

# Al-Najah National University

## FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

Computer Engineering Department

Software Graduation Project



## Healthcare Management & Shopping System (HMSS)

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Together, we reached the summit. Thank you.

## **Disclaimer Statement**

This report was written by students Mohammad Badawi & Ammar Mohammad Ammar at the Computer Engineering Department, Faculty of Engineering, An-Najah National University. It has not been altered or corrected, other than the examination committee, and carries the approval of the supervising professor and the said committee.

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## Abstract

This project presents HMSS (Healthcare Management & Shopping System), a comprehensive and integrated digital platform developed for beauty centers, healthcare clinics, and educational academies. The system is built as a cross-platform solution with a React-based web frontend, a React Native (Expo) mobile application for iOS and Android, and a Django REST Framework backend with a MySQL database.

HMSS adopts a role-based access control system supporting six user types: Admin, Secretary, Customer, Student, Worker (Specialist), and Teacher, each with tailored dashboards and permissions. The platform consolidates clinic operations, e-commerce, appointment booking, course management, payroll and HR, and a loyalty rewards system into a single unified ecosystem.

Customers interact with a modern, responsive interface to browse products, book appointments through a multi-step wizard, enroll in courses, and manage orders. The e-commerce module supports product variants, attributes, categories, wishlist, cart, checkout with cash-on-delivery, and return/refund requests. The booking system offers real-time scheduling with worker availability tracking and supports both regular services and multi-session therapy treatments.

Administrators and secretaries manage offices, sections, products, appointments, courses, complaints, and finances through dedicated dashboards. The system includes a full accounting module with income/outcome tracking, a notification system (in-app and SMS), and an AI-powered chat assistant that answers user queries about products, services, and courses.

The web version provides optimized interfaces for desktop screens with data tables, advanced filtering, and comprehensive management tools. The mobile application mirrors the customer-facing features with a native experience including push notifications, theme customization (Light, Dark, and Luxury), multi-currency support, and bilingual content (Arabic RTL and English LTR).

With its rich feature set — including intelligent appointment booking, e-commerce with variants, educational course management, loyalty points, AI-driven assistance, and secure role-based

control — HMSS delivers a robust, scalable, and user-friendly platform for modern healthcare and beauty center management.

## Chapter 1

### 1.1 Introduction

#### 1.1.1 Problem

In Palestine and the wider Middle East, beauty centers, healthcare clinics, and educational academies face significant challenges in managing their day-to-day operations. These businesses typically rely on fragmented tools — paper-based appointment books, separate e-commerce platforms, manual payroll systems, and disconnected communication channels — leading to inefficiencies, missed appointments, lost revenue, and poor customer experiences.

Managing appointments, training courses, and e-commerce separately creates a disjointed workflow for both administrators and customers. Customers struggle to find available time slots, track their bookings, or purchase products from the same provider. Secretaries and managers spend excessive time coordinating schedules, processing payments, and handling complaints across multiple disconnected systems.

Furthermore, the lack of a unified digital platform means there is no centralized loyalty system to retain customers, no integrated financial tracking, and no efficient way to manage multi-branch operations. Communication between the business and its clients remains poor, with no real-time notifications or AI-powered assistance to handle common inquiries.

### **Problem & Solution**

- **Problem:** Difficulty in managing appointments, training courses, and e-commerce separately, along with poor direct communication with customers.
- **Solution:** A unified central system connecting management (Secretary/Admin) with customers and students across multiple platforms, featuring smart tools and an advanced loyalty system.



Figure 1: Problem & Solution Overview

### 1.1.2 Objective

The main objective of HMSS is to provide a unified digital ecosystem that bridges the gap between management, commerce, and education for beauty centers and healthcare clinics. The system aims to:

- **Integrated Clinic Management:** Provide a centralized system to streamline beauty center operations and administrative tasks across multiple offices and sections.
- **Full-Scale E-commerce Platform:** Deliver a robust marketplace for beauty products with secure transactions, order tracking, product variants, and return/refund handling.
- **Intelligent Appointment Booking:** Implement a real-time scheduling engine managing staff and service availability with multi-step booking wizards.
- **Educational Academy:** Offer a dedicated platform for professional training and specialized courses with enrollment, attendance, and payment tracking.
- **Advanced Loyalty & Rewards System:** Provide automated points accumulation and redemption to boost customer retention.
- **AI-Powered Assistance:** Integrate an AI chat assistant to answer user queries about products, services, and courses instantly.



**Objectives** 

- **Integrated Clinic Management:** A centralized system to streamline beauty center operations and administrative tasks.
- **Full-Scale E-commerce Platform:** A robust marketplace for beauty products with secure transactions and order tracking.
- **Intelligent Appointment Booking:** A real-time scheduling engine managing staff and service availability.
- **Educational Academy:** A dedicated platform for professional training and specialized courses.
- **Advanced Loyalty & Rewards System:** Automated points accumulation and redemption to boost customer retention.

Figure 2: Project Objectives

### 1.1.3 Scope of the Work

HMSS is a role-based healthcare management and shopping system designed for beauty centers and clinics. The project covers the development of core functionalities including:

- User registration and authentication with OTP verification and password reset.
- A comprehensive e-commerce module with product management, variants, categories, attributes, cart, checkout, orders, wishlist, and return requests.
- An appointment booking system supporting regular services and multi-session therapy treatments with worker availability tracking.
- A course management module with enrollment, attendance tracking, payment management, and teacher dashboards.
- Multi-office and multi-section management with dedicated admin and secretary dashboards.
- Financial management including income/outcome tracking, payment processing, and payroll.
- A points-based loyalty system with analytics and point-based offer redemption.
- Notification system (in-app and SMS) with sent logs tracking.
- Customer complaints management with status tracking and admin responses.
- AI-powered chat assistant for instant user support.
- Cross-platform delivery: responsive web application and native mobile application (iOS and Android).
- Bilingual support (Arabic RTL and English LTR) with database and frontend translation.
- Theme customization (Light, Dark, and Feminine Luxury modes).

### 1.1.4 Importance

The HMSS application is important as it offers a modern, reliable platform that improves the operational efficiency of beauty centers and healthcare clinics while enhancing the customer experience. It empowers administrators, secretaries, specialists, and teachers with dedicated tools tailored to their roles, while providing customers and students with a seamless digital experience for booking, shopping, and learning.

By consolidating multiple operational aspects into a single platform, HMSS eliminates the need for separate tools, reduces administrative overhead, and provides real-time insights through integrated dashboards and analytics. The loyalty system encourages repeat business, while the AI assistant reduces the burden on staff by handling common inquiries automatically.

### 1.1.5 Report Organization

This report is structured in a logical sequence to reflect the development process of the HMSS project:

- Chapter 1: Introduction — presents the problem, objectives, scope, and importance of the project.
- Chapter 2: Theoretical Background — discusses challenges faced, adopted development standards, and architectural patterns.
- Chapter 3: Literature Review — reviews related work and existing solutions in the healthcare management domain.
- Chapter 4: Methodology and Implementation — details the technologies used, system architecture, database design, and provides a comprehensive walkthrough of all features with screenshots.
- Chapter 5: Testing — describes the testing strategy and results.
- Chapter 6: Conclusion — summarizes the project outcomes, things learned, and recommendations.
- Chapter 7: References — lists all references and resources used.

## Chapter 2

### 2.1 Theoretical Background and Previous Work

#### 2.1.1 Practical Challenges and Limitations

Throughout the development of the HMSS project, we encountered several significant challenges:

1. **Time Constraints and Learning Curve:** Since this was our first experience developing a full-scale web and mobile application with a shared backend, we had to learn new technologies including React, React Native with Expo, Django REST Framework, and various third-party integrations. Balancing this learning curve with academic commitments required careful time management and incremental development.
2. **Complex Multi-Role Architecture:** Designing a system that seamlessly serves six different user roles (Admin, Secretary, Customer, Student, Worker, Teacher) required careful planning of permissions, navigation flows, and UI customization. Ensuring each role had exactly the right access level without compromising security or usability was a significant challenge.
3. **Cross-Platform Consistency:** Maintaining feature parity and consistent user experience across the web application and the mobile application (iOS and Android) required careful abstraction of shared logic and API contracts. Differences in platform capabilities (e.g., push notifications, file handling) required platform-specific implementations.
4. **Bilingual and RTL Support:** Implementing full Arabic (RTL) and English (LTR) support across both web and mobile platforms, including database content translation and UI direction switching, added significant complexity to the layout and styling systems.
5. **Integration Complexity:** Integrating multiple subsystems — e-commerce, booking, courses, accounting, notifications, AI chat — into a unified platform while maintaining clean separation of concerns required thoughtful API design and state management.

These challenges not only tested our technical and problem-solving abilities but also strengthened our collaboration and adaptability as a team.

## **2.1.2 Adopted Development Standards**

### ***2.1.2.1 MVC Architecture***

Our system follows the MVC (Model-View-Controller) architectural pattern. On the backend, Django REST Framework naturally separates Models (database schema), Views (API logic), and Serializers (data transformation). On the frontend, React components serve as the View layer, hooks and context providers handle Controller logic, and API services manage data communication with the backend.

### ***2.1.2.2 RESTful API Design***

All communication between the frontend/mobile clients and the backend server follows REST principles. The API uses standard HTTP methods (GET, POST, PUT, PATCH, DELETE), returns JSON responses, and implements proper status codes. JWT (JSON Web Tokens) are used for stateless authentication with access and refresh token rotation.

### ***2.1.2.3 Component-Based Architecture***

Both the web and mobile frontends use a component-based architecture where UI elements are broken into reusable, self-contained components. This promotes code reuse, easier testing, and maintainable code organization. Common patterns include custom hooks for data fetching, context providers for global state, and shared utility functions.

## Chapter 3

### 3.1 Literature Review

Several existing platforms address parts of the problem that HMSS solves, but none offer the comprehensive integration that our system provides:

- Fresha / Booksy: Popular appointment booking platforms for beauty salons. They offer scheduling and client management but lack integrated e-commerce, course management, and multi-office support.
- Shopify / WooCommerce: Leading e-commerce platforms that excel at online stores but do not integrate appointment booking, therapy session tracking, or educational course management.
- Teachable / Thinkific: Online course platforms focused on digital learning. They lack integration with physical clinic operations, booking systems, and product sales.
- Square Appointments: Combines booking and point-of-sale but does not offer course management, multi-session therapy tracking, or comprehensive loyalty systems.

HMSS distinguishes itself by combining all these capabilities — e-commerce, appointment booking, course management, HR/payroll, loyalty rewards, and AI assistance — into a single unified platform with multi-office support, bilingual content, and cross-platform delivery (web + mobile).

## Chapter 4

### 4.1 Methodology and Implementation

#### 4.1.1 Methodology

The development of HMSS followed an Agile methodology with iterative sprints. Each sprint focused on a specific module (e.g., e-commerce, booking, courses), allowing us to deliver working features incrementally, gather feedback, and refine the implementation. We used Git for version control and maintained separate branches for feature development.

#### 4.1.2 Tools, Programming Languages, and Technologies

The following technologies were used to build the HMSS platform:

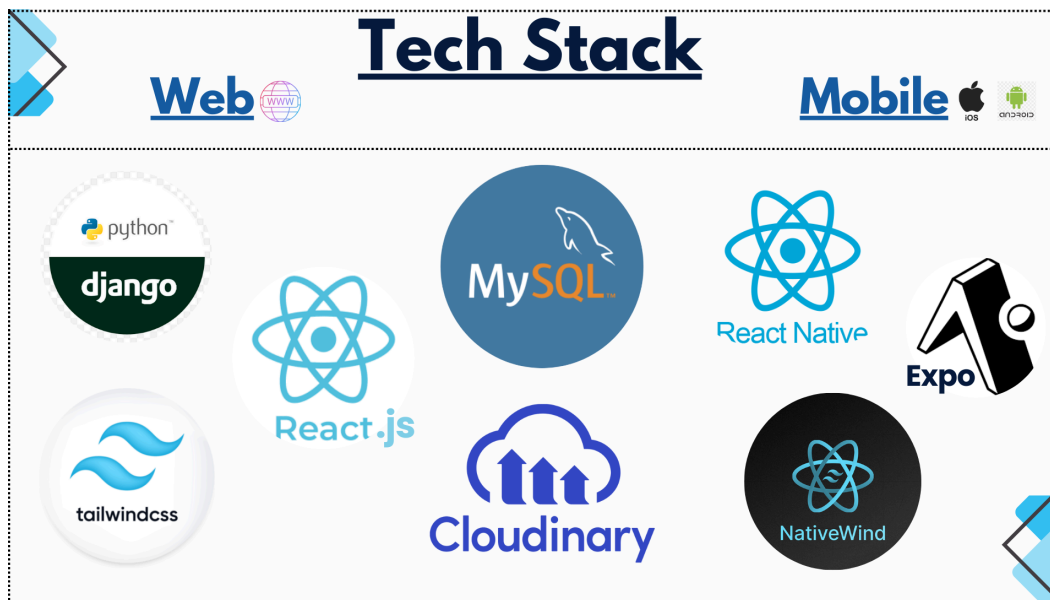


Figure 3: HMSS Technology Stack Overview

#### 4.1.3 Client Side — Web Frontend

6. Design: The HMSS web application was designed to be modern, responsive, and visually appealing. The interface uses a dark-themed design language with gold accents, providing a luxury aesthetic appropriate for beauty and healthcare centers. The system supports three theme modes: Light, Dark, and Feminine Luxury.

7. Frameworks and Libraries: The web frontend is built using React 18 with TypeScript, bundled with Vite for fast development and optimized production builds. Key libraries include:
  - TailwindCSS for utility-first responsive styling
  - Material-UI (MUI) and PrimeReact for advanced UI components
  - React Router DOM for client-side routing
  - TanStack React Query for server state management and caching
  - React Hook Form for form handling and validation
  - i18next for internationalization (Arabic/English)
  - Framer Motion for animations
  - Chart.js for data visualization
  - Cloudinary for image upload and management
8. Programming Languages: TypeScript is used as the primary language, providing type safety, better developer experience, and reduced runtime errors. HTML and CSS (via TailwindCSS) handle the presentation layer.

#### 4.1.4 Client Side — Mobile Application

9. Design: The mobile application mirrors the web design language with a native feel optimized for touch interactions. It supports the same three theme modes and provides safe-area-aware layouts for both iOS and Android devices.
10. Frameworks and Libraries: The mobile application is built using React Native with Expo, utilizing:
  - Expo Router for file-based navigation
  - NativeWind (TailwindCSS for React Native) for styling
  - React Navigation (Drawer + Bottom Tabs) for navigation structure
  - i18next for internationalization with full RTL support
  - AsyncStorage for local data persistence
  - Expo Image Picker for camera/gallery integration
  - Cloudinary for image uploads

11. Programming Languages: TypeScript is used throughout the mobile application, consistent with the web frontend, enabling shared type definitions and development patterns.

#### 4.1.5 Server Side

12. Frameworks: The backend is built using Django REST Framework (DRF), a powerful and flexible toolkit for building Web APIs in Python. Django provides an excellent ORM, built-in admin panel, robust security features, and a mature ecosystem of packages.

13. Programming Languages: Python 3 is used for the backend, chosen for its readability, extensive library ecosystem, and excellent support for rapid development. Django's ORM handles database interactions, while DRF provides serialization, authentication, and permission handling.

