Qassim University جامعة القصيم

CS383 Group Project

Software Requirements Specification (SRS)

for

ALLERGY BUD

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Contents

Introduction

[Allergy Bud] is an application that aims to revolutionize allergy handling. With a user-friendly interface and great features, Allergy Bud lets the users control their own health and well-being.

[Allergy Bud] provides its users with the ability to quickly obtain allergy-related information concerning any given product by simply scanning its barcode.

Additionally, this application offers food recommendations to help users easily to discover allergen free options wherever they go.

One of the main advantages of our Allergy Bud app is the ability to promote a sense of belonging with allergy sufferers, health professionals and individuals who are having a similar circumstances.

in case of a reaction Allergy Bud, Allergy Bud is having emergency assistance feature which grants users access to emergency contacts, medical information, and nearby healthcare facilities

More than an application Allergy Bud is a lifesaver. It serves as your trusted companion while you are searching for allergy-friendly recipes, navigating the aisles of the grocery store, or simply spending time with friends.

1.1 Purpose

The purpose of an SRS (Software Requirements Specification) is to clearly define the functional and non-functional prerequisites of a software system, So the "Allergy Bud" application, this document aims to outline the specific requirements and specifications for its development. "Allergy Bud" is an elegant and powerful app that personalizes your culinary experience based on allergies and dietary restrictions. It guides you through recipes, scans barcodes to alert you of undesirable ingredients, and revolutionizes your cooking journey.

1.2 Product scope

The [Allergy Bud] application goal is to enhance the user safety in a more convenient way by allowing them to manage any allergens.

The [Allergy Bud] will have the following features:
Registration: Upon the app launch, users are asked to sign in with personal information.
User profile: The user can customize their profiles to show them enhance results, tailored to their dietary preferences.
Services: Search recipes, filter allergens based on user profile (which can be private), and scan product barcodes for instant allergen information.
User incentives: create a community where users share recipes, discuss experiences, and recommend allergy friendly establishments.
Emergency situations: A one click feature to contact help, sharing user location and allergies for more efficient assistance.
Availability: App accessible to all without payment required, promoting inclusivity.

1.3 Document Structure

Here we will discuss all sections of our document,
starting with system overview section
in this section we have Six parts the first one: will be about the product perspective, and we discuss why Allergy Bud application is designed and how The app facilitates user.
second one: product features have included the Registration, scanning the barcode and allergen-free food recommendations, distinguishing between each individual, finding medical information in case of emergency, a personal account to help friends who suffer from the same problems and chat with them, a search function to quickly find what the user is looking for.
third one: in user roles and characteristics has the basic rule of "Allergy-Aware Individuals are the main users of the app".
forth one: in operating environment it will support many operating systems and can be used with internet and without it.
fifth one: Design and Implementation Constraints.
sixth one: about the Assumptions and Dependencies.
functional requirements section we describe three specific behaviors and functionality that the software system must exhibit, starting with user Registration which include sign up and sign in, then Allergen Identification which here you can entered identify allergens and using Barcode scanning,
then App interaction which include Recipe Recommendations and Community Recipe Sharing and Emergency Assistance
Non-functional requirements section, we specify the qualities of a system including performance, safety, security, and software quality attributes.
external interface requirements section specifying how the software system interacts and communicates with external entities, such as user interface, hardware, software interface, and communication interface.

1.4 Reference

Software Engineering, 10th Edition Textbook
https://www.okaz.com.sa/news/local/2133932
https://youtu.be/4emxjxonNRI?si=GxuWX9T8vDPnvQzl

System Overview

Data from the Saudi Food and Drug Authority indicates that approximately 21% of Saudi Arabia citizens suffer from food allergies highlighting a significant health issue within the society, this mobile application is designed to assist users with managing their allergies, offers detailed allergy information, safe food recommendations, community support, emergency Assistance, and the unique feature of displaying recipe ingredients by scanning the barcode. These features assist individuals with food allergies in overcoming challenges, improving dietary quality, enhancing flexibility, and safeguarding their health.

