



Budget Bytes

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Overview

Budget Bytes, designed for college students, is a web-based culinary assistant emphasizing simplicity and affordability. Our application introduces an interactive chatbot, offering personalized meal suggestions based on user queries and available ingredients.

Brief Description

Targeting the college demographic, Budget Bytes addresses the challenges of cost-effective and straightforward meal preparation. The chatbot engages users in dynamic conversations, delivering tailored meal recommendations aligned with preferences and dietary requirements. Users can easily locate nearby grocery stores, save favorite recipes, and generate dynamic grocery lists, streamlining the shopping process.

Main Goals

- **Customized Meal Suggestions:**

We aim to provide personalized meal recommendations to users based on their preferences and available ingredients through an engaging chatbot interface.

- **Locate Nearby Stores:**

We have seamlessly integrated a feature that helps users find nearby grocery stores and markets, enhancing convenience in ingredient procurement.

- **Save/Favorite Recipes:**

Our platform enables users to bookmark and save their favorite recipes, fostering a sense of personalization and creating a curated collection for future reference.

- **Grocery List:**

We facilitate the generation of dynamic grocery lists that streamline the shopping process for users, minimizing food waste.

These features facilitate the creation of dynamic grocery lists, minimizing waste and enhancing overall shopping efficiency. Budget Bytes aims to simplify the culinary journey for college students, providing an affordable and enjoyable cooking experience through intuitive features and personalized interactions.