14. API Architecture: The API follows RESTful design principles with JWT authentication. Key features include:

- Token-based authentication with access/refresh token rotation
- Role-based permission system (Admin, Secretary, Customer, Student, Worker, Teacher)
- Language-aware content delivery via Accept-Language and X-UI-Language headers
- Currency-aware pricing via X-Currency header
- Pagination, filtering, and search on list endpoints
- Cloudinary integration for image storage

#### 4.1.6 IDEs and Code Editors

- Visual Studio Code (VS Code): Primary IDE for web and mobile frontend development, with extensions for TypeScript, TailwindCSS, and ESLint.
- Cursor IDE: AI-powered code editor used for rapid development and code generation.
- PyCharm: Used for Django backend development with built-in database tools and debugger.
- Expo Go: Used for real-time mobile testing on physical devices during development.

#### 4.1.7 Database Structure

HMSS uses MySQL as its relational database management system. The database was designed to support multi-office operations with the following key entity groups:

- Users & Authentication: User profiles, roles, permissions, JWT tokens, OTP verification records.
- Offices & Sections: Multi-branch office structure with sections (departments/clinics), services, therapy sessions, and worker assignments.
- Products & E-commerce: Products with variants, attributes, categories, stock management, orders, order items, return requests, and wishlist items.
- Appointments: Service appointments and therapy session appointments with worker availability, approval workflow, and payment tracking.
- Courses: Course definitions, enrollments, attendance records, payment tracking, and teacher assignments.
- Financial: Income/outcome transactions, payment records, checks, and accounting summaries.
- Points & Loyalty: Point transactions, point-based offers, and redemption records.
- Notifications: Notification records, delivery channels, read status, and sent logs.
- Complaints: Customer complaints with status tracking, admin responses, and related appointments.

#### 4.1.8 System Architecture

The HMSS platform follows a three-tier architecture:

Presentation Layer (Frontend):

- Web Application: React + TypeScript + TailwindCSS, served via Vite, communicating with the backend through RESTful APIs.
- Mobile Application: React Native + Expo + NativeWind, communicating with the same backend APIs.

Business Logic Layer (Backend):

- Django REST Framework handles all business logic, authentication, authorization, data validation, and API responses.
- AI module powered by integration with language models for the chat assistant feature.

Data Layer:

- MySQL database stores all persistent data.
- Cloudinary cloud storage handles all image assets (products, offices, profiles, therapy session images).

Integration Points:

- Both web and mobile clients share the same backend API, ensuring data consistency.
- JWT tokens provide stateless authentication across all platforms.
- Language and currency headers enable localized content delivery.
- Push notifications are delivered to mobile devices; in-app notifications are available on both platforms.

#### 4.1.9 Features of The Application

This section provides a comprehensive overview of all major features implemented in the HMSS platform, organized by functional area.

#### 4.1.10 Cross-Platform Features

##### *Bilingual Support (Arabic & English)*

The system supports instant switching between Arabic and English languages. When Arabic is selected, the entire UI switches to Right-to-Left (RTL) layout, and both database content and UI strings are translated. All menus, labels, notifications, and product descriptions are available in both languages, ensuring a seamless experience for all users.

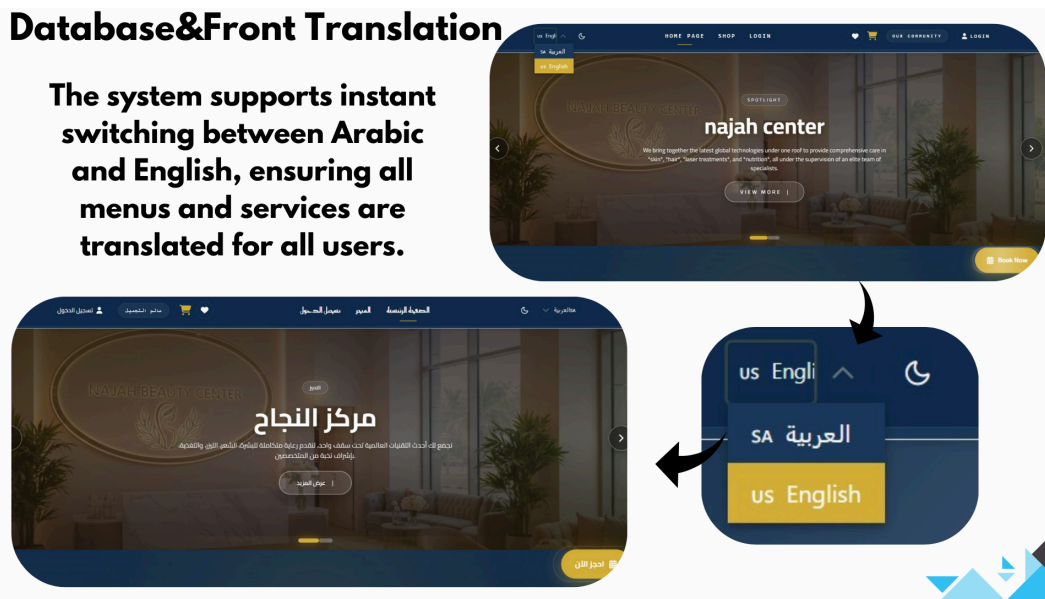


Figure 4: Database & Frontend Translation — Arabic/English switching

##### *Theme Modes*

The system offers three UI themes to accommodate different user preferences: Light Mode for clarity and brightness, Dark Mode for eye comfort in low-light environments, and Feminine Luxury mode for an elegant, pink-themed aesthetic that matches the beauty center branding.

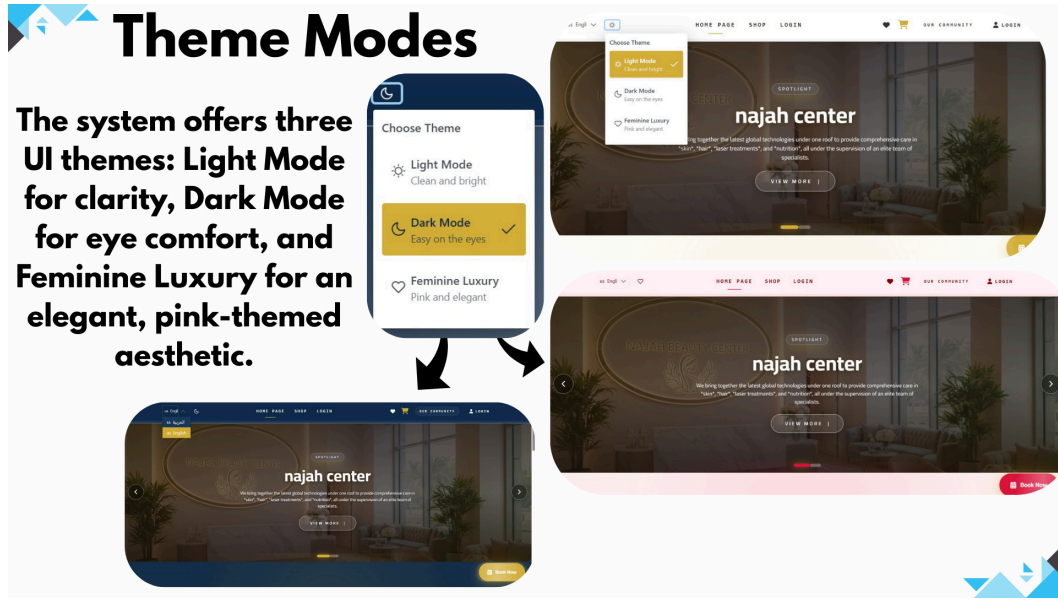


Figure 5: Three Theme Modes — Light, Dark, and Feminine Luxury

### Responsive Design

The web application is fully responsive, adapting seamlessly from desktop screens to mobile browsers. Navigation collapses into a hamburger menu on smaller screens, and layouts restructure to maintain usability across all device sizes.



Figure 6: Responsive Design — Mobile and Desktop views



## 4.1.11 Authentication System

### *Login Page*

The login page allows users to sign in using their phone number and password. The interface includes language selection and theme switching capabilities. Users can also navigate to the sign-up page or reset their password from this screen.



*Figure 7: Web Login Page*

### *Sign Up Page*

New users can create an account by providing their first name, last name, phone number, and password. Upon submission, the system sends an OTP verification code to the provided phone number. The user must enter this code to complete the registration process, ensuring account authenticity.

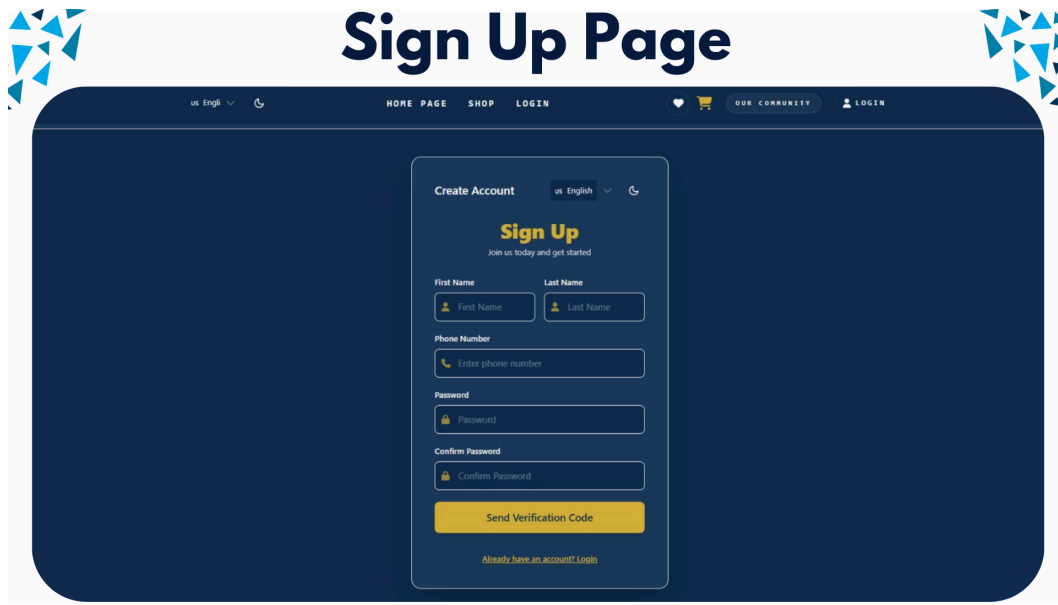


Figure 8: Web Sign Up Page with OTP Verification

### Forgot Password Page

Users who have forgotten their password can initiate a reset by entering their phone number. The system sends a reset code via SMS, which the user enters along with their new password to regain access to their account.



Figure 9: Forgot Password Page



#### 4.1.12 Mobile Application

The HMSS mobile application is built using React Native with Expo and is available for both iOS and Android devices. It provides a native user experience with all customer-facing features.

##### Home Page

The mobile home page features a hero section with an image carousel showcasing the beauty center, quick access statistics (happy customers, ratings), a prominent 'Book Now' button, and sections for featured products, services, and courses. Users can browse offices and sections directly from the home page.

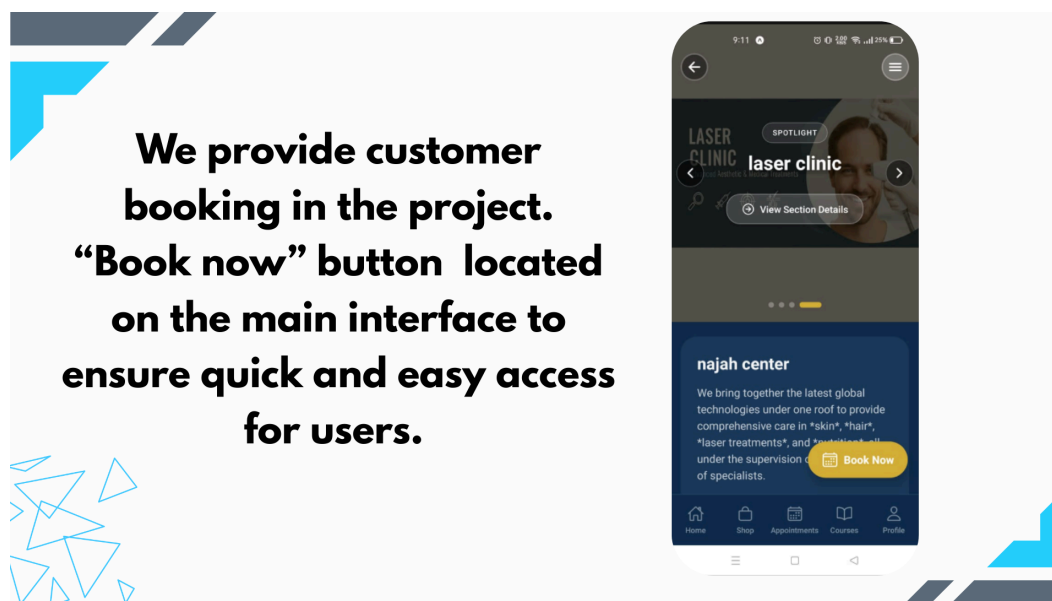


Figure 10: Mobile Home Page with Book Now button

##### Profile & Settings

The profile interface allows users to manage their personal data (name, birth date, address, phone), track their loyalty points balance, and link social media accounts. The settings drawer provides full control over language selection, theme mode, and currency preferences. Users can also log out or delete their account from the settings page, with privacy policy and terms of service accessible from the drawer.

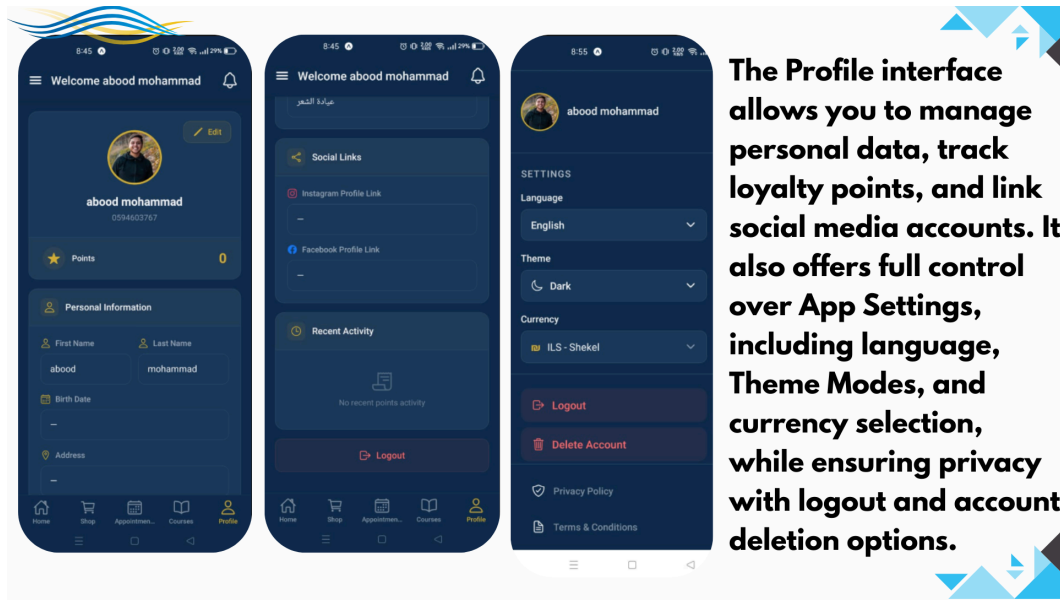


Figure 11: Mobile Profile — Personal data, loyalty points, social links, and settings

### Shop Page

The mobile shop interface organizes products into categories (cream, shampoo, accessories, etc.) with a search bar and category filters. Each product card displays the product image, name, price (with discount if applicable), and an 'Add to Cart' button. The top navigation provides quick access to the shop, orders, wishlist, and cart pages.



