

DESIGN

SENG 401 - L01

Group: 18

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1 ARCHITECTURE: LAYERED

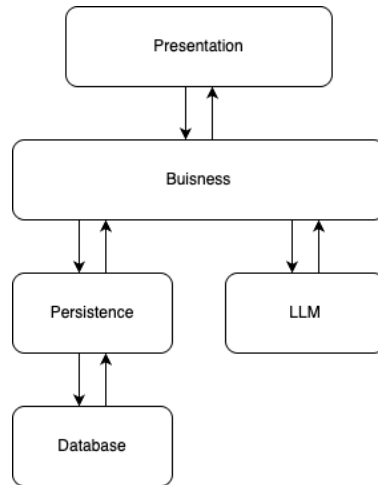


Figure 1: D-002 Layered Architecture Diagram

1.1 PRESENTATION LATER

- (1) The front end handles user interactions and presents the application's UI.
- (2) Communicates with the backend via APIs.
- (3) Technologies: React for dynamic user interfaces.

1.2 BUSINESS LAYER

- (1) Processes business logic and handles requests from the front end.
- (2) Manages data flow between the presentation layer and database layer.
- (3) Manages data flow between the presentation layer and the LLM layer.

1.3 PERSISTENCE LAYER

- (1) Manages data flow between the business layer and the database layer.

1.4 DATABASE LAYER

- (1) Stores and retrieves persistent data for the application.
- (2) Technologies: PostgreSQL for relational data management.

1.5 LLM LAYER

- (1) Processes data input by the user and returns an output.
- (2) Technologies: Gemini-2.0-flash

2 APPLICATION OF SOLID PRINCIPLES

2.1 SINGLE RESPONSIBILITY PRINCIPLES (SRP)

- (1) Each class and component will have a single responsibility, ensuring better maintainability and separation of concerns.
 - (a) The User class will handle user-related attributes and profile management, while the UserAuthentication class will handle authentication logic.

2.2 OPEN/CLOSED PRINCIPLE (OCP)

- (1) Classes will be open for extension but closed for modification, ensuring new functionality can be added without altering existing code.
 - (a) New types of users (e.g., AdminUser and GuestUser) will be implemented by extending the User base class. This will ensure that UserService interacts with the User class through an abstract interface rather than modifying its logic for each new type.

2.3 DEPENDENCY INVERSION

- (1) High-level modules should not depend on low-level modules; both should depend on abstraction.
 - (a) The database connection will be managed through abstraction, ensuring the application is not tightly coupled to a specific database implementation. A singleton instance will maintain a single database connection throughout the application, reducing redundant connections and improving efficiency.
 - (b) LLM integration uses abstraction (a wrapper) instead of directly coupling to the LLM. The wrapper is initiated using a Builder Pattern, allowing flexible configuration while maintaining separation between the application and external dependencies.

