



PROJECT PROPOSAL

COMP3900-W16A-GOODNAME

Eric Du (z5208062)
Jonathan Liu (Scrum Master) (z5258906)
Reyner Ong (z5211715)
Avin Singh (z5222179)
Junxuan Zhang (z5221478)

TABLE OF CONTENTS

1	BACKGROUND.....	2
1.1	PROBLEM.....	2
1.2	EXISTING SYSTEMS.....	2
1.3	PROJECT OBJECTIVES.....	7
2	USER STORIES & SPRINTS.....	8
2.1	USER TYPES.....	8
2.2	PRODUCT BACKLOG ON JIRA.....	8
2.3	USER STORY DETAILS.....	9
2.4	HOW USER STORIES SATISFY PROJECT OBJECTIVES	19
2.5	SPRINTS.....	20
2.6	NOVEL FUNCTIONALITY	21
3	INTERFACE AND FLOW DIAGRAMS (STORYBOARDS).....	22
3.1	ACCOUNT MANAGEMENT.....	22
3.2	RECIPE DETAILS	27
3.3	RECIPE EXPLORATION.....	30
3.4	EXPLORER-CONTRIBUTOR INTERACTION.....	33
3.5	CHATBOT.....	35
4	SYSTEM ARCHITECTURE.....	36
4.1	SYSTEM ARCHITECTURE DIAGRAM	36
4.2	SYSTEM ARCHITECTURE DESCRIPTION	37
5	REFERENCES.....	40



This PDF contains bookmarks. If viewing digitally, using bookmarks may be easier than using the table of contents.

1 BACKGROUND

1.1 PROBLEM

MyRecipes is aimed at providing users with a platform to share and learn new recipes. Users who share recipes are referred to as "Contributors" and users who look up recipes are referred to as "Explorers." The website must allow the contributors to post their recipes and allow explorers to search and view recipes comfortably. Our project 'MyRecipes' aims to provide users with an intuitive solution and address the mentioned problems.

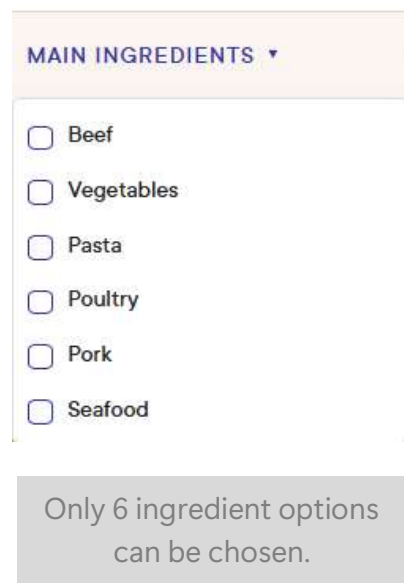
1.2 EXISTING SYSTEMS

Three existing websites aim to solve similar problems for their customers, which we have chosen to analyse: www.kitchenstories.com, www.simplyrecipes.com, and www.delish.com.

KITCHEN STORIES

From a first impression, Kitchen Stories is a very sophisticated website that is very easy to use and navigate around. The website lists all the recipes neatly with a picture and a description. One novel feature that the website has is that it includes a 'How-tos' section. In the 'How-Tos' section, various cooking tutorials are explained along with a wide variety of cooking content that is beneficial for the users.

Kitchen stories has a very advanced search engine to look through the recipes. It provides a variety of criteria such as type of dishes, diet, cuisine, etc... However, under each search criteria, there isn't much depth. For example, there are only 6 main ingredients listed to choose from. Also, there are only a few hand-picked cuisines listed. The search system lacks flexibility as it doesn't include some search options at all and only focuses on the few given options. This is a missed opportunity as this hinders the users from searching for recipes and cuisines with various other criteria and doesn't allow them to narrow their search.



Kitchen Stories is the only examined system that offers nutrition information. However, the details are limited, with only 4 metrics, and this does not appear to be calculated automatically based on the ingredients. Instead, the recipe contributor appears to need to enter the details manually.

Nutrition per serving

Cal	Protein	Fat	Carb
293	6 g	15 g	34 g

Nutrition information is limited to 4 metrics.


Kitchen Stories does not provide chatbot functionality. Nor does it provide the ability to subscribe to creators so it appears in a news feed.

SIMPLY RECIPES


Simply recipes is also a very neatly designed and architected website. From opening the home page, you can see a variety of recipes under various categories. On the top of the website, there are a bunch of drop-down options which contain choices with an option to view all of them at the end of each list. This is a useful feature as the users can see all the related content, recipes, and links under a section on a single webpage.

However, the search system on simple recipes is very straightforward - the search query is searched through the entire website. There is no feature for adding filters/criteria in the search. For example, there is no option to include cooking time, main ingredients, cuisine, or anything else. The lack of an advanced search system is a big issue as the users face problems narrowing down their searches. Also, the recipes recommended are not always the ones with the highest rating. Moreover, no search feature allows the users to view the highest or only the high rated recipes.


Search Results




SALADS
Pasta Salad Recipes



COOKING TIPS & TECHNIQUES
How to Make Homemade Pasta



VEGETARIAN SOUPS
Pasta e Fagioli



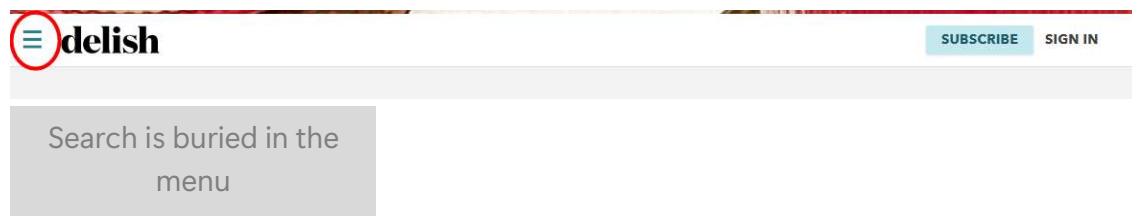
SAUCES
Pasta Sauce Recipes

No filtering or other search options are available.

Simply Recipes does not provide nutritional information. It also does not provide a chatbot to make it easier to access functions. Nor does it provide the ability to subscribe to creators so it appears in a news feed.

DELISH

Delish is one of the websites that lack simplicity and quite a bit of features. Delish's search bar is not directly visible or in access on the home page. The only way to search on the website is to open the side panel and then search on the search bar there. Furthermore, on clicking on the search bar we get directed to a search overlay, which only takes the input query as the search parameter. If a search bar was on the home page without the redirection, it would be much more appropriate for the users as it's much more intuitive and provides a streamline experience.



Also, there is no option to add filters to the search. Additionally, the recommended recipes are not the best recipes for a given search. For a given search, the recommended recipes are not necessarily the most appropriate ones, as they are neither highly rated nor most viewed. Additionally, when the recipes are recommended or searched, the user interface doesn't show the number of likes or the rating, or the time required to make the recipe, only a picture with a name and description is shown.

pasta

Type keyword(s) to search

2445 RESULTS



No filtering or other search options are available.

Delish does not provide nutritional information. It also does not provide a chatbot to make it easier to access functions. Nor does it provide the ability to subscribe to creators so it appears in a news feed.

FEATURE COMPARISON TABLE

Feature	Kitchen Recipes	Simply Recipes	Delish
RECIPES			
Like/rate/comment on recipes	✓	✓	✓
Recipe page features	Add/edit posts Photos Videos Description Step-by-step process Difficulty Time Ingredients Utensils	Add/edit posts Photos - Description Step-by-step process - Time Ingredients -	Add/edit posts Photos Videos Description Step-by-step process - Time Ingredients -
Nutritional info	✓* * limited info and requires manual input	✗	✗
Recipe page recommendations	Provides a list of similar posts or recipes with the most liked/viewed recipes first	Provides somewhat similar recommendations but mostly other trending searches	Provides similar posts and recipes however not necessarily on basis of rating or views

Search features	Search bar on home page Limited options in advanced search Provides optimal posts and recipes for each search	Search bar on home page No additional system to add filters to search Search query is matched with the database to find matches	Search bar NOT on home page, hidden in menu No additional system to add filters to search Search overlay provides suggestion on typing a query
CONTRIBUTORS			
Contributors' Profile	✓	✗	✓
Contributor Features	Can login, create account, and post recipes	No login	Can login but there is a subscription for the website
Subscribe to contributors and newsfeed	✗	✗	✗
EXPLORERS			
Explorer Profile	✓	✗	✓
Explorer Overview	Can create account on website and view, like, and comment on recipes	Cannot create an account on website and can view the recipes	Can create an account, without the subscription, and view 4 recipes per month for free
Chatbot	✗	✗	✗

CONCLUSION

Overall, analysing the features and different components of these existing solutions highlights some problems, which are summarised below:

- Lack of an appropriate search engine that can account for various filters along with the search query.
- Lack of granularity in search engines and filters upon looking for specific recipes
- Lack of in-depth recommendation functionality based on search history previously viewed and liked posts.
- Lack of proper recommendations and search results based on popularity, views, likes, or comments.
- Somewhat presence of account management of both the contributor and explorer. Only Kitchen Recipes have account management for both.
- No appropriate user searching experience as sometimes it's hard to navigate and use the website.
- Limited or nutritional information functionality
- No chatbot functionality

1.3 PROJECT OBJECTIVES

In light of the above, the following functional requirements form the objectives of this project:

REQUIREMENTS FOR FEATURE PARITY WITH EXISTING SYSTEMS

1. A profile where name, details, and recipe contributions are specified.
2. Ability to create, edit and delete recipes.
3. Ability to select the name, ingredients, method and meal-type for the recipe when it is being created.
4. Ability to add pictures to recipes, including a thumbnail (which appears in search results).
5. 'Like' and 'comment' functions on recipes
6. Advanced recommendation system both on news feed and on each recipe page

REQUIREMENTS WHICH WILL ALLOW US TO IMPROVE ON EXISTING SYSTEMS

7. Automatic nutrition information not requiring manual input
8. Chat bot functionality
9. Granular search including advanced filtering based on ingredients, method, meal-type and recipe name.
10. News feed and subscribing allowing viewers to subscribe to particular contributors

2 USER STORIES & SPRINTS

2.1 USER TYPES

There are three types of users which we envisage will use this system.

1. **Unregistered users.** These are users who are viewing the website but are not registered with an account. They will have limited functionality available. They can search for, and view recipes but cannot offer any other input like comments, subscribing or liking.
2. **Contributors.** These are users who are registered with an account and contribute new recipes to the site. They input recipe names, ingredients, method, images, etc and add to the website's main data output.
3. **Explorer.** These are users who are registered with an account and wish to explore recipes on the site. Unlike unregistered users, these users can like, comment, subscribe and view a customised news feed.

2.2 PRODUCT BACKLOG ON JIRA

The full product backlog on Jira is shown below.

Backlog

Q JL Epic Label

▼ **CWG Sprint 1** 21 Jun – 30 Jun (7 issues)
The goal of this sprint is to get all account management features fully working and viable. This includes a fully working frontend and backend for account management features.

