Skincare & Beauty Consultancy Platform Software Architecture Document

1 Introduction

1.1 Purpose

The Skincare & Beauty Consultancy Platform's architecture is thoroughly described in this document, along with the many parts, their interactions, and the reasoning behind the design choices. To capture the important features of the system, it incorporates a number of architectural views, including the Use-Case View, Logical View, Process View, and Deployment View.

1.2 Scope

An architectural overview of the Skincare & Beauty Consultancy Platform is given in this software architecture document. Based on customers' skin type and problems, the platform is intended to provide them with individualised skincare consultations, professional guidance, and product suggestions. It also offers popular cosmetics that can be bought without tailored suggestions.

This document has been generated directly from the platform's analysis and design model. The majority of the sections have been derived from the platform's design specifications and the architecture model, ensuring alignment with the overall vision and user requirements.

1.3 Definitions, Acronyms, and Abbreviations

- **API**: Application Programming Interface, allowing the frontend and backend to communicate.

- **UML**: Unified Modeling Language, used for system modeling.

- **UI**: User Interface, representing the visual elements of the platform.

1.4 References

- **CSUN Software Architecture Guidelines**: `https://www.ecs.csun.edu/~rlingard/COMP684/Example2SoftArch.htm`

2 Architectural Goals and Constraints

This section describes the system requirements that impact architectural decisions, including:

- **Legacy System Integration**: For the purpose of processing payments, the system might have to interface with external APIs (such as Apple Pay and Google Pay).

- **Scalability**: To accommodate an expanding user population, the system needs to be scalable.

- **Security**: Safeguard sensitive user data, including payment and personal data.

- **Performance**: Video consultations that take place in real time should be responsive and seamless.

3 Architectural Representation

This section presents the system architecture using several views:

- **Use-Case View**

- **Logical View**

- **Process View**

- **Deployment View**

Each of these viewpoints provides insight into the system's structure and the interactions between its many parts.

3.1 Use-Case View

The Skincare & Beauty Consultancy Platform's primary use cases are described in this part, along with the key features that users will encounter:

- **Login/Registration**: To access the platform, users can register and log in.

- **Submit Skincare Concerns**: In order to receive personalised advice from experts, customers fill out a form detailing their skincare issues.

- **Expert Matching**: The system matches the customer with the most qualified beauty specialist based on their skin concerns.

- **Consultation**: Through video conferencing, users may discuss skincare routines, recommended products, and beauty secrets with experts.

- **Product Recommendation**: Experts provide customised product suggestions based on the user's preferences and concerns, with a focus on skincare routines.

- **Follow-up Consultation**: Users can arrange follow-up meetings to track their progress and get further advice after their first session.

- **Rate/Review**: Users may improve the platform's quality and have an impact on future service recommendations by ranking and reviewing their expert consultations.

- **Trending Makeup Products:** The website also sells popular cosmetics, but it doesn't provide tailored suggestions.