3 UML DIAGRAMS

3.1 SEQUENCE DIAGRAMS

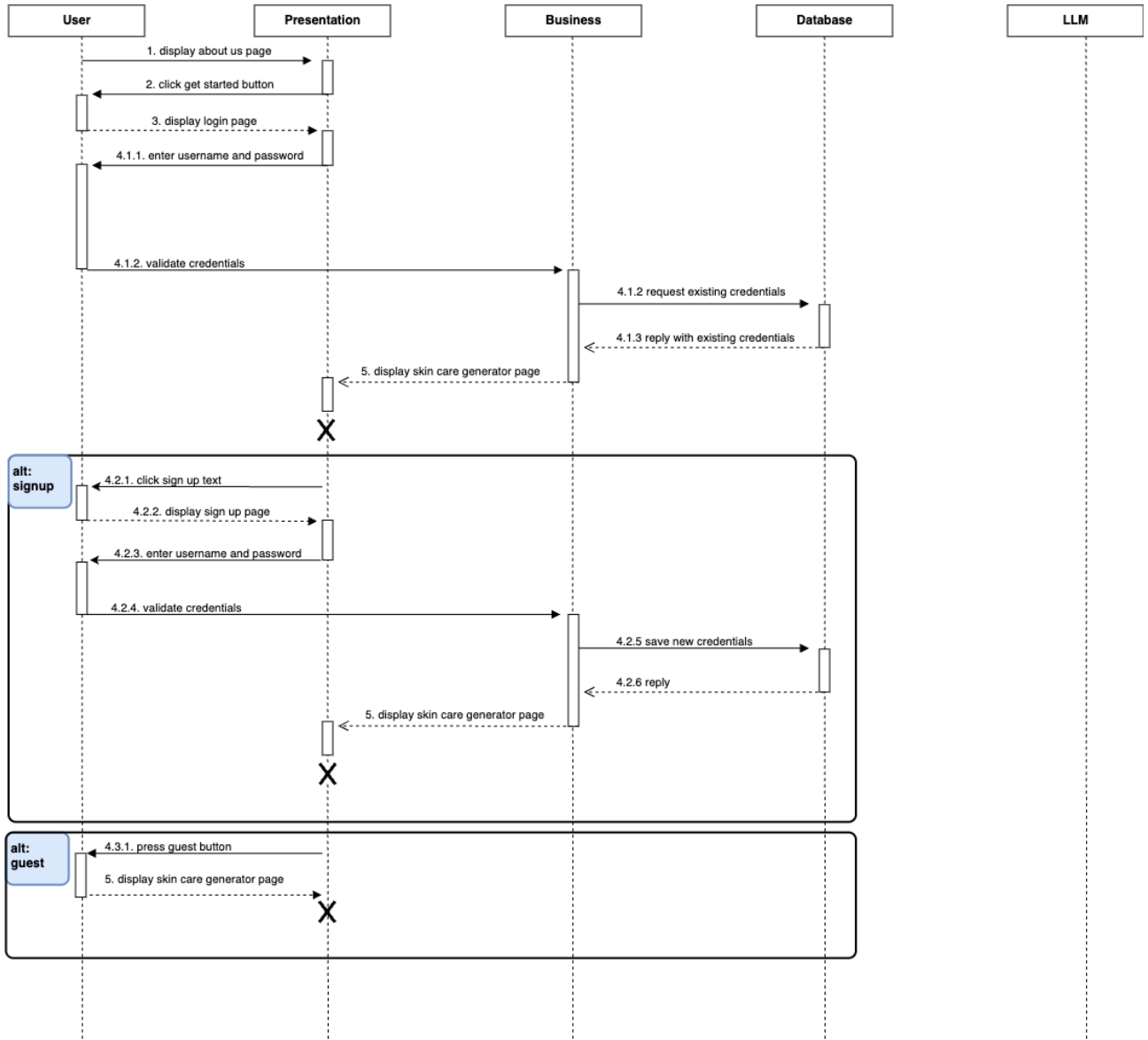


Figure 2: D-003 Credentials Sequence Diagram

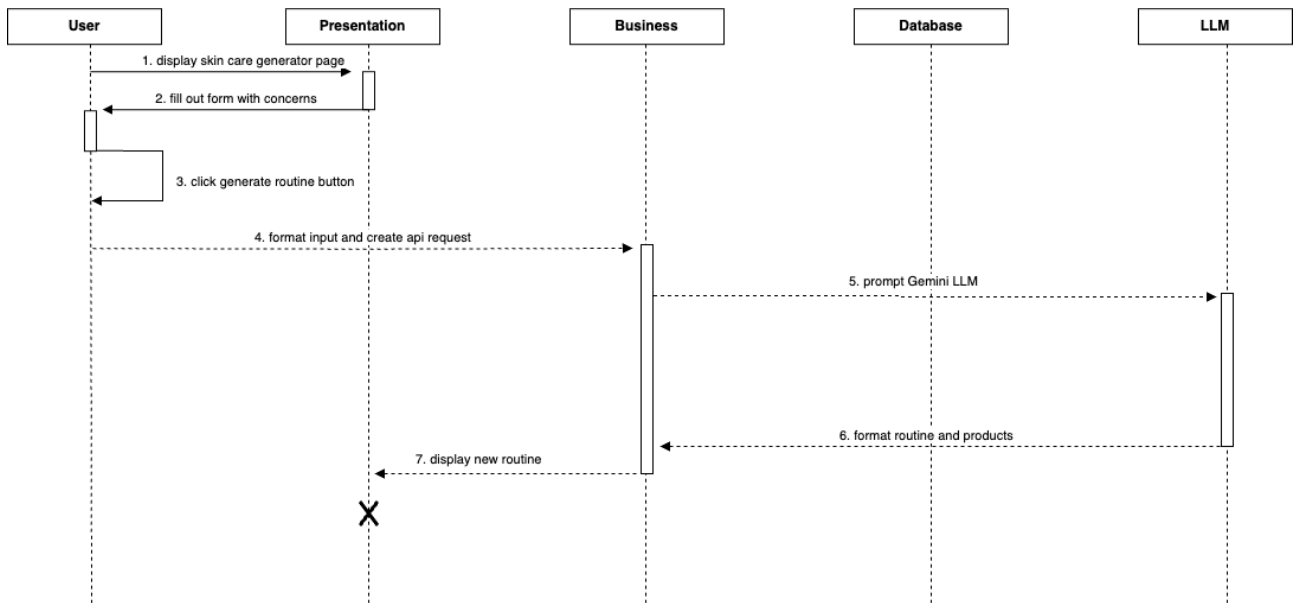


Figure 3: D-004 Use Generator Sequence Diagram

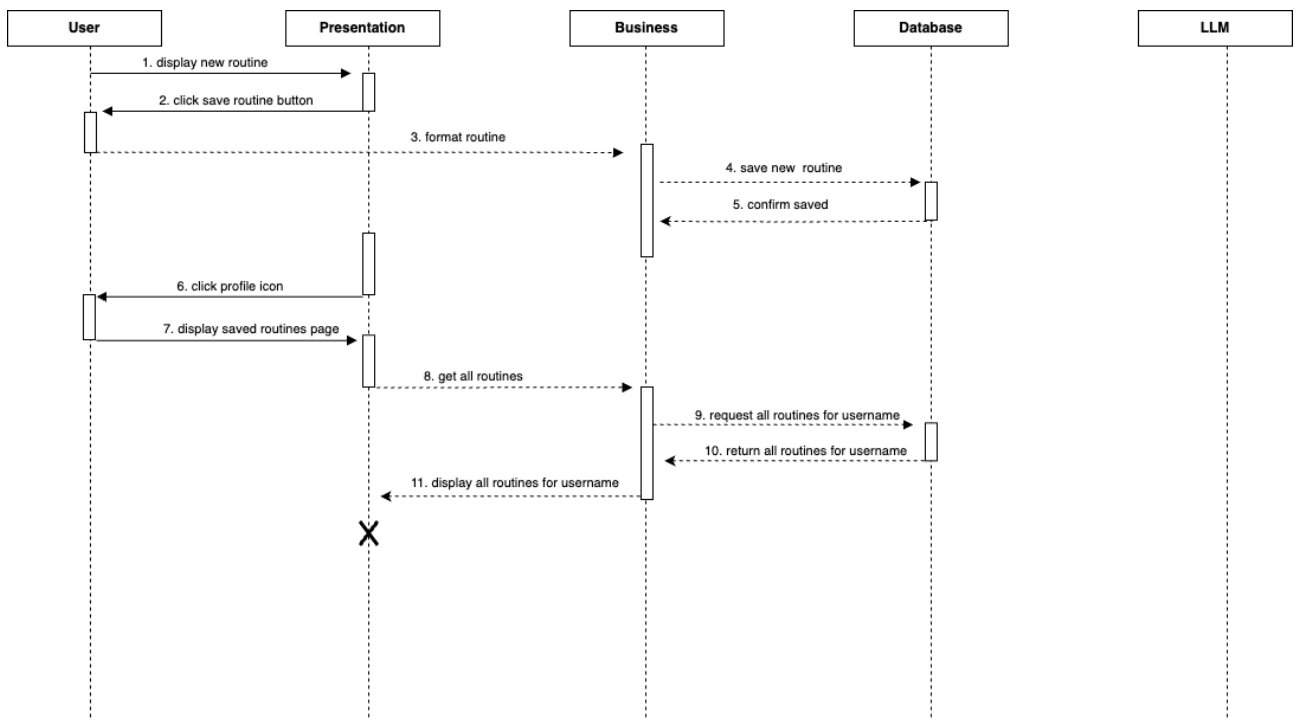


