



MARCH 31, 2024

Software requirements specifications

DISHYDISHES

GROUP 17



### Revision History

Revision number	Author(s)	Description	Date
0	Jie Zhang Kaicheng Xu Shuren Xu Zirui He	Document Init	Oct 2, 2023
1	Jie Zhang	Main Skeleton built Implementation of 2	Oct 14, 2023
1.1	Shuren Xu	Skeleton of 11 built	Oct 15, 2023
1.2	Jie Zhang Shuren Xu Kaicheng Xu Zirui He	Implementation of 1, 7, 10, 11 Minor updates	Oct 18, 2023
1.3	Zirui He Kaicheng Xu Shuren Xu	Implementation of 5, 10 Updates on 8	Oct 19, 2023
1.4	Zirui He Kaicheng Xu Shuren Xu Jie Zhang	Implementation of 4, 9 Updates on 8 Scratch drawn Alignment and styling adjustment	Oct 20, 2023
2	Zirui He	Updates 8 based on feedback received from POC	Dec 1, 2023
3	Zirui He	Final update based on actual progress	Mar 31, 2024

## 1. The Purpose of the Project

- **Service goal:** Help users find good recipes and share their experience in cooking. This project aims to deliver a smooth, intuitive user experience, along with appealing, modern aesthetic design.
- **Revenue goal:** After releasing this app for a certain period, we will estimate the market share we get. If the market share reaches a certain number, we will add advertising, purchases of related products, or subscription function to make money. If this app market share could not reach the limit we expect, we will continuously gather feedback from the users to improve the platform.
- **Legal goal:**
  - **Terms of Service and Privacy Policy:** Establish a clear and comprehensive terms of service and privacy policy that users must agree to before using DishyDishes. The policy should specify the responsibilities for both users and DishyDishes to prevent misuse of the platform.
  - **Data Privacy and Security:** Protect user data and prevent data breaches from happening.

## 2. The Stakeholders

- Users: owner of restaurants, cook, chef, gourmet, nutritionist, foodie, etc.
- Developers and maintainers
- Competitors
- Customer Service and Support Team
- Legal Experts
- Advertisers

## 3. Personnel of the Project and their Roles

- Back-end developers: Shuren Xu, Kaicheng Xu
- UI/UX designers: Jie Zhang, Zirui He
- Dev Ops: Shuren Xu, Kaicheng Xu
- Testing: Kaicheng Xu

## 4. Overview of the Design

The project is aimed to use Vue.js for the frontend, Java and Spring Boot for the backend, and MongoDB for database since it is faster and more scalable than SQL.

- Backend Design (Refer to Point 8 Functional Requirements)  
Note: Rating related features are deprecated as they are redundant to bookmark features to some extent.

- Frontend Design  
(following was our preliminary sketches, please refer to Design Doc for the full design)

