**HomeChef360 Project**

Software Requirements Specification

1.3

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**Prepared for**

HomeChef360.com

**Revision History**

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# **Introduction**

The purpose of this document is to define the requirements for **HomeChef360**, a **web and mobile-based cooking assistant** that simplifies meal planning, recipe discovery, and cooking guidance — with a strong focus on Arabic cuisine. The application will allow users to search and discover recipes, view ingredients with exact measurements, follow step-by-step cooking tutorials, and receive substitution suggestions when needed. Additional features include **nutritional tracking** for each recipe, the ability to **generate personalized recipes based on ingredients available in the user’s pantry**, customizable **meal plans** tailored to dietary preferences and schedules, **grocery ordering** with automated shopping list generation, and **AI-powered recipe recommendations** to enhance the overall cooking experience.

This document will serve as a reference for developers, testers, designers, and stakeholders to ensure a shared understanding of system requirements before development begins.

## Purpose

The purpose of this document is to define the SRS for HomeChef360, an all-in-on cooking application. This document provides a detailed description of the system's functional and non-functional requirements. It serves as a reference for all stakeholders, including developers and testers, throughout the development lifecycle to ensure a shared understanding of the system's features, behavior, and constraints.

## Scope

*The* ***HomeChef360*** *application will be developed as a cross-platform solution available on both web and mobile devices. Its primary goal is to help users plan meals, discover recipes, and improve their cooking skills through AI-powered tools and guided tutorials, with a particular emphasis on Arabic cuisine.*

*The system will enable users to:*

* *Search, filter, and view detailed recipes.*
* *Generate recipes based on available pantry ingredients.*
* *Create and customize weekly meal plans.*
* *Track nutritional values for individual recipes and overall dietary intake.*
* *Watch cooking tutorials for step-by-step guidance.*
* *Receive ingredient substitution suggestions.*
* *Generate and manage shopping lists, with optional grocery ordering integration.*

***In Scope:***

* *Functional testing of all listed features.*
* *User interface testing across supported devices.*

***Out of Scope:***

* *Performance testing, stress testing, and load testing.*
* *Automation testing.*
* *Integration with grocery services beyond supported APIs in the initial release.*

*The initial release will focus on delivering the core features listed above, and advanced personalization is planned for future updates.*

## 

## 1.3 Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| **Abbreviation** | **Word** |
| U | User |
| A | Admin |
| UI UX | User Interface & User Experience Designer |
| FE | Frontend Developer |
| BE | Backend Developer |
| SM | Scrum Master |
| AI | |  | | --- | | Artificial Intelligence |  |  | | --- | |  | |
| DB | Database |
| Pantry | |  | | --- | | Ingredient Inventory | |
| NT | |  | | --- | | Nutritional Tracking |  |  | | --- | |  | |

## 1.4 References

*Nil*

# **Specific Requirements**

The HomeChef360 application will have **three user roles**:

1. **Registered User** – A user with a personal account who can access all core features.
2. **Guest User** – A visitor who can browse limited content without logging in.
3. **Admin** – An internal role responsible for managing recipes, users, and app content

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature / Module** | **Registered User** | **Guest User** | **Admin** |
| Meal Planning | Yes | No | No |
| Recipe Suggestions | Yes | Limited | Yes |
| AI Recipe Generator | Yes | No | No |
| Grocery Ordering | Yes | No | No |
| Nutritional Tracking | Yes | No | No |
| Cooking Tutorials | Yes | Limited | Yes |
| Ingredient Subsitiution | Yes | No | No |
| Account Management (Login, Profile, Settings) | Yes | No | Yes (User Management) |
| Content Management (Add/Edit/Delete Recipes, Tutorials) | No | No | Yes |
| Change Password | Yes | No | Yes |
| Login & Logout |  | Login & Logout | Yes |