Figure 4: D-005 Save Routines Sequence Diagram

3.2 ACTIVITY DIAGRAMS

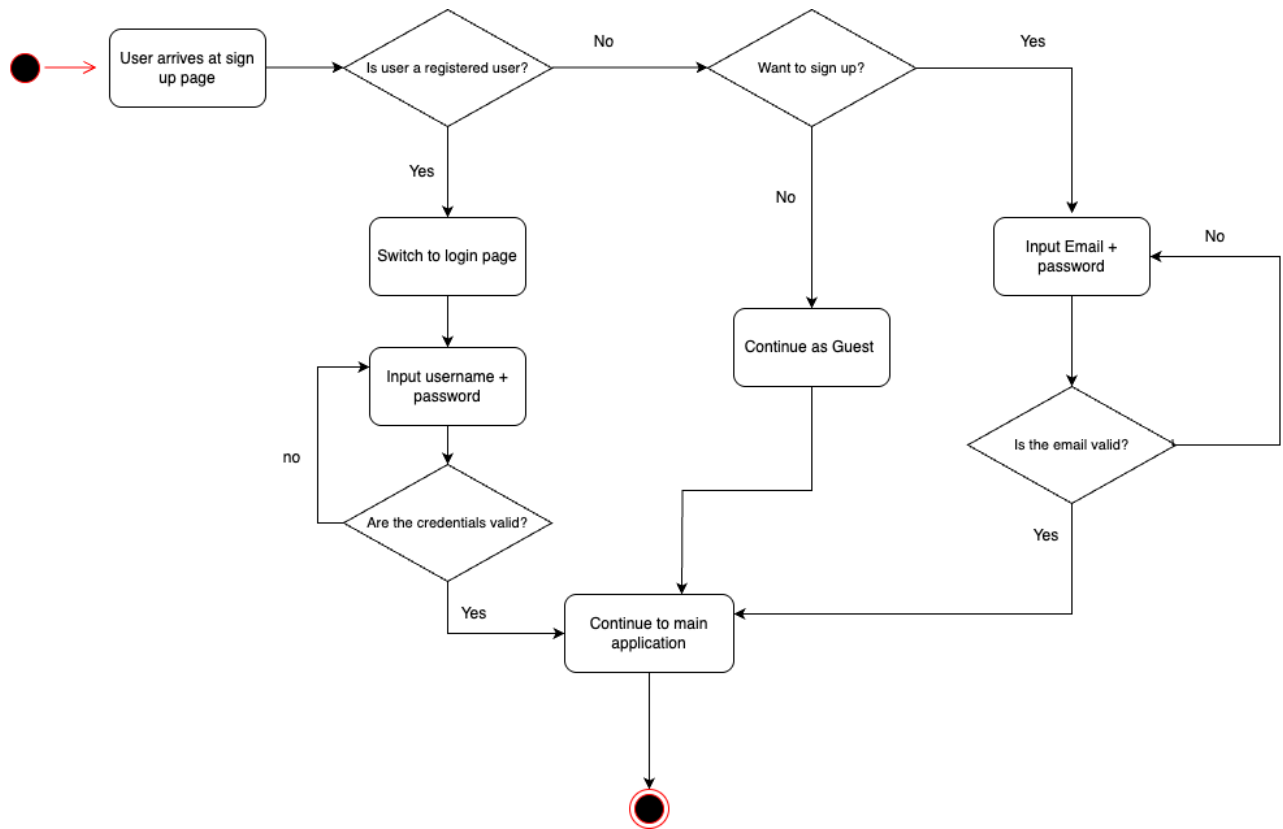


Figure 5: D-006 Become Registered User System Activity Diagram

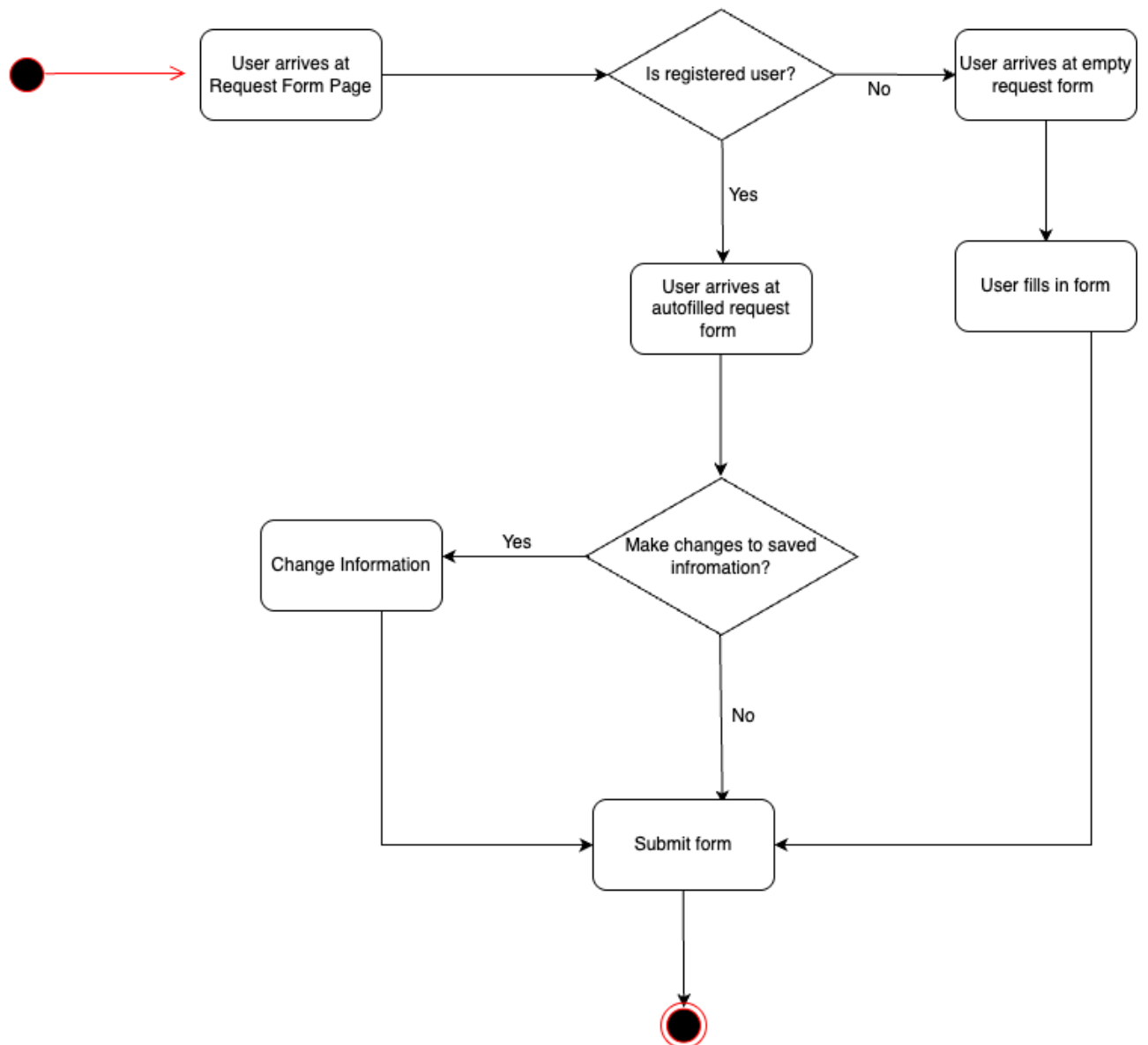


Figure 6: D-007 Submit Form System Activity Diagram