2.1 Product Perspective

Our Allergy Bud application is designed to improve the health and wellbeing of individuals with allergies and similar circumstances, while also making their lives much easier.
The best thing about Allergy Bud is providing the users with a quick and convenient way to filter and find specific food based on their dietary preferences, restrictions, nutritional needs.
Our app goal is to provide the user with helpful tools to find and enjoy food that aligns with their lifestyle.

2.2 Product Features

Our application features are:

- Registration.
- By scanning the barcode for any product, you can get information about ingredients that cause allergies.
- Get allergen free food recommendations to help users. create a community among allergy sufferers, health professionals, and individuals having a similar circumstances.
- Access to emergency contacts, medical information, and nearby healthcare facilities in case of a reaction.
- Serving as a trusted companion for finding allergy-friendly recipes, navigating grocery store aisles, and spending time with friends.
- provide a search function to find allergy friendly products and recipes within the app.

2.3 User Roles and Characteristics

Allergy-Aware Individuals are the main users of the app, It can be used by people who wish to avoid certain types of food. As well as those who want to share their recipes with others. Also, people who want to know quickly if a product contains unwanted ingredients.

2.4 Operating environment

The application is compatible with both the iOS and Android operating systems and is intended for mobile devices, The app will require a device with camera in order to use certain features. The app will need stable internet connection for some features and it will support offline functionality to access the pre-downloaded data.

2.5 Design and Implementation Constraints

in order to create this software, we well use C++ language for the functions because it has a powerful feature, and for the database we will use MySQL, both is used to build a secure and dependable apps.

2.6 Assumptions and Dependencies

Assumptions:

- Users should have a mobile device with stable internet connectivity.
- Users should have a mobile device with a camera and will give the app permission to use it to use certain features.
- Users will accurately input their allergy information and dietary preferences.

Dependencies:

- The app depends on third-party APIs and databases for accessing product information and recipe databases.
- The app depends on a barcode scanner SDK for the barcode scanning feature to function accurately.
- Accuracy of product allergy information will depend on the database used.

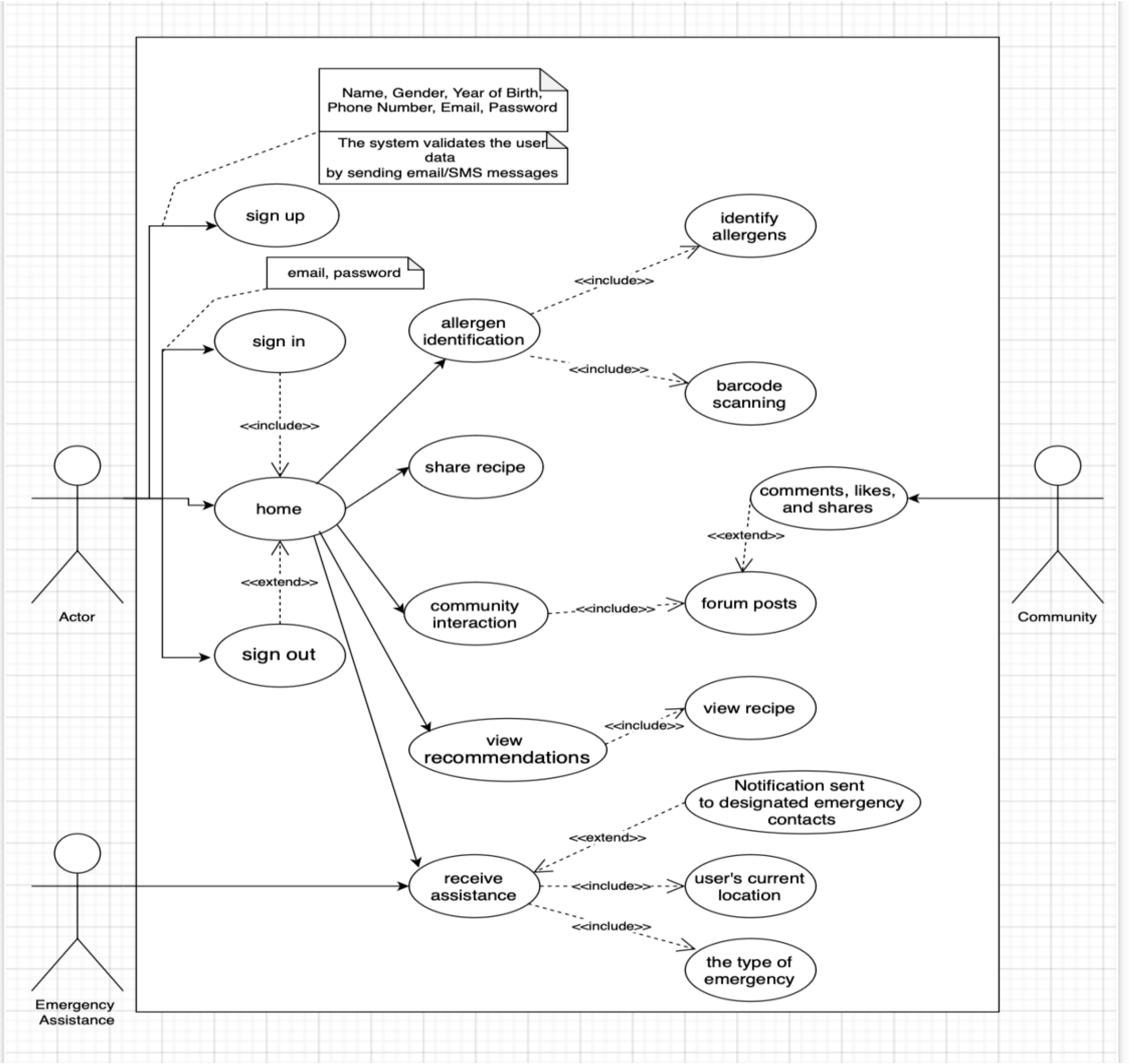
Requirements:

3.1 Requirements engineering

3.1.1 Requirements elicitation

- Use Cases

We used the Use Case Diagram in software development and system design to illustrate the various ways in which end-users may interact with a product, they assist in understanding, defining, and validating the functionality of the system.



3.1.2 Requirements analysis

For our app, requirements were analyzed by identifying end-users and by utilizing use case to visualize how the software will look at the end from their point of view.

3.1.3 Requirements validation

We approached this document using Agile methodology because In Agile, validation is an ongoing process that occurs all the way through the development lifecycle, with a many feedback and iterations to ensure that the app meets the needs of its users, this is the methods that we used to ensure that the system meets its intended objective and requirements.

Prototyping: We created prototypes which have barcode scanning, recipe recommendations and community interaction for the main features for the application and showed them to some potential users.
Also, Feedback from users has been gathered to validate usability and effectiveness of these proposed functionalities and to make sure they meet the intended desire.
Testing: Functional testing was done to verify that the system indeed meets the specified requirements.
We designed test cases to cover various scenarios including user registration, barcode scanning, recipe recommendations and emergency assistance to ensure comprehensive validation of the system.

3.2 Functional Requirements

3.2.1- User Registration

R0001: sign up

Description: the users should provide some information to create a new account.
Rationale: the user must create an account to start using the app features and recognize the user.
Source: user information.
Input: Name, Gender, year of birth, Phone Number, Email, Password.
Output: The system will verify the user data by sending Email/SMS messages.
Priority: High.

R0002: sign in

Description: if the user has an account on the app the user can log in securely any time.
Rationale: to Prevent unauthorized access from entering the account and be able to manage their profiles, including personal information, dietary restrictions, and allergies.
Source: user information.
Input: Email, Password.
Output: The system will verify the user by sending Email/SMS messages and grant the user access to the application.
Priority: High.

3.2.2- Allergen Identification

R0003: identify allergy

R0003: identify allergy
Description: our app will allow users to choose specific foods, ingredients, or dishes and filter the search results based on their dietary preferences and allergens.
Rationale: Search and filtering capabilities help users to find suitable food options quickly and efficiently.
Source: user information.
Input: Selected filtering options.
Output: the Search results matching the user's filters and if there is a warning for allergens present in search results.
Priority: High.