- CWG-19 As an unregistered user, I want to be able to create an account, so that I can contribute my own recipes and explore others. ACCOUNT MANAGEMENT
- CWG-20 As an unregistered user, I want to be able to view recipes without registering, so that I can keep my personal information private. ACCOUNT MANAGEMENT
- CWG-2 As a user, I want to be able to modify my account details, so that I can keep my user profile up to date. ACCOUNT MANAGEMENT
- CWG-21 As a user, I want to change my password, so that I can better secure my account. ACCOUNT MANAGEMENT
- CWG-22 As a user, I want to have the ability to reset my password if I forget it, so I don't lose access to my account. ACCOUNT MANAGEMENT
- CWG-30 As a contributor, I wish to be able to have and change my profile picture, so that explorers can easily identify and find me. ACCOUNT MANAGEMENT
- CWG-32 As a user, I want to be able to log in and log out, so that I can switch between different accounts. ACCOUNT MANAGEMENT

+ Create issue

▼ **CWG Sprint 2** 1 Jul – 10 Jul (4 issues)
The goal of this sprint is to support recipe creation and viewing. This includes the recipe creation screen and recipe details pages. Recipe exploration (like searching) is not in the scope of this sprint. Nutritional information is excluded from this sprint.

- CWG-3 As a contributor, I want to be able to create recipes, so that I can share my ideas. RECIPE DETAILS
- CWG-2 As a contributor, I want to be able to change the visibility of my recipes, so it incentivises users to subscribe to me. RECIPE DETAILS
- CWG-4 As a contributor, I want to modify or delete my recipes, so that I can keep my recipes up-to-date. RECIPE DETAILS
- CWG-15 As an explorer, I want to view the details of the recipes, so that I can learn to create them. RECIPE DETAILS

+ Create issue

▼ **CWG Sprint 3** 11 Jul – 19 Jul (3 issues)
The goal of this sprint is to support recipe searching. This includes filtering functionality, and searching within specific fields (e.g. for specific ingredients).

- CWG-6 As an explorer, I want to be able to search recipes based on any combination of ingredients, method, meal-type(s) and recipe name, so that I can find one which I am interested in. RECIPE EXPLORATION
- CWG-8 As an explorer, I want to see a summary for each recipe which includes its name and photo thumbnail in my search result, so that I can get an overview of the recipe. RECIPE EXPLORATION
- CWG-28 As an explorer, I want to see my search history under the search box, so that I do not need to retype recipes which I have searched recently. RECIPE EXPLORATION

+ Create issue

▼ CWG Sprint 4 20 Jul – 27 Jul (5 issues) <small>The goal of this sprint is to add user profile functionality and the news feed functionality. This includes a user profile page containing users' contributions, and the ability to subscribe to users so that their recipes appear in their news feed.</small>	
<div> <div></div> <div>CWG-17 As an explorer, I want to see a personal, sorted recipe news feed, so that I can discover recipes I might be interested in.</div> <div>RECIPE EXPLORATION</div> </div>	
<div> <div></div> <div>CWG-5 As an explorer, I want to be able to like or comment on other's recipes, so that I can convey my opinion.</div> <div>EXPLORER-CONTRIBUTOR INTER...</div> </div>	
<div> <div></div> <div>CWG-9 As an explorer, I wish for the total number of times I liked their recipes to appear on their profile, so that I can figure out which contributors suit my style.</div> <div>EXPLORER-CONTRIBUTOR INTER...</div> </div>	
<div> <div></div> <div>CWG-10 As an explorer, I want to have ability to subscribe/unsubscribe any contributor, so that I can see new recipes that are added or have been recently updated by that contributor.</div> <div>EXPLORER-CONTRIBUTOR INTER...</div> </div>	
<div> <div></div> <div>CWG-29 As an explorer, I want there to be profiles for all contributors, so I can easily see the recipes they have created.</div> <div>EXPLORER-CONTRIBUTOR INTER...</div> </div>	
+ Create issue	
▼ CWG Sprint 5 28 Jul – 5 Aug (4 issues) <small>The goal of this sprint is to support recommendations functionality (both on the news feed and on the recipe pages), and to support the two novel features: nutritional information and chatbots.</small>	
<div> <div></div> <div>CWG-12 As an explorer, I want to see the nutritional value of each recipe so that I can make food that best fits my nutritional diet.</div> <div>RECIPE DETAILS</div> </div>	
<div> <div></div> <div>CWG-11 As an explorer, I wish for recommendations to appear for recipes in my news feed based on my search history, so that I can find interesting recipes easily.</div> <div>RECIPE EXPLORATION</div> </div>	
<div> <div></div> <div>CWG-18 As an explorer, I want to see ordered recommendations for recipes that are similar to a given reference recipe based on ingredients, so that I can browse similar recipes according to my interest.</div> <div>RECIPE EXPLORATION</div> </div>	
<div> <div></div> <div>CWG-31 As an explorer, I want there to be a chatbot so I can find what I need more naturally.</div> <div></div> </div>	
+ Create issue	

2.3 USER STORY DETAILS

ACCOUNT MANAGEMENT

<div> <div></div> <div>CWG-19 As an unregistered user, I want to be able to create an account, so that I can contribute my own recipes and explore others.</div> <div>ACCOUNT MANAGEMENT</div> </div>	
<div> <div></div> <div>CWG-20 As an unregistered user, I want to be able to view recipes without registering, so that I can keep my personal information private.</div> <div>ACCOUNT MANAGEMENT</div> </div>	
<div> <div></div> <div>CWG-1 As a user, I want to be able to modify my account details, so that I can keep my user profile up to date.</div> <div>ACCOUNT MANAGEMENT</div> </div>	
<div> <div></div> <div>CWG-21 As a user, I want to change my password, so that I can better secure my account.</div> <div>ACCOUNT MANAGEMENT</div> </div>	
<div> <div></div> <div>CWG-22 As a user, I want to have the ability to reset my password if I forget it, so I don't lose access to my account.</div> <div>ACCOUNT MANAGEMENT</div> </div>	
<div> <div></div> <div>CWG-30 As a contributor, I wish to be able to have and change my profile picture, so that explorers can easily identify and find me.</div> <div>ACCOUNT MANAGEMENT</div> </div>	
<div> <div></div> <div>CWG-32 As a user, I want to be able to log in and log out, so that I can switch between different accounts.</div> <div>ACCOUNT MANAGEMENT</div> </div>	

ID	User Story	Acceptance Criteria
CWG-19	As an unregistered user, I want to be able to create an account, so that I can contribute my own recipes and explore others.	Criteria 1: Register button accessible on all pages <ul style="list-style-type: none"> The register button should appear in the top right of every page for unregistered users. Criteria 2: User prompted to register when attempting to use a function that requires a registered account <ul style="list-style-type: none"> The unregistered user is redirected to the register page. Criteria 3: Register page <ul style="list-style-type: none"> The unregistered user should be able input their details on the register page and can only be registered if the details are valid. If user was redirected to register page, after successfully registering the user should be redirected back to their source.
CWG-20	As an unregistered user, I want to be able to view recipes without	Criteria 1: Unregistered user able to view unpersonalised homepage

	<p>registering, so that I can keep my personal information private.</p>	<ul style="list-style-type: none"> The system should display a generic homepage to all unregistered users, without recommendations or personalised content <p>Criteria 2: Unregistered user able to search for recipes</p> <ul style="list-style-type: none"> The search functionality should be enabled for unregistered users Unregistered users will not have their search history tracked. <p>Criteria 3: Unregistered user able to view recipes but with certain functions disabled</p> <ul style="list-style-type: none"> Unregistered users should be able to view recipes The following functions should be disabled: <ul style="list-style-type: none"> Like Comment Subscribe
CWG-1	<p>As a user, I want to be able to modify my account details, so that I can keep my user profile up to date.</p>	<p>Criteria 1: Update Name</p> <ul style="list-style-type: none"> The system should allow the user to update their first and last name <p>Criteria 2: Update email</p> <ul style="list-style-type: none"> The system should allow the user to update their email address. It needs to first send an email verification to verify they own the new email address before performing the update.
CWG-21	<p>As a user, I want to change my password, so that I can better secure my account.</p>	<p>Criteria 1: Verify old password</p> <ul style="list-style-type: none"> The system needs to verify the user by prompting them to enter their old password. <p>Criteria 2: Confirm new password</p> <ul style="list-style-type: none"> The system needs to have a confirm field to ensure the user typed the password correctly. <p>Criteria 3: Enforce password requirements</p> <ul style="list-style-type: none"> The system needs to enforce any password requirements, if they exist <p>Criteria 4: Notify user of change</p> <ul style="list-style-type: none"> The system should notify the user by email of the password change, and provide advice if the change was not expected.
CWG-22	<p>As a user, I want to have the ability to reset my password if I forget it, so</p>	<p>Criteria 1: Verify by email</p> <ul style="list-style-type: none"> The system should verify the user by sending an email containing a link to reset the password

	I don't lose access to my account.	Criteria 2: Confirm new password <ul style="list-style-type: none"> The system needs to have a confirm field to ensure the user typed the new password correctly. Criteria 3: Enforce password requirements <ul style="list-style-type: none"> The system needs to enforce any password requirements, if they exist Criteria 4: Notify user of change <ul style="list-style-type: none"> The system should notify the user by email of the password change, and provide advice if the change was not expected.
CWG-30	As a contributor, I wish to be able to have and change my profile picture, so that explorers can easily identify and find me.	Criteria 1: Ability to set profile picture <ul style="list-style-type: none"> The system should allow users to set a profile picture when they don't currently have one. If a user does not have a profile picture, it should be set to a default picture. Criteria 2: Ability to change profile picture <ul style="list-style-type: none"> The system should allow users to change their profile picture. The system should not store the old profile picture. Criteria 3: Ability to remove profile picture <ul style="list-style-type: none"> The system should allow users to remove the profile picture they have set. This should reset their picture to the default picture. The system should not store the old profile picture.
CWG-32	As a user, I want to be able to log in and log out, so that I can switch between different accounts.	Criteria 1: Log out <ul style="list-style-type: none"> Logged in users should be able to log out. The system will then treat the client as an unregistered user.

RECIPE DETAILS

▼ Backlog (16 issues)

	CWG-3 As a contributor, I want to be able to create recipes, so that I can share my ideas. RECIPE DETAILS
	CWG-2 As a contributor, I want to be able to change the visibility of my recipes, so it incentivises users to subscribe to me. RECIPE DETAILS
	CWG-4 As a contributor, I want to modify or delete my recipes, so that I can keep my recipes up-to-date. RECIPE DETAILS
	CWG-15 As an explorer, I want to view the details of the recipes, so that I can learn to create them. RECIPE DETAILS
	CWG-12 As an explorer, I want to see the nutritional value of each recipe so that I can make food that best fits my nutritional diet. RECIPE DETAILS

ID	User Story	Acceptance Criteria
CWG-3	As a contributor, I want to be able to create recipes, so that I can share my ideas.	<p>Criteria 1: Set name and description</p> <ul style="list-style-type: none"> The user should be able to set a custom name for their recipe. The user should be able to set a custom text description for their recipe. <p>Criteria 2: Set serving size</p> <ul style="list-style-type: none"> The contributor should be able to set a serving size for the recipe, e.g. serves 5 people. <p>Criteria 3: Set meal type</p> <ul style="list-style-type: none"> The contributor should be able to set the meal type of the recipe by selecting one or more options from the following list: <ul style="list-style-type: none"> Breakfast Brunch Lunch Dinner Snack <p>Criteria 4: Ingredients</p> <ul style="list-style-type: none"> The system should allow users to select ingredients for the recipe This should allow users to enter the ingredient name, and the quantity in separate fields <p>Criteria 5: Method</p> <ul style="list-style-type: none"> The system should provide an input screen which is numbered, where a contributor can enter the method (steps) for the recipe <p>Criteria 6: Images</p> <ul style="list-style-type: none"> The user should be able to add any amount of images of the finished product. One of the images should be selected as the 'cover' image which will appear as the thumbnail in search.
CWG-2	As a contributor, I want to be able to change the visibility of my recipes, so it incentivises users to subscribe to me.	<p>Criteria 1: Ability to set recipe as 'public'</p> <ul style="list-style-type: none"> The system should allow contributors to set their recipes as public, which means available to all users, registered or unregistered. <p>Criteria 2: Ability to set recipe as 'subscriber only'</p>

