

Project Topic 2:

Recipe Wizard

Final Report

Team 11  K

Fang Juncheng, Nick
Huang Kunping, Queen
Ip Zhuo Xuan, Adams
Tu Shuo, Tommy
Li Zhirong, Stella

Content

1 INTRODUCTION

- 1.1 Project Overview
- 1.2 Objective
- 1.3 Highlights
- 1.4 Project Statistics

2 SYSTEM ARCHITECTURE DESIGN by DFD

- 2.1 System Architecture
- 2.2 DFDs

3 DETAILED DESCRIPTION OF COMPONENTS by UML

- 3.1 Overall Class Diagram
- 3.2 Use Case Diagram
- 3.3 Sequence Diagram

4 USER INTERFACE DESIGN

- 4.1 Description of the User Interface
- 4.2 Screen Images
- 4.3 Objects and Actions

5 TEST

- 5.1 Test Overview and Test Plan
- 5.2 Sign in and sign up
- 5.3 Search
- 5.4 Create and Edit
- 5.5 Upload personal information

6 LESSONS LEARNED

7 CONCLUSION

1 INTRODUCTION

1.1 Overview

1.1.1 Background

Project ***Recipe Wizard*** is initiated on request by Professor Michael Lyu as to make an activity planning and sharing platform. We thus decided to create a website that help people plan their meal and share their experience with others. The project aims at providing a dynamic and elegant platform for people packing up a menu with recipes created by users. It also provides recipe recommendations personalized to the individual's tastes, digital recipe box (namely "menu") and menu/recipe search.

1.1.2 Team members' roles and responsibilities

Nick	Back-end Developer	Construct the database and develop functions
Queen	Back-end Developer	Web crawl, design recommendation system and search method
Adams	Front-end Developer	Develop the web user interfaces and CSS
Tommy	Front-end Developer	Standardize the formatting and merge all the components
Stella	Front-end Developer	Merge front end elements with the back-end server

1.2 Highlight Features

1.2.1 Personalized Recipe Recommendation

The system will recommend recipes to user based on his/her like history. In case the users don't have any ideas what to cook, the

recommendation function can provide suggestions that suit their taste.

1.2.2 Categorized Browsing

The recipes and menus are differentiated into 6 categories, allowing users quickly surf to their desired section.

1.2.3 Like and Comment

Users can also like the content as an upvote for the post and the content ID will be stored into the users' database like bookmark. They can also exchange opinions with others in the comment section.

1.2.4 Dynamic user interface

The user interface is responsive towards user action such as the steps popping out as user scroll down the recipe page or hovering over lists will highlight the row, providing a dynamic browsing experience.

1.2.5 Over 1000 recipes by official

The platform is loaded with over 1000 recipes as base for users to browse and refer to. Providing plenty resources at initial stage can attract food lovers to use our platform for preparing meal.

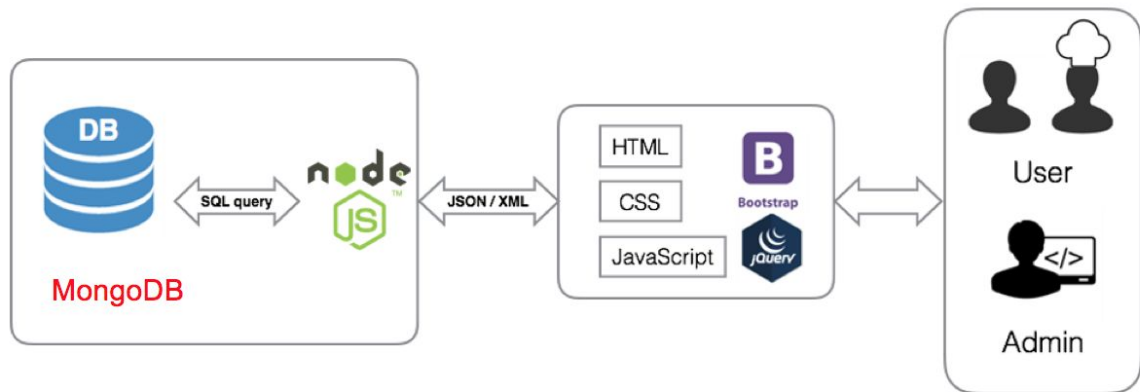
1.3 Statistics

Function	TOL	MacCabe Value
Search	55	7
Recommendation	47	6
Post recipe	53	9
Show recipe	65	7

2 SYSTEM ARCHITECTURE DESIGN by DFD

2.1 System Architecture

2.1.1 Diagram



2.1.2 System Component

- Git Server

We use git to control our project. Git is a distributed version control system designed to handle everything from small to very large projects with speed and efficiency. By using git, branching and merging are easy and data integrity is assured. In addition, workflow is flexible since you can choose your own workflow.

- Database

Our system will use mongoDB and Redis. Requests sent to database are mostly text. Replies can be text, recipes or photo. It is able to dynamic update of the data.

Mongo database provides a mechanism for storage and retrieval of data which is modeled in means other than the tabular relations used in relational databases.

Redis database is required by the recommendation engine, raccoon, to store the recommendation information. It will only maintain recipe id and user id.

- Front-end

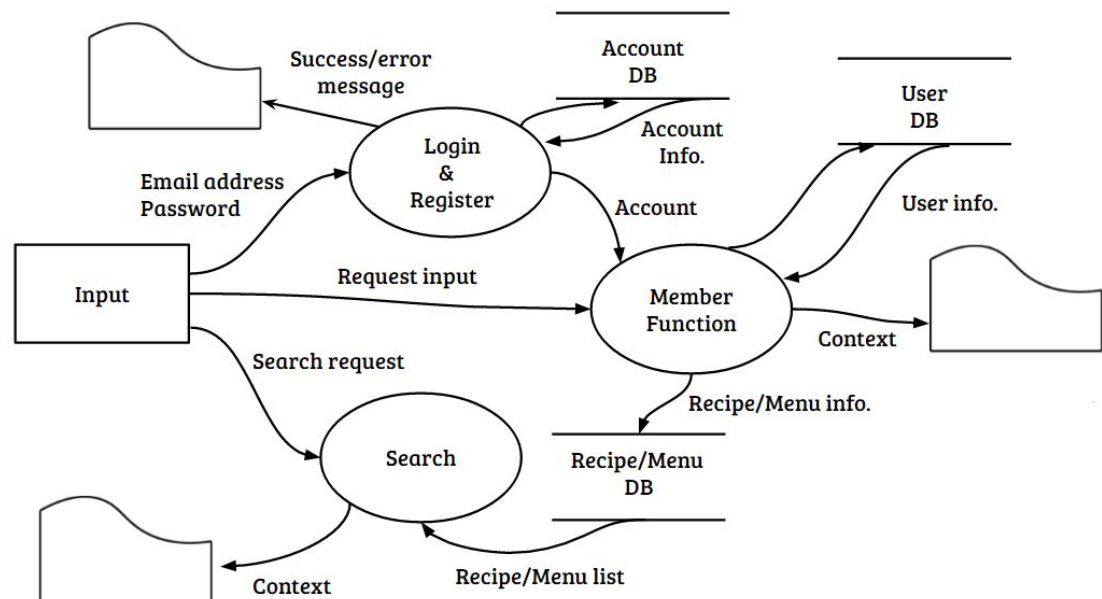
The project will make use of node.js to render the views for the user. With the help of HTML5, CSS, javascript, we will produce a user-friendly interactive web application.

2.2 DFDs

DFD(Data Flow Diagram) a graphical representation of the "flow" of data. It is often used as a preliminary step to create an overview of the system, which can later be elaborated. In this specification, we will use DFD to illustrate how the product works.

2.2.1 Overview

There are three main blocks in the product. The first block is login and register function. It will take account information as input and compare with the account info in the account database to validate the request. The second block is search function. It will use recipe/menu database to search the recipes or menus according to the search request. The third block is member function which can only be accessed after user login.

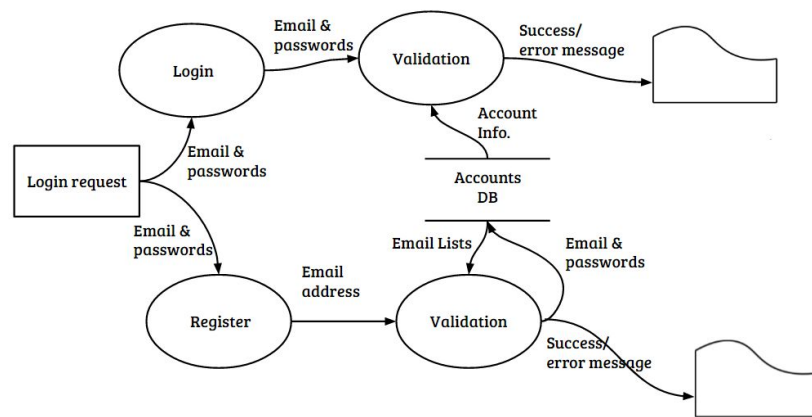


2.2.2 Login & Register

In login procedure, the login function will collect user's email address and password.

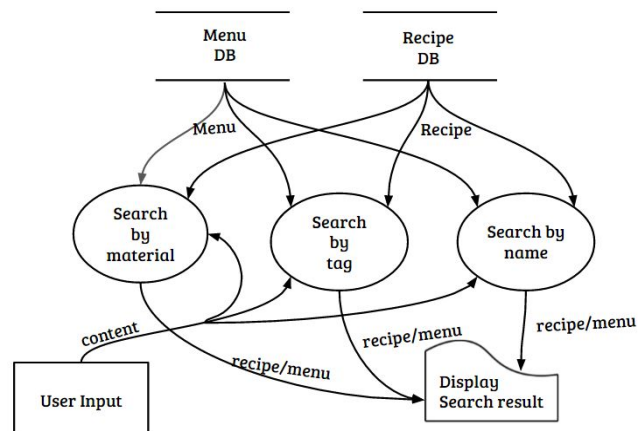
Then the login information will be passed to validation function which will check the information with the account database. At last, the success or error message will be shown on the screen.

In registration procedure, the process is similar to login procedure despite the validation function. The validation function of registration will get emails list from the account database to check whether the email has been used. If not, it will record the new account in the database.



2.2.3 Search

In search function, the user can input a search request and choose to search by material, tag or name. Those function will collect information from menu or recipe database and do searching according to request. At last, the recipes or menus that satisfy the request will be shown on the screen.



2.2.4 Member Function

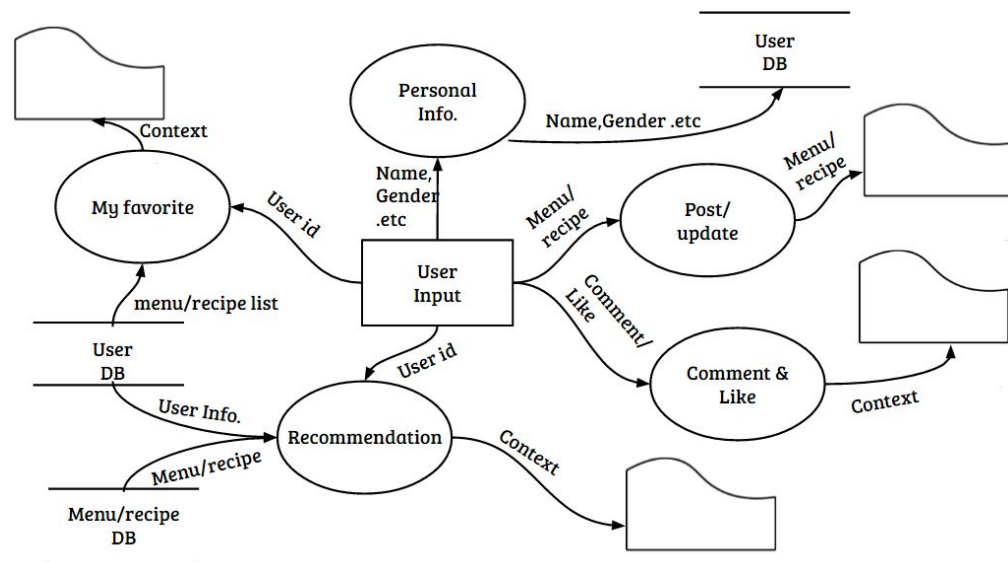
Member function is a collection of functions that can only be accessed after user login. There are in total five functions.