R0004: Barcode Scanning

Description: our app will provide barcode scanning, allowing users to scan barcodes of food products using their device's camera.
Rationale: Barcode scanning provides users with quick access to very detailed information about food products, to notify the user of any ingredient that the user is allergic to, and nutritional content, to help the users of being well informed.
Source: product information.
Input: Barcode data captured by the device's camera.
Output: Detailed information retrieved from the barcode scan, including product name, ingredients, allergens, and nutritional information.
Priority: High.

3.2.3- App Interaction

R0005: Recipe Recommendations

Description: Our app offers users customized recipe suggestions according to their dietary preferences and restrictions.
Rationale: Recipe recommendations increase the user engagement by providing the users with allergy-friendly meal ideas that made for their dietary needs, preferences, and it's easy to cook.
Source: recipe recommender system.
Input: User profile information and user interactions with the app such as recipe likes and saves.
Output: customized recipe recommendations presented to the user according to their profile and interactions.
Priority: medium.

R0006: Community Recipe Sharing

Description: Our app offers users the chance to share their allergy-friendly recipes with the community to have many options available in the app.
Rationale: Community interaction fosters a sense of belonging, support among users to share recipes and help each other to overcome challenges.
Action: Users can create, edit, and delete their own allergy-friendly recipes. They can also like, and bookmark recipes shared by other community members.
Source: users posts.
Input: User-generated allergy-friendly recipes, including ingredients and preparation instructions.
Output: Shared recipes showed to the other users within the app.
Priority: medium.

R0007: Emergency Assistance
Description: our app provides users with quick access to help in case of allergic reactions or emergencies related to their allergies.
Rationale: Emergency assistance offers users comfort and support with their allergic reactions or emergencies, to ensure their safety and well-being.
Action: When the Emergency Assistance feature activated it will alert the user's emergency contacts by providing them with information to assist in the situation and call for the nearby healthcare facilities.
Source: user condition.
Input: User emergency alert, including the type of emergency (e.g., severe allergic reaction, anaphylaxis), user's current location.
Output: alerts sent to emergency contacts, including location details and emergency type.
Priority: high.

R0008: Community Interaction
Description: Our app encourages community interaction by allowing users to post, like, comment, and share content with each other to overcome many challenges.
Rationale: Community interaction help the users have a sense of belonging to each other, there is a whole community of allergy sufferers and health professionals to support them.
Source: users posts.
input: User-generated content, such as forum posts, comments, and likes and shares.
Output: Community content in the app, including discussions, comments, shared recipes, and Notifications for the user interactions.
Priority: medium.

3.3 Nun-Functional Requirements

3.3.1- <u>product requirements</u>

1.1 Performance Requirement:

R1:
Description The application must ensure a responsive user experience by loading barcode scan responses and search results in an average of 3 seconds.
Rationale: A responsive app enhances user satisfaction by providing them quick access to information, and allergen warnings, improving the user experience because users expect a fast response when using the app, and delays may lead to frustration.

R2:
Description: The app main goal is to respond quickly for user interactions, such as filtering search results and accessing recipe suggestions, and communications with other users should be under 2 seconds.
Rationale: Performance directly focuses on user satisfaction efficiently, by setting a performance requirement of responding within 2 seconds on average, the app aims to provide users with a seamless and responsive experience.

1.2 Usability Requirement:

R3:
Description: The application should have a clear, simple, and easy-to-use user interface with simple design elements, and be easy to navigate.
Rationale: By prioritizing usability, the app aims to have a simple and friendly user interface because the user needs a comfortable application away from any complication, allowing them to find information and features quickly and efficiently.

R4:
Description: our application is going to support many languages to help people and to diverse the user base.
Rationale: Supporting many languages is the perfect addition for the users to get them to know other people with different cultures through the app and to share their stories and advices without the language barrier, and to make the app accessible for a much wider audience.

R5:
Description: our app brings up some helpful tools for errors to send to the users when there are errors or system break down.
Rationale: Clearly stated error messages help users understand and fix any issues they may facing while using the software. when lack of understanding and confusion are reduced, it will lead to better user experience, satisfaction, and improve the whole usability.

3.3.2 - Organization requirements

2.1 Environmental requirements

R6:

Description: To guarantee peak performance and reduce its negative effects on the environment, our application is going to be made to use the least amount of memory, CPU, and battery life possible on the device.

