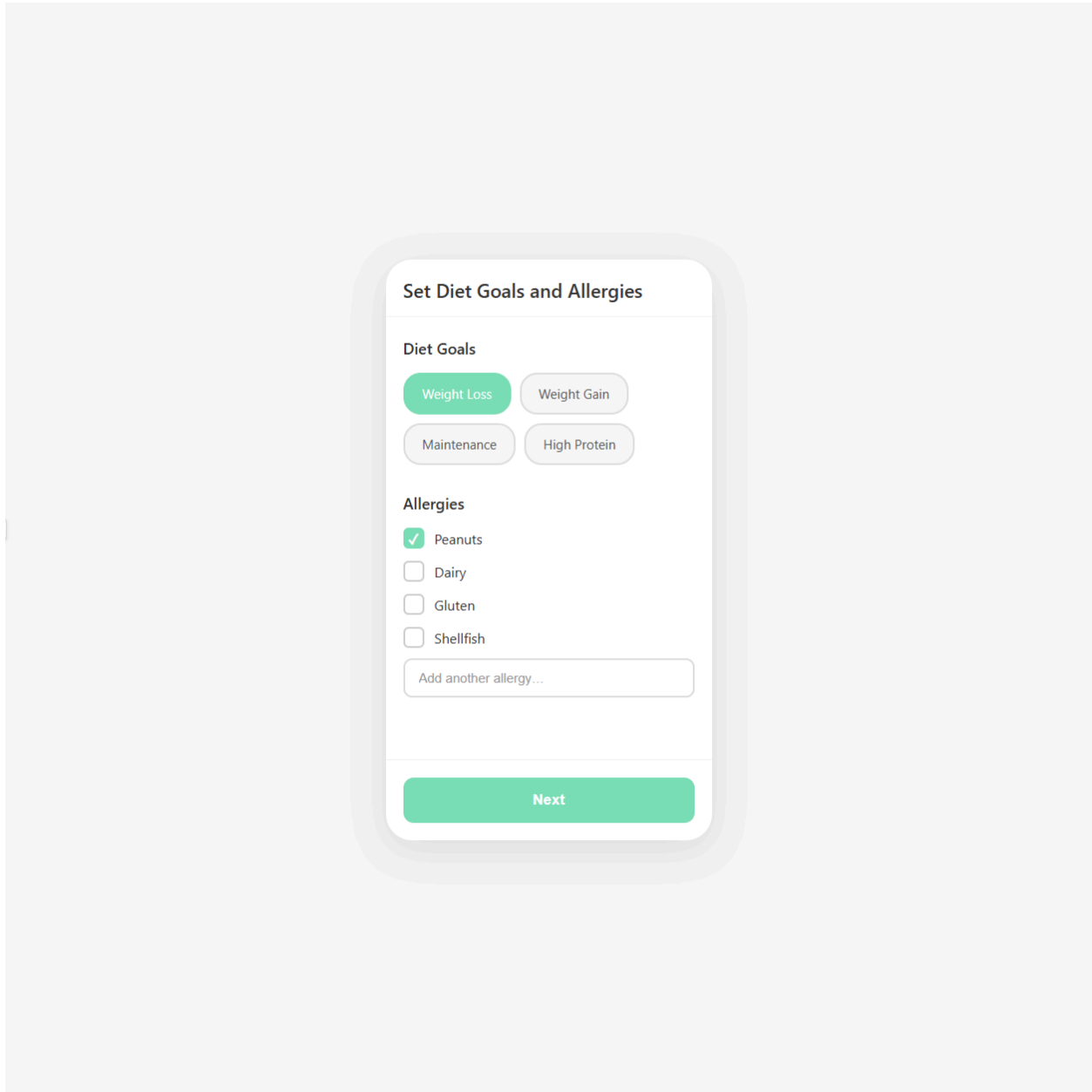
The screenshot shows a mobile application interface for entering pantry items. The title is "Enter Pantry Items". Below the title is a text input field with the placeholder "Add an item...". Below the input field are three rows of items, each with a red 'x' icon to its right:

- Chicken breast
2 lb
- Rice
1 bag
- Eggs
12 count

At the bottom of the screen is a green button labeled "Continue".