In personal information function, user can modify their personal information and this function will update the information in user database.

My favorite function will receive the user id after users send a 'view my favorite' request. Then it will retrieve the user's favorite recipes or menus list from the user database and display the information on the screen.

Recommendation function will also receive the user id after users send a 'view recommendation' request. Then it will analyse the user's interest according to what he or she has liked collected from the user database. Next the function will search over the whole recipe or menu database and show several recipes or menus which the user may be interested in.

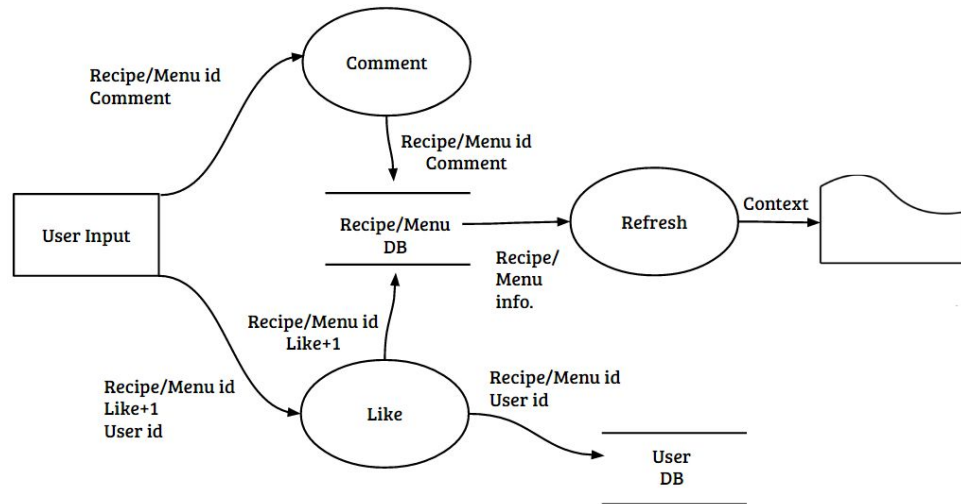
Comment and like function, post and update function will be elaborated in the subsections following.



2.2.4.1 Comment & Recommendation

The comment function will take recipe/menu id and the comment content as input, process the data and store it in the recipe/menu database respectively. Then the screen will be refreshed and show the updated result.

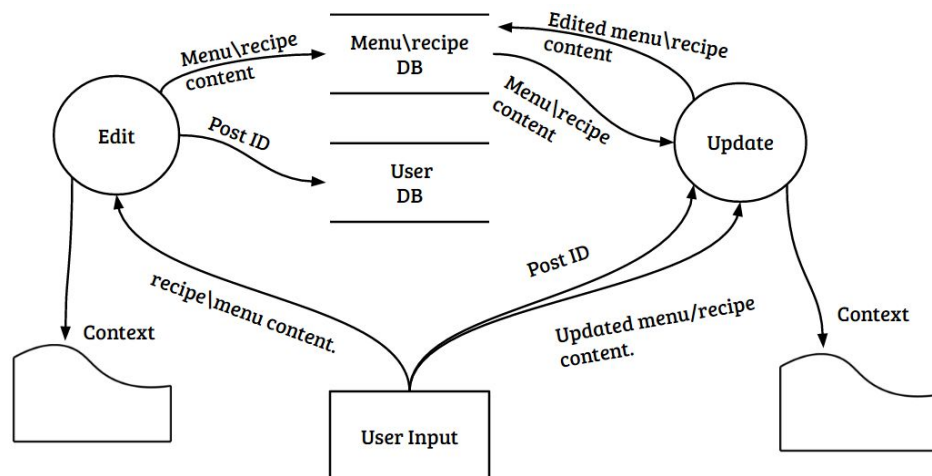
The like function will collect recipe/menu id, user id and 'like+1' request. It will update the like number in recipe/menu database and insert the recipe/menu id into the user database. Then it will also refresh the current page.



2.2.4.2 Post & Update

In edit function, users can write their own recipe or menu. The function will collect the content and record it in the recipe/menu database. The post id will also be stored in user database.

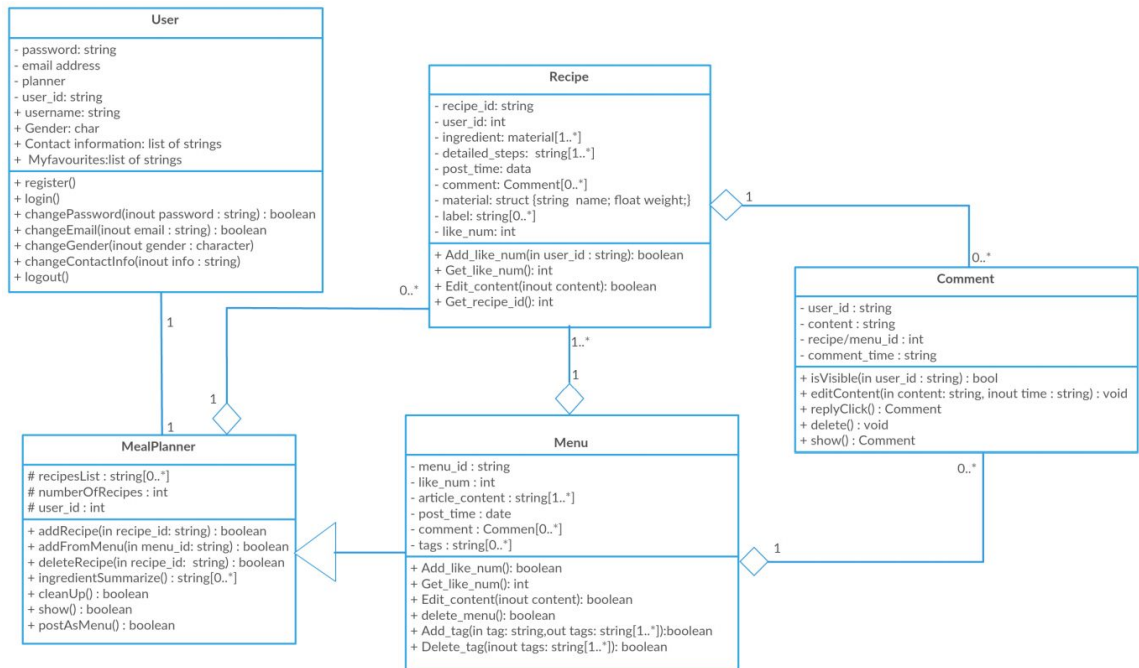
Update function will show the current content of the menu or recipe, users can modify it and update the post. The updated content will



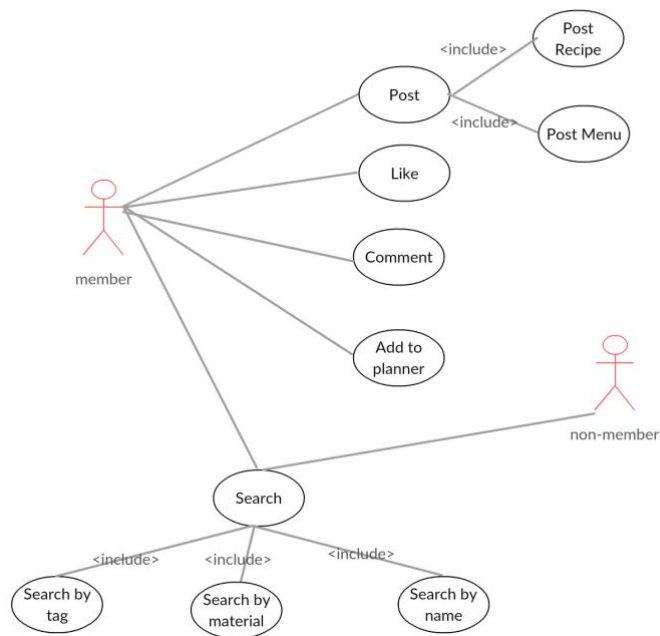
replace the original content in the menu/recipe database.

3 DETAILED DESCRIPTION OF COMPONENTS by UML

3.1 Overall Class Diagram

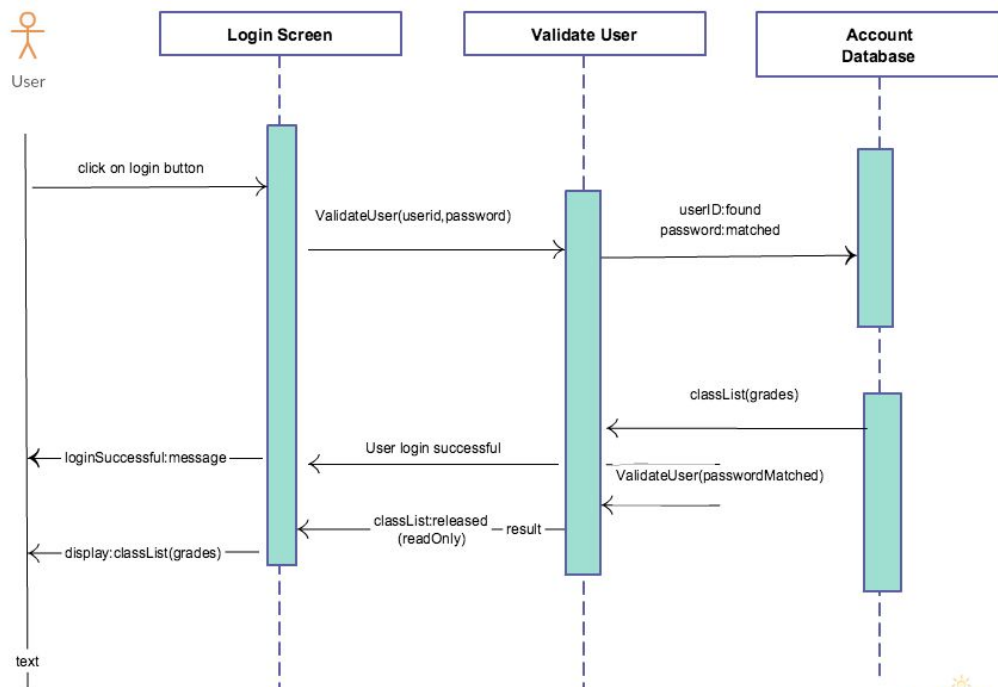


3.2 Use Case Diagram

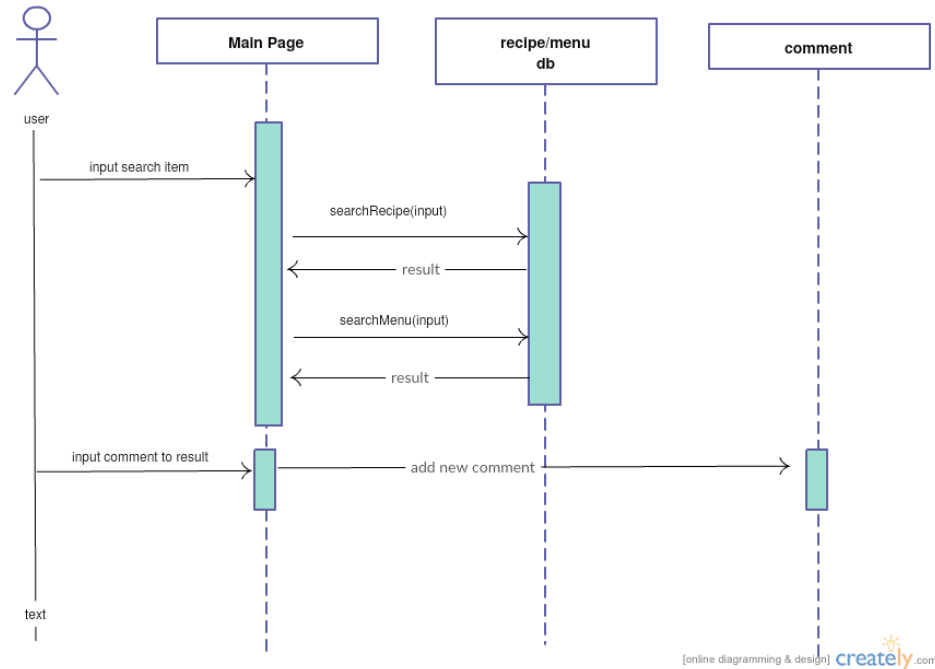


3.3 Sequence Diagram

3.3.1 Log In



3.3.2 Search and Comment



4 USER INTERFACE DESIGN

(Our web page is strongly recommended to run on Chrome!!)

