CSC 431

Skin4You

System Architecture Specification (SAS)

Team 6

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Version History

Version	Date	Author(s)	Change Comments
1.0	4/3/23	Miranda Bialek, Isabella Dieguez, Rachel Tomasetti	First draft

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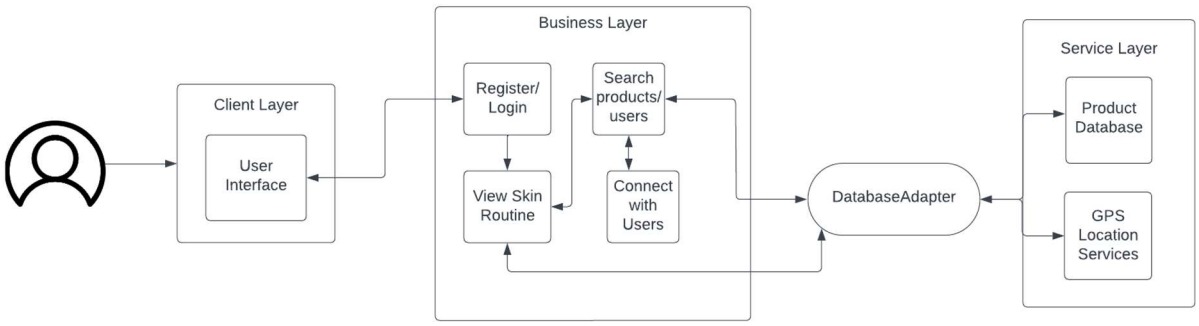
1. System Analysis

1.1 System Overview

Skin4You is a mobile application that allows users to match their unique skin types with dermatologist approved products best suited for them.

The architectural design will utilize a three-tier style, composed of a client layer, business layer and service layer. The client server will consist of the user interface and features. The business layer will consist of the app's functions such as the logging in, account creation, product matching, purchasing and sharing through the social aspect. This layer will be home to the user's profile, preferences and information. The service layer will host the location services software, online databases and product information all used to facilitate the business the layer.

1.2 System Diagram



1.3 Actor Identification

The actors within our system include:

- New Users: actors who have not created an account.
- Registered Users: actors who have created an account.
- Server: actor which hosts the databases and holds user data.

1.4 Design Rationale

1.4.1 Architectural Style

Skin4You will utilize a three-tier architectural style composed of a client, business and service layer. This allows for a variation of the database-centric architectural style and the client-server architectural style, adding a middle tier between the two to implement business logic.

- Client Layer: user interface for iOS, Android and Google, allowing users to interact with our mobile application and data easily

- Business Layer: logging in, account creation, product matching, purchasing and sharing through the social aspect, and home to the user's profile, preferences and information.
- Service Layer: host of the behind-the-scenes databases such as locations services, product information and online databases where products are purchased from. This layer will also contain the information regarding the dermatologists.

