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Statement of Goals

Diabetes is a serious health condition caused by a lack of insulin from the pancreas. It can result in too much sugar in the bloodstream, which leads to other health complications. This application aims to aid people with diabetes in planning meals they can make using the ingredients they have at home as well as in maintaining a safe sugar intake. This application is targeted towards people with diabetes and its goal is to help users plan meals with healthy recipes using only the ingredients in their home.

Functional Description – Minimum Viable Product (MVP)

This application is designed to help individuals who struggle with diabetes (type 1, 2, or gestational) plan their daily meals using the ingredients they have available while making sure they follow all dietary guidelines.

1. Feature 1: One of the focal points of this application is having a calendar with the user's meal planned out and shown. The app will utilize the Spoonacular API and ingredients available to design this meal plan while ensuring all dietary restrictions are followed (sugar intake, calorie intake, carbohydrate intake, etc.). Meals include breakfast, lunch, and dinner, as well as healthy and effective snack recommendations. After generating this plan, it will be added to the calendar so the user can look ahead to their meal plan for the entire week/month.

2. Feature 2: Along with providing the meals for each day of the week, the app should also be able to provide the user with a recipe for each of those dishes. The recipes would be selected from a wide range across the internet based on the average star rating for each recipe, and a helpful list of ingredients and allergens will be provided at the top for the user to decide whether they would be able to cook the food or not. If the user decides they are unable to cook the food, they could select a dish from alternative dishes that are provided at the bottom of the page.

3. Feature 3: One helpful part of this application would be to include a camera that the user can use to scan the barcode of any food items that they would like to eat. Upon scanning the bar code, the program will search a database available to it for a match and return a page with all nutrition information for the product. The app

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will also generate a rating for the product as "good," meaning it is healthy for the user to consume, or "bad," meaning it could cause issues for the user's health. If the app deems the product as "bad," it will instead provide recommendations for similar products that could be healthier alternatives.

Technical and Data Feasibility

Our application will require APIs that contain nutrition and recipe data. We will use Spoonacular which contains nutrition, price, and recipe information, as well as many other benefits that can be implemented after we make our Minimum Viable Product. The user interface can be programmed using Android Studio which is a great development tool that utilizes Java to create applications for Android devices.

The data that will be collected from the user will include allergens and dietary restrictions, which can be stored through SharedPreferences. Utilizing SharedPreferences could allow the app to generate recipes that won't contain ingredients that the user is allergic to. The application also will store the items, as well as the quantities that the user has through SQLite. SQLite is a strong local storage tool that would allow us to easily track and update inventory details. As a user selects a recipe, their inventory would update accordingly. Any changes that are made, such as adding extra ingredients, while making the recipe could also be accounted for by the user as they are able to change the amount of ingredients they have.

As an extension to our Minimum Viable Product, we will use OpenFoodFacts, an API that allows for barcode scanning and contains nutritional information of products. The user can scan products and choose to add them to their inventory, which will allow us to generate recipes based on the corresponding nutritional facts.

User Interface

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DiaByte

App Intro:
Once the user opens the app, the app would load while showing them the logo.

WELCOME!

DiaByte is an app that will help you plan out healthy meals
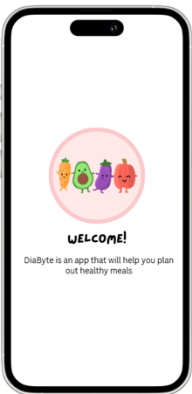
App Instructions:
After the app logo loads, the app will show a small brief guide on how the app works. This only occurs the first time the user uses the app. Once the user uses the app once, these instructions won't show up.

RECIPE GENERATOR

DiaByte allows the user to input ingredients and outputs recipes that consists of the ingredients.

App Instructions:
This is the second screen for the app instructions. Here the app shows a screen talking about the main feature of the app. The ability for the app to take the user's ingredients and output recipes based off of those ingredients.

MEAL PLANNER

DiaByte can then plan out their meals for the week and month
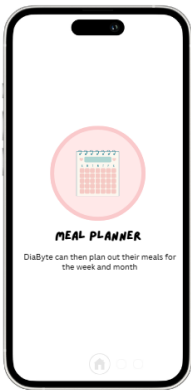
App Instructions:
This is the last screen for the app instructions and it lets the user know that the app also consists of a calendar and weekly page that lets the users plan out their meals and remind them what meals to eat each day.

What type of diabetes do you have?

