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Tech Basics II Report: “Too Good to Waste”

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Too Good to Waste – Reducing Food Waste, One Click at a Time

Introduction

One of the most pressing issues in our society is the climate crisis. The western world is used to overconsumption and wasting resources, including food. How can this carelessness be prevented and how can food be saved, if it is too good to go to waste? Do you also sometimes forget what's in your fridge and your food goes to waste quickly? To support this idea of preventing food waste but also finding a way to have a more structured overview of what one possesses in their own pantry and fridge, technology can be used.

This gave me the idea for "Too good to waste". An application where you can save the data of the foods that you buy at the grocery store, and when you put them away in your fridge or pantry, the app will save the expiration date and remind you a few days before it is about to go bad. Additionally, the app can provide recipes with the food you already have at home, based on the expiration date, and suggest different recipes to use up the food with the latest expiration date. The following report outlines how this idea was implemented in my MVP.

Methodology

I developed the application using Python, primarily utilizing Tkinter for the graphical user interface and PIL for handling image processing. I also included a few additional libraries to enhance various features:

- `tktooltip`: Used to provide messages that guide users in interacting with the interface elements.
- `tkinter.messagebox`: Utilized for displaying message boxes to inform or alert users.
- `webbrowser`: Allows the application to open web pages directly from the GUI for additional resources and information.
- `tkmacosx`: Specifically used for macOS to enhance button aesthetics with Button and CircleButton widgets.
- `src.helpers`: A module containing custom helper functions such as add_item, save_list, update_food_items, check_expiration, and clear_widgets to manage the application's core functionality.

The application begins by personalizing the user interface with a greeting, where users can enter their name. This name is then displayed across the home screen and various sections of the application, making the experience more personalized. Tooltip messages are available to guide users on how to interact with the different interface elements.

The application uses the PIL library to load and display images for the home screen, fridge contents, and recipe cards. Navigation within the application is straightforward, with buttons that direct users to different sections, ensuring a smooth user experience. The fridge management is a key feature, where users can view different compartments of the fridge, such as Dairy, Protein, and Veggies. Each compartment not only displays an image but also provides buttons to access related recipe cards, facilitating the use of items from each compartment in various recipes.

A dedicated shopping list window allows the user to add, view, and save items. This feature includes functionalities to add items, display them in a list box, and save the list to a file, making it easy to manage shopping needs.

The expiration date checker is a feature that helps users select food items and check their expiration dates based on predefined durations. This feature helps in keeping track of food freshness and to reduce waste by ensuring that items are used before they expire.

Additionally, the application includes a seasonal calendar window displaying an image of seasonal fruits and vegetables. An info button within this window provides users with additional resources about seasonal foods, helping them make informed choices about their diet based on seasonal availability.

Design

I created and designed all graphics used in the GUI myself, which are based on inspiration and visuals sourced from Pinterest. This allowed me to tailor the GUI to match my vision precisely. To develop ideas, I began by exploring images and illustrations on Pinterest. I then brainstormed and outlined the GUI application, determining the necessary pages and features. My initial illustrations focused on various fridge layouts: a closed fridge as the first page, a fridge with a shopping list on the front as the second, and an open fridge as the third. I organized three food compartments—dairy, protein, and veggies—to categorize different food items. Each food item, from eggplants to silken tofu and Capri Sun, was hand-drawn using Sketchbook and Goodnotes on an iPad, creating small PNGs that could be layered to form a custom fridge. The entire layout of the GUI is designed to fit the size of a smartphone app.

Ultimately, I chose a rather empty fridge design to align with the concept of an app tailored for university students.

Limitations

Since my MVP can be seen as a prototype for my initial ideas, there are several limitations to consider. Firstly, the app relies heavily on users to manually input data about their food purchases and expiration dates. This can be time-consuming and might lead to inaccurate tracking. In a future version, incorporating a QR-code scanner could make things easier.

The current version categorizes foods into broad compartments (Dairy, Protein, Veggies). This simplicity may not cater to users with more complex dietary needs or preferences, such as people dealing with allergies.

Additionally, the expiration date checker uses predefined durations, which might not always be accurate for all types of food. Factors such as the freshness of the food at purchase, storage conditions, and packaging can significantly affect the actual shelf life.

Although the app proposes to include information about local food-sharing organizations, the current implementation does not support real-time data integration. This could limit its effectiveness in larger cities or areas with frequent changes in food availability.

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