

# SE1 - Final Specification

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January 2022

# 1 Introduction

The idea of the app is to provide suggestions of recipes that the end user can cook at his home according to the ingredients that the user has at home. The user may filter recipes according to categories such as the type of cuisine or difficulty. In case the user opts for a recipe which requires ingredients that the user does not have at home, the app allows the user to make an order at a nearby market. Also, if the user will have an option to order that dish from a nearby restaurant.

## 2 User Stories

We have considered for our project some user stories for the End user, who will use the functionalities of the app; The Administrator, who may manage user accounts and recipes and a potential Customer Support. The front sides of the user stories are presented below along with their prioritization according to the Moscow scheme.

AS A	I WANT TO	SO THAT	Moscow
End user	Choose products that I have in the fridge	I can get lunch ideas	M
End user	See the recipe after choosing criteria	I know what I can prepare with those products	M
End user	Select an option to choose cook or show close restaurants meeting criteria	So that I can eat without cooking	C
End user	Save favourite recipes	I can come back to it easily	C
End user	Order the products I don't have	I can cook the dish	C
End user	Select time/ type of cuisine	So that the recipe is more custom chosen for me	C
End user	Manage an account	So that my recipes will be saved to my account and I will be able to change or delete my account	S
Administrator	Add products to the list of possible choices	The user can choose from them	M
Administrator	Approve/Deny user requests to create their own recipes.	So that our recipe database is growing	C
Administrator	Option to manage users	So i can block someone etc	M
Consumer support	Get user reviews	Improve the app	W

Figure 1: User Stories

### 3 Requirements

We have added the reverse sides of the user stories which contain functional and non-functional requirements related to them.

End User	I want to see the recipe after choosing criteria so that I know what I can prepare with those products
Functionality	Can I choose a particular recipe?
Functionality	Can I see all the products required along with their quantity to make the dish?
Functionality	Can I see videos/tutorials to make the dish?
Usability	Are the recipes presented in a clear way to see on a smart-phone?
Performance	Does a customised list of dishes appear depending on my past preferences?

End User	I want to select the time/type of cuisine so that the recipe is more custom chosen for me
Functionality	Can I select how much time I have to make the dish?
Functionality	Can I select what cuisine I would like to eat?
Functionality	Do I get a filtered result depending on the time or/and cuisine?
Reliability	Are the recipes shown indeed doable in the specified time and represent chosen cuisine?

End User	I want to order the products so I don't have I can cook the dish
Functionality	Can I add information about each ingredient/product (calories, average price, illustrative picture)?
Usability	Does the app automatically fill information about that ingredient/product after selecting the name (which can be changed if desired)?

End User	I want to add products to the list of possible choices so that I can choose from them
Functionality	Can I see a list of available markets nearby with their prices for the desired ingredients and delivery time?
Functionality	Can I order and pay directly through the app?
Functionality	Can I see a list of possible substitutes to a given ingredient/product in case they are not available?
Security	Can I make payments in a secure manner?
Performance	Can the app show the list of possible places in less than 5 seconds?

End User	I want to choose products that I have in the fridge so that I can get lunch ideas
Functionality	Can I choose a product that I want or have in the fridge?
Functionality	Can I choose a few products from the same category?
Functionality	Can I add my own products to the app's database of products?
Usability	Can I skip a product if I don't like any of the recommendations?

End User	I want to select an option to choose to cook or show close restaurants meeting criteria so that I can eat without cooking
Functionality	Can I still use this app if I'm terrible cook?
Usability	Can I select this option before I decide the dish?
Reliability	Is there enough restaurants to get food from?
Reliability	Do we have capabilities of delivering food to customers?
Performance	Can I see price of dish and delivery instead of recipe?
Security	Is my dish going to be delivered by trusted courier?
Security	Is my credit card data safe?

End User	I want to save favourite recipes so that I can come back to it easily
Functionality	Can I save the best recipes to not swipe to them every time if I just want to cook them?
Usability	Can I save it with a single button?
Usability	How can I open saved recipes?
Reliability	Can I remove saved recipes from the list?

