CS486C – Senior Capstone Design in Computer Science
Project Description

Meal Prep Management App

Dr. Ana Paula Chaves,
School of Informatics, Computing, and Cyber Systems
Northern Arizona University
Ana.Chaves@nau.edu

1. Introduction

Meal prepping is an essential practice for those looking to maintain a healthy diet and save time and money throughout the week. It helps people to create menus tailored to their diet needs and preferences, reduces nutrition-related decision-making on busy weekdays, and reduces food waste by supporting planning and smart use of ingredients.

Despite its benefits, meal prepping can be overwhelming, as it requires managing recipes, planning meals, and keeping track of ingredients. Many individuals struggle to manage their recipes effectively, plan their weekly meals, and coordinate their grocery shopping. Additionally, there is a growing desire for a social experience around meal prepping, where users can share their recipes, meal plans, and cooking habits with others, especially with other people in their households.

Currently, one can find dozens apps in Apple/Google Play stores that intend to support meal prep. Although useful to some extent, these apps usually restrict the organization to a predefined set of meals (e.g., breakfast and dinner), restrict the recipes to the ones they can crawl from recipe websites, and have limited or no sharing functionalities. Shopping lists usually add all ingredients from the recipes, disregarding the ingredients one may already have at home and the ingredients the recipes share. Finally, most of the apps are mobile-only rather than mobile-first. This requires the users to install them and use them on their phones, limiting the user interface to the resources available on small screens.

To address these challenges, we propose developing a Meal Prep Management WebApp that helps users organize their meal plans, manage recipes, and streamline grocery shopping. The app will allow users to customize their meal menu, and share and discover recipes, menus, and shopping lists.

2. Project Objectives

The primary objective of this project is to develop an intuitive web app that allows users to: manage recipes, discover new recipes, create meal prep calendars, generate shopping lists, and manage ingredients, all of these with some social features.

I expect that the app will significantly simplify the process of organizing menus and shopping lists. As a result, it will encourage healthier, more efficient meal prep habits and enhance the overall meal planning experience.

3. Project Scope/Features
The app will be designed with the following key features:
- **Recipe management**: users can add, remove, or modify their recipes and set them as public or private. Recipes can include ingredients, preparation steps, tags, and notes. Tags are used for searching features. Users can search for and share recipes within their social connections.
- **Meal prep calendar**: a weekly calendar where users can assign recipes to meals on specific days, allowing for organized meal prepping. The default meals can be *breakfast*, *lunch*, and *dinner*, but the menu should be customizable to include/remove meals (e.g. add another *lunch* spot, remove *breakfast*, add *kids snacks*, etc.)
- **Shopping list generation**: based on the weekly meal prep calendar, the app will automatically generate a shopping list that includes all the necessary ingredients for the week. The app should allow the user to maintain a sort of "online pantry," where users indicate ingredients that they have at home, which can be excluded or may be presented separately in the shopping list. The shopping list must allow the user to check the items that are already brought or available.
- **Online pantry management**: users can input the ingredients they have in their fridge or pantry, and the app will suggest recipes that best utilize these ingredients, reducing waste. This feature can also facilitate the shopping list generation, as described in the previous bullet.
- **Social network integration**: users can invite friends or relatives to share recipes, calendars, online pantries, and shopping lists. The user should be able to establish permission levels (e.g., viewer, editor, etc).
- **Stretch goal – AI integration**: the app could integrate with AI tools to generate the recipes and recommend menus based on preferences identified on their previous menus recorded on the calendar.

4. Expected Deliverables
A fully functional app prototype with the ability to:
- Manage and share recipes with public (sharable) and private (not-sharable) settings.
- Organize a weekly meal prep calendar (with the ability to check history and repeat the prep).
- Generate shopping lists based on planned meals.
- Manage ingredients in the fridge/pantry and suggest recipes accordingly.
- Facilitate social interactions and content sharing with friends or relatives.
- User documentation and how-to.

The app will be developed for both web and mobile platforms to ensure accessibility and convenience for users.