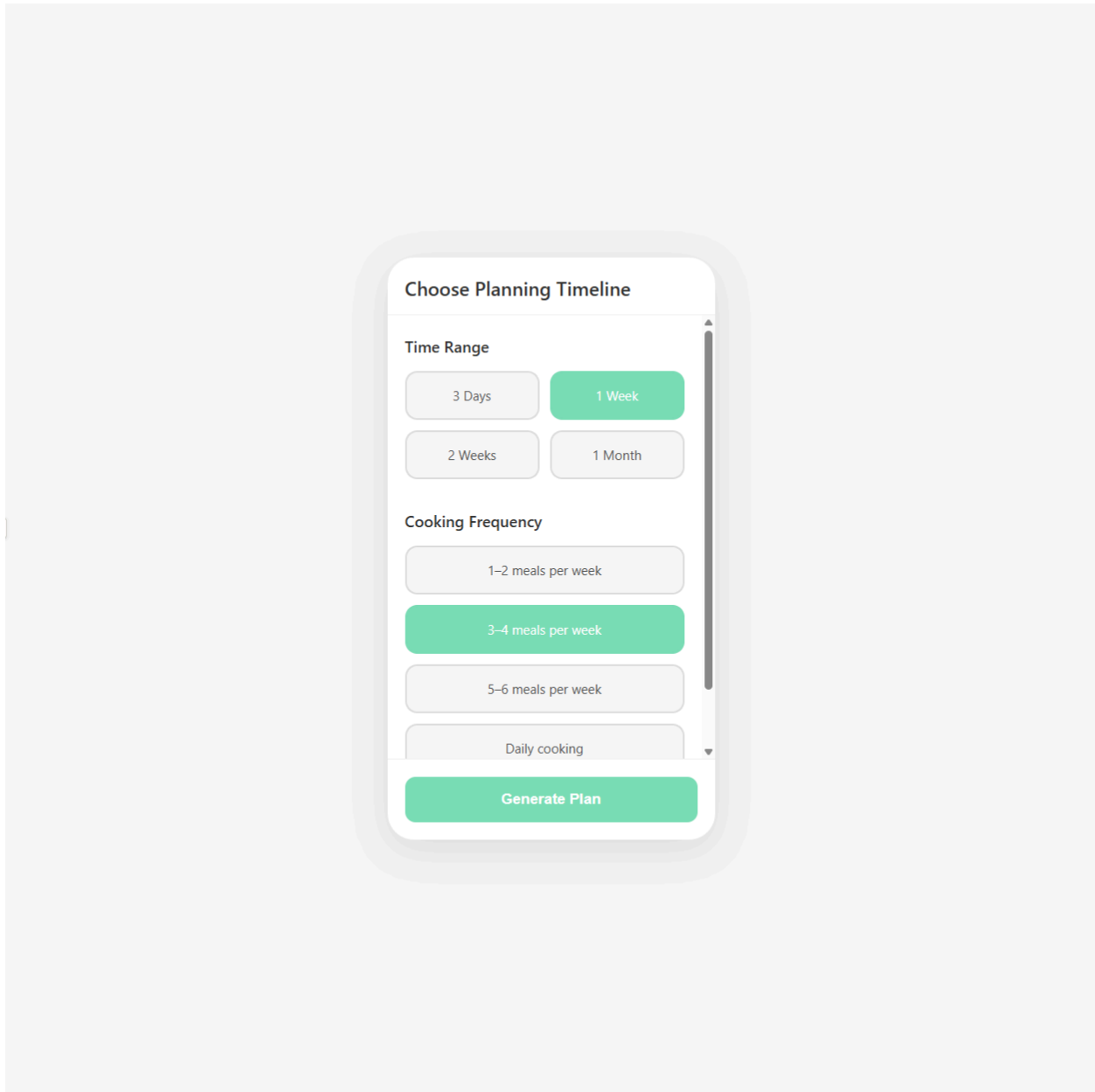
Description: Users add items they have with a lot of quick suggestions or text entry. This gives fast entry and avoids a lot of repetitive tasks.