Figure 12: Mobile Shop Page — product categories and listing

## Product Details

The product details screen displays comprehensive information including multiple product images in a carousel, product name, stock status, price (with original price and discount), variant selection (e.g., scent: Lavender, Vanilla, Musk, Mint), product description, SKU, and stock count. Users can adjust the quantity and add items to their cart directly.

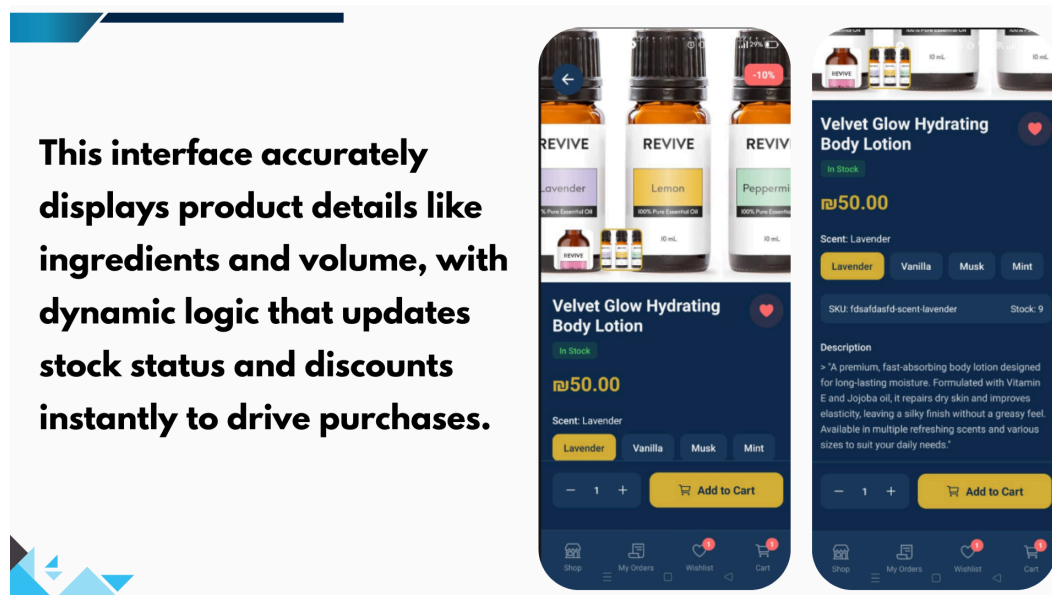


Figure 13: Mobile Product Details — images, variants, pricing, and stock info

## Product Filtering

The filtering system provides advanced options to narrow down product searches by price range (slider), gender (All, Male, Female), categories, and custom attributes such as scent and weight. These dynamic filters are generated based on the product attributes defined by administrators.

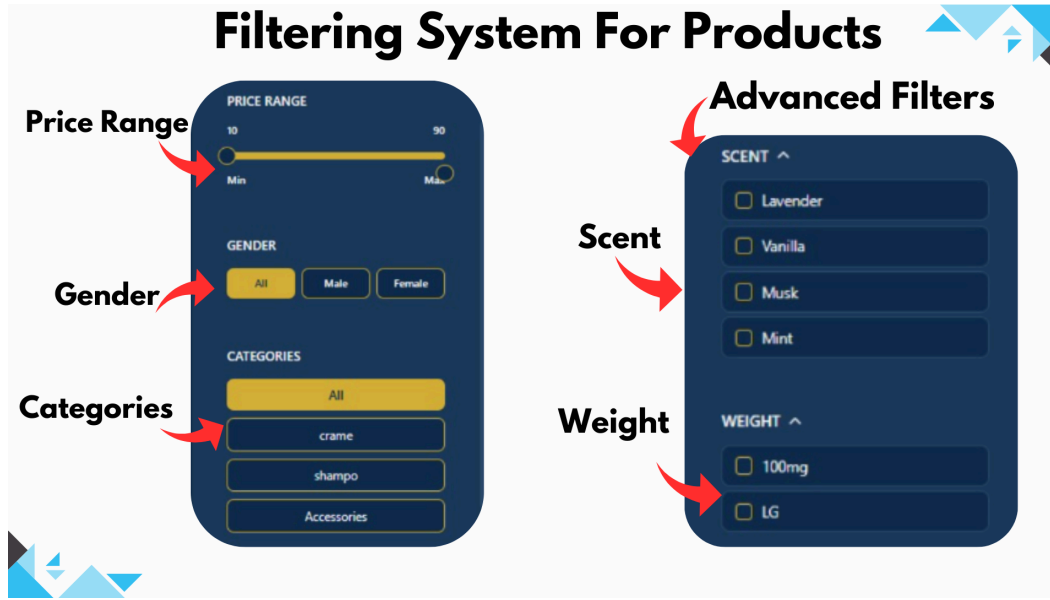


Figure 14: Filtering System for Products — price, gender, categories, and attributes

### Wishlist

The wishlist feature allows users to save preferred items for later access, reducing the effort of re-searching for products. Users can add items to the wishlist from any product listing or detail page, and the wishlist is synchronized across web and mobile platforms. Bulk actions like 'Add All to Cart' and 'Clear Wishlist' are available on the web version.

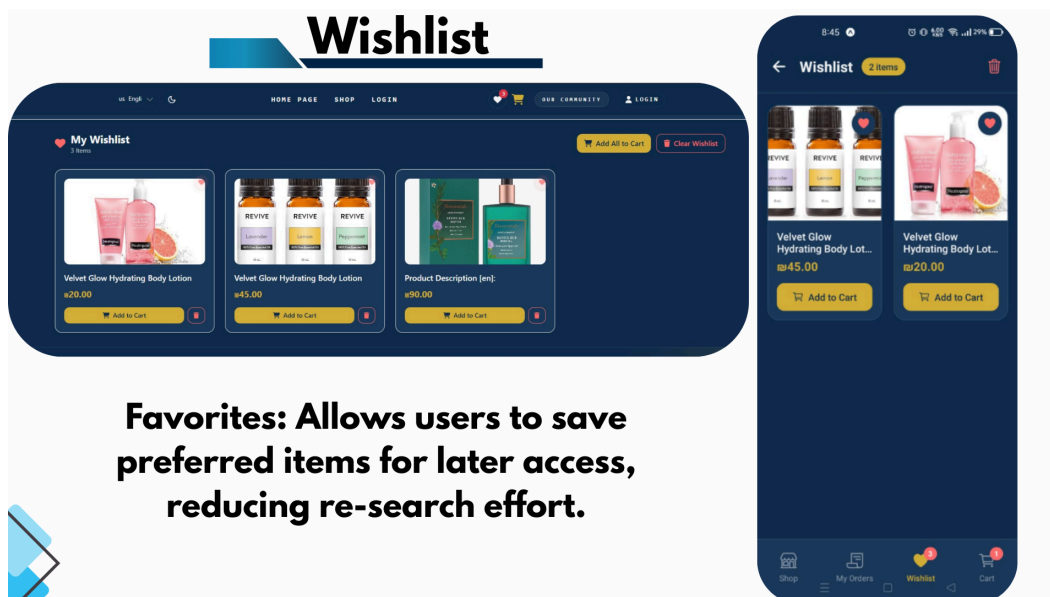


Figure 15: Wishlist — Web and Mobile views

### Recently Viewed Products

This feature tracks and stores recently viewed products, allowing users to quickly return to items they liked without re-searching. The recently viewed section appears on the shop page as a horizontal carousel.

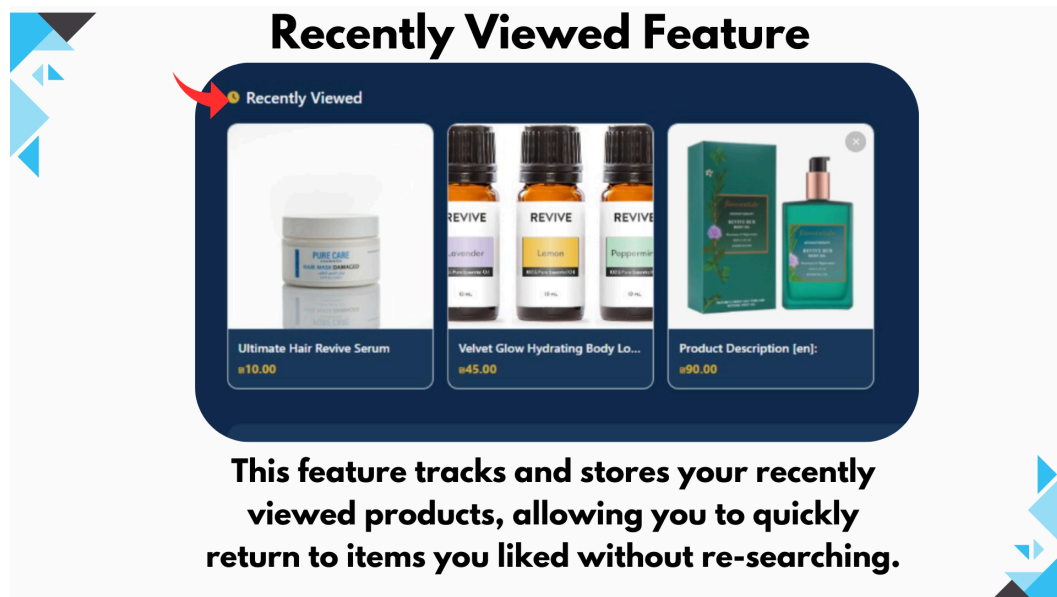
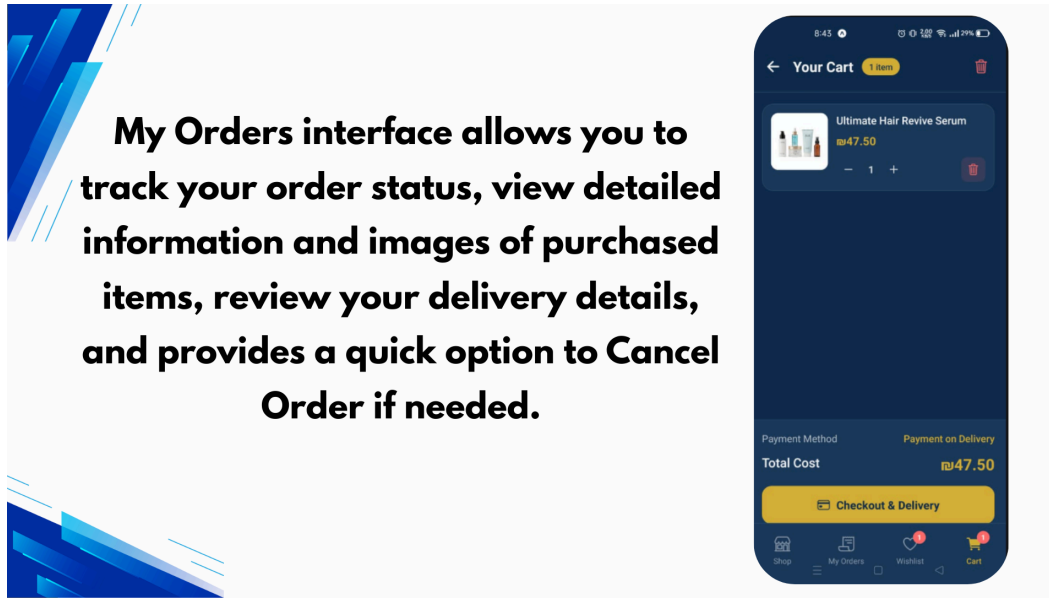


Figure 16: Recently Viewed Products feature

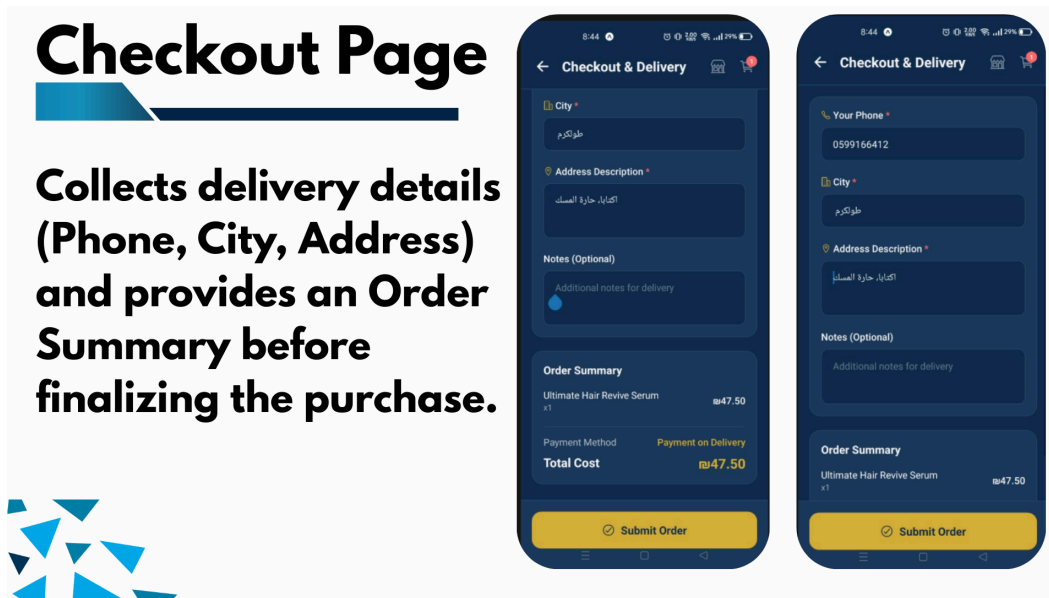
### Shopping Cart & Checkout

The cart interface displays selected items with quantities and prices, allowing users to adjust quantities or remove items. The checkout process collects delivery details including phone number, city, address description, and optional notes. An order summary shows all items, quantities, payment method (Payment on Delivery), and the total cost before the user submits the order.



**My Orders interface allows you to track your order status, view detailed information and images of purchased items, review your delivery details, and provides a quick option to Cancel Order if needed.**

Figure 17: Shopping Cart with item details and checkout button



## Checkout Page

**Collects delivery details (Phone, City, Address) and provides an Order Summary before finalizing the purchase.**

Figure 18: Checkout Page — delivery details and order summary

### My Orders

The My Orders page allows users to track their order status (Pending, Processing, Completed) and view details of purchased items including order number, date, items, delivery information, and total cost. Users can cancel pending orders directly from this interface.