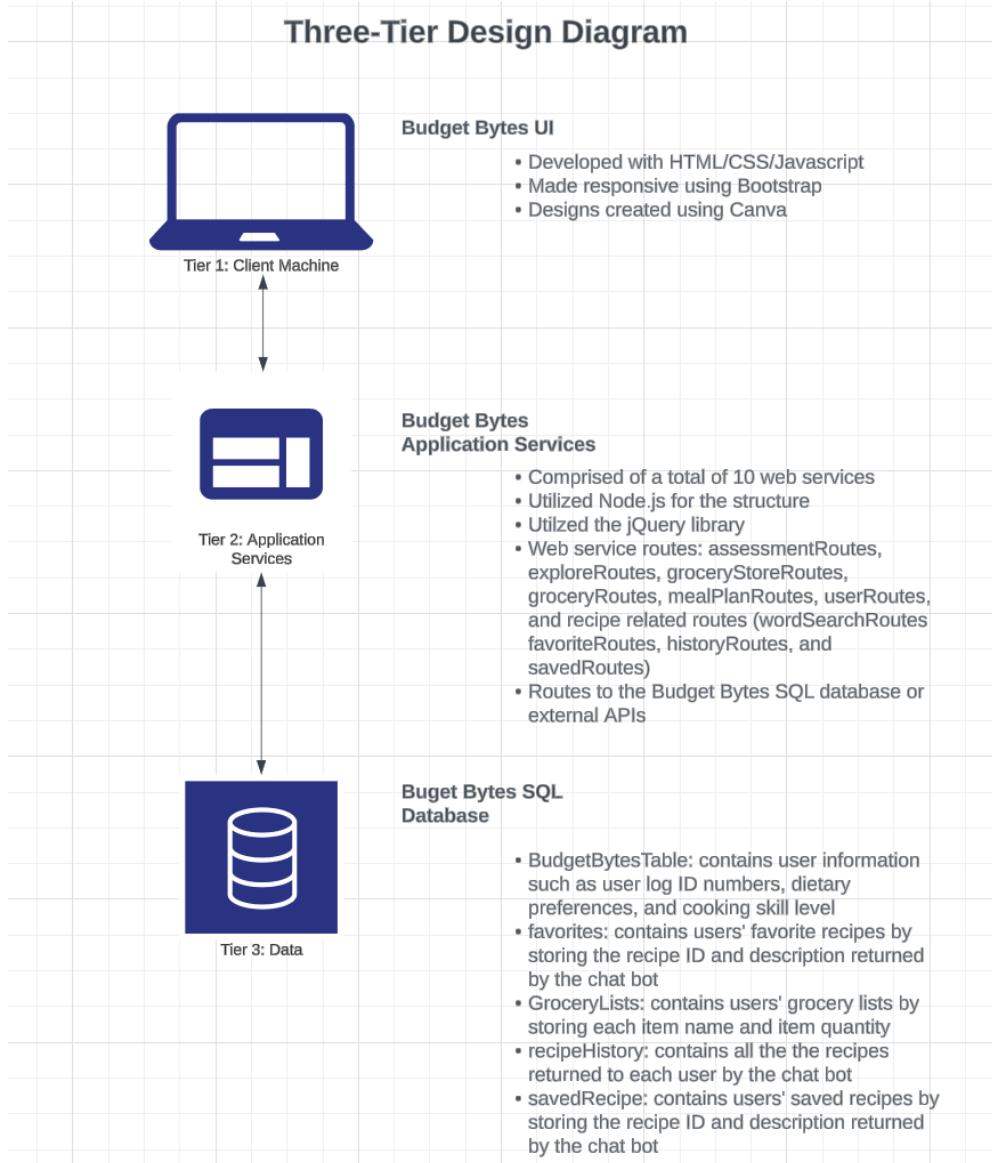
Appendix

This section contains supplementary materials, including architectural diagrams, data details, samples, and documentation, providing insights into our project. Use the appendix letters to access specific details.

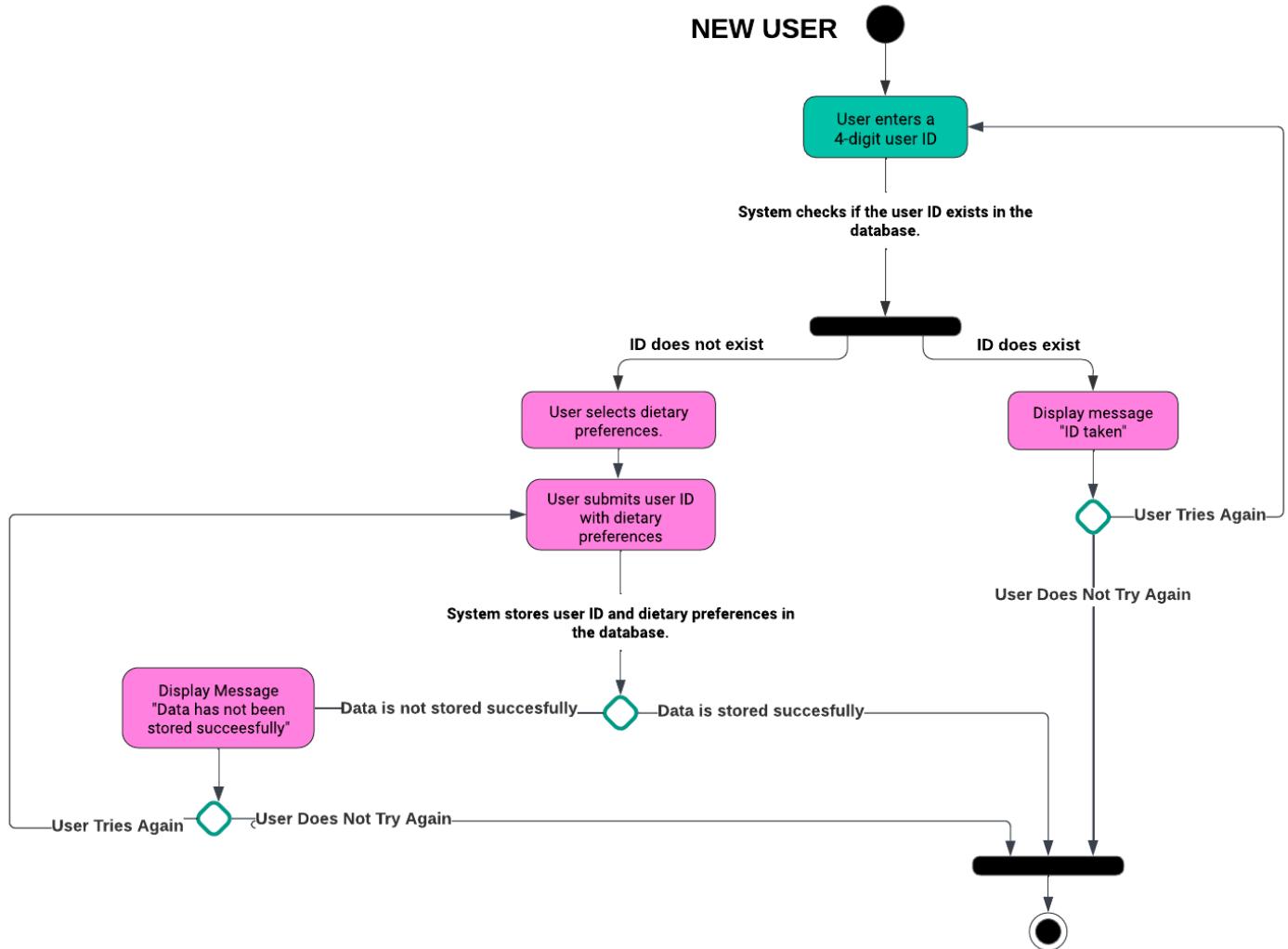
Appendix A: Architectural Design

This section presents the architectural design of our project, featuring a Three-Tier Design Diagram, the Relational Database Schema, and UI Design Diagrams.

