CSC 431

Smart Food Storage

Software Requirements Specification (SRS)

Team 04

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Version History

Version	Date	Author(s)	Change Comments
1.0	2/18/2022	Angela Wang	first draft
2.0	05/03/22	Jason Donovan	Error corrections

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1. System Requirements

1.1. Functional Requirements

1.1.1. Retrieve and Display Stored Food Information

Title	Displaying stored food information
Description	The AI technology in the Smart Fridge needs to correctly identify what food is in the fridge and how much and their expiration date to display on the app.
Priority	0
Precondition(s)	User needs to have food in the Smart Fridge
Basic Flow	• User puts their groceries in the fridge • Fridge identifies what each grocery is through its camera or by user's manual keyboard input • Fridge identifies the quantity based on weights in the specific location of the fridge • Fridge sends and updates the information to the connected app on the user's phone
Postconditions(s)	App correctly displays and stores all the new items in the *Refrigerator View* and also the *Grocery List* view.
Use Case Diagram	User and System

1.1.2. View Refrigerator/View Grocery List

Title	View Refrigerator/View Grocery List
Description	This is the main page of the app, which displays the user's current fridge contents.
Priority	0
Precondition(s)	Open the app
Basic Flow	• User opens app • User views currents items in the fridge
Postconditions(s)	Users can click into items to view food information or can generate recipes.
Use Case Diagram	User and System

1.1.3. Manually Input Items

Title	Manually Input Items
Description	users can manually input items if needed

Priority	5
Precondition(s)	Open the app
Basic Flow	• User opens app • User clicks on 'edit' icon to change any of the food items
Postconditions(s)	The Refrigerator View/Grocery List View correctly updates and depicts food items based on the manual input from the user.
Use Case Diagram	User and System

1.1.4. Get More Information On Specific Food Item

Title	Get more information on specific food item
Description	Each item needs to display details on that item per user request. The details consist of name, quantity, and expiration date.
Priority	1
Precondition(s)	User needs to have food in the Smart Fridge
Basic Flow	• User has items in the Smart Fridge and is updated in the app • User clicks on the item in the app • popup fills the screen and the user can see the name, quantity, and expiration date. • User clicks anywhere outside of the popup to close it
Postconditions(s)	App correctly displays a popup consisting of the details of a specific food item
Use Case Diagram	User and System

1.1.5. Generate Recipes

Title	Search for Recipes from External Sources
Description	The app searches for recipes by accessing other websites, priority given to *Food Network* and recipe sites listed on our "credible" list.
Priority	0
Precondition(s)	User has inputted their food items
Basic Flow	• User input food items • App compares food items with ingredients of recipes online • Returns recipes with a ratings icon that indicated the average rating from other users
Postconditions(s)	App correctly displays 3-4 recipes which the user can click into and look at the details. When a user clicks 'finish' with a recipe, indicating that they are done creating food, it automatically updates the quantity of food.
Use Case Diagram	Dialogue between user and system

1.1.6. Refresh Recipes

Title	Refresh recipes
Description	Refresh recipe list to display 3-4 additional recipes. The first to display are the most highly rated and from most credible sources, with additional recipes being less rated.
Priority	5
Precondition(s)	User has inputted their food items
Basic Flow	• User input food items • App compares food items with ingredients of recipes online • Returns recipes • User clicks 'more recipes' • Displays 3-4 more recipes
Postconditions(s)	App correctly displays 3-4 recipes which the user can click into and look at the details. When a user clicks 'finish' with a recipe, indicating that they are done creating food, it automatically updates the quantity of food.
Use Case Diagram	Dialogue between user and system

1.1.7. Substitute Missing Ingredients

Title	Substitute missing ingredients
Description	If a user has almost all of the ingredients except one or two, the app will generate popular substitutions for the missing ingredients based on food items in the fridge, and will also identify and suggest which ingredients can be left out.
Priority	2
Precondition(s)	User has inputted their food items
Basic Flow	• Recipes almost available but missing one or two ingredients are highlighted in yellow • User clicks recipe highlighted in yellow and check the ingredient list for what is missing • Missing ingredient is highlighted in red • user clicks missing ingredient • System searches in a database for substitution items • a popup displays a substitution item or if it can be left out • User clicks accept • The original ingredient in the recipe is crossed out and shows the new ingredient (or is just crossed out to show not to include)
Postconditions(s)	App correctly displays a new recipe that is modified with a substitution ingredient or the exclusion of the missing ingredient
Use Case Diagram	Dialogue between user and system