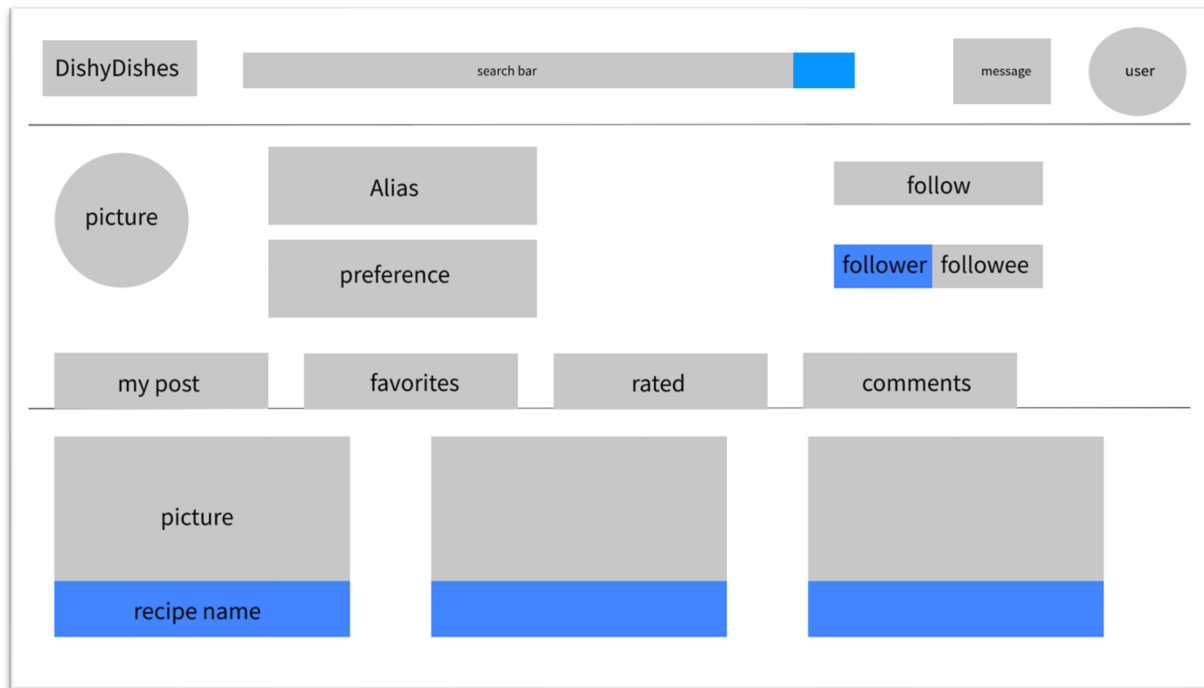


Figure 1 - User Profile page

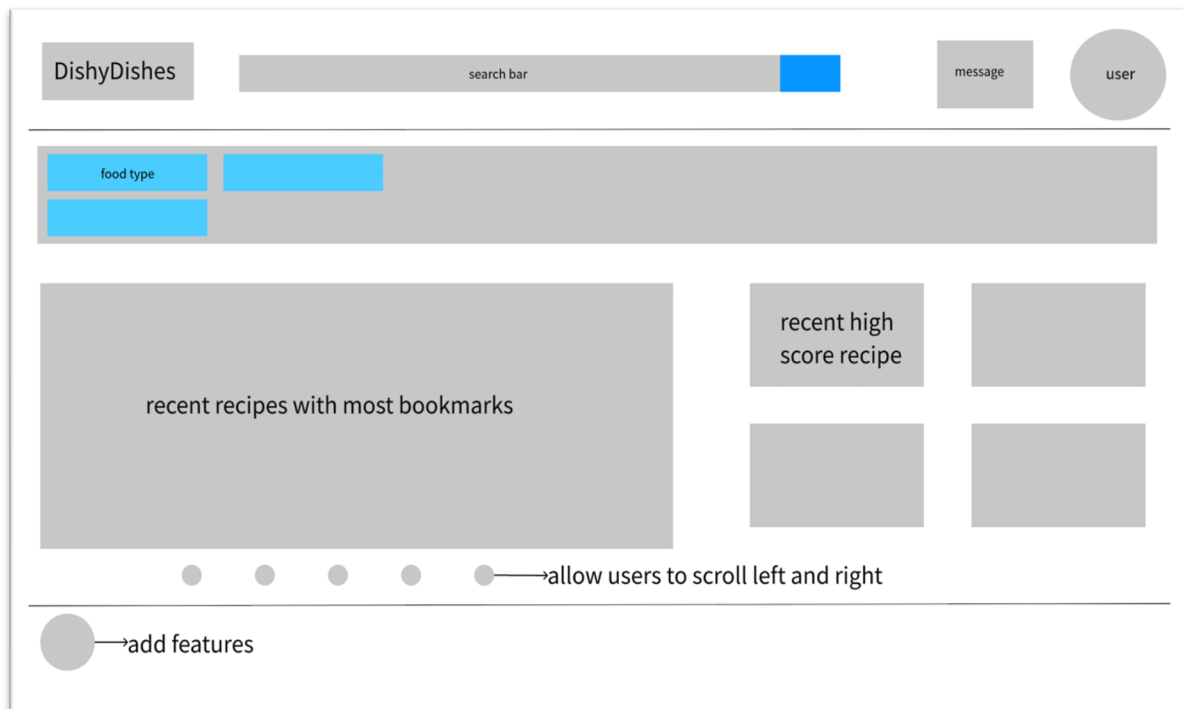


Figure 2 - Main page

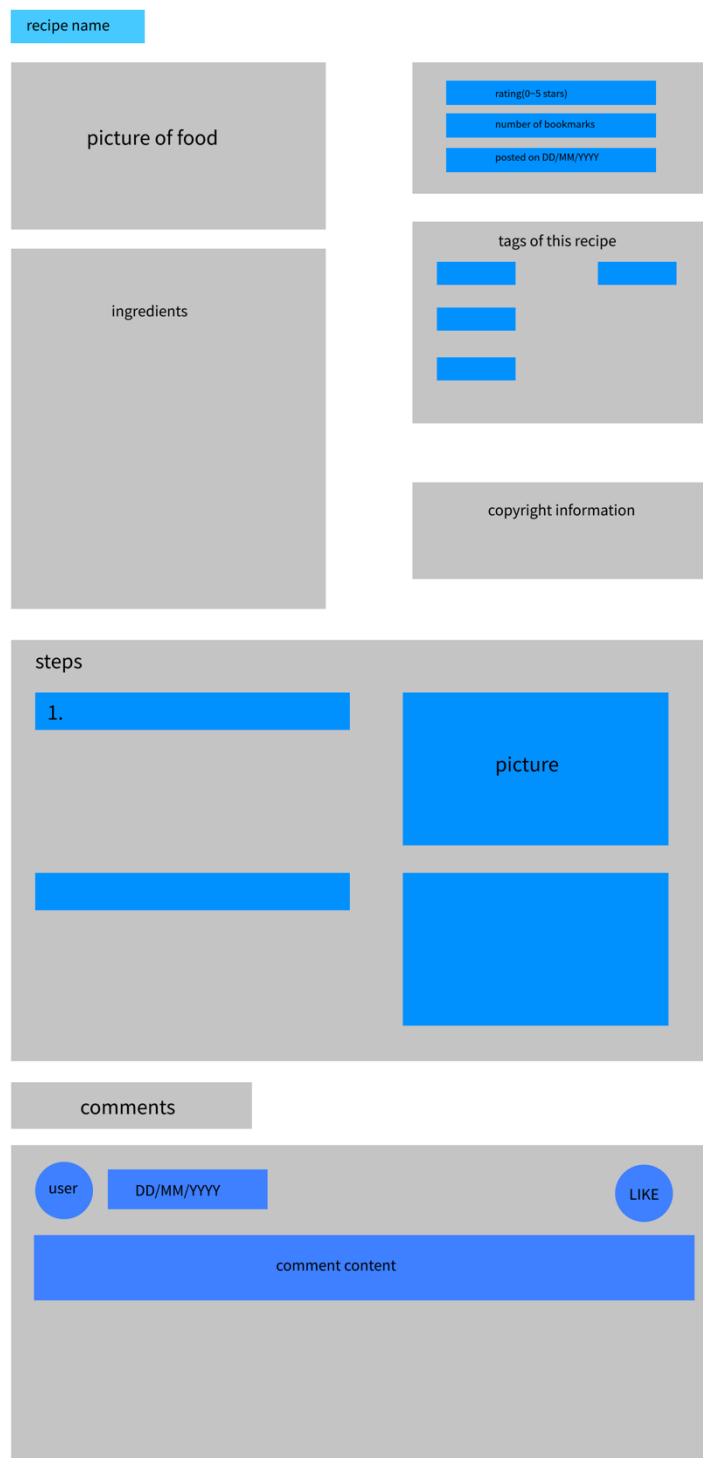


Figure 3 - Recipe page

- Database:
  - Users: ID, Name, Email, Preferences, Followers, Fellowes, Favorites, User Photo, Posts, ~~Rating~~{Recipe ID: Rating score}, Comments ID
  - Recipes: ID, Ingredients, Steps, Likes, ~~number of Ratings, average Rating~~, Comments ID
  - Comments: ID, User ID, Recipe ID, contents, Comments ID (there can be replies for comments)
- Likely changes the design may contains:
  - It is possible that we will use a different JavaScript frame to build front-end interface.
  - We might replace some computationally intensive operations with WebAssembly to increase performance.