- **Search & View Experts:** Additionally, a user can look up professionals and see their contact details, among other things.
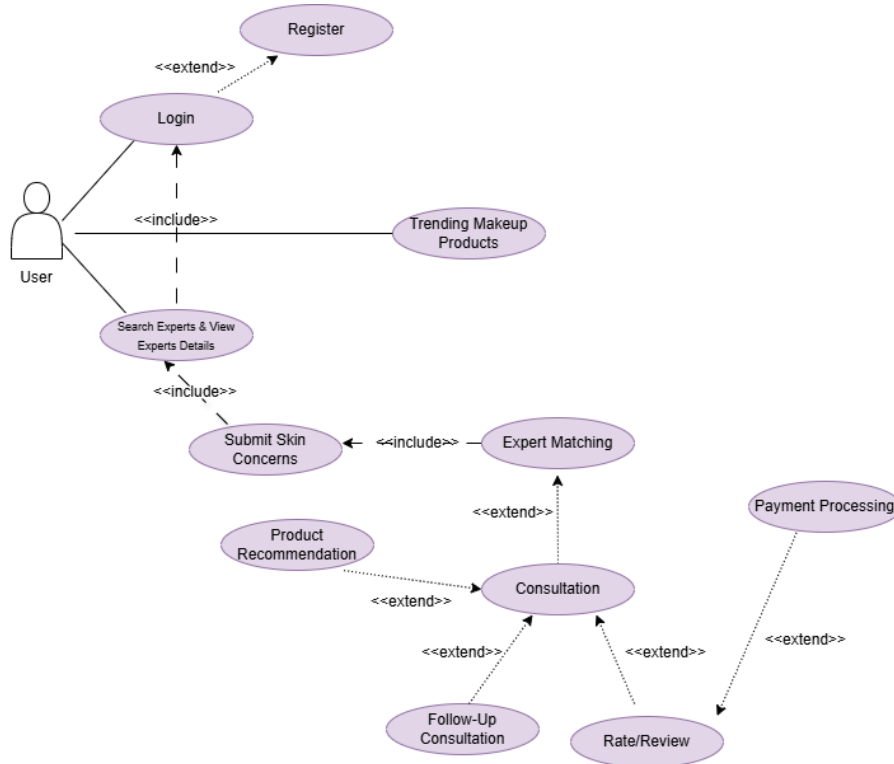
Figure 1: Use Case Model for Skincare & Beauty Consultancy Platform

3.1.1 Architecturally-Significant Use Cases

Every important use case has a direct effect on different parts of the architecture. The following are the main architectural elements associated with these use cases:

- **Login/Registration**:
  - Impact: Requires users to register or log in, which guarantees safe access to the platform.
  - Architecture: Managed by the system for authentication, which guarantees safe access for users.

- **Trending Makeup Products**:
  - Impact: Gives customers the option to buy popular cosmetics, even if they don't get tailored suggestions.
  - Architecture: Retrieved from the product catalogue subsystem and shown via the user interface.

- **Search Experts & View Experts Details**:
  - Impact: Users can browse thorough profiles and look for specialists based on their skin concerns.
  - Architecture: Managed by the expert search subsystem, which looks for appropriate matches in the expert database.

- **Submit Skin Concerns**:
  - Impact: Users enter their skincare issues, which are then processed and saved to aid in product recommendations and expert matching.
  - Architecture: Kept in the user database for later usage and controlled by the form submission subsystem.

- **Expert Matching**:

– Impact: Depending on their skincare requirements, the portal pairs consumers with the top professionals.

– Architecture: Suggests the ideal expert for the user based on the expert database and expert matching methodology.

- **Consultation**:

  – Impact: Experts can be consulted by users via text or video.

  – Architecture:Overseen by the consultation subsystem, which uses real-time communication networks to link people with specialists.

- **Product Recommendation**:

  – Impact: Professionals offer tailored skincare product advice.

  – Architecture: Integrated with the product recommendation subsystem, which fetches product details from the product database.

- **Follow-Up Consultation**:

  – Impact: Users can schedule follow-up consultations to monitor their progress after the initial appointment.

  – Architecture: Managed by the consultation scheduler subsystem.

- **Rate/Review**:

  – Impact: Expert ratings are impacted by user evaluations and ratings of their consultations.

  – Architecture: The expert database is used to track performance and contains ratings and reviews.

- **Payment Processing**:

  – Impact: Secure payment processing for consultations.

  – Architecture: Managed by the payment gateway subsystem, integrated with external payment processors like Google Pay or Credit/Debit cards.

3.2 Logical View

The **Logical View** illustrates the primary components of the Skincare & Beauty Consultancy Platform, their organisation into packages and subsystems, and their cooperation in meeting the system's requirements.
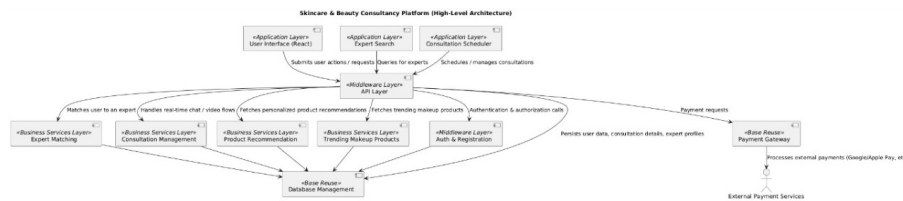

Figure 2: Logical View

3.2.1 Architecture Overview – Package and Subsystem Layering

This section explains the architecture of the Skincare & Beauty Consultancy Platform, including its various levels and subsystems. In order to facilitate modularisation and concern separation, the system's design is tiered.