# My Orders

**Allows you to track your order status and view details of purchased items, with an option to Cancel Order.**

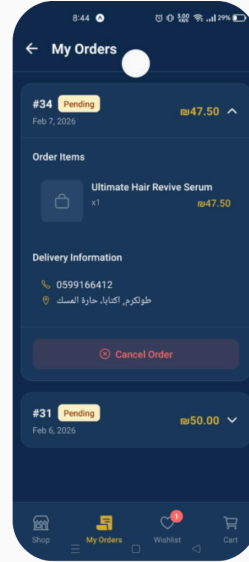


Figure 19: My Orders — order tracking with status and cancel option

**This interface provides real-time status updates and a full order summary, and here we can "Cancel Order" option for maximum flexibility while the order is still Pending.**

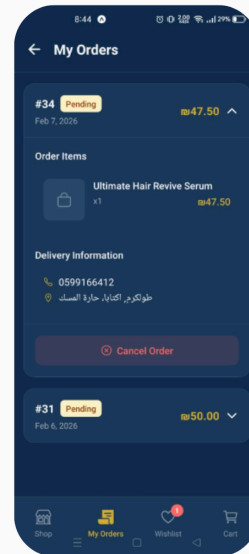


Figure 20: Order Details — status updates and Cancel Order option

## Request Return

Users can request a return for completed orders within a 24-hour window after order completion. The return request form requires a reason for the return, and the system tracks the request status. If the 24-hour window has passed, the system displays an informative message.

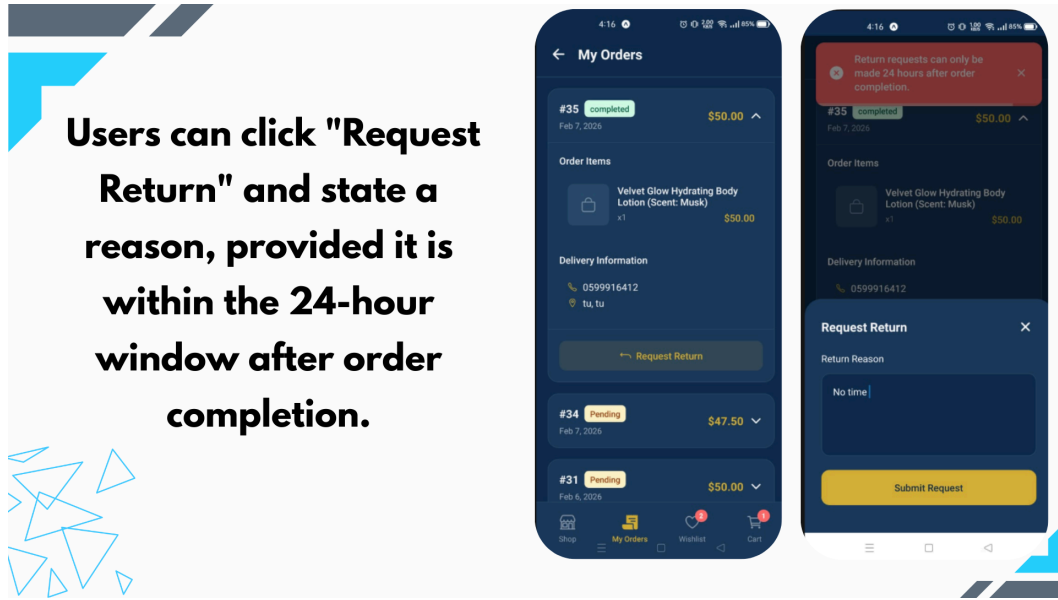


Figure 21: Request Return — return form with 24-hour window notice

## Appointment Booking System

The HMSS booking system uses a 3-step wizard to guide customers through the appointment booking process:

Step 1 — Select Office and Section: Users choose the beauty center (office) and the specific clinic/department (section) where they want to book an appointment.

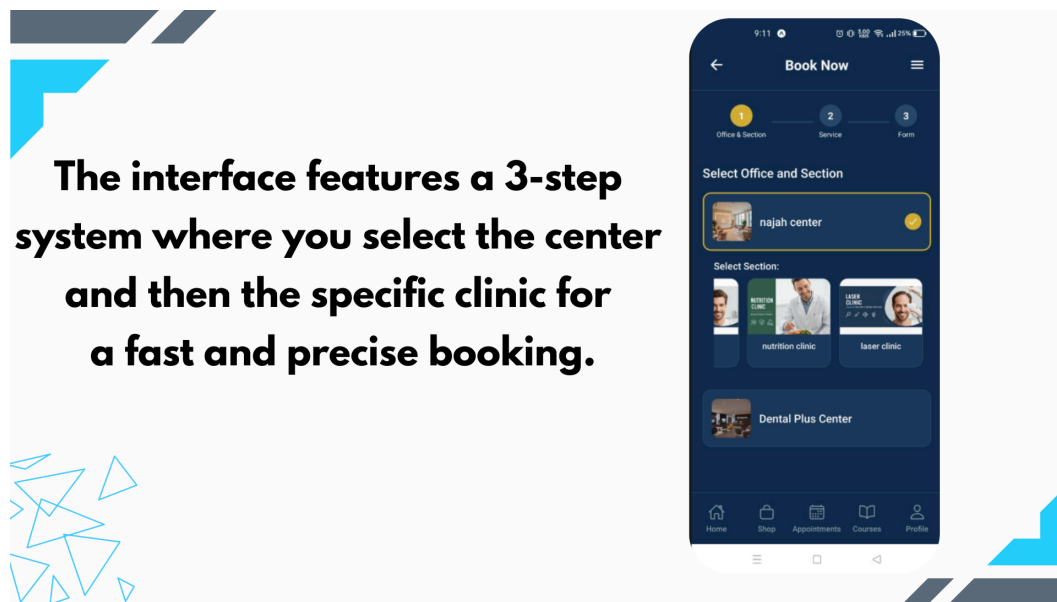


Figure 22: Booking Step 1 — Select Office and Section

Step 2 — Select Service: Users browse available services and therapy sessions in the selected section. Each option displays the service name, description, duration, and price. Users can select one or more services, and a selection summary shows the total duration and price.

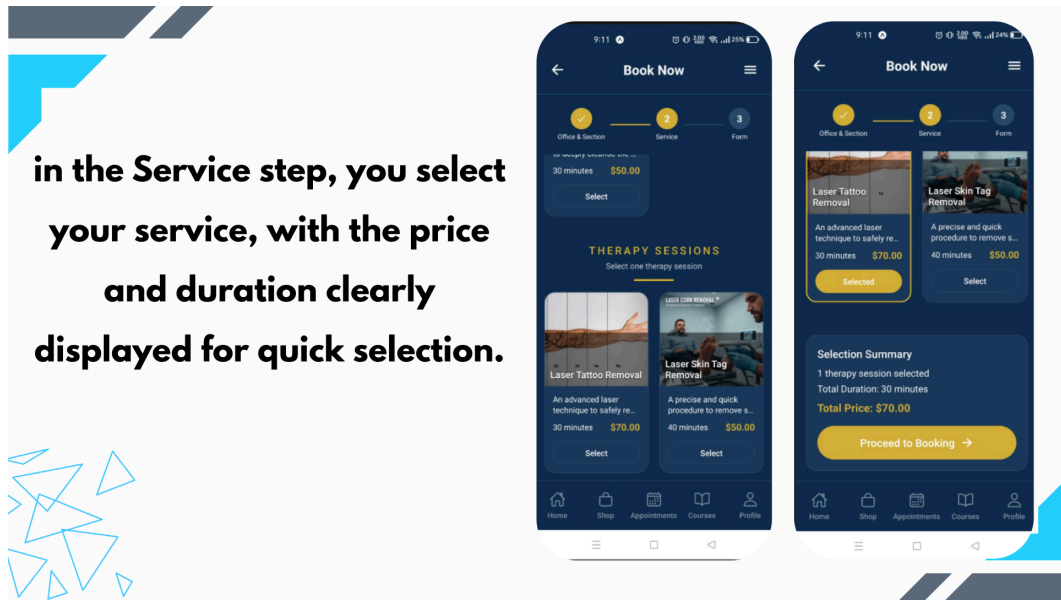


Figure 23: Booking Step 2 — Select Service with prices and durations

Step 3 — Booking Form: Users review their selected service summary, total price, and choose their preferred appointment date and start time. Optional notes can be added for special requests. Upon submission, the booking is sent for approval by the secretary/admin.

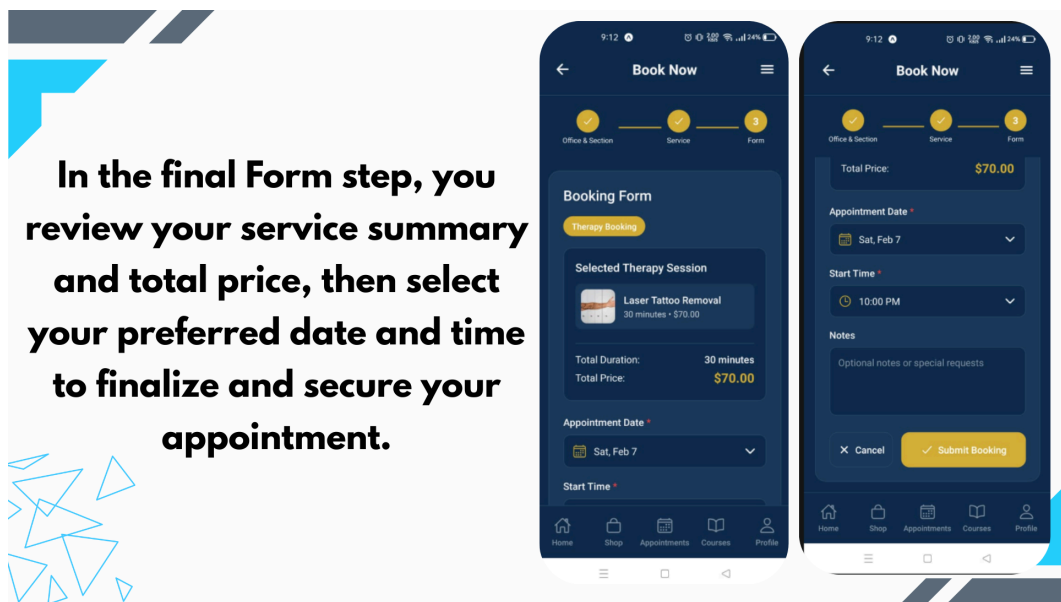


Figure 24: Booking Step 3 — Date, time selection, and booking form

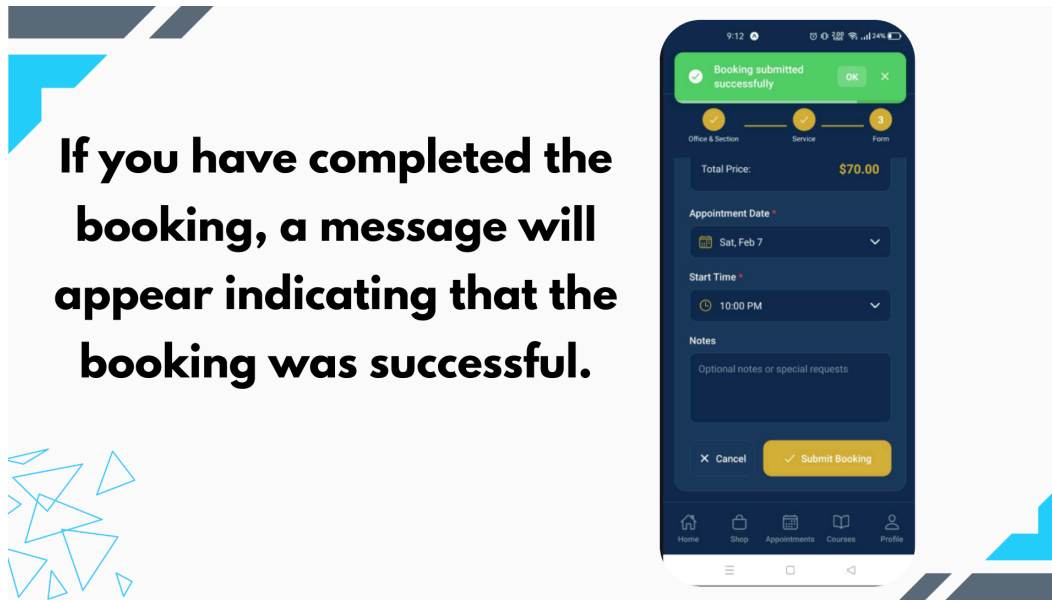


Figure 25: Booking submitted successfully confirmation

### My Bookings

The My Bookings page displays all user appointments (both service appointments and therapy sessions) with details including service type, price, appointment date/time, duration, and status. Users can view their upcoming and past bookings, and submit complaints related to specific appointments.

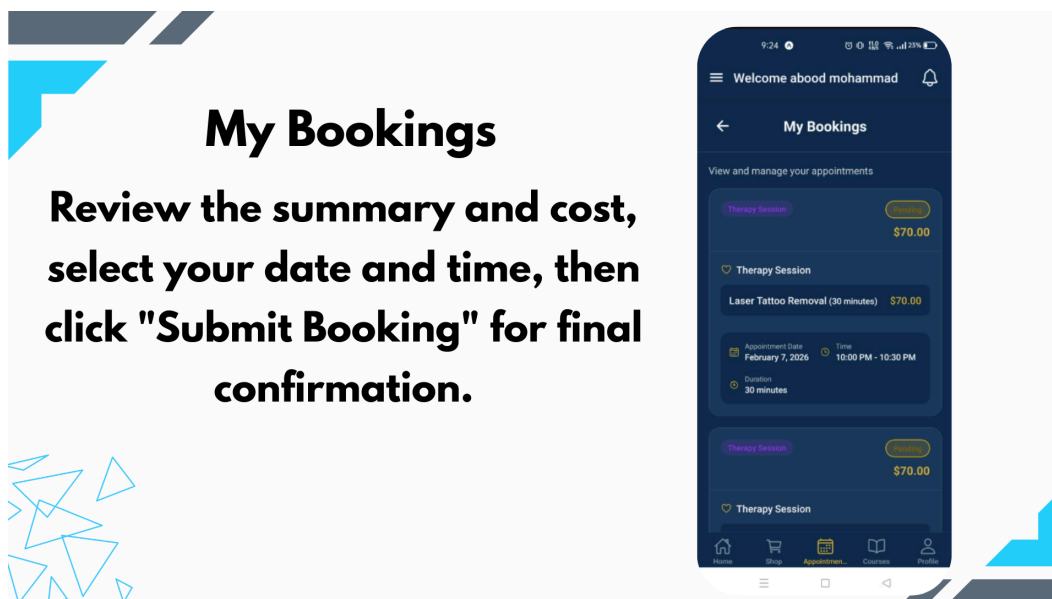


Figure 26: My Bookings — appointment list with details and status



## My Courses (Student)

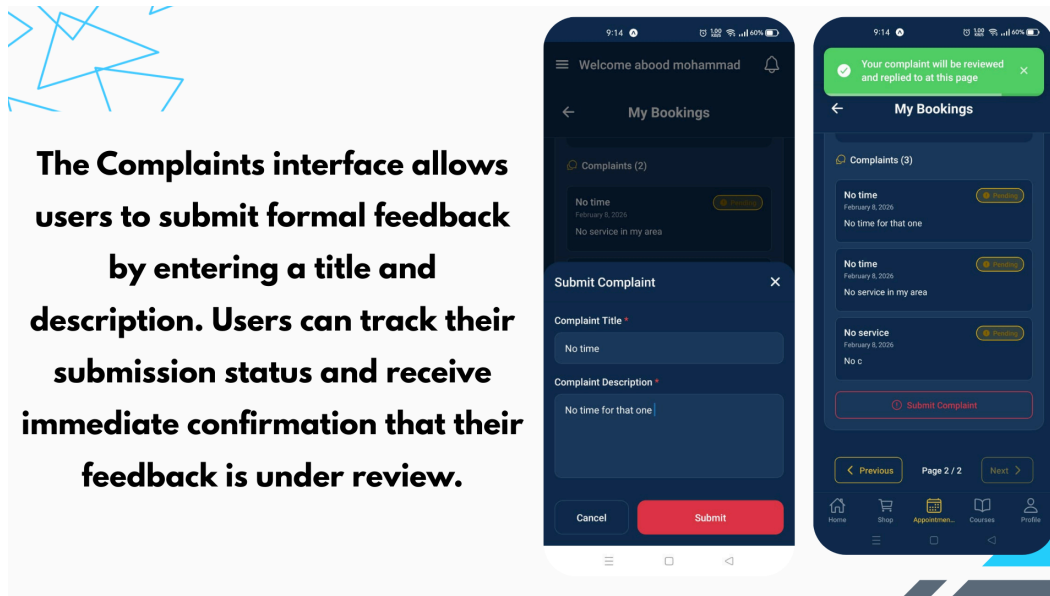
Students can view their enrolled courses with comprehensive details including course name, description, content outline, benefits, target audience, schedule (meeting days and times), duration, enrollment date, price, amount paid, remaining balance, and absence count. The interface provides a rich overview to help students track their academic progress.



