Design Walkthrough

Index

By Saqab Mohammad, Tom Bestwick, Sami Idreesi, Adam Mazur, Vlad Septelici, Aman Tukhar

Summary of proposal:

Objectives

Our main objectives for this project are to give people a platform where they can share recipes, learn ideas and explore different cultures through cuisine, all while reducing food wastage through recipe suggestions based on ingredients people already have in their kitchens.

Essential features:

- Register as a base or pro user
- Browse recipes
- Add and remove ingredients to virtual fridge
- Add and remove recipes if pro user
- Comment on recipes
- Follow users/add recipes to favourite
- Get suggestions /browse recipes based on items in the fridge
- Have a week's top recipe/user section, in the discover section

To expand the app beyond what we outlined in the specification we have a list of desirable features that we could add as a future update. These include things like:

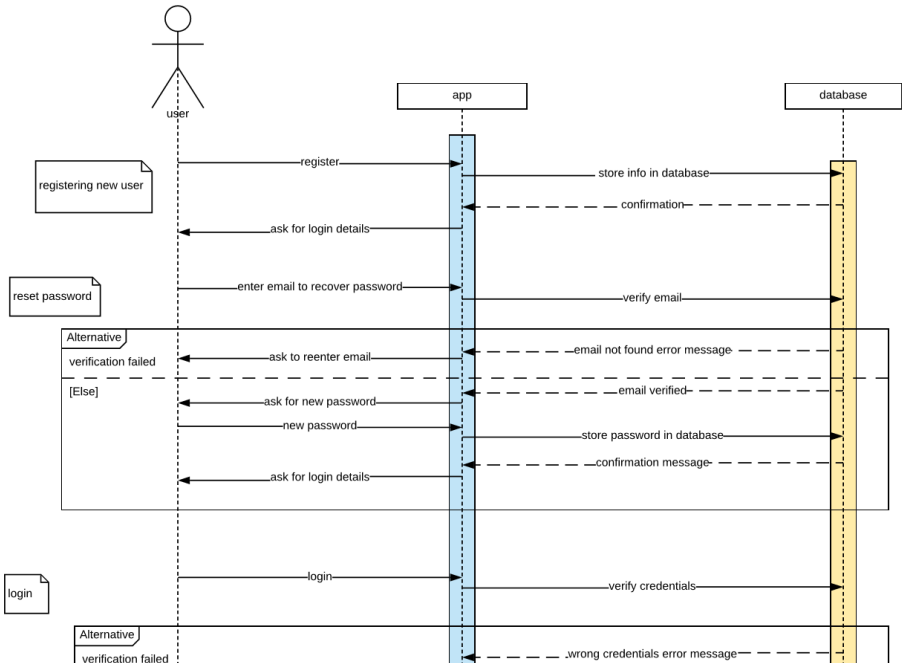
- Add a shopping list and get a notification when near a supermarket
- A smarter way to input ingredients (using your phones camera)
- A feature that allows users to get suggestions on how to swap certain foods in their diet for healthy alternatives.

Specification changes:

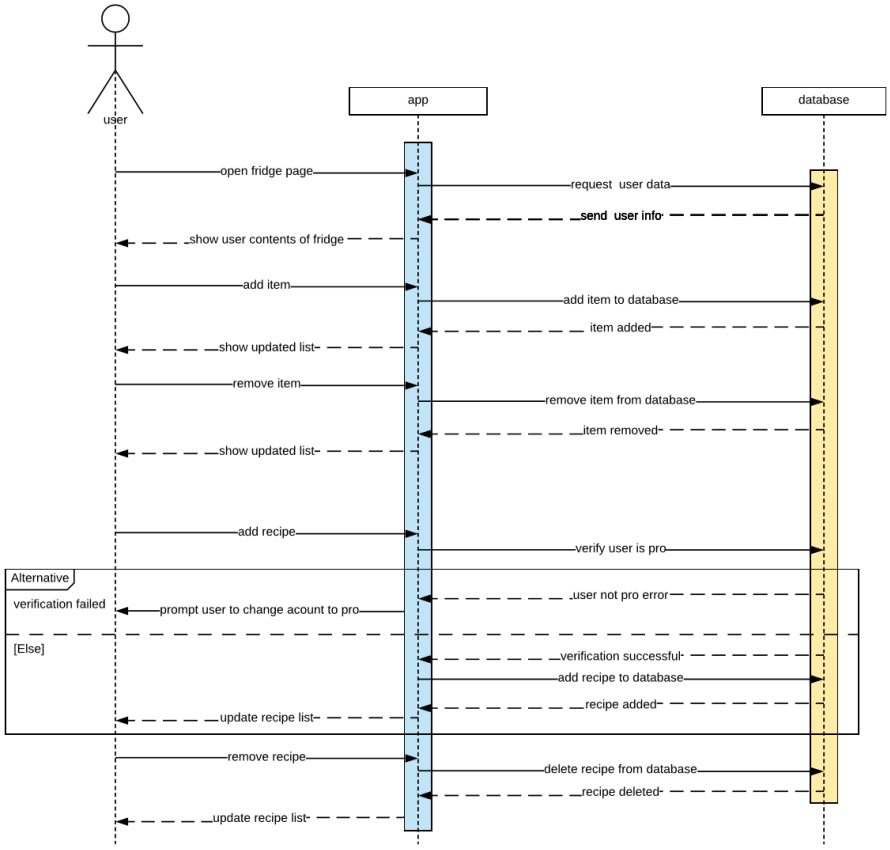
As we were planning the development phase, we decided it would be a good idea to make the app start on the login page instead of the home page as we said in the specifications. The reason for this change is that there is not much a user can do on the app if they are not registered.