3.2.2 Application Layer

The application layer controls user interactions, including signing in, submitting skincare issues, and using the user interface (UI) for expert consultations.

Subsystems:

- **User Interface (UI)**: React-built user interface that lets consumers report skincare problems, interact with the platform, and get expert help.

- **Expert Search**: This subsystem allows users to search for experts based on their skin concerns and match them with suitable beauty specialists.

- **Consultation Scheduler**:Depending on their availability, users can use this subsystem to schedule consultations with the chosen professionals.

3.2.3 Business Services Layer

The Business Services Layer contains the core business logic, including expert matching, consultation management, and product recommendations for customised skincare guidance.

Subsystems:

- **Expert Matching**: This subsystem matches users with the best professionals based on their skin conditions and preferences.

- **Consultation Management**: It manages online consultations between users and experts and enables both text-based and video-based interactions.

- **Product Recommendation**: Experts give personalised skincare and makeup recommendations based on individuals' skin issues and the results of their consultations.

- **Trending Makeup Products**: Displays trending beauty products for purchase without personalised recommendations.

3.2.4 Middleware Layer

The middleware layer serves as a communication link between the front-end application and back-end services, ensuring seamless data interchange between the user interface and the underlying system components.

Subsystems:

- **API Layer**: The API Layer ensures that data flows easily between the application and back-end services, allowing the user interface and business logic to communicate more effectively.

- **Authentication and Authorization**: This subsystem is in charge of user authentication, registration, and login management to control access to platform capabilities.

3.2.5 Base Reuse

The Base Reuse layer's reusable components and shared services provide common functionality that other levels can use.

Subsystems:

- **Database Management**:This subsystem stores user information, expert profiles, skincare consultations, and product recommendations in either a relational (MySQL) or non-relational (MongoDB) database.

- **Payment Gateway**: To manage consulting fees, this subsystem incorporates payment methods like Google Pay, Apple Pay, and credit/debit card processing.

3.3   Process View

The Process View, which concentrates on data flow and control, demonstrates how different tasks (processes) interact within the system. It highlights key functions and illustrates how the application's layers work together to achieve organisational goals.
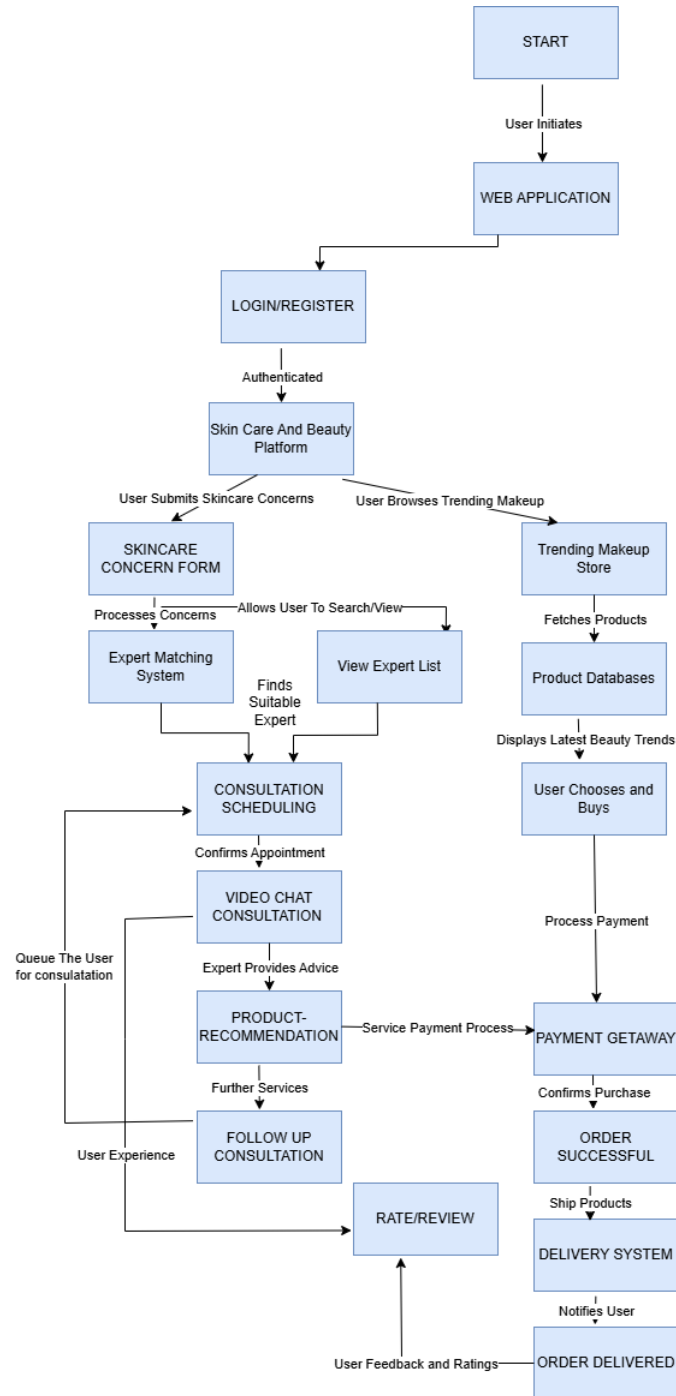