		<ul style="list-style-type: none"> The system should allow the contributors to limit recipes to be visible only those who subscribe to them. <p>Criteria 3: Ability to set recipe as link-only</p> <ul style="list-style-type: none"> The system should allow contributors to limit recipe visibility to only those with the link or ID of the recipe. <p>Criteria 4: Option on recipe dashboard</p> <ul style="list-style-type: none"> The visibility settings should be available on the recipe dashboard page.
CWG-4	As a contributor, I want to modify or delete my recipes, so that I can keep my recipes up-to-date.	<p>Criteria 1: Change name and description</p> <ul style="list-style-type: none"> The system should support changing of the name and description <p>Criteria 2: Modify serving size</p> <ul style="list-style-type: none"> The system should support modifying the serving size <p>Criteria 3: Modify meal type</p> <ul style="list-style-type: none"> The system should support modifying the meal type <p>Criteria 4: Change ingredients</p> <ul style="list-style-type: none"> The system should support changing of the ingredients <p>Criteria 5: Change method</p> <ul style="list-style-type: none"> The system should support changing of the method <p>Criteria 6: Change images</p> <ul style="list-style-type: none"> The system should support removal and adding of images. The system should support changing the selected cover image.
CWG-15	As an explorer, I want to view the details of the recipes, so that I can learn to create them.	<p>Criteria 1: Name</p> <ul style="list-style-type: none"> The name of the recipe should be placed as a heading <p>Criteria 2: Cover image</p> <ul style="list-style-type: none"> The cover image of the recipe should be placed near or behind the name. <p>Criteria 3: Meal type</p> <ul style="list-style-type: none"> The meal type should be displayed. <p>Criteria 4: Serving size</p>

		<ul style="list-style-type: none"> The serving size should be displayed as the number of people served by the recipe. <p>Criteria 5: Description</p> <ul style="list-style-type: none"> The description of the recipe should be placed below the name. <p>Criteria 6: Images Carousel</p> <ul style="list-style-type: none"> Images of the recipe should be placed below the description as an automatically scrolling carousel. <p>Criteria 7: Ingredients</p> <ul style="list-style-type: none"> The ingredients and their quantities should be listed as either a list or table. This should be placed beneath the description. <p>Criteria 8: Method</p> <ul style="list-style-type: none"> The method should be numbered and be placed after the ingredients. Each step in the method can contain an image.
CWG-12	As an explorer, I want to see the nutritional value of each recipe so that I can make food that best fits my nutritional diet.	<p>Criteria 1: Key metrics near the top of recipe page</p> <ul style="list-style-type: none"> Estimated nutritional values for key metrics should be calculated and placed near the top of the recipe page <p>Criteria 2: Detailed metrics near the bottom of recipe page</p> <ul style="list-style-type: none"> The detail of all nutritional values should be placed near the bottom of the recipe page This should be linked to by the key metrics at the top of the page, with a button similar to "Show details" <p>Criteria 3: Search: filter by nutritional value</p> <ul style="list-style-type: none"> It should be possible to filter recipes by an upper limit for a nutritional value. For example, it should be possible to filter by <1000 kJ <p>Criteria 4: Display key metrics in search results</p> <ul style="list-style-type: none"> Estimated nutritional values for key metrics should be displayed inline with each search result.

RECIPE EXPLORATION

■ CWG-6	As an explorer, I want to be able to search recipes based on any combination of ingredients, method, meal-type(s) and recipe name, so that I can find one which I am interested in.	RECIPE EXPLORATION
■ CWG-8	As an explorer, I want to see a summary for each recipe includes its name and photo thumbnail in my search result, so that I can get an overview of the recipe.	RECIPE EXPLORATION
■ CWG-11	As an explorer, I wish for recommendations to appear for recipes in my news feed based on my search history, so that I can find interesting recipes easily.	RECIPE EXPLORATION
■ CWG-18	As an explorer, I want to see ordered recommendations for recipes that are similar to a given reference recipe based on ingredients, so that I can browse similar recipes according to my interest.	RECIPE EXPLORATION
■ CWG-17	As an explorer, I want to see a personal, sorted recipe news feed, so that I can discover recipes I might be interested in.	RECIPE EXPLORATION
■ CWG-28	As an explorer, I want to see my search history under the search box, so that I do not need to retype recipes which I have searched recently.	RECIPE EXPLORATION

ID	User Story	Acceptance Criteria
CWG-6	As an explorer, I want to be able to search recipes based on any combination of ingredients, method, meal-type(s) and recipe name, so that I can find one which I am interested in.	<p>Criteria 1: Search by Ingredients</p> <ul style="list-style-type: none"> The user should be able to specify ingredients by inputting text. The system should only include results which contains a part of or all of the text specified in the ingredients field. <p>Criteria 2: Search by method</p> <ul style="list-style-type: none"> The user should be able to specify method keywords by inputting text. The system should only include results which contains a part of or all of the text specified in the methods field. <p>Criteria 3: Filter by serving size</p> <ul style="list-style-type: none"> The user should be able to specify serving size keywords by inputting the number of people they wish to serve. The system should only include results which matches the serving size specified. <p>Criteria 4: Filter by meal type</p> <ul style="list-style-type: none"> The user should be able to specify from a predefined list the type of meal to be served. The predefined list should contain the following options: <ul style="list-style-type: none"> ○ Breakfast ○ Brunch ○ Lunch ○ Dinner ○ Snack The system should only list the recipes which match the meal type specified. <p>Criteria 5: Search by name</p> <ul style="list-style-type: none"> The user should be able to specify the recipe name by inputting text.

		<ul style="list-style-type: none"> The system should only include results which contains a part of or all of the text specified in the name field. <p>Criteria 6: Search by one or more combinations of the above</p> <ul style="list-style-type: none"> The system should support the combined use of one or more of the filters described above at the same time.
CWG-8	As an explorer, I want to see a summary for each recipe which includes its name and photo thumbnail in my search result, so that I can get an overview of the recipe.	<p>Criteria 1: Recipe name displayed as title of search result</p> <ul style="list-style-type: none"> The name of the recipe should be a prominent feature of the recipe in search results. <p>Criteria 2: Recipe thumbnail displayed</p> <ul style="list-style-type: none"> The cover photo that the contributor selected should be displayed as a thumbnail. <p>Criteria 3: One-line recipe description displayed</p> <ul style="list-style-type: none"> The recipe description should be displayed in smaller text inside the search result. If the recipe description cannot fit on one line, the description should be cut off and this should be indicated by an ellipsis (...)
CWG-11	As an explorer, I wish for recommendations to appear for recipes in my news feed based on my search history, so that I can find interesting recipes easily.	<p>Criteria 1: Recommendations displayed in news feed</p> <ul style="list-style-type: none"> The system should calculate similar recipes to the past 10 that the user viewed. The system should display the similar recipes on the news feed <p>Criteria 2: Recommendations should be ordered by similarity</p> <ul style="list-style-type: none"> Recommendations should be ordered from most similar to least.
CWG-18	As an explorer, I want to see ordered recommendations for recipes that are similar to a given reference recipe based on ingredients, so that I can browse similar recipes according to my interest.	<p>Criteria 1: Recommendations displayed in recipe page</p> <ul style="list-style-type: none"> The system should calculate similar recipes to the one being viewed The system should display the similar recipes on the recipe page <p>Criteria 2: Recommendations should be ordered by similarity</p> <ul style="list-style-type: none"> Recommendations should be ordered from most similar to least.
CWG-17	As an explorer, I want to see a personal, sorted recipe news feed, so that I can discover recipes I might be interested in.	<p>Criteria 1: Displays recipes from subscribed contributors</p> <ul style="list-style-type: none"> The system should display recipes from contributors the user has subscribed to on the news feed page. <p>Criteria 2: Sorting</p>

		<ul style="list-style-type: none"> The recipes should be sorted in the following order <ul style="list-style-type: none"> Date Number of likes this explorer has for the contributor Time <p>Criteria 3: Accessible by home button available on any screen</p> <ul style="list-style-type: none"> The user should be able to return to the news feed by a button available on every page. <p>Criteria 4: The default homepage for registered users</p> <ul style="list-style-type: none"> The news feed should be the website homepage for logged in, registered users.
CWG-28	As an explorer, I want to see my search history under the search box, so that I do not need to retype recipes which I have searched recently.	<p>Criteria 1: Search history for last 10 searches</p> <ul style="list-style-type: none"> The last 10 search keywords should be shown when a user selects the search field <p>Criteria 2: Remove search history</p> <ul style="list-style-type: none"> Each past search should be removable by selecting a delete button next to it.

EXPLORER-CONTRIBUTOR INTERACTION

	CWG-5 As an explorer, I want to be able to like or comment on other's recipes, so that I can convey my opinion.	EXPLORER-CONTRIBUTOR INTERA...	TO DO ▼	
	CWG-9 As an explorer, I wish for the total number of times I liked their recipes to appear on their profile, so that I can figure out which contributors suit my st...	EXPLORER-CONTRIBUTOR INTERA...	TO DO ▼	
	CWG-10 As an explorer, I want to have ability to subscribe/unsubscribe any contributor, so that I can see new recipes that are added or have been recently u...	EXPLORER-CONTRIBUTOR INTERA...	TO DO ▼	
	CWG-29 As an explorer, I want there to be profiles for all contributors, so I can easily see the recipes they have created.	EXPLORER-CONTRIBUTOR INTERA...	TO DO ▼	

ID	User Story	Acceptance Criteria
CWG-5	As an explorer, I want to be able to like or comment on other's recipes, so that I can convey my opinion.	<p>Criteria 1: Like button on recipe pages</p> <ul style="list-style-type: none"> A like button should be prominent on the recipe page. The number of likes should be visible near the like button. <p>Criteria 2: Comment composer</p> <ul style="list-style-type: none"> A text field should be available where an explorer can compose a comment. <p>Criteria 3: Comments list</p> <ul style="list-style-type: none"> A list of comments on the recipe should be shown near the comment composer. The comments list should be ordered by recency.

CWG-9	As an explorer, I wish for the total number of times I liked their recipes to appear on their profile, so that I can figure out which contributors suit my style.	Criteria 1: Display like count on contributor profile <ul style="list-style-type: none"> The number of recipes an explorer has liked should be displayed on the contributor's profile.
CWG-10	As an explorer, I want to have the ability to subscribe/unsubscribe any contributor, so that I can see new recipes that are added or have been recently updated by that contributor.	Criteria 1: Subscribe <ul style="list-style-type: none"> The user should be able to subscribe to a contributor by selecting the 'Subscribe' button on the contributor's profile Criteria 2: Unsubscribe <ul style="list-style-type: none"> The user should be able to unsubscribe to a contributor by selecting the 'Unsubscribe' button on the contributor's profile
CWG-29	As an explorer, I want there to be profiles for all contributors, so I can easily see the recipes they have created.	Criteria 1: Access by clicking username <ul style="list-style-type: none"> Each recipe page should list the user who created it. Selecting the user should bring one to their contributor profile Criteria 2: Display recipes <ul style="list-style-type: none"> The contributor profile should display all recipes the user has created, sorted by recency. Criteria 3: Access own profile by profile menu <ul style="list-style-type: none"> A user's own profile should be accessible by selecting an option in a menu available on all pages.

CHATBOT

 CWG-31 As an explorer, I want there to be a chatbot so I can find what I need more naturally.