Customer Support	I want to get user reviews so that I can Improve the app
Functionality	Can I see and read customers' reviews?
Functionality	Can I ask them for clarification?
Usability	Can I sort them by issue or time?
Usability	Can I mark reviews as junk or good insight when it is useful or just malicious?
Security	Can customers keep their anonymity while sending me reviews?

Administrator	I want to manage an account so that my recipes will be saved to my account and I will be able to change or delete my account
Functionality	Can I create a new account?
Functionality	Can I delete my account?
Functionality	Can I have orders assigned to my account?
Functionality	Can I change my password?
Usability	Can I display my account details in a clear manner?
Reliability	Is all data related to my account actually deleted after removing an account?
Performance	Are latencies of performing all user management queries below 100ms?
Security	Is user data encrypted and are passwords hashed?

Administrator	I want to approve/deny user requests to create their own recipes so that our recipe database can grow
Functionality	Can I view all requests to create the recipe?
Functionality	Can I approve/deny requests to add a recipe?
Usability	Can I preview multiple requests on a single screen?
Performance	Are requests to add new recipes presented to me real-time?

Administrator	I want an option to manage users so that I can block someone
Functionality	Can I ban/unban a user?
Functionality	Can I change user account details if necessary?
Functionality	Can I link/unlink recipes from the user account?
Usability	Can I easily search for any user?
Performance	Can I get a list of selected users in sub 100ms?
Security	I shouldn't have the option to remove the user account.

## 4 Use Case Diagrams

The Use Case Diagram contains information about the requirements from the User Stories in a more schematic and formal manner.

As seen below, the End User, is able to Manage his Account; Manage Recipes (by creating new recipes to be added to the database, saving favorite recipes); Select Type of Cuisine to filter recipes; Choose Ingredients among the list to filter recipes; Get Recipe Ideas from a list; Select Missing Ingredients that the user does not have at home; Make a Market order for these products; Select available Restaurants which offer the desired dish; and Making an order at the selected Restaurant. The Administrator is able to manage accounts; Manage the database of ingredients by adding, editing or deleting them; Manage the database of Recipes by adding, editing or deleting them; Approve or Deny suggestions of recipes created by the users.

The Customer Service can get user reviews and mark them as junk or useful.