3. Snapshot 3: Set Diet Goals and Allergies



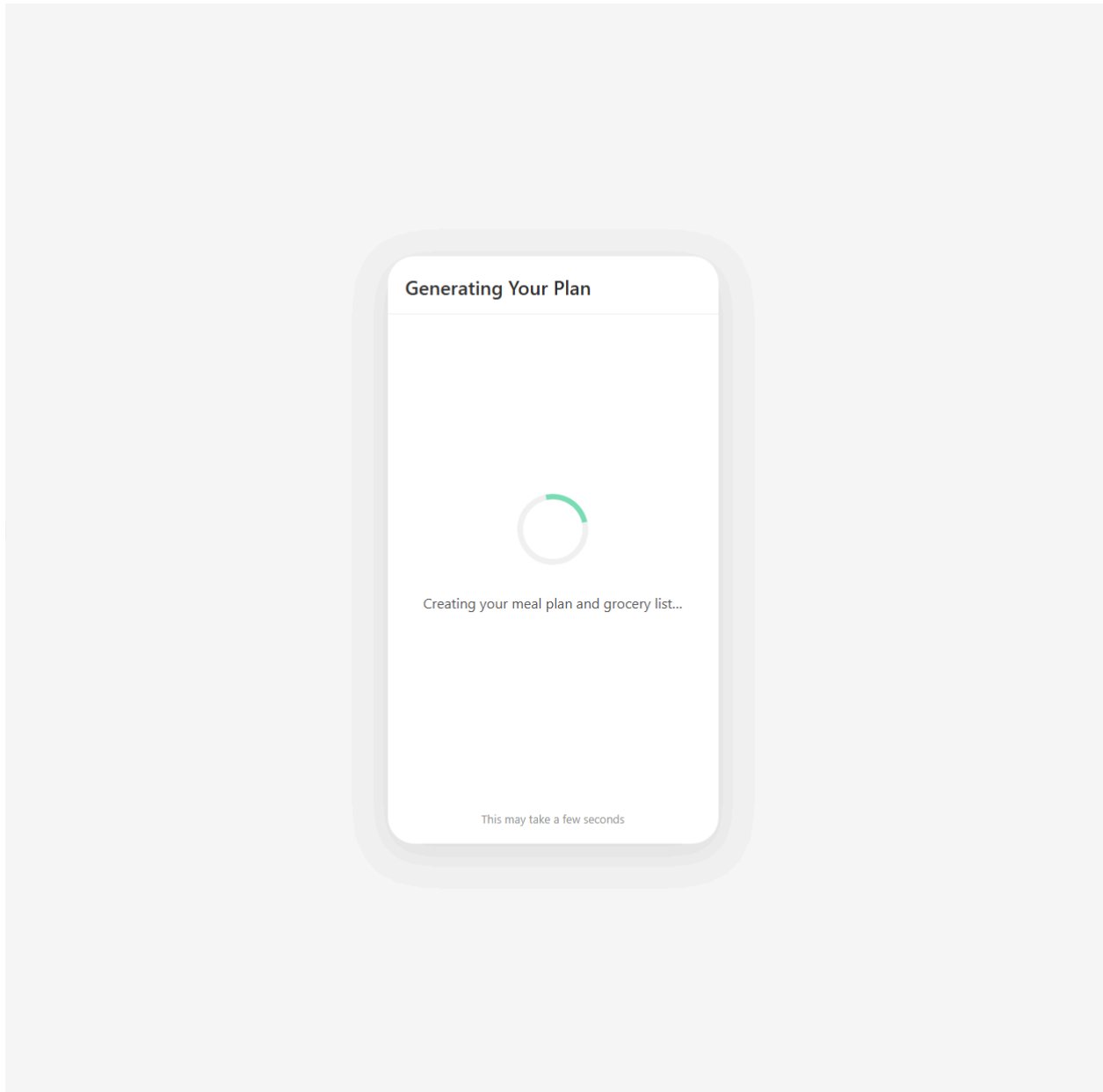
Description: The system asks for diet goals and allergies, the options are simple for the user so it's easy to pick.

