Technical Design

CS39930 – Web Based Major Project

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Introduction

The web-based project that I have decided to build is a meal planner that allows the user to look through recipes created by themselves, their close friends and family to add to this planner. There will also be an option to create a shopping list from the recipes selected in the weekly planner.

The customers/users of this site are my close friends and family to allow them to share recipes efficiently and in a clear format as well as making them easily accessible. The customer also wants to ensure that meal planning and shopping trips are efficient.

The people that want this to be built will be the users/customers as it is for people who are interested in cooking as well as wanting to share the recipes with their friends.

Structure And Navigation

Figure 1 shows the structure of the website and how the pages are linked together.

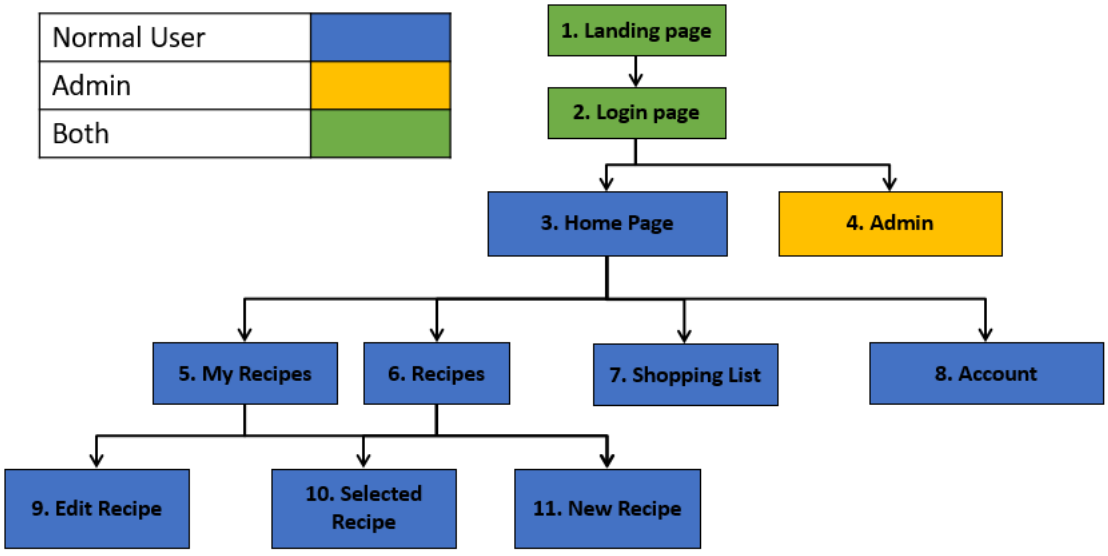


Figure 1. Site navigation diagram.

Log in/ Create Account

To log in, both users will have to use the landing page and then navigate to the login/register page. From here they are able to create an account or log in by filling in the forms provided.

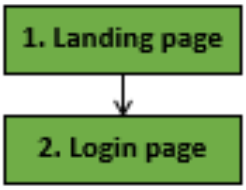


Figure 2. Login/Create Account

Edit Recipe

To edit a recipe the user will have to navigate to “My Recipes” to be able to see a list of their recipes in order to edit them. Users are only allowed to edit their own recipes.

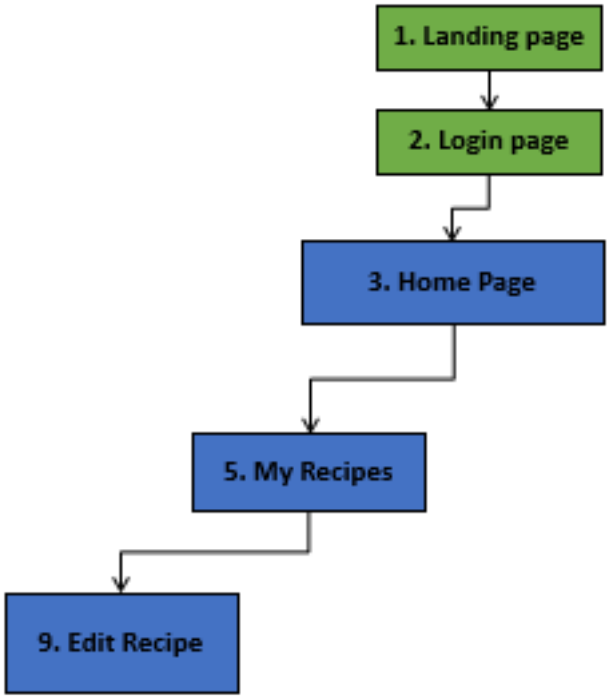


Figure 3. Edit Recipe.

Add Recipe

To add a recipe users can use the “Recipes” page or the “My Recipes” page and use the “Add Recipe” button to create a new recipe. From there they can fill in the form to create a new recipe.

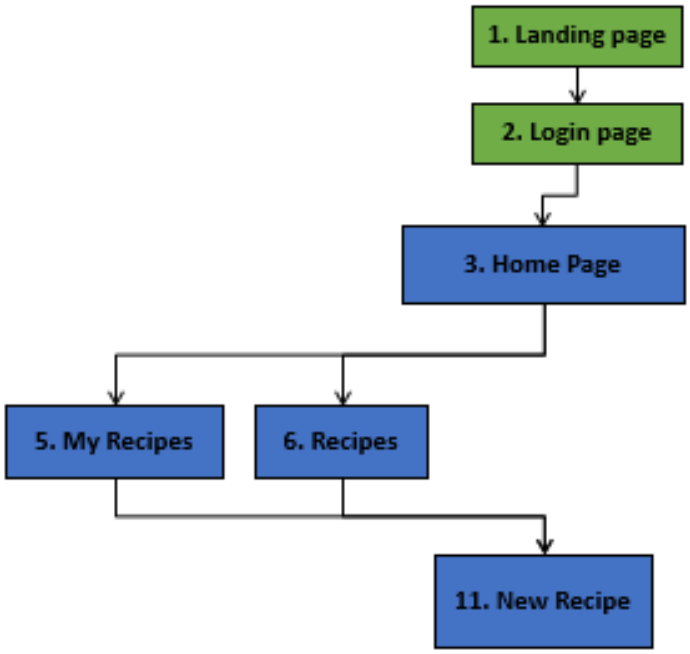


Figure 4. Add Recipe.

Remove Recipe

Like with editing recipes, users can only edit recipes they have made so they will have to go through the “My Recipes” page to edit their recipes. This will bring them to a filled in form to allow them to make changes as needed.

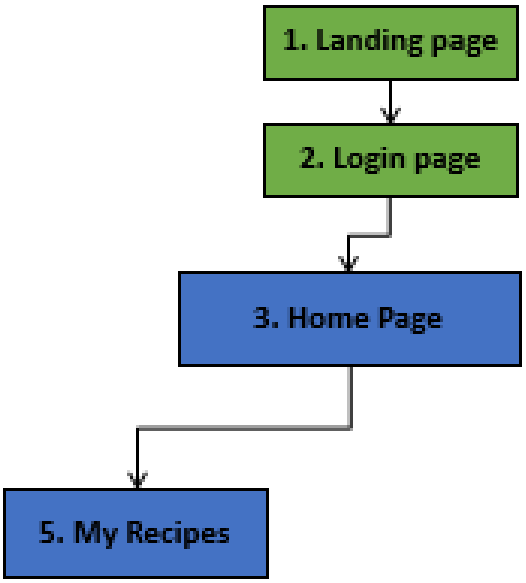


Figure 5. Remove Recipe.

Make Shopping List

To “make” the shopping list users will have to have something in their planner otherwise their shopping list will be empty. The list is generated automatically from the planner table.

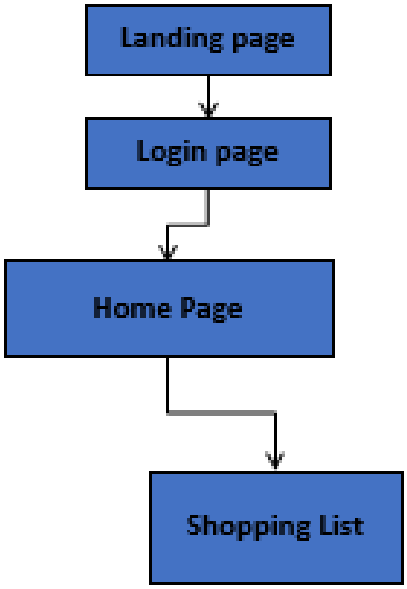


Figure 6. Make Shopping List.

Remove From Planner

To remove from the planner users need to get to the home page where the planner is. There are buttons next to the items on the planner to remove recipes in the event that the user may not need to make a meal that day.

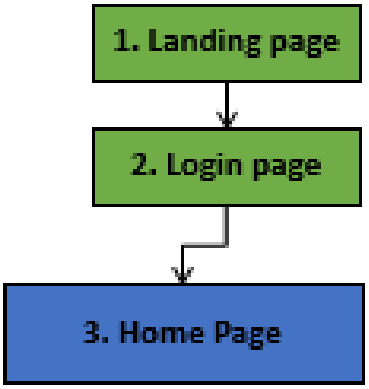


Figure 7. Remove From Planner.