ID	User Story	Acceptance Criteria
CWG-31	As an explorer, I want there to be a chatbot so I can find what I need more naturally.	Criteria 1: Chatbot accessible on every page <ul style="list-style-type: none"> The chatbot should be accessible in any page. Criteria 2: Supports recipe exploration <ul style="list-style-type: none"> The chatbot should facilitate recipe exploration by allowing users to find recipes via the chatbot. Criteria 3: Supports account management

		<ul style="list-style-type: none"> The chatbot should guide users through the process of account management, e.g. changing password, email etc. <p>Criteria 4: Supports profile management</p> <ul style="list-style-type: none"> The chatbot should allow users to manage their profile, including changing their name, profile pic, etc. <p>Criteria 5: Access to contact customer support</p> <ul style="list-style-type: none"> The chatbot should allow users to contact customer support if the chatbot could not help with their query.
--	--	---

2.4 HOW USER STORIES SATISFY PROJECT OBJECTIVES

These user stories fully cover the project objectives specified in [1.3](#). The table below demonstrates the user stories which cover each objective.

REQUIREMENTS FOR FEATURE PARITY WITH EXISTING SYSTEMS

Objective	Covered by
1. A profile where name, details, and recipe contributions are specified.	CWG-29, CWG-9, CWG-1, CWG-30
2. Ability to create, edit and delete recipes.	CWG-3, CWG-2, CWG-4
3. Ability to select the name, ingredients, method and meal-type for the recipe when it is being created.	CWG-3 (see acceptance criteria)
4. Ability to add pictures to recipes, including a thumbnail (which appears in search results).	CWG-3 (see acceptance criteria)
5. 'Like' and 'comment' functions on recipes	CWG-5, CWG-9
6. Advanced recommendation system both on news feed and on each recipe page	CWG-11, CWG-18

REQUIREMENTS WHICH WILL ALLOW US TO IMPROVE ON EXISTING SYSTEMS

Objective	Covered by
7. Automatic nutrition information not requiring manual input	CWG-12, CWG-15
8. Chat bot functionality	CWG-31
9. Granular search including advanced filtering based on ingredients, method, meal-type and recipe name.	CWG-6, CWG-8, CWG-28
10. News feed and subscribing allowing viewers to subscribe to particular contributors	CWG-10, CWG-17, CWG-11

2.5 SPRINTS

Sprints have been designed to meet the demo and retrospective dates. On average, sprints last 8 days.

No	Start	End	Goal
1	21 June	30 June	The goal of this sprint is to get all account management features fully working and viable. This includes a fully working frontend and backend for account management features.
2	1 July	10 July	The goal of this sprint is to support recipe creation and viewing. This includes the recipe creation screen and recipe details pages. Recipe exploration (like searching) is not in the scope of this sprint. Nutritional information is excluded from this sprint.
3	11 July	19 July	The goal of this sprint is to support recipe searching. This includes filtering functionality, and searching within specific fields (e.g. for specific ingredients).
4	20 July	27 July	The goal of this sprint is to add user profile functionality and the news feed functionality. This includes a user profile page containing users' contributions, and the ability to subscribe to users so that their recipes appear in then news feed.
5	28 July	5 Aug	The goal of this sprint is to support recommendations functionality (both on the news feed and on the recipe pages), and to support the two novel features: nutritional information and chatbots.

The goals of sprints other than sprint 1 may be adjusted depending on the progress of the previous sprint.

A screenshot of the first sprint's allocated user stories is seen below.

2.6 NOVEL FUNCTIONALITY

Two novel functionalities which are not seen in competing products, and which are not specified in the project specification, are contained in user stories **CWG-12** and **CWG-31**.

CWG-12: NUTRITIONAL INFORMATION

Estimated nutritional information will be calculated automatically using a food database based on the ingredients and amounts given. This means that recipe creators do not need to enter the information manually.

Most other sites do not provide such functionality. For the ones that do, recipe creators typically need to enter the info manually.

This novel functionality will help those conscious of their health better decide what to eat.

CWG-31: CHATBOT

MyRecipes will have a chatbot accessible on any page which allows users to complete tasks by simply typing to the bot. Features that will be supported by the chatbot include:

1. Making a search
2. Account detail management, like changing password, email etc.
3. Profile management, including change profile picture, name etc.
4. Messaging customer support

Very few of existing recipe websites offer such functionality.

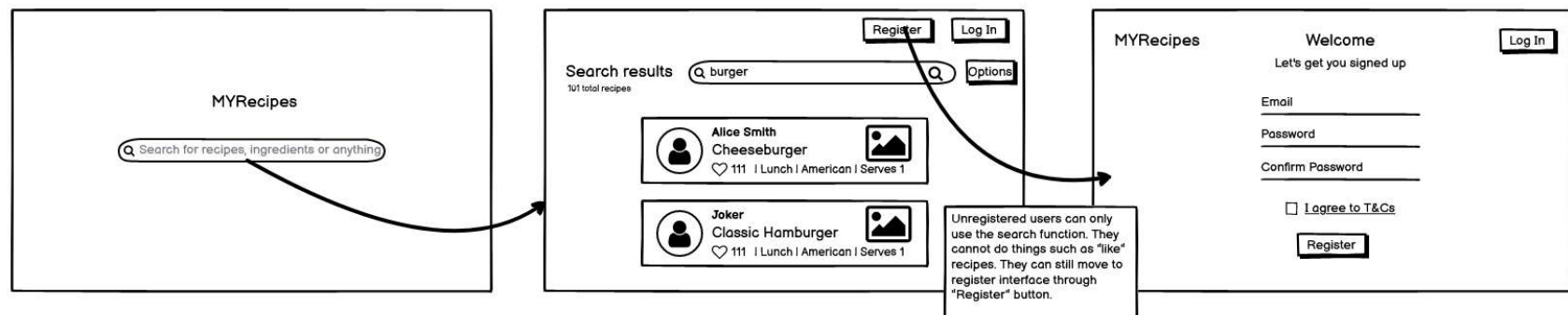
3 INTERFACE AND FLOW DIAGRAMS (STORYBOARDS)

3.1 ACCOUNT MANAGEMENT

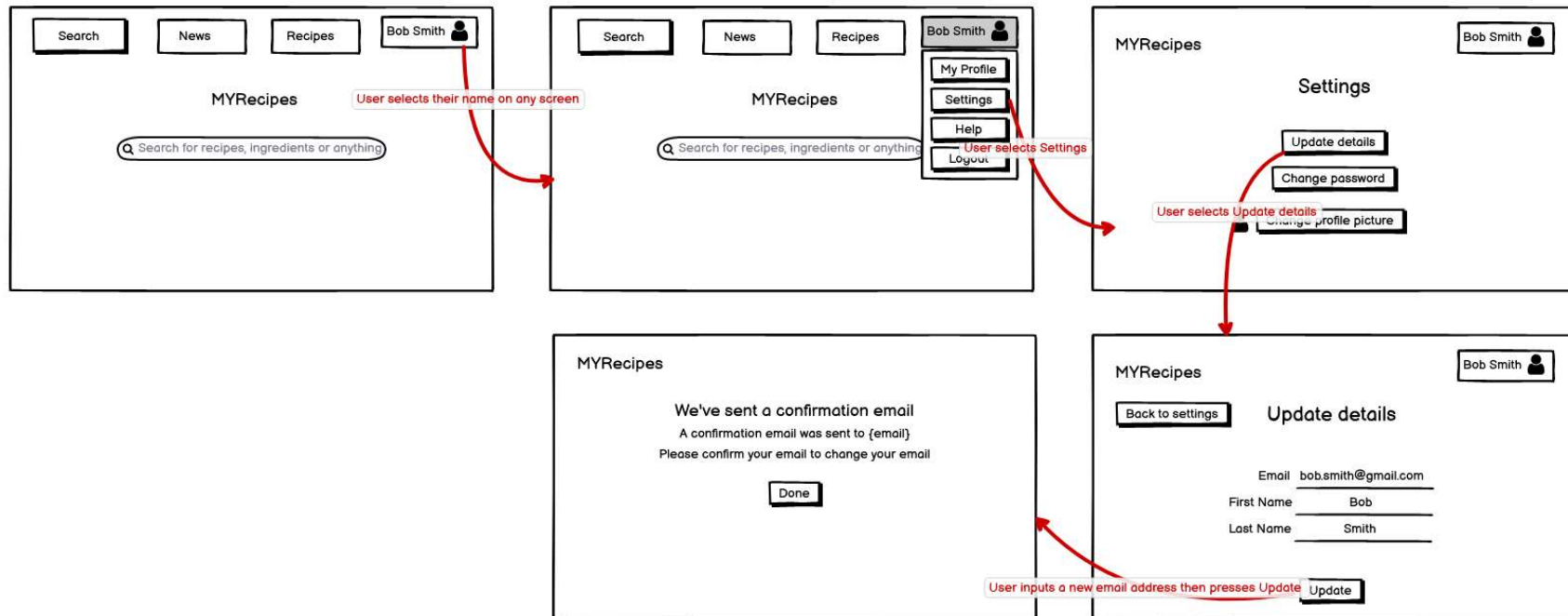
REGISTERING (CWG-19)



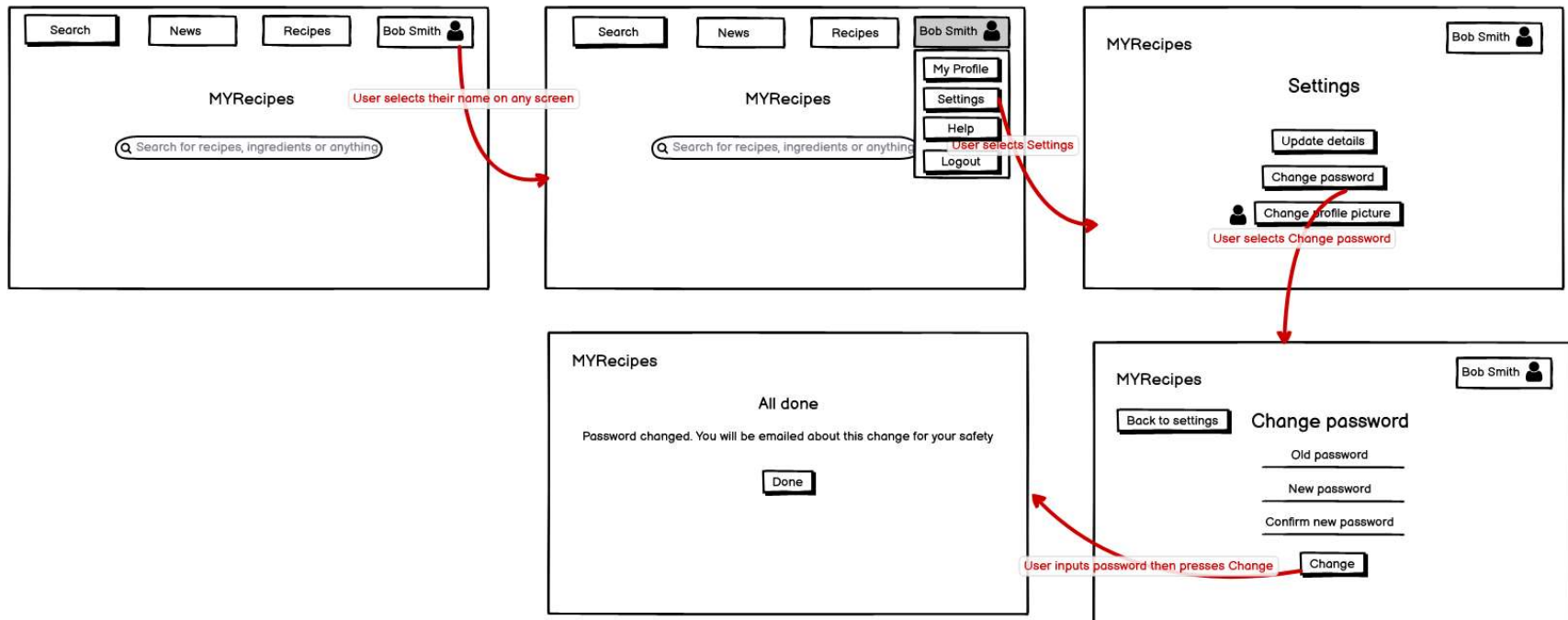
VIEWING RECIPES WITHOUT REGISTERING (CWG-20)