Figure 27: My Courses — course details, schedule, payments, and absences

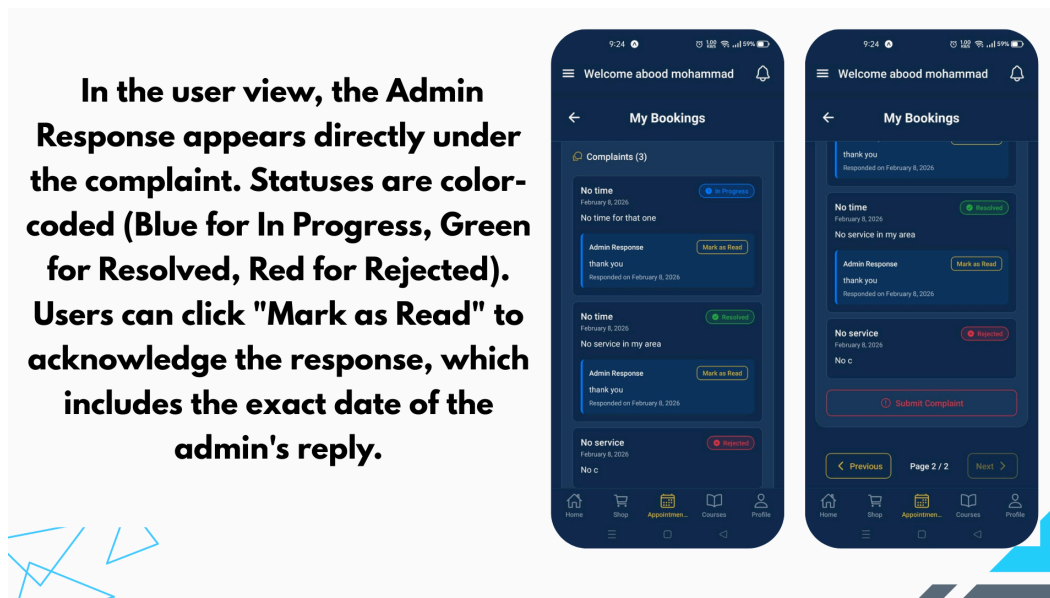
## Complaints System (Mobile)

The complaints interface allows users to submit formal feedback by entering a title and description related to a specific appointment. Users can track their complaint submission status and receive immediate confirmation that their feedback is under review. Statuses are color-coded: Blue for 'In Progress', Green for 'Resolved', and Red for 'Rejected'. When an admin responds, the response appears directly under the complaint with the response date, and users can click 'Mark as Read' to acknowledge it.



**The Complaints interface allows users to submit formal feedback by entering a title and description. Users can track their submission status and receive immediate confirmation that their feedback is under review.**

Figure 28: Complaints — submit complaint form and status tracking (mobile)



**In the user view, the Admin Response appears directly under the complaint. Statuses are color-coded (Blue for In Progress, Green for Resolved, Red for Rejected). Users can click "Mark as Read" to acknowledge the response, which includes the exact date of the admin's reply.**

Figure 29: Complaint responses with color-coded statuses and admin replies (mobile)

### Notifications & Points (Mobile)

The notification system delivers real-time updates including points earned notifications, course absence notifications, booking status updates, and admin-sent messages. Notifications are displayed with timestamps and unread counts. The points system rewards users upon payment, with instant notifications showing their updated balance.

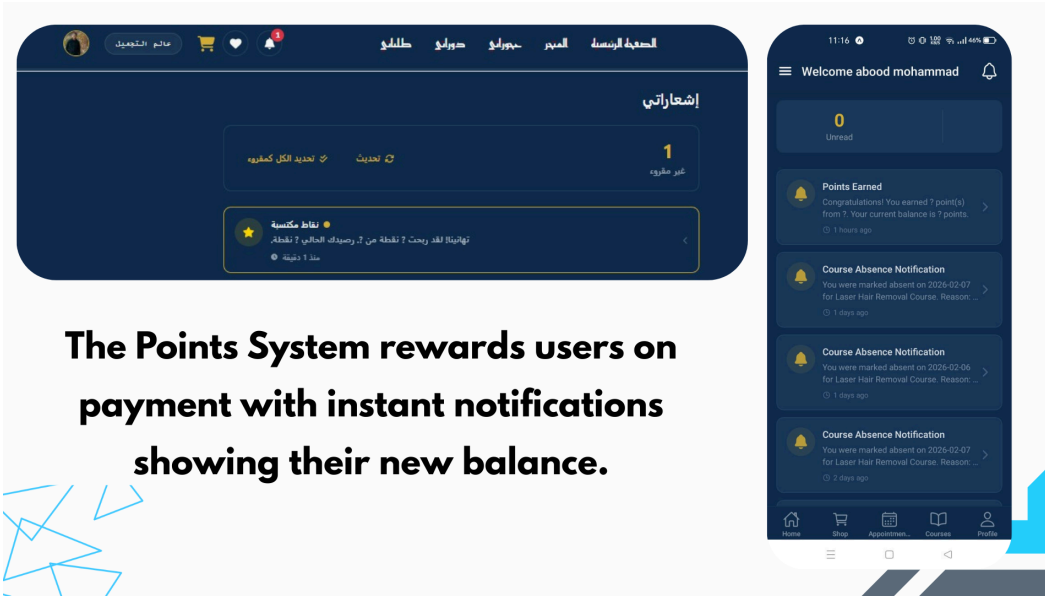


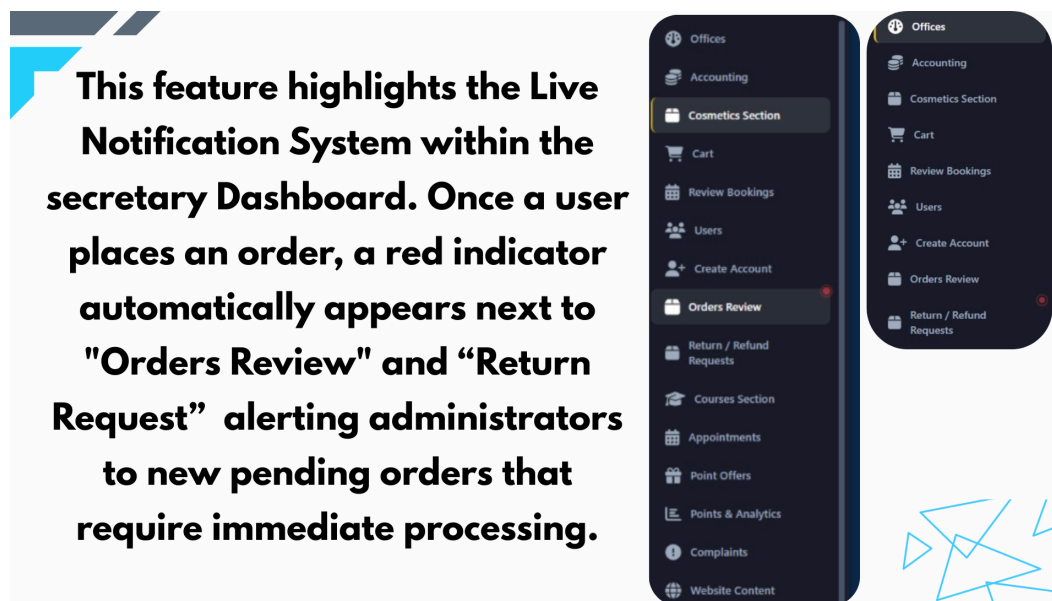
Figure 30: Points System — notifications showing earned points and course absences

#### 4.1.13 Web Application — Admin & Secretary Dashboard

The HMSS web dashboard provides comprehensive management tools for administrators and secretaries. The interface uses a side navigation with real-time notification indicators for pending items.

##### *Dashboard Navigation*

The side navigation displays all management modules including Offices, Accounting, Cosmetics Section, Cart, Review Bookings, Users, Create Account, Orders Review, Return/Refund Requests, Courses Section, Appointments, Point Offers, Points & Analytics, Complaints, and Website Content. A red notification indicator automatically appears next to modules with pending items (e.g., new orders awaiting processing).



*Figure 31: Secretary Dashboard — side navigation with notification indicators*

##### *Bookings Review*

The Bookings Review dashboard allows admins and secretaries to manage customer appointment requests. It displays appointment details including time, duration, customer name, service type, price, and status. Administrators can approve or reject requests, with the approval dialog allowing them to edit the booking time and assign a specific worker. Advanced filters by status, date range, and customer name enable efficient scheduling.

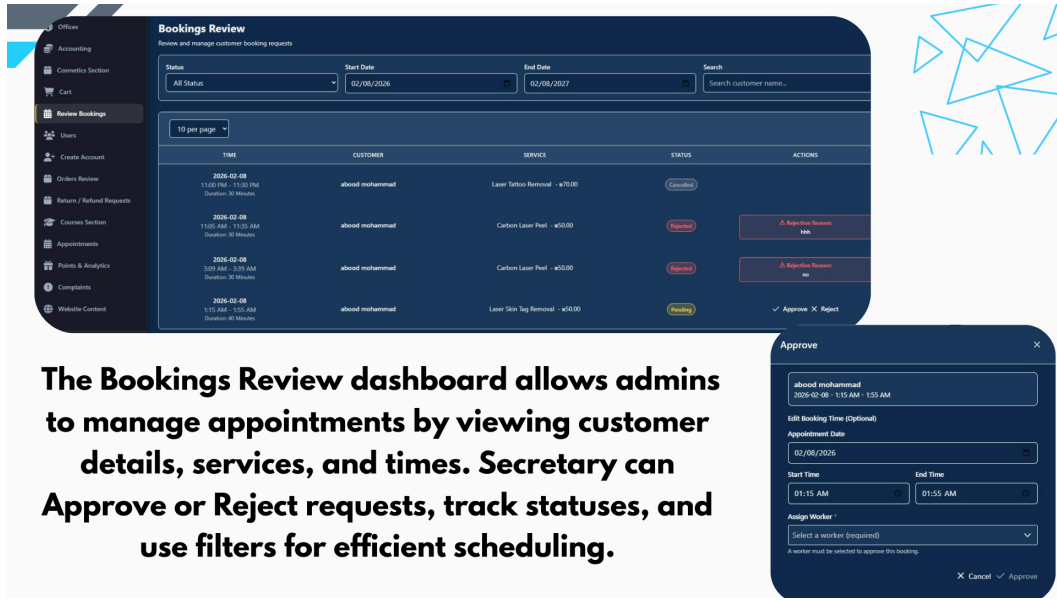


Figure 32: Bookings Review — appointment management with approve/reject actions

### Orders Review

The Orders Review dashboard tracks and manages incoming e-commerce orders with advanced filters for status and date. It displays customer information, ordered items with quantities and prices, total amount, status, and creation date. Quick action buttons allow updating order status to 'Processing', 'Finalize (Paid)', or 'Reject'.

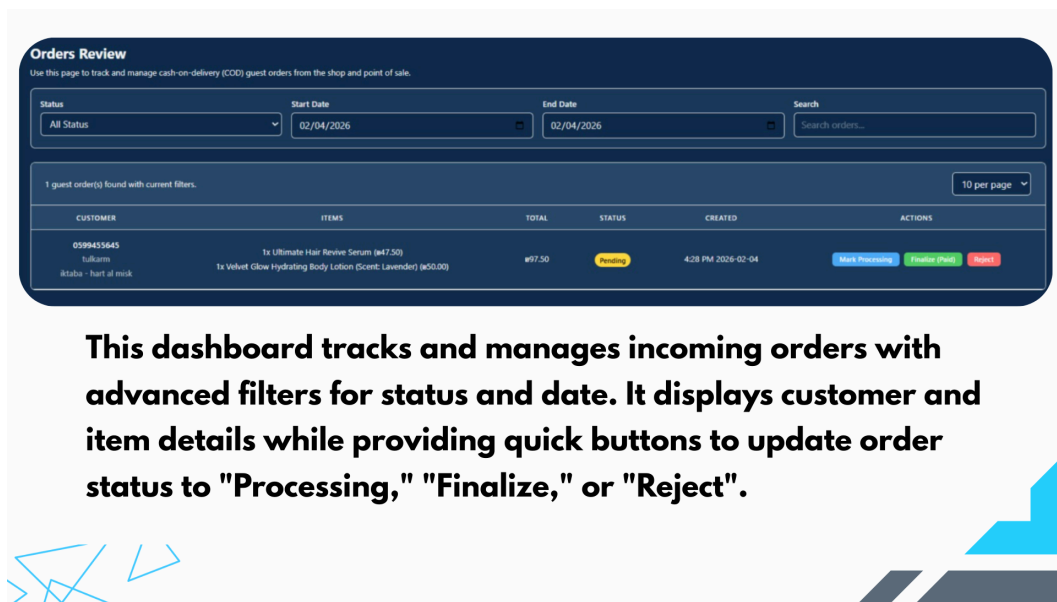
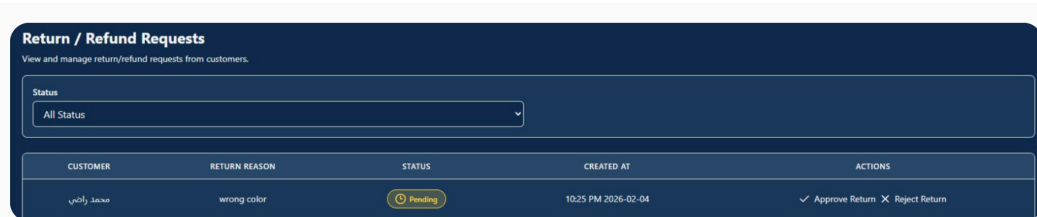


Figure 33: Orders Review — order management with status update actions

## Return / Refund Requests

The Return/Refund Requests dashboard displays customer return requests with the customer name, reason for return, request status, and creation date. Secretaries can directly approve or reject return requests using quick action buttons, ensuring an efficient post-purchase support workflow.



**This interface is the Return / Refund Requests dashboard . It displays customer names, reasons for return , and request status. Secretary can directly Approve or Reject requests using quick action buttons, ensuring an efficient post-purchase support workflow.**



*Figure 34: Return / Refund Requests — dashboard with approve/reject actions*

## Products Management

The Products Management page provides a comprehensive overview of all products with summary statistics (Total Products, Active Products, Low Stock, Out of Stock). The product table displays images, names, categories, office assignments, prices (with original/discounted), stock levels with status indicators, active status, and expiration dates. Advanced sorting and filtering by category, office, and status are available. Action buttons allow editing, viewing, and managing each product.

