REQUIREMENTS

SENG 401 - L01

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1   FUNCTIONAL REQUIREMENTS

1.1   R-001 USER AUTHENTICATION

(1)   Registered users with valid usernames and passwords will have their credentials verified each time they log in.

(2)   Acceptance Criteria:

     (a)   The home page will have a button navigating you to the login page.

     (b)   The login page will have text boxes for entering a username and password to create or sign in to an account.

     (c)   Login credentials will be persistent.

     (d)   Password storage will be encrypted.

1.2   R-002 GUEST USER ACCESS

(1)   Users will be allowed full access to the capabilities of our website except for persistent user data.

(2)   Acceptance Criteria:

     (a)   All users will be able to make submissions and receive recommendations.

     (b)   Only registered users will have persistent data stored.

1.3   R-003 ROUTINE TIME SELECTION

(1)   Users can select whether they wish to do a morning routine, an evening routine, or both or indicate that they have no preference.

(2)   Acceptance Criteria:

     (a)   A dropdown-style submission for the morning or evening routine will be available.

1.4   R-004 SKIN TYPE INPUT

(1)   Users will be able to select their skin type.

(2)   Acceptance Criteria:

(a)   A drop-down menu will be available to indicate the following skin concerns:

(i)   Normal Skin

(ii)   Oily Skin

(iii)   Dry Skin

(iv)   Combination Skin

(v)   Sensitive Skin

(vi)   Aging-Skin

1.5   R-005 SKIN CONDITIONS INPUT

(1)   Users can submit skin conditions such as acne or rashes and general traits such as dry or oily.

(2)   Acceptance Criteria:

(a)   Users will describe their skin conditions in a text box.

(b)   Gemini will parse this information and only use recognized skin conditions.

1.6   R-006 ALLERGIES INPUT

(3)   Users will be able to submit allergies.

(4)   Acceptance Criteria:

(a)   Users will list their allergies in a text box.

(b)   Gemini will parse this information and only use recognized allergies.

1.7   R-007 SKIN CONCERNS

(3)   Users can select specific areas of their skin that are of concern.

(4)   Acceptance Criteria:

(a)   A checkbox will be available to indicate the following skin concerns:

(i)   Skin Concerns:

        (1)   Acne

        (2)   Hyperpigmentation

        (3)   Redness

        (4)   Dryness/Dehydration

        (5)   Oily & Congested Skin

        (6)   Enlarged Pores

        (7)   Dullness & Uneven Texture

        (8)   Fine Lines & Wrinkles

        (9)   Loss of Firmness & Elasticity

        (10)   Dark Circles & Puffiness (Under Eyes)

        (11)   Sun Damage

        (12)   Keratosis

        (13)   Scarring

(b)   A textbox will be available to describe the severity of the checked concerns or to include other skin concerns.

1.8 R-008 INGREDIENT PREFERENCES

(1)   Users will be able to select ingredient preferences for the recommended products.

(2)   Acceptance Criteria:

(a)   A checkbox will be available to indicate the following ingredient preferences:

        (i)   Fragrance-Free

        (ii)   Alcohol-Free

        (iii)   Paraben & Sulfate-Free

1.9   R-009 ETHICAL & SUSTAINABILITY CONCERNS

(3)   Users can select ethical and sustainability concerns for the recommended products.

(4)   Acceptance Criteria:

(a)   A checkbox will be available to indicate the following product preferences:

(i)   Cruelty-Free

(ii)   Vegan

(iii)   Eco-Friendly Packaging

(iv)   Sustainable Sourcing

1.10 R-010 BUDGET PREFERENCE

(1)   Users can submit budget preferences for low-, medium-, and high-priced products.

(2)   Acceptance Criteria:

(a)   Users can input the minimum and maximum of their budget range per item.

1.11 R-011 SMART RECOMMENDATIONS

(1)   Users will receive product recommendations tailored to their specific skin and budget concerns provided in their input form.