Interaction chart:

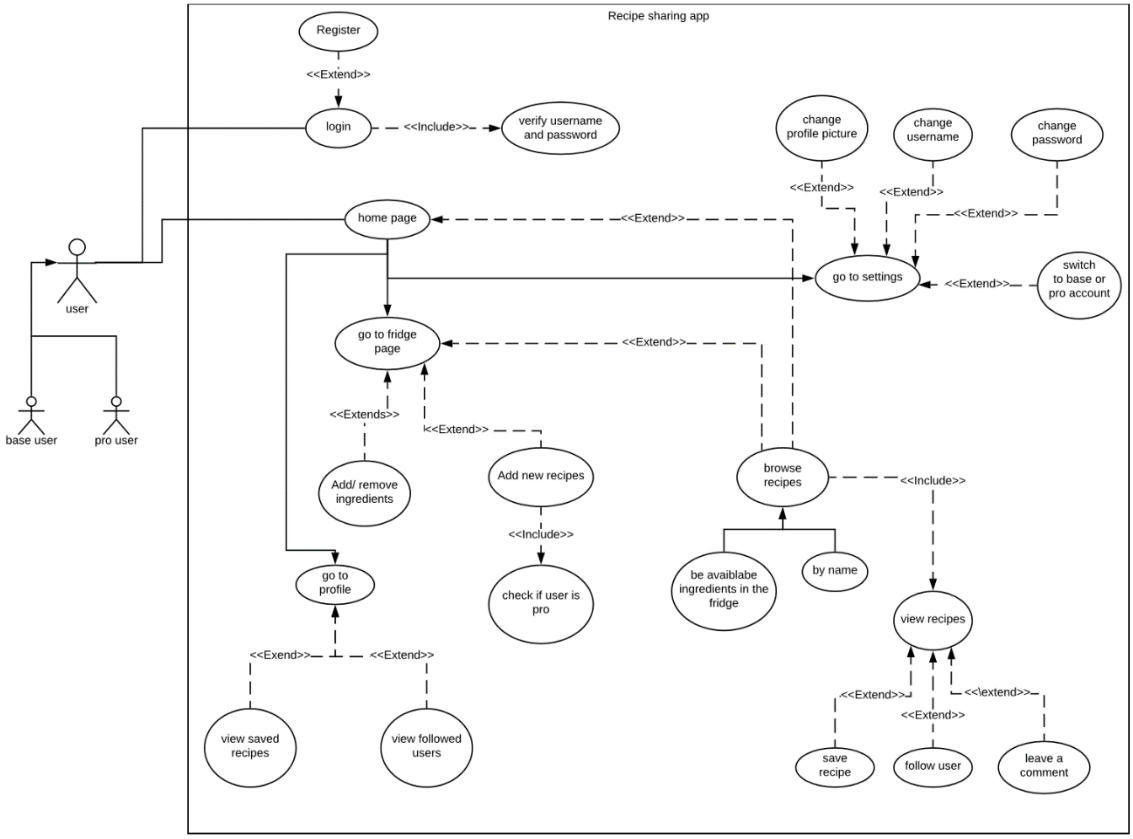
Registration, password recovery and login.



Add remove ingredients and recipes.



UML Use Case Diagram:



Use case descriptions:

ID	UC1
Name	Add Ingredient
Description	User adds ingredient to Virtual Fridge
Pre-Condition	Account exists and initial fridge configuration done
Event Flow	1. Enter Ingredient 2. Include UC2 'Validate Ingredient' 3. If successful, add ingredient, else include UC3 'Re-enter Ingredient'
Extension Points	Validate Ingredient Re-enter Ingredient
Triggers	User selected the "Add Ingredient" option
Post Condition	Fridge is updated, notification is given to user, user is shown fridge

ID	UC2
Name	Validate Ingredient
Description	User enters ingredient – validated to ensure it exists in DB
Pre-Condition	User enters ingredient
Event Flow	1. Check Ingredient

	2. If exists, add to Fridge and exit 3. Else, UC3, re-enter ingredient
Extension Points	Re-enter Ingredient
Triggers	User added a new ingredient
Post Condition	Fridge updated or user directed to re-enter UC3

ID	UC3
Name	Re-enter Ingredient
Description	User enters invalid ingredient and must re-enter a valid one
Pre-Condition	Ingredient entered is invalid
Event Flow	1. Re-enter ingredient 2. UC2 – check ingredient again
Extension Points	Validate Ingredient
Triggers	User entered invalid ingredient
Post Condition	Balance updated, cash is given to customer, customer is logged out

ID	UC4
Name	Remove Ingredient
Description	User wants to remove ingredient
Pre-Condition	User has ingredients in fridge
Event Flow	1. Check which item user wants to remove 2. See if it exists in fridge and if it does remove it
Extension Points	
Triggers	User selected the “Remove Ingredient” option
Post Condition	Fridge updated, and the fridge is shown to the user

ID	UC5
Name	Add Recipe
Description	User wants to upload a recipe
Pre-Condition	Account exists
Event Flow	1. Allow user to enter recipe 2. UC6 – check for validity 3. If fine, upload recipe and show user 4. Else, UC7 re-enter recipe
Extension Points	Validate Recipe Re-enter recipe
Triggers	User selected the “Add Recipe” option

Post Condition	Recipe DB updated, recipe is shown to user

ID	UC6
Name	Validate Recipe
Description	User enters recipe – validated to ensure it does not already exist in DB
Pre-Condition	User enters recipe
Event Flow	1. Check recipe 2. If not exists, add to recipe DB and exit 3. Else, UC7, re-enter recipe
Extension Points	Re-enter recipe
Triggers	User added a new recipe
Post Condition	DB updated or user directed to re-enter UC7

ID	UC7
Name	Re-enter recipe
Description	User enters invalid recipe and must re-enter a valid one
Pre-Condition	recipe entered is invalid
Event Flow	1. Re-enter recipe 2. UC6 – check recipe again
Extension Points	Validate recipe
Triggers	User entered invalid recipe
Post Condition	DB updated or user directed to re-enter UC7

ID	UC8
Name	Remove recipe
Description	User wants to remove recipe
Pre-Condition	User has recipe in fridge
Event Flow	1. Check which recipe user wants to remove 2. See if it exists in DB and if it does remove it
Extension Points	
Triggers	User selected the “Remove recipe” option
Post Condition	DB updated, and the confirmation is shown to the user

ID	UC9
Name	Add to Shopping List
Description	User wants to add to shopping list
Pre-Condition	Account exists
Event Flow	1. Allow user to enter item
Extension Points	
Triggers	User selected the “Add to SL option” option
Post Condition	Shopping list updated; list is shown to user

ID	UC10
Name	Add comment
Description	User wants to add a comment
Pre-Condition	Account exists
Event Flow	1. Allow user to enter comment 2. UC11 – check for validity (profanity etc) 3. If fine, upload comment and show user 4. Else, UC12 re-enter comment
Extension Points	Validate comment Re-enter comment
Triggers	User selected the “Add comment” option
Post Condition	Recipe DB updated, comment is shown to user