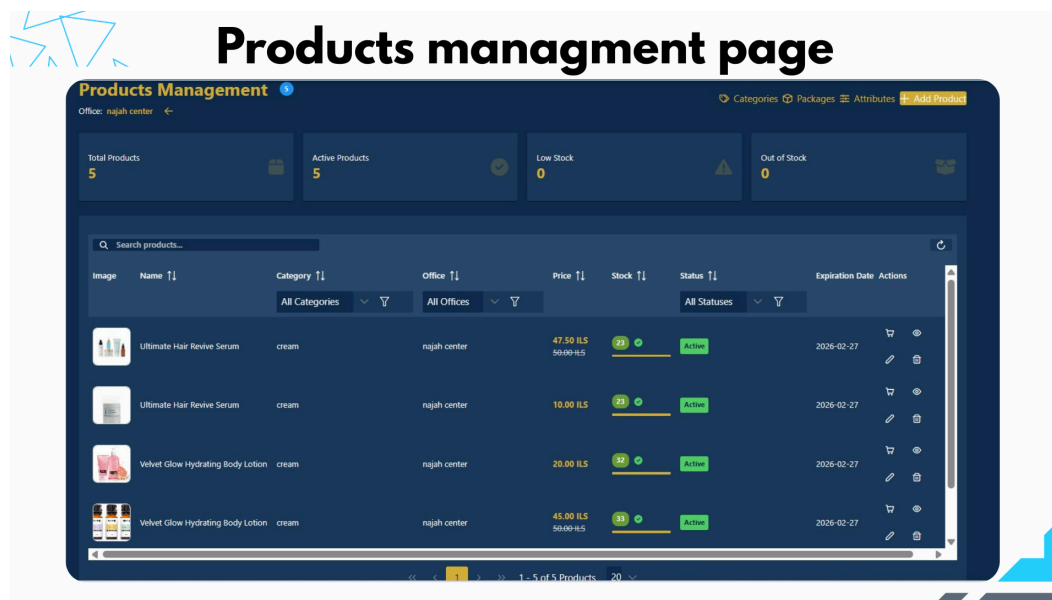


Figure 35: Products Management — product listing with statistics and actions

## Create Product

The Create Product form captures comprehensive product information including barcode (with scanner support), gender targeting, bilingual product name (English and Arabic), bilingual description, organization assignment (office, section, category), pricing (base price, currency, discount percentage), stock management (current stock, minimum level, status), expiration date, and image uploads (main image and additional images via Cloudinary).

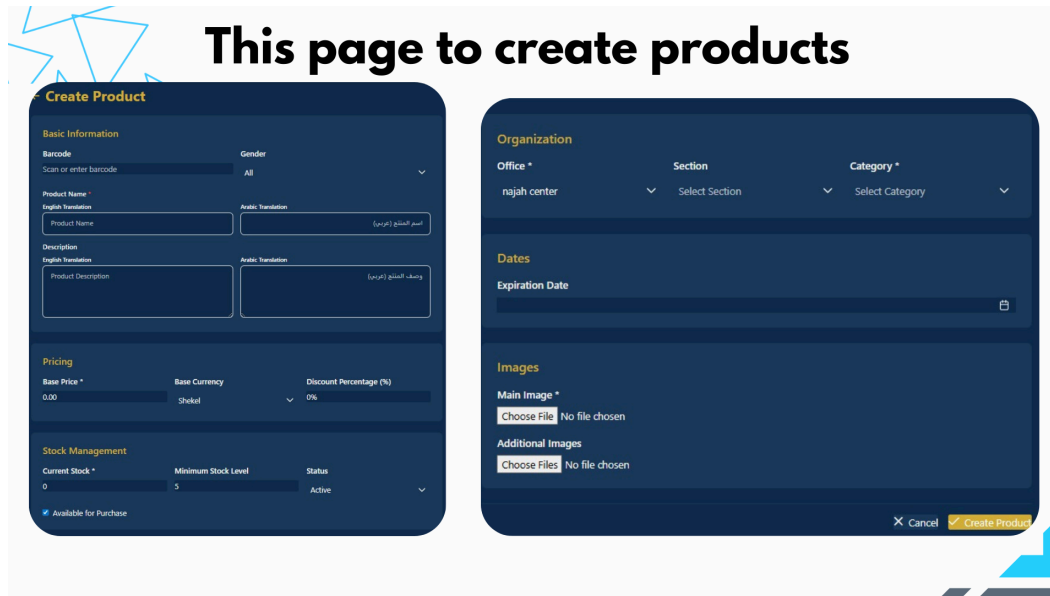


Figure 36: Create Product — comprehensive product creation form

### Edit Product

The Edit Product form pre-fills all existing product data and allows modifications. Admins can update descriptions in both languages, adjust pricing and discount percentages, manage stock levels, change expiration dates, and update product images. The interface shows existing images and allows adding new ones.

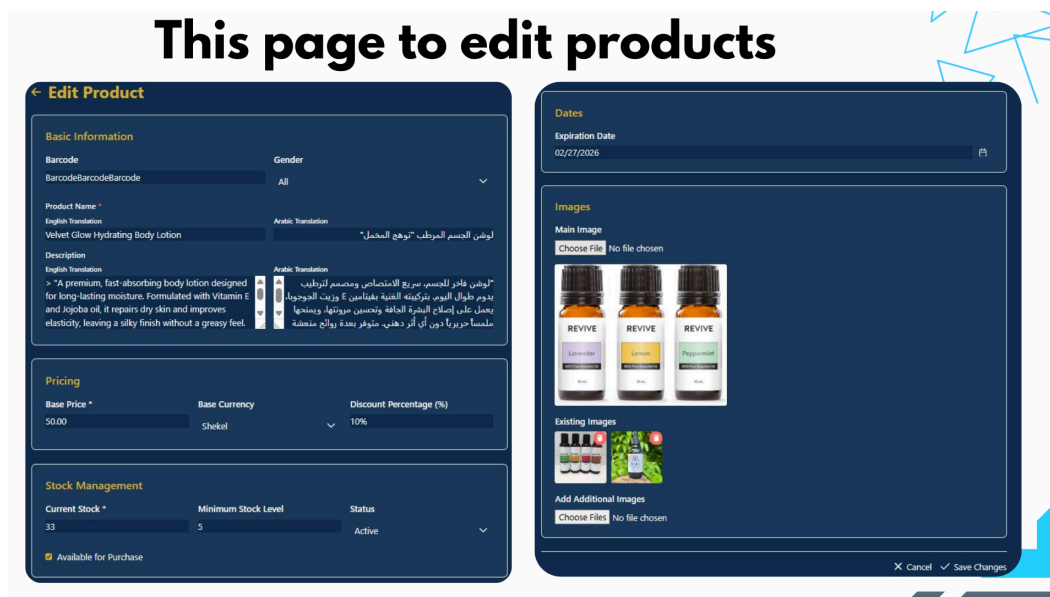
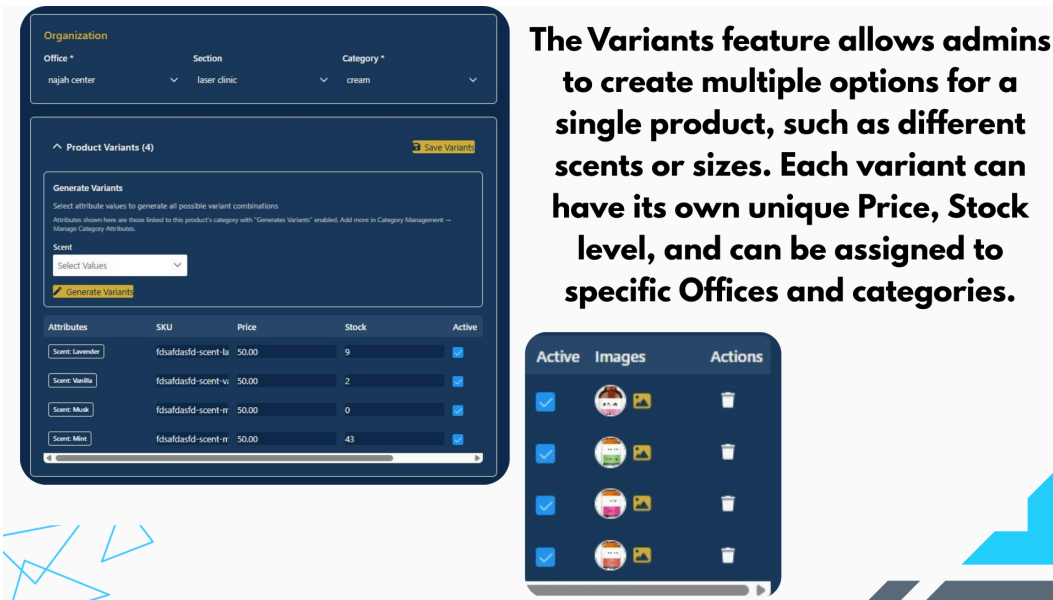


Figure 37: Edit Product — product editing with existing data and images

## Product Variants

The Variants feature allows admins to create multiple options for a single product, such as different scents (Lavender, Vanilla, Musk, Mint) or sizes. Each variant can have its own unique price, stock level, SKU, and active status. Variants are generated from product attributes, and each variant can be assigned to specific offices and categories. This enables selling the same product in different configurations.



**The Variants feature allows admins to create multiple options for a single product, such as different scents or sizes. Each variant can have its own unique Price, Stock level, and can be assigned to specific Offices and categories.**

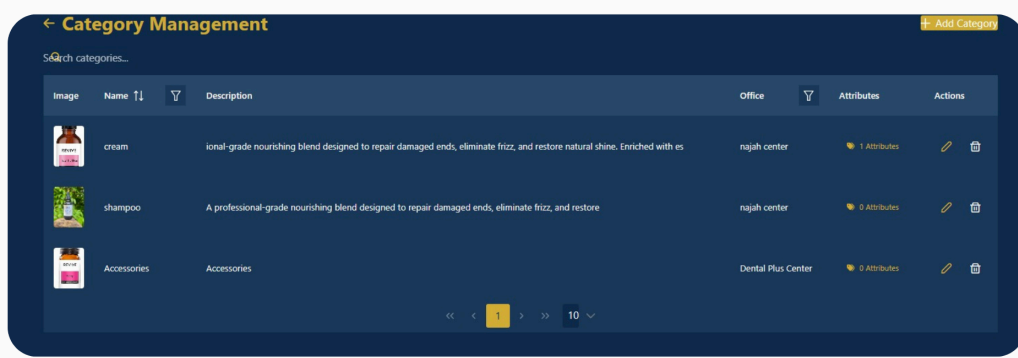
Attributes	SKU	Price	Stock	Active
Scent: Lavender	fdsafdasfd-scent-lv	50.00	9	<input checked="" type="checkbox"/>
Scent: Vanilla	fdsafdasfd-scent-vi	50.00	2	<input checked="" type="checkbox"/>
Scent: Musk	fdsafdasfd-scent-m	50.00	0	<input checked="" type="checkbox"/>
Scent: Mint	fdsafdasfd-scent-mi	50.00	43	<input checked="" type="checkbox"/>

Active	Images	Actions
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>		

Figure 38: Product Variants — multiple options with individual pricing and stock

## Category Management

The Category Management dashboard allows admins to organize products into groups (e.g., cream, shampoo, accessories). Each category displays its name, description, associated office, and linked attributes. Categories can be created, edited, and deleted, and they serve as the foundation for product organization and filtering.

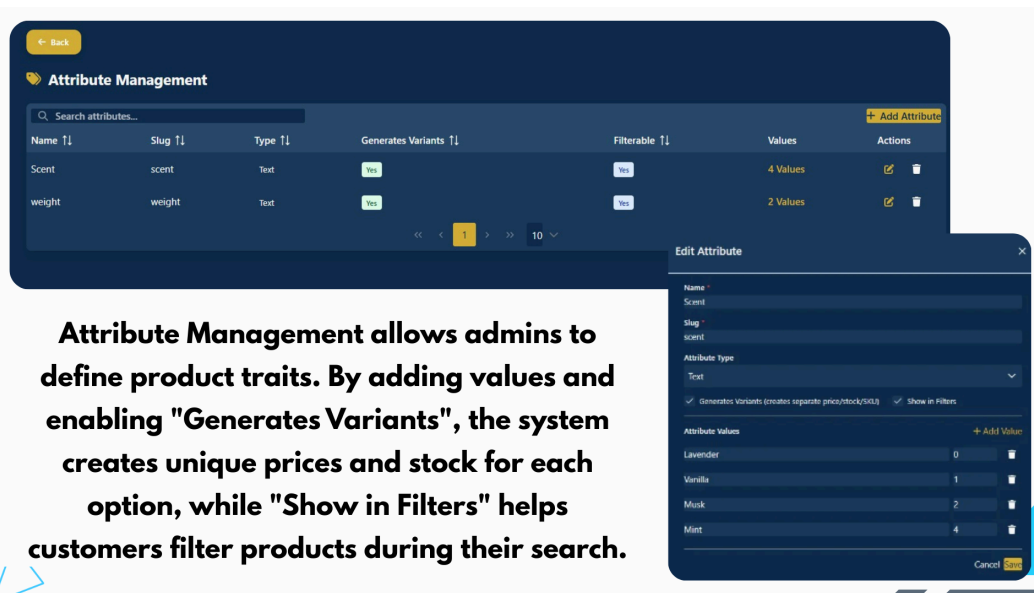


**Category Management dashboard allows admins to organize products into groups. Each category is linked to a specific attributes**

Figure 39: Category Management — product categories with attributes

### Attribute Management

The Attribute Management system allows admins to define product traits such as scent, weight, or color. Each attribute has a name, slug, type, and a set of values. The 'Generates Variants' option creates separate price/stock/SKU entries for each value combination. The 'Show in Filters' option makes the attribute available as a filter for customers during product search.



**Attribute Management allows admins to define product traits. By adding values and enabling "Generates Variants", the system creates unique prices and stock for each option, while "Show in Filters" helps customers filter products during their search.**

Figure 40: Attribute Management — defining product traits with variant generation



## Offices Management

The Offices dashboard displays all registered beauty centers/offices with their images and names. Admins can create new offices and access Tasks and Permissions management. Each office card provides quick access to the office details and management interface.