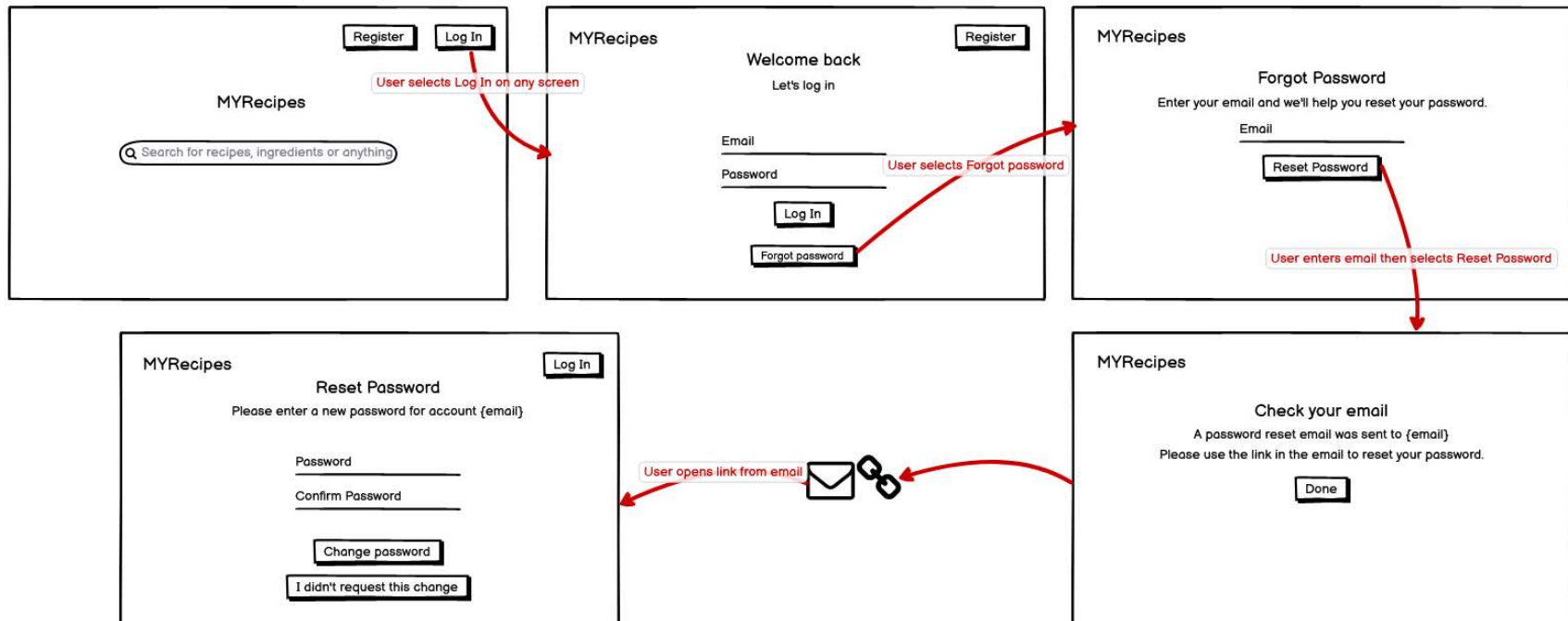
MODIFYING ACCOUNT DETAILS (CWG-1)



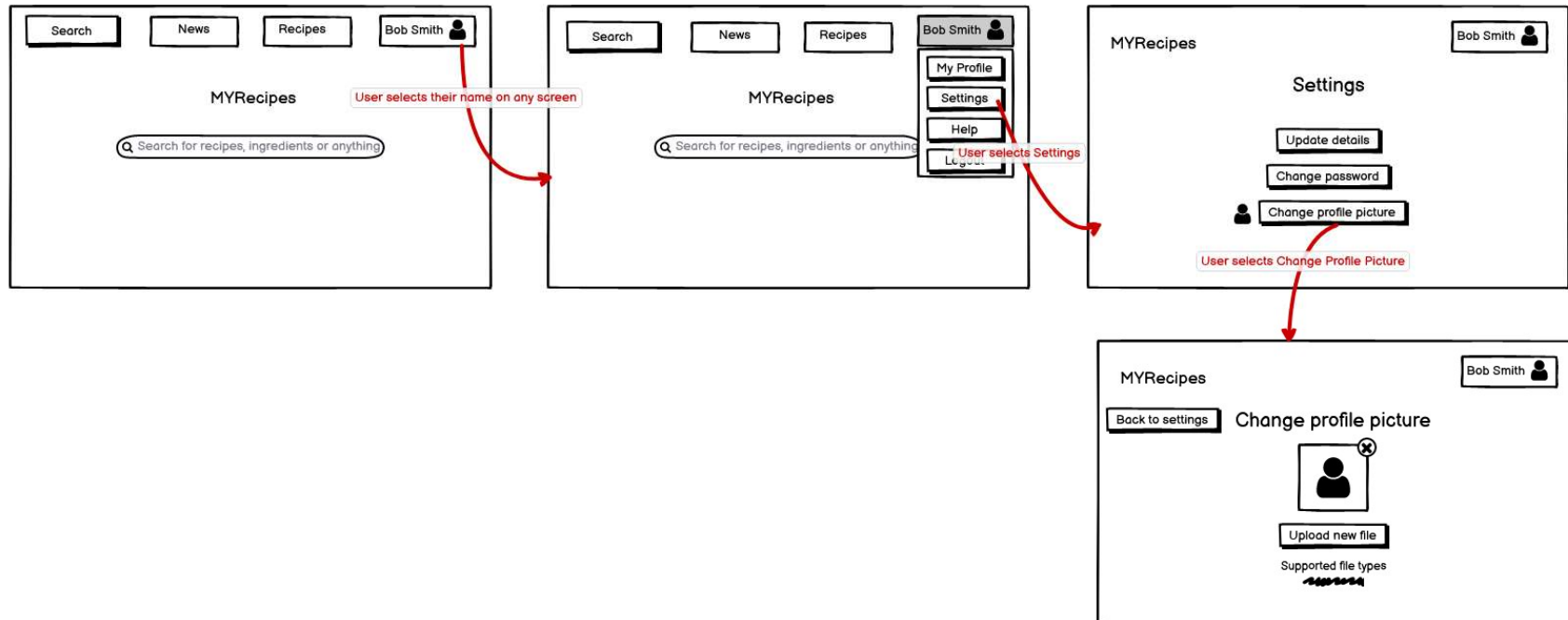
CHANGING PASSWORD (CWG-21)



FORGOT PASSWORD (CWG-22)

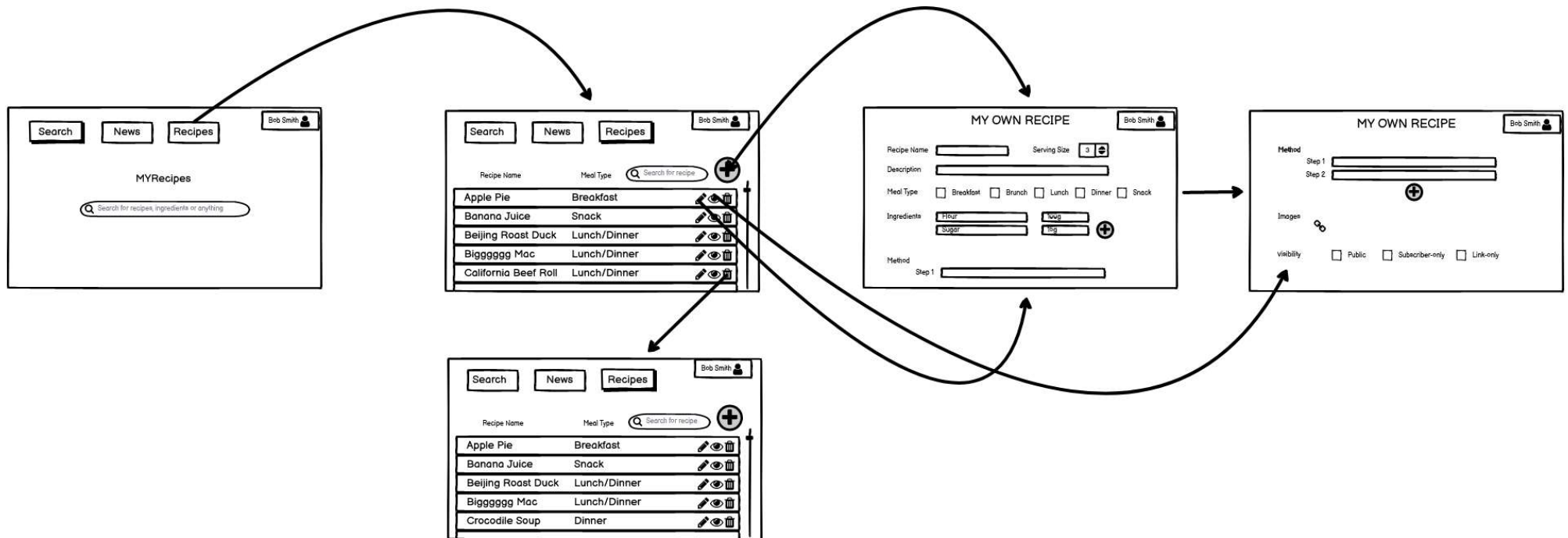


CHANGE PROFILE PICTURE (CWG-30)