(2)   Acceptance Criteria:

(a)   Gemini will use all user input when crafting the recommendation query.

1.12 R-012 ROUTINE STORAGE

(1)   Registered users can save their recommended routines and store them in their accounts.

(2)   Acceptance Criteria:

(a)   Products and routines will be persistent.

(b)   Prior routines and product recommendations will be stored and accessible to the users.

1.13 R-013 RECOMMENDATION REASONING

(1)   Gemini will provide reasoning behind the products and routine recommendations.

(2)   Acceptance Criteria:

    (a)   Gemini will display the reasoning to the user upon receiving a recommendation.

    (b)   User profiles will persistently store reasoning alongside product recommendations and routines.

1.14 R-014 PRODUCT VISUALIZATION

(1)   Gemini will provide photos of each product alongside recommendations.

(2)   Acceptance Criteria:

    (a)   Photos of all products up for recommendation will be viewable alongside them.

1.15 R-015 FORM DATA PERSISTENCE

(1)   Registered user-submitted data will be persistent across user sessions and immediately accessible during future routine requests.

(2)   Acceptance Criteria:

    (a)   User data will auto-fill for future queries for registered users.

2   NON-FUNCTIONAL REQUIREMENTS

2.1   R-016 USER INTERFACE

(1)   The interface will be generally appealing and easy to navigate.

(2)   Acceptance Criteria:

    (a)   Web page content will be reasonably divided to prevent information from being clustered.

    (b)   The colour palette will be accessible and designed to mitigate eye strain.

2.2 R-017 RESPONSE TIME PERFORMANCE

(1)   Recommendation response times will be as low as possible.

(2)   Acceptance Criteria:

(a)   The time between the user's submission of criteria and Gemini's response will be no longer than the average time for a Gemini query of the same size.

2.3 R-018 PAGE LOADING

(1)   Website traversal will be seamless, with low latency and quick-loading web pages.

(2)   Acceptance Criteria:

(a)   The site organization will lay out the web pages and assets to make navigation quick.

2.4 R-019 SECURITY

(1)   The site will not store user data without their knowledge and approval and should not make it available to any third party.

(2)   Acceptance Criteria:

(a)   UI elements will inform users of their data usage.

(b)   UI elements will use user input to determine data usage and storage.

(c)   Data for one user will only be made accessible to that user during a logged-in session.

2.5 R-020 RESPONSIVE DESIGN

(1)   The UI will use responsive web design to adapt to the user's screen size and browser seamlessly.

(2)   Acceptance Criteria:

(a)   The UI will adapt to screen sizes with minimal changes or intelligently transition formatting when impossible.

(b)   Backend connections for all platforms will be centralized.

(c)   Data continuity will be seamless when transitioning from one platform to another.

2.6 R-021 HIGH-TRAFFIC PERFORMANCE

(1)   The number of users accessing the site simultaneously will not impact performance.

(2)   Acceptance Criteria:

    (a)   The site will handle requests from multiple users concurrently.

    (b)   The database infrastructure will be scalable.

3   USER STORIES

3.1 U-001: PERSONALIZED SKINCARE RECOMMENDATIONS

(1)   *As a* skincare enthusiast, *I want to* receive personalized product and routine recommendations based on my skin type and concerns *so that I* can efficiently improve my skincare routine.

(2)   Functional Requirements:

    (a)   Allow users to input skin type, concerns, and skincare goals.

    (b)   Process user input and fetch product recommendations from a database or third-party API.

    (c)   Display customized skincare routines step by step.

(3)   Non-Functional Requirements:

    (a)   Recommendations should be accurate and tailored to user input.

    (b)   Response time for generating suggestions should be under 3 seconds.

3.2 U-002: USER AUTHENTICATION AND GUEST ACCESS

(1)   *As a* user, *I want to* log in securely or access the application as a guest *so that I* can receive skincare recommendations without always creating an account.