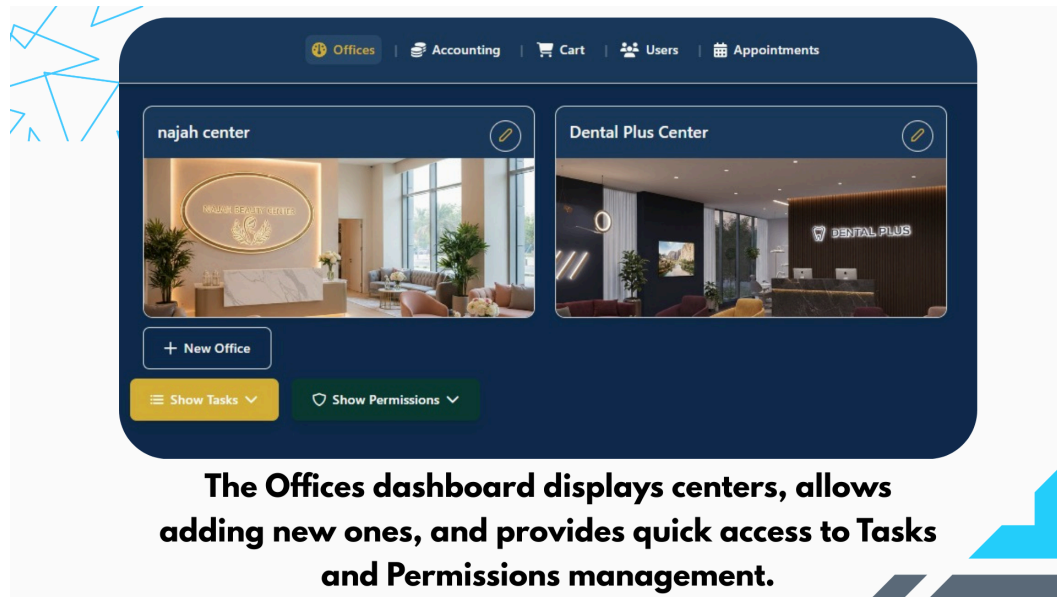
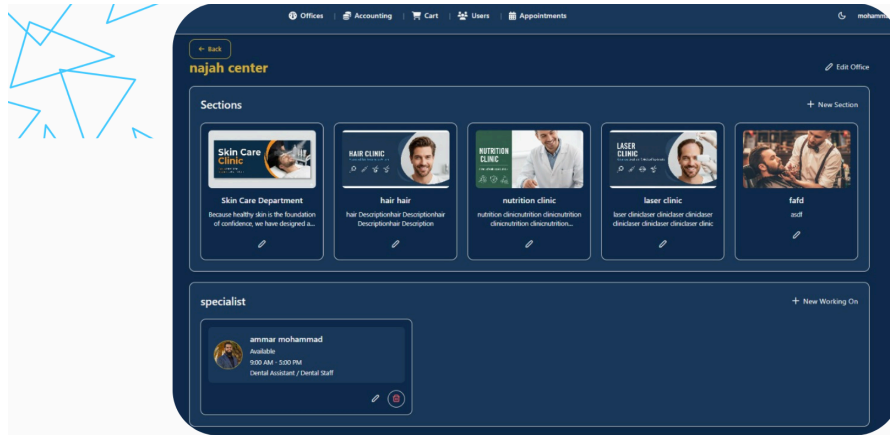


Figure 41: Offices Dashboard — center listing with management options

## Office Details & Sections

The Office Details view manages specific branch departments (sections) such as Skin Care, Hair, Nutrition, and Laser clinics. Admins can add new sections, assign specialists to sections with their working hours, and create 'Working On' entries to describe the branch's services and staff. Each section card shows the department name, description, and image.



**The Office Details view manages specific branch departments like Skin Care or Laser Clinics. Admins can assign Specialists to these branches, set their working hours, and use the "New Section" or "New Working On" tools to expand the branch's services and staff.**

Figure 42: Office Details — sections and specialists management

### Create and Edit Office

The office creation/editing forms capture bilingual names and addresses (English and Arabic), phone number, Google Maps embed URL for location display, bilingual descriptions, and social media links (Facebook, Instagram, WhatsApp, Telegram). The edit form pre-fills all existing data for modification.

## Create and edit office

Figure 43: Create and Edit Office — bilingual office information forms

## Create and Edit Section

Sections (clinics/departments) within an office can be created and edited with bilingual names and descriptions, and an image uploaded via Cloudinary. Each section can have its own services, therapy sessions, and assigned specialists.

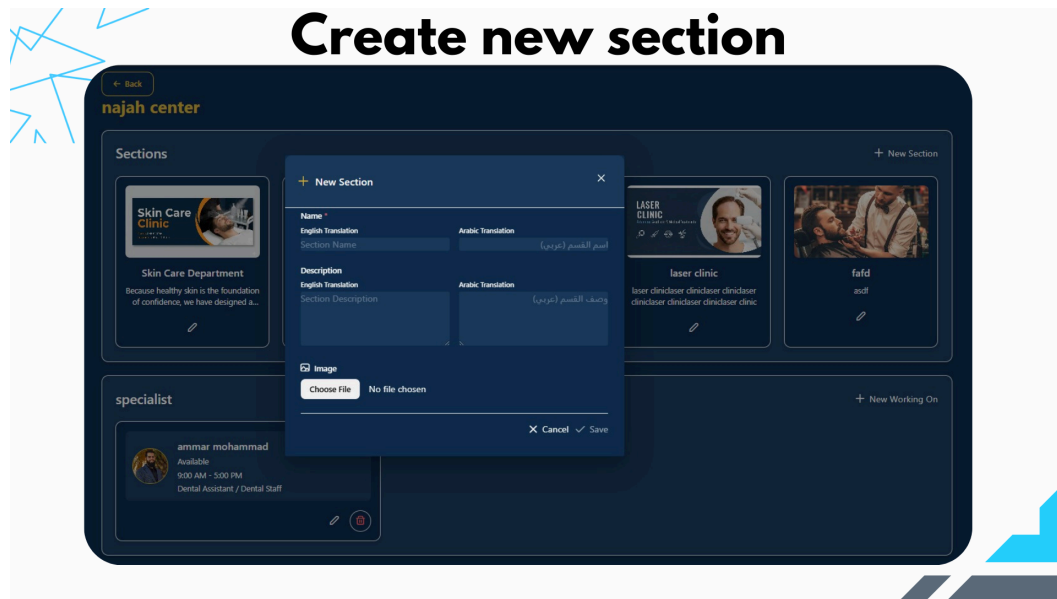


Figure 44: Create New Section — bilingual section creation within an office

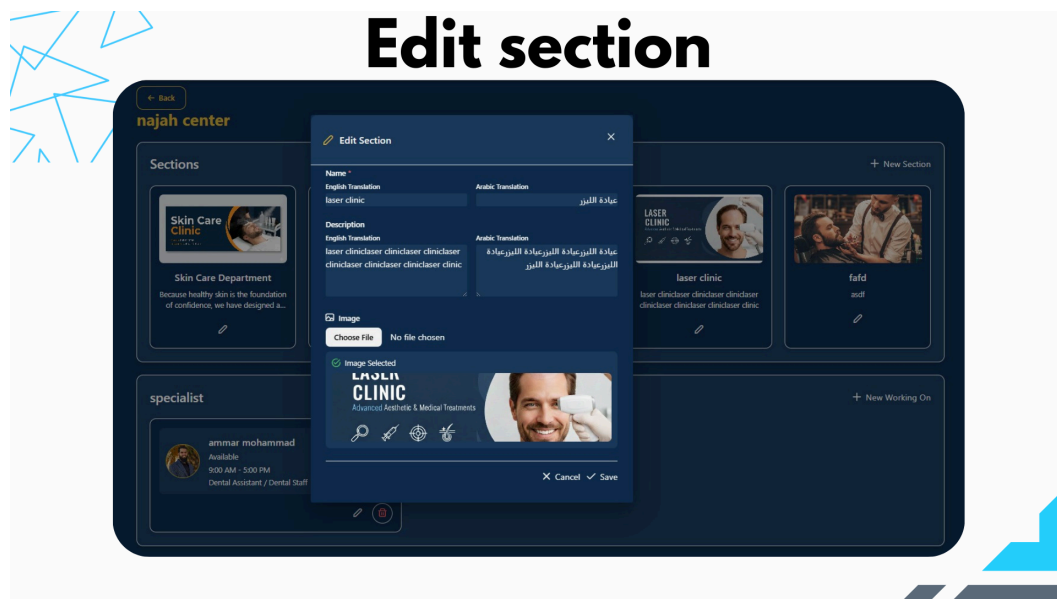
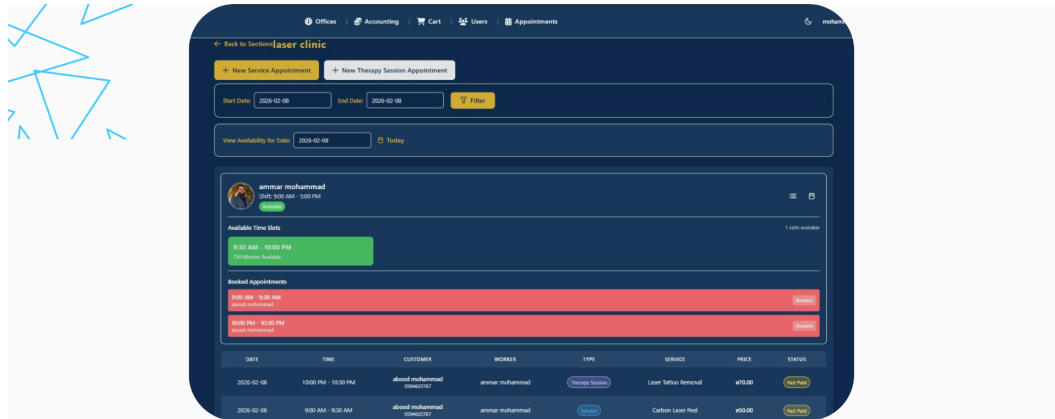


Figure 45: Edit Section — updating section details with image



## Appointments Management

The Appointment Management interface for specific clinics allows admins to schedule services or therapy sessions. It displays specialist availability with color-coding: green slots are available and red slots are booked. A detailed appointment log shows client names, service types, prices, and payment statuses. Admins can create new service appointments or therapy session appointments directly from this interface.

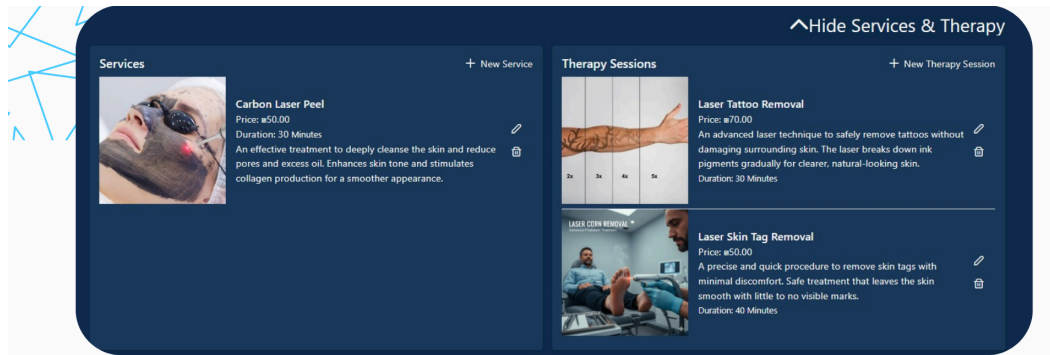


**The Appointment Management interface for specific clinics allows admins to schedule services or therapy sessions. It uses color-coding to show available (Green) and booked (Red) slots for specialists, while providing a detailed log of client names, service types, prices, and payment statuses.**

Figure 46: Appointment Management — specialist availability and appointment log

## Services & Therapy Sessions Management

The services dashboard categorizes offerings into regular Services and Therapy Sessions. Each entry displays the service name, price, duration, and description with an image. Admins can add, edit, or delete services and therapy sessions using the provided management tools.



**The dashboard categorizes Services and Sessions. It displays price, duration, and descriptions, while providing tools to add, edit, or delete services.**

Figure 47: Services & Therapy Sessions — management dashboard

### Create New Service Appointment

The appointment creation form allows secretaries to search for customers by phone, name, or username, select a service, assign a worker, choose a date and time range, and add a description. This enables walk-in appointment booking from the admin panel.

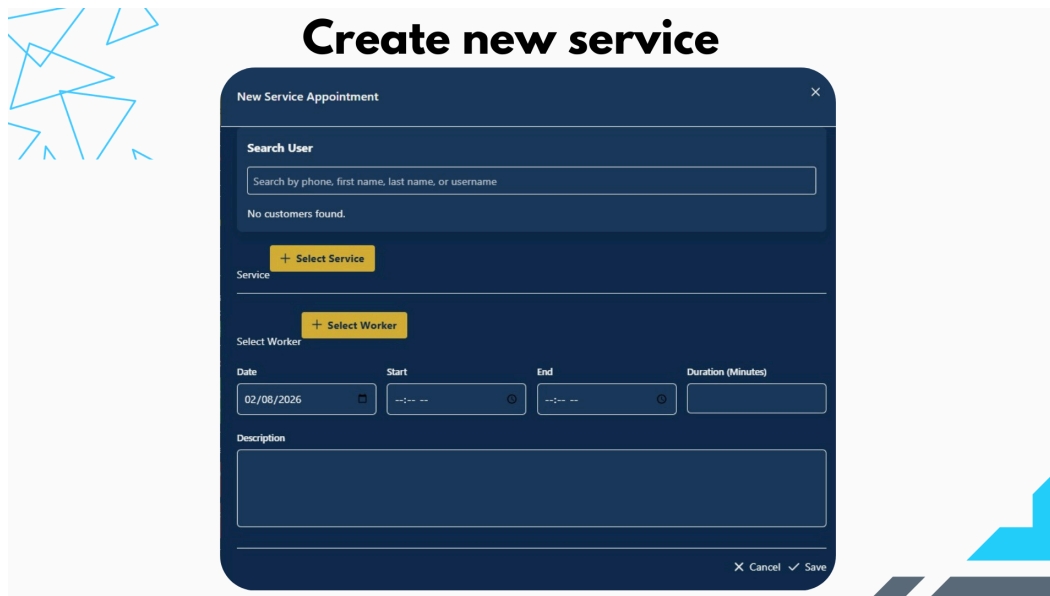
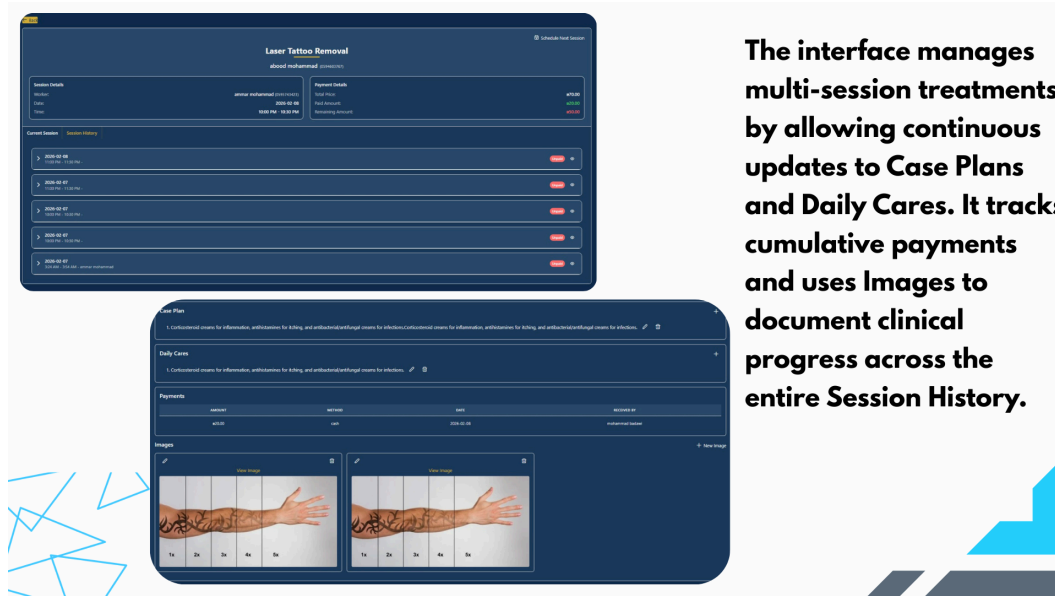