- ( ) Type I
- (•) Type II
- ( ) Other

Next ->

App Introduction #1
Upon download, the app would start with a quick survey to better understand the user's needs, asking questions like what type of diabetes they have, how old they are, and any other dietary restrictions

Tomatoes   3

You can add your ingredients to this list by clicking the plus button. It is assumed users have basic ingredients, such as salt, pepper, and sugar.

Oranges   1

🔍 Search Ingredient Here

Search the ingredient type and input the amount that you have. Ingredients remain automatically ticked until there is none left. To update the amount, simply rewrite it in the box.

- ☑ rice   Amount: [   ] lbs
- ☐ strawberries
- ☑ onions   Amount: [   ] (#)

App Introduction #3
The app will also have instructions on how to add ingredients that the user has in their inventory in the app.

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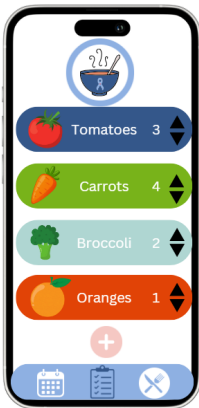
Inventory

The application allows the user to input food items that they have, this will help with recipe generation.

There will be a plus button to add a new food item. The app will also allow the user to switch between three pages: meal prep, recipes, and inventory.

Each quantity can also be controlled as the user could update a new quantity.
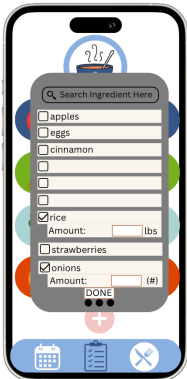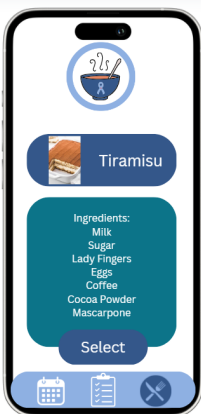
Inventory

If the user clicks ticks the checkbox next to an ingredient, a drop down menu appears in which the user can write the amount of the ingredient that they have, either in pounds or as a number of items of that type. After using a recipe, the user can go back and remove items from inventory (the list does not automatically remove ingredients in case the user altered the recipe).
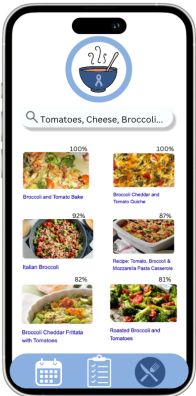
Recipe Generation

On this page, the user inputs the ingredients they want to use for their meal and subsequently, recipes are generates. Above the recipes will include a percentage of how closely the ingredients in the recipe match to the ingredients given by the user.

Recipes

The app will allow the user to scroll through and pick a recipe. The recipe will contain the ingredients needed and potentially video instructions. Selecting the recipe will update the inventory of the user.
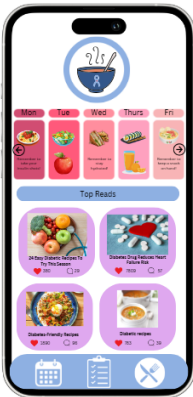
Meal prep

The app displays a weekly arrangement of meals for the user. Additionally below the calendar for the week, there will be a recommendations for recipes. Underneath the articles, there are also icons for liking or commenting. This way users can see the reviews and the opinions of others who used the recipes.