Description of the modules

|  |  |  |
| --- | --- | --- |
| **Module Name** | **Applicable**  **Roles** | **Description** |
| |  | | --- | | **Meal Planning** |  |  | | --- | |  | | Registered User | Create and customize weekly meal plans based on dietary preferences, schedule, and goals. |
| |  | | --- | | **Recipe Discovery** |  |  | | --- | |  | | User/  Guest User/ Admin | * **Registered User**: Search and filter recipes by cuisine, ingredients, cooking time, and nutritional content. * **Guest User**: Can search but with limited access to full recipe details. * **Admin**: Can search and manage (add, edit, delete) recipes. |
| |  | | --- | | **AI Recipe**  **Generator** |  |  | | --- | |  | | |  | | --- | | Registered User | | Enter available ingredients into the pantry and receive AI-generated recipe suggestions. |
| |  | | --- | | **Grocery Ordering** |  |  | | --- | |  | | Registered User | Automatically generate shopping lists from selected recipes and place grocery orders. |
| |  | | --- | | **Nutritional Tracking** |  |  | | --- | |  | | Registered User  Admin | |  | | --- | | The app tracks calories and nutrients from meals to help users meet their health goals. And   * **Registered User**: View detailed nutritional information for each recipe and track daily intake. * **Admin**: Can manage nutritional data for recipes. |  |  | | --- | |  | |
| |  | | --- | | **Cooking Tutorials** |  |  | | --- | |  | | Registered User/  Guest User/ Admin | |  | | --- | | * **Registered User**: Access a full library of step-by-step cooking videos, focusing on Arabic cuisine. * **Guest User**: Can preview limited tutorials. * **Admin**: Can upload and manage tutorials. |  |  | | --- | |  | |
| |  | | --- | | **Ingredient Substitution** |  |  | | --- | |  | | Registered User/  Admin | |  | | --- | | * **Registered User**: Receive ingredient substitution suggestions based on dietary needs or missing ingredients. * **Admin**: Can manage substitution database. |  |  | | --- | |  | |
| |  | | --- | | **Change Password** |  |  | | --- | |  | | Registered User/  Admin | |  | | --- | | Allows both users and admins to change their own passwords. |  |  | | --- | |  | |
| |  | | --- | | **Login & Logout** |  |  | | --- | |  | | Registered User/  Admin | |  | | --- | | Authentication for accessing and exiting the application. |  |  | | --- | |  | |
| |  | | --- | | **Manage Content** |  |  | | --- | |  | | Admin | |  | | --- | | Admin can Add, edit, or remove recipes, tutorials, and nutritional data. |  |  | | --- | |  | |

## 2.1 External Interface Requirements

### 2.1.1 User Interfaces

 **Mobile App Interface**:

* Responsive design optimized for Android and iOS devices.
* Warm color palette suitable for the target audience (primarily mothers and young adults).
* Simple, intuitive navigation with minimal learning curve.
* Key sections: Home, Meal Planning, Recipes, Tutorials, Grocery List, Nutrition Tracking, Profile.

 **Web App Interface**:

* Responsive design compatible with major browsers (Chrome, Firefox, Safari, Edge).
* Similar layout and design to the mobile version for consistent user experience.

### 2.1.2 Hardware Interfaces

None

The application is web-based and does not require direct interaction with hardware components.

### 2.1.3 Software Interfaces

The system will integrate with the following software interfaces:

* **Recipe Database API** – For storing and retrieving recipes.
* **Nutrition API** – For calculating nutritional values.
* **Video Hosting API (e.g., YouTube API)** – For accessing and displaying cooking tutorials.

### 2.1.4 Communications Interfaces

* **Push Notifications**: Used to send reminders for meal plans, grocery lists, and cooking tips.
* **Data Synchronization**: All user data (meal plans, pantry, preferences) synced in real-time between web and mobile versions.

## 3.1 Front End Details

This section describes the Front end of the HomeChef360 application.

It also lists a few use cases to describe the functioning of the system

Following is a list of module-wise fields

**Meal Planning**

* **Meal Plan Name**
* **Select Start Date**
* **Select End Date**
* **Dietary Preferences** (Drop-down: Vegetarian, Vegan, Low-Carb, etc.)
* **Add Meals** (Button – choose from recipe list)
* **Generate Shopping List** (Button)
* **Save Plan** (Button)
* **Reset** (Button)

**Recipe Discovery**

* **Search Bar** (Keyword search)
* **Filter by Cuisine** (Arabic, Specifc ingeredient)
* **Filter by Cooking Time** (Drop-down: <30 min, 30–60 min, >60 min)
* **Filter by Difficulty** (Easy, Medium, Hard)
* **Show Results** (Button)
* **Reset Filters** (Button)

**Pantry-Based Recipe Generator**

* **List of Current Pantry Ingredients** (Editable)
* **Add Ingredient** (Button)
* **Remove Ingredient** (Button)
* **Generate Recipes** (Button)
* **Clear List** (Button)