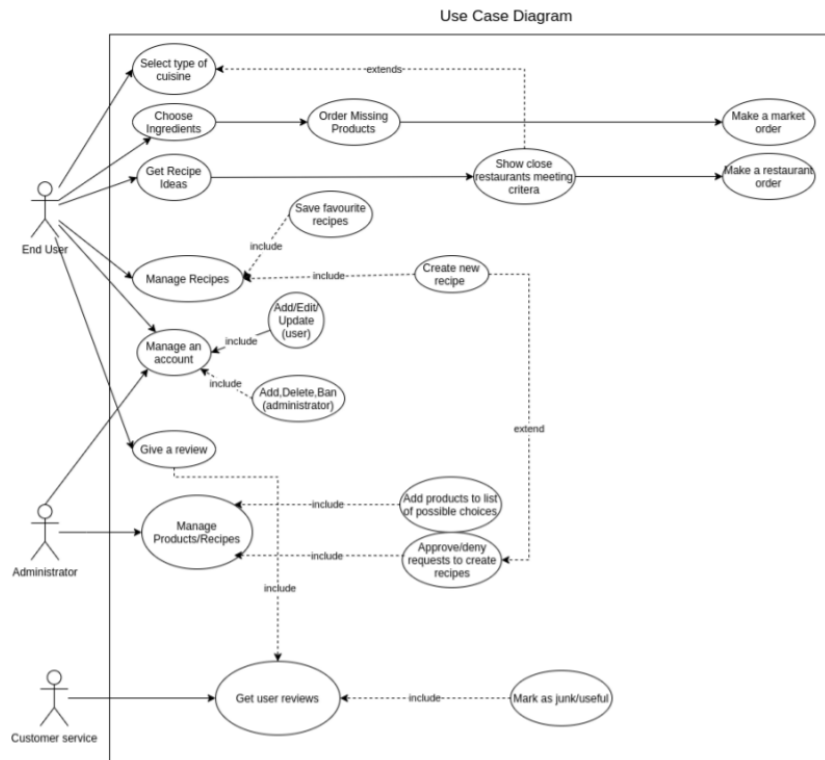


Figure 2: Use Case Diagram

## 5 Classes

- **User** - class used for representing a user with information about his/her name, userID and email address. It has a GetRecipe function which returns a list of recipes to be rendered in the UI for the user to see. Additionally, it has an order function which sends confirmation of the order
- **Ingredient** - class having basic details an ingredient should have like name,quantity and group.
- **Recipe** - class having all the key information regarding a recipe like the name, ingredients,cuisine and country. It has the functionality of adding or removing an ingredient from a particular recipe.
- **Admin** - class defining admins and their powers. It has functionalities to ban or unban a user, insert/update/modify/delete recipes or ingredients in the database.
- **Order** - class having the basic information consisting of name,address,price,userID.
- **Restaurant Order** - A subclass of Order having the functionality to forward the order to partnered restaurants.
- **Ingredient Order** - Similar to Restaurant Order, it has the functionality to forward the orders to partnered markets.
- **Restaurant Partner** - It contains a list of dishes available for delivery and a function to order a dish out of the available ones.
- **Market Partner** - Similarly, it contains a list of ingredients available for delivery and cost of the delivery process.Lastly, we have a function to order ingredients here.

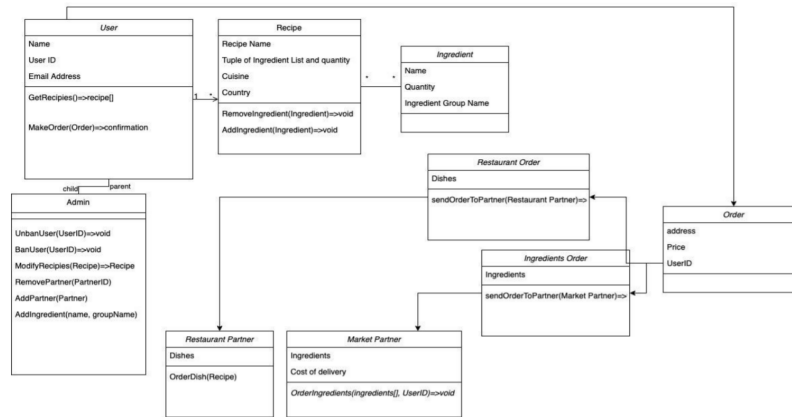


Figure 3: Class Diagram

## 6 State Diagrams

### User state diagram

Whole process starts with the user filling in his profile data such as username, password, email address. Then after he is done the system sends a verification email to the provided address. If User does not confirm that he owns that address by clicking the link included in the email for 48 hours his data is removed from the database and he will have to repeat the verification process from the start if he wants to create an account. Otherwise, his account is added to the database, he is shown a “Thank you for registration” message and some basic tutorial on how to use the application. Registered users can also be promoted to administrator rank, but it must be done by another administrator. Any administrator can be also demoted back to being a regular user.