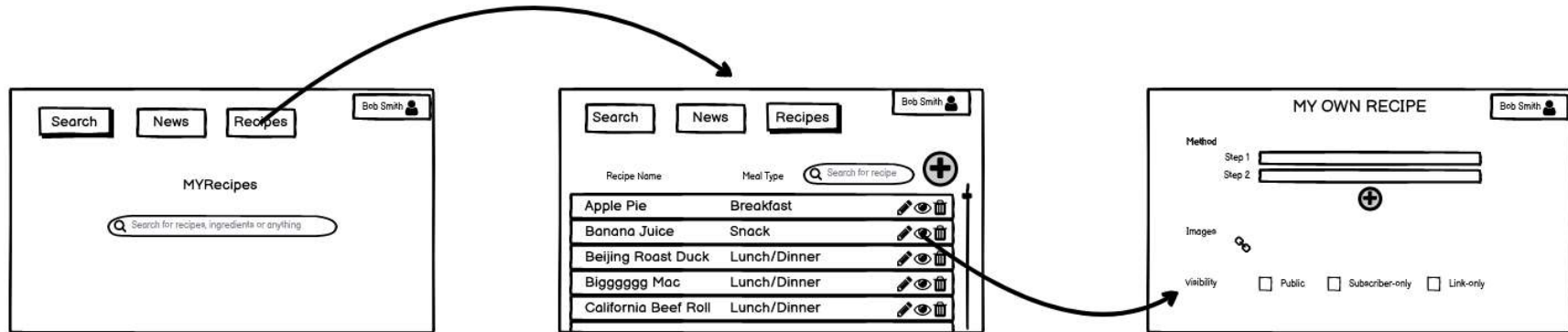


3.2 RECIPE DETAILS

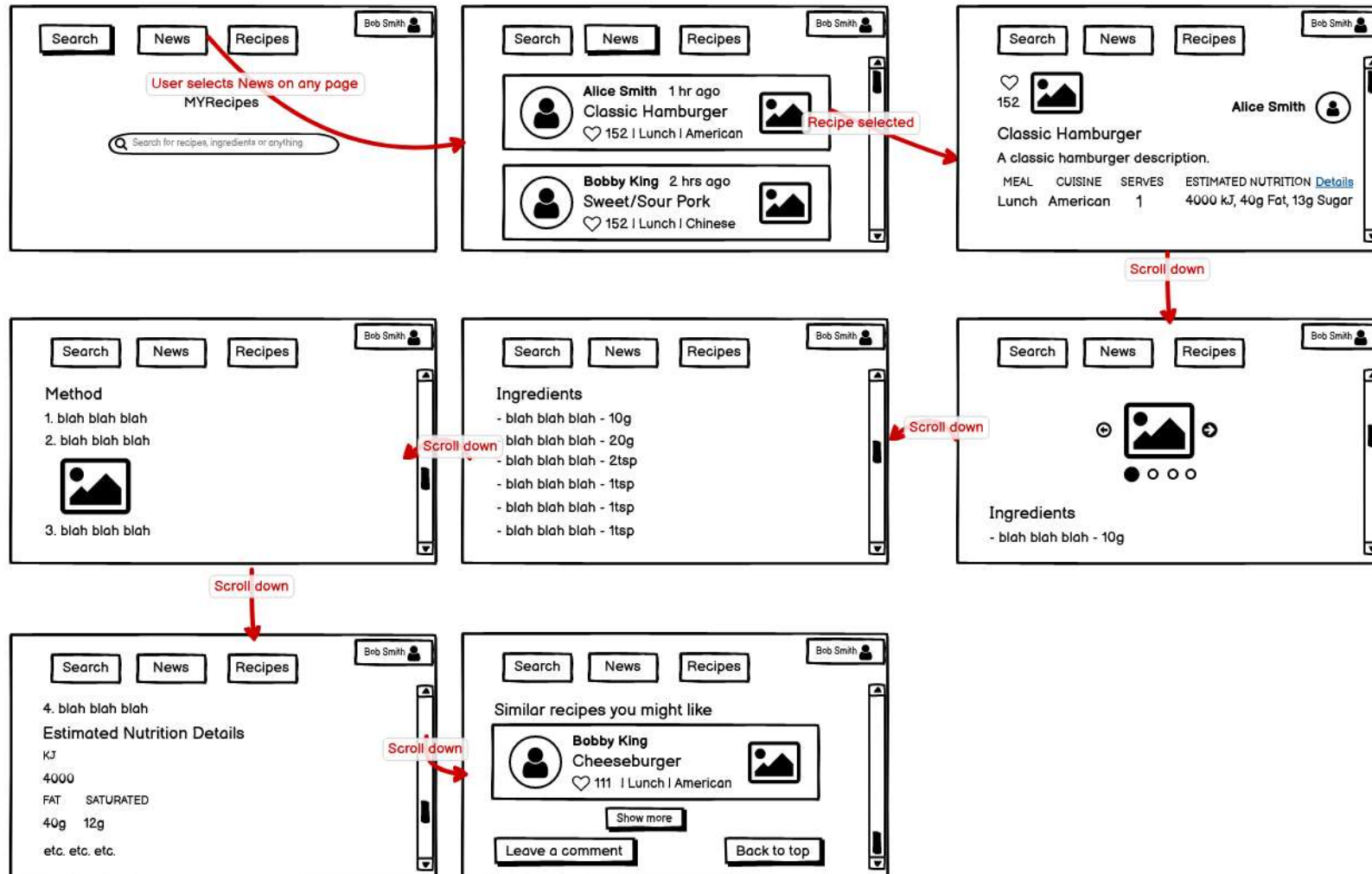
CREATE, MODIFY AND DELETE RECIPES (CWG-3, CWG-4)



CHANGE VISIBILITY (CWG-2)

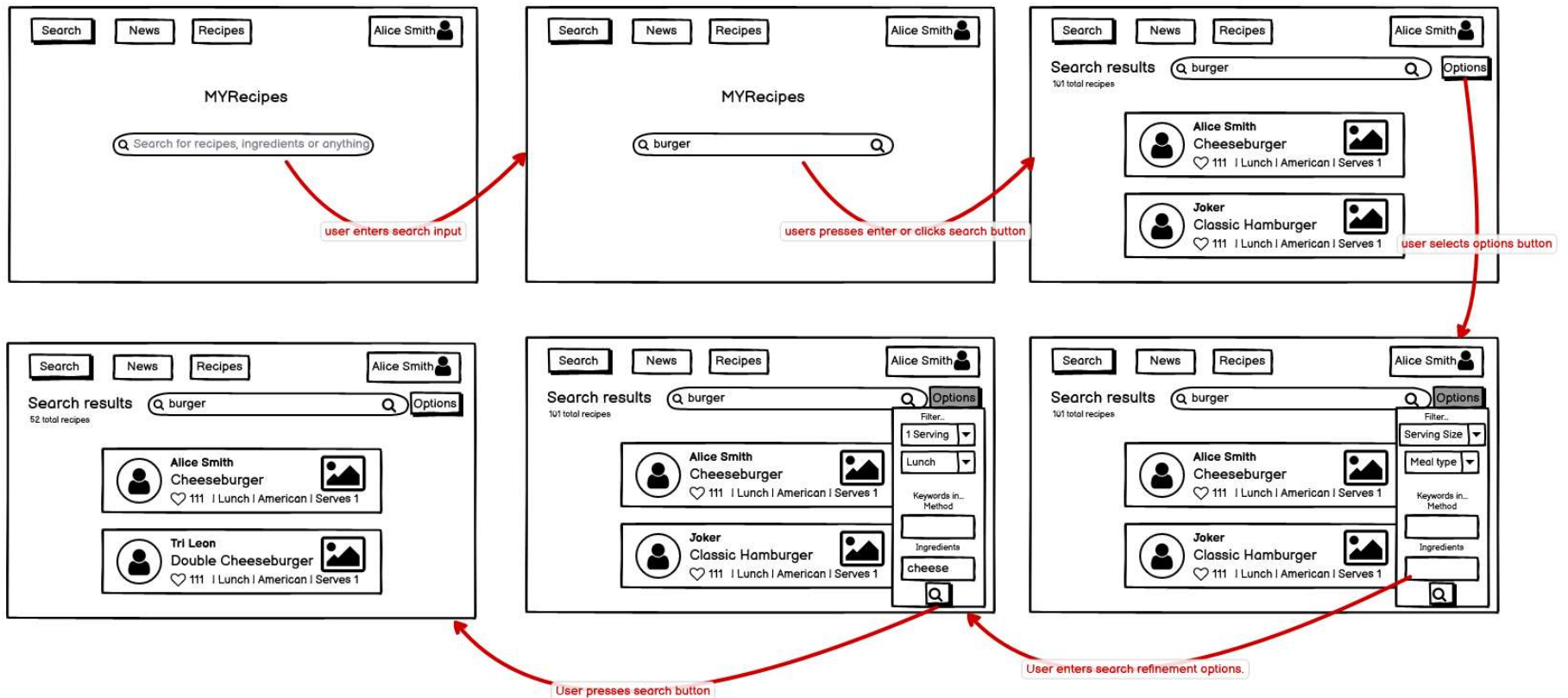


VIEW RECIPE DETAILS, INCLUDING NUTRITION (CWG-15, CWG-12, CWG-18)

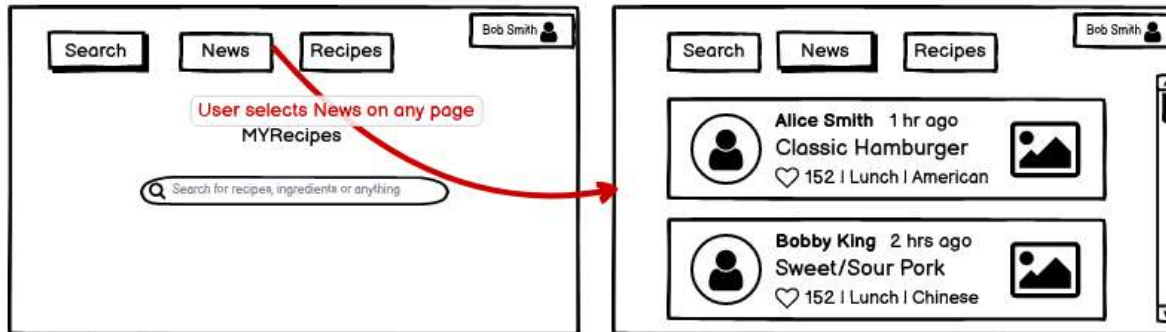


3.3 RECIPE EXPLORATION

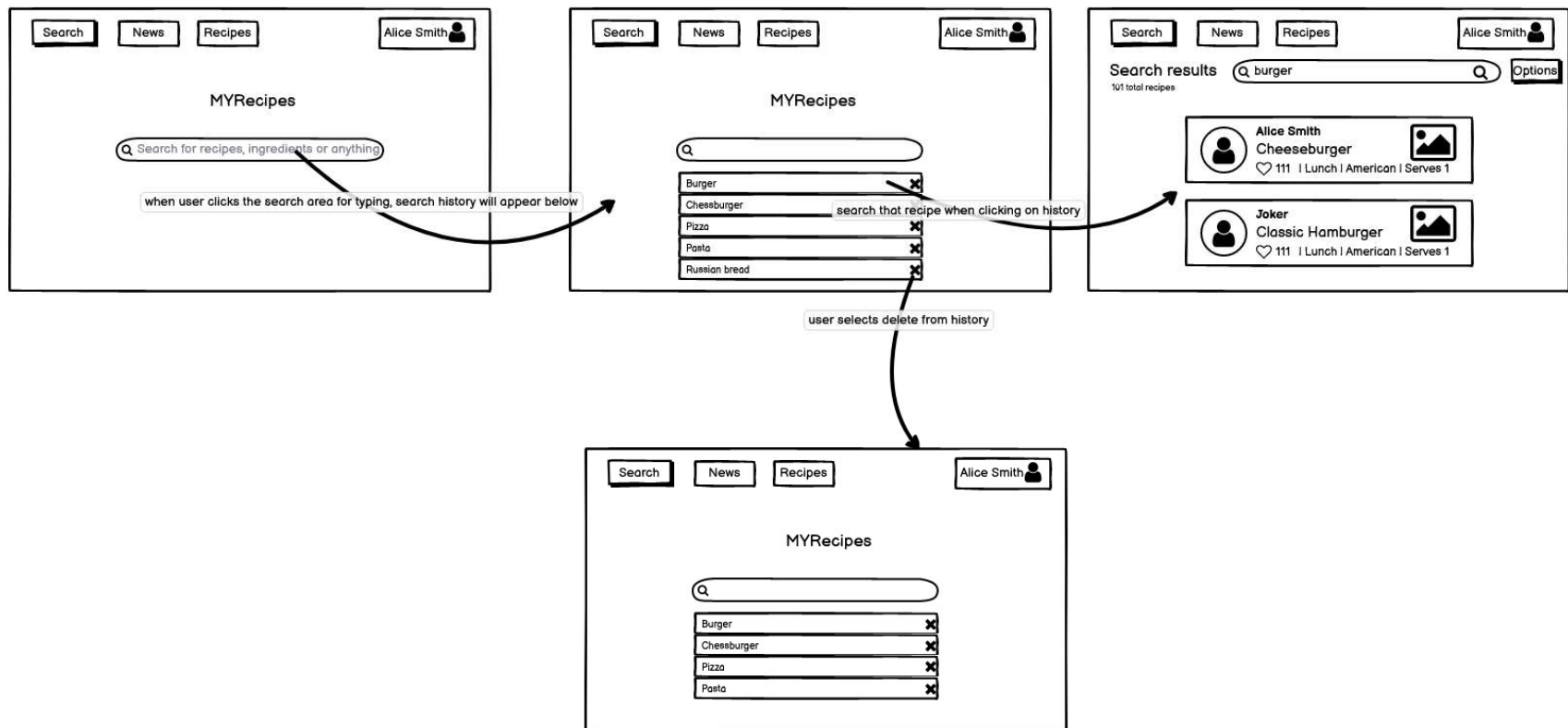
SEARCH FOR RECIPES AND FILTER SEARCH RESULTS (CWG-6, CWG-8)