**Grocery Ordering**

* **Shopping List View** (Auto-generated from meal plans)
* **Edit Quantities**
* **Place Order** (Virtual Button)
* **Cancel** (Button)

**Nutritional Tracking**

* **Daily Calorie Goal** (Numeric Input)
* **Macro Goals** (Protein, Carbs, Fats – Numeric Inputs)
* **Add Consumed Meal** (Search Recipe or Manual Entry)
* **View Daily Summary** (Button)

**Cooking Tutorials**

* **Video List** (With thumbnail, title, duration)
* **Filter by Cuisine** (Drop-down)
* **Filter by Skill Level** (Beginner, Intermediate, Advanced)
* **Play Video** (Button)

**AI Recipe Generator**

* **Select Cuisine Preference** (Drop-down)
* **Generate Recipe** (Button)
* **Reset** (Button)

**User Authentication**

* **Login Form**
  + Email / Username
  + Password
  + Login (Button)
  + Forgot Password (Link)
* **Registration Form**
  + Full Name
  + Email
  + Password
  + Confirm Password
  + Register (Button)
  + Reset (Button)

**Profile Management**

* **Edit Profile** (Name, Email, Dietary Preferences)
* **Change Password** (Old Password, New Password, Confirm Password)
* **Save Changes** (Button)
* **Cancel** (Button)

## 3.2 Technical Requirements

**Login**

T1 Email must not be blank

T1.2 Email must follow a valid format (e.g., example@domain.com)

T2 Password must not be blank

T2.1 Password cannot start with a space

**Signup**

T5 – Name must not be blank  
T6 – Name cannot contain numbers (except if in username format)  
T7 – Email must not be blank  
T8 – Email must follow a valid format  
T9 – Password must not be blank  
T10 – Password must be at least 8 characters, with at least 1 number and 1 special character  
T11 – Confirm Password must match Password  
T12 – Dietary Preference selection must be from the allowed list (no free text if not supported)

**Meal Planning**

T13 – Meal Plan Name must not be blank  
T14 – Special characters are not allowed in Meal Plan Name (except spaces)  
T15 – Start Date must be before End Date  
T16 – At least one meal must be added before saving the plan

**Recipe Discovery**

T17 – Search field must not be blank when searching  
T18 – Search field cannot start with a space  
T19 – No special characters allowed in search field (except spaces)

**Pantry-Based Recipe Generator**

T20 – Ingredient name must not be blank  
T21 – Ingredient name cannot start with a space

T22 No numbers allowed in ingredient name (unless measurement like "2 cups")

**Grocery Ordering**

T23 – Store selection must not be blank  
T24 – Item quantity must be a positive number  
T25 – Item quantity cannot start with a zero unless it's a decimal

**Nutritional Tracking**

T26 – Calorie goal must be a positive integer  
T27 – Macro values (Protein, Carbs, Fat) must be positive integers  
T28 – Macro totals must be within realistic daily ranges (0–500g)

**Cooking Tutorials**

T29 – Video selection must not be blank before playback  
T30 – Tutorial filter fields must be from the allowed list (no custom entries)

**AI Recipe Generator**

T31 – Ingredient list must not be blank  
T32 – Cuisine preference must be from the allowed options  
T33 – Difficulty level must be from the allowed options

**Substitution Suggestions**

T34 – Missing ingredient name must not be blank  
T35 – Missing ingredient name cannot start with a space

**Profile Management**

T36 – Name must not be blank  
T37 – Name cannot contain numbers (except in usernames if allowed)  
T38 – Dietary Preferences must be selected from the allowed list

**Change Password**

**T97** Old Password must not be blank

**T98** New Password must not be blank

**T99** Enter at-least one numeric value

**T100** Enter at-least one special character

**T101** Choose a difficult Password

**T102** Confirm Password must not be blank

**T103** Passwords do not Match

## 3.3 Functional validations

**Login**

F1 – If email is invalid, system displays an error.  
F2 – If password is incorrect, system displays an error.  
F3 – If both fields are blank, system displays an error.  
F4 – If login fails 3 consecutive times, system displays a "Too many attempts" warning.

**Signup**

F5 – If name is blank, system displays an error.  
F6 – If email already exists in the system, system displays an error.  
F7 – If password and confirm password do not match, system displays an error.  
F8 – If dietary preference is not selected, system displays an error.