4.1 Description of the User Interface

4.1.1 Header Bar

The header bar in our web page is concise, including three navigation bars in the left, a search bar in the middle and the account control bar in the right^[4.2.1.1]. “Recipe Wizard” navigates to the index page, “Explore” navigates to the exploration page and “Create” navigates to the creation of the new recipe page. When the user logs in, the navigation of account control bar contains “Profile” and “Logout”^[4.2.1.2]; otherwise, it contains “sign in” and “sign up”^[4.2.1.3].

4.1.2 Welcome Page

Our welcome page contains a background image and welcome sentences. A login button will show if the user is not logged in^[4.2.2.1], otherwise, it won’t show the button^[4.2.2.2].

4.1.3 Login

In the login page, user use email address and password to login. In addition, they can tick the “remember me” option to save their login information in their browser. If they are not register to our web application, they can click the “register” button to sign up^[4.2.3].

4.1.4 Sign Up

In the register page, user use email address and password to register. Our system will check whether the email is registered^[4.2.4].

4.1.5 My Account

The following pages are used to manage users’ basic information, their favorites and their plan. There is a navigation column in the left side for users.

4.1.5.1 My Profile

In this page, user can see and edit their basic profile information, including their name, their gender their avatar and etc^[4.2.5.1].

4.1.5.2 Setting New Password

In this page, user can update their password. They need to input their original password and a new password^[4.2.5.2].

4.1.5.3 My Planner

In this page, user can create a menu. The left side is the some recipes that users add to their planner previously. In the right side, if users want to create a menu contains these recipes they added to the planner, they need to give the title, category and descriptions of this menu. Then they can submit to the system^[4.2.5.3.1].

Each item of recipe include a title and a picture of the recipe. In addition, users can remove recipes that they don’t need by clicking the “-” button, or the “clear” button to clear all recipes

in the planner. If there is no recipe in the planner, it will show empty message^[4.2.5.3.2].

4.1.5.4 My Favorites

In this page, users can see menus and recipes they have already liked. The header contains a photo of users and information that how many recipes or menus they like.

Each item of recipe or menu include a picture, a title brief description, the like time and the category^[4.2.5.4.1]. In addition, users can remove recipes that they don't need by clicking the "-" button. If it is empty in the planner, it will show empty message^[4.2.5.4.2].

4.1.5.5 My Posts

In this page, user can see their posts, including menus and recipes. The header contains a photo of users and information that how many recipes or menus they posted.

Each item of recipe or menu include a picture, a title brief description, the post time and the category^[4.2.5.5.1]. In addition, users can delete recipes that they don't need by clicking the "-" button. If it is empty in the planner, it will show empty message^[4.2.5.5.2].

4.1.6 Explore

This page is for users to explore some menus and recipes. There are two parts: category (top) and daily recommendation (down).

4.1.6.1 Category

There are six categories of food: Chinese food, Indian food, Japanese food, Mediterranean food, American food and French food. Each category is indicated by one picture^[4.2.6.1.1]. When the cursor of mouse moves to a category, the name of category will show in a decent and user-friendly way^[4.2.6.1.2] and when the cursor of mouse leaves, the picture becomes normal.

4.1.6.2 Daily Recommendation

In this part, every day we will recommend 9 recipes to users according to their favorites. They are show by 3 by 3 grids. Each item shows the picture, the title, and the category of that recipe^[4.2.6.2]. When users click one of them, recipe detail page will show^[4.2.8.2].

4.1.7 Search

The search bar includes a input box, a cancel button and the enter button.

4.1.8 Show

4.1.8.1 Menu Page

The menu page shows the title, the photo of the menu and the recipes contained in the menu^[4.2.8.1.1]. Then other users can comment on the menu^[4.2.8.1.4]. If users like some of recipes, they can click the “heart” button to like it, our system will help to add to user’s favorites^[4.2.8.1.2].

4.1.8.2 Recipe Page

In recipe detail page, firstly, it will show the photo. Then a brief description is given. Next, a list of gradients will be shown to users, which tells what are needed to make this food. Also, the creator, creating date and the time needed to prepare this food are given^[4.2.8.2.1]. If user like the recipe, they can click the “heart” button and the button will turn pink^[4.2.8.2.2].

Moreover, steps will be shown in timeline to help users to make the food accordingly^[4.2.8.2.3]. Finally, they can comment on the recipe^[4.2.8.2.5].

Specially, if the creator of the recipe is exactly the user himself/herself, he/she can see a edit button in the right-down of web page^[4.2.8.2.6], which he/she can click it to edit the post^[4.2.8.2.7].

4.1.9 Create

4.1.9.1 Create Menu (refer to 4.2.5.3)

4.1.9.2 Create Recipe

Firstly users need to input the basic information of the recipe they want to create. For example, a title, a brief description, the photo, gradients which tell what are needed to make this food, the time needed to prepare this food are given^[4.2.9.1.1].

Moreover steps will be shown in timeline and users need to add steps for making the food^[4.2.9.1.2]. Users can add a new step by clicking the add button^[4.2.9.1.3] and delete a step by clicking the cancel button^[4.2.9.1.4]. Finally, users submit it and the recipe will be added to our database.