Add To Planner

To add to the planner users need to go to a selected recipe and use the dropdown menu to select which day they want to put the recipe into.

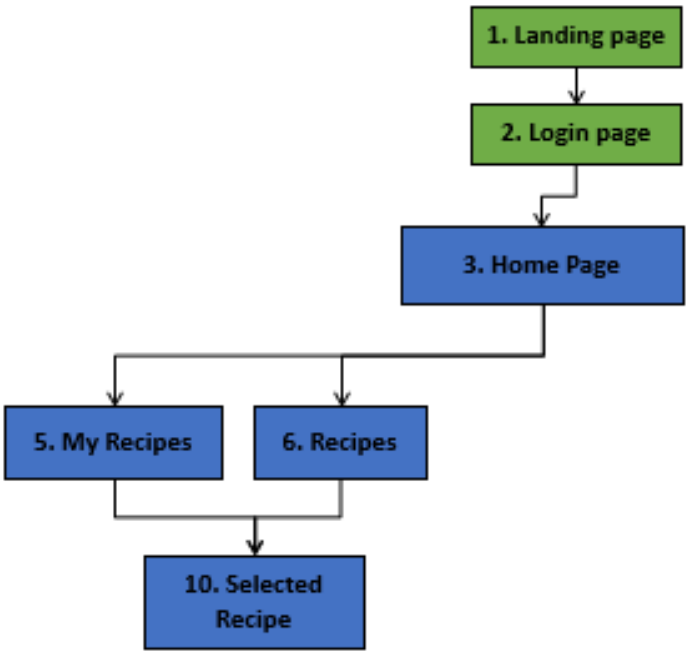


Figure 8. Add To Planner.

Log Out

To log out, a regular user will have to go to the account page and press the log out button. This will immediately log out the user and return them to the login page.

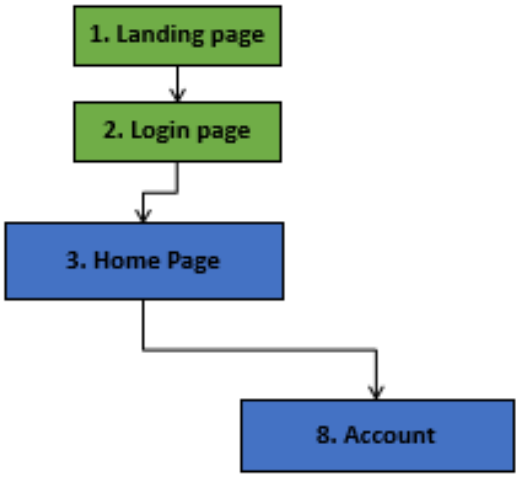


Figure 9. Log Out.

Delete User Account (Admin And Regular User)

To delete an account regular users will need to go to their account page and press the “delete account” button. To remove a user as an admin, the admin would need to go to the admin page and use the “remove user” button to remove the selected user.

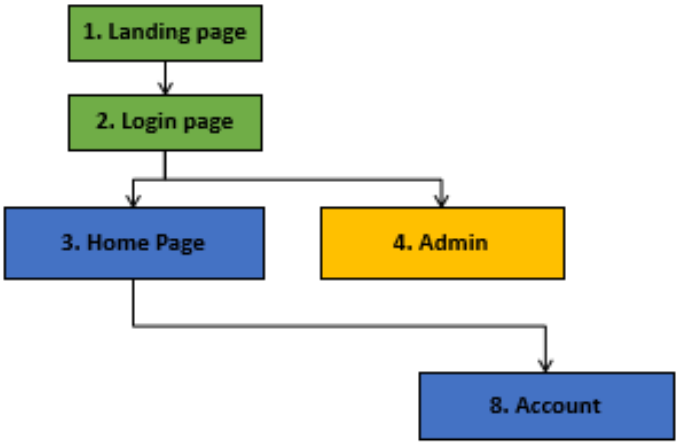


Figure 10. Delete User Account.

Browse Recipes

To browse recipes users will need to navigate to the “recipes” page where they will see all recipes as well as options to search and sort recipes.

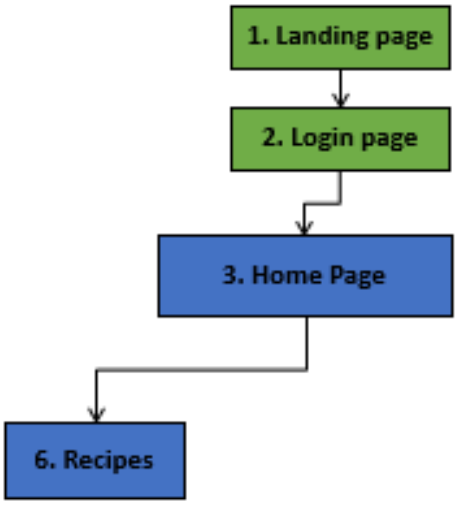


Figure 11. Browse recipes.

Change User Password (Admin And Regular User)

To change a password, users will have to go to the “account” page and change their password and confirm their choice. Admins can change user passwords in the admin page.

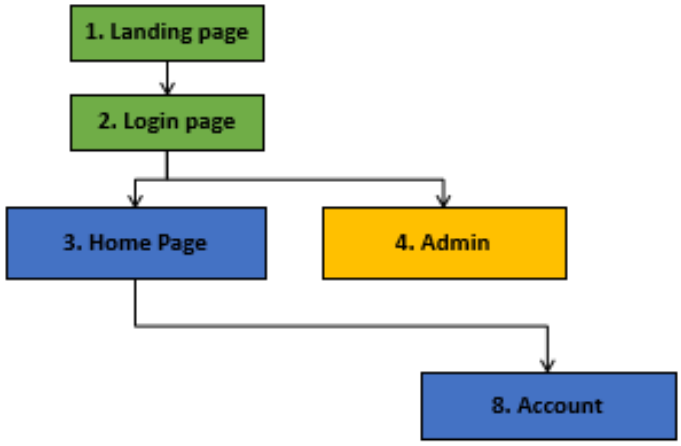


Figure 12. Change Password.

View Recipe

To view a recipe, users need to navigate to one of the two recipe pages and then select the recipe they want to view. When on the selected recipe page, they will be able to see their desired recipe.

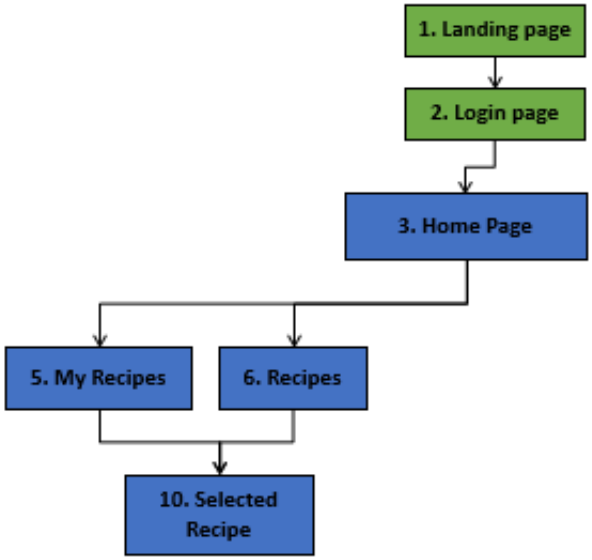


Figure 13. View Recipe.

Component Structure

Landing Page

Page ID	1. Landing Page
Info On Page	Shows some information about the site and how to register.
Page Generation Details	The page has all of its information generated in html with links to get to the login page.
Links To Other Pages	This page links to 2. Login Page.

Other Things Worth Noting	None

Based on previous feedback of the original prototype, more visual elements have been added to the site to make it more appealing to users. The main change is the header with the background of a food platter. This helps to show that this site is for food related information and services. Another change is the “Log in / Register” tab in the navigation bar which has been made to fit on one line to look neater.