**Meal Planning**

F9 – If no meals are added before saving, system displays an error.  
F10 – If start date is after end date, system displays an error.  
F11 – If meal plan name already exists for the user, system prompts for a new name.

**Recipe Discovery**

F12 – If search field is blank, system prompts user to enter a search term.  
F13 – If no matching recipes are found, system displays “No recipes found.”

**Pantry-Based Recipe Generator**

F14 – If ingredient list is blank, system displays an error.  
F15 – If pantry has no matching recipes, system displays “No recipes can be generated from current ingredients.”

**Grocery Ordering**

F16 – If store selection is blank, system displays an error.  
F17 – If item quantity is less than or equal to 0, system displays an error.  
F18 – If selected store is unavailable for delivery in the user's location, system displays an error.

**Nutritional Tracking**

F19 – If calorie goal is blank or unrealistic, system displays an error.  
F20 – If macro totals exceed daily limit thresholds, system displays a warning.  
F21 – If nutritional data for a recipe is unavailable, system displays “Nutritional info not available.”

**Cooking Tutorials**

F22 – If no tutorial is selected, system displays an error.  
F23 – If selected video is unavailable, system displays “Video not available.”

**AI Recipe Generator**

F24 – If ingredient list is blank, system displays an error.  
F25 – If no recipe can be generated from given parameters, system displays “No matching recipes found.”

**Substitution Suggestions**

F26 – If missing ingredient name is blank, system displays an error.  
F27 – If no substitution exists for given ingredient, system displays “No substitutions available.”

**Profile Management**

F28 – If name is blank, system displays an error.  
F29 – If dietary preference is not selected, system displays an error.  
F30 – If email format is invalid, system displays an error.

## 3.4 Classes / Objects

**3.4 Classes / Objects**

**3.4.1.1 Attributes**

**1. User**

* userId (unique identifier)
* name
* email
* password
* dietaryPreference
* role (Admin / Registered User / Guest)
* profilePicture

**2. Recipe**

* recipeId (unique identifier)
* title
* cuisineType (e.g., Arabic, Italian)
* description
* ingredients (list)
* quantities (per ingredient)
* steps (list of instructions)
* nutritionalInfo (calories, macros, vitamins)
* videoTutorialURL

**3. MealPlan**

* mealPlanId
* userId (owner)
* startDate
* endDate
* meals (list of recipes per day)

**4. Pantry**

* pantryId
* userId
* ingredients (list)

1. **GroceryOrder**

* orderId
* userId
* items (ingredient name, quantity)
* storeName
* deliveryAddress
* orderStatus

**6. NutritionLog**

* logId
* userId
* date
* totalCalories
* macros (protein, carbs, fats)

**3.4.1.2 Functions**

**User Functions**

* login(email, password)
* signup(name, email, password, dietaryPreference)
* updateProfile(profileData)
* logout()

**Recipe Functions**

* searchRecipe(keyword)
* getRecipeById(recipeId)
* generateRecipeFromPantry(ingredientsList)
* suggestSubstitutions(ingredient)

**MealPlan Functions**

* createMealPlan(mealPlanData)
* updateMealPlan(mealPlanId, mealPlanData)
* deleteMealPlan(mealPlanId)

**Pantry Functions**

* addIngredient(ingredient, quantity)
* removeIngredient(ingredient)
* getPantryContents(userId)

**GroceryOrder Functions**

* placeOrder(orderData)
* updateOrderStatus(orderId, status)
* cancelOrder(orderId)

**NutritionLog Functions**

* addNutritionEntry(logData)
* getDailySummary(date)
* setNutritionGoals(goalData)

## 3.5 Non-Functional Requirements

Nil

## 3.6 Inverse Requirements

Nil.

## 3.7 Design Constraints

Many of the HomeChef360 users, especially the primary target audience (mothers and young adults), may not have advanced technical knowledge. Therefore, the system must be intuitive, simple to navigate, and use warm, inviting colors suitable for the target demographic. The design must work seamlessly on both mobile and web platforms..

## 3.8 Logical Database Requirements

Nil

## 3.9 Other Requirements

Nil

# **4. Analysis Models**

Nil

# **5. Change Management Process**

Changes to the SRS, whether initiated by the development team or, testing team.

**A. Appendices**

*Nil*

## 