4.2 Screen Images

4.2.1 Header Bar

4.2.1.1 General Overview



4.2.1.2 With Login

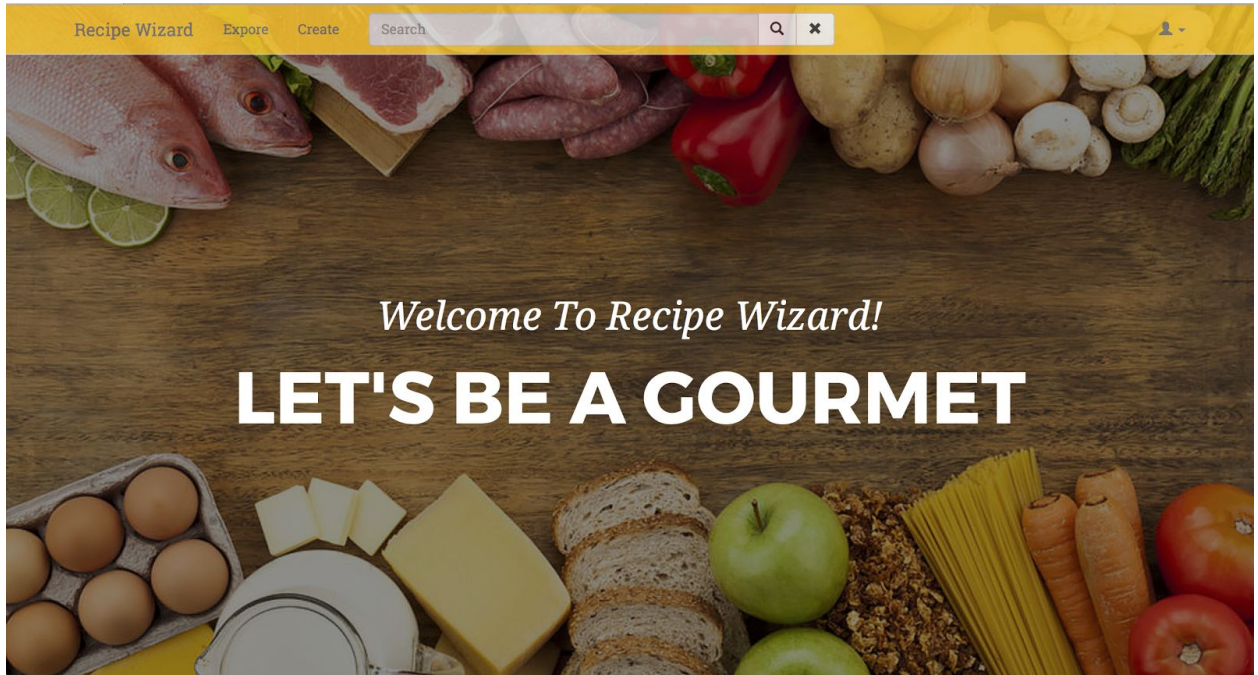


4.2.1.3 Without Login

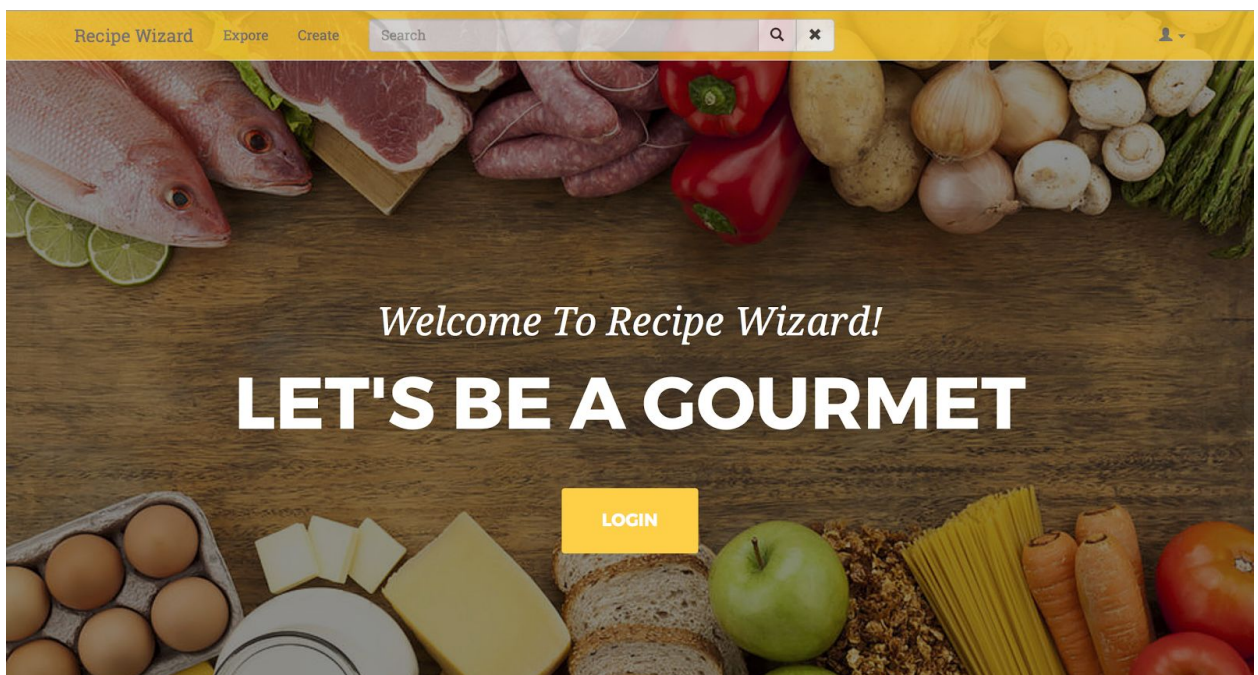


4.2.2 Welcome Page

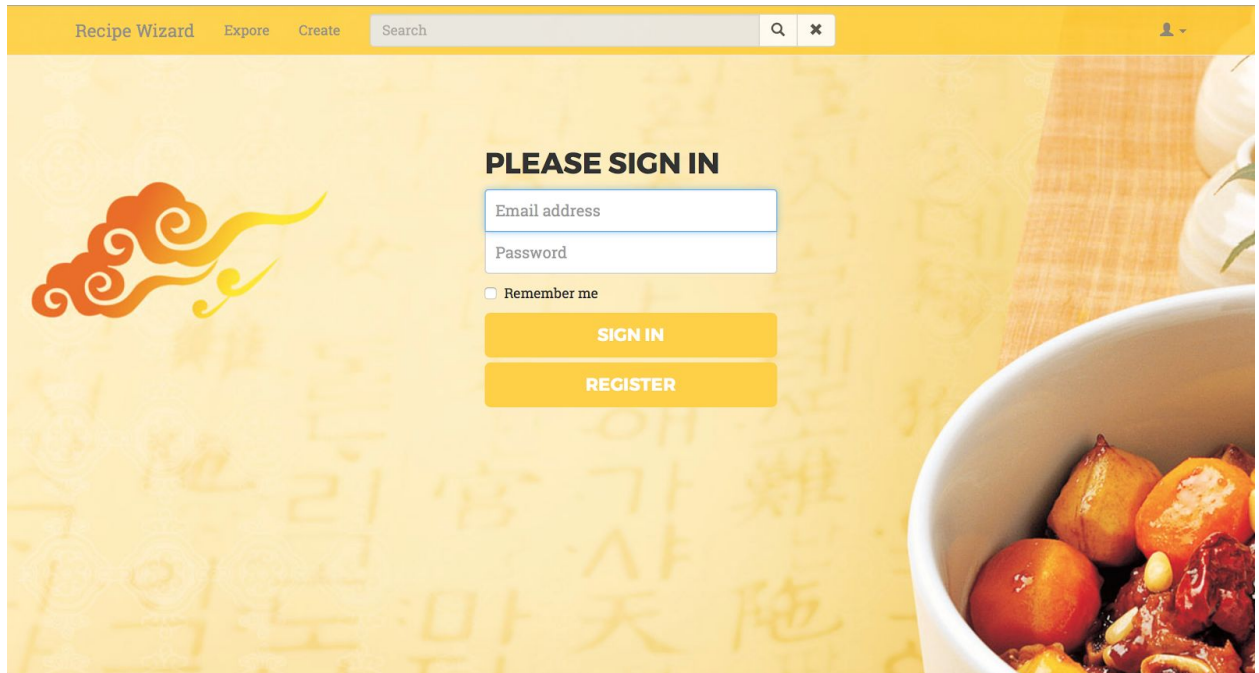
4.2.2.1 With Login



4.2.2.2 Without Login



4.2.3 Login Page



The screenshot shows the login page of a web application. The header is yellow with links for 'Recipe Wizard', 'Explore', and 'Create', followed by a search bar. The main content area has a light yellow background with a subtle pattern of Korean text. On the left is a stylized orange and yellow cloud logo. The login form is titled 'PLEASE SIGN IN' and includes fields for 'Email address' and 'Password'. Below these is a checkbox for 'Remember me' and two yellow buttons: 'SIGN IN' and 'REGISTER'. The background image shows a bowl of food on the right.

Recipe Wizard Explore Create Search

PLEASE SIGN IN

Email address

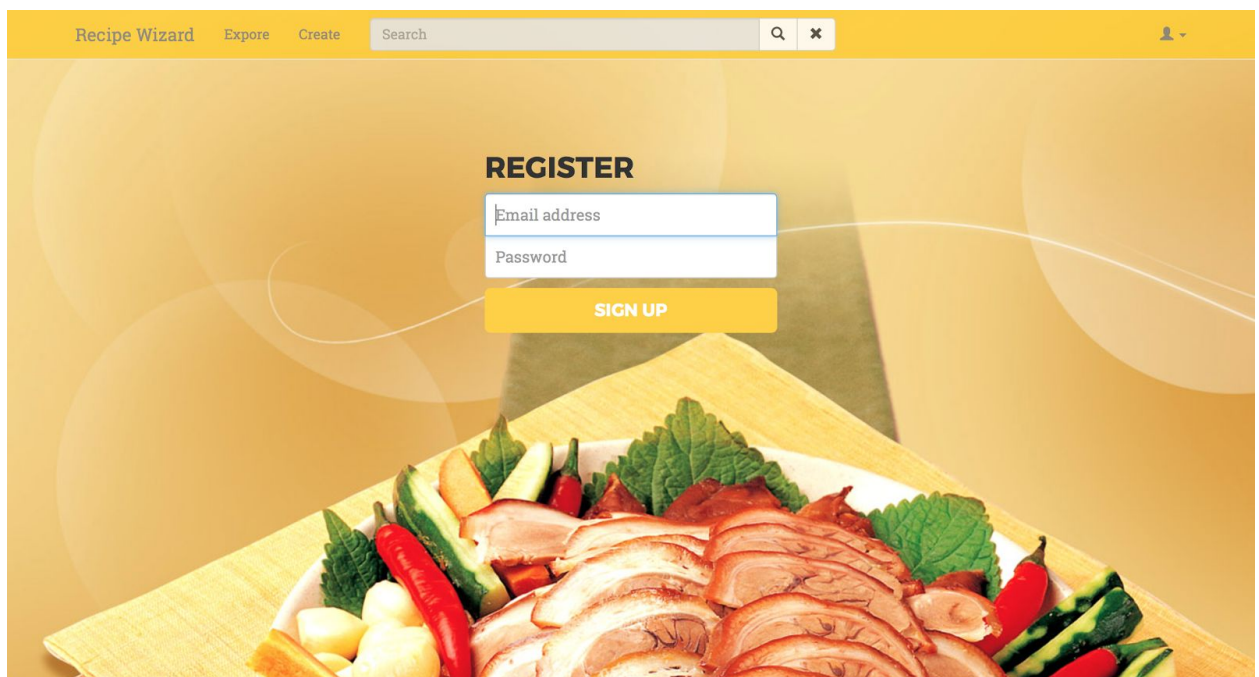
Password

☐ Remember me

SIGN IN

REGISTER

4.2.4 Sign up



The screenshot shows the sign-up page of the same web application. The header is identical to the login page. The main content area has a light yellow background with a subtle pattern of Korean text. The sign-up form is titled 'REGISTER' and includes fields for 'Email address' and 'Password'. Below these is a yellow button labeled 'SIGN UP'. The background image shows a plate of food on the bottom.

Recipe Wizard Explore Create Search

REGISTER

Email address

Password

SIGN UP

4.2.5 My Account

4.2.5.1 My Profile

The screenshot shows the 'My Profile' page within the 'Recipe Wizard' application. The top navigation bar is yellow and contains links for 'Recipe Wizard', 'Explore', 'Create', a search bar, and a user profile icon. The main content area has a yellow header labeled 'USER ACCOUNT'. Below this, the 'PROFILE' section is active, indicated by a blue button in the left sidebar. The sidebar also lists 'Setting', 'My Planner', 'My Favourites', and 'My Posts'. The profile form includes fields for 'Username' (filled with 'stella'), 'Gender' (radio buttons for 'Male' and 'Female', with 'Female' selected), and 'Email' (filled with '978@qq.com'). There is a 'Submit' button at the bottom left of the form. To the right of the form is a profile picture of a young girl, with 'Select' and 'Update' buttons below it.

4.2.5.2 Setting New Password

The screenshot shows the 'Setting New Password' page within the 'Recipe Wizard' application. The top navigation bar is yellow and contains links for 'Recipe Wizard', 'Explore', 'Create', a search bar, and a user profile icon. The main content area has a yellow header labeled 'USER ACCOUNT'. Below this, the 'SETTING PASSWORD' section is active, indicated by a blue button in the left sidebar. The sidebar also lists 'Profile', 'My Planner', 'My Favourites', and 'My Posts'. The password form includes three fields: 'Old Password:' (placeholder 'Enter old password'), 'New Password:' (placeholder 'Enter new password'), and 'New Password Again:' (placeholder 'Enter new password again'). There is a 'Submit' button at the bottom left of the form.

4.2.5.3 My Planner


4.2.5.3.1 Non-empty


[Recipe Wizard](#) [Explore](#) [Create](#) [Q](#) [X](#) [User Account](#)


USER ACCOUNT


[Profile](#)
[Setting](#)
[My Planner](#)
[My Favourites](#)
[My Posts](#)


MY PLANNER

**HUEVOS RANCHEROS TOSTADOS**

**CHEDDAR & HAM BREAKFAST MUFFINS**

**SHEPHERD'S PIE**

**SNEAKY VEGGIE FRANKS & BEANS**

**HAM & CHEESE OMELET ROLLS**

Title

Tag

Indian

Description

4.2.5.3.2 Empty

[Recipe Wizard](#) [Explore](#) [Create](#) [Q](#) [X](#) [User Account](#)

USER ACCOUNT

[Profile](#)
[Setting](#)
[My Planner](#)
[My Favourites](#)
[My Posts](#)

MY PLANNER

1

EMPTY NOW...

