Initial Architecture Document

Team 7

Team Members:

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Project Name:

Pantry

Project Synopsis:

Web/Mobile app that catalogs ingredients and recipes, makes a weekly meal plan, updates grocery list and schedule if the user runs out of ingredients.

Architecture/Design:

Whether you are working a full time job or are a full time student, one of the more challenging aspects of living independently is the intense planning required to figure out what food and ingredients you need to get from the store in order to have healthy and filling meals for your entire week.

The purpose of Pantry is to facilitate this process for any user interested in organizing the way they approach meal-planning. To help this process Pantry has four distinct tabs: My Ingredients, My Recipes, My Grocery List, and My Weekly Schedule. Each tab has its own unique design and functionality within Pantry.

To initially use Pantry, the user will first curate a list of any food items and ingredients present in their kitchen, using a user-friendly interface to help the user ensure that they document the entire range of foods that could be used in meal-planning. After that process is done, the user is guided through the process of inputting recipes that they have used in the past to make meals. The user is then able to assign a recipe to each meal they want to plan for in the coming week,

and Pantry keeps track of which ingredients they need to ensure that the user will not run out of the ingredients they need to make each meal. In this way Pantry acts as a personal database that contains both an itemized list of a user's kitchen contents, but also a compendium of recipes that the user can quickly access while cooking.

After each meal is completed, based on the quantity of the ingredients used in the recipe, the user will be prompted to update the ingredient list to account for any ingredients that may have been used up in order to prepare the meal. Any ingredients that the user has run out of will automatically be added to a grocery list within Pantry. This alleviates the need for the user to maintain their own grocery list since the app will do it on its own. The grocery list feature will also allow the user to edit the list themself to adjust the amount of each ingredient needed to be purchased and include anything that the app is not keeping track of. Whenever a shopping trip is complete a user can edit the list to match what they have just purchased and then press a button and have the contents of the grocery list transferred into the list of ingredients on Pantry.

If a user has run out of any ingredients needed for a meal they planned to make later in the week, Pantry will scan through the list of recipes the user has provided in order to find a meal that requires ingredients the user still has and prompt the user to add that new meal to the schedule. This system will remove any of the uncertainty in meal-planning. Even if the user miscalculates the amount of food and ingredients needed for each meal, Pantry will be able to quickly find a solution and ensure no one goes hungry.

We fully intend for a lot of aspects of Pantry to be customizable. Ingredients can be grouped into a variety of categories (fruits, vegetables, canned goods, spices, etc.) so even in a situation where a user may have a very large list of ingredients, it will be relatively easy to navigate through the menu to check/update what ingredients the user has. The recipes will

function in a similar fashion by allowing the user to assign any recipe a tag for what meal they would like to eat it as (breakfast, lunch, dinner, etc.) The recipe tab will optionally allow the user to input the recipe instructions to allow for an easy way to follow along to a recipe while making it. When following recipe instructions that require timers (e.g. baking, pan-frying) there is an option to add a timer that can be used within the app.

We also plan on including some functionality that allows a user to find new recipes that they might be interested in adding to their weekly meals. By either allowing users to upload their own recipes to be seen and/or used by other users, or scraping the web for existing recipes already published online, Pantry could become an incredible resource for discovering new meals and cuisines from different parts of the world from the comfort of your own home. The process would allow a user to import a recipe into their list of recipes which would then allow the user to see if they have all the ingredients and would also allow that recipe to be used as a replacement meal in the event that the user needs to adjust their menu.

The weekly schedule is completely customizable. The default setting will prompt the user to assign three recipes to each day of the week to account for breakfast, lunch, and dinner but due to differences in diets and religious observances it will be very easy for the user to adjust the amount of meals planned for each day in the week. The user will also be able to save the meal loadout of one week and easily assign that exact schedule to any following week.

Pantry can be accessed as both a web app and mobile app, and if a user creates an account they will be able to sync their data between both so they can meal-plan on both desktop and mobile. React and React Native will be the frameworks used to implement the application on web browsers and mobile devices the backend will be hosted in Google Firebase to store all the user account data as well as all the recipe and ingredient data the user would be able to customize