4. Snapshot 4: Choose Planning Timeline



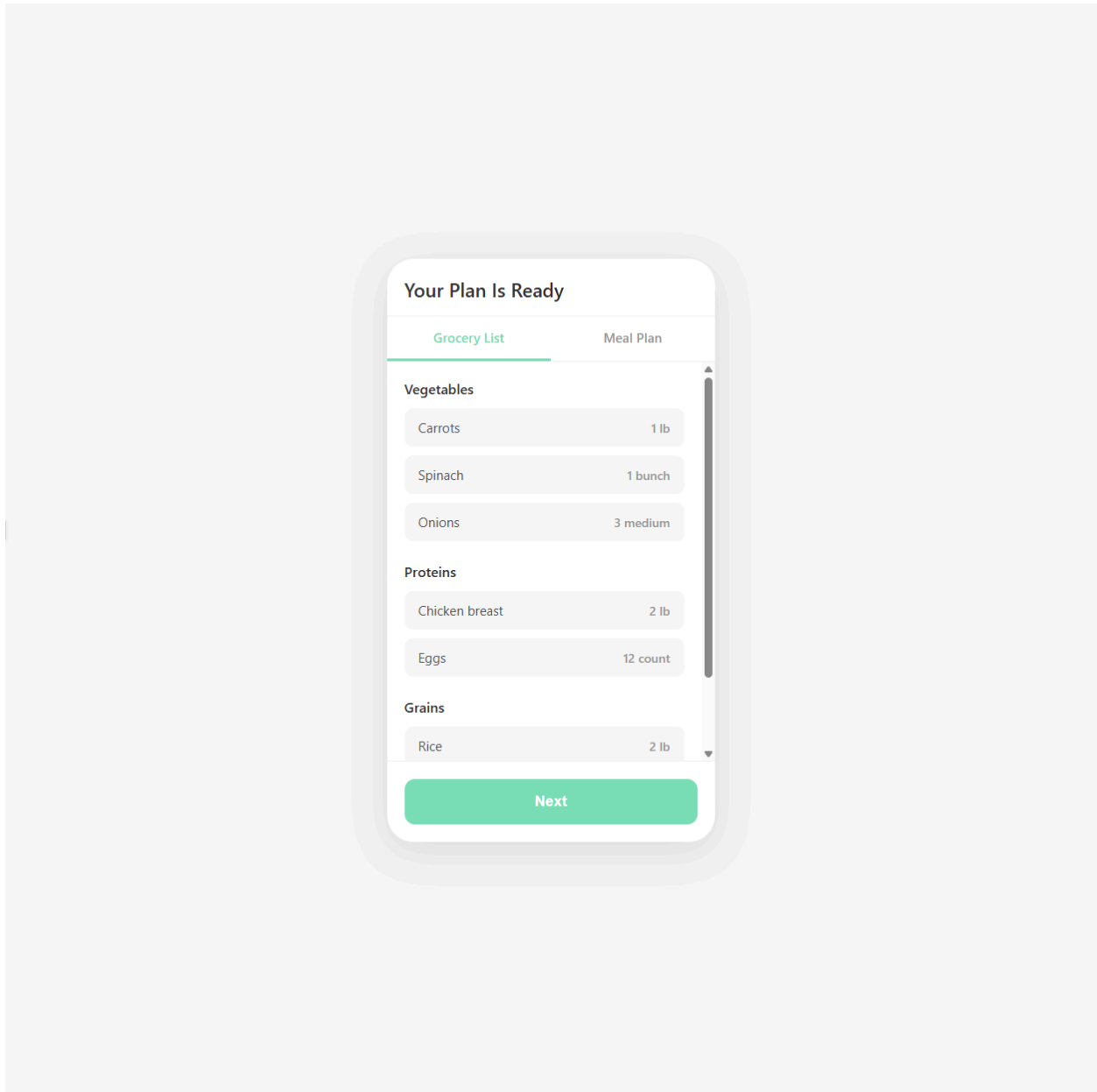
Description: Users select how long the plan should cover and how many times they want to cook.