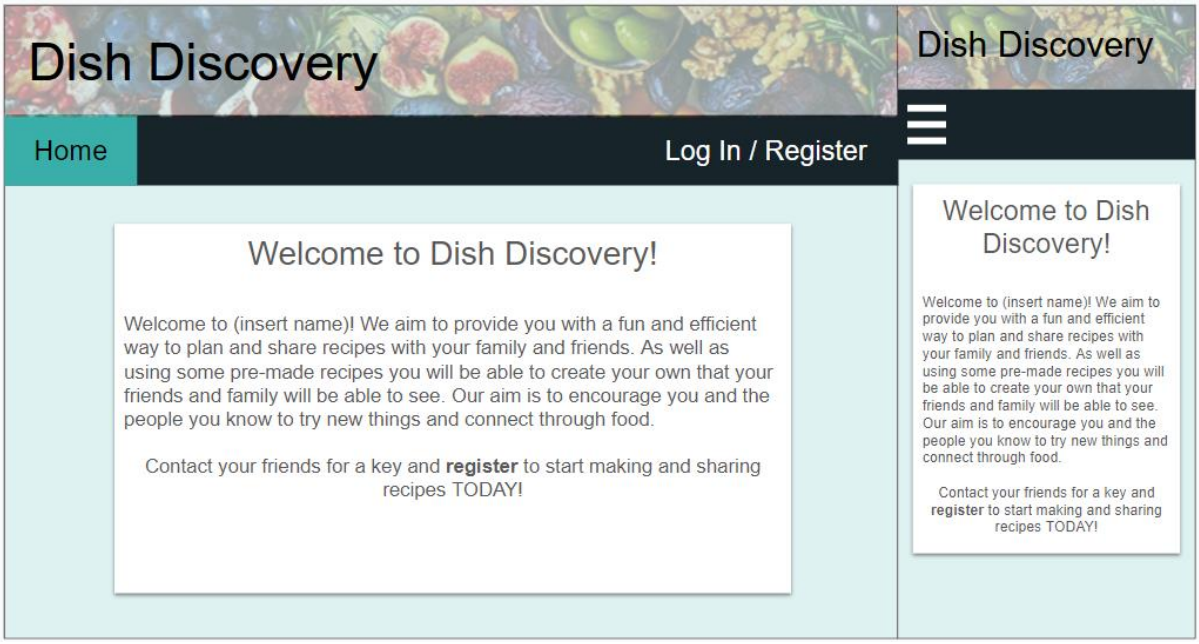


Figure 14. Landing page 2.0.

Login Page

Page ID	2. Login Page
Info On Page	This page has a form for logging in and registering.
Page Generation Details	The page uses html form elements to generate the forms. Once the data is filled in, it is checked with form validation in JavaScript then checked again server side in Php.
Links To Other Pages	This page links to the landing page and to the home page/admin page depending on the user type if the credentials that are given are correct.
Other Things Worth Noting	None

To help users understand what some of the fields are for, a clickable question mark has been added, and if clicked a popup appears to tell users what the key is for and how they can get one.

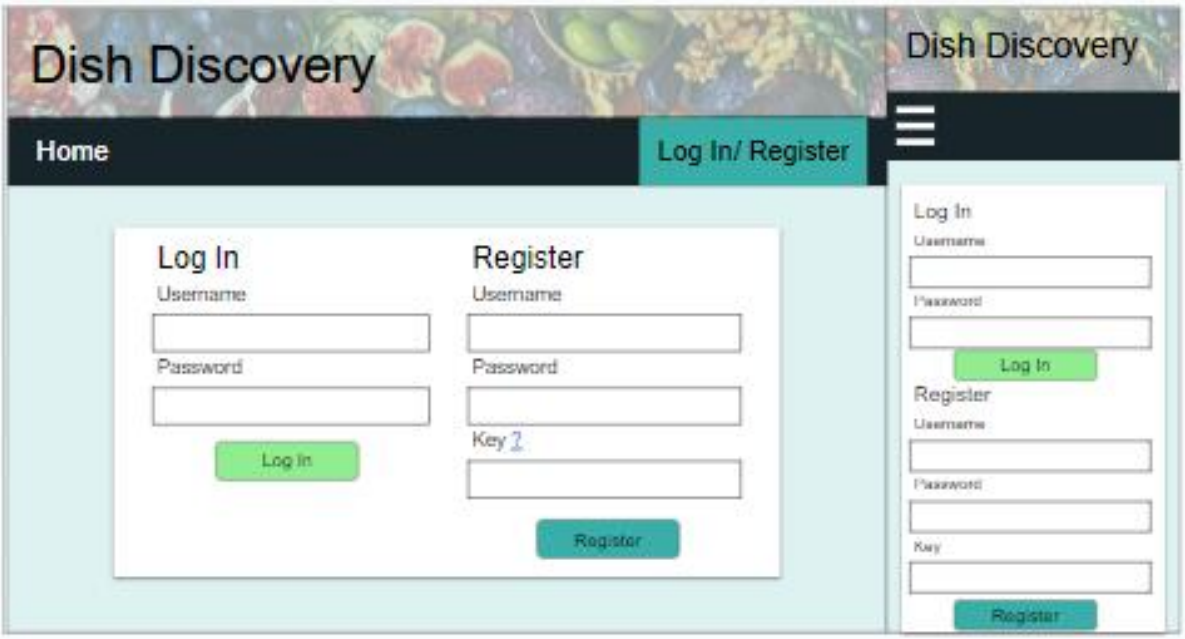


Figure 15. Login / register page 2.0.

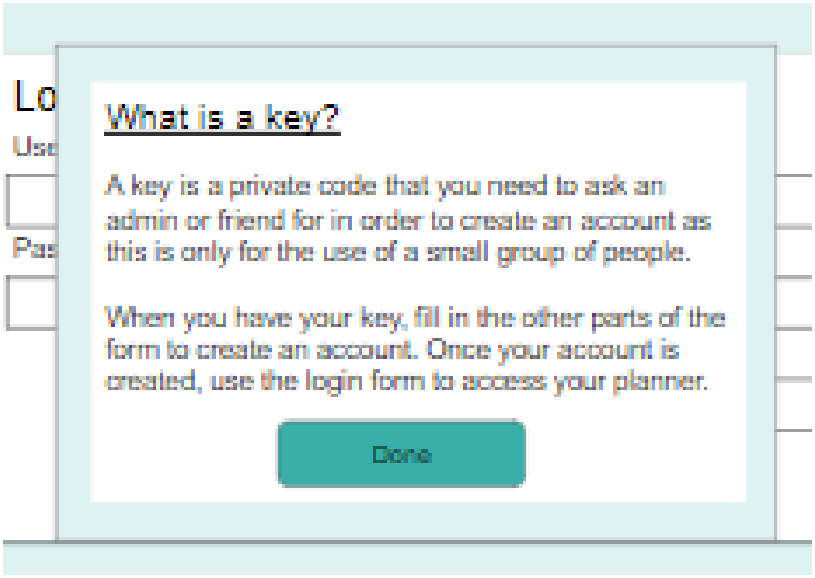


Figure 16. popup message to tell users what the key is and how they can obtain one.

Home Page

Page ID	3. Home Page
Info On Page	The home page has an individual planner for each user that they can add to, remove and edit.
Page Generation Details	This page generates a table for the logged in user from a database that contains a table for users and their planner. The recipes come from a recipe table that has all of the recipes in it.
Links To Other Pages	This page links to 5. My Recipes, 6. Recipes, 7. Shopping List and 8. Account.
Other Things Worth Noting	This page is individual to each user and is generated on loading the page once the user has logged in.

The planner has changed from the previous design to cater more to the use cases. There is now a button on each row of the planner to empty out the meal for a certain day for users that don't plan on making something that day.

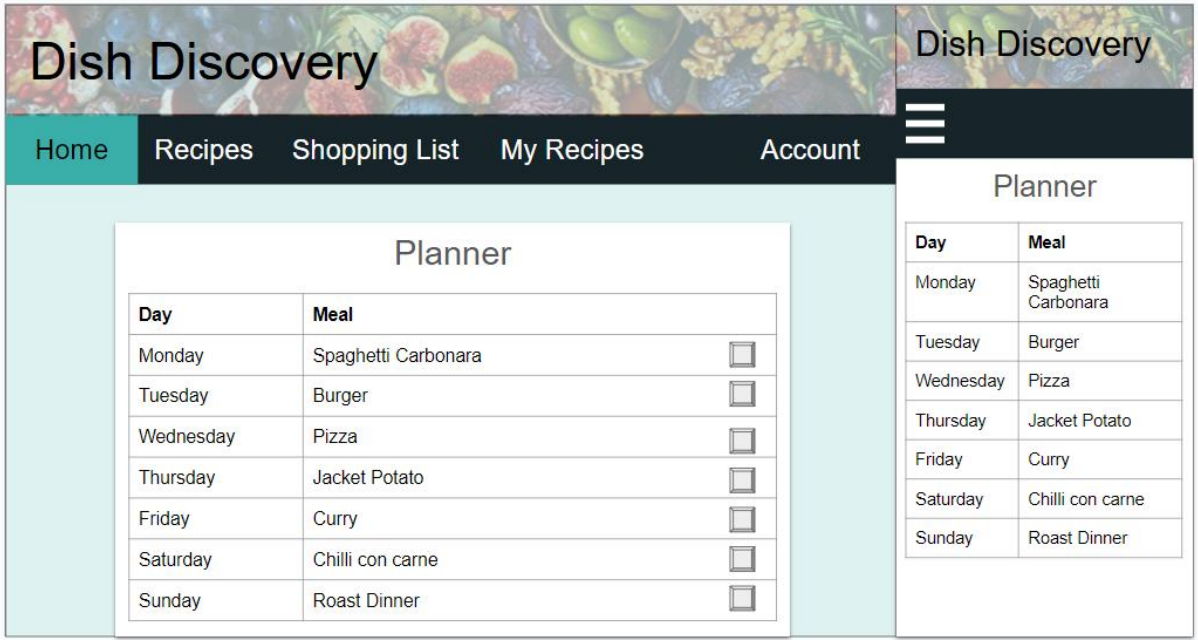


Figure 17. Planner page 2.0.