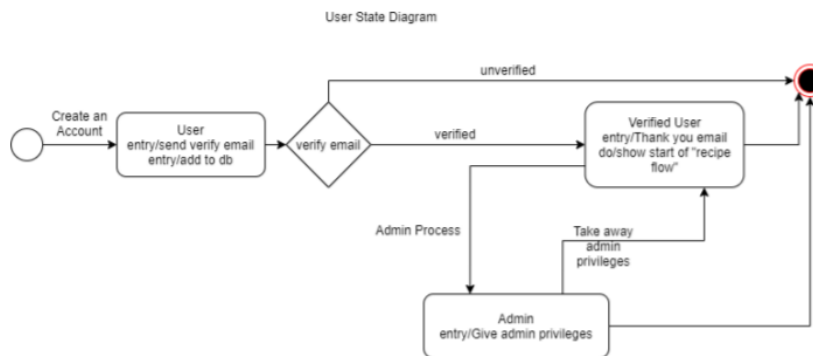


Figure 4: User State Diagram



### **Recipe State Diagram**

Recipe creation begins with a menu containing options for different ingredients. Users can exit this menu which terminates the creation process. In that case nothing is created. Users can choose any number of ingredients presented to him/her. Server is responsible for recommending such ingredients so that the final sum is always a valid recipe. If the user selects enough ingredients to create a valid dish, the “I’m done” button becomes visible and after clicking it he is presented with the finished recipe. It consists of a picture of the dish, list of ingredients, their proportions, and step by step method to create it. He can also rate it using a 1 to 5 star system. Then user is presented with more options: He/She can add it to favorites. This will assign this recipe to a specific “favorite” list accessible from the user account so he wouldn’t have to create it every time he wants to make this dish. He/She can also decide that he doesn’t feel like cooking today and he would like to order it from one of the food delivery partners. In such a case he is presented with a list of nearby restaurants that can prepare this specific dish along with the prices for it in each of them. This option also displays delivery time for each of them.

If User is feeling like cooking but is missing some specific ingredients, he can also order them in our app. He has to select which items he wishes to order, and then he is presented with a list of grocery delivery partners willing to supply him with a given item. It present’s supplier name along with, price, time of delivery, expiration date (if exists), production date.If User is feeling like cooking but is missing some specific ingredients, he can also order them in our app. He has to select which items he wishes to order, and then he is presented with a list of grocery delivery partners willing to supply him with a given item. It present’s supplier name along with, price, time of delivery, expiration date (if exists), production date.

### **Admin State Diagram**

The admin is a usual user that was elevated and granted additional permissions. Because to elevate a user to an admin such a user needs to have a verified account the first state that the admin arrives at is Verified Account. There admin has three options:

- manage users - by clicking on this option a list of users will be downloaded from the database and the admin will be able to see a list of users and select one of them if needed, in which case he/she would see details of the user’s account and option to modify them (in case user has some problems and needs for example new login ID) or ban and unban user, and save the changes to the database when leaving the user profile.
- Manage recipes created by users. It will show a list of recipes created and uploaded for verification by users. After selecting one of them the admin will see a universal template with ingredients, information and detailed steps depicting cooking a dish based on this recipe. The admin can modify such recipe and when the admin is done with it he/she can either reject it or approve it. In the first case the recipe will be deleted and the user will

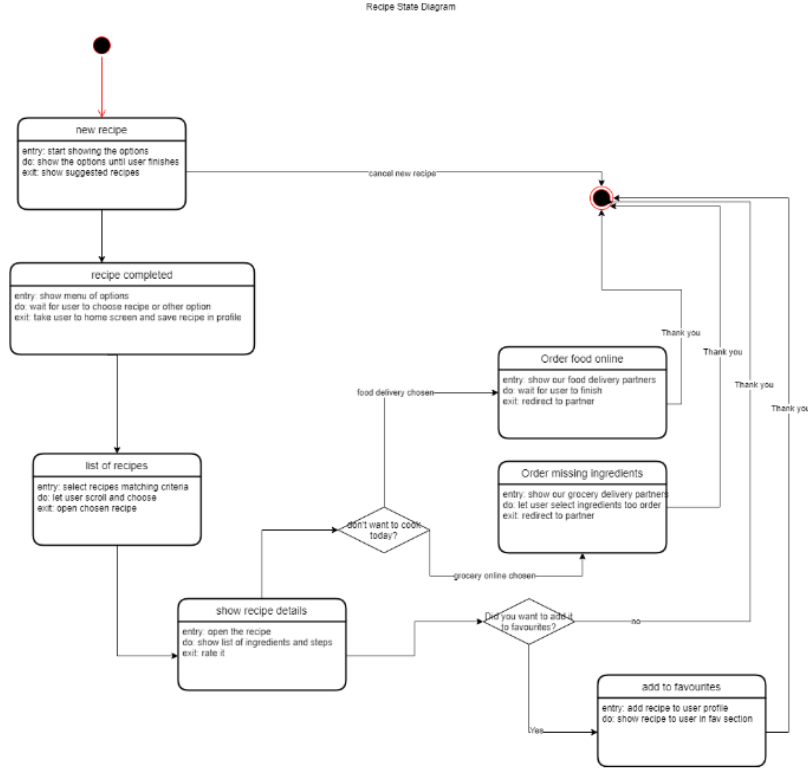


Figure 5: Recipe State Diagram

be notified. In the second case the recipe will be added to the database of the recipes and the user will again be notified.