ID	UC11
Name	Validate comment
Description	User enters comment – validated to ensure it does not contain profanity
Pre-Condition	User enters comment
Event Flow	1. Check comment 2. If good, add to recipe DB and exit 3. Else, UC12, re-enter comment
Extension Points	Re-enter comment
Triggers	User added a new comment
Post Condition	DB updated or user directed to re-enter comment UC12

ID	UC12
Name	Remove Comment
Description	User/Admin wants to remove comment
Pre-Condition	User/Admin selects remove comment and admin rights if deleting another users comment
Event Flow	
Extension Points	
Triggers	User wants to remove comment
Post Condition	DB updated

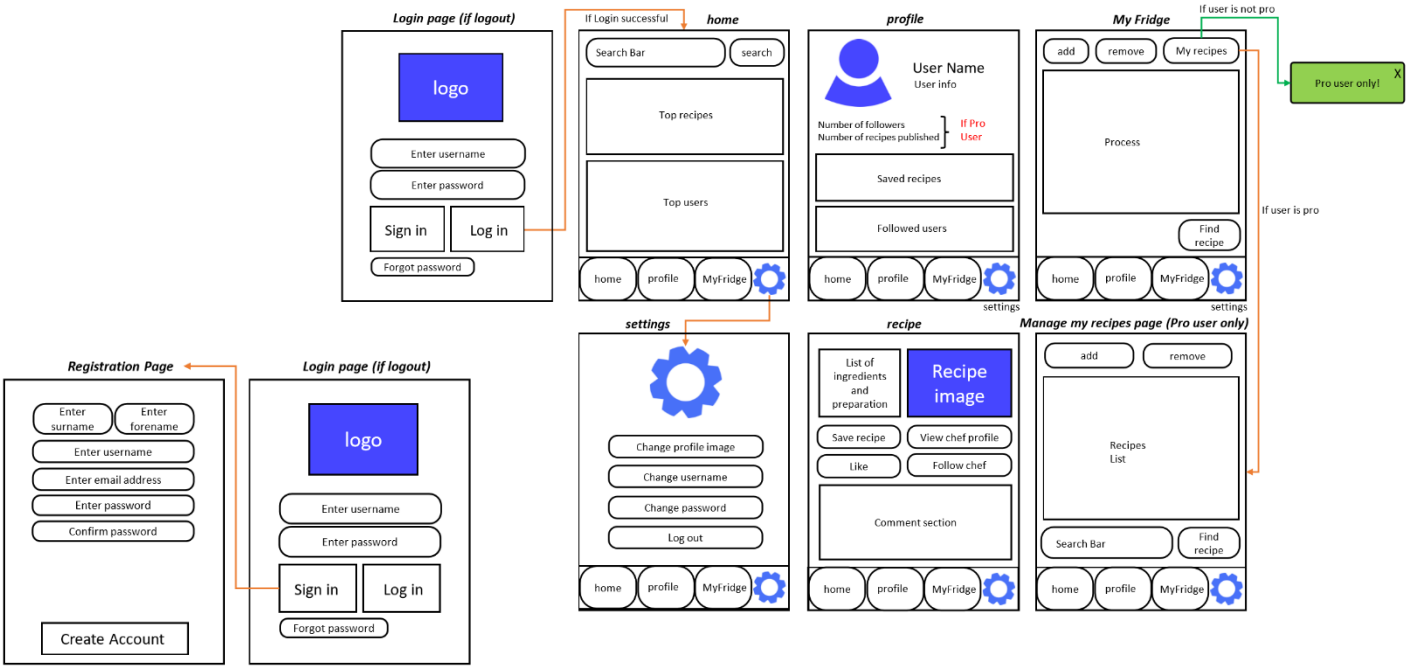
ID	UC13
Name	Search Recipe
Description	User wants to search for a recipe
Pre-Condition	User taps on search bar
Event Flow	1. Search DB based on search term/items in virtual fridge 2. Show search results to user
Extension Points	
Triggers	User wants to search recipes
Post Condition	Display search

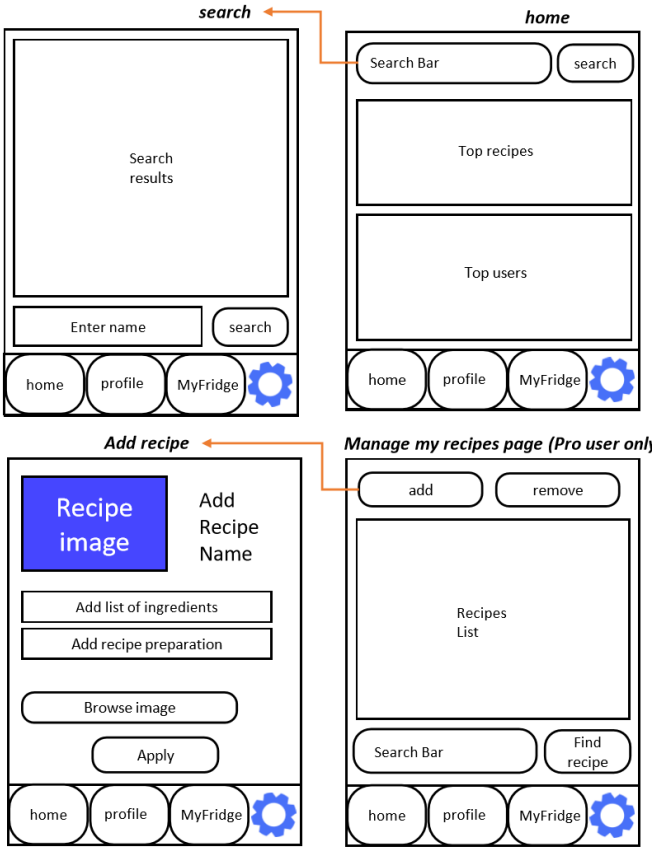
ID	UC13
Name	Search Recipe
Description	User wants to search for a recipe
Pre-Condition	User taps on search bar
Event Flow	1. Search DB based on search term/items in virtual fridge 2. Show search results to user
Extension Points	
Triggers	User wants to search recipes
Post Condition	Display search