## 5. List of Abbreviations and Notations, Naming Conventions and Definitions

Definition, Abbreviation or Acronym	Intended Meaning
DD	Dishydishes
RCP	Recipe
ING	Ingredient
STP	Cooking steps
UREG	Unregistered user
RUSR	Registered user
ADM	Administrator or admin
<del>RAT</del>	<del>Rating</del>
COMM	Comment
CAT	Category
FAV	Favorite
SRCH	Search

## 6. Table of Contents and Contributions

Jie Zhang	1, 2, part of 4, 7, 10, 11
Kaicheng Xu	Most of 5, part of 4, 7, 8
Shuren Xu	Most of 11, part of 4, 7, 8, 10
Zirui He	8, 9, assisting with 4

## 7. Project Constraints and Relevant Facts

- **Platform Constraint:** App would be better for this project than web-based platform because it provides smoother and more optimized user experience, can take advantage of phone cameras and push notifications, and is able to be designed to support offline access. However, it costs more to create an app adapting to various smartphone systems. Therefore, for this project, we will just establish a web-based platform. In the future, we may create app versions if ever possible.
- **Content Constraint:** The primary focus of the platform will be recipes. E-commerce functionality will be avoided in the initial phase, although there may be channels for selling products in the future.

## 8. Functional Requirements

- Backend features:

Priority	Features		Data Needed
P0	User Registration/Login (Users database creation)		User details (alias, password, email)
P0	Uploading recipes (Recipes database creation)		User ID, Images, ingredients, steps
P0	Search functionality	By food name	database, user search queries
		By alias	
P0	Getting recipe content by ID		Recipe ID
P1	Commenting on a recipe (Comments database creation)		User ID, Recipe ID, comments, timestamps
P1	Rating a recipe		User ID, Recipe ID, rating score, timestamps
P1	Bookmarking a recipe as favorite		User ID, Recipe ID, timestamps
P1	Recipes recommend ation	6 most liked posts last week	Recipes database
		6 random posts in past 24 hours	
		6 most recent posts from user's followees	
P1	Tagging recipes by types/categories when creating		Recipe ID, corresponding tags
P1	Getting recipes by tag		Recipes database
P1	Search functionality	By ingredients	Recipe database, user search queries
P1	Getting the user's	personal info	User ID
		recipe posts	

		comments	
		rates	
		bookmarked recipes	
		preference	
P2	Advanced Search functionality	Filtering out recipe posts based on religion and/or allergies	Recipe database, user search queries, and user's religion and/or allergies getting from Users database
P2	Updating a recipe		User ID, Recipe ID, images, ingredients, steps
P2	Deleting a recipe		User ID, Recipe ID
P2	Updating personal preference (e.g., religion and/or allergies)		User ID, user preference
P2	Updating personal info (e.g., alias, profile picture, ...)		User ID, corresponding user info
P2	Edit recipe visibility (By site admin/reviewer)		Recipe ID
P2	Edit comment visibility		Recipe ID, Comment ID
P2	Notify users about their recipe/comment visibility change		User ID, Recipe ID, Comment ID
P2	Deleting a comment		User ID, Comment ID
<del>P2</del>	<del>Deleting a rating</del>		<del>User ID, Recipe ID</del>
<del>P2</del>	<del>Changing a rating</del>		<del>User ID, Recipe ID</del>
P2	Remove a recipe from favorites		User ID, Recipe ID
P3	Commenting on a comment		User ID, Comment ID, comment, timestamps
P3	Thumb-up to a comment		User ID, Comment ID
P3	Notify user when their recipes get favorited or commented, or comments get commented or thumbed-up		User ID, recipe ID
P3	Attaching pictures to a comment		Photos, Comment ID
P3	Social media sharing of recipes		Recipe URL, social media APIs
P3	Following another user		User ID
P3	Getting who a user is following/followed by		User ID
P3	Calories Estimation		ingredients
P4	Recommendations based on user behavior		User history, likes, and previous searches
P4	Auto tagging		Recipes database