- Add a recipe. This will open a new text template of a recipe. The admin will be able to add ingredients and their amount, linking them with the database of ingredients of the app. Then the admin can add extra description and finally steps. After this the admin can approve the recipe and as above it will be added to the database. In case of rejecting it will be simply deleted.

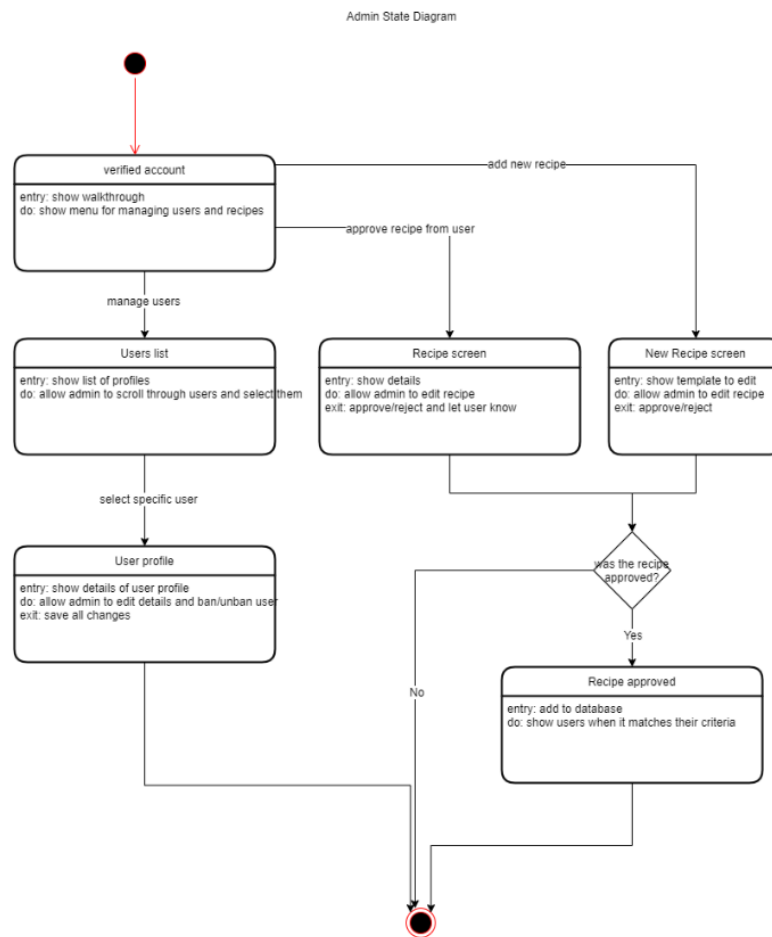


Figure 6: Admin State Diagram

## 7 Activity Diagrams

### 7.1 Recipe picking

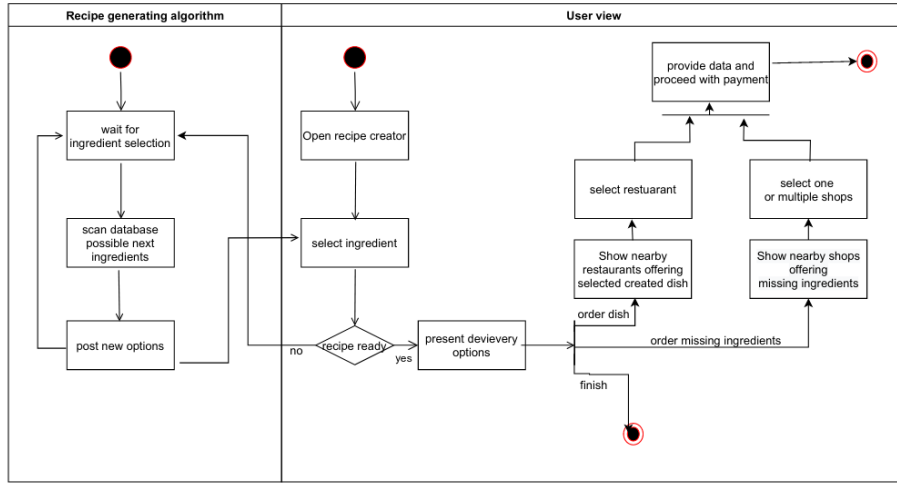


Figure 7: Recipe picking activity diagram

The recipe creation process activity is started with a user opening recipe creator. After that user is asked to select ingredients. If list of ingredients is sufficient (recipe ready), the activity will proceed to presenting delivery options.

If not, recipe generating algorithm will be triggered. It will wait for ingredient selection (which is an entry point from the point of view of the algorithm). The algorithm will scan database looking for next possible ingredients to suggest. New options will be posted to the user as long as any recipe satisfying the requirements is ready.

After that the user has exactly 3 possibilities:

- Finish the process which means a user is satisfied with recipe only. This finishes the activity.
- Order missing ingredients.
- Order already prepared dish.