Admin Page

Page ID	4. Admin Page
Info On Page	This page will contain all of the users' usernames and passwords as well as a way to change the password or remove the user entirely.
Page Generation Details	This page will get all of the users and their passwords from the users table and the password table and then print them all out into a table.
Links To Other Pages	This page is only accessible under the admin account. The admin only has access to this page to change user information. Admins can then log out to get back to the login page.
Other Things Worth Noting	None

A log out button has been added to the admin page to allow administrators to log out. Each of the buttons that are used to delete or remove anything on the site will have a bin symbol in it that is provided by Google Material Icons (Google, 2024).

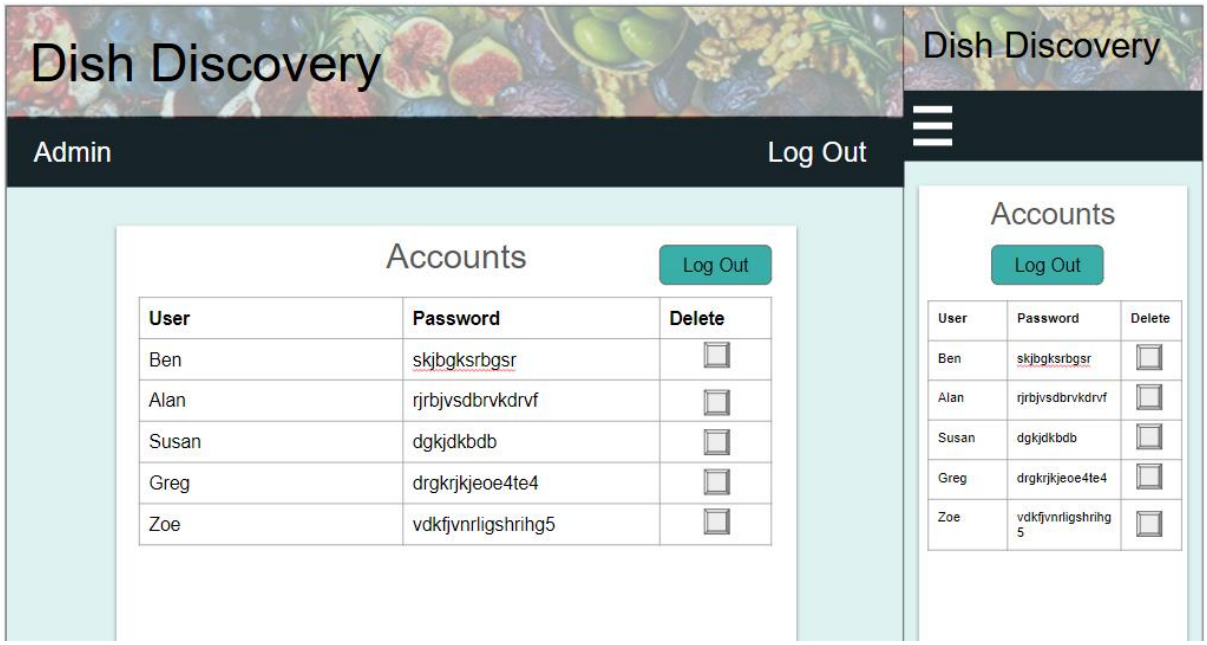


Figure 18. Admin page 2.0.

My Recipe

Page ID	5. My Recipes
Info On Page	This page will display all of the recipes made by a specific user so they can edit or delete them. These are displayed in a table.
Page Generation Details	This page generates a table of all of the recipes that the logged in user created. A query will be used to search through the recipes table and return all of the recipes made by that user.
Links To Other Pages	This page links to 6. Recipes, 7. Shopping List, 8. Account as they are all on the navigation bar. It also links to 9. Edit recipe, 10. Selected Recipe and 11. New Recipe.
Other Things Worth Noting	The recipes are displayed in a table to save space and make them easy to find and change. The user who made the recipes do not need the images to know what the recipe is as they are the ones who made them.

The “My Recipes” page how has buttons to search and sort recipes. Each of the buttons will use Google Material Icons to have a bin and a pencil symbol to show what can be edited and deleted (Google, 2024).

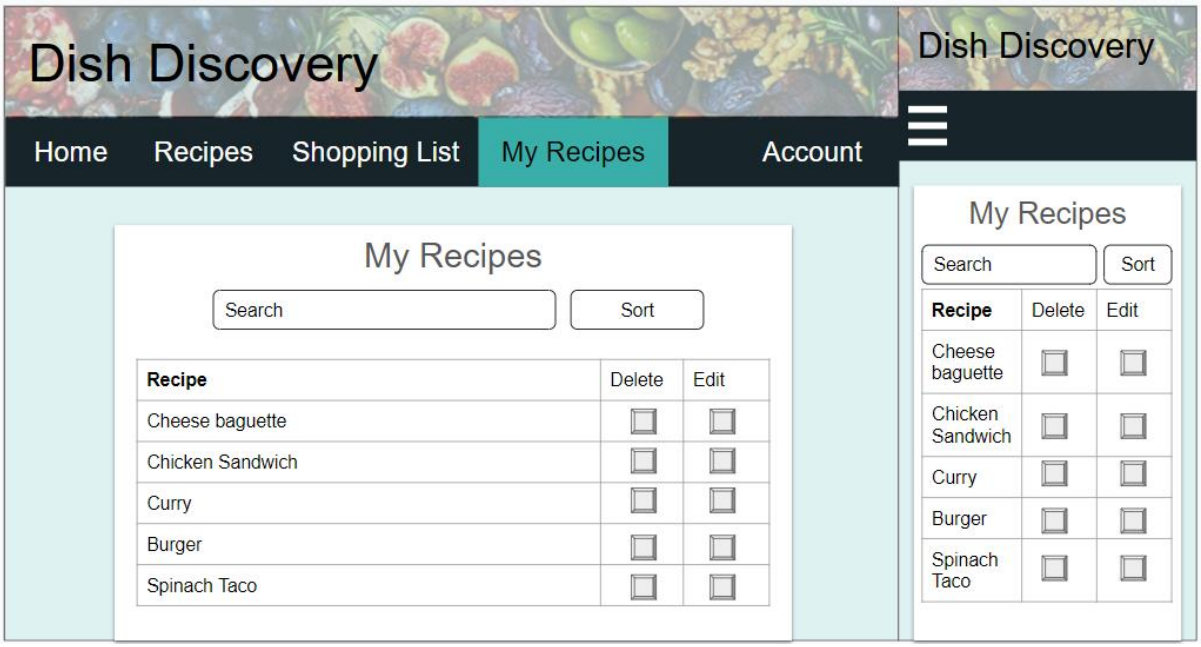
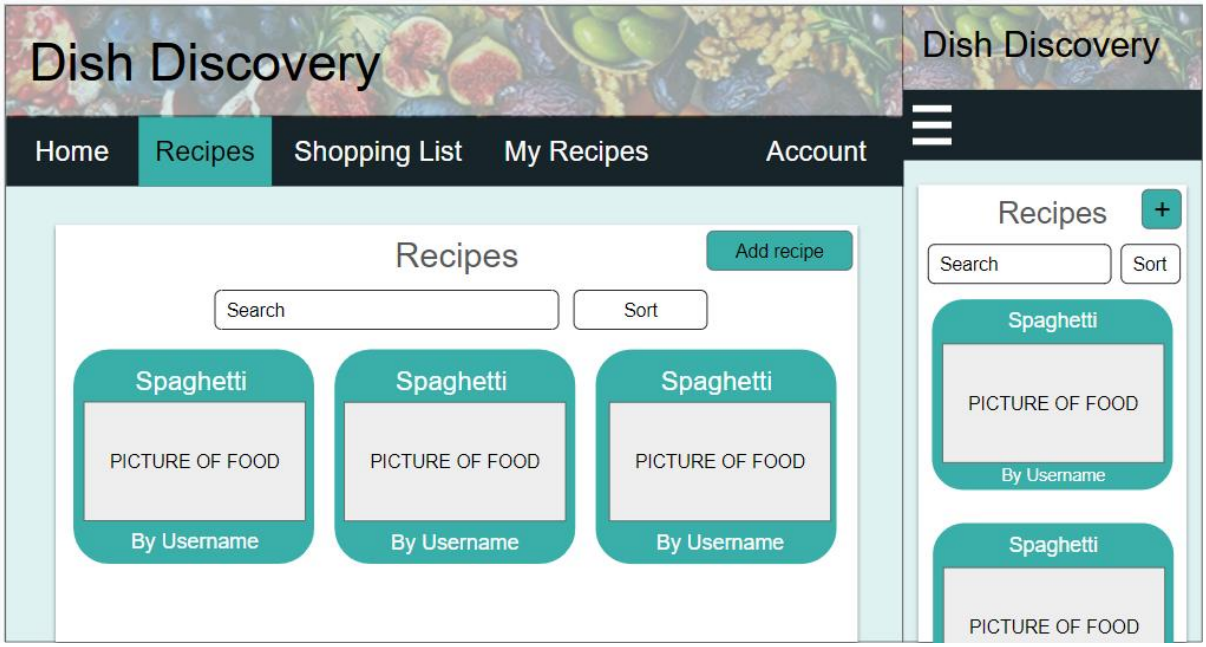


Figure 19. My Recipes 2.0.