Title

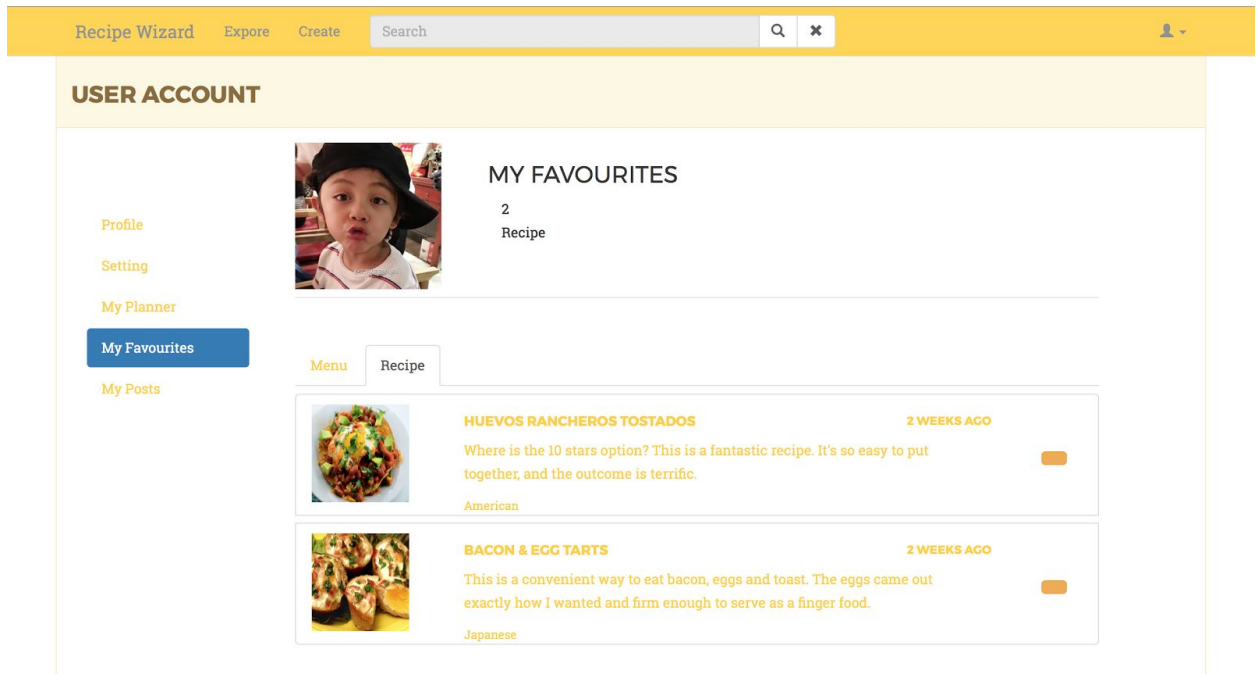
Tag

Chinese

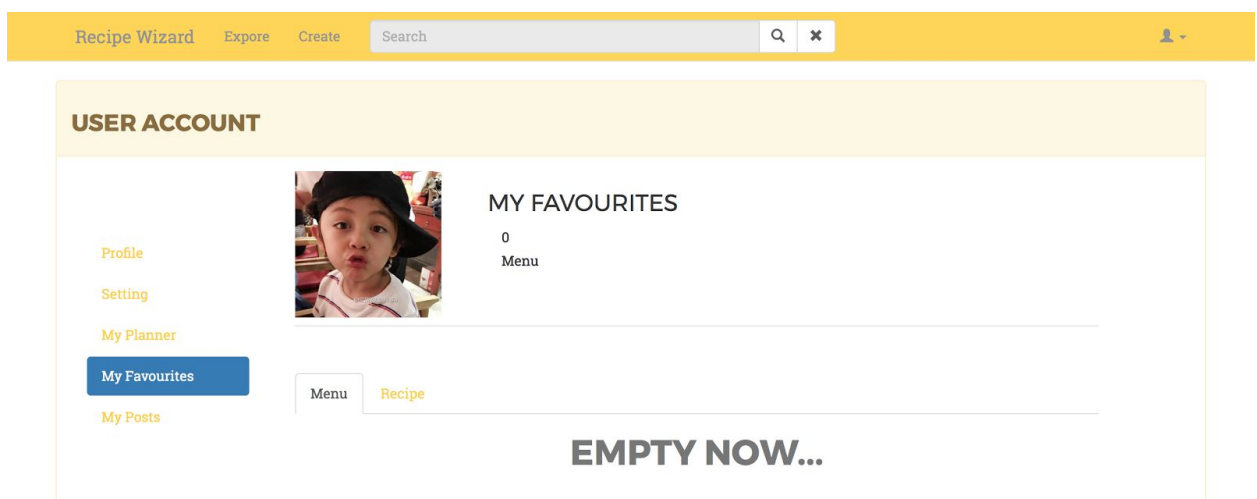
Description

4.2.5.4 My Favorites

4.2.5.4.1 Non-empty

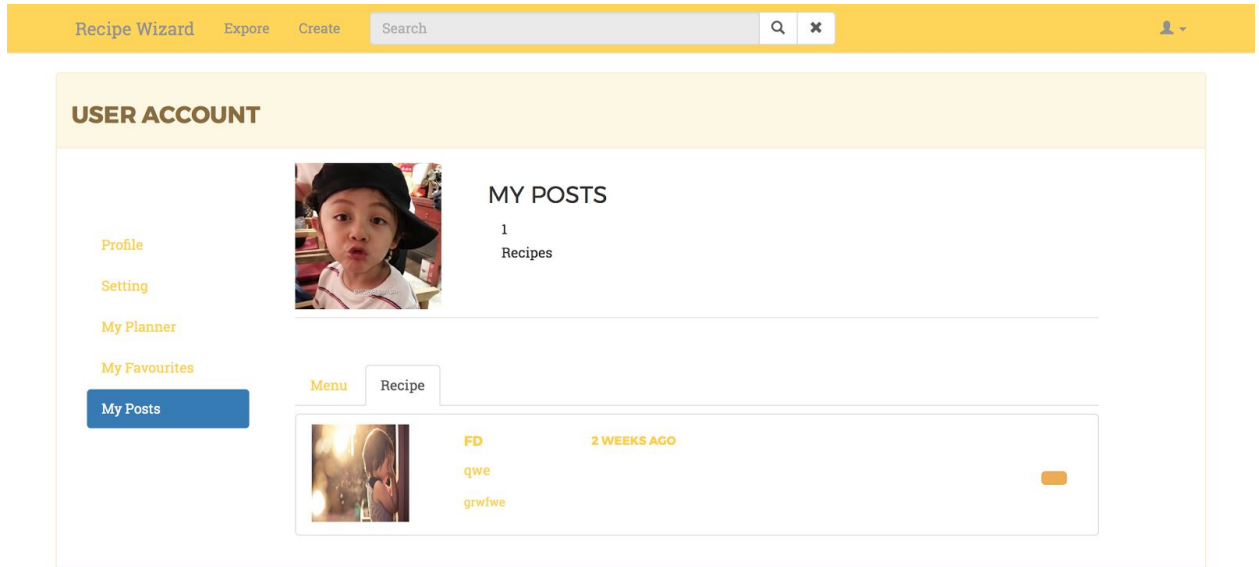


4.2.5.4.2 Empty

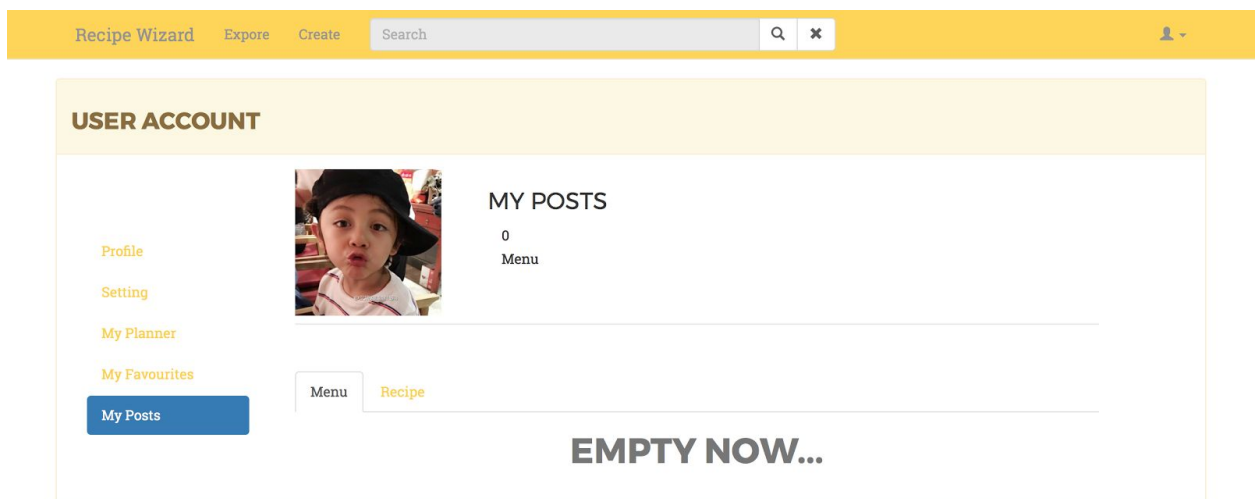


4.2.5.5 My Posts

4.2.5.5.1 Non-empty



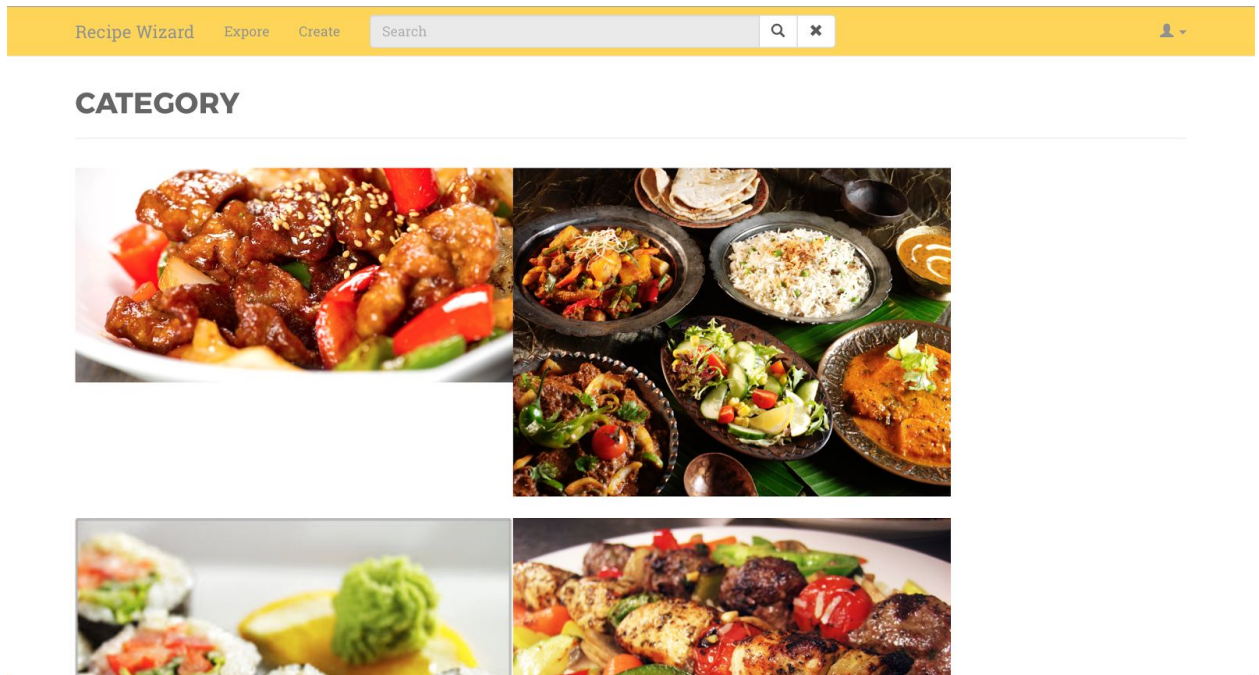
4.2.5.5.2 Empty



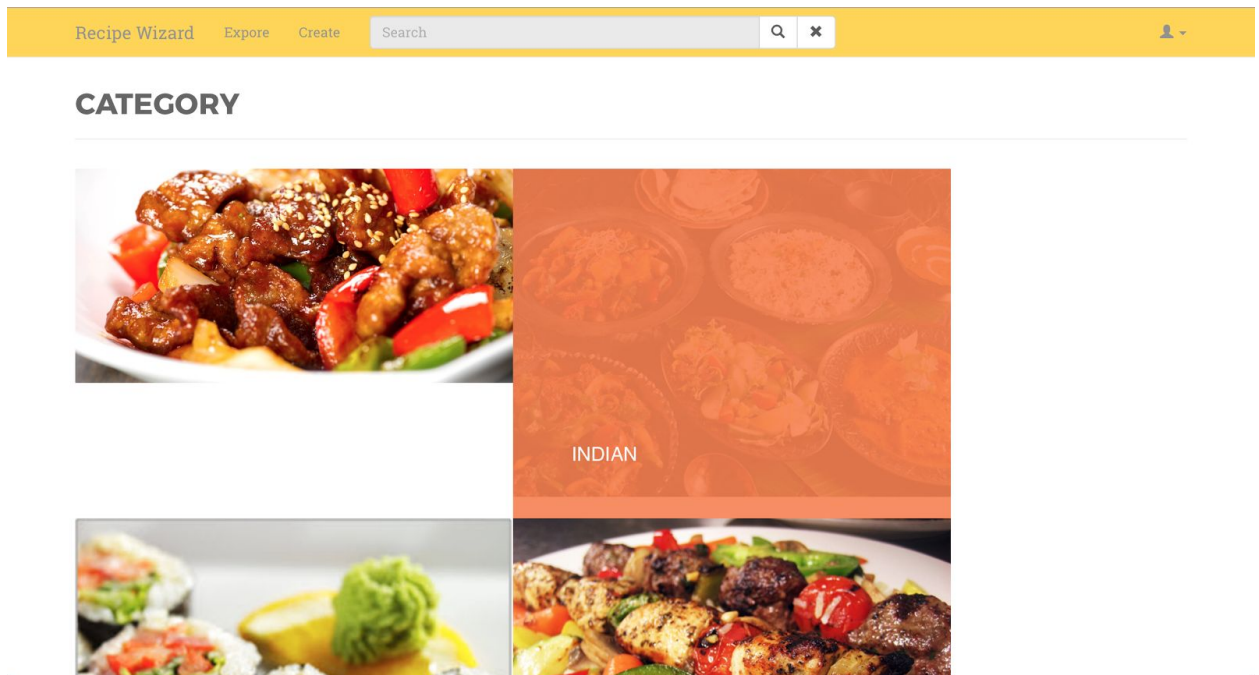
4.2.6 Explore

4.2.6.1 Category

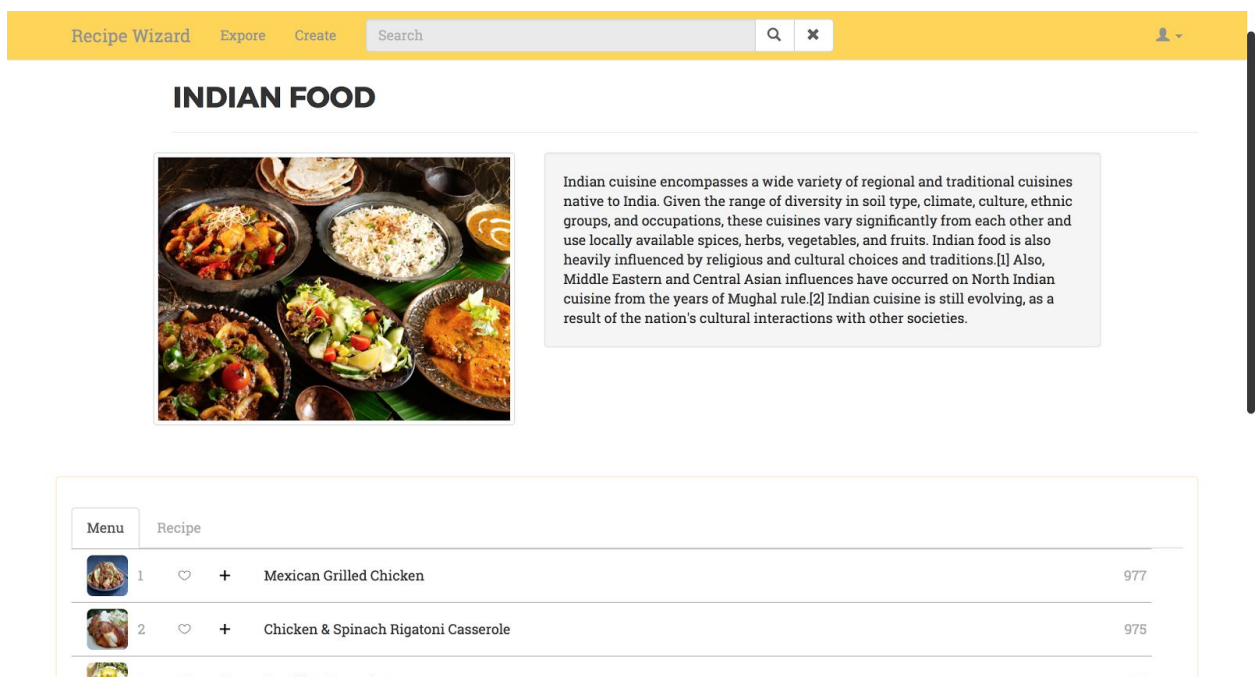
4.2.6.1.1 Normal View













4.2.6.1.2 Show Name













4.2.6.1.3 Detail Page






4.2.6.1.4 List of menu and recipe

Recipe Wizard Explore Create <input type="text" value="Search"/>						
Menu	Recipe					
	1	♡	+	Mexican Grilled Chicken		977
	2	♡	+	Chicken & Spinach Rigatoni Casserole		975
	3	♡	+	Breakfast Brownies		975
	4	♡	+	Chicken & Corn Soup		961
	5	♡	+	Chicken or Steak Fajitas		957
	6	♡	+	Skillet Tarragon Chicken		932
	7	♡	+	Easy Crepes		924
	8	♡	+	Fluffy Meringue Frosting		912
	9	♡	+	Easy Stovetop Macaroni 'n' Cheese		904
	10	♡	+	Baconless Carbonara		899


4.2.6.1.5 Click the like button

Recipe Wizard Explore Create <input type="text" value="Search"/>						
Menu	Recipe					
	1	♡	+	Mexican Grilled Chicken		977
	2	♥	+	Breakfast Brownies		976
	3	♡	+	Chicken & Spinach Rigatoni Casserole		975
	4	♡	+	Chicken & Corn Soup		961
	5	♥	+	Chicken or Steak Fajitas		958
	6	♥	+	Skillet Tarragon Chicken		933
	7	♥	+	Easy Crepes		925
	8	♡	+	Fluffy Meringue Frosting		912