Figure 3: Diagram Name: Processes

3.4 Deployment View

The deployment view describes the system's hardware and software components and their interrelationships. It focuses on how various elements of the Skincare & Beauty Consultancy Platform are physically deployed. The deployment of the system's components across various servers and devices is depicted in the diagram below.
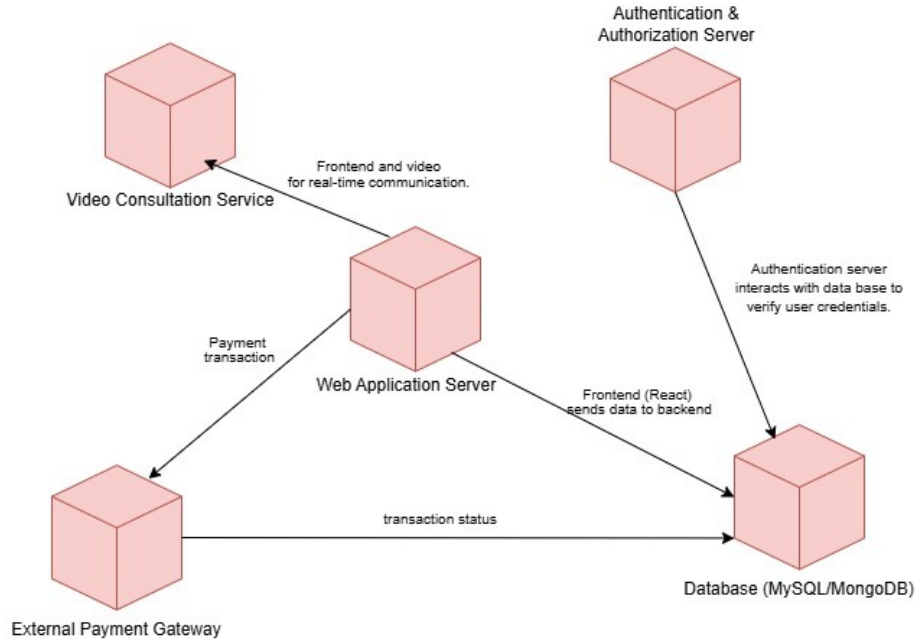

Figure 4: Deployment View of Skincare & Beauty Consultancy Platform

- **User's Device (Desktop/Mobile)**:
  - Objective: Using a mobile app or web browser, the user engages with the platform.
  - Components:
    * **Frontend UI**: An interface built using React that allows users to communicate, submit skincare issues, browse experts, and more.
    * **Video Consultation**: A feature that uses WebRTC or comparable services to provide real-time video consultations.