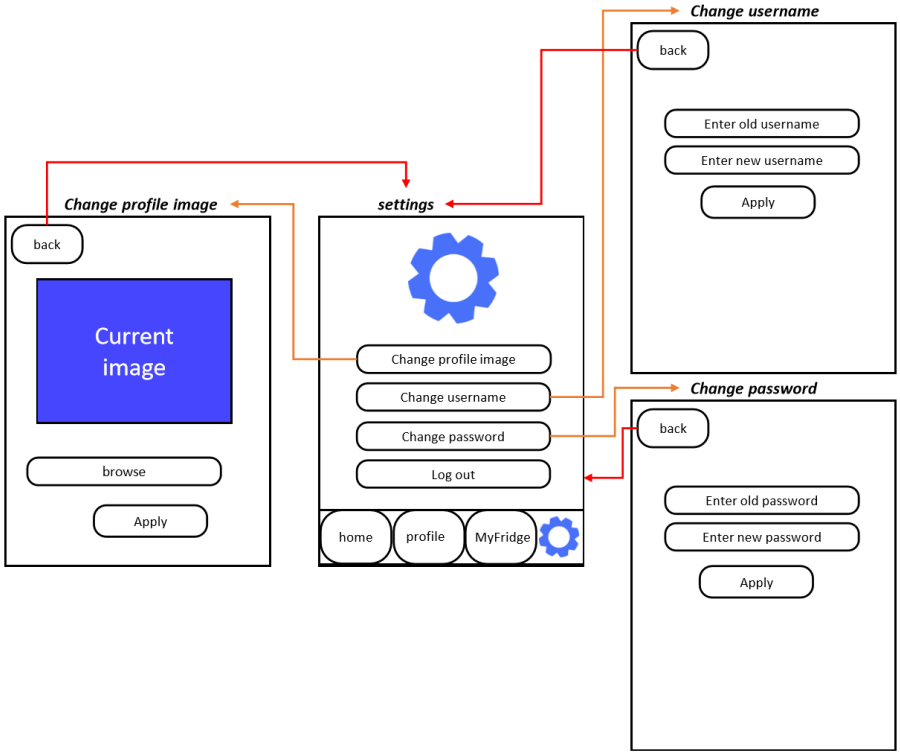
ID	UC14
Name	Add User
Description	Allows admin to add user
Pre-Condition	Admin taps on add user and they have admin rights
Event Flow	1. Enter email 2. Search DB based on user to check they don't already exist 3. Input user details 4. Display confirmation message
Extension Points	
Triggers	Admin wants to add user
Post Condition	Display user account details and confirmation

ID	UC15
Name	Remove recipe
Description	Allows admin to remove a user
Pre-Condition	Admin taps on remove user
Event Flow	1. Enter email 2. Search DB based on user to check they already exist 3. Display confirmation message of deletion
Extension Points	
Triggers	Admin wants to delete user
Post Condition	Display confirm message

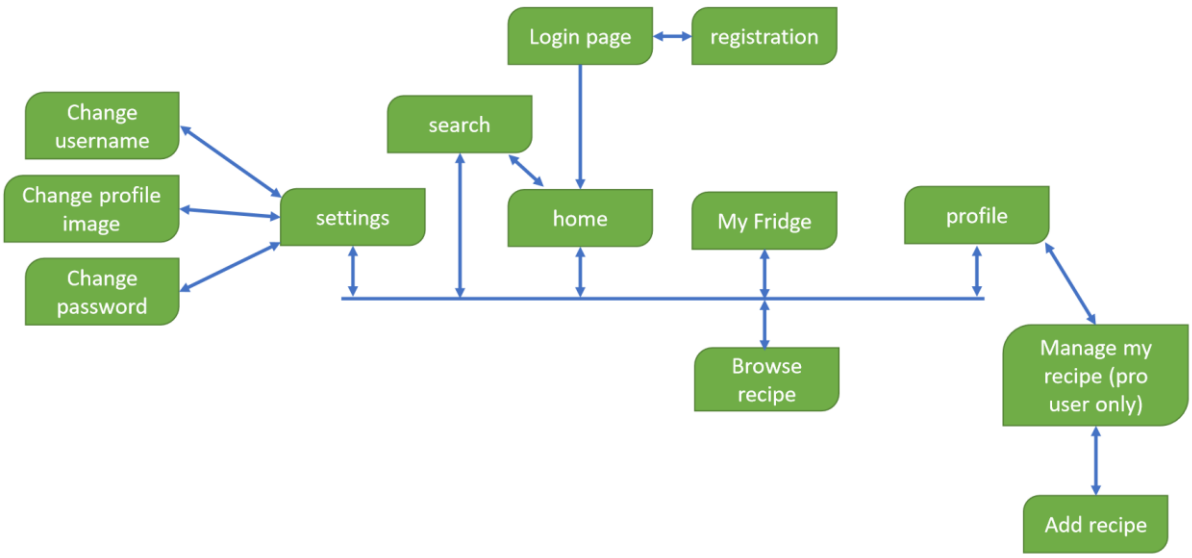
App layout design:







App navigation chart:



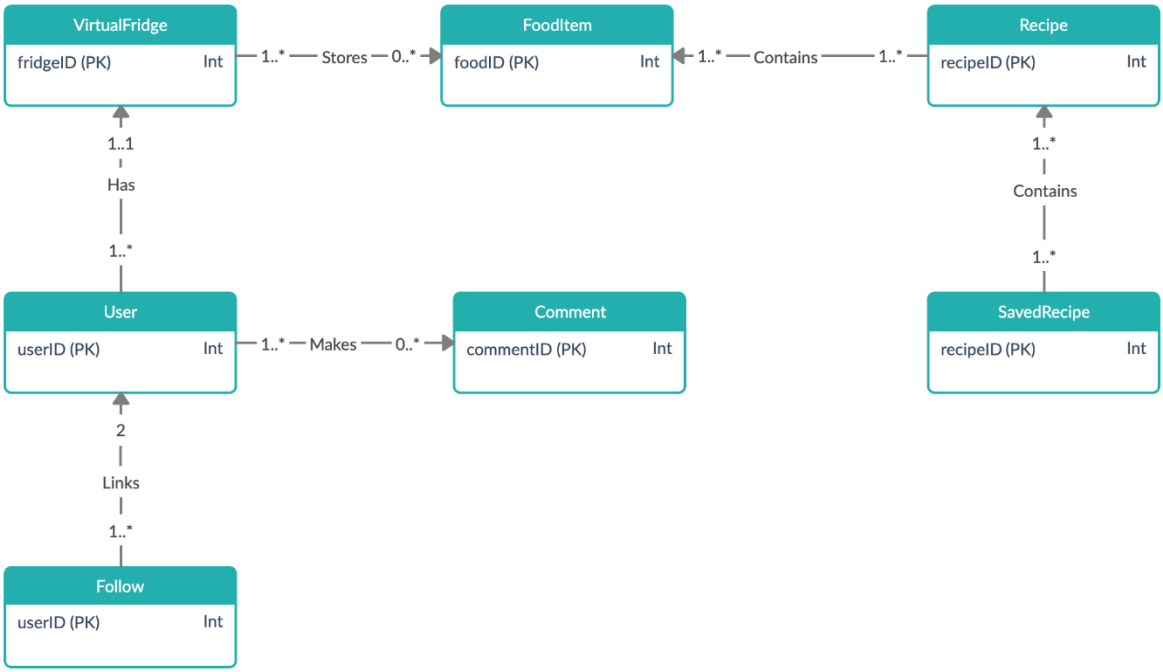
Database Design:

Data Dictionaries

Description data dictionary

Entity name	Description	Aliases	Occurrence
VirtualFridge	Store the food items of the user	Fridge	Virtual fridge page – each user has a virtual fridge
FoodItem	Describe details regarding an item of food	Food, product, item	In the virtual fridge, in a recipe
User	Store details of the person using the application	Person, chef	Throughout the application - to use the application a 'User' must be defined
Recipe	Describe and store recipes	Meal	Recipes page, profile page, virtual fridge page
SavedRecipe	Store recipes saved by the user		Profile page
Follow	Store the users the user is followed by and is following		Profile page
Comment	Store comments made by users regarding a recipe		Recipes page

Global ER Diagram



Relationships data dictionary

Entity name	Multiplicity	Relationship	Multiplicity	Entity name
VirtualFridge	1..*	Stores	0..*	FoodItem
User	1..*	Has	1..1	VirtualFridge
User	1..*	Makes	0..*	Comment
Recipe	1..*	Contains	1..*	FoodItem
SavedRecipe	1..*	Contains	1..*	Recipe
Follow	1..*	Links	2	User

Attributes data dictionary

No attributes are multi-valued

Entity name	Attributes	Data type and length	Description	Nulls
VirtualFridge	**fridgeID (PK)**	int(6) fixed	Uniquely identify a virtual fridge	No
	foodID (FK)	int(7) fixed	Id of the food item in the fridge	No
	quantity	int(3) variable	Quantity of a food item	No
FoodItem	**foodID (PK)**	int(7) fixed	Uniquely identify a food item	No
	name	varchar(50)	Name of the food	No
	calories	int(5) variable	Number of calories of the food	Yes
	image	varchar(50)	Directory of the image of the food	Yes
	isVegan	boolean	If the food is suitable for vegans	No
	isVegetarian	boolean	If the food is suitable for vegetarians	No
	isPescatarian	boolean	If the food is suitable for a pescatarian	No
User	**userID(PK)**	int(6) fixed	Uniquely identify a user	No
	fridgeID (FK)	int(6) fixed	ID of the user's VirtualFridge	No
	username	varchar(20)	User's username	No
	fName	varchar(30)	User's first name	No
	lName	varchar(30)	User's last name	No
	email	varchar(50)	User's email	No
	isPro	boolean	Indicate is the user is a pro user	No
	isVegan	boolean	Indicate if the user is a vegan	No
	isVegetarian	boolean	Indicate if the user is a vegetarian	No
	isPescatarian	boolean	Indicate if the user is a pescatarian	No
	followersCount	int(6) fixed	Number of followers the user has	Yes
	publishedRecipesCount	int(6) fixed	Number of user's published recipes	Yes

Recipe	**recipeID (PK)**	int(7) fixed	Uniquely identify a recipe	No
	userID(FK)	int(6) fixed	User who created the recipe	No
	name	varchar(50)	Name of the meal	No
	image	varchar(50)	Directory of the image of the food	Yes
	ingredients	varchar(max)	Ingredients required to make the meal	No
	instructions	varchar(max)	Instructions on how to make the meal	No
	viewCount	int(7) variable	Amount the recipe has been viewed	No
	likeCount	int(7) variable	Number of likes the recipe has	No
Comment	**commentID (PK)**	int(7) fixed	Uniquely identify a comment	No
	recipeID (FK)	int(7) fixed	ID of the recipe the comment was made on	No
	userID(FK)	int(6) fixed	ID of user who made the comment	No
	commentContent	varchar(200)	The actual comment that was made	No
Follow	**followerID (PK)**	int(6) fixed	ID of the following user	Yes
	followedID (PK)	int(6) fixed	ID of the followed user	Yes
SavedRecipe	**recipeID (PK)**	int(6) fixed	ID of the recipe being saved	No
	userID(PK)	int(6) fixed	ID of the user saving the recipe	No

Global logical data model

VirtualFridge (fridgeID, foodID, quantity) **Primary Key:** fridgeID **Foreign Key:** foodID **references** FoodItem (foodID)
FoodItem (foodID, name, calories**,** image**,** isVegan**,** isVegetarian**,** isPescatarian) **Primary Key:** foodID
User (userID, fridgeID, username, fName**,** lName**,** email**,** isPro, isVegan**,** isVegetarian**,** isPescatarian) **Primary Key:** userID **Foreign Key:** fridgeID **references** VirtualFridge (fridgeID)
Recipe (recipeID, userID**,** name**,** image**,** ingredients**,** instructions**,** viewCount**,** likeCount) **Primary Key:** recipeID **Foreign Key:** userID **references** User (userID)
Comment (commentID, recipeID, username, commentContent) **Primary Key:** commentID **Foreign Key:** recipeID **references** Recipe (recipeID)
SavedRecipe (recipeID, userID) **Composite Primary Key:** recipeID, userID **Foreign Key:** recipeID **references** Recipe (recipeID) **Foreign Key:** username **references** User (userID)
Follow (followerID, followedID) **Composite Primary Key:** followerID, followedID **Foreign Key:** followerID **references** User (userID) **Foreign Key:** followedID **references** User (userID)

Physical table structure

VirtualFridge(fridgeID Fridge_Identification NOT NULL AUTO_INCREMENT,
foodID Food_Identification NOT NULL,
quantity Food_Quantity NOT NULL)