	9	♡	+	Easy Stovetop Macaroni 'n' Cheese		904
	10	♡	+	Baconless Carbonara		899


4.2.6.2 Daily Recommendation

Recipe Wizard Explore Create Search   


DAILY RECOMMENDATION




CORN FRITTERS
Indian





CHICKEN & CORN SOUP
French



HAWAIIAN TURKEY LOAF
Chinese
























4.2.7 Search

4.2.7.1 Search menu

Recipe Wizard Explore Create egg   

SEARCH FOR EGG, FIND 7 MENU TOTALLY.











Menu	Recipe
	1  + Bacon Egg & Cheese Tacos 889
	2  + Grilled Ham & Egg 617
	3  + Slow-Cooker Lentil Veggie Soup 607
	4  + Eggplant Ragout 557
	5  + California-Style Eggs Benedict 402
	6  + Parmesan Eggs 318
	7  + Bacon & Egg 18

1

4.2.7.2 Search recipe

Recipe Wizard Explore Create egg 🔍 ✕

Menu Recipe

	1	♥	+	Poppy Seed Muffins	987
	2	♡	+	Slow-Cooker Topsy-Turvy Pineapple Cake	987
	3	♡	+	Slow-Cooker Pina Colada Bread Pudding	986
	4	♡	+	Huevos Rancheros Tostados	967
	5	♡	+	Cheddar & Ham Breakfast Muffins	953
	6	♡	+	Bruschetta Chicken	953
	7	♡	+	Sneaky Veggie Franks & Beans	940
	8	♡	+	Shepherd's Pie	929
	9	♡	+	Classic Potato Salad	927
	10	♡	+	Ham & Cheese Omelet Rolls	922








1 2 3 4 5 6 7 8 9 10

4.2.7.3 Click Like Button

Recipe Wizard Explore Create egg 🔍 ✕

SEARCH FOR EGG, FIND 7 MENU TOTALLY.

Menu Recipe

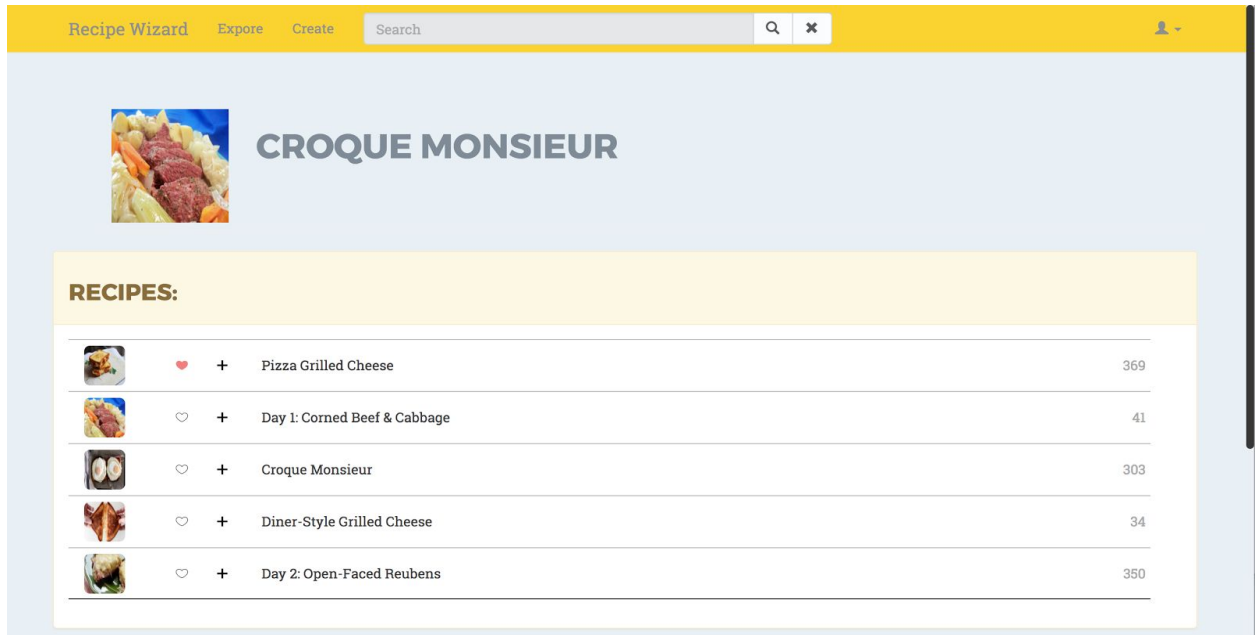
	1	♡	+	Bacon Egg & Cheese Tacos	889
	2	♥	+	Grilled Ham & Egg	618
	3	♡	+	Slow-Cooker Lentil Veggie Soup	607
	4	♥	+	Eggplant Ragout	558
	5	♥	+	California-Style Eggs Benedict	403
	6	♡	+	Parmesan Eggs	318
	7	♡	+	Bacon & Egg	18

