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PROJECT TITLE: Meal Prep Sunday

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ABSTRACT

We created the web app *Meal Prep Sunday* to help people plan and execute meal planning. There is a rise in people meal planning both to save money and to improve eating habits, and there is a gap in the free app market for this functionality. Users are able to add recipes from scratch or from web pages, schedule meals they would like to cook, and auto-generate grocery lists based on the required ingredients. To implement the app, we used Google Firebase to store the app's data, and programmed the pages in JavaScript. While there are free apps that exist that implement a subset of our features, we are the only free app that combines all steps of meal planning that we could find.

INTRODUCTION

Inspired by the SCORE contest project "Brew Day!", we created *Meal Prep Sunday*, a web application that allows users to seamlessly combine their recipe book, meal planning, and grocery list! The application allows users to create, store, modify, and delete recipes. In addition, the app allows users to generate lists based on selected recipes, and schedule when they plan on cooking. Users are able to choose which recipes they would like to prepare for the week and the app creates a corresponding grocery list.

There are existing applications that offer one or two of the features listed above, however it is rare for an application to combine them all while also remaining free of charge. Our goal is to present an application that seamlessly flows through the steps of meal prep with an efficient and easy-to-use interface. *Meal Prep Sunday* makes creating an optimized grocery list as simple as choosing a few recipes and downloading a file!

MOTIVATION

More and more, people are using the concept of meal prepping to plan what they are going to eat in advance and save some money in the process by not going out to restaurants or fast food establishments to eat [1, 2]. While meal prepping can be a very useful strategy to save money and possible eat healthy, it can be difficult to keep up with the process and keep track of what you need. Several individuals on our team have experienced when you come home to cook meals for the week and start cooking only to find

that an ingredient was forgotten, or they didn't get quite enough. Our goal is to prevent this as well as encourage and simplify meal planning with an application that streamlines the process.

There are existing applications that offer tools to help people navigate the intricacies of meal planning. However, many of these applications either are limited in some of their functionality or come at a cost to the user. Our team aimed to create an application that was not only free, but also combined the more desirable functionalities of existing applications into one cohesive service. Creating such an application would fill a gap that exists in the market or meal planning and meal prep applications.

EXAMPLE USE CASES

The main usage scenario of *Meal Prep Sunday* targets users that want to streamline their meal planning and grocery shopping. It can be difficult for individuals to keep track of all of their recipes, whether they are handwritten family recipes or recipes from a website. *Meal Prep Sunday* allows users to save recipes of both types in one convenient application. Additionally, a user may want to save ingredient information for a recipe found on a website such as Allrecipes.com. The app enables users to provide a yummly link to the recipe to quickly obtain the recipe information. Once a recipe is saved for an individual, it can be modified for any changes. For homemade or family recipes, the app allows users to manually input the ingredients and their amounts. Whether the recipe is from a website or a handwritten note, both recipes appear in the same format after being registered on the application.

Manually planning a grocery list based on unfamiliar recipes can take time and effort, and can lead to confusion in how much of an ingredient is actually needed. *Meal Prep Sunday* handles the planning aspect of meal prepping in the "Planned Recipes" tab. A user can pick from their own recipes or any public recipe, and add it to the week they would like to cook it. Then, once the week has been planned, they can generate a custom grocery list based on the chosen recipes. This alleviates any confusion that can be caused by consolidating multiple recipe ingredient requirements into a single list. When multiple recipes use the same ingredient, the amounts are added together so the grocery list displays each unique ingredient once with the total amount needed. Additionally, if a user needs to add any wildcard items, like cat litter or dog treats to their grocery list, they have the ability to add custom, one-off items to their generated grocery list.

TECHNICAL DETAILS

Meal Prep Sunday focuses on creating an enjoyable and simple meal planning experience. In order to accomplish this task, we aimed to create an application that met certain major criteria for a fast and easy user experience. One such requirement is for the user to have the ability to create, modify, and delete recipes with support for saving the recipe for later use. The user can pick recipes for a week and generate a grocery list based on the ingredients of the selected recipes. Another minor requirement is the ability to link to an external recipe API in order to import recipes from existing websites. The final design includes the listed requirements as well as other additional features discussed here.