5. Snapshot 5: AI Generation Screen



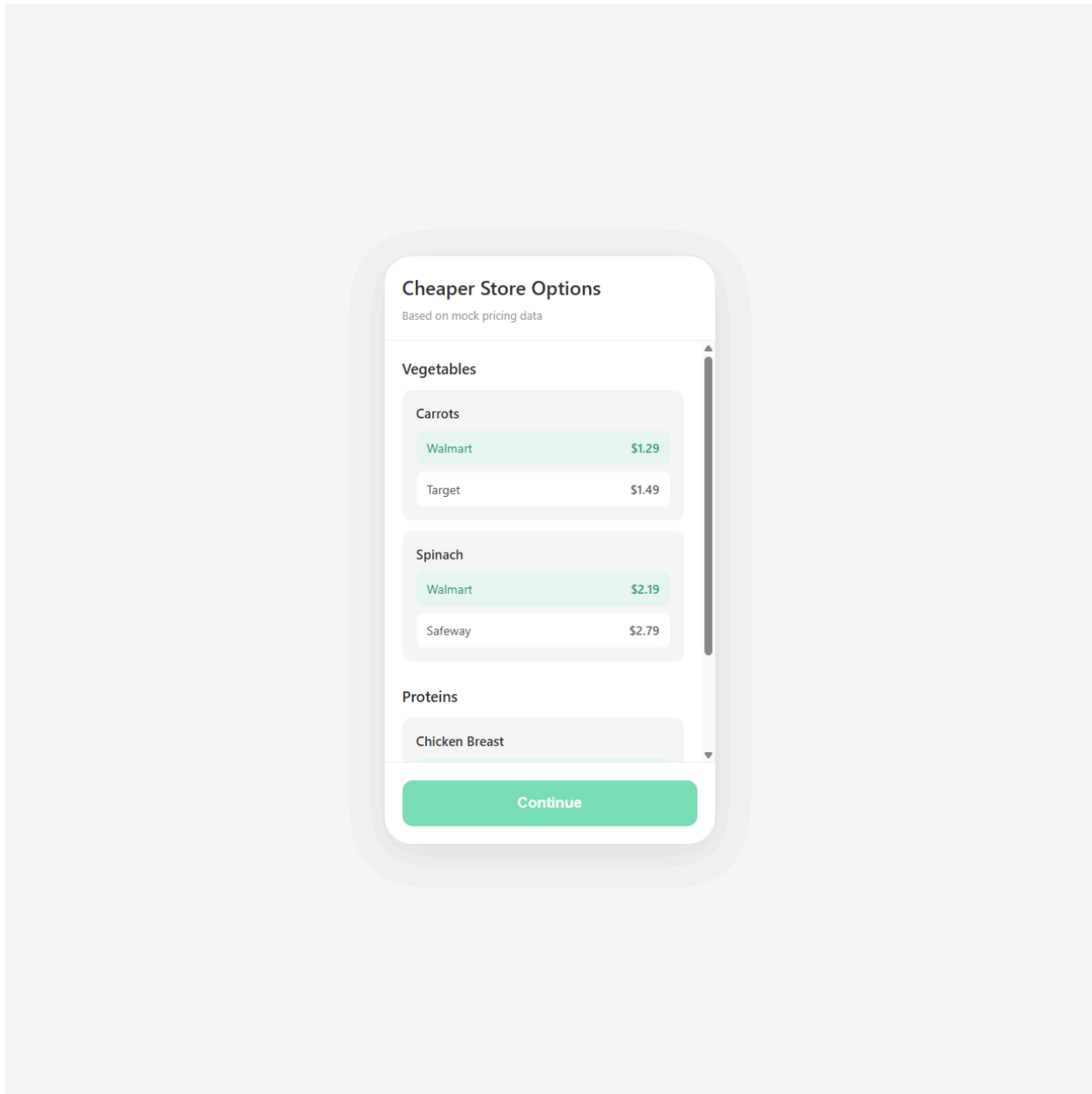
Description: A short loading screen appears when the AI is creating the meal plan and grocery list.