1

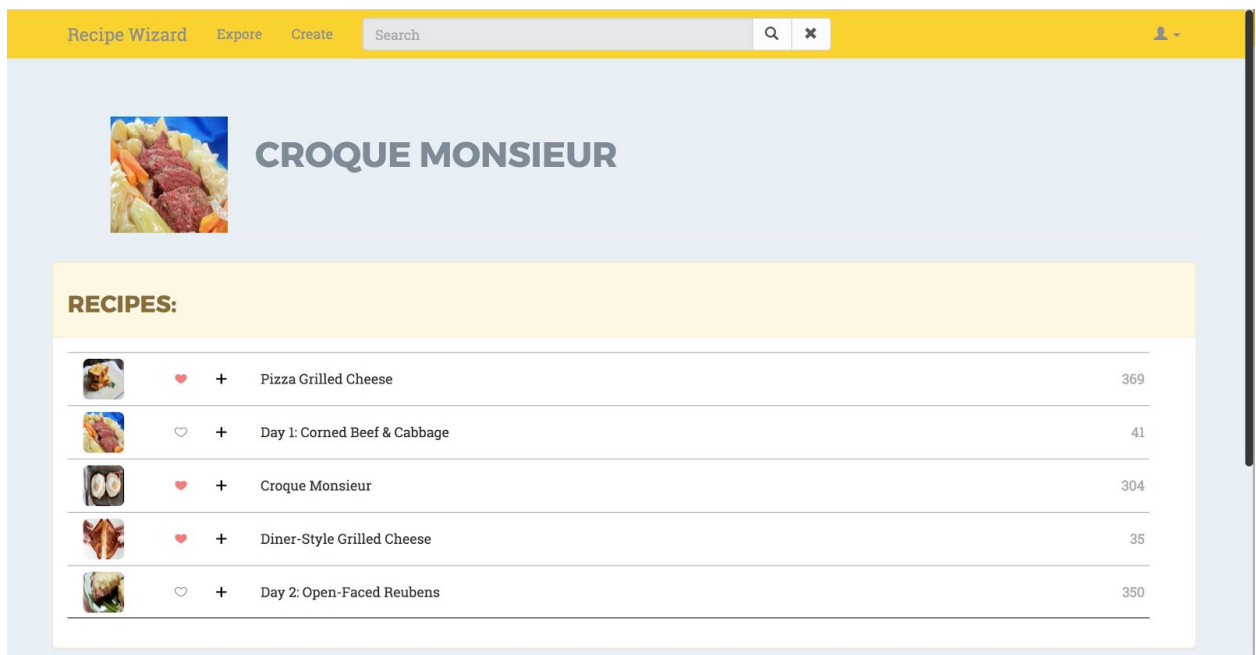
4.2.8 Show

4.2.8.1 Menu Detail

4.2.8.1.1 Show recipe list



4.2.8.1.2 Click Like button



4.2.8.1.3 Comment

RECIPES:
Recipe Wizard

Explore






Create

Search

Q

X

Person icon

	♥	+	Pizza Grilled Cheese	369
	♡	+	Day 1: Corned Beef & Cabbage	41
	♡	+	Croque Monsieur	303
	♡	+	Diner-Style Grilled Cheese	34
	♡	+	Day 2: Open-Faced Reubens	350

Write your comment here!

SHARE

USER COMMENTS

EMPTY NOW...

4.2.8.1.4 Add a comment

RECIPES:
Recipe Wizard

Explore






Create

Search

Q

X


Person icon

	♥	+	Pizza Grilled Cheese	369
	♡	+	Day 1: Corned Beef & Cabbage	41
	♡	+	Croque Monsieur	303
	♡	+	Diner-Style Grilled Cheese	34
	♡	+	Day 2: Open-Faced Reubens	350

Write your comment here!

SHARE

USER COMMENTS



stella commented 14 ms ago


Good menu!

4.2.8.2 Recipe Detail Page

4.2.8.2.1 Head (not liked)

[Recipe Wizard](#) [Explore](#) [Create](#)

CHICKEN & CORN SOUP



DESCRIPTION
This soup was very tasty. I served it with whole wheat spaghetti.


INGREDIENT
4 cups low sodium chicken broth
8 -10 ounces skinless chicken breasts or 8 -10 ounces skinless chicken thighs
1/2 medium onion, chopped
1/2 carrot, peeled and chopped
1/2 celery, coarsely chopped
1/4-1/2 teaspoon saffron
1/2 cup frozen corn
1/2 cup cooked whole wheat egg noodles
1/2 cup celery, small cubes
1/2 tablespoon chopped parsley

Creator: [admin](#) Date: 2 weeks ago Time: 45mins

4.2.8.2.2 Head (liked)

[Recipe Wizard](#) [Explore](#) [Create](#)

CHICKEN & CORN SOUP

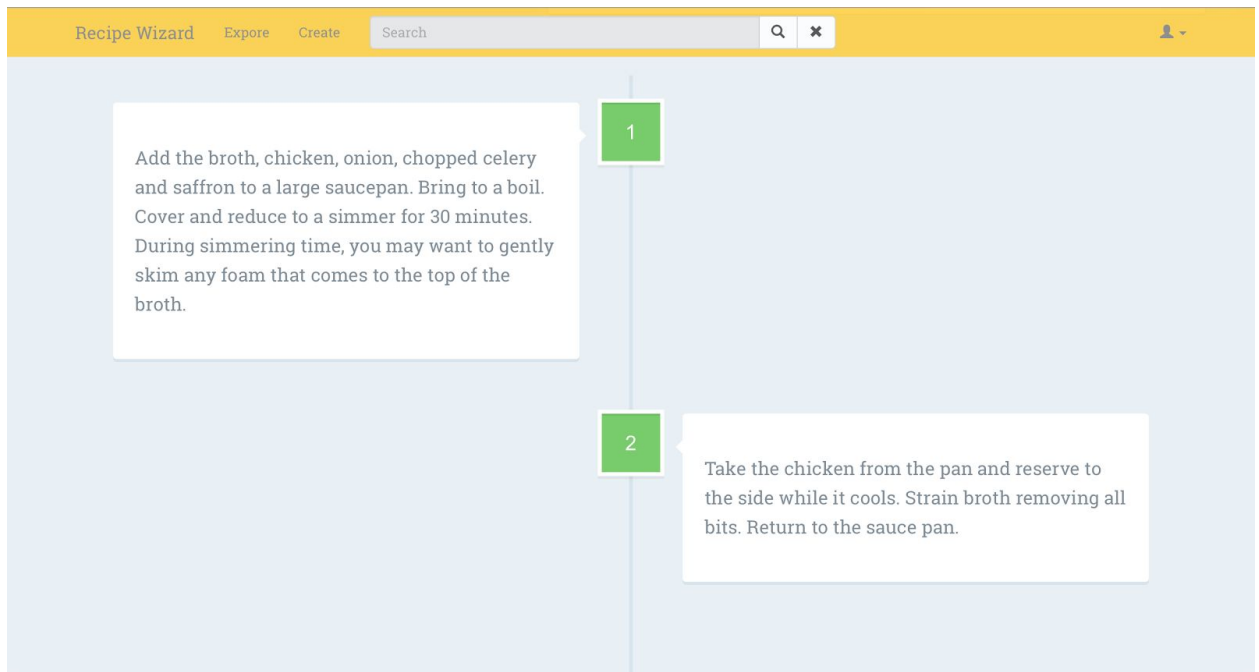


DESCRIPTION
This soup was very tasty. I served it with whole wheat spaghetti.

INGREDIENT
4 cups low sodium chicken broth
8 -10 ounces skinless chicken breasts or 8 -10 ounces skinless chicken thighs
1/2 medium onion, chopped
1/2 carrot, peeled and chopped
1/2 celery, coarsely chopped
1/4-1/2 teaspoon saffron
1/2 cup frozen corn
1/2 cup cooked whole wheat egg noodles
1/2 cup celery, small cubes
1/2 tablespoon chopped parsley

Creator: [admin](#) Date: 2 weeks ago Time: 45mins

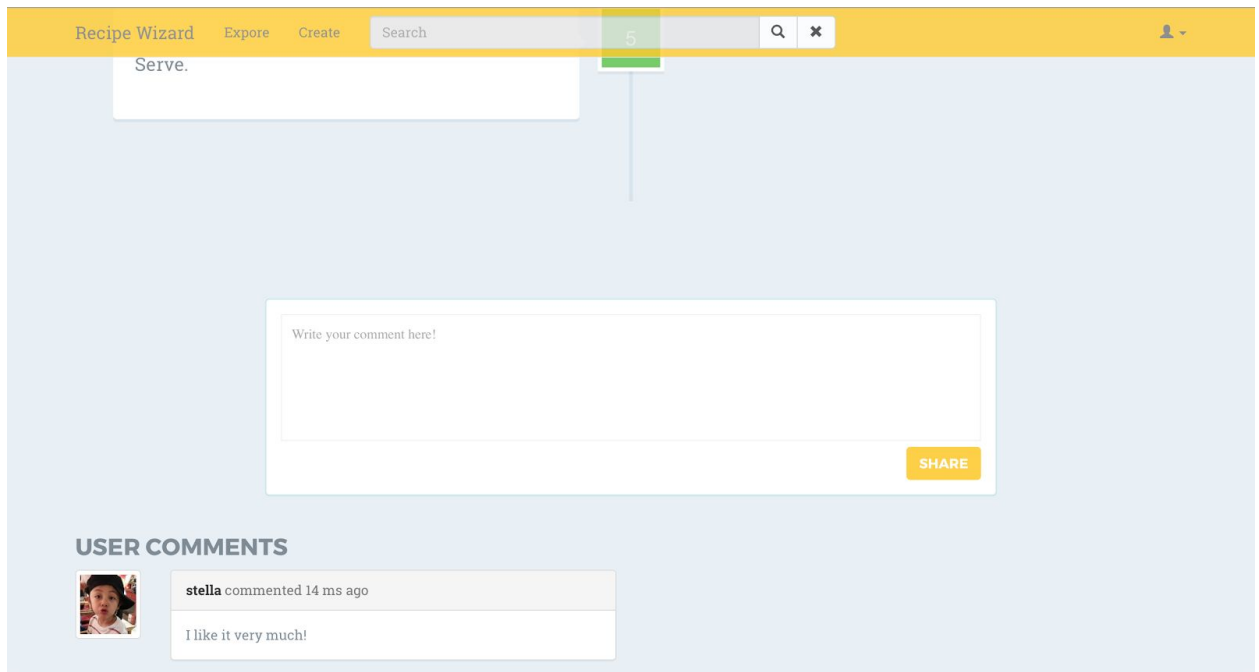
4.2.8.2.3 Show Steps



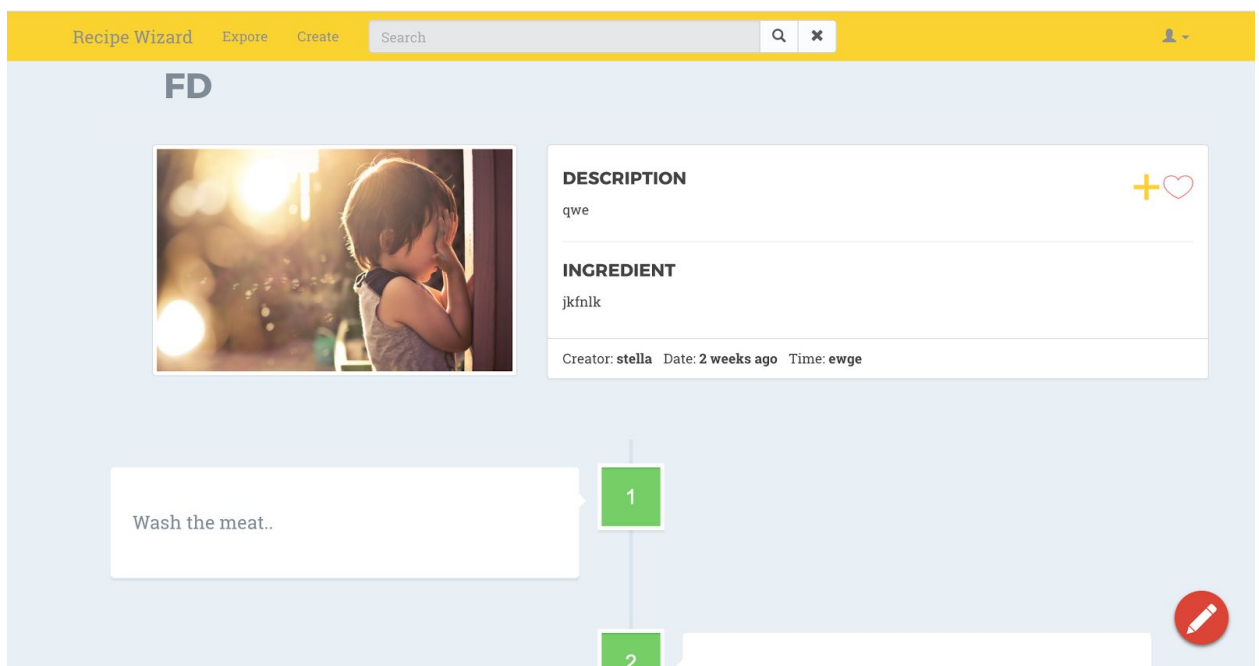
4.2.8.2.4 Comments part

The screenshot shows the 'Comments part' of the 'Recipe Wizard' interface. The header bar is yellow and contains 'Recipe Wizard', 'Explore', 'Create', and a search bar. A vertical timeline with five steps is displayed, with step 5 highlighted by a green square. The text 'Serve.' is visible in a box on the left. Below the timeline, there is a large text input area with the placeholder text 'Write your comment here!' and a yellow 'SHARE' button. At the bottom, the text 'USER COMMENTS' is followed by 'EMPTY NOW...'.