Recipes

Page ID	6. Recipes
Info On Page	This page displays all recipes by all users and has options to search and sort the results. From here users will be able to create recipes also.
Page Generation Details	The page uses html to generate the template of the page and then each of the recipes are displayed in their own cards once the data is collected from the database. Each card will be clickable to take the user straight to that recipe.
Links To Other Pages	This page links to 5. My Recipes, 7. Shopping List, 8. Account as they are all on the navigation bar. From this page users will be able to go to 10. Selected Recipe and 11.New Recipe.
Other Things Worth Noting	On the navigation diagram there is a line to edit recipe. This is due to overlapping lines but this page only has access to 10. Selected recipe to view it and 11. New Recipe to make a new one.

The recipes page now has a button to add a recipe which was missing in the original prototype.



Shopping List

Page ID	7. Shopping List.
Info On Page	This page contains all of ingredients from a user's planner. These are all displayed in a table with a checkbox next to show if it has been selected to make it easier to check items off when the user goes shopping.
Page Generation Details	This page displays all of the ingredients from the recipes from the user's planner. They are all displayed in a table that is generated in JavaScript with a checkbox for users to toggle.
Links To Other Pages	This page links to 5. My Recipes, 6. Recipes, 8. Account as they are all on the navigation bar. This page does not link to any other pages.
Other Things Worth Noting	None

Based on feedback, a form has been added to the bottom of the shopping list to add extra items so it can be used as a main list for users that use it while shopping.

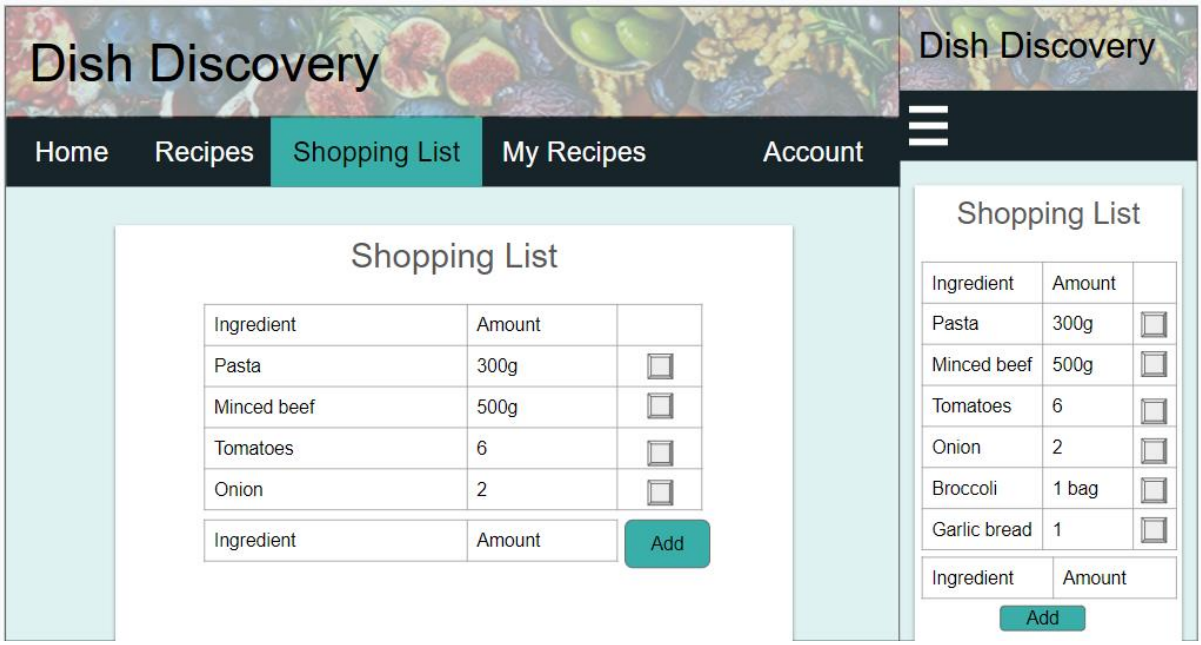


Figure 20. Shopping List 2.0.

Account

Page ID	8. Account
Info On Page	This page displays the username, password an option to remove account, option to log out and the key so the user can share it to others who wish to use the site.
Page Generation Details	This page is generated mostly in html with some of the boxes being filled in with JavaScript. The username and password is fetched from the database to be displayed in the username and password box to allow users to change them.
Links To Other Pages	This page links to 5. My Recipes, 6. Recipes, 7. Shopping List as they are all on the navigation bar. This page does not link to any other pages.
Other Things Worth Noting	The content will be generated depending on the user so another user's user is not displayed where it is not supposed to.

This page has not been updated from the previous version of the prototype.

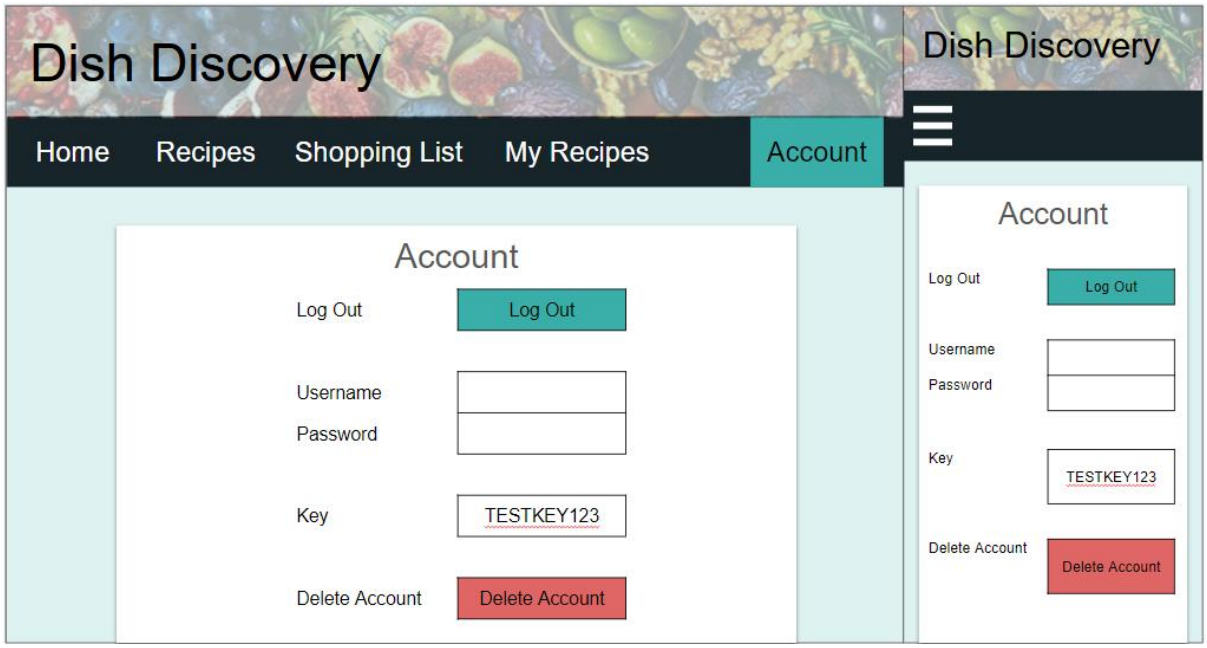


Figure 21. Account page 2.0.

Edit Recipe

Page ID	9. Edit Recipe
Info On Page	This page contains options to change the recipe name, ingredients, instructions and the picture as well as a confirmation and cancel button.
Page Generation Details	This page contains a form that will already be filled out so users can edit an already existing recipe. This will update all of the already existing details of the recipe.
Links To Other Pages	This page links back to 5. My Recipes page when the recipe is changed or the change was cancelled.
Other Things Worth Noting	None

This page has not been updated from the previous version of the prototype.