- **Web Application Server**:
  - Objective: The web application is hosted on the server, which also handles requests.
  - Components:
    * **Frontend (React)**: Makes queries to the backend, records user input, and controls the user interface.
    * **Backend**: Manages the business logic for scheduling consultations, recommending products, pairing experts, etc.
    * **Payment Processing**: Integrates with an external payment gateway to manage payment-related activities.
    * **Expert Matching**: Handles the reasoning behind matching consumers with the right beauty professionals according to their skin issues.

- **Authentication & Authorization Server**:
  - Objective: Manages user authentication, login, and registration to guarantee safe platform access.
  - Components:

- ∗ **Authentication Service**: Compares user credentials to the database (such as MongoDB or MySQL).
- ∗ **Authorization**: Oversees user access, rights, and session control.

- **Database Server (MySQL/MongoDB)**:
  - Objective: Keeps track of all platform data, such as user details, skincare issues, past consultations, expert information, and product details.
  - Components:
    - ∗ **User Data**: Keeps track of personal data, skincare issues, and previous consultations.
    - ∗ **Product & Expert Data**: keeps information on beauty professionals and product recommendations.

- **External Payment Gateway**:
  - Purpose: Manages the external payment processing for purchases made during user consultations.
  - Components:
    - ∗ **Third-party Payment Processor**: Integration with other payment card processing systems or services such as Google Pay, PayPal, etc.

Once these elements are deployed, a scalable, safe, and effective system that offers consumers easy access to beauty consultations and product suggestions is guaranteed.
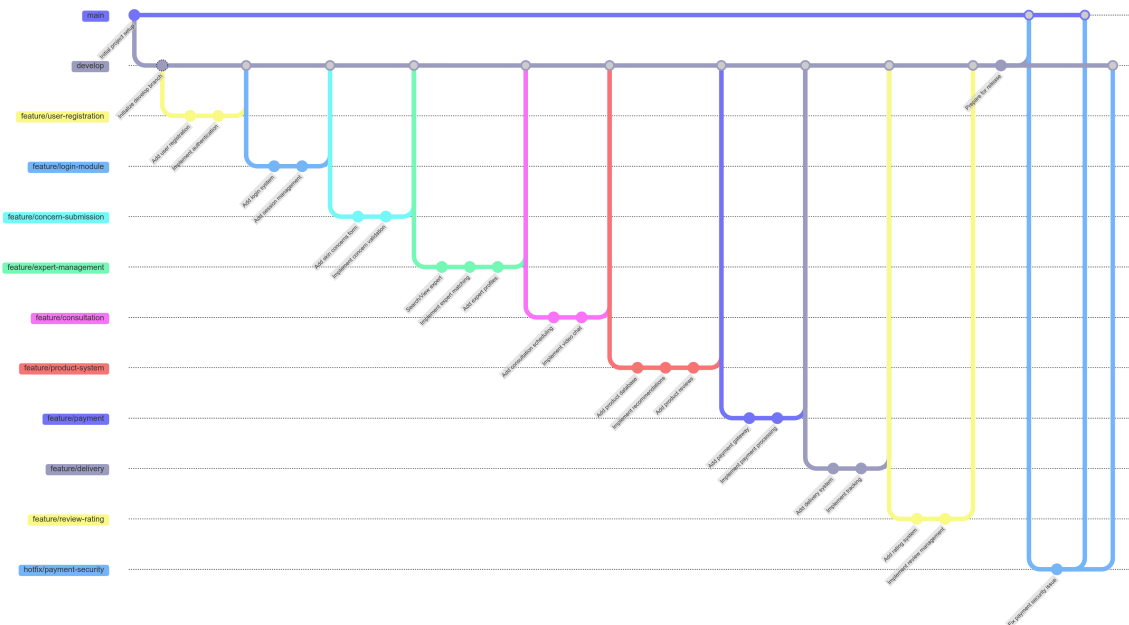
4 Git Flow

Figure 5: Git Flow