1.1.8. Rate Recipes

Title	Rating Systems
Description	Users can give ratings to recipes
Priority	5
Precondition(s)	User has generated recipes from their food items and are browsing for recipes
Basic Flow	• User input food items • App compares food items with ingredients of recipes online and returns recipes • When clicks into a recipe to view it • User clicks 'rate me' • Popup displays and asks for user to input a rating • User clicks x stars/ 5 stars • User clicks 'submit'
Postconditions(s)	App recalculates the average rating and displays according to the user rating.
Use Case Diagram	Dialogue between user and system

1.2. Non-Functional Requirements

1.2.1. Retrieving information about existing items quickly

Title	Retrieving information about existing items quickly
Description	The app needs to display information about certain item(s) upon the user's request. This information includes a detailed name, quantity and expiration date.
Priority	0
Applicable FR(s)	Display a food item and its quantity

1.2.2. Generate Recipes Time

Title	Generate Recipes Time
Description	Because the app is looking for recipes from many different external sources, this process can be very slow (and also determined by network requirements.) We want this process to be as quick as possible, less than 1000ms.
Priority	0
Applicable FR(s)	Search for Recipes from External Sources

1.2.3. Maintenance Time

Title	Maintenance Time
Description	To ensure that the app is working properly, maintenance will be conducted every month. The down time for the application will be no longer than an hour.
Priority	2
Applicable FR(s)	N/A

1.2.4. Food Item Storage

Title	Food Item Storage
Description	The database must be able to handle more than 300 food items from the user.
Priority	0
Applicable FR(s)	Retrieve and Display Stored Food Information

2. System Constraints

2.1. Tool Constraints

2.1.1. iOS Application Constraints

Title	iOS Application Constraints
Description	Application for iOS and will be designed in XCode for optimal UX design and device specific testing/debugging.
Priority	3

2.2. Language Constraints

2.2.1 iOS Application Language

Title	iOS Application Language
Description	The application will use Swift, the native language for Apple mobile devices. Swift will minimize time spent developing/debugging when used in conjunction with XCode.
Priority	1

2.2.2 JavaScript Language

Title	JavaScript Language
Description	The application's frontend UI will be written in JavaScript. Javascript is used by programmers across the world to create dynamic and interactive web content like applications and browsers.
Priority	1

2.3. Platform Constraints

2.3.1. Apple Mobile Store Compliance

Title	Apple Mobile Store Compliance
Description	The Apple iOS store is strict on design and functionality. Font, color palette, and other design considerations must be compliant with Apple standards for the app to be listed.
Priority	1

2.4. Hardware Constraints

2.4.1 Compatible Smart Food Storage hardware required

Title	Certified compatible Smart food storage hardware required
Description	The software application is only compatible with our own Smart Food Storage hardware, and also other certified OEM partners' smart food storage hardwares.
Priority	0

2.4.2 Computer / smart mobile device required

Title	Computer / smart mobile device required
Description	The software can only be accessed on our website or the mobile application(compatible with both android and iOS). Therefore, all users need to have either a computer running Windows/Mac OS or a mobile device running Android/iOS.
Priority	0

2.5. Network Constraints

2.5.1. Stable wireless network

Title	Stable wireless network
Description	A stable wireless network is required for the system to access online recipes and databases. Also, the Smart Food Storage needs to be connected to a stable wireless network.
Priority	0

2.6. Deployment Constraints

2.6.1. Apple Mobile Store Acceptance

Title	Apple Mobile Store Acceptance
Description	The application must have been accepted to be listed in the Apple store. Without this users will not be able to effortlessly download the app and is a barrier to mass adoption.
Priority	<Priority from 0 (highest) – 5 (lowest)>

2.7. Transition & Support Constraints

2.7.1. Hardware Support Constraints

Title	Hardware support constraints
Description	Some troubleshooting processes involving the hardware will require a hardware technician onsite to debug the system.
Priority	3

2.7.2. Food Items can Only be Displayed in App from Manual Input or *Smart Food Storage* System

Title	Food Items can Only be Displayed in App from Manual Input or *Smart Food Storage* System
Description	For items to be displayed in the app, there needs to be food items detected first. The app cannot display food unless it is given food items.
Priority	0