Calendar

This page shows meal plans for every day of the week. It allows users to see all upcoming recipe plans. To figure out what to purchase for groceries in a week, the user can simply select each day of the week and check what ingredients are required for each recipe planned.
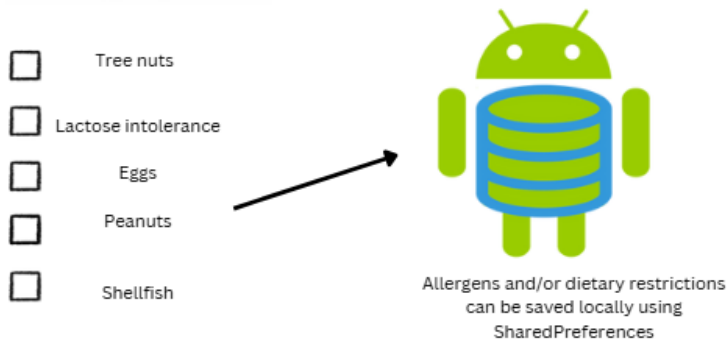
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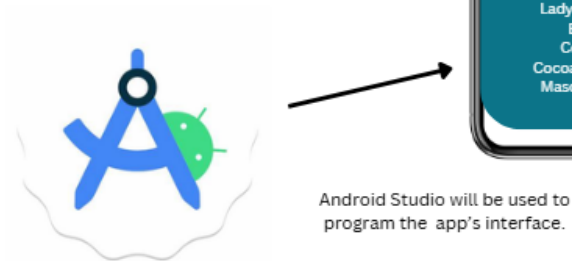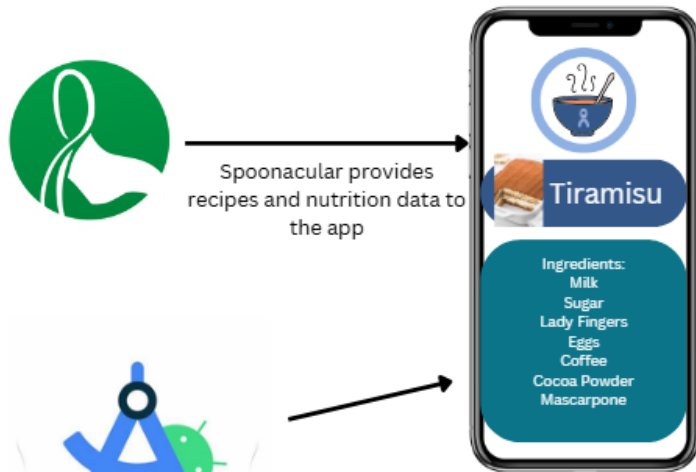

Calories: 230
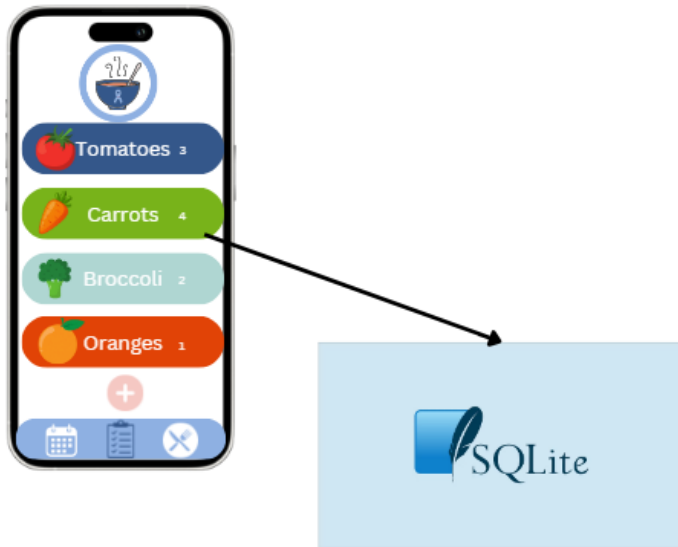Total fats: 12 g
Protein: 11g
Total Sugars: 5g

The user can scan food items and choose to add them to their inventory. This will allow the application to generate meals based on the nutritional data that was accessed by scanning the meal.

Flow Chart and/or Structural Diagram

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Spoonacular provides recipes and nutrition data to the app

Tiramisu

Ingredients:
Milk
Sugar
Lady Fingers
Eggs
Coffee
Cocoa Powder
Mascarpone

Android Studio will be used to program the app's interface.

☐ Tree nuts

☐ Lactose intolerance

☐ Eggs

☐ Peanuts

☐ Shellfish

Allergens and/or dietary restrictions can be saved locally using SharedPreferences

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Meanwhile, SQLite will store the inventory of each item the user has. We will also make sure to update the inventory if the user ends up making one of the recipes.

Utilizing the phone's camera, the user can scan barcodes. Openfoodfacts API would send nutrition information to the user

Calories: 230

Total fats: 12 g
Protein: 11g
Total Sugars: 5g

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Persistent Storage

Our Minimum Viable Product will use local storage, through Shared Preferences, to store preferences such as allergens and dietary restrictions. It will also store the inventory along with the quantities of the ingredients a user has. The inventory can be stored using SQLite which is built into most phones and stores table data. SQLite is powerful as it can handle large data and contains offline support.

Links to all resources mentioned:

Android Studio: https://developer.android.com/studio

SharedPreferences: https://developer.android.com/training/data-storage/shared-preferences

SQLite: https://www.sqlite.org/docs.html

Spoonacular: https://spoonacular.com/food-api/docs

Openfoodfacts: https://world.openfoodfacts.org/data