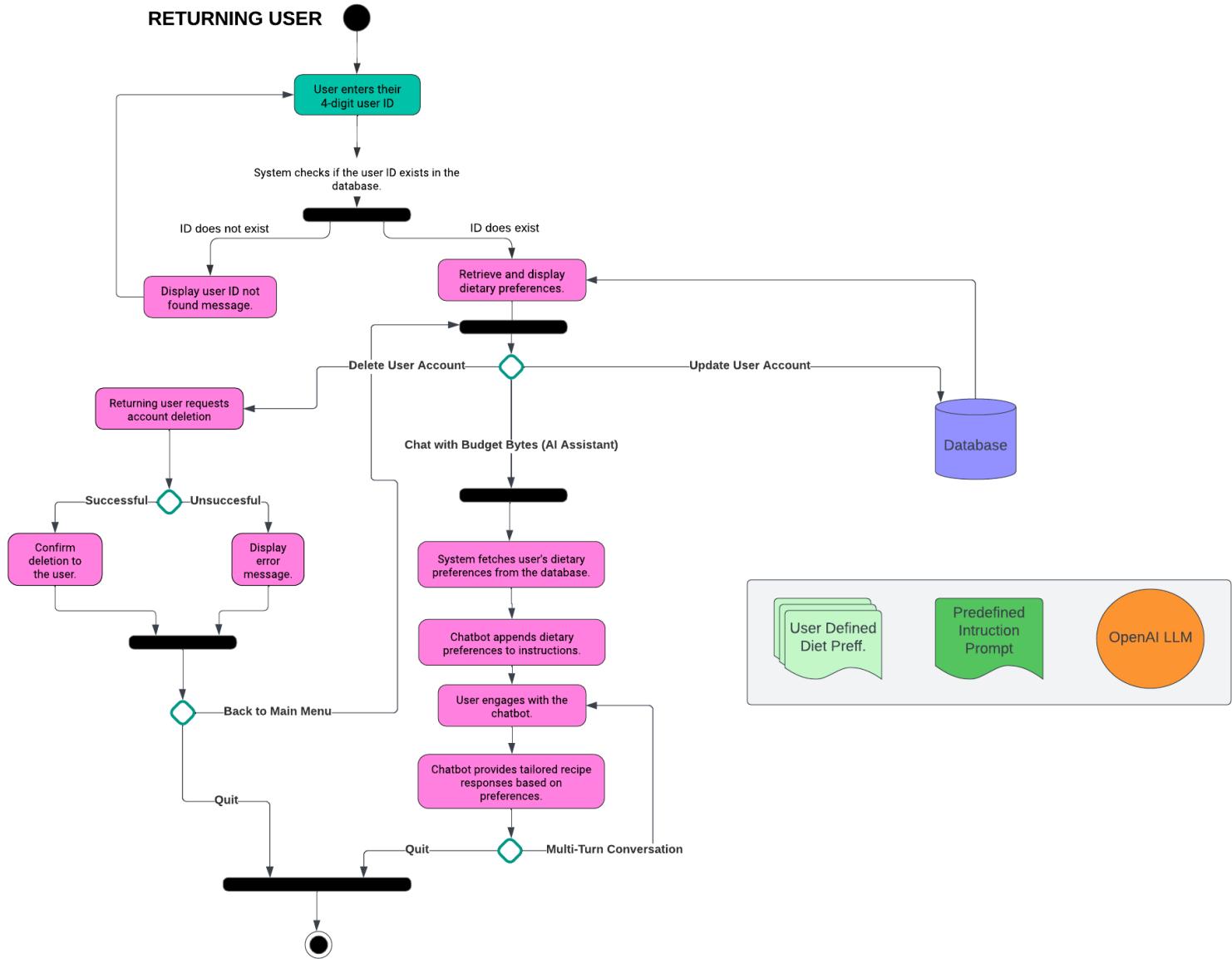
Three-Tier Design Diagram



UI Design Diagram for New User Authentication



UI Design Diagram for Returning User Authentication



Class Diagram

To access the Class Diagram for our project, please follow these steps:

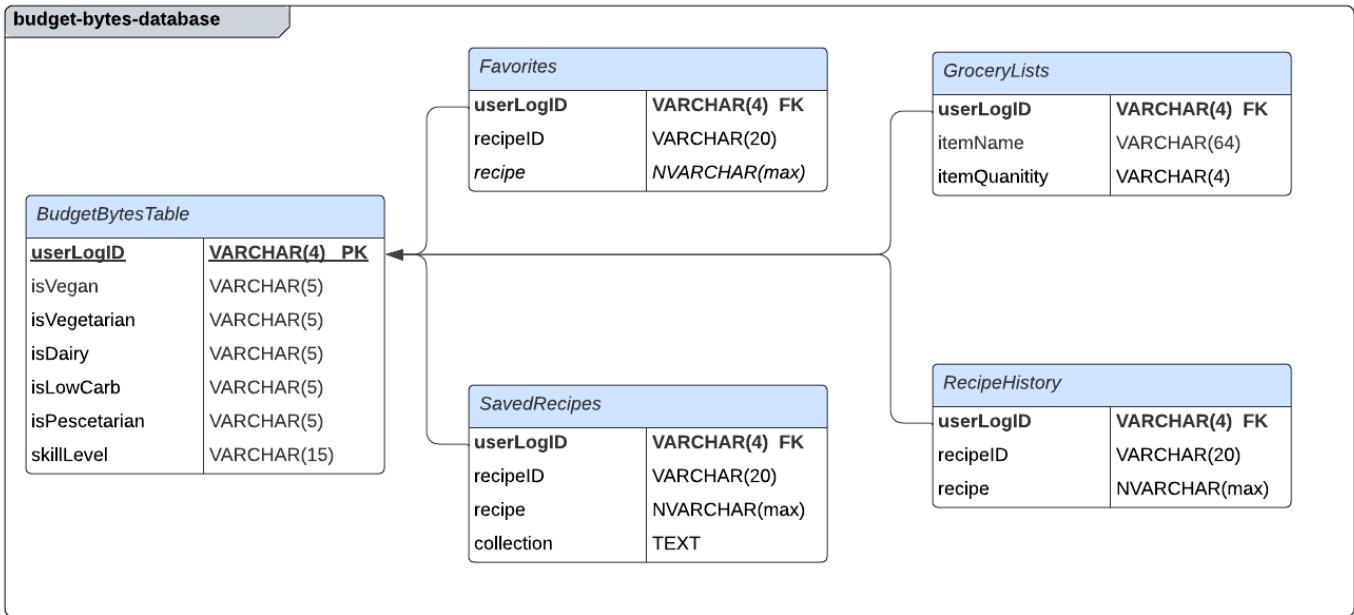
1. Click on the following link: [Budget Bytes Class Diagram Link](#)
2. The link will open in your web browser.
3. You will be directed to a diagram viewer.
4. You can navigate the diagram and interact with it as needed to explore the Class Diagram in detail.

If you encounter any issues or have questions, please feel free to reach out for assistance.

Appendix B: Data Storage Design and Sample Data

This section explores the design and structure of our data storage system in this section. Additionally, sample data sets are provided to illustrate how data is organized and stored.

General Overview of our data management system:



Sample Body of Data stored in “BudgetBytesTable”:

```
{
  "userLogID": "1332",
  "isVegan": "false",
  "isVegetarian": "false",
  "isDairyFree": "false",
  "isLowCarb": "false",
  "isPescetarian": "false",
  "skillLevel": "Beginner"
},
```

Appendix C: Sample Screenshots of the REST Web Service API Swagger Documentation

This section showcases a collection of sample screenshots from our REST Web Service API Swagger Documentation, providing insights into how our APIs are documented for usage and integration.

Budget Bytes OAS 3.0

A recipe chatbot that offers simple and affordable recipes tailored for college students.