6. Snapshot 6: Grocery List and Meal Plan



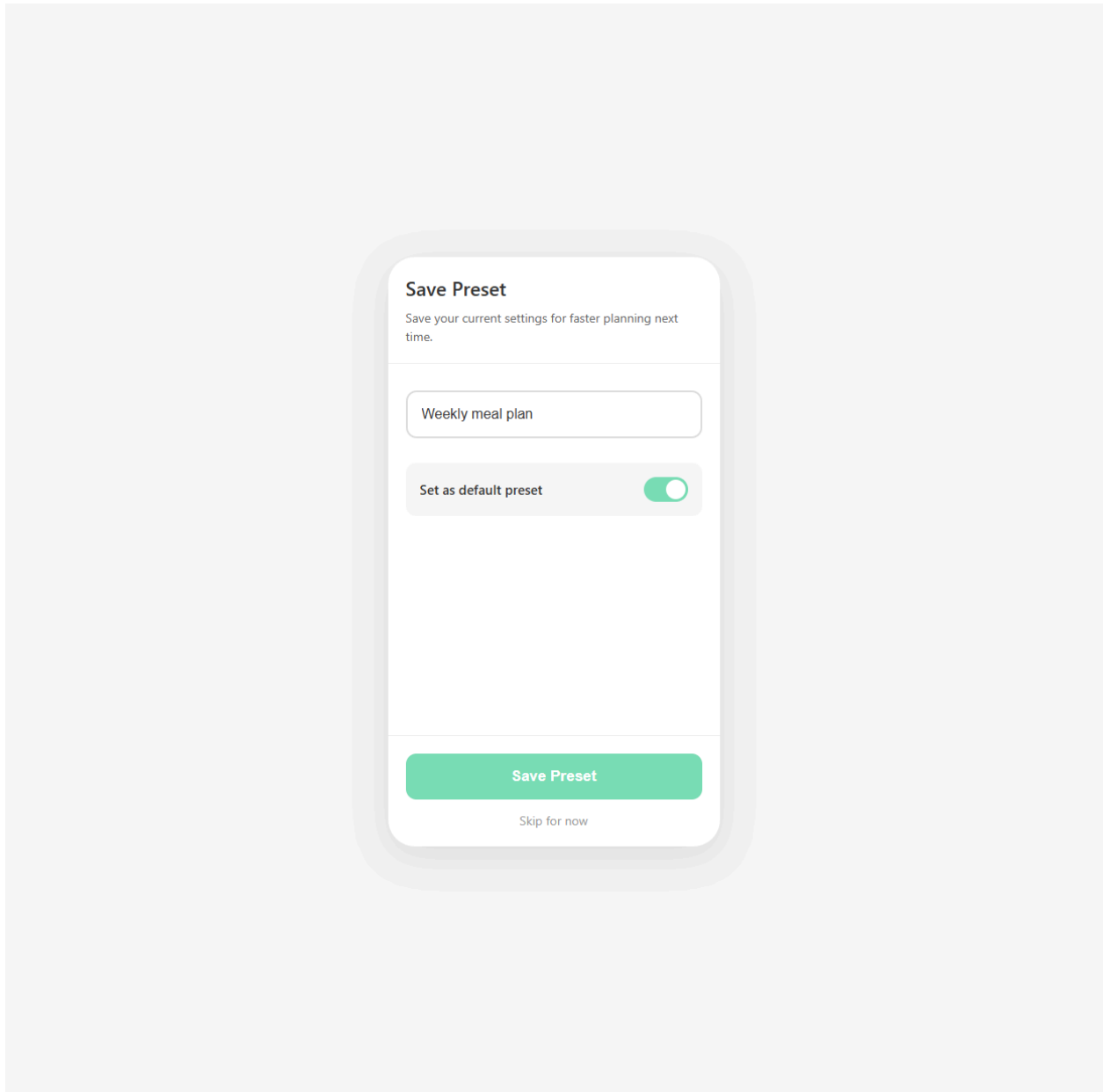
Description: This page displays the AI generated grocery list and meal plan. Items are grouped logically and meals use overlapping ingredients to reduce waste.

7. Snapshot 7: Cheaper Store Suggestions



Description: This page displays the suggestions for lower cost store options. These suggestions are based on fake data matching Level 2 requirements.

8. Snapshot 8: Save Preset



Description: This page displays the save preset for future sessions speeding up the process. This supports the Level 1 requirement for saving preferences.

Alternative designs

Multi Step Card Layout

AI Chef

Smart Meal Planning & Grocery Lists

1. Enter Pantry Items

Collapse

Search or add pantry item

Type to search or add new items...

Chicken

Rice

Eggs

Milk

Chicken breast – 2 lb

Rice – 1 bag

2. Set Diet Goals and Allergies

Expand

Click to enter details

3. Choose Planning Timeline and Cooking Frequency

Expand

Click to enter details

4. Generate Grocery List with AI

Expand

Click to enter details

5. Save a Preset for Next Time

Expand

Click to enter details

Description: For this design the layout has all the steps in their own expendebole cards,he layout consists of expandable cards that encapsulate each one of the main steps. The pantry items, diet goals, allergies, timeline, and cooking frequency all appeared as separate cards. Users are able to open them one at a time. The design aims to keep things visually organized and less cluttered.

Why was it not selected?

12

The card based design required more scrolling which could cause disconnect for users and take up more time. Also this type of design could cause important sections to be missed.

AI use

I ended up using Chat GPT to help with each page design. I told it to make a prompt that I would paste into [Claude.ai](#) that would generate a perfect outcome for what I wanted each page to look like and also so that it keeps the same overall design. Each screenshot was made using Claude and also the alternative design.