Primary key: fridgeID

Foreign key foodID References **FoodItem**(foodID) ON DELETE CASCADE

Domain	Data type and length
Fridge_Identification	Fixed length integer, length 6
Food_Identification	Fixed length integer, length 7
Quantity	Variable length integer, max length 3

FoodItem (foodID Food_Identification NOT NULL AUTO_INCREMENT,
name Food_Name NOT NULL,
calories Food_Calories NULL,
image Food_Image NULL
isVegan Food_Vegan NOT NULL,
isVegetarian Food_Vegetarian NOT NULL,
isPescatarian Food_Pescatarian NOT NULL)

Primary Key: foodID

Domain	Data type and length
Food_Identification	Fixed length integer, length 7
Food_Name	Variable length character, max length 50
Food_Calories	Variable length integer, max length 5
Recipe_Image	Variable length BLOB, max length
Food_Vegan	Boolean
Food_Vegetarian	Boolean
Food_Pescatarian	Boolean

User (userID User_Identification NOT NULL AUTO_INCREMENT,
fridgeID Fridge_Identification NOT NULL,

username NOT NULL,
fName First_Name NOT NULL,
lName Last_Name NOT NULL,
email Email_Address NOT NULL,
isPro User_Pro_User NOT NULL
isVegan User_Vegan NOT NULL,
isVegetarian User_Vegetarian NOT NULL,
isPescatarian User_Pescatarian NOT NULL,
followersCount Followers_Count NOT NULL,
publishedRecipesCount Recipes_Count NULL)

Primary Key: userID

Foreign Key: fridgeID **references** VirtualFridge (fridgeID) ON DELETE CASCADE

Domain	Data type and length
User_Identification	Fixed length integer, length 6
Fridge_Identification	Fixed length integer, length 6
Username	Variable length character, max length 20
First_Name	Variable length character, max length 30
Last_Name	Variable length character, max length 30
Email_Address	Variable length character, max length 50
User_Pro_User	Boolean
User_Vegan	Boolean
User_Vegetarian	Boolean
User_Pescatarian	Boolean
Followers_Count	Fixed length integer, length 6
Recipes_Count	Fixed length integer, length 6

Recipe (recipeID Recipe_Identification NOT NULL AUTO_INCREMENT,
userID User_Identification NOT NULL,
name Recipe_Name NOT NULL,
image Recipe_Image NULL,
ingredients Recipe_Ingredients NOT NULL,
instructions Recipe_Instructions NOT NULL,
viewCount Recipe_Views NOT NULL,

likeCount Recipe_Likes NOT NULL)

Primary Key: recipeID

Foreign Key: userID **references** User (userID) ON DELETE CASCADE

Domain	Data type and length
Recipe_Identification	Fixed length integer, length 6
User_Identification	Fixed length integer, length 6
Recipe_Name	Variable length character, max length 50
Recipe_Image	Variable length character, max length 50
Recipe_Ingredients	Variable length character, max length
Recipe_Instructions	Variable length character, max length
Recipe_Views	Variable length integer, max length 6
Recipe_Likes	Variable length integer, max length 6

Comment (commentID Comment_Identification NOT NULL AUTO_INCREMENT,

recipeID Recipe_Identification NOT NULL,

userID User_Identification NOT NULL,

commentContent Comment's_Content NOT NULL,)

Primary Key: commentID

Foreign Key: recipeID **references** Recipe (recipeID) ON DELETE CASCADE

Foreign Key: userID **references** User (userID) ON DELETE CASCADE

Domain	Data type and length
Comment_Identification	Fixed length integer, length 7
Recipe_Identification	Fixed length integer, length 7
User_Identification	Fixed length integer, length 6
Comment's_Content	Variable length character, max length 200

SavedRecipe (recipeID Recipe_Identification NOT NULL,

userID User_Identification NOT NULL)

Composite Primary Key: recipeID, userID

Foreign Key: recipeID **references** Recipe (recipeID)

Foreign Key: userID **references** User (userID) ON DELETE CASCADE

Domain	Data type and length
Recipe_Identification	Fixed length integer, length 7
User_Identification	Fixed length integer, length 6

Follow (followerID Following_User_Identification NOT NULL,

followedID Followed_User__Identification NOT NULL)

Composite Primary Key: followerID, followedID

Foreign Key: followerID **references** User (userID) ON DELETE CASCADE

Foreign Key: followingID **references** User (userID) ON DELETE CASCADE

Domain	Data type and length
Following_User_Identification	Fixed length integer, length 6
Followed_User__Identification	Fixed length integer, length 6

Transaction Matrix (Data entry)

a) Enter details of a new user

	I	R	U	D
Fridge				
User		X		
ProUser		X (if pro)		
Shopping List				
Registration	X			
Ingredient				
Recipe				

b) Adding new ingredient to Virtual Fridge

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List				
Registration				
Ingredient	X			
Recipe				

c) Uploading a new recipe

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List				
Registration				
Ingredient				
Recipe	X			

d) Adding an item to the shopping list

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List	X			
Registration				
Ingredient				
Recipe				

e) Add a comment on a recipe

	I	R	U	D
Fridge				
User				
ProUser	X			
Shopping List				
Registration				
Ingredient				
Recipe				

Transaction Matrix (Deletion/Updates)

a) Update/Delete Recipe

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List				
Registration				
Ingredient				
Recipe		X	X	X

b) Delete/Edit comment

	I	R	U	D
Fridge				
User			X	X
ProUser			X	X
Shopping List				
Registration				
Ingredient				
Recipe				

c) Delete User

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List				
Registration				
Ingredient				
Recipe				
Admin		X		X

d) Update shopping List

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List			X	
Registration				
Ingredient				
Recipe				
Admin				

Transaction Matrix (Data Queries)

a) List recipe details/comments on a recipe

	I	R	U	D
Fridge				
User				
ProUser				
Shopping List				
Registration				
Ingredient				
Recipe		X		

b) List virtual fridge items/ingredients

	I	R	U	D
Fridge		X		
User				
ProUser				
Shopping List				
Registration				
Ingredient				
Recipe				

c) List shopping list

	I	R	U	D
Fridge				
User			X	
ProUser				
Shopping List		X		
Registration				
Ingredient				
Recipe				