The application must allow the user to save and modify their recipes. This includes being flexible enough to pull ingredients from recipes on the internet or through manual entry of custom recipes. Once a recipe is saved, either from the internet or through manual entry, the user is able to modify it and delete it when it is no longer needed. Another key requirement is the ability to compile a grocery list for the user based on recipes that they have chosen to prepare for a given week. The grocery list can then be saved and downloaded for use on a shopping trip to the grocery store. Each recipe contains a list of ingredients with their required amounts. *Meal Prep Sunday* takes the chosen recipes and consolidates any repeated ingredients into a single item on the grocery list.

An additional feature implemented is a public recipe feed where a user can display their own recipes and view the recipes of others. Upon creation, a user can specify whether or not a recipe is considered private or public. All public recipes are displayed on the public page and users can like recipes that they prefer. The public feed allows users to see what recipes are liked by other people, and thus which recipes are likely to be good choices.

Meal Prep Sunday consists of several streamlined user interface feature including a user sign-up and login, a recipe input and modification interface, a “grocery-list” tab, a planning page to keep track of recipes you want to prepare, and a public recipe tab. Supporting this interface is a simple and effective user database that includes information on the user login, recipe data, and ingredient inventory data.

The user interface highlights the different functionalities available to the user. The UI is housed in a web interface that is hosted using Google Firebase. Behind the effortless user interface is an implementation using JavaScript to control user’s interactions with the web service. After signing up for an account and logging in, the application shows the public recipes page as the main homepage with tabs specified for the

additional features at the top of the page. The recipe page also allows the user to input a new recipe either manually or based on a recipe link from a limited list of websites. Adding recipes then allows the user to add that recipe to their calendar to be made for a certain day and in a certain quantity. Both of these functions are used to inform the "grocery list" feature where the recipes chosen for a certain shopping trip have their ingredients added to the list to be downloaded or printed as a pdf. All of these features working in tandem make meal planning and grocery shopping more efficient and enjoyable for the user.

The application's database stores two major types of information: the user's account information and their recipe information. Storing the user's account information makes it possible for multiple users to use the application and is a simple yet necessary requirement. Recipe information is stored in a recipe table that saves a unique identifier for each recipe as well as a list of their ingredients, including the ingredient name, quantity, and units. Should a user choose to share a recipe publicly, the recipe and its details will be added to the public recipe table to be displayed to all users. For each user, there is a grocery-list, planning list, liked recipes list, and general recipes list saved in the database. These lists are used to populate the user interface tabs for each individual user. Using this information, a user can modify, add, or delete recipes as well as add them to the public list with ease. Finally, a user can add any recipe to their list of planned recipes and it will be displayed in the Planner window as well as have the stored ingredients for those recipes show in the grocery list tab. All of the information on users and recipes work in tandem to make the user interface tabs work as one cohesive unit [Figure 1].

All of the user interface pages are supported by the database in the background. For instance, users can input recipes manually and have the information stored in the recipe table or can use the public recipes table to copy recipes to their personal lists. The "My Grocery List" feature is supported by all of the database information, including the list of planned recipes to create an optimized grocery list for the user. *Meal Prep Sunday* aims to be fast and easy to use, making planning for a grocery shopping trip a much more enjoyable experience.

In order to simplify a user's experience when adding recipes from the internet, we integrated with Yummly's recipe API. When a user requests a recipe from a valid site, we make a REST API call to Yummly, which returns a json object containing the recipe's data. We parse that information, and populate the relevant fields in that recipe. We leave the instructions as a link to the original web page both because of the way we parse the data and in order to give credit to the original poster of the recipe.

RELATED WORK

There is a collection of applications and web services that have similar goals and implementations to the web service described in this document. Our project combines many of the functionalities of these applications into one cohesive unit and presents them in the form of tabs that are efficient to use.