Cooking Assessment

- PUT /quiz** Submit quiz answers and get skill level

Favorite Recipes

- GET /favorites** Retrieve all favorite recipes for a specific user
- POST /favorites** Add a new favorite recipe for a user
- GET /favorites/all** Retrieve all favorite recipes across all users
- GET /favorites/notUser** Retrieve user IDs of all users except the requesting user from favorites
- DELETE /favorites/{id}** Delete a favorite recipe

Grocery List

- GET /grocery/getLists** Retrieve all users' grocery lists
- POST /grocery/create** Create a new grocery list
- POST /grocery/{userLogID}** Add an item to a user's grocery list
- GET /grocery/{userLogID}** Retrieve a grocery list by User Log ID
- PUT /grocery/{userLogID}** Update quantity of an item in the grocery list
- DELETE /grocery/{userLogID}** Delete the entire grocery list of a user
- DELETE /grocery/{userLogID}/{itemName}** Remove an item from the user's grocery list

Recipe History

- GET /history** Retrieve all recipe history for a specific user
- POST /history** Save a new recipe history record for a user
- GET /history/notUser** Retrieve recipe history for all users except the requesting user
- GET /history/all** Retrieve all recipe history across all users

Meal Plan

Meal Plan

GET /mealPlan/favorite/{userID} Get 7 random recipes from user favorites

Retrieve 7 random recipes from the user's favorites.

Parameters

Name	Description
userID • required	ID of the user string (path) 1332

Responses

Code	Description	Links
200	Successful response with 7 (or less, depending on available recipes) random recipes Media type application/json Controls Accept header. Example Value Schema	No links
400	Error fetching recipes. Media type application/json Example Value Schema	No links

```
[  
  [  
    {  
      "userLogID": "1332",  
      "recipeID": "1702343598952",  
      "recipe": {  
        "name": "Sure! Here's a delicious and easy recipe for Teriyaki Chicken and Rice Bowls!",  
        "ingredients": [  
          "<li>2 boneless, skinless chicken breasts</li>",  
          "<li>2 tablespoons of teriyaki sauce</li>",  
          "<li>2 tablespoons of honey</li>",  
          "<li>1 cup of cooked white rice</li>",  
          "<li>1/2 cup of frozen vegetables</li>",  
          "<li>1 tablespoon of olive oil</li>"  
        ]  
      }  
    }  
  ]
```

```
{  
  "Error": "Error fetching recipes"  
}
```

Cooking Assessment

PUT /quiz Submit quiz answers and get skill level

Parameters

Name **Description**

userAnswers * required The quiz answers of the user.
object (body) Default value : OrderedMap { "userAnswers": List [1, 2, 3, 2, 1, 3, 2, 1, 3, 2] }

[Example Value](#) | [Schema](#)

```
{
  "userAnswers": [
    1,
    2,
    3,
    2,
    1,
    3,
    2,
    1,
    3,
    2
  ]
}
```

Parameter content type
[application/json](#)