- Frontend features:

Priority	Features	
P0	User Registration/Login Page	
P0	Nav bar	On the left is the logo, by clicking on which user will be redirected to the main page
		Search field to query recipes with name, ingredients, or user alias
		On the right is the user profile picture, by clicking on which user will be redirected to <ol style="list-style-type: none"> <li>1. the user registration/ login page if not logged in,</li> <li>2. or to the user portal after logged in</li> </ol>
P0	Main Page	A List of types/categories
		A carousel to list 6 most liked posts for a week
		A dashboard to show 6 random new posts in past 24 hours
		A + sign button to upload a recipe
P0	Recipe creation UI	The form to upload a recipe's name, description, images, ingredients, and steps
P0	Recipe page	Starting with the recipe name as title and a background photo
		Description section
		A heart-shape button to favorite this recipe, and a 5-star rating section.
		A block on the right side stating current info of this recipe, including number of likes, review scores, uploading time...
		A List showing every ingredient and their usage amount
		Presentation of each step with picture
		Corresponding tags section
		Comment section
P1	Search View Page	Display search results (recipes by names, tags, ingredients; users by alias)
P1	User Portal Page	personal info
		recipe posts
		comments
		rates
		bookmarked recipes
		preference
P2	Main Page	2 rows for common searched tags
		A row of 6 most recent posts from user's followees
P2	All the changes accommodating to P2 backend features	
P3	All the changes accommodating to P3 backend features	

## 9. Data and Metrics:

- In the future, as we are getting enough recipes and users' ~~ratings and~~ bookmarks data, we might apply ML/AI to generate personal recommendation. However, in the capstone scope, we don't harshly intend to do so. In this sense, we marked it as a P4.
- Similarly, we believe tagging recipes by types/categories is beneficial, while it's unrealistic to collect adequate recipes and tags data before Dishydishes goes public. We also marked it as a P4.

## 10. Non-functional Requirements

- **Usability and Humanity Requirements**

Features like tooltips, an FAQ section or a dedicated support channel will ensure that users are able to address any challenges they face.

- **Look and Feel Requirements**

- The user interface should be consistent in color theme, font, font size, names, and icons.
- The user interface design should be clear and easy for users to navigate without extra learning curves.
- The user interface should comply with system built-in accessibility.

- **Performance and speed requirements**

Considering the high number of images on the site, it is crucial to optimize the loading time. All pages should ideally load within 3 seconds. CDN is likely to be considered.

- **Cultural Requirements**

- Diversity: The contents should be diverse and not dominated by a single cultural preference.
- Sensitivity: For users in different regions or religions, the recipes should be filtered to avoid offending them. For example, filtering recipes with beef out for Indian users.

- **Security and Privacy**

- Users' data should be protected.
- Regular security reviews will be conducted. User data will be encrypted and any third-party integrations (e.g., social media sharing) shall be subject to security review.

- **Legal**

All users uploading content will be required to ensure there is no copyright infringement. Regular checks will be conducted to ensure compliance. Upon user account creation, users will be prompted to sign a user agreement, a privacy policy and a code of conduct before completing account registration. The user agreement is a contract between the users and the service provider i.e., us, about the terms of use of our app, which includes a guideline to the users of how they might use our platform and states the division of responsibility. The privacy policy explains how our app collects, uses, shares and protects the users' data. The code of conduct is required to ensure users' behavior is healthy and

harmless. A sample code of conduct may contain restrictions on ethics, race, gender and age. As users post new recipes, a message stating that by submitting the recipe, a disclaimer would be signed automatically. The disclaimer would illustrate that potential health or ethical issue caused by this post lies on the authors responsibility, and while the copyright of user content belongs to the author and the author only, the platform keeps the right to add health warnings and the ability to set visibility status of the post.