PERSONALISED NEWS FEED (CWG-11, CWG-17)

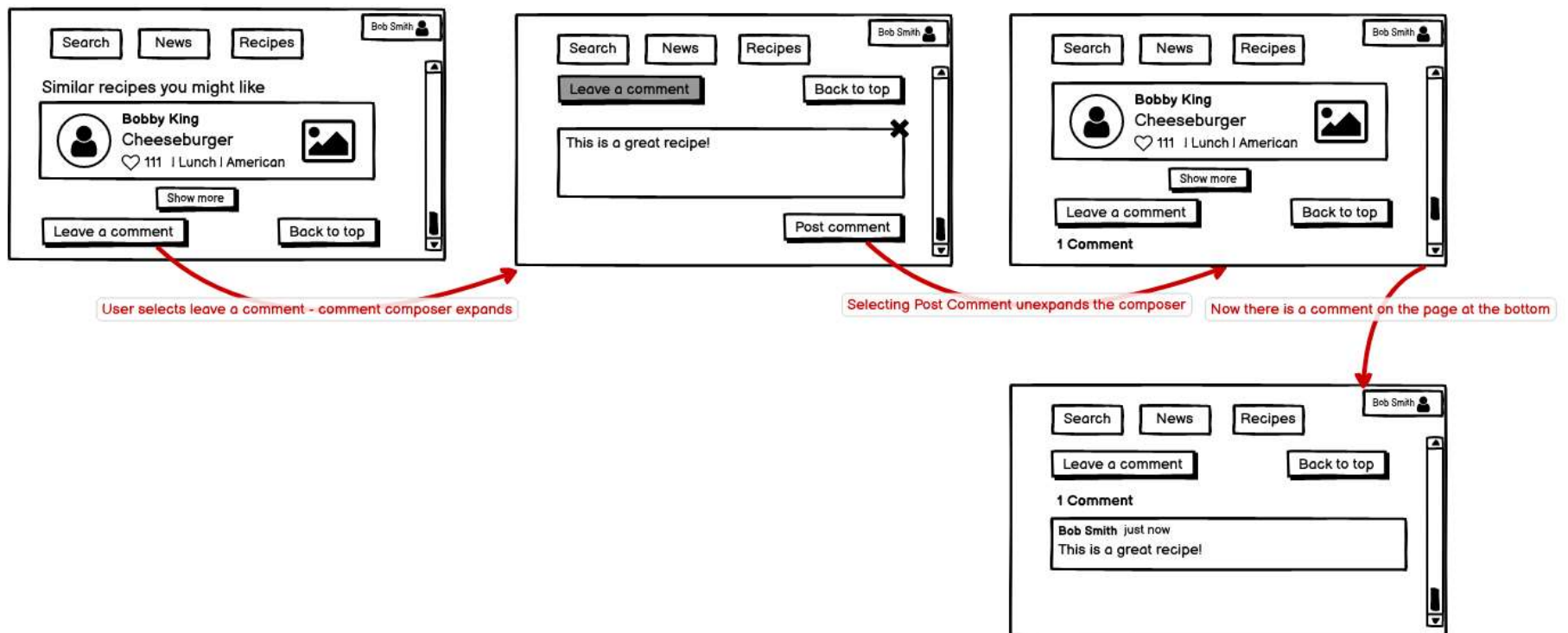


SEARCH HISTORY (CWG-28)



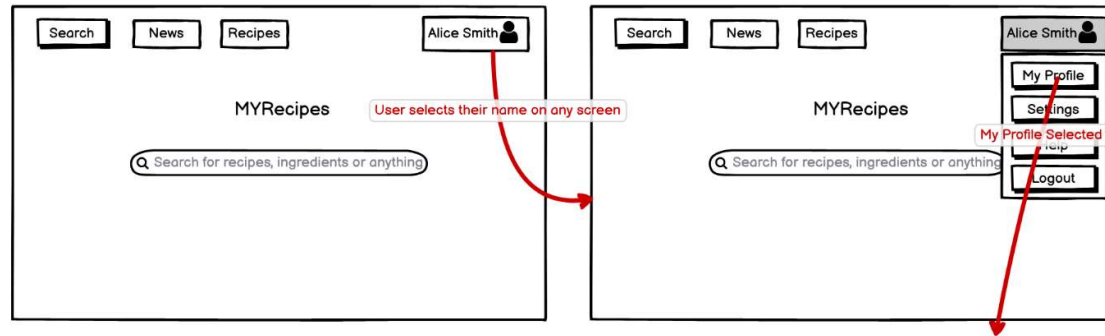
3.4 EXPLORER-CONTRIBUTOR INTERACTION

LEAVING COMMENTS ON RECIPES (CWG-5)

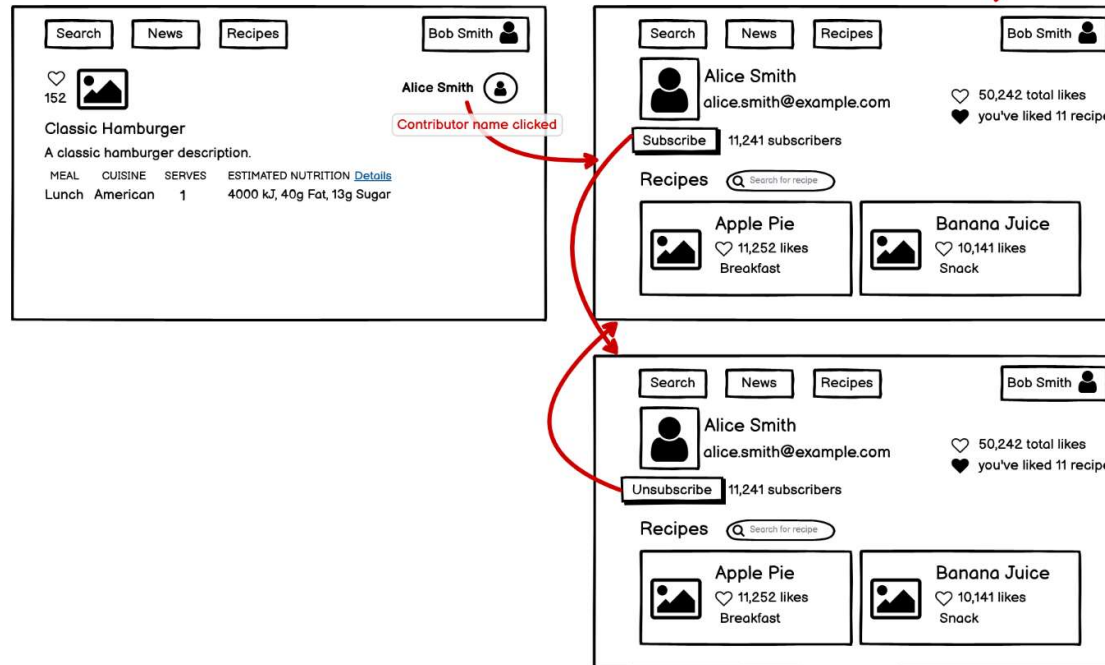


CONTRIBUTOR PROFILES (CWG-29, CWG-10, CWG-9)

Accessing own profile:

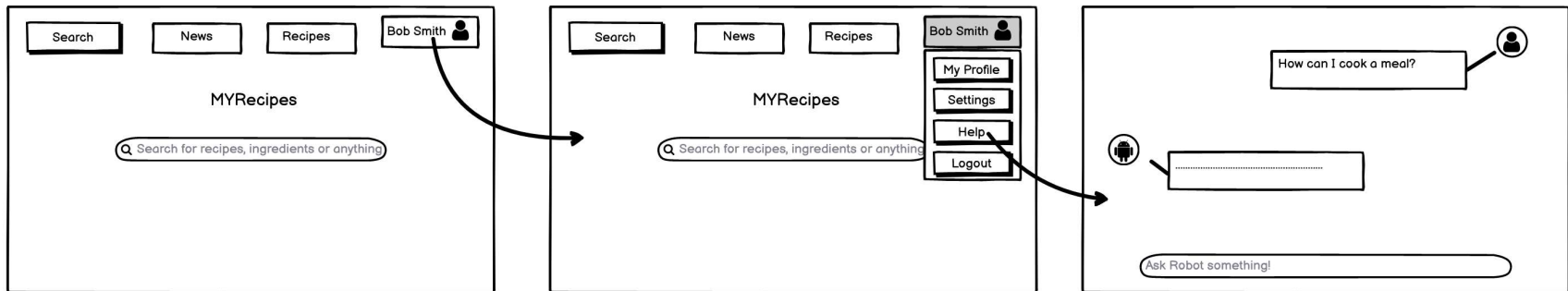


Accessing a different person's profile:
(Access from recipe page)



