Introduction

This application was created for those who suffer from allergies (ranging from those who only experience mild, or even seasonal allergies and are searching for relief, to those who suffer from a multitude of allergies that interfere with their everyday activities); however it was primarily intended for those who suffer from food allergies, although those with seasonal or contact allergies may still use it.

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Overview

This application is designed mostly to prevent allergic reactions from happening. It mainly helps with preventing a user to come in contact with an allergen with a variety of features: scanning/searching, finding alternatives to an item, meal planning, compiling a list of items containing said allergen, and finding quick reliefs based on the user's situation are all key features of the application.

The main goals of this application are the following:

- **Help** individuals easily **prevent** or **mitigate** reactions to allergens, allowing them to proceed with life with comfort.
- **Avoid** and **lessen** the probability of severe situations occurring in an individual's day to day life.
- **Allow** them to **maintain** the same lifestyle as those without allergies, by sustaining their nutrition.

Here are some indepth explanations to how each of the key features of this app are supposed to function:

- **Scanning/Searching:** This feature allows the user to check if their allergen is in a certain item/product by either searching for the item/product, or scanning it using a camera feature.
- **Finding Alternatives:** This provides users a couple choices of alternative foods that sustain the same nutritional values as the ones they cannot have.
- **Meal Planning:** The planning feature assists the user in preparing choices of dishes based around the foods that are safe for them to consume.
- **Compiling a List:** The list feature compiles a list of all the items/consumables that contain a specific allergen the user is allergic to.
- **Quick Relief:** This feature prompts the user to describe their symptoms, and then recommends methods/medications to quickly relieve their symptoms.

Application Context.

This particular application will be used in everyday scenarios, and can be used anywhere on a device with access to browsing and the internet.

The application can be used in the following situations:

- **Grocery Shopping:** In the instance the user is shopping for groceries, the app assists with checking/scanning items for allergens before buying them.
- **Cooking a Meal:** Provides assistance for creating nutritious recipes that do not contain the specified allergen.
- **Social Outings:** When going to social settings–like restaurants– to help check the menu quickly for potential allergens, increasing the efficiency in the ordering process.
- **Experiencing Symptoms:** In the event of a mild to moderate reaction, the app will direct the user to relief for their symptoms.

Functional Requirements.

The application primarily uses buttons or input from the user to direct them to the specific function they will need, such as planning meals, searching for a specific allergen, or when the user needs relief. It also uses the camera in order to scan for an allergen.

Scanning/Searching Functions.

takeItemPicture:

- Application prompts the user to take a picture.
- User takes a picture of the item.
    - Application scans the item and looks for the product name.
    - Application sends request to API/model for ingredient information.
- Flags ingredients that are/contain allergen.
    - Prompts the user for if they would like alternative products.
        - User selects yes: uses the findAlternatives function.
        - User selects no: application redirects back to homepage.

searchItem:

- Application prompts the user to search for an item/product by name.
- User types in the item's name.
    - Application searches for the item from a database.
        - Flags any potential allergen-containing ingredients.
    - Prompts the user for if they would like alternative products.
        - User selects yes: uses the findAlternatives function.

        - User selects no:

findAlternatives:

- Application prompts the user for their allergen, and the food they are searching to "replace".
- User inputs both required responses.
    - The application searches through a database of items/foods/products that are similar to that "replaced" food, that do not contain that allergen.
        - Compiles a short list for the user to see.

planMeal:

- Application prompts the user for what kind of meal they are searching for (ex. lunch/dinner/breakfast, cuisine), and asks the user to type in what their allergen.
- The user inputs both required responses.
    - The application then searches through a recipe database for recipes based on the user's input.
    - Application compiles a list for the user to select from.

compileList:

- Application prompts the user for their allergen.
- The user then inputs their response.
    - Application compiles a comprehensive list of items/products/food that contain that allergen.

findRelief:

- Application asks the users symptoms.
- User inputs their symptoms.
    - The application searches for the best medications/methods to relieve the user based off their symptoms.
    - Then outputs it.

appSignup:

- Application prompts the user to create user/password.
- The user fills in both requirements.
    - Application checks for duplicates.
    - Application saves the user/password.
    - Redirects to the login page.

appLogin:

- Application prompts the user to type in their username/password.
- The user fills in both requirements.
    - If both username and password are found (correct) log into the account/redirect to homepage.
        - Otherwise give an incorrect user/password message.

saveData:

- Inputting the user's allergen:
    - Application prompts the user to input/change their allergen.
    - The user types it in.
        - The application saves this information.
- Saving generated meal plans:
    - The application will ask the user if they wish to save/bookmark this recipe.
    - The user will select either yes or no.
        - If yes: application saves the recipe.
        - If no: application redirects back to homepage.
- Saving generated alternatives:
    - The application will ask the user if they wish to save/bookmark this item/product.
    - The user will select either yes or no.
        - If yes: application saves the item/product.
        - If no: application redirects back to homepage.

retrieveData:

- Retrieving past generated meal plans.
    - The user navigates towards the "book marked past meal plans".
    - Application pulls up past meal book marked plans.
- Saving past generated alternatives.
    - The user navigates towards the "book marked past products/items".
    - Application pulls up past booked marked products/items.

notifyAllergenExposure:

- The application scans the menu/item/product for any potential allergen.
- The application checks your environment.
- If an allergen is found, the application will alert the user.

contactEmergency:

- User presses the emergency button.
- The application dials emergency services with an automated message stating the user's location, and that they are having an allergic reaction.
    - Sends them an allergen list previously imputed by the user.

trackSymptoms

- The application asks the user to input the following:
    - Date and time.
    - Symptoms experienced.
    - Suspected allergen.
- The user inputs the information required.
- The application checks if the following information matches with any previous symptoms recorded.
    - If so, the application reports back to the user what matches/potential allergen.

scheduleReminders

- The application prompts the user to input their hours for meals.
    - The user inputs the required information
    - The application saves it.
- The application sends notification during meal hours, reminding them to check for allergens.

generateShoppingList.

- The application asks if the user wants to generate a shopping list of recommended foods.
- If the user selects yes:
    - The application generates the shopping list based on what foods do not contain the specified allergen.
- If the user selects no:
    - The application redirects back to the homepage.

Sample functions:

takeMenuPicture:

- Application prompts user to take a picture
- User takes picture of restaurant menu

        - Application stores restaurant menu
        - Application scans restaurant menu and looks for the following
            - Name of meal
            - Type of meal (Dessert, main course, etc)
        - Application sends request to Nutrition API/ Nutrition AI for information on ingredients and nutritional value
- Lists to user all the items in the menu (Filtered by diet: vegetarian, vegan, seafood, etc.)
    - Shows user main ingredients of each item
    - Flags any potential ingredients that might have allergen