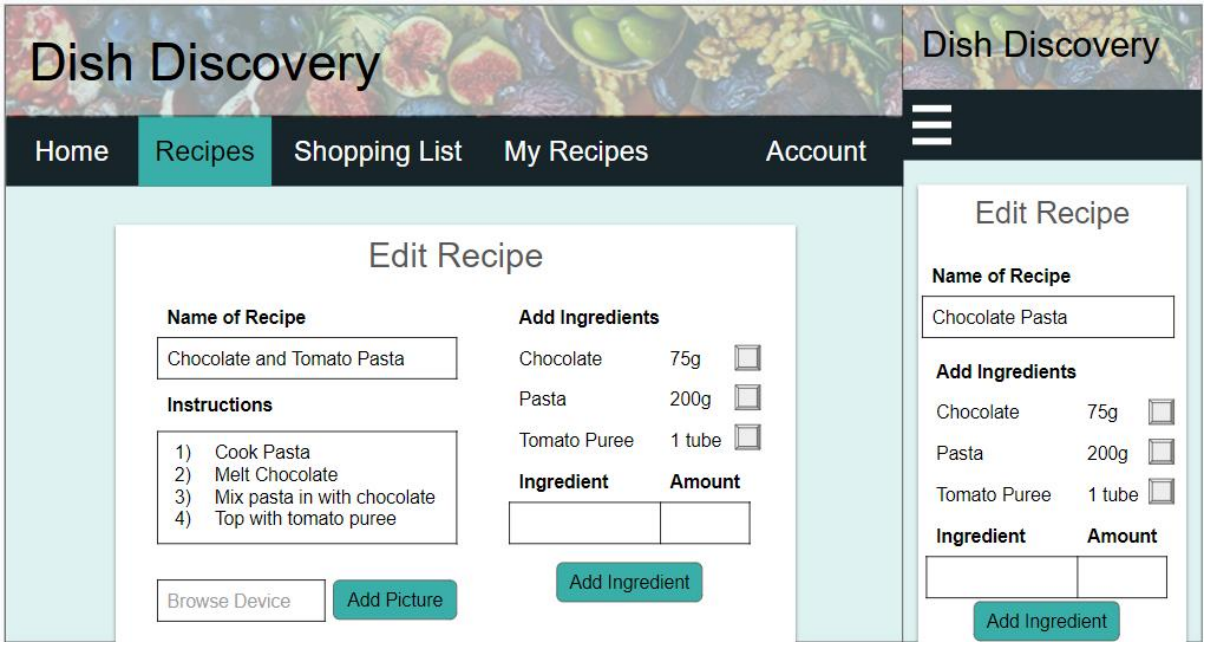


Figure 22. Edit recipe 2.0.

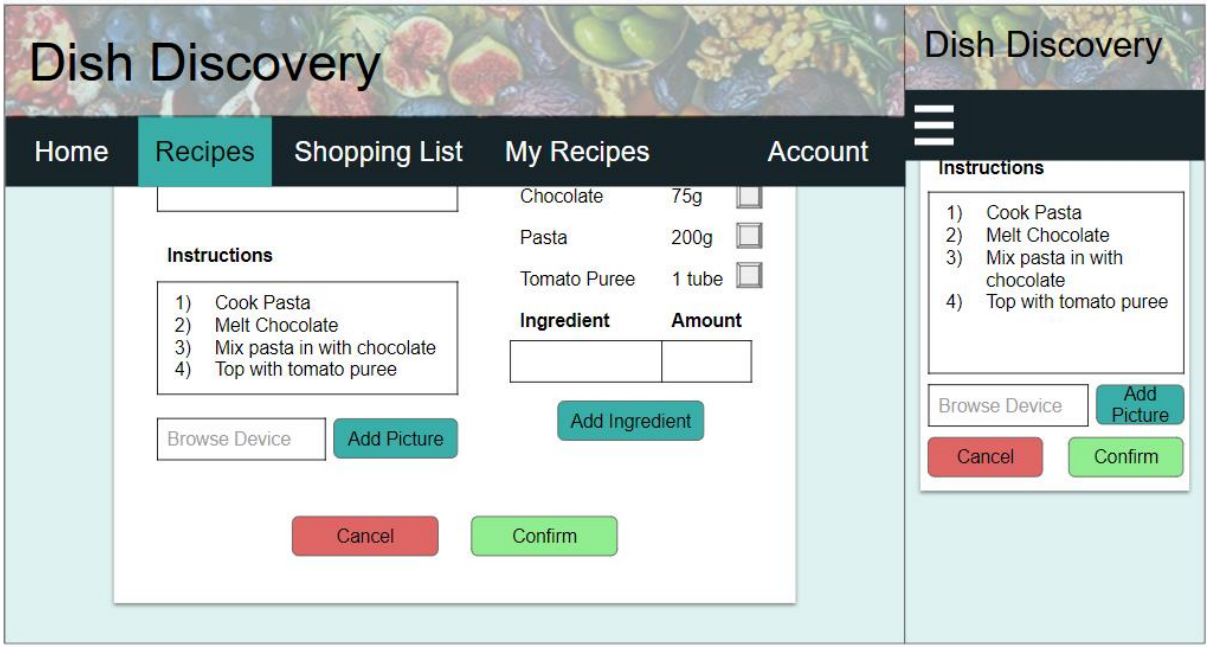


Figure 23. Edit recipe 2.0.

Selected Recipe

Page ID	10. Selected Recipe
Info On Page	This page displays the selected recipe that the user selected. It will contain the name of the recipe, the creator, an image that was uploaded by the creator and then the ingredients and instructions.
Page Generation Details	The recipe information will be fetched from the database and displayed accordingly. The ingredients will be looped through and displayed into rows on a table. The image will be displayed by using the

	stored image file path to where the image is stored on the server. To have separate lines between the steps in the instructions, any time the user presses an enter key, it will be converted to a " " tag so it can be displayed correctly.
Links To Other Pages	This page only links back to 5. My Recipes or 6. Recipes depending on which page the recipe was selected from.
Other Things Worth Noting	None

This page has not been updated from the previous version of the prototype.

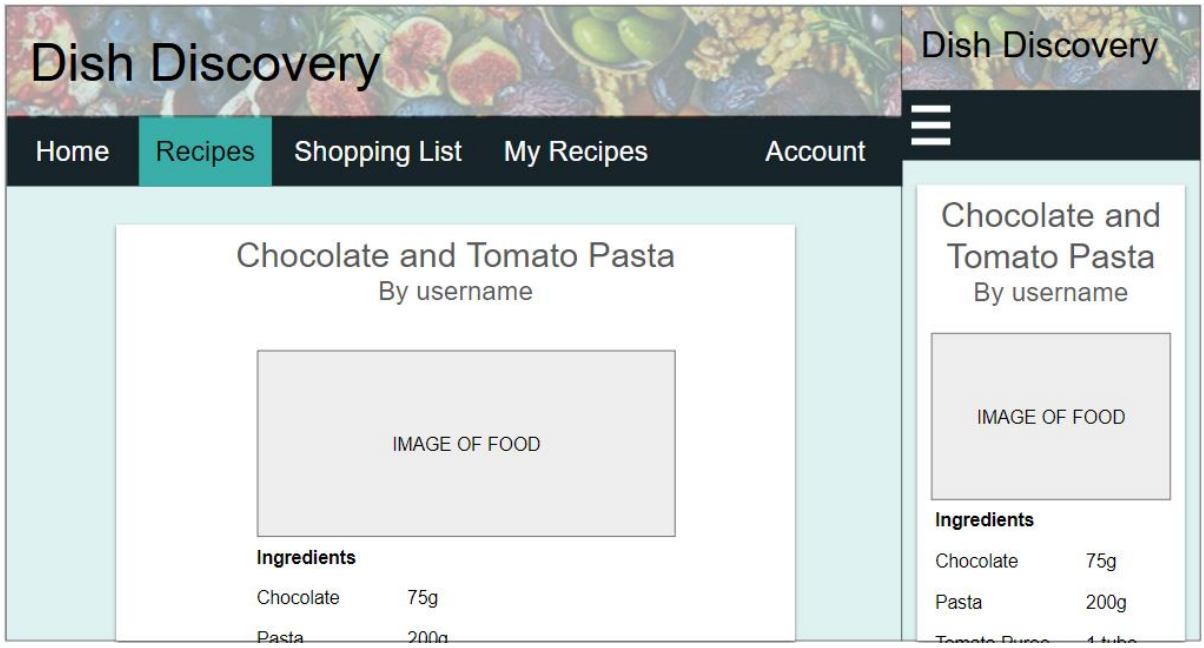


Figure 24. Selected recipe 2.0.