and access. There are some existing APIs that scrape online websites for the recipes that the user can browse and select from. It may be necessary to create our own scraper to implement some specific functionalities but there are already several Python web scrapers publicly available that accomplish the same or similar task.
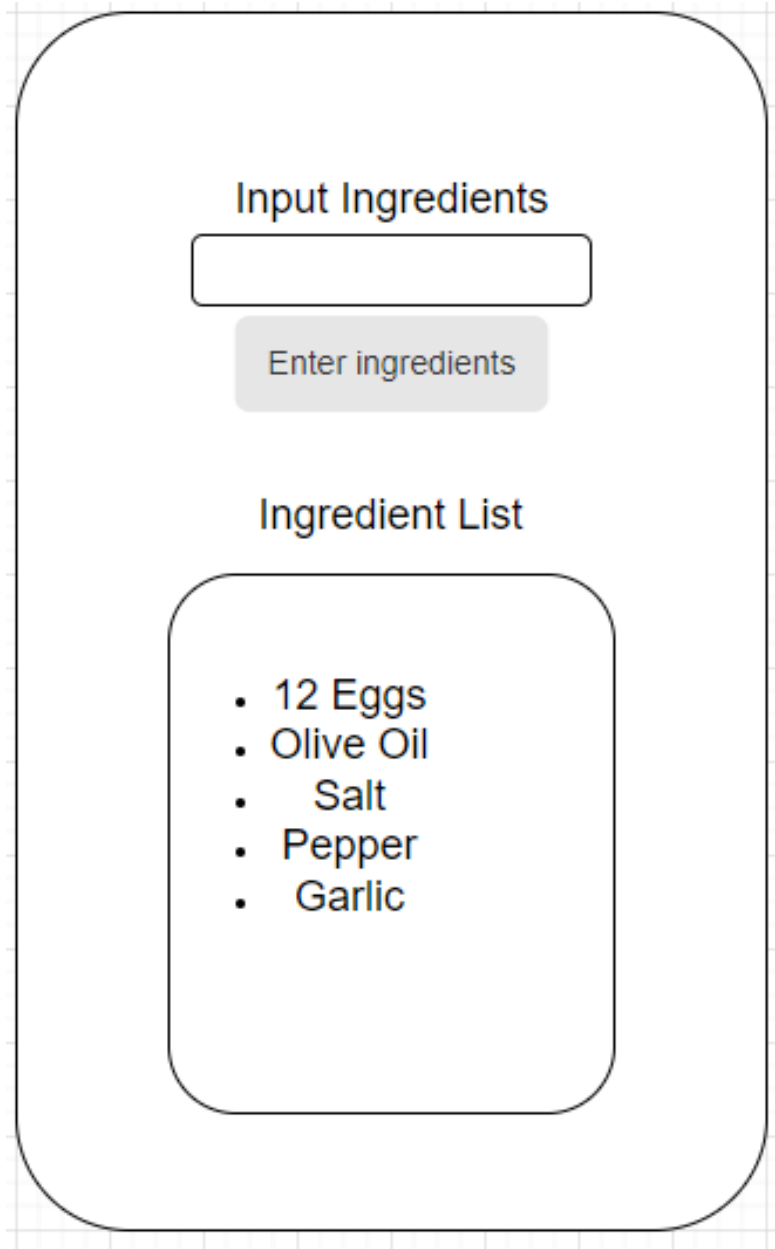