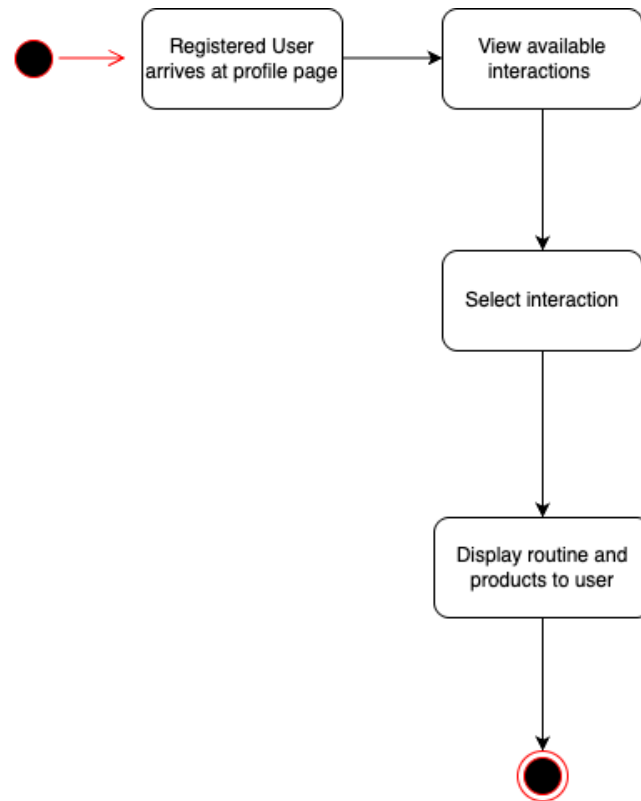


Figure 7: D-008 View Saved Routine System Activity Diagram

3.3 COMPONENT DIAGRAM

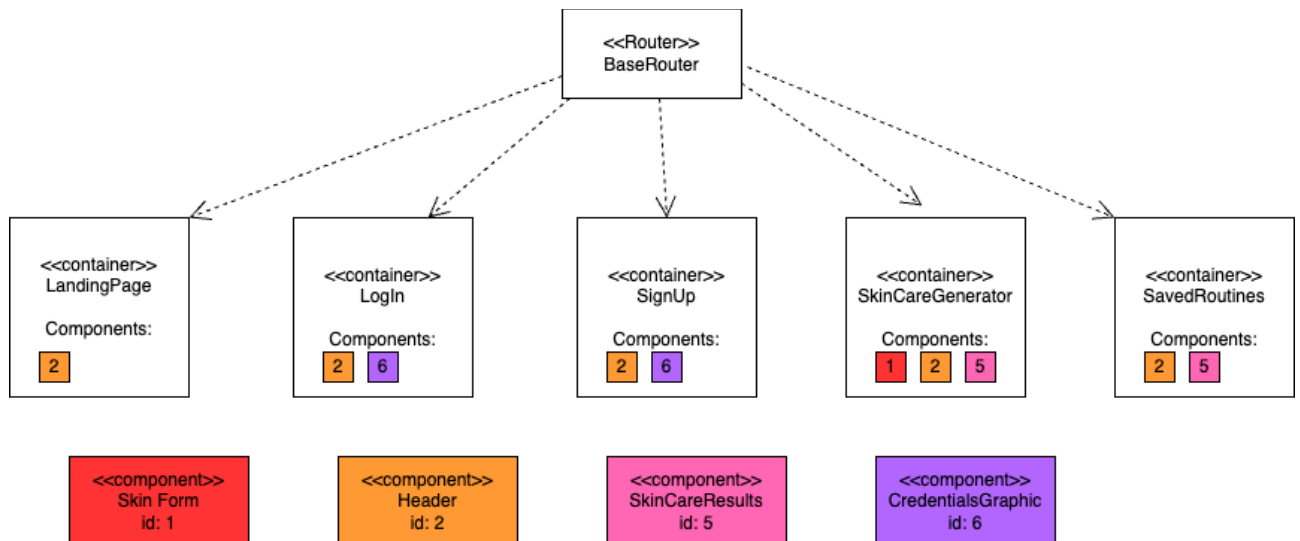


Figure 8: D-009 Component Diagram

3.4 RELATIONAL MODEL DIAGRAM

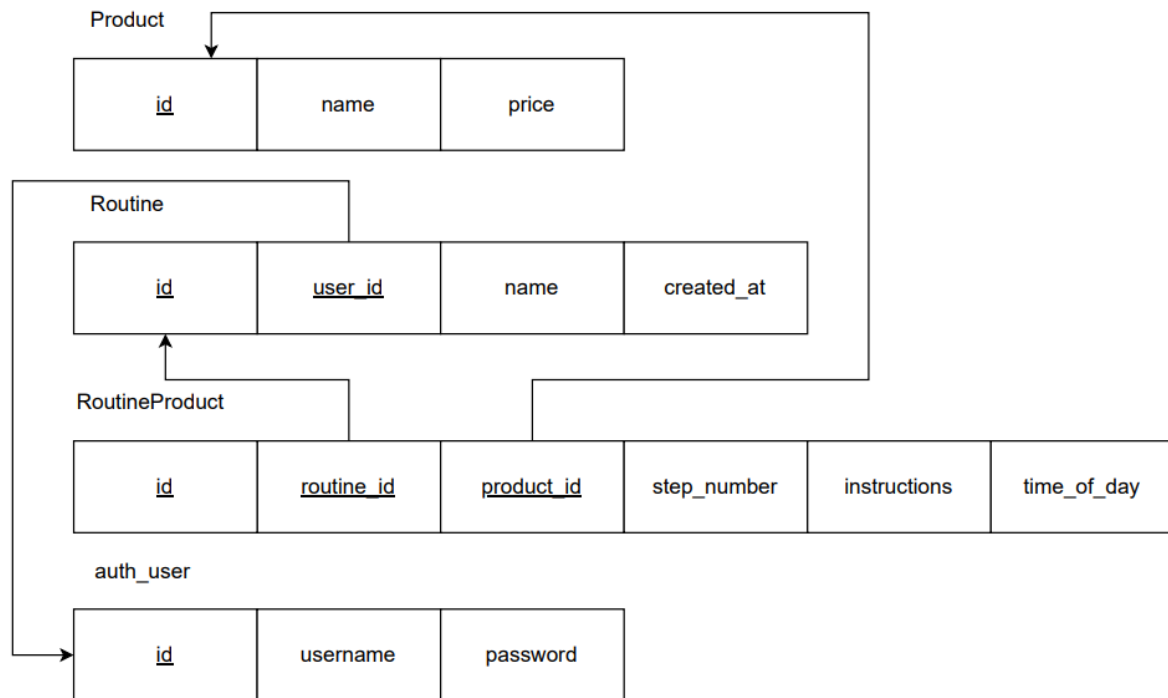