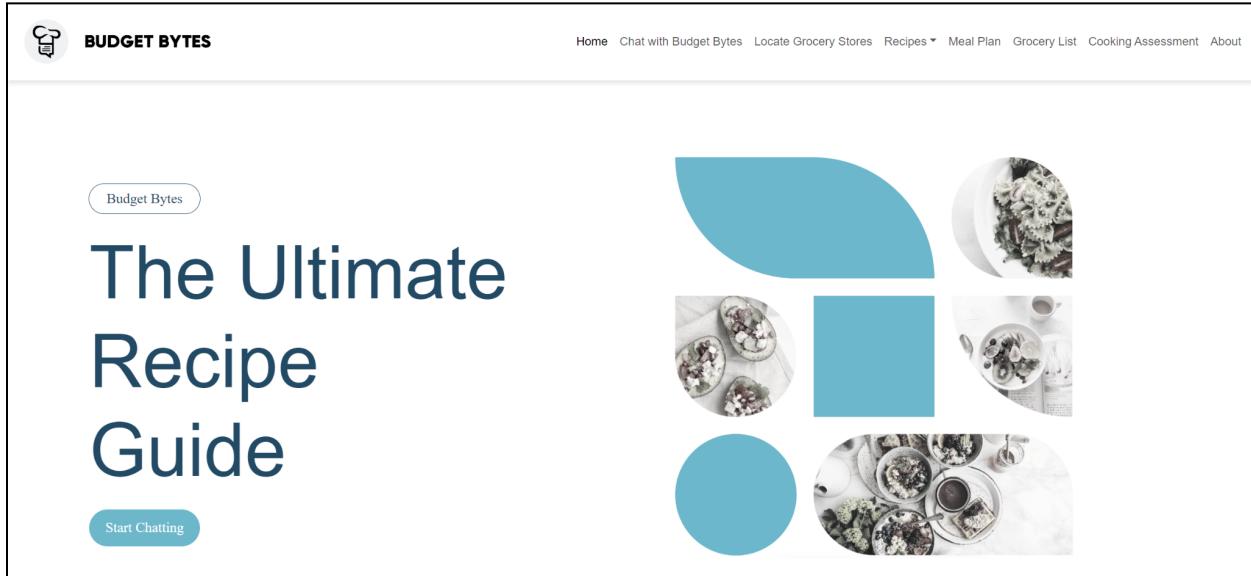
Responses

Code	Description	Links
200	Successful response Media type application/json ▾ Controls Accept header. Example Value <pre>{ "result": "success", "skillLevel": "Advanced" }</pre>	No links
400	Bad request Media type application/json ▾ Example Value <pre>{ "error": "Please provide valid user answers" }</pre>	No links
500	Internal server error Media type	No links

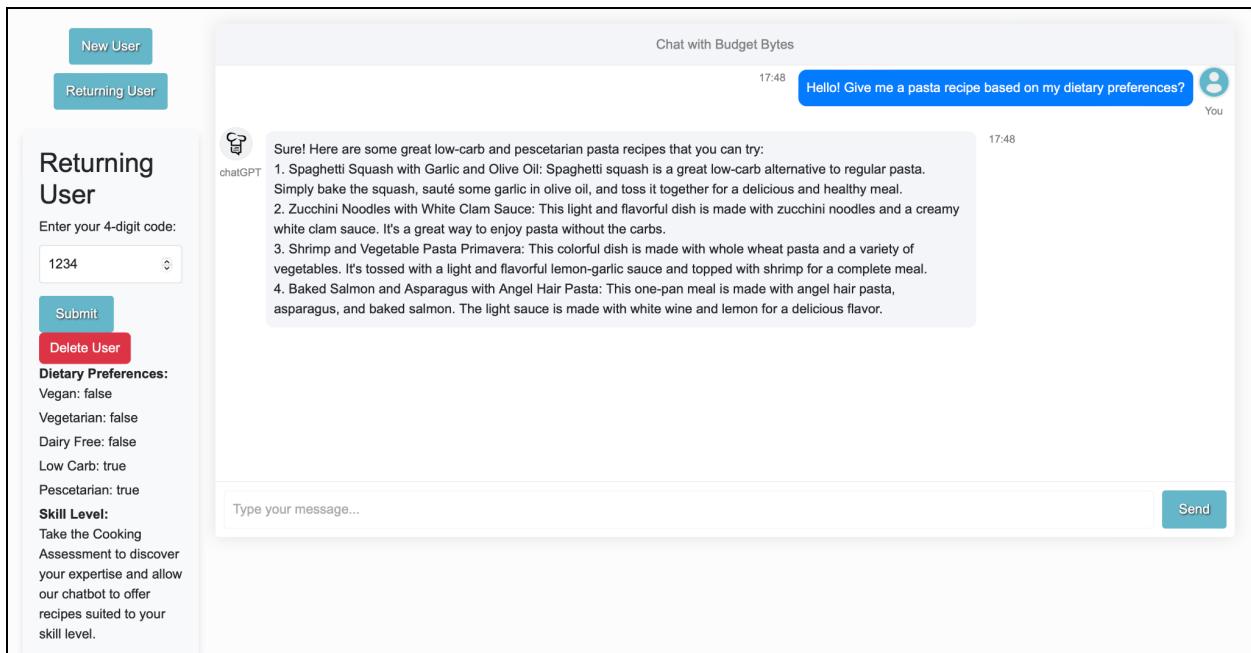
Appendix D: Sample Screenshots of front-end interface

This section provides a collection of sample screenshots showcasing the development progress of our front-end interface. It offers visual insights into the user interface's design and features during the development phase of Part D.

Screenshot of landing page:



Screenshot of chat page which holds the Budget Bytes AI Assistant and Authentication Feature:



Screenshots of Authentication feature for returning users (split in 2 due to document page size constraint):

New User

Returning User

Returning User

Enter your 4-digit code:

Submit

Delete User

Dietary Preferences:

Vegan: false

Vegetarian: false

Dairy Free: false

Low Carb: true

Pescetarian: true

Skill Level:

Take the Cooking Assessment to discover your expertise and allow our chatbot to offer recipes suited to your skill level.