Pseudocode:

compare method in settings (username/password)

pseudocode	comments

k ← inputted string
n ← size of the array
A[n] ← elements taken from database
for i in n
begin loop
  e ← A[i]
  if e is k then
  report that the name is taken (1.)
  break the loop
  else if i is n and e is not k then
  allow user to update his/her any information about them (2.)
end loop
	1. describe that username or passowrd is already taken and go back to the change your password/username page
	2. change the username or password of the user

Search bar

psuedocode	comments

k ← string inputted
s ← size of string in characters
C[s] ← characters in the string
count ← 0
n ← 10 (1.)
S[n] ← strings that results from k that has been cut
for i in s
begin loop
  if C[i] is not space
  word ← word + C[i]
  else
  S[count] ← word
  word ← empty string
  count ← count + 1
end loop
pass S[] to the search results
	1. max size of passed array is 10

Search results

psuedocode	comments

S[n] ← array of strings inputted in the searchbar
s ← number of recipes in the database
R[s] ← array of names of recipes
UR[s] ← array which will store points with the search for recipes
SR[s][2] ← matrix which will be sorted for recipes
c ← number of pro users in the database
P[c] ← array of pro users
UP[c] ← array which will store points with the search for pro users
SP[c][2] ← matrix which will be sorted for pro users
for i in n (1.)
begin loop
  for j in s
  begin loop
  if S[i] is part of R[j]
  UR[j] ← UR[j] + 1
  else if S[i] is ingredient of R[j]
  UR[j] ← UR[j] + 1
  end loop
end loop
for i in n (2.)
begin loop
  for j in c
  begin loop
  if S[i] is part of P[j]
  UP[j] ← UP[j] + 1
  else if S[i] is part of recipe made by P[j]
  UP[j] ← UP[j] + 1
  end loop
end loop
multiply each element of UR[] by the amount of views of R[]
max ← 0 (3.)
ID ← 0
for i in s
begin loop
  for j in s
  begin loop
  if max is smaller than UR[j] and is non-negative then
  max ← UR[j]
  ID ← j
  SR[i][0] ← max
  SR[i][1] ← ID
  end loop
	1. loop which counts how much relevant is inserted string to the recipes' names and ingridients inside of them.
	2. loop which counts how relevant is inserted string to the pro users and their recipes.
	3. the loop that sorts the recipes by how relevant their are to the inserted string (from the biggest to the smallest)
	4. the loop that sorts the pro users by how relevant they are to the inserted string (from the biggest to the smallest)

UR[SR[i][1]] ← -1 end loop multiply each element of UP[] by the amount of followers of P[] max ← 0 (4.) ID ← 0 for i in c begin loop for j in c begin loop if max is smaller than UP[j] and is non-negative then max ← UP[j] ID ← j SP[i][0] ← max SP[i][1] ← ID end loop UP[SP[i][1]] ← -1 end loop display the elements from SR[][] and SP[][] with the most likes that is not zero	

Add ingredients to the fridge

psuedocode	comments
s ← string inputted a ← amount of the inputted item l ← amount of food items in the database FN[l] ← array that stores names of the food items c ← number of distinct products in the fridge F[c] ← array of food items in the fridge (ID) for i in l (1.) begin loop if s is FN[i] s ← i end loop for i in c begin loop if s is c increase the quantity of that item by a in the fridge else add this item to the fridge with quantity of a end loop	1. loop to see if the items that person want to imput is in the database

Remove ingredients from the fridge

psuedocode	comments

s ← item user wants to remove (via event)
a ← amount of that item
c ← number of distinct products in the fridge
F[c] ← array of food items in the fridge (ID)
for i in c
begin loop
  if ID of s is F[i]
  remove the amount a of items F[i] from the fridge
end loop	

Find recipes based on the food items in the fridge

psuedocode	comments
s ← amount of all distinct items in the fridge S[s] ← array of all of the items in the fridge (ID) C[s] ← array of all of the items in the fridge (strings) for i in s begn loop C[i] ← name of the item S[i] end loop pass C[i] to the search result method	

Evaluation Design:

Below I have briefly described the main functionality that the system needs to be able to perform to be deemed a success. Even though there are many more functions we want our system to perform there are 5 main functionality criteria we need to test so that we can deem the system at least partly successful. As if these few functions can perform correctly the system will be functional for a main goal of giving people recipes based on what's left in their fridge. Below I give a brief description about how each should perform and how we could test.

Each of tests briefly outlined below should be performed more than once with multiple different values so we can be sure that the system didn't just fluke one of the tests and we can be sure it will actually work when it comes to our customers using it.

Can we add ingredients to our 'virtual fridge'?

- This test will be a straight-forward feature to test. We will go onto the add ingredients section and try adding some ingredients of differing varieties. We will save the changes and go back to our current contents page and check that it has updated.

Can we add recipes to our recipe database?

- From the recipe page we should try to add a new recipe and save it, we should then return to the recipe search bar and see if it shows up when it is searched for.

Can we find those recipes on different devices?

- This a more important adaptation of the test above. Can we add recipes on one device and find them on another? This Requires us to create and save a new recipe and then search for it on a new device.

Can we get recipes shown to us by what ingredients we have?

- Now that we've tested that we can add ingredients and recipes (and search for them) we need to check that we can get recipes to show up based on what ingredients we have left.

When we cook a recipe do ingredients get deducted?

- A simple feature to test. When we've found a recipe, we are going to cook and pressed a button to confirm your cooking it your virtual fridge should have ingredients removed and be updated to represent what you have.

The testing will be done black box using members of our team that were not involved directly with the coding, or if that's not possible we will use coding members of the team but get them only test features they were not involved with as its likely our project is going to split

into functions and these be completed by different sub-teams so we can use teams to test each other's code.

We will be doing it black box as this means that we are purely testing its functionality and that it performs exactly how we wanted it to, giving us the correct outputs when used by somebody who doesn't know exactly how that function works.

Additionally, as our system is proposed to be used by the general public there are additional usability features, we need to test.

Is the system Intuitive?

- We want our system to be easy to use by any member of the general public so it's important that the system is intuitive. Any should be able to pick up the app and within a few minutes understand exactly how it work and how to use it.

Are the buttons easy to press?

- We need to remember that the application is designed to be used on mobile devices with touchscreens. So, the buttons will need to be big so that they are easy to press.

Is the app easy to navigate?