Figure 9: D-010 Relational Model Diagram

4 LAYOUT DESIGN

4.1 LANDING PAGE

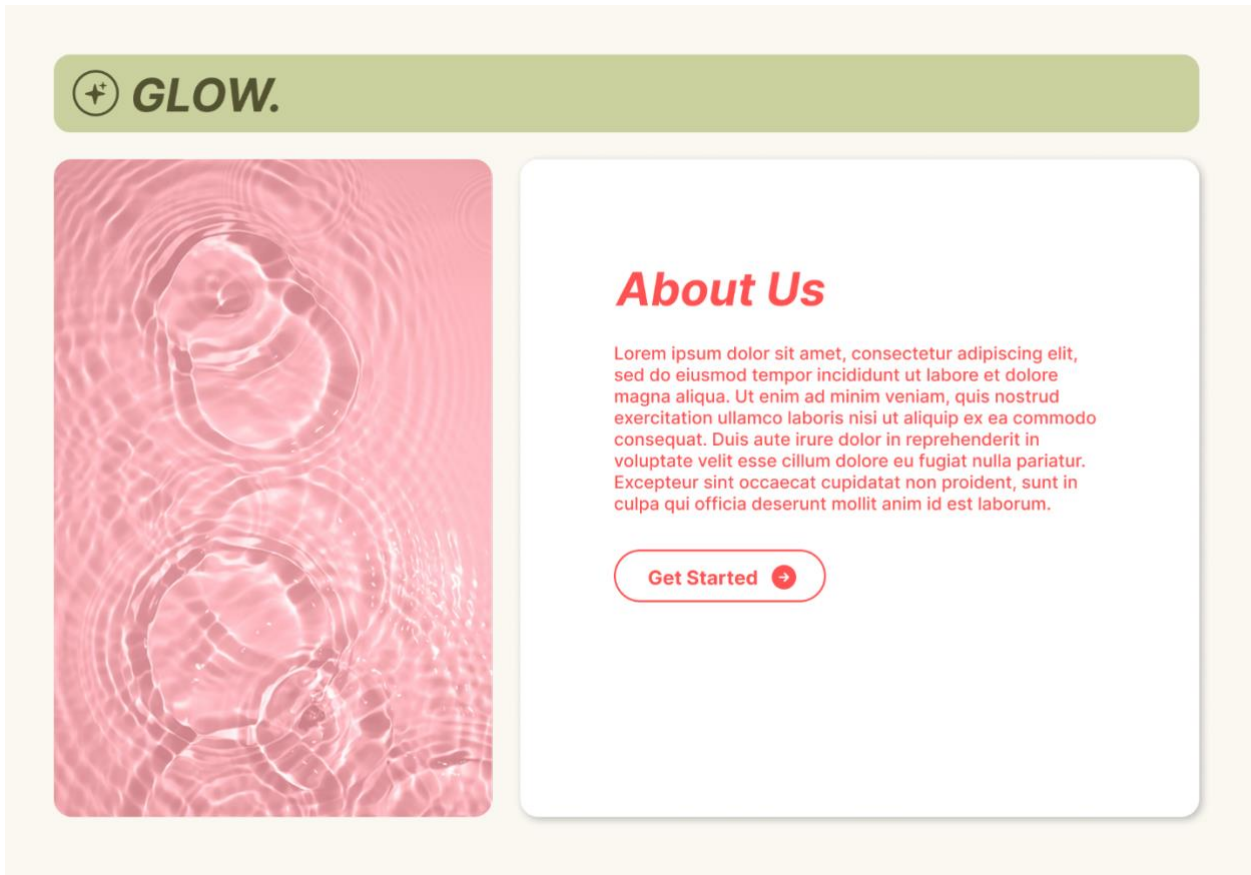


Figure 10: L-001 Landing Page (Desktop)

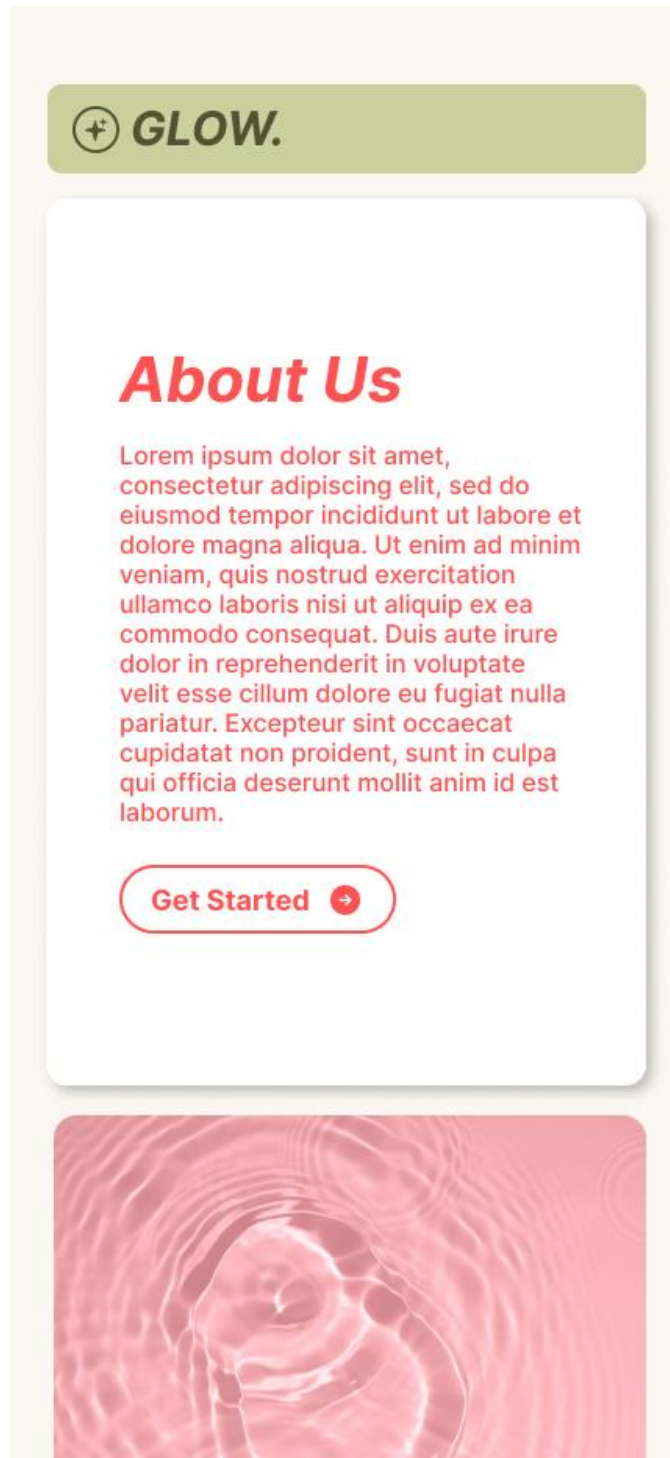




Figure 11: L-002 Landing Page (Mobile)

4.2 REGISTRATION PAGE





Welcome!