In case of 2 latter options, nearby shops/restaurants will be presented to the user. After user selection, he will proceed with inputting required data and payment, which terminates the activity as well.

## 7.2 Account creation

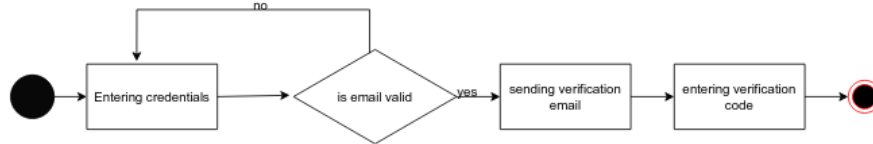


Figure 8: Account creation activity diagram

Account creation activity begins as user enters his proposed credentials. After that, credentials are validated, checking if password is complex enough and if email address is valid. The process is repeated until the validation is satisfied. After that, verification email is sent to the user. When a user enters correct verification code (sent to his email), the activity finishes with new account being present in the system. The user may proceed to login.

## 8 Sequence Diagrams

### 8.1 Create account and login

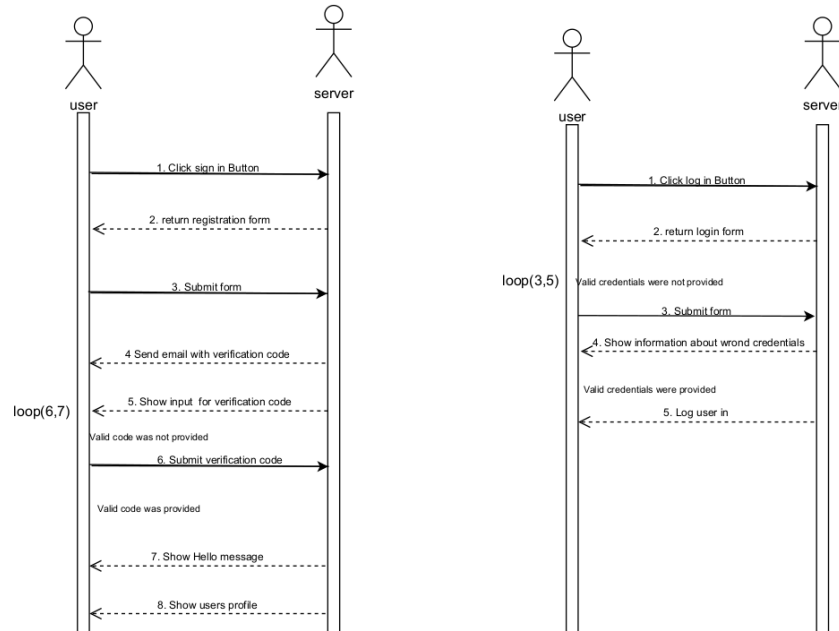


Figure 9: Sequence diagram for creating an account (left) and login (right)

Here we will describe 2 scenarios:

- Creating Accounts

The steps are pretty generic from what we usually see in various applications. The user initiates the process by clicking sign up button. The sign up form gets displayed to user as a result. After submitting the form, the user receives a validation code to validate the account(which will be in loop if the user fails to provide the correct verification code). After successfully verifying, user receives a welcome message along with the display of his/her profile.