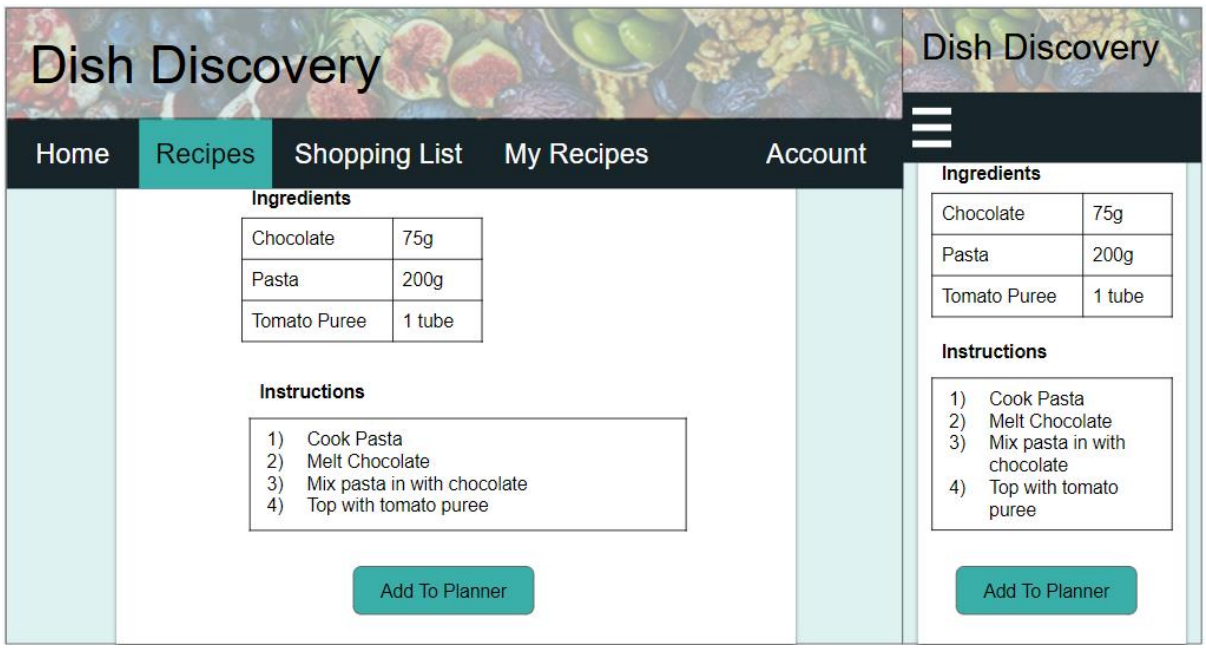


Figure 25. Selected Recipe 2.0.

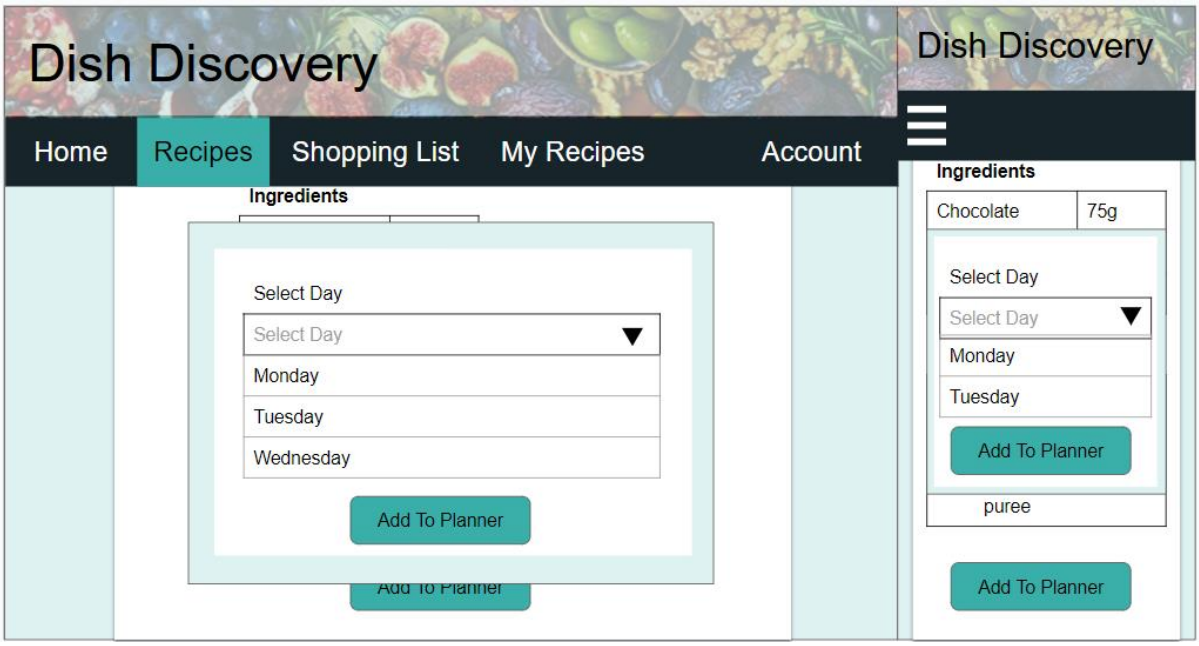


Figure 26. Selected recipe pop up to save to the planner 2.0.

New Recipe

Page ID	11. New Recipe
Info On Page	This page is similar to 9. Edit Recipe but all of the text boxes are blank. There is a form for users to fill in that includes the recipe name, recipe image upload, ingredients and instructions and then a button to confirm or cancel the creation of the recipe.
Page Generation Details	This page contains a form that is empty that will be used to fill in the data to add a new recipe.
Links To Other Pages	This page only links back to 5. My Recipes and 6. Recipes.
Other Things Worth Noting	None

This page has not been updated from the previous version of the prototype.

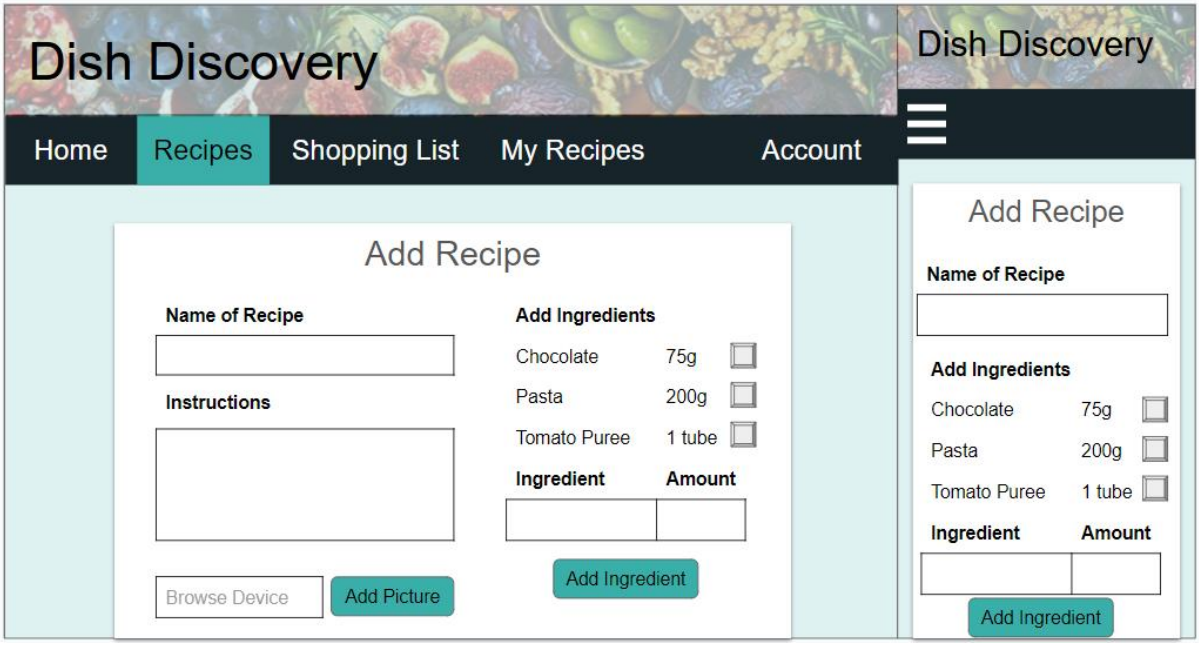


Figure 27. Add recipe 2.0.

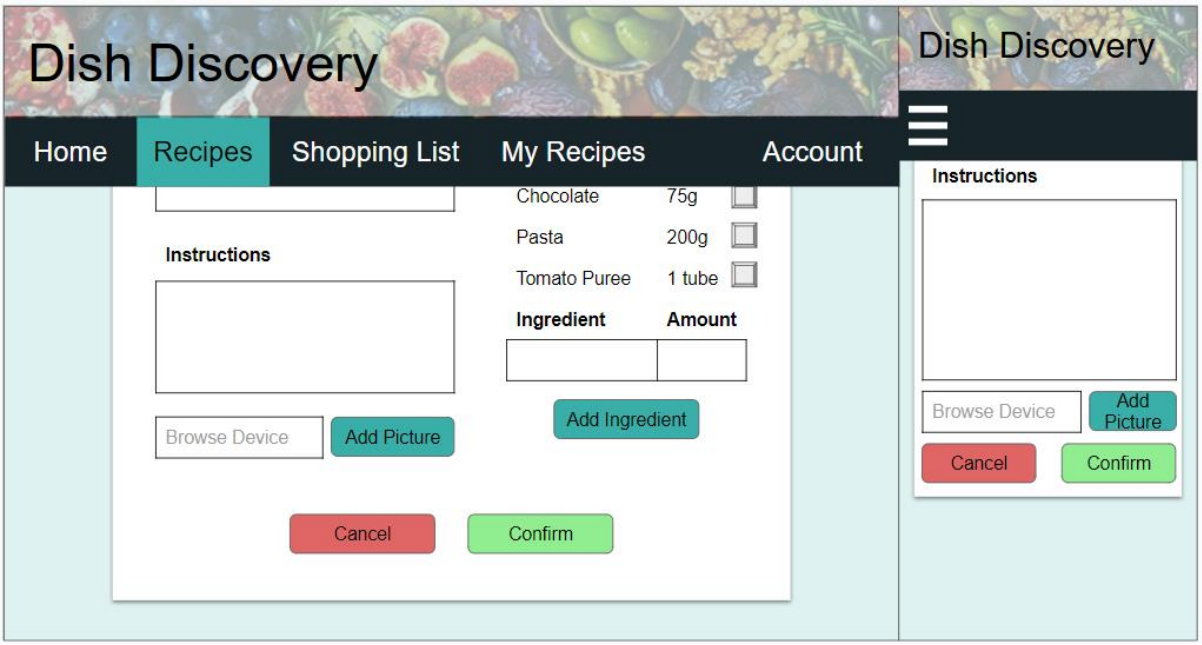


Figure 28 Add recipe 2.0.