Sign up to Glow to save your skin care routines with ease

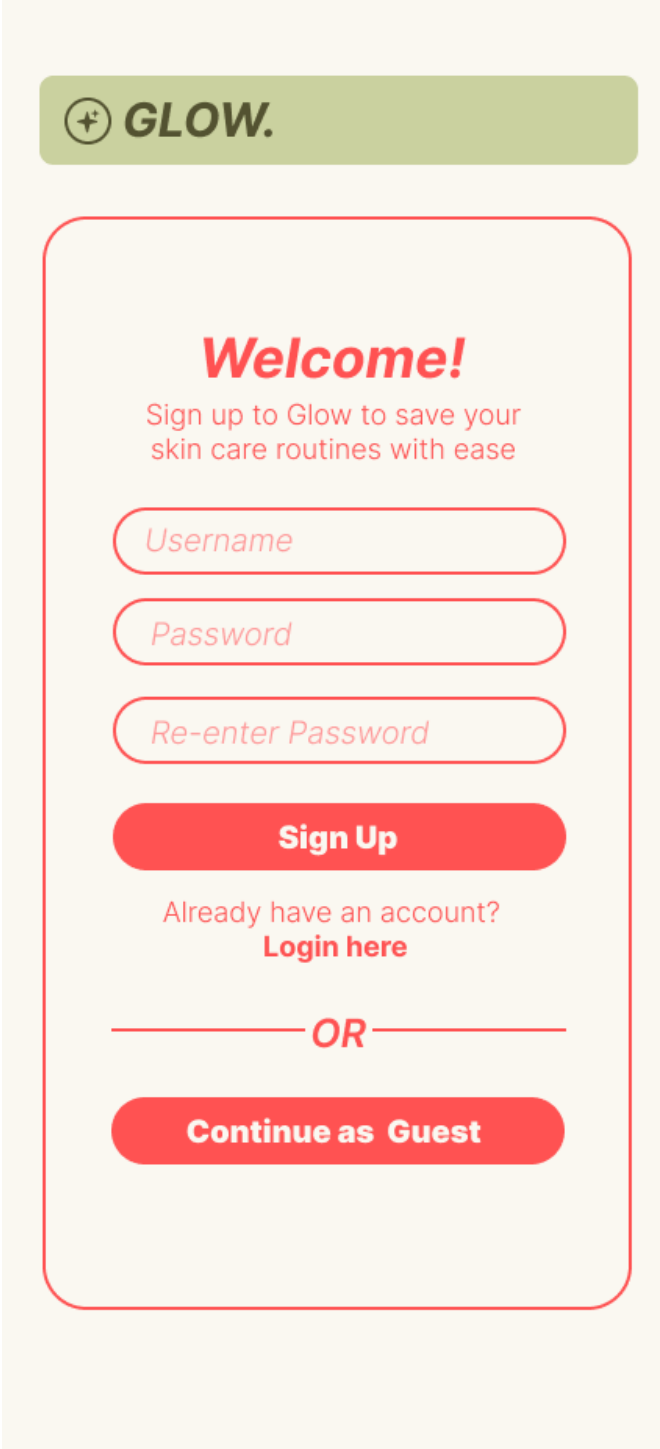
Sign Up

Already have an account? [Login here](#)

OR

Continue as Guest

Figure 12: L-003 Registration Page (Desktop)



The image shows a mobile registration page for 'GLOW'. At the top, there is a green header bar with a circular icon containing a plus sign and the word 'GLOW.' in white. Below this, the main content area is enclosed in a large, rounded rectangle with a thin red border. Inside this rectangle, the word 'Welcome!' is written in a bold, red, sans-serif font. Below it, a line of text in a smaller, red font says 'Sign up to Glow to save your skin care routines with ease'. There are three input fields, each with a red border and rounded corners, containing the placeholder text 'Username', 'Password', and 'Re-enter Password' in a red font. Below these fields is a red button with rounded corners and the text 'Sign Up' in white. Underneath the button, the text 'Already have an account?' is in red, followed by 'Login here' in a bold red font. A horizontal line with the word 'OR' in red is centered below this. At the bottom of the red-bordered area is another red button with rounded corners and the text 'Continue as Guest' in white.

Figure 13: L-004 Registration Page (Mobile)