4.2.8.2.5 Add a comment



4.2.8.2.6 If the poster is user himself/herself



4.2.8.3 Edit

[Recipe Wizard](#) [Explore](#) [Create](#)   

CREATE POSTS


Title:

Tag:




Time:

Description:

Ingredients:



Upload

[Recipe Wizard](#) [Explore](#) [Create](#)   

1

ADD NEW STEP

CANCEL

2

ADD NEW STEP




CANCEL

SUBMIT

4.2.9 Create

4.2.9.1 Create a recipe

4.2.9.1.1 Input basic information

[Recipe Wizard](#) [Explore](#) [Create](#)   

CREATE POSTS


Title:

Tag:

Time:

Description:

Ingredients:



Upload

4.2.9.1.2 Edit steps

The screenshot shows a web application titled "Recipe Wizard" with a yellow header bar. The header contains the text "Recipe Wizard", "Expore", "Create", a search bar, and an "Upload" button. Below the header, there are two text input fields: "Description:" and "Ingredients:". The "Ingredients:" field contains the text "jklfnlk". In the center, there is a vertical line with a red square containing the number "1" at the top. To the left of this line is a white box with a text input field containing "Write your steps here!" and two buttons: "ADD NEW STEP" and "CANCEL". At the bottom, there is a yellow bar with the text "SUBMIT".

4.2.9.1.3 Add a step

The screenshot shows the same web application as the previous one, but with two steps. The first step is highlighted with a red square containing the number "1" and a white box with a text input field containing "Wash the meat..." and two buttons: "ADD NEW STEP" and "CANCEL". The second step is highlighted with a red square containing the number "2" and a white box with a text input field containing "Write your steps here!" and two buttons: "ADD NEW STEP" and "CANCEL". The "SUBMIT" button is still at the bottom.

The screenshot shows the 'Recipe Wizard' interface. At the top, there is a yellow navigation bar with 'Recipe Wizard', 'Explore', and 'Create' links, a search bar, and a user profile icon. A vertical blue line with red numbered boxes '2' and '3' indicates the current steps. Step 2 is a modal box with the text 'Use two eggs..' and buttons 'ADD NEW STEP' and 'CANCEL'. Step 3 is a modal box with the text 'Write your steps here!' and buttons 'ADD NEW STEP' and 'CANCEL'. A yellow 'SUBMIT' button is at the bottom.

4.2.9.1.4 Cancel a step

The screenshot shows the 'Recipe Wizard' interface. At the top, there is a yellow navigation bar with 'Recipe Wizard', 'Explore', and 'Create' links, a search bar, and a user profile icon. A vertical blue line with red numbered boxes '1' and '2' indicates the current steps. Step 1 is a modal box with the text 'Wash the meat..' and buttons 'ADD NEW STEP' and 'CANCEL'. Step 2 is a modal box with the text 'Wait for 30 minutes..' and buttons 'ADD NEW STEP' and 'CANCEL'. A yellow 'SUBMIT' button is at the bottom.

4.3 Objects and Actions

4.3.1 Search

4.3.1.1 Category

Category can be searched in the Explore page. There are six categories of food: Chinese food, Indian food, Japanese food, Mediterranean food, American food and French food. When click one of category, detail page will show^[4.2.6.1.3]. The header contains the picture and the introduction of this kind of food.

Scroll down and there is a list of menu or recipe of this kind of food^[4.2.6.1.4]. Each item includes a picture, like button, add button("+"), the title and the number of likes by all users. When clicking the like button, this menu or recipe will be added to user' favorites, the heart-like button will turn pink^[4.2.6.1.5], and we can see that the number of likes in the rightmost will be changed accordingly. When clicking the "+" button, this menu or recipe will be added to user' planner.

4.3.1.2 Menu & Recipe

When users input a keyword in the search bar, our system will show the search result to users. Total number of result will be show on the top of result. Default page is a menu list^[4.2.7.1]. If users want to see the results for recipe, they can click the recipe navigation bar to see the result^[4.2.7.2]. User can click the "heart" button to like a menu or recipe^[4.2.7.3].

4.3.2 Detail pages (refer to 4.1.8)

4.3.3 Post (refers to 4.1.9)

4.3.4 Recommendation (refers to 4.1.6.2)

4.3.5 Profile (refers to 4.1.5)

5 TEST

5.1 Test overview and test plan

The project is relatively large so the module testing and integration testing is applied for our testing instead of white-box testing and black-box testing. With the help of the build integration, we are allowed to test each functionality with its submodules, that is to say, we test our program by branch. The major functions that we are going to test are signing in and signing up, searching, creating and editing recipes, browsing website pages and uploading personal information. For each functionality, we are going to test their correctness, reliability, performance and robustness.

To realize the entire testing, we plan to draw the GDN for each module in the whole program and after that, testing by branch follows. The primary works we have to do is to test the correctness and the performance for each branch separated in the GDN. Finishing the job in the right way is the basis of the program and the performance of the program is one of the most significant quality. The additional task for testing is to test their robustness. To do this, we are going to find the boundary value for each branch and unexpected conditions the program potentially encounters while executing and operated by users. Last but not least, the test environment is the browser chrome.

5.2 Sign in and sign up

5.2.1 Purpose

Sign in and sign up are basic function for our website. The major functions of the website, such as posting, sharing, require signing in to operate. For them, we should test the format of the account, sign in and sign up with existed account and nonexistent account.

5.2.2 Input

- The correct format of email account like name@gmail.com and incorrect format of email account like name, name@, @gmail.com
- The existed email account in database and nonexistent account
- The existed email account with correct password and incorrect password

5.2.3 Expected output and Pass/Fail criteria

With correct format and nonexistent email account, the user can sign up successfully and jump to the explore page. When you sign up with incorrect format or existed email account, the website will reminder you with error message in order to help you to correct your email account.

The other thing is test for signing in. With incorrect format and nonexistent email account and the existed email account with incorrect password, the website will send you the error message for feedback. To sign in successfully, the user need to enter the correct email account and corresponding password. After that, the website will also automatically jump to explore page.

5.3 Search

5.3.1 Purpose

Search function is a significant function to acquire recipes and menus users need. For this task, we are going to test whether items obtained are related to the keywords, whether the search function returns items that users wanted.

5.3.2 Input

- Single English word
- Multiple English words
- Meaningless letters combination

5.3.3 Expected output and Pass/Fail criteria

When you search by one or more English words and they are included in recipes, then the recipes will be listed. If they are not included in the recipes, no matter how meaningful it is, no result will be returned.

5.4 Create and Edit

5.4.1 Purpose

To add more recipes and updated posted recipes, the create and edit function is necessary for users. The goal of this one is to test valid input text, uploaded photograph, add and delete each procedure step for the recipes.

5.4.2 Input

- Each text box is filled with words
- Some text boxes are empty and some are filled with words
- Each text box is empty
- Upload file for photo
- Upload file except photo

5.4.3 Expected output and Pass/Fail criteria

When all text boxes are filled, then user can create the recipe successfully. If there are some or all boxes are empty, then user can not submit the recipe and error message will be shown. When click upload button, you are not allowed to select a file except photo which means that you can only upload photo file.

5.5 Upload personal information

5.5.1 Purpose

The management of the personal information is also the basic function for users. In the personal information part, users are allowed to view their information, favorite recipes, posted recipes and so on. The purpose of this task is to check whether the uploaded function is work properly.

5.5.2 Input

- Existed email account

- Nonexistent email account
- Upload photo file
- Upload file except photo file
- Incorrect old password
- Correct old password and new password is same as old one
- Correct old password and new password differs from old one

5.5.3 Expected output and Pass/Fail criteria

If you change your email account to another email account existed, the error message will be shown. When you enter a nonexistent email account, you can successfully update your personal profile. The uploading photo function is same as 5.4. The old password should be correct when user want to update their password. If the new password is checked to be same as old one, a reminder will come out. If the new password differs from the old one, then the password will be change.

6 LESSONS LEARNED

6.1 Interfaces specification should be well defined

Our team didn't start with a good interface design between front-end and back-end, which led to chaos on communication at the beginning. It is because we didn't have a full-stack programmer who knows both front-end and back-end as the project manager. Thus, we could not define a good interface ahead of schedule.

6.2 Modularization significantly increases efficiency

We started the back-end programming with a clear classes and functionalities design, so the prototype of our back-end server has already divided into several modules. Some commonly used functions are collected in a "common" module which can be reused by many other modules. It significantly reduce repeated codes. In addition, locating bugs becomes much more easier with a good modularization.

6.3 Focus on your own responsibility

Teamwork is not all about cooperation. Besides, it needs division of responsibility. Our project is managed using git which will help us avoid collision or conflict of codes. Back-end team should only work on back-end part and never touch front-end part. Otherwise, git will send a warning message about the conflicting files to prevent messing up the project.

Also, frequent communications with other modules before you finish your own part, in fact, will not increase efficiency. For example, the paths of css files in the html file should be modified before the html can be opened by back-end server. At the beginning, front-end team wanted to see what would the page look like during designing, so every time they send a new version to back-end team, modifying paths is required. It is really meaningless and a waste of time comparing with integrating after the UI design is completed.

7 CONCLUSION

Our product, ***Recipe Wizard*** is a website that help people plan their meal and share their experience with others. The project aims at providing a dynamic and elegant platform for people packing up a menu with recipes created by users. It also provides recipe recommendations personalized to the individual's tastes, digital recipe box (namely "menu") and menu/recipe search.

We utilize Express framework to build the back-end server with MongoDB for data store and RedisDB for recommendation. To design fancy UI suitable for device of different shapes, we apply Bootstrap framework to develop front-end.

In this project, we experienced the whole workflow of software development and learned how to build an app as a team with the version control system, git. For the first time, we tried to consider not simply for software correctness, but also for the needs of users. Also, we have learned specific techniques for web application developing.

To further improve our product, we plan to enhance our search engine with advanced options and more user-friendly sorting criteria. Also, we would like to add some restrictions on image uploading such as limiting file size and allowing only specific filename extension. Last but not least, we will introduce AJAX to Recipe Wizard for better user experience.