(2)   Functional Requirements:

    (a)   Provide secure user authentication using PostgreSQL to store credentials.

    (b)   Offer guest user login functionality with limited features.

(3)   Non-Functional Requirements:

(a)   Ensure secure password storage and login process (use encryption).

(b)   System uptime for login functionality should be 99.9% over a month.

3.3   U-003: SKINCARE ROUTINE MANAGEMENT

(1)   *As a* registered user, *I want to* save and view my skincare routines *so that I* can track my skincare regimen over time.

(2)   Functional Requirements:

(a)   Allow users to save generated skincare routines to their profiles if logged in.

(b)   Provide an interface to view and manage saved routines.

(3)   Non-Functional Requirements:

(a)   Saved routines should persist across sessions.

(b)   The database should process queries to retrieve routines efficiently.

3.4   U-004: BUDGET-FRIENDLY RECOMMENDATIONS

(1)   *As a* budget-conscious user, *I want to* filter product recommendations by budget *so that I* can select affordable skincare options.

(2)   Functional Requirements:

(a)   Include budget input fields during the recommendation process.

(b)   Filter recommendations based on price range.

(3)   Non-Functional Requirements:

(a)   Ensure real-time filtering without page reloads.

(b)   Handle edge cases like missing budget data gracefully.

3.5   U-005: CROSS-PLATFORM COMPATIBILITY

(1)   *As a* mobile user, *I want to* access the application on different devices *so that I* can seamlessly use it on my desktop and phone.

(2)   Functional Requirements:

(a)   Design a responsive user interface that adapts to different screen sizes.

(3)   Non-Functional Requirements:

(a)   Maintain consistent performance across devices and user traffic with minimal layout shifts.

(b)   Ensure compatibility with major browsers (Chrome, Safari, Edge).
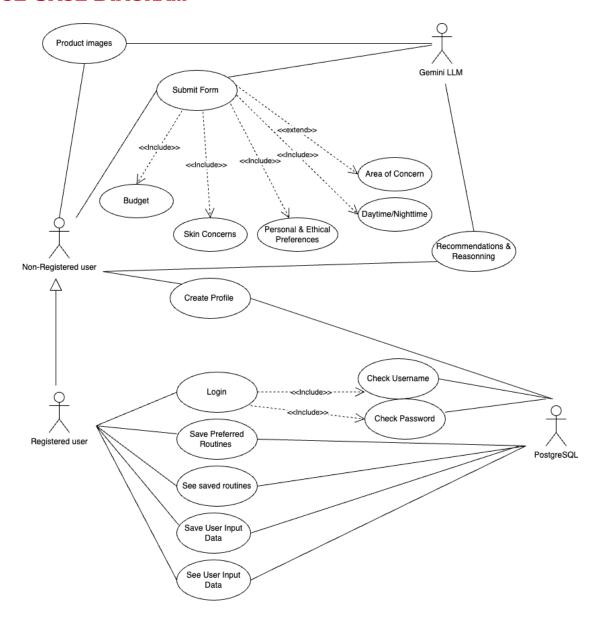
4   USE CASE DIAGRAM

Figure 1: D-001 Use Case Diagram

5   REQUIREMENTS PRIORITIZATION

PRIORITIZATION LEVEL	RED ID	REQUIREMENT TITLE
1 – Must Have	R-001	User Authentication
1 – Must Have	R-002	Guest User Access
1 – Must Have	R-003	Routine Time Selection
1 – Must Have	R-004	Skin Type Input
1 – Must Have	R-005	Skin Conditions Input
1 – Must Have	R-006	Allergies Input
1 – Must Have	R-007	Skin Concerns
1 – Must Have	R-011	Smart Recommendations
1 – Must Have	R-012	Routine Storage
1 – Must Have	R-015	User Interface
1 – Must Have	R-016	Response Time Performance
1 – Must Have	R-019	Responsive Design
2 – Should Have	R-008	Ingredient Preferences
2 – Should Have	R-009	Ethical & Sustainability Concerns
2 – Should Have	R-010	Budget Preference
2 – Should Have	R-018	Page Loading
2 – Should Have	R-019	Security
2 – Should Have	R-021	High-Traffic Performance
3 – Could Have	R-013	Recommendation Reasoning
4 – Won't Have	R-014	Product Visualization
4 – Won't Have	R-015	Form Data Persistence