Rationale: Reduce resource usage helps the app be more energy efficient and less harmful to the environment. it will Also make operating costs lower and improve the efforts for promoting ecofriendly app usage.

3.3.3 - External requirements

2.1- Safety/Security requirements --

R7:

Description: In order to protect the user privacy and data our app has to make sure to take many security measures from any unauthorized access or security vulnerabilities, using encryption, user authentication and access control.

Rationale: data protection is very important to maintain users trust and avoiding legal consequences, our app has a responsibility to protect the user's privacy and their sensitive health information and make sure that their data is kept secure and confidential.

5 - External Interface Requirements

5.1 user interfaces Requirements

The user interface of our software is focused on making user interactions and searches much simpler, ensuring that the interface is user friendly and easy navigate is much important. It should also allow new users to use the program without needing any prior experience, with a clear and flexible interface that's simple to understand and interact with, users can access all the services in the app, like doing quick searches or making a personal account to help those with health concerns, they can also scan barcodes on food items to see what they're made of and if they have any allergens, since this interface is meant to be capable of expansion, it is possible to add more features in the future. By taking care of these aspects, the user interface develops into a strong tool that helps people choose the appropriate food selections and easily manage their allergies. and to make it easier to talk to people who are experiencing the same problems, promoting peaceful cohabitation.

5.3 Hardware interfaces

Smartphones are compatible with the Allergy Bud app, and its hardware interface needs are:

1- Mobile Device:

Tablets and smartphones.

2- Internet connectivity:

our app require internet connection to work properly.

3- Camera:

for scanning barcodes of the product. note: it's has to capture clear image for barcode recognition

4- Storage Space:

The amount of space that can be used to install apps and store data.

5- GPS:

The app makes advantages of the device's GPS abilities for features that depends on location

5.2 software interfaces

The factors the software will be built on. for instance, the type of operation system or database will suit the software most.

Operating system:
The app will both be designed to work on especially smartphones, so it should be compatible with android and IOS operating system. The app will need permission for your camera so you can upload pictures and your location permission for the one-click emergency function.

Database:
The database should ensure security and not have any of the user's private information leaked for their own safety, that's why MySQL was chosen for this app. It should also be used with the operating system.

Updates:
Updating your app keeps your users engaged by giving them the latest features and it helps improve the security by avoiding the use of outdated software.

5.4 communication interfaces.

Communicating interface with an allergic program involves sharing data between different parts, there is a barcode reader to quickly check product codes for allergy info and get dietary tip, the program connects people with allergies, doctors, and others with similar conditions. Allergy sufferers' community can be benefit by sharing recommendations, advice, recipes, stories, and support each other, If a reaction happens, the emergency screen gives contacts, medical details, and nearby care locations.
The app has a place where people manage their health details, what they like, and settings. The search tool helps find recipes, items, or community talks that are safe for allergies, It also has a Navigation tool to help people move between parts of the app, such as recipes, community forums, emergency help, and settings, The alert function informs individuals of significant notification, such as new facts about allergy, community discussions, or emergency warnings when something happens.

5 - Work Section

student name	section work
Melaf Alobidan	Introduction **From the system overview:** - design and implantation constraint **From the requirements:** 1- Four of the functional requirements 2- Non-functional requirements - Edit and review the document
Alhanof Alfadhel	**From the introduction:** - Purpose and document structure and reference **From the external interface:** - User Interface requirements
Manar Altorbag	**From the introduction:** Product scope **From the requirements:** Requirements analysis **From the external interface:** - Software Interface requirement
Aryam Aljarallah	**From the system overview:** 1- system overview 2-Product perspective **From the requirements:** Non-functional requirements **From the external interface:** Hardware Interface requirements - Edit the document
Rahaf Alosaimi	**From the system overview:** - Product features **From the external interface:** - Communication Interface requirements
Raghad Alharbi	**From the system overview:** - user roles and characteristics **From the requirements:** - Requirements elicitation & uses case
Jana Alsuwailimi	**From the system overview:** 1 - operating environment 2 - assumption and dependence **From the requirements:** - Requirements validation
Lujain alsayegh	**From the requirements:** - Four of the functional requirements **From the requirements:** - Requirements elicitation & uses case