2.8. Budget & Schedule Constraints

2.8.1. Budget of $1000 and Future Investments

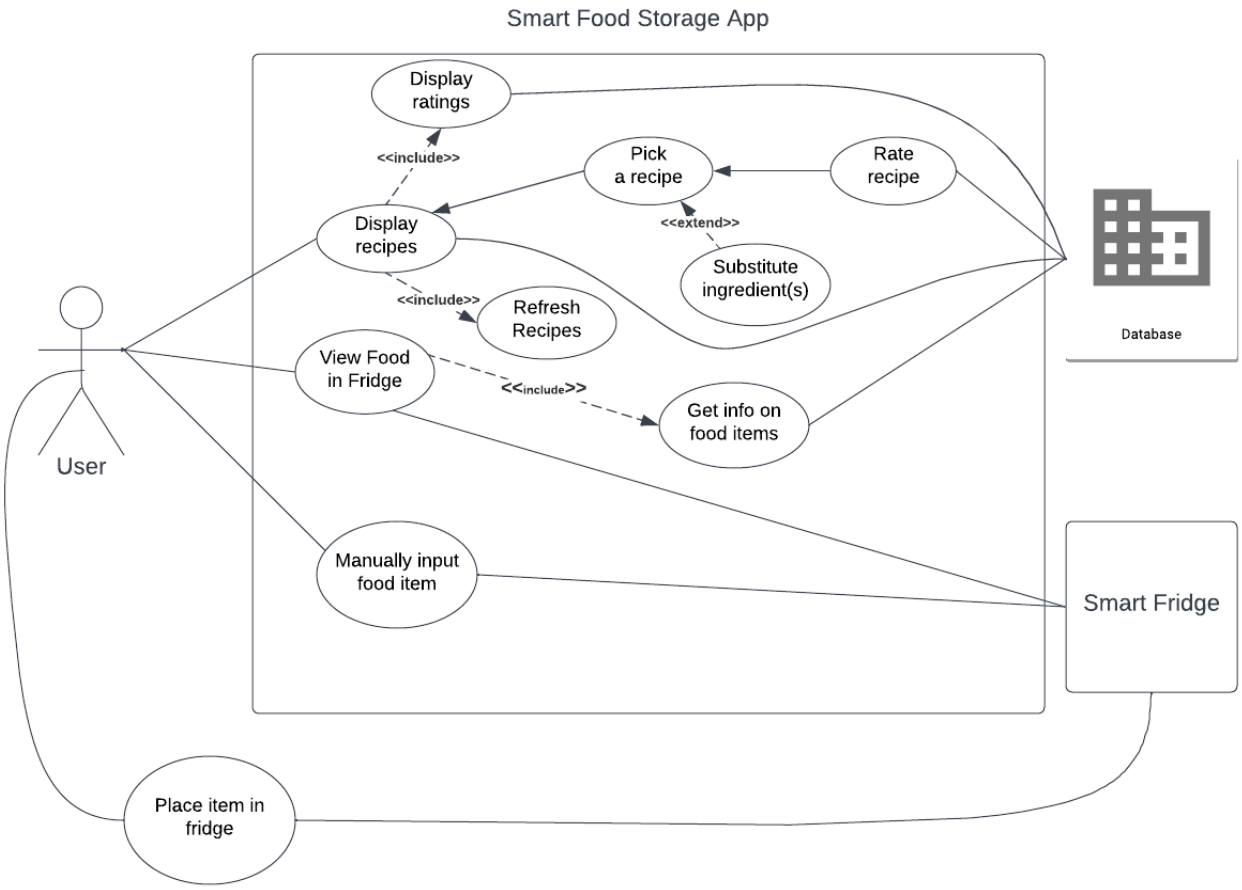
Title	Budget of $1000 and future investments
Description	The app itself can be developed from the core developers with no compensation, however, the technology required to develop the *Smart Food Storage* itself requires compensation towards electrical engineers and material to create the fridge.
Priority	0

2.8.2. Be Finished by May 13th 2022

Title	Be finished by May 13th 2022
Description	The app must be finished before May 13th 2022 as developers will be graduating.
Priority	0

3. Requirements Modeling

3.1 Use Cases



4. Evolutionary Requirements

4.1. Functional Requirements

4.1.1 Android Port

Title	Android Port
Description	The app will first be created for iOS devices but ported to Android to be accessible to more users.
Priority	3
Precondition(s)	Successful iOS deployment
Postconditions(s)	Almost entirely integrated version of *Smart Food Storage* to Android devices
Use Case Diagram	None