## 11. Risks and Issues Predicted

- **Health and Safety Concerns:**

Users might post recipes with harmful or toxic ingredients; this could be both intentional and not intentional. For instance, *houltuynia cordata* is a famous of its unique taste as a spice or garnish in the southwest part of China, yet it might damage human kidneys as it contains aristolactams (Kumar, Manish; Prasad, Satyendra K.; Hemalatha, S. A current update on the phytopharmacological aspects of *Houttuynia cordata* Thunb. Pharmacognosy Reviews. 2014-01-01). Moreover, vegetables with green leaves usually contain oxalic acid, which is harmless in most scenarios, yet oxalic acid combines with free calcium ions in other foods to form calcium oxalate, which may increase the risk of stones. Furthermore, some people might be allergic to certain ingredients, which they might not notice if these are not highlighted. Therefore, our design requires a review system to eliminate this kind of hazard. The review system could be divided into two parts, a pre-review mechanism to detect harmful ingredients automatically and display a warning near the heading of the post; and a post-review mechanism allows site administrators to check manually and set the status of posts to not visible/require edit status.

- **Content Quality Concerns:**

Since the contents are posted by users, it is possible that some recipes and comments are of low quality, misleading, or include inappropriate content. Posts with low quality might harm the reputation of the platform significantly, and reputation is the core element for any platform that offers and relies on users' creativity. Inappropriate content might not only affect the reputation of the website, but also causes a series of legal issues. Thus, to remove potential harmful content and provide a smooth, polished experience to the users, we need a review system and a review team to filter these posts out.

- **Plagiarism Concerns:**

Since there isn't copyright protection in recipes as mere lists of ingredients, the only exception that will be ruled as plagiarism in DishyDishes is when two recipes are totally the same from ingredients to steps. Since it is hard to compare a recipe with all existing recipes, we will implement the punishment for plagiarism only after users submit a complaint about it. The complaint should contain both recipes and then the support team can help.

- **User Interface Concerns:**

Our user community is a complex and diverse combination, which requires us to form a

user interface with high flexibility and usability. In other words, our design must comply with different user needs. For instance, some users might access DD through their mobile devices, in that case, we shall adjust the design to maintain a stable experience for our users on mobile devices. Although modern operating systems usually offers accessibility options for users in need, there are implementations which might block the built-in accessibility functionalities, which we should avoid and provide consistent experience to people with disabilities. While caring for minorities, our main goal still lies with the majority, which includes eliminating potential issues such as insufficient search functionality, difficult navigation or unclear instructions. We would use knowledge acquired in CS4HC3 to build a well refined user-centric design.

- **Data and Privacy Concerns:**

DD collect user data including but not limited to food allergies, preferences, age and nationalities to accurately push content to users that may be of interest and warn users about potential health risks, thereby providing a smooth experience to the users. However, such sensitive data might be mishandled by internal personnel or breached by outside hackers. Internal misuse of sensitive user data might lead to decrease in reputation, which is not so different to a death sentence if not well-handled by PR department. In case our user data is hacked by outside illegal organizations, our users might still keep using our app, yet they might not be willing to share their sensitive information anymore, which results in the fact that we would not be able to provide the users full experience as designed. We will ensure transparency on all our data usages with user consents and use top-end methodologies on every process with the usage of user data.

- **Network and Stability Concerns:**

There may exist issues regarding network or server due to force majeure, in which we should use redundancies and backup strategies to prevent, to keep the convenience of the users. For network issues, we can use CDN i.e. content delivery network to provide a fast, stable experience to users in different countries or regions without deploying extra servers everywhere. To increase server stability, we could take advantage of tools like Kubernetes and Jenkins, which are capable of automatically re-deploying in case it goes down.

- **Advertisement Concerns:**

- **Risk to reduce user satisfaction:** After adding advertisement, it is likely that users will feel unhappy and move to a competitive product. To reduce this from happening, the advertisement should be soft promotion.
- **False or misleading advertisement:** The actual quality of the products may be different from what they look like in the advertisement. If the users are cheated by these advertisements, their trust, confidence and satisfaction for DD will all drop. Thus, contracts with advertisers should prevent this from happening.

## References

- [1] Kumar, Manish; Prasad, Satyendra K.; Hemalatha, S. A current update on the phytopharmacological aspects of *Houttuynia cordata* Thunb. Pharmacognosy Reviews. 2014-01-01