4.3 LOGIN PAGE

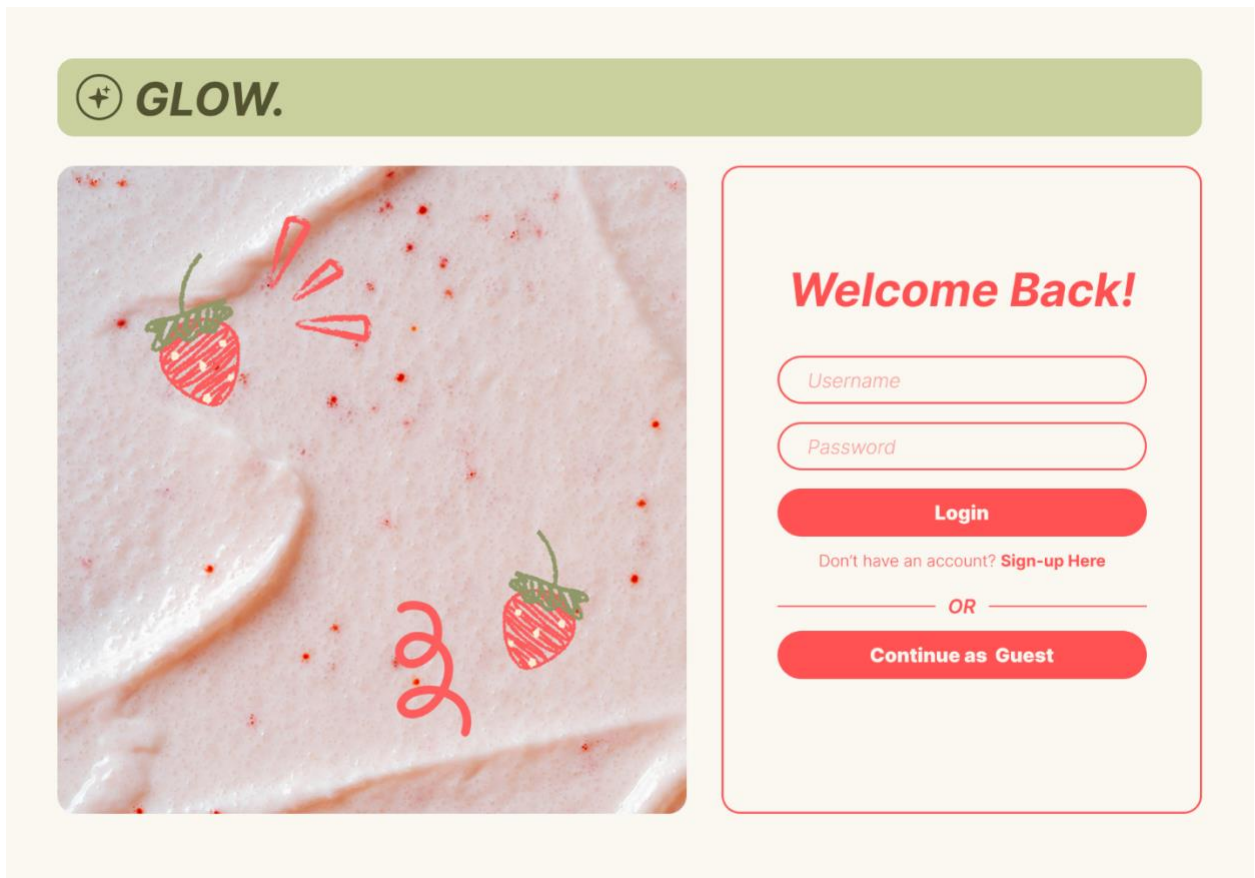
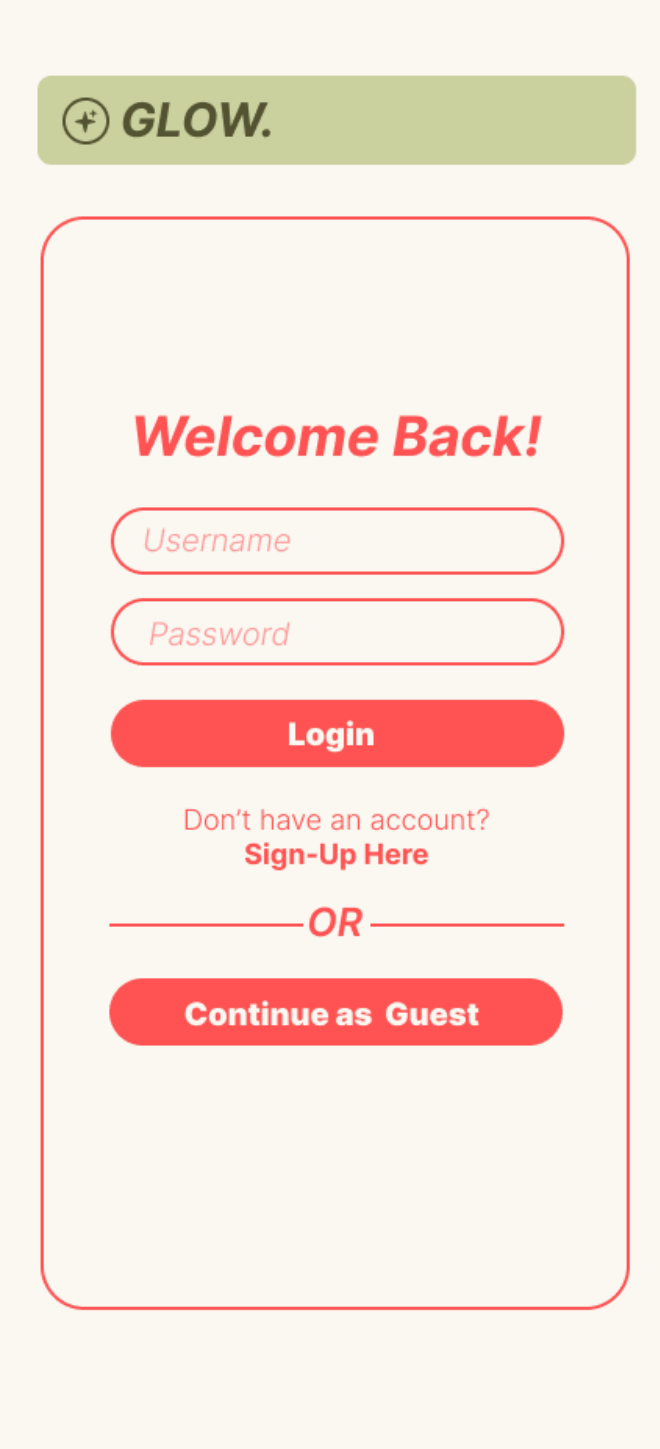



Figure 14: L-005 Login Page (Desktop)



 **GLOW.**

Welcome Back!

Username

Password

Login

Don't have an account?
Sign-Up Here

— OR —

Continue as Guest

Figure 15: L-006 Login Page (Mobile)

4.4 PROFILE



Figure 16: L-007 User Profile (Desktop)

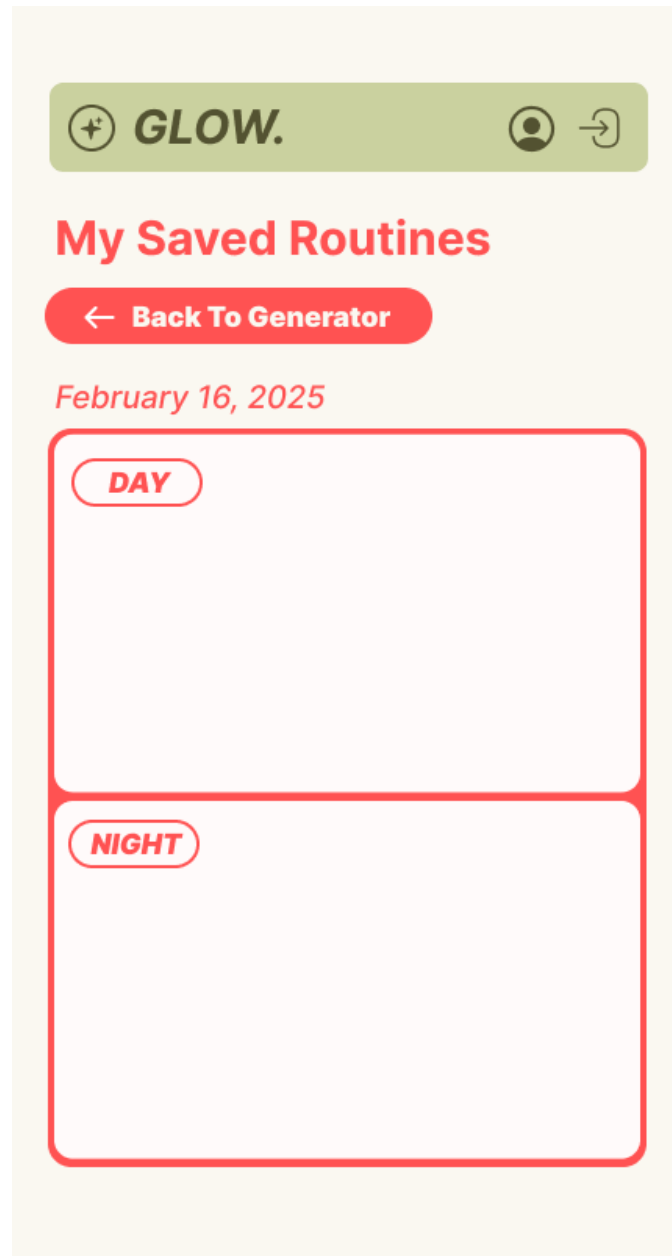



Figure 17: L-008 User Profile (Mobile)