- Our final app has multiple proposed features across different pages. It should be easy for users to quickly navigate across these and gain access to each page, whether it's through a menu or a navigation bar it needs to be easy to use and obvious which page you're heading to.

Is the app nice to look at?

- Although un-important to how usable the app is it's important that its visually appealing as this will mean more people are inclined to use it and therefore help it appeal to the masses, furthering our goal of reducing food wastage.

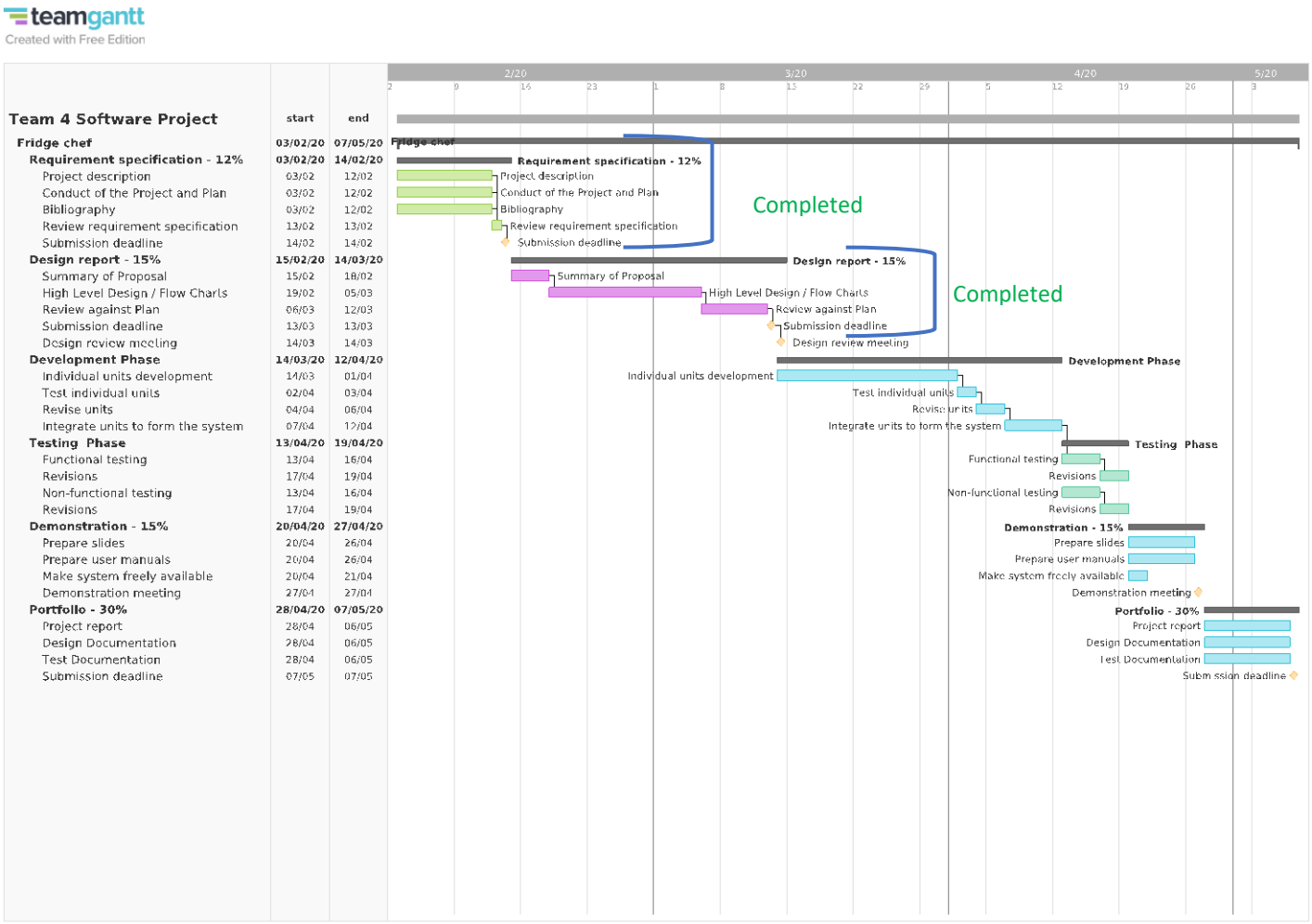
We will test all the above ideally using a focus group set up, we will get general members of the public ideally of varying age and different backgrounds so we can get an idea of the system performs for the entire public.

The setting of a focus group will be so that we can watch and see for ourselves exactly how the end users are interacting with the system as well as then receiving their feedback. The reason for this is being able to physically see where initial problems occur is much more effective than asking someone to describe it. Also, it ensures we get accurate feedback.

It's important for these tests that we don't use people on our course as their computer science background means they can't be considered general public in this field. Additionally, we shouldn't use anybody that we know as they may alter their feedback in order to be nice to us.

Review against the Plan:

See below the Gantt Chart indicating the progress to date as of the design report and future objectives to complete.



Design report responsibilities of group members:

Aman – Summary of proposal, Transaction matrix, Use case descriptions

Adam – Pseudocode

Sami – Data dictionaries, ER Diagrams, Logical table structures, Physical table structures

Saqab – Interface design, Use case diagram, Interaction chart,

Tom – Evaluation design

Vlad – Interface design, navigation chart

Necessary changes

All tasks set out in the plan and the Gantt chart have been completed so currently the project is on track for completion – provided that the next stages (development and testing) are also completed on time. So as of now there are no required changes.

Plans for implementation

For the implementation of our system each group member will have a specific responsibility to aid in the development. This will be based on each member's strengths or previous experiences. To begin with, Vlad will work on designing the GUI layout of our app as he designed the user interface in the design section and has previous experience within this regard. Sami will develop the login functionality to be used by Fridge Chef as he already made a start on this during the design and Tom will also aid in this by implementing the registration functionality. Adam will implement the database based on the design and Sami will also aid in this as he was responsible for the database aspect in the design and can make any clarifications. Aman and Saqab will work on implementing the various functions to be used by the application such as the process of suggesting meals based on the items in the fridge - because of their previous experience in iOS App Development. Further responsibilities regarding the implementation will be discussed during group meetings.

We also aim to maximise each member's efficiency as when someone is finished with their current task they should move on to the next incomplete task or aid other members on the task they're working on to speed the up the implementation phase. We will use GitHub for version control to collaborate in the development. Members will work on the relevant branches based on the features or units of the application.