One such application that is similar to this project is a current website called “Plan to Eat”. This website is a paid subscription service that offers users a tool to plan meals for up to a month in advance. Users can add old family recipes as well as import recipes from outside sources into their list of preferred recipes. Once the recipes are saved, they can be added to a calendar so that you can effectively plan for the weeks ahead, keep track of what you already made and have access to, and how much time you should save for cooking. There are additional features to make the process of cooking and meal prepping more streamlined and easy for the user. One key difference between this application and our project is the ease of creating a grocery list using our website as opposed to a more involved process using “Plan to Eat”, in addition to the fact that “Plan to Eat” is a paid service [3].

Another application that served as inspiration for our project was another meal planning app, “Paprika”. This app also has the ultimate goal of making meal prepping easier and more manageable for the average person. Similarly to “Plan to Eat”, this application does require some form of payment to use the service, albeit in a single amount rather than a monthly subscription. “Paprika” allows you to import websites from other sources and also add them to a calendar. It is notable that the main difference between “Paprika” and “Plan to Eat” is that “Paprika” does not allow you to create recipes on your own -- they must be imported from another website -- and they are allowed to create a grocery list from their selected recipes. Our project brings the functions of these too applications together and allows you to create your own recipes and import external recipes while also allowing you to generate a grocery list. This way, the meal planning process is made easy and intuitive for the end user, while also being free to use [4].

The list of other related applications that have similar motivation and functionality to this project continues with a wide array of services, easily found with a simple google search. This project offers a single application that combines many of the desired functions of different application into one convenient package. Using *Meal Prep Sunday* makes the meal planning process easier by utilizing several functions in a cohesive system to make prepping for the week a simple and enjoyable experience.

CONCLUSION

Though existing apps like PlanToEat and Paprika exist, there is a gap in the free app market for a meal planning app that streamlines the meal planning process and allows a user to create custom recipes or pull from the internet. Using JavaScript, Google Firebase, and Yummly's rest API we built and app to assist users as they seek to save time and money and eat healthier through meal planning. A typical user can input recipes, add them to their recipe planning, and generate their custom grocery list that consolidates all of the recipes to be made that week. This app was inspired by the growing meal prepping trend, and instances where we wished we had an app like this to use ourselves.

REFERENCES

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APPENDIX

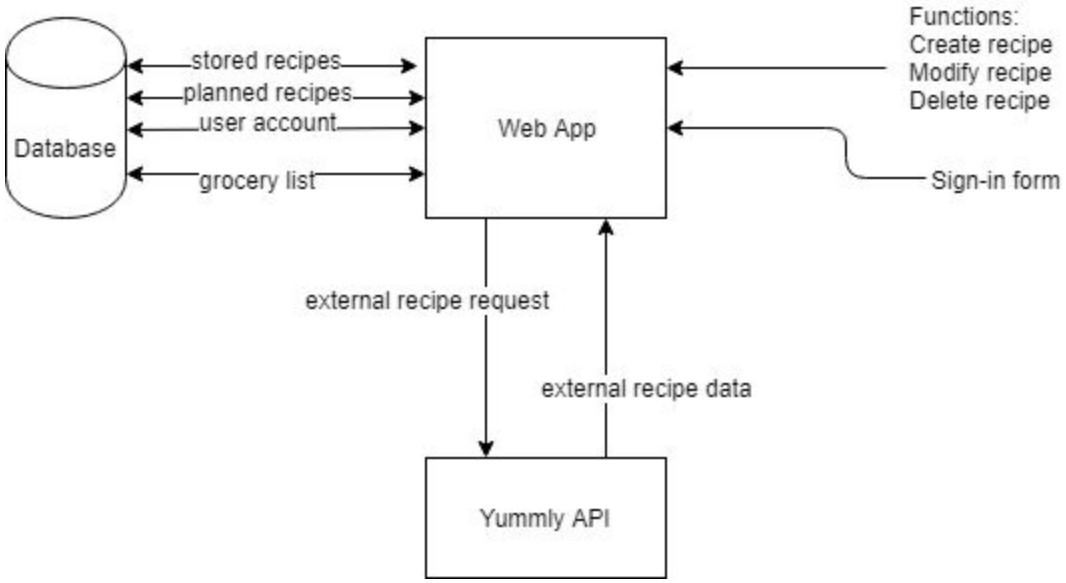

Figure 1: Overview of Design