4.5 ROUTINE SUBMISSION FORM

 **GLOW.**

Skin-Care Generator

Routine Criteria

Routine Type

Day

Skin Type

Combination

Skin Conditions

Enter Skin Conditions (comma separated)

Allergies

Enter Allergies (comma separated)

Skin Concerns

☐ Acne

☐ Hyperpigmentation

☐ Dehydrated

☐ Textured

☐ Enlarged Pores

☐ Congested Skin

☐ Redness

☐ Wrinkles

☐ Loss of Firmness

☐ Sun Damage

☐ Scarring

☐ Sensitive

☐ Dark Circles

☐ Puffy Eyes

☐ Aging

Product Criteria

Ingredient Preferences

☐ Fragrance-Free

☐ Alcohol-Free

☐ Paraben & Sulfate-Free

Ethical & Sustainability Concerns

☐ Cruelty-Free

☐ Vegan

☐ Eco-Friendly Packaging

☐ Sustainable Sourcing

Budget

Medium

Minimum Price

\$0

Maximum Price

\$100

Create Routine

Routine Generated. Scroll down to view!

Your Routine

DAY

Product 1 - \$18

Product 2 - \$18

Product 3 - \$18

NIGHT

Product 1 - \$18

Product 2 - \$18


Product 3 - \$18


Figure 18: L-009 Routine Submission Form Guests (Desktop)

SENG 401 - L01

17

Group 18

 **GLOW.**

 Sign Out

Skin-Care Generator

Routine Criteria

Routine Type

Day

Skin Type

Combination

Skin Conditions

Enter Skin Conditions (comma separated)

Allergies

Enter Allergies (comma separated)

Skin Concerns

☐ Acne

☐ Hyperpigmentation

☐ Dehydrated

☐ Textured

☐ Enlarged Pores

☐ Congested Skin

☐ Redness

☐ Wrinkles

☐ Loss of Firmness

☐ Sun Damage

☐ Scarring

☐ Sensitive

☐ Dark Circles

☐ Puffy Eyes

☐ Aging

Product Criteria

Ingredient Preferences

☐ Fragrance-Free

☐ Alcohol-Free

☐ Paraben & Sulfate-Free

Ethical & Sustainability Concerns

☐ Cruelty-Free

☐ Vegan

☐ Eco-Friendly Packaging

☐ Sustainable Sourcing

Budget

Medium

Minimum Price

\$0

Maximum Price

\$100

Create Routine

Routine Generated. Scroll down to view!

Your Routine

DAY

Product 1 - \$18

Product 2 - \$18

Product 3 - \$18

NIGHT

Product 1 - \$18

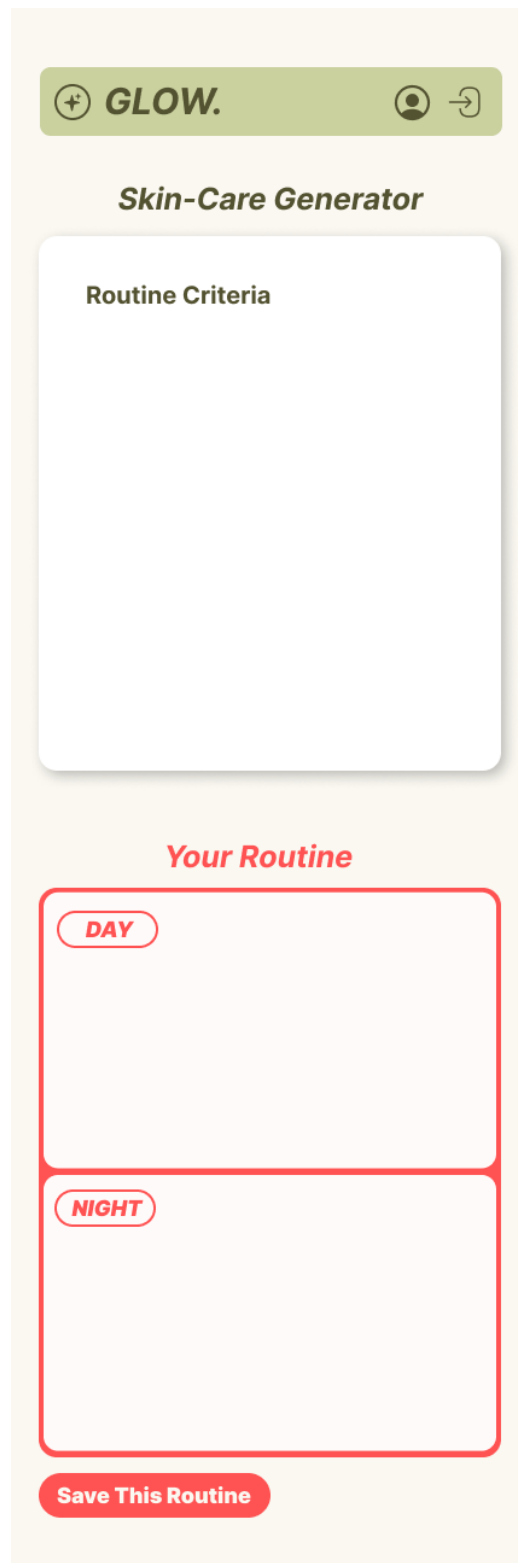
Product 2 - \$18

Product 3 - \$18

Save This Routine

Routine Successfully Saved ✓

Figure 19: L-010 Routine Submission Form Users (Desktop)



The image shows a mobile app interface for a skin-care routine generator. At the top is a green header bar with a plus icon, the text "GLOW.", a user profile icon, and a share icon. Below the header is the title "Skin-Care Generator". Underneath is a white box labeled "Routine Criteria". Below that is a section titled "Your Routine" in red, which contains two red-outlined boxes. The top box is labeled "DAY" and the bottom box is labeled "NIGHT". At the bottom of the "Your Routine" section is a red button labeled "Save This Routine".

GLOW.

Skin-Care Generator

Routine Criteria

Your Routine

DAY

NIGHT

Save This Routine

Figure 20: L011 Routine Submission Form (Mobile)