Persistent Data Model

The site only needs three tables to be able to provide for all of the use cases. The users table stores the user information for users to log in. The planners table contains all of the planners for each of the users and stores the IDs for the recipes that the users have

selected. Instead of using the recipe names, IDs have been used so that there can be multiple recipes with the same name. The Recipes table contains all of the recipes and the information related to them. The Recipes table links to the Users table as users can have multiple recipes and their name is referenced in the creator field. The username is used as the reference instead of the userID because each username is unique.

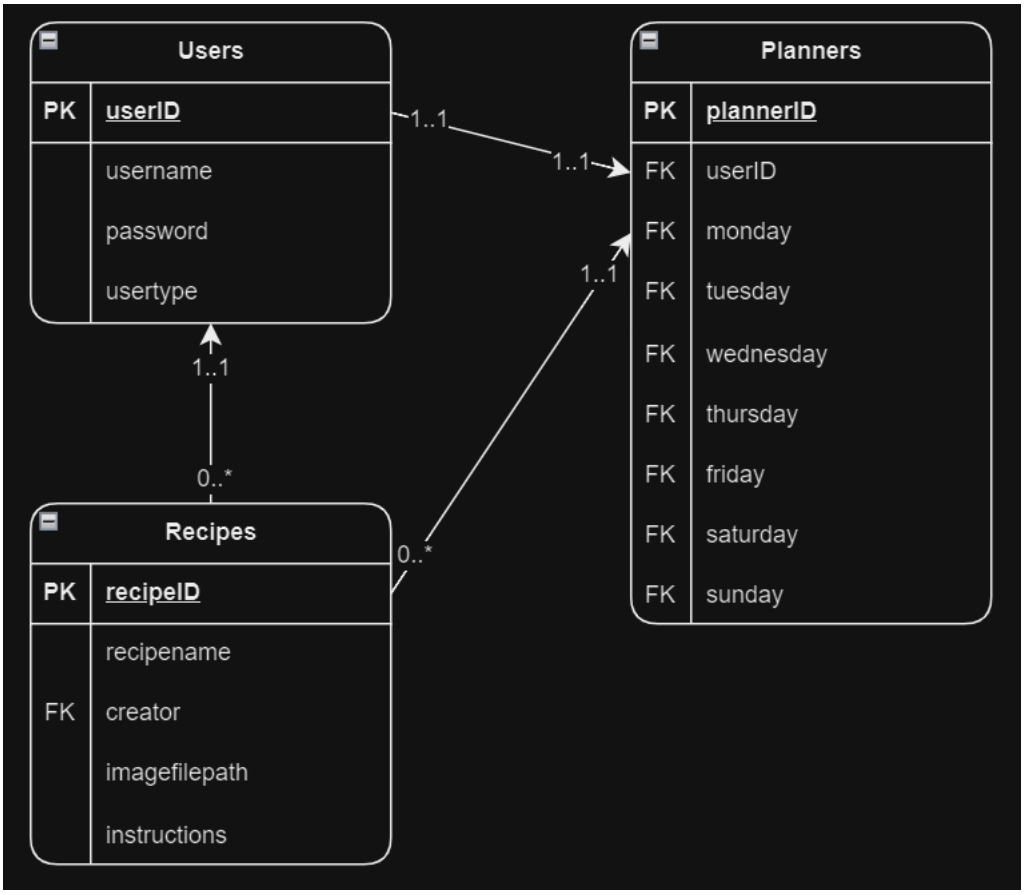


Figure 29. Diagram of the tables in the database and how they link.

Sample Data

Users Table

The users table consists of a userID as the primary key, the username, the hashed password and the user type which defaults to regular as there will only be one administrator for now.

```
CREATE TABLE Users (
    UserID SERIAL PRIMARY KEY,
    username VARCHAR(15) UNIQUE,
    password VARCHAR(255),
    usertype VARCHAR(7) DEFAULT 'regular'
);
```

Figure 30. Query to create users table.

	userid	username	password	usertype
1	1	TESTUSER1	PASSWORD	regular
2	2	TESTADMIN1	PASSWORD1	Admin

Figure 31. Users table with two example users.

Recipes Table

The recipes table contains all of the recipes that users have created as well as some pre-made ones to populate the site. There are some character limits on some of the fields to avoid too many characters in the forms. This table needs username from the users table to fill the creator field and this is done with the foreign key.

```
CREATE TABLE Recipes (
    recipeID SERIAL PRIMARY KEY,
    recipeName VARCHAR(100),
    creator VARCHAR,
    imageFilePath TEXT,
    ingredients TEXT,
    instructions TEXT,
    FOREIGN KEY (creator) REFERENCES users(username)
);
```

Figure 32. Query to create recipes table.

	recipeid	recipe...	creator	imagefil...	instructions	ingredients
1	1	Grilled Chick…	Dish Discovery	Images/burgerpl…	1. Season chicken brea…	[{"ingr

Figure 33. Recipe table with an example recipe.

Planners Table

The planner table stores the planners of each user and uses foreign keys to populate the table on the planner page for each user.

```sql
CREATE TABLE Planner (
    plannerID SERIAL PRIMARY KEY,
    userID INT,
    monday INT,
    tuesday INT,
    wednesday INT,
    thursday INT,
    friday INT,
    saturday INT,
    sunday INT,
    FOREIGN KEY (userID) REFERENCES users(userid),
    FOREIGN KEY (monday) REFERENCES recipes(recipeid),
    FOREIGN KEY (tuesday) REFERENCES recipes(recipeid),
    FOREIGN KEY (wednesday) REFERENCES recipes(recipeid),
    FOREIGN KEY (thursday) REFERENCES recipes(recipeid),
    FOREIGN KEY (friday) REFERENCES recipes(recipeid),
    FOREIGN KEY (saturday) REFERENCES recipes(recipeid),
    FOREIGN KEY (sunday) REFERENCES recipes(recipeid)
);
```

Figure 34. Query to create the planner table.

	plannerid	userid	monday	tuesday	wednesday	thursday	friday
1	1	3	1	1	1	1	1

Figure 35. Full table of the recipe IDs in the planner.

```sql
SELECT plannerid, 'Monday' AS dayofweek, recipes.recipename
FROM planner
         JOIN recipes ON planner.monday = recipeid;
```

Figure 36. Query for the table in Figure 37. It shows how a recipe from a certain day could be fetched to display it on the website.

	plannerid	dayofweek	recipename
1	1	Monday	Grilled Chicken Caesar Salad

Figure 37. Example data of the day of the week and the meal set to it.

Front End Test Data

This is some test data to test how a recipe will be displayed on the website. It uses the recipeID to get the recipe as there are multiple recipes in this array. The ingredients section is an array ingredients in JSON so they can be looped around to display them in a table. The instructions section is a large section of text that has “<br>” tags where the

user would press the enter key to go to a new step when creating the recipe. When displayed on the page, it will have a new line for each step.


```
{
    "recipeID": 3,
    "recipeName": "Grilled Chicken Caesar Salad",
    "creator": "Chef Ben",
    "imageFilePath": "Images/burgerplaceholder.jpeg",
    "ingredients": [
        {"ingredient": "Boneless, skinless chicken breasts", "amount": "2"},
        {"ingredient": "Romaine lettuce, chopped", "amount": "1 head"},
        {"ingredient": "Croutons", "amount": "1 cup"},
        {"ingredient": "Parmesan cheese, grated", "amount": "1/2 cup"},
        {"ingredient": "Caesar dressing", "amount": "1/3 cup"},
        {"ingredient": "Black pepper, freshly ground", "amount": "To taste"}
    ],
    "instructions": "1. Season chicken breasts with salt and pepper, then grill until fully cooked.<br>2
     . Slice grilled chicken into strips.<br>3. In a large bowl, combine chopped romaine lettuce,
     croutons, and grated Parmesan cheese.<br>4. Add grilled chicken strips to the salad.<br>5. Drizzle
     Caesar dressing over the salad and toss gently.<br>6. Sprinkle freshly ground black pepper on
     top.<br>7. Serve immediately for a delicious and satisfying Caesar salad."
},
```


Figure 38. JSON of an example recipe.

References

Google. (2024, March). Retrieved from Google Fonts: https://fonts.google.com/icons