Figure 48: New Service Appointment — appointment creation form

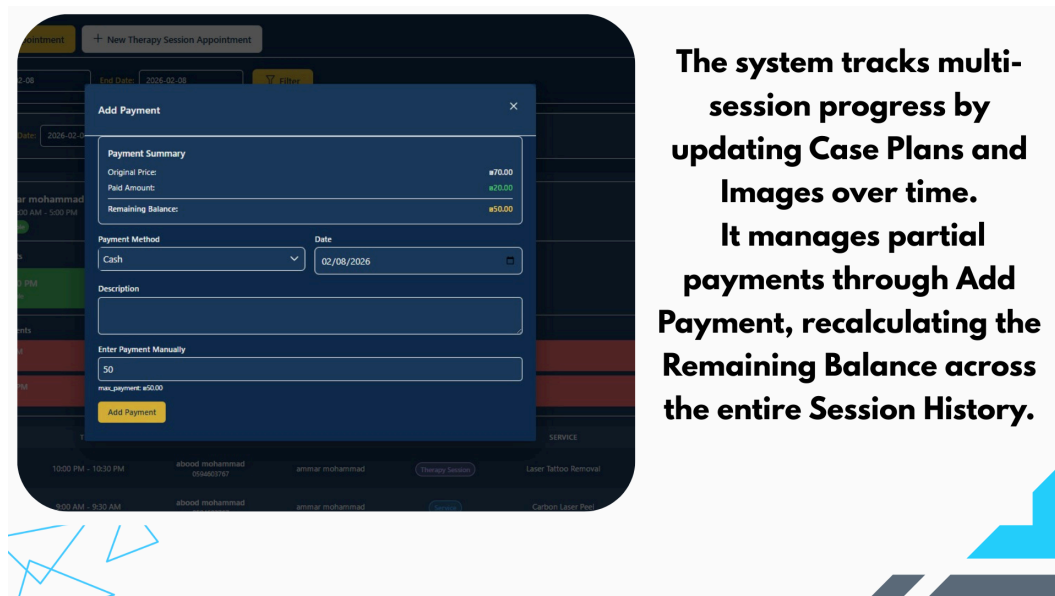
## Multi-Session Therapy Treatments

For therapy sessions that span multiple appointments (e.g., laser tattoo removal), the system tracks the complete session history with case plans and daily care notes. Each session is logged with its date, time, and status. The interface tracks cumulative payments, remaining balance, and uses images uploaded via Cloudinary to document clinical progress across the entire treatment history.



The interface manages multi-session treatments by allowing continuous updates to Case Plans and Daily Cares. It tracks cumulative payments and uses Images to document clinical progress across the entire Session History.

Figure 49: Multi-Session Treatment — session history, case plan, payments, and progress images



The system tracks multi-session progress by updating Case Plans and Images over time. It manages partial payments through Add Payment, recalculating the Remaining Balance across the entire Session History.

*Figure 50: Add Payment — partial payment management for therapy sessions*

## Complaints Management (Admin)

The Complaints Management dashboard lets admins track customer feedback with date/status filters and a 'View / Respond' button for direct resolution. The Complaint Details view enables admins to review specific issues, update their status (Pending, In Progress, Resolved, Rejected), and write a direct Admin Response that is immediately visible to the customer.

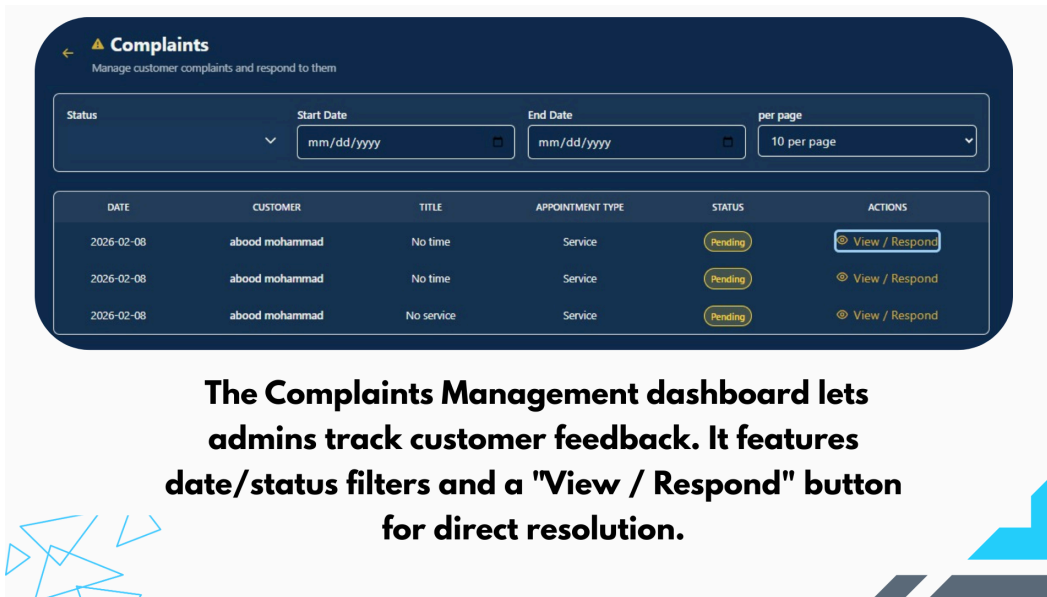


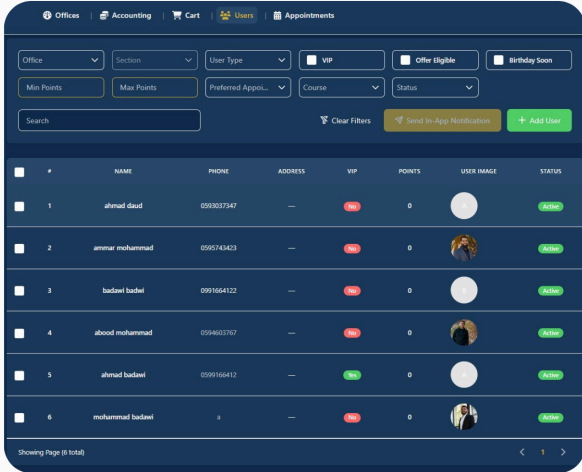
Figure 51: Complaints Management — admin dashboard with filters



Figure 52: Complaint Details — status update and admin response

## Users Management

The Users Management dashboard displays customer profiles, phone numbers, addresses, VIP status, point balances, profile images, and account statuses. Advanced filtering options include office, section, user type, VIP status, offer eligibility, birthday proximity, point ranges, preferred appointment type, course enrollment, and active status. Admins can send targeted in-app notifications to selected users and add new users directly.



The screenshot shows a dashboard with a navigation bar at the top containing 'Offices', 'Accounting', 'Cart', 'Users', and 'Appointments'. Below the navigation bar is a filter section with dropdown menus for 'Office', 'Section', 'User Type', and 'Status', and checkboxes for 'VIP', 'Offer Eligible', and 'Birthday Soon'. There are also input fields for 'Min Points' and 'Max Points', a 'Preferred Appo...' dropdown, and a 'Course' dropdown. A search bar is located below the filters. To the right of the search bar are buttons for 'Clear Filters', 'Send In-App Notification', and '+ Add User'. The main content area is a table with the following columns: #, NAME, PHONE, ADDRESS, VIP, POINTS, USER IMAGE, and STATUS. The table contains six rows of user data. At the bottom left of the table, it says 'Showing Page 0 of total'. The table data is as follows:

#	NAME	PHONE	ADDRESS	VIP	POINTS	USER IMAGE	STATUS
1	ahmad daud	0993037547	—	NO	0		Active
2	ammar muhammad	0995743423	—	NO	0		Active
3	hadari hadari	0991864132	—	NO	0		Active
4	abood muhammad	0994607357	—	NO	0		Active
5	ahmad hadari	0999166412	—	NO	0		Active
6	mohammad hadari	—	—	NO	0		Active

Text overlay on the right: **The Users Management dashboard displays customer profiles, statuses, and point balances. It features advanced filtering for targeted searches and tools for sending mass in-app notifications or adding new users.**

Figure 53: Users Management — profiles, filters, and notification tools

## Specialist (Worker) View

The Specialist view provides workers with their personal daily schedule showing appointment times, customer names, service types, and payment statuses. Workers can filter their appointments by date range to plan their workday efficiently.

Start Date *	End Date *	DATE	TIME	CUSTOMER	WORKER	TYPE	SERVICE	STATUS
2026-02-08	2026-02-08	2026-02-08	9:00 AM - 9:30 AM	abdoel mohammad 05662197	amrmar mohammad	<a href="#">View</a>	Carbon Laser Peel	<a href="#">Not Paid</a>
		2026-02-08	10:00 PM - 12:30 PM	abdoel mohammad 05662197	amrmar mohammad	<a href="#">View</a>	Laser Tattoo Removal	<a href="#">Paid</a>

**The Specialist view displays a personal schedule with specific times, customer names, and service types. It tracks payment status for each appointment and allows filtering by date.**

*Figure 54: Specialist View — personal schedule with appointment details*

## Courses Management

The course management system provides comprehensive tools for creating and managing professional training courses:

### Create and Edit Courses

Course creation captures bilingual names, price, meeting count, meeting days, meeting time range, start/end months, bilingual descriptions, teacher assignment (searchable by phone/name), and office/section assignment. The edit form pre-fills all existing data for modification.

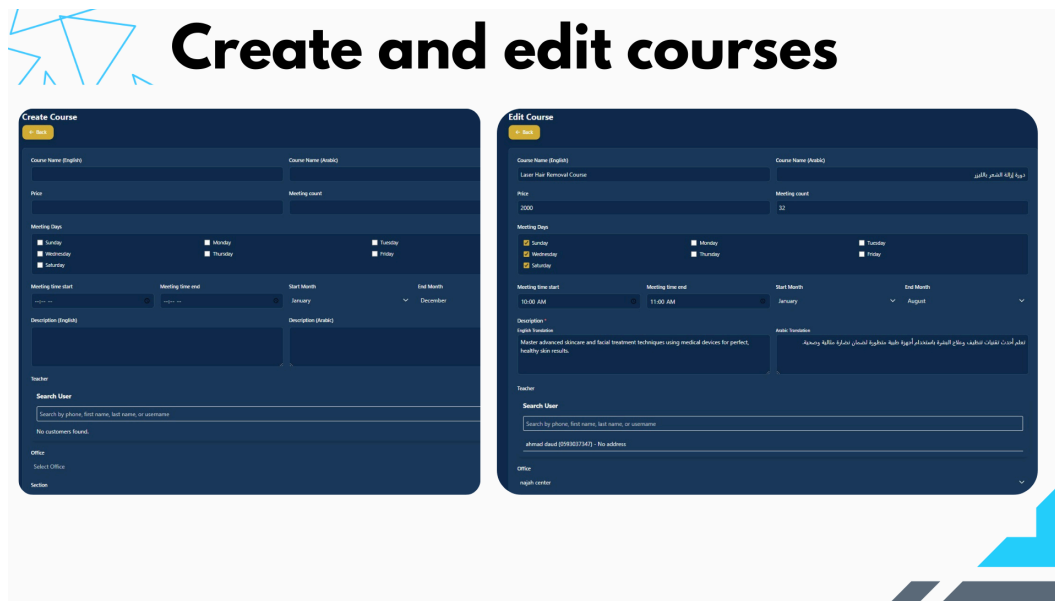
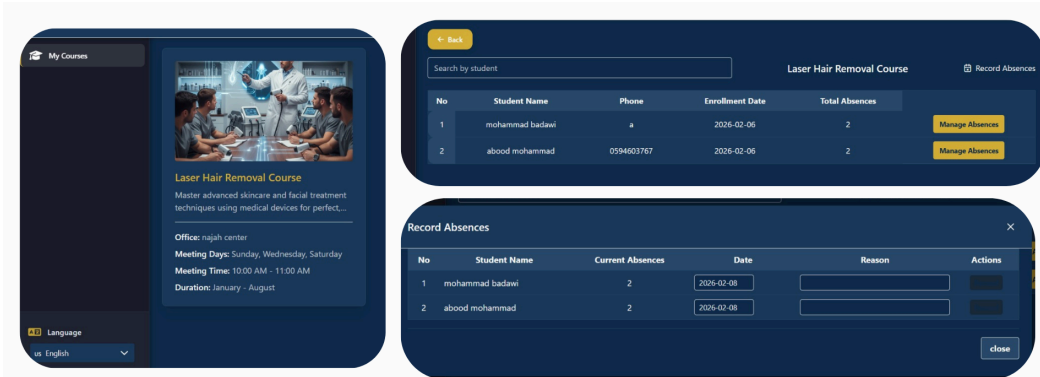


Figure 55: Create and Edit Courses — comprehensive course configuration forms

## Teacher Dashboard

The Teacher dashboard allows viewing course schedules and managing student attendance. Teachers can see enrolled students with their phone numbers, enrollment dates, and total absences. The 'Record Absences' feature enables marking students absent with a date and reason, which automatically sends a notification to the student via the app.

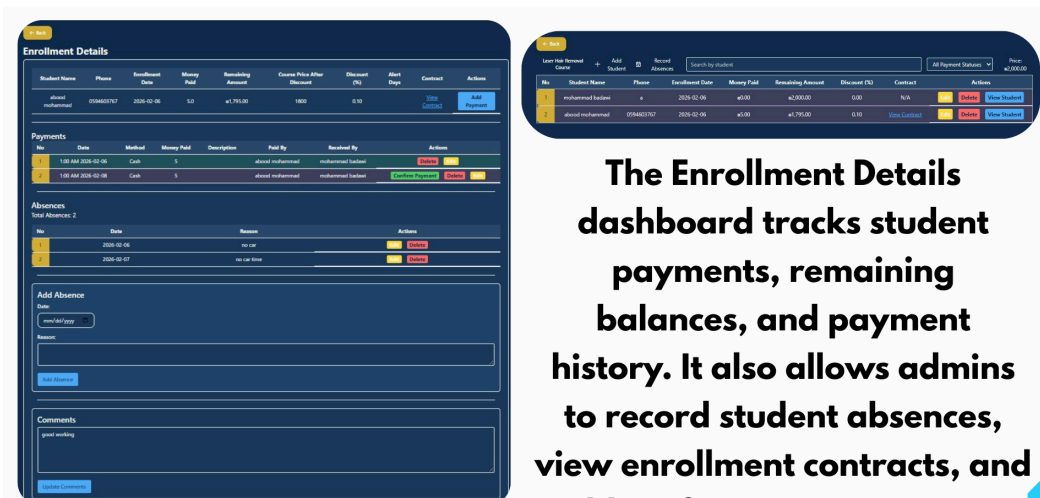


**The Teacher's dashboard allows viewing course schedules and managing student attendance. Teachers can record absences with reasons, which automatically notifies the student via the app.**

Figure 56: Teacher Dashboard — course schedule and student attendance management

### Enrollment Details

The Enrollment Details page tracks individual student payments (amounts, methods, dates, received by), remaining balance, absences (dates and reasons), and performance comments. Admins can add payments, record absences, view enrollment contracts, and update comments. The enrollment list shows all students with their payment status and contract information.