Update Dietary Preferences

Vegan

Vegetarian

Dairy Free

Low Carb

Pescetarian

Submit Updated Data

Screenshot of local grocery feature based on the user's chosen address:

The screenshot shows a map of Seattle, Washington, centered on the city. Numerous red location pins are scattered across the map, primarily concentrated in the central business district and surrounding urban areas. The map includes labels for various neighborhoods like Queen Anne, Belltown, Pioneer Square, and Madrona Park. A search bar at the top right of the map interface contains the text "Find Nearby Stores". Below the map, there are standard Google Map controls for zooming and panning.

Screenshot of explore recipe feature that allows the user to discover new recipes based on the following factors:

The screenshot displays the "Explore Recipes" section of the website. On the left, a sidebar titled "Recipes" offers filtering options: "All" (selected), "Popular Recipes", "By Preference", and "Popular Recipes By Preference". The main content area features a grid of three recipe cards. Each card includes a title, a list of ingredients, and a set of instructions.

- Card 1 (Top Left):**
 - Ingredients:**
 - 1 pound of penne pasta
 - 2 tablespoons of olive oil
 - 2 cloves of garlic, minced
 - 2 cups of fresh cherry tomatoes, halved
 - 2 tablespoons of fresh basil, chopped
 - Salt and pepper to taste
 - Instructions:**
 - Cook the pasta according to the package instructions.
 - Heat the olive oil in a large
- Card 2 (Top Right):**
 - Ingredients:**
 - 2 cups macaroni
 - 1/2 cup vegan butter
 - 1/4 cup all-purpose flour
 - 2 cups non-dairy milk
 - 1 teaspoon onion powder
 - 1/2 teaspoon smoked paprika
 - 1/4 teaspoon turmeric
 - 2 cups vegan cheese
 - Salt and pepper, to taste
 - Instructions:**
 - Preheat oven to 350°F
 - Brown meat in a large
- Card 3 (Bottom Center):**
 - Ingredients:**
 - 8 ounces of your favorite vegan pasta
 - 2 tablespoons of olive oil
 - 1/2 cup of vegan parmesan cheese
 - 2 cloves of garlic, minced
 - 2 tablespoons of vegan butter
 - 2 tablespoons of fresh parsley, chopped
 - Salt and pepper, to taste
 - Instructions:**
 - Bring a large pot of salted water
 - Boil pasta until al dente
- Card 4 (Bottom Left):**
 - Ingredients:**
 - 2 zucchinis, spiralized
 - 1/2 cup cherry tomatoes, halved
 - 1/4 cup red onion, diced
 - 1/4 cup vegan feta cheese
 - 2 tablespoons olive oil
 - 1 teaspoon oregano
 - 1/2 teaspoon garlic powder
 - Instructions:**
 - Preheat oven to 350°F
 - Boil zucchini until soft
- Card 5 (Bottom Right):**
 - Ingredients:**
 - 1 cup cooked quinoa
 - 1 can black beans, drained and rinsed
 - 1 red bell pepper, diced
 - 1/2 cup corn
 - 1/4 cup diced red onion
 - 1 teaspoon smoked paprika
 - 2 cloves garlic, minced
 - Instructions:**
 - Boil quinoa according to package
 - Drain and rinse black beans

Screenshot of ingredient word search feature which the user to search a word from the recipe database to discover how many time the word occurs and analyze the nutritional value of the ingredient:

The screenshot shows the 'Budget Bytes' website interface. At the top, there's a navigation bar with links for Home, Chat with Budget Bytes, Locate Grocery Stores, Recipes (with a dropdown arrow), Meal Plan, Grocery List, Cooking Assessment, and About. Below the navigation is a search form titled 'Recipe Word Search'. The 'Search Word:' field contains 'tomatoes'. Under the 'Recipe:' section, there's a block of cooking instructions. The 'Ingredients' section lists: 1 pound of penne pasta, 2 tablespoons of olive oil, 2 cloves of garlic, minced, 2 cups of fresh cherry tomatoes, halved, 2 tablespoons of fresh basil, chopped, and Salt and pepper to taste. The 'Instructions' section includes steps like cooking pasta, heating oil, adding garlic, and finally adding tomatoes. A sidebar on the right features a 'G' logo.

Recipe:
 Add the garlic and cook for 1 minute.
 Add the tomatoes and cook for 5 minutes.
 Add the cooked pasta, basil, salt, and pepper and stir to combine.
 Cook for an additional 2 minutes.
 Serve and enjoy!