1.4.2 Design Pattern(s)

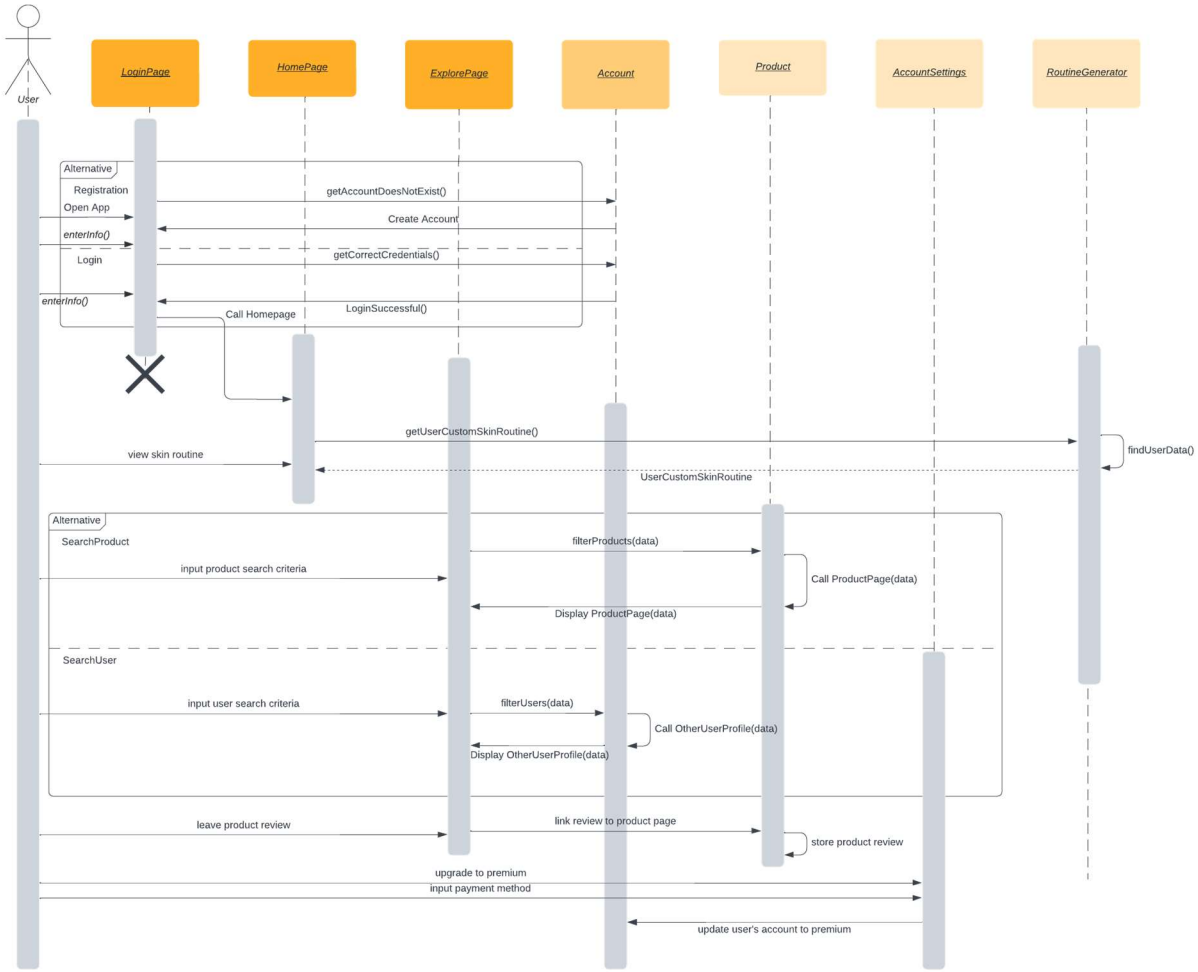
- Façade: The user will be exposed to a simple display with easy functionality. Behind the aesthetic, social app, will be a complex system of algorithms and databases allowing the user to find the perfect products for their unique skin.
- Adapter: This design will allow for incompatible components to become compatible with each other, allowing for a seamless three-tier system. This will be the connection between the multiple APIs utilized to make Skin4You an easy, useful mobile application.
- Decorator: This design will add functionality to existing components without modifying source code. This design will be most useful in the social media aspect of the application.
- Strategy: This design allows for a family of algorithms to become interchangeable. This design will be vital for possible updates.
- Command: This design encapsulates a command request as an object, allowing for the parameterization of clients with different requests, queue or log requests and support undoable operations. This design is vital to the user interface.

1.4.3 Framework

For our framework, we will be utilizing Flutter. Flutter is an open-source UI software development kit created by Google. It is used to develop cross-platform applications for Android, iOS, Linux, macOS, Windows, Google Fuchsia, and the web from a single codebase. Flutter's versatility is what makes it the most attractive framework for our mobile application. Skin4You is going to be accessible on several platforms and will contain complex algorithms and a sophisticated structure. Flutter, not only well documented, but will also provide the best platform and experience for the users.

2. Functional Design

2.1 Interacting with App



- When the user opens the app, they are prompted to register if they are a new user or login if they are a returning user.
- Once the user is logged in, they are directed to the home page where they can view their customized skin care routine.
- The user has the ability to search specific products catered to their needs (skin product, color, skin type, price, etc.)
- The user has the ability to search other users and find specific users who are either in their social network or have similar skin types to them.
- The user can leave a review on products that they have tried to give other users insight into how the product worked for them.

- The user can connect with other user’s profiles to stay up to date on their skin care goals, routines, and accomplishments.

3. Structural Design

Below is a UML class diagram that outlines the core functionality in our system, which employs the façade design pattern.