- Log in to Existing Accounts

A simple process which helps the user to log into existing account by filling in valid credentials. In case of invalid credentials, the process enters a loop which runs until the login form is submitted with correct credentials.

## 8.2 Dish Selection

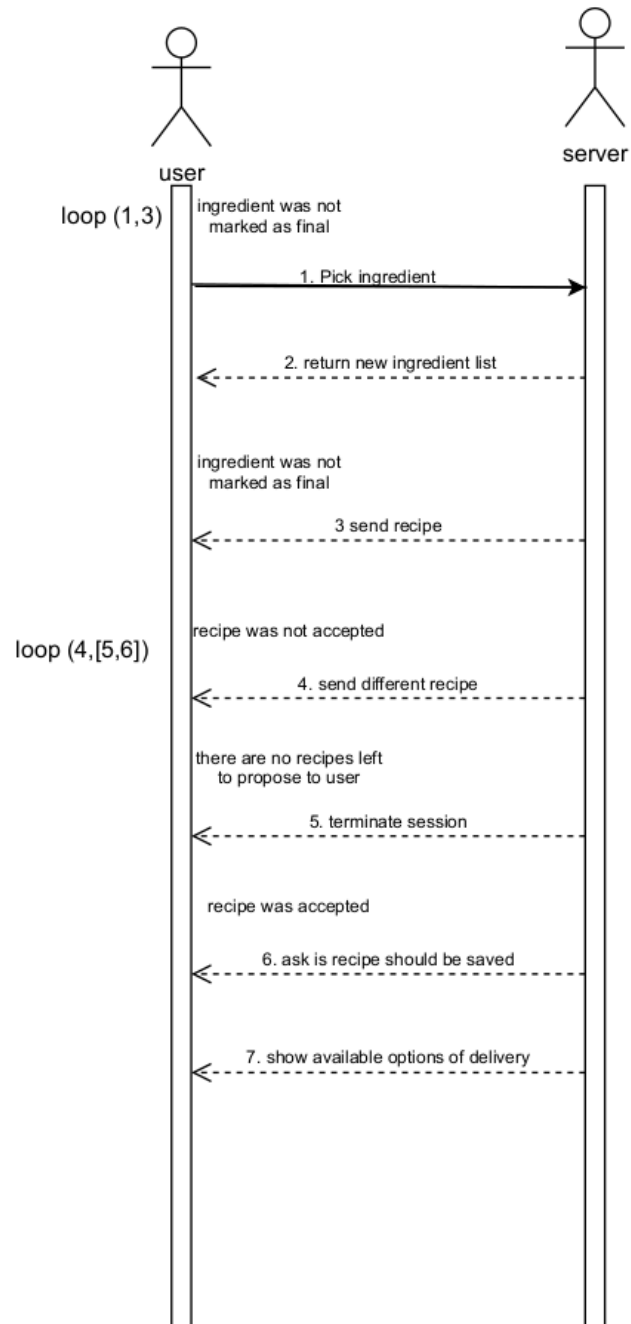


Figure 10: Sequence diagram for dish selection process

The above sequence diagram describes the steps of the communication between the user and the server when selecting for ingredients to receive suggestions of dishes by the app. The user is presented with the list of suggested ingredients. Every time an ingredient is selected, a message is sent to the server, which replies with a new list of ingredients. This is repeated until the user marks the ingredient as final, and in this case the server also sends a suggestion of recipe. In case the suggestion is not accepted, the server keeps sending other suggestions until either there are no recipes left to be proposed or a recipe suggestion is accepted. Once a recipe is accepted then the user receives available options of delivery.