Search Word:

2 occurrence(s) found
 Ingredients
 1 pound of penne pasta
 2 tablespoons of olive oil
 2 cloves of garlic, minced
 2 cups of fresh cherry tomatoes, halved
 2 tablespoons of fresh basil, chopped
 Salt and pepper to taste

Instructions
 Cook the pasta according to the package instructions.
 Heat the olive oil in a large skillet over medium heat.
 Add the garlic and cook for 1 minute.
 Add the tomatoes and cook for 5 minutes.

This screenshot shows the same 'Budget Bytes' Recipe Word Search interface. The 'Search Word:' field now contains 'olive'. The 'Ingredients' section lists: 1 pound of penne pasta, 2 tablespoons of olive oil, 2 cloves of garlic, minced, 2 cups of fresh cherry tomatoes, halved, 2 tablespoons of fresh basil, chopped, and Salt and pepper to taste. The 'Instructions' section includes steps like cooking pasta, heating oil, adding garlic, and finally adding tomatoes. A sidebar on the right features a 'G' logo.

Recipe:
 olive

Search Word:

Nutrient Values: {"ENERC_KCAL":116,"PROCNT":0.84,"FAT":10.9,"CHOCDF":6.04,"FIBTG":1.6}

Screenshot of weekly meal feature that allows user to generate a weekly meal plan based on the following options:

BUDGET BYTES

Home Chat with Budget Bytes Locate Grocery Stores Recipes ▾ Meal Plan Grocery List Cooking Assessment About

Weekly Meal Plan

Generate a meal plan based on:

- All Budget Bytes Recipes
- All Recipes By Preference
- Popular Recipes By Preference
- Your Favorite Recipes
- Your Saved Recipes
- Your Recipe History

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Ingredients:	Ingredients:	Ingredients:	Ingredients:	Ingredients:	Ingredients:	Ingredients:
<ul style="list-style-type: none"> • 1 cup cooked quinoa • 1/2 cup cooked black beans • 1/2 cup diced bell peppers • 1/4 cup diced red onion • 1/4 cup diced tomatoes 	<ul style="list-style-type: none"> • 1 cup uncooked lentils • 2 tablespoons olive oil • 1 onion, chopped • 2 cloves garlic, minced • 2 carrots, chopped 	<ul style="list-style-type: none"> • Vegan Mac and Cheese: • 1/2 cup uncooked macaroni • 1/4 cup vegan butter • 1/4 cup all-purpose flour • 2 cups vegan milk 	<ul style="list-style-type: none"> • 1/2 pound ground beef • 1/4 cup diced onion • 1/2 teaspoon garlic powder • 1/4 teaspoon dried oregano • 1/4 teaspoon dried basil • 1/4 teaspoon 	<ul style="list-style-type: none"> • 1 cup cooked quinoa • 1 can black beans, drained and rinsed • 1 red bell pepper, diced • 1/2 cup corn • 1/4 cup diced red onion • 2 tablespoons 	<ul style="list-style-type: none"> • 1 cup cooked quinoa • 1 cup cooked black beans • 1 cup cooked sweet potato • 1 cup cooked broccoli • 1/4 cup diced red onion • 2 tablespoons 	<ul style="list-style-type: none"> • 2 boneless, skinless chicken breasts • 2 tablespoons of teriyaki sauce • 2 tablespoons of honey • 1 cup of cooked white

Screenshot of create a grocery list feature that allows user create a grocery list:

BUDGET BYTES

Home Chat with Budget Bytes Locate Grocery Stores Recipes ▾ Meal Plan Grocery List Cooking Assessment About

Create a Grocery List

Grocery List

Please select an option and then click "Submit"

Item: celery
Quantity: 4
Item: onions
Quantity: 1

Item deleted from list

Add item Update item Delete item Delete list

Item name: onions

New item quantity: 1

Submit

localhost:3000/landingPage.html

Screenshot of cooking assessment feature that allows user to discover their cooking skill level:

Screenshot of web applications and the developers mission statement:

BUDGET BYTES

Home Chat with Budget Bytes Locate Grocery Stores Recipes Meal Plan Grocery List Cooking Assessment About

Our Mission

At Budget Bytes, we believe that delicious and satisfying meals should be accessible to everyone, especially busy college students. Our mission is to make cooking enjoyable, hassle-free, and budget-friendly. We understand the challenges of student life, and we're here to simplify the culinary journey.