Table 1: Requirements Prioritization

6   REQUIREMENTS TRACEABILITY MATRIX

REQ ID	REQUIREMENT DESCRIPTION	REQ REF	DESIGN REF	TEST CASE ID	STATUS
R-001	Registered User Login Credentials – Allow users to register and log in with username and password.	R-012 R-015 U-002	D-003 D-004 D-005 D-007 D-008 D-009	T-001 T-002 T-003 T-004 T-005 T-006 T-007 T-025 T-041	
R-002	Guest User Access – Provide full feature access except for data persistence.	U-002	D-003 D-006 D-007 D-009	T-001 T-026 T-027 T-040	
R-003	Routine Time Selection – Allow users to select morning/evening preferences.	U-001	D-004 D-007 D-009	T-008 T-028	
R-004	Skin Type – Enable users to submit their skin type.	U-001	D-004 D-007 D-009	T-009 T-029	
R-005	Skin Conditions – Enable users to submit skin conditions.	U-001	D-004 D-007 D-009	T-010 T-030	
R-006	Allergies Input – Enable users to submit allergies.	U-001	D-004 D-007 D-009	T-011 T-031	
R-007	Skin Concerns – Enable users to submit skin concerns.	U-001	D-004 D-007 D-009	T-012 T-032	
R-008	Ingredient Preferences – Enable selection of ingredient preferences.	U-001	D-004 D-007	T-013 T-033	

REQ ID	REQUIREMENT DESCRIPTION	REQ REF	DESIGN REF	TEST CASE ID	STATUS
			D-009		
R-009	Ethical & Sustainability Concerns – Enable selection of ethical and sustainability concerns.	U-001	D-004 D-007 D-009	T-014 T-034	
R-010	Budget Range – Allow users to select price range preferences.	U-004	D-004 D-007 D-009	T-015 T-015 T-017 T-018 T-035 T-036 T-037 T-038	
R-011	Smart Recommendations – Provide tailored product suggestions based on user inputs.	U-001	D-004 D-009	T-019 T-039	
R-012	Routine Storage – Save recommended routines for registered users.	U-003	D-005 D-008 D-009 D-010	T-023 T-024	
R-013	Recommendation Reasoning – Display reasoning behind product suggestions.	U-001	D-004 D-008 D-009	T-020	
R-014	Product Visualization – Display product images with recommendations.	U-001	D-004 D-008 D-009	T-021	
R-015	Form Data Persistence – Save user preferences and concerns for registered users.	R-001 U-003	D-004 D-007 D-009 D-010	T-022	
R-016	User Interface – Implement intuitive, user-friendly design.	U-005	L-001 L-002	T-041	

REQ ID	REQUIREMENT DESCRIPTION	REQ REF	DESIGN REF	TEST CASE ID	STATUS
			L-003 L-004 L-005 L-006 L-007 L-008 L-009 L-010 L-011		
R-017	Response Time Performance – Ensure recommendation response time is under 5 seconds.	U-001	D-009	T-042	
R-018	Page Loading – Optimize web page loading times.	U-005	D-009	T-043	
R-019	Security – Implement data privacy and security measures.	U-002	D-009	T-044	
R-020	Responsive Design – Ensure cross-platform compatibility.	U-005	L-001 L-002 L-003 L-004 L-005 L-006 L-007 L-008 L-009 L-010 L-011	T-045	
R-021	High-Traffic Performance – Ensure optimal performance regardless of the number of users.	U-005	D-009	T-046	

Table 2: Requirements Traceability Matrix