### 8.3 Place an order

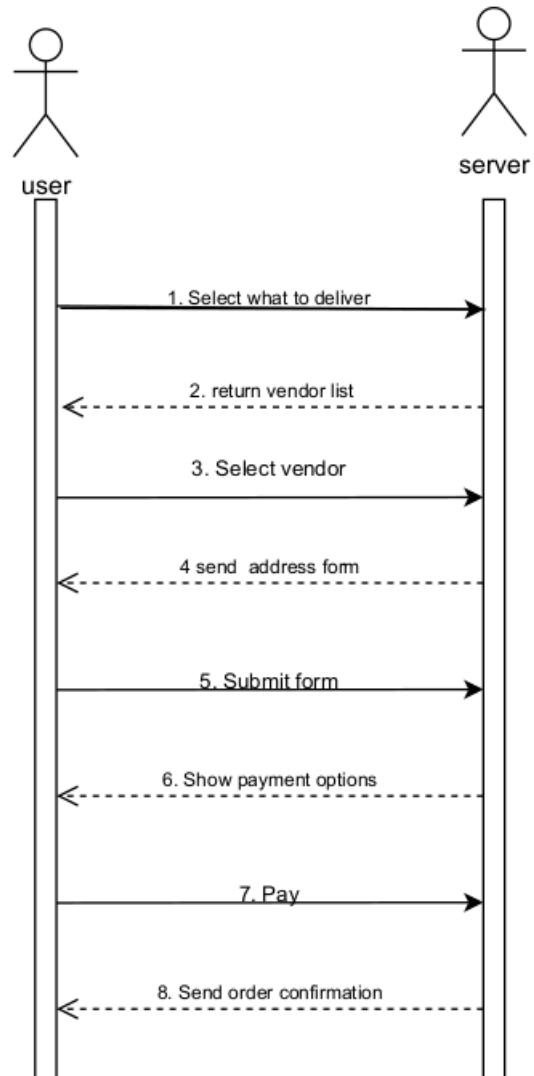


Figure 11: Sequence diagram for process of placing an order

The above sequence diagram describes the steps of communication between the user and the server when the user is about to place an order. The sequence starts when an order is previously made in the app. A message is sent to the server describing the contents of the order and the server responds with a list of restaurants or markets that provide that can provide the contents of the order. The user selects the desired one and send a message to the server informing that. The user is then presented with an address form to be filled. Once the user finishes it, the server is informed and replies back with payment options. Once the user fills the relevant information required for the payment and executes the payment a message is finally sent to the server, which then sends back to the user a confirmation that the order is successfully executed.

## 9 REST API Specification

### 9.1 Log in

```
Endpoint: /api/login
Method: get
Response Status:
- 200: OK
- 404: Username not found
- 401: Password not correct
Body:
{
    Username (string)
    Password (string)
}
```

### 9.2 Register

```
Endpoint: /api/register
Method: post
Response Status:
- 201: Created
- 409: Email already in use
Body:
{
    Username (string)
    Password (string)
    Email (string)
    Verified (bool)
}
```

### 9.3 Get ingredient

Endpoint: /api/ingredient  
Method: get  
Response Status:  
- 200: OK  
- 404: Category not found  
Body:  
{  
    Category (string)  
}

### 9.4 Post ingredient

Endpoint: /api/ingredient  
Method: post  
Response Status:  
- 200: OK  
- 404: Category not found  
Body:  
{  
    Category (string)  
}

### 9.5 Get recipes

Endpoint: /api/recipe  
Method: get  
Response Status:  
- 200: OK  
- 404: No matching recipe found  
Body:  
{  
    Ingredients (array of strings)  
    Time of cooking (int)  
    Type of cuisine (string)  
}

## 9.6 Deliver food

Endpoint: /api/delivery

Method: post

Response Status:

- 200: OK
- 404: No delivery partner found
- 402: Payment required
- 500: Request rejected

Body:

```
{  
  ID of dish (int?string?)  
  Address (string)  
  Name (string)  
}
```