Figure 1: UI Diagram for Ingredients page

Weekly Meal Prep

User selects their meals for the week

App determines if required ingredients are on hand

if additional ingredients are needed

A shopping list is generated by app

user inputs times/dates for meals

After shopping user confirms shopping list has been added to the pantry
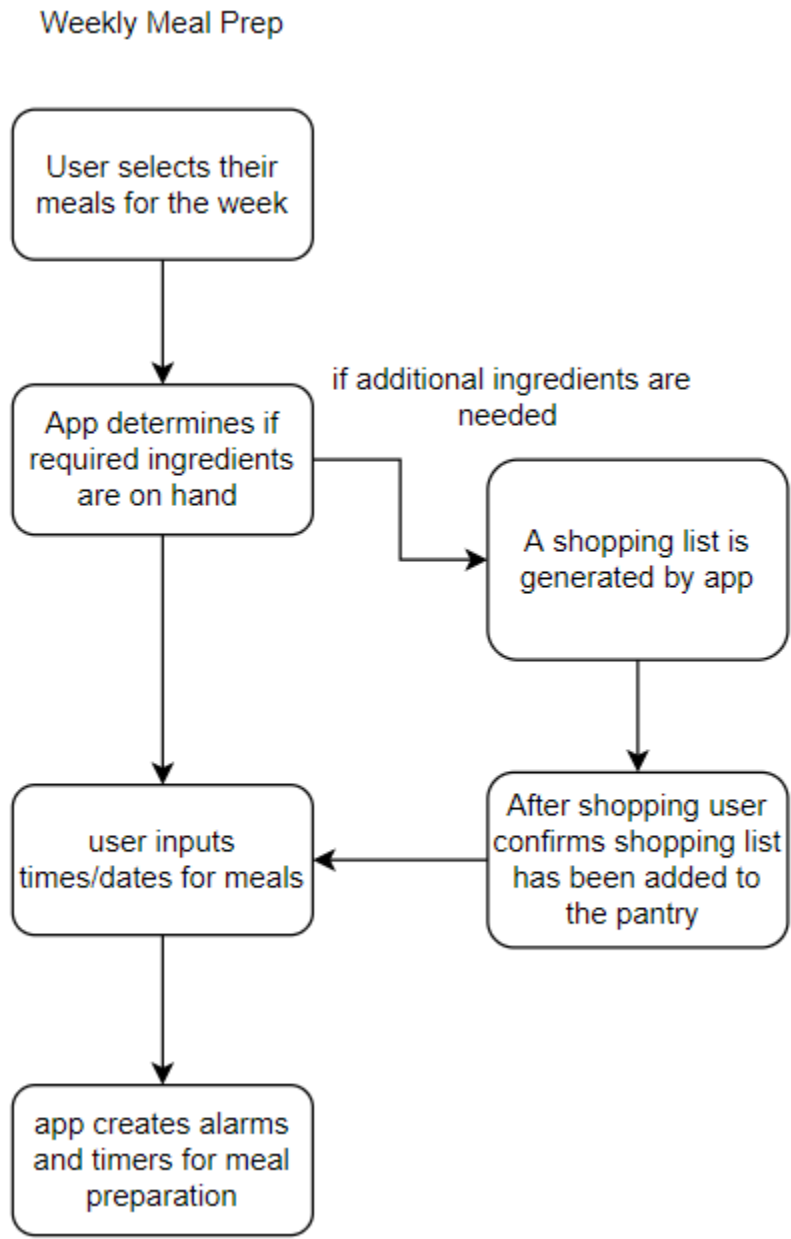
app creates alarms and timers for meal preparation
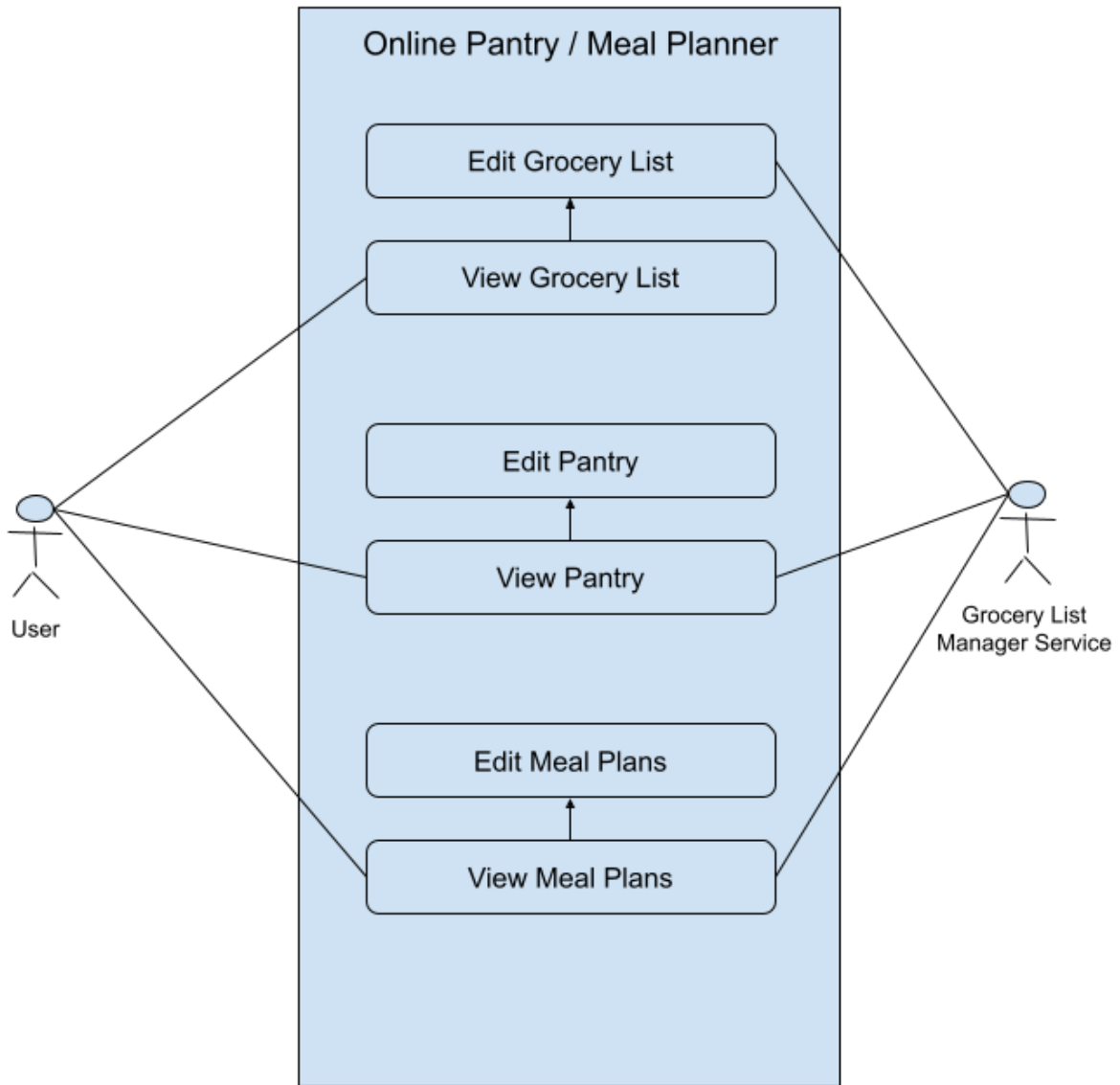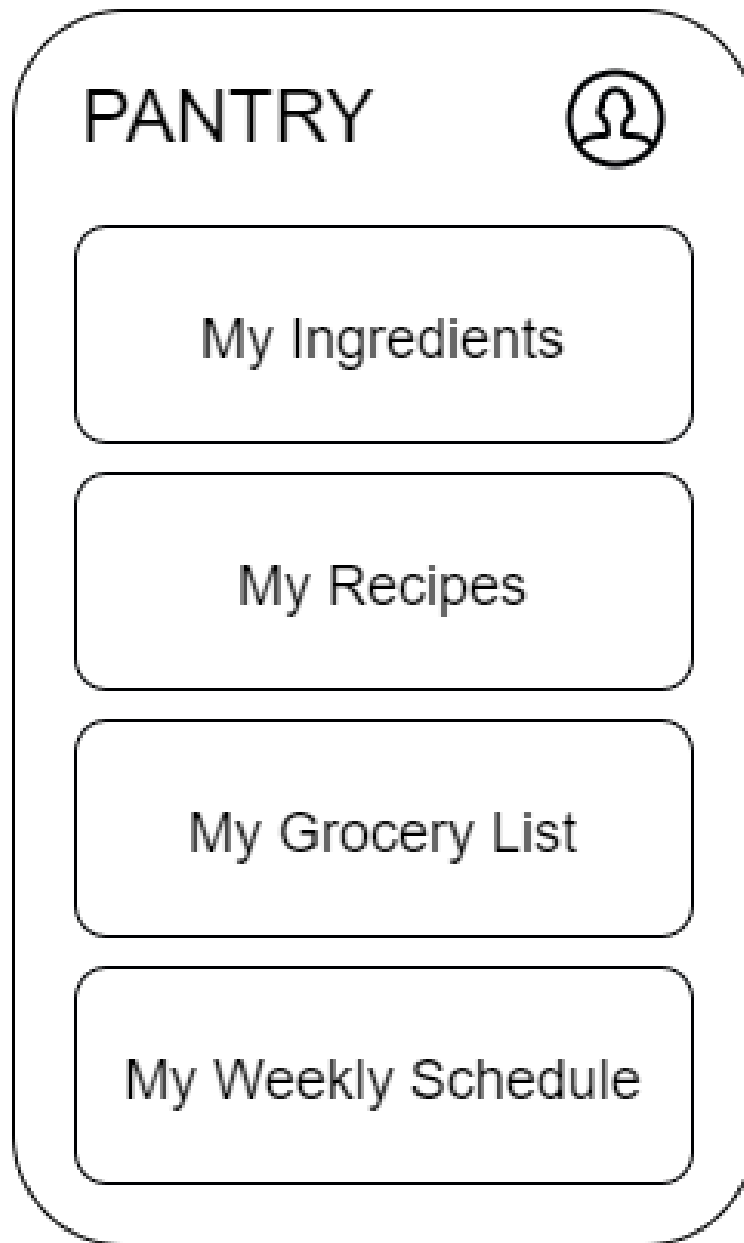
Figure 2: UML Activity Diagram

Figure 3: UML Use Case Diagram

Figure 4: Homepage design Diagram