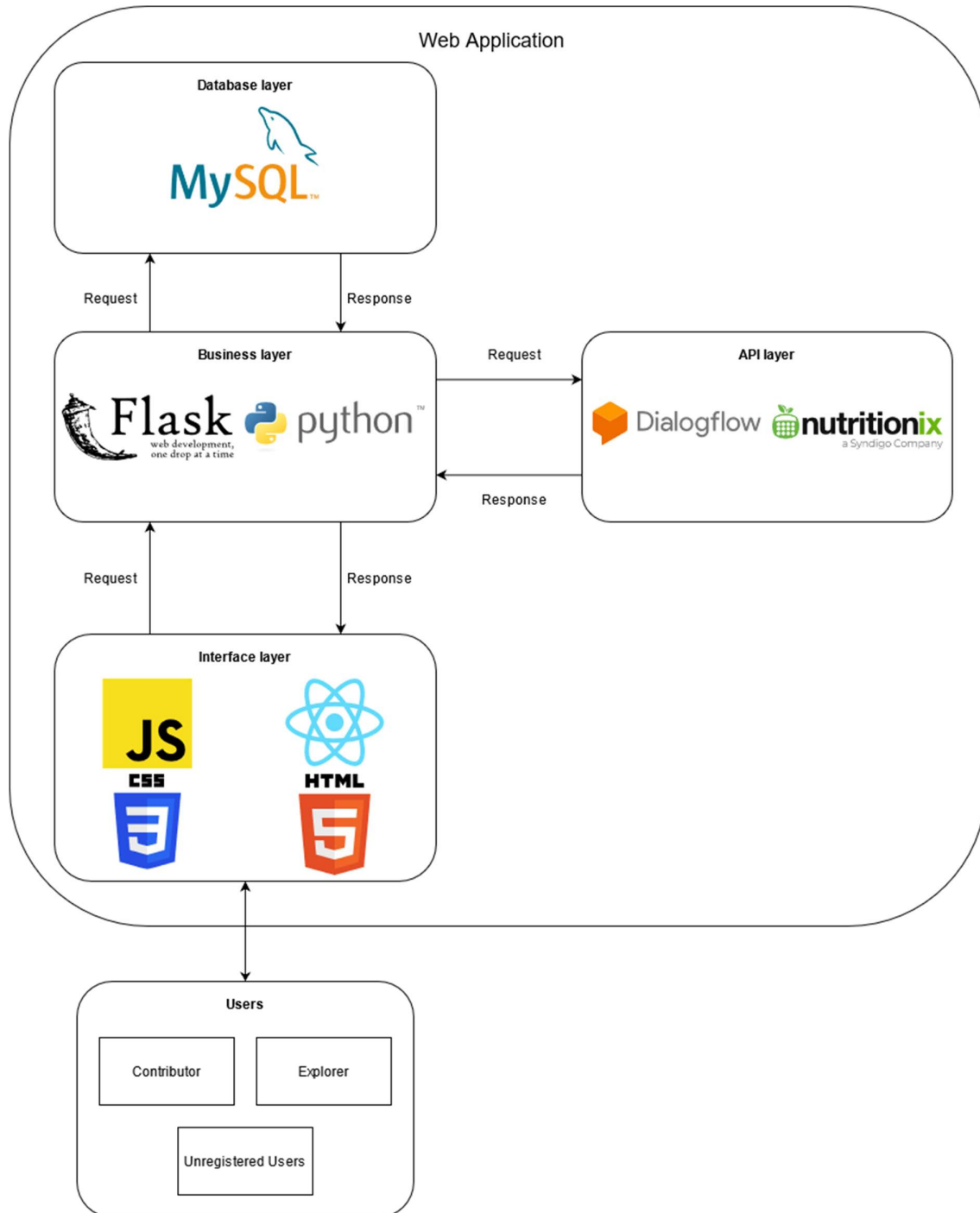
3.5 CHATBOT

CHATBOT (CWG-31)



4 SYSTEM ARCHITECTURE

4.1 SYSTEM ARCHITECTURE DIAGRAM



4.2 SYSTEM ARCHITECTURE DESCRIPTION

INTERFACE LAYER

The interface layer or front-end is the user interface which users interact with on their devices. It allows users to view information and send requests to the web application. The front-end framework selected is React. React is developed by Facebook¹ and is popular for web development due to its ease of creating dynamic web applications. It is built upon JavaScript, HTML and CSS² which appeals to less experienced front-end web developers, as opposed to Angular which has a steep learning curve. This makes it suitable for our purposes. React uses virtual DOM and allows web applications to re-render certain components without having to reload the page,³ an additional benefit.

BUSINESS LAYER

The business layer or back-end handles the requests sent from the interface layer and provides responses based on what the interface layer requires. It also prevents users from accessing secured parts of the web application directly since the business logic in this layer will verify the users' permissions before fulfilling the requests. For example, if the interface layer requires information stored in the data layer, the business layer will act as an intermediary to retrieve the information from the data layer and then send it to the interface layer. The back-end framework selected is Flask. Flask is a Python micro web framework⁴ and is built for rapid development. It is lightweight and provides a simple solution to RESTful HTTP request handling, which is suitable for a large project in a relatively short timeframe, like MyRecipes.

DATA LAYER

The data layer or database stores persistent information utilised by the web application and can only be accessed by the business layer. The information stored includes user details and recipe information. The selected database is MySQL. MySQL is a relational database management system (RDBMS)⁵ and provides seamless integration with the

¹ RisingStack Engineering - Node.js Tutorials & Resources. 2021. *The History of React.js on a Timeline / @RisingStack*. [online] Available at: <<https://blog.risingstack.com/the-history-of-react-js-on-a-timeline/>> [Accessed 19 June 2021].

² Skillcrush. 2021. *React JS—What is It? What is Used For? Why Should You Learn It? - Skillcrush*. [online] Available at: <<https://skillcrush.com/blog/what-is-react-js/>> [Accessed 20 June 2021].

³ Reactjs.org. 2021. *Virtual DOM and Internals – React*. [online] Available at: <<https://reactjs.org/docs/faq-internals.html>> [Accessed 19 June 2021].

⁴ Flask.palletsprojects.com. 2021. *Foreword — Flask Documentation (2.0.x)*. [online] Available at: <<https://flask.palletsprojects.com/en/2.0.x/foreword/#what-does-micro-mean>> [Accessed 19 June 2021].

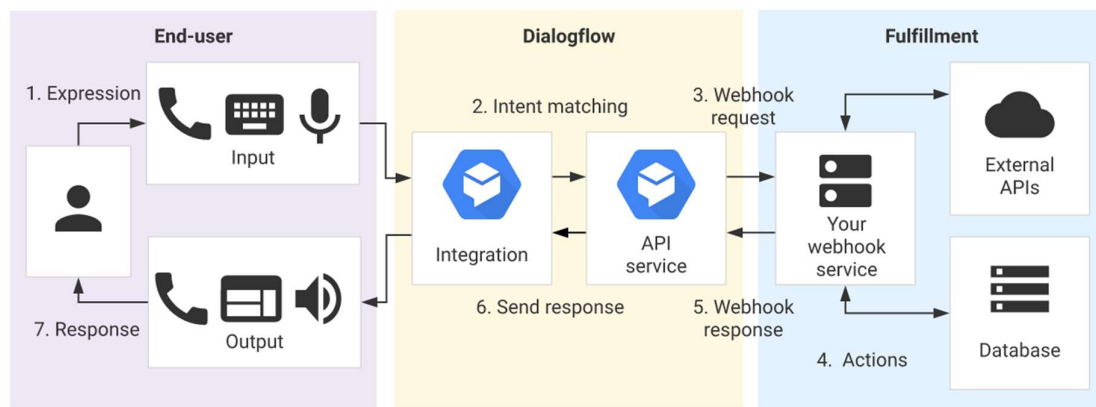
⁵ Dev.mysql.com. 2021. *MySQL :: MySQL 8.0 Reference Manual :: 1.2.1 What is MySQL?*. [online] Available at: <<https://dev.mysql.com/doc/refman/8.0/en/what-is-mysql.html>> [Accessed 19 June 2021].

Flask web server via the Flask-MySQL extension.⁶ A RDBMS is preferred over NoSQL database systems such as MongoDB because there are close relations between the recipe data and user data, and therefore a RDBMS will allow for faster transactions.

API LAYER

The API layer enables the web application to interact with external applications. The back-end can send a request to the external applications for various tasks such as obtaining data from their database or verifying a piece of information.

DIALOGFLOW



Google, 2021. [image] Available at:

<<https://cloud.google.com/dialogflow/es/docs/images/fulfillment-flow.svg>>

[Accessed 20 June 2021].

DialogFlow is a natural language understanding platform acquired by Google.⁷ It allows developers to design and integrate conversational user interface into their systems.⁸ DialogFlow will be implemented into the proposed chatbot to provide users a more engaging experience. Users can ask questions or make requests using conversational sentences via the chatbot. The chatbot will be able to understand their needs and provide the required services. For example, if a user types "I want to eat Chinese food" in the chatbot, Dialogflow will analyse the sentence and provide recipe suggestions for

⁶ Flask-mysql.readthedocs.io. 2021. *Flask-MySQL — flask-mysql 1.4.0 documentation*. [online] Available at: <<https://flask-mysql.readthedocs.io/en/stable/>> [Accessed 19 June 2021].

⁷ Kumarak, G., 2021. *Google acquires API.AI, a company helping developers build bots that aren't awful to talk to*. [online] Techcrunch.com. Available at: <<https://techcrunch.com/2016/09/19/google-acquires-api-ai-a-company-helping-developers-build-bots-that-arent-awful-to-talk-to/>> [Accessed 20 June 2021].

⁸ Google Cloud. 2021. *Dialogflow Documentation / Google Cloud*. [online] Available at: <<https://cloud.google.com/dialogflow/docs>> [Accessed 20 June 2021].

Chinese food. Dialogflow extracts the intent of the sentence and provides the back-end with the most suitable request. The back-end then generates the relevant response which is outputted in the chatbot. This API is well-suited for our chatbot feature.

Nutritionix provides comprehensive nutritional information on food items and boasts a nutrition database of 995,726 food items.⁹ The information is verified by a team of registered dietitians to ensure that the information is accurate and reliable. Nutritionix will be integrated into recipe creation where contributors will select the ingredients from the Nutritionix food database.¹⁰ Since Nutritionix provides an autocomplete search in its API, this solution provides contributors with the ease of both ingredient selection and automatic overall nutrition calculation. These features make it suitable for the automatic nutritional information feature.

USER TYPES

The user types are described in [2.1 User Stories](#).

⁹ Nutritionix.com. 2021. *Nutritionix – Largest Verified Nutrition Database* [online] Available at: <<https://www.nutritionix.com/>> [Accessed 20 June 2021].

¹⁰ Nutritionix.com. 2021. *Nutrition API by Nutritionix*. [online] Available at: <<https://www.nutritionix.com/business/api>> [Accessed 20 June 2021].

5 REFERENCES

RisingStack Engineering - Node.js Tutorials & Resources. 2021. *The History of React.js on a Timeline / @RisingStack*. [online] Available at: <<https://blog.risingstack.com/the-history-of-react-js-on-a-timeline/>> [Accessed 19 June 2021].

Skillcrush. 2021. *React JS—What is It? What is Used For? Why Should You Learn It? - Skillcrush*. [online] Available at: <<https://skillcrush.com/blog/what-is-react-js/>> [Accessed 20 June 2021].

Reactjs.org. 2021. *Virtual DOM and Internals – React*. [online] Available at: <<https://reactjs.org/docs/faq-internals.html>> [Accessed 19 June 2021].

Flask.palletsprojects.com. 2021. *Foreword — Flask Documentation (2.0.x)*. [online] Available at: <<https://flask.palletsprojects.com/en/2.0.x/foreword/#what-does-micro-mean>> [Accessed 19 June 2021].

Dev.mysql.com. 2021. *MySQL :: MySQL 8.0 Reference Manual :: 1.2.1 What is MySQL?*. [online] Available at: <<https://dev.mysql.com/doc/refman/8.0/en/what-is-mysql.html>> [Accessed 19 June 2021].

Flask-mysql.readthedocs.io. 2021. *Flask-MySQL — flask-mysql 1.4.0 documentation*. [online] Available at: <<https://flask-mysql.readthedocs.io/en/stable/>> [Accessed 19 June 2021].

Kumparak, G., 2021. *Google acquires API.AI, a company helping developers build bots that aren't awful to talk to*. [online] Techcrunch.com. Available at: <<https://techcrunch.com/2016/09/19/google-acquires-api-ai-a-company-helping-developers-build-bots-that-arent-awful-to-talk-to/>> [Accessed 20 June 2021].

Google Cloud. 2021. *Dialogflow Documentation / Google Cloud*. [online] Available at: <<https://cloud.google.com/dialogflow/docs>> [Accessed 20 June 2021].

Nutritionix.com. 2021. *Nutritionix – Largest Verified Nutrition Database* [online] Available at: <<https://www.nutritionix.com/>> [Accessed 20 June 2021].

Nutritionix.com. 2021. *Nutrition API by Nutritionix*. [online] Available at: <<https://www.nutritionix.com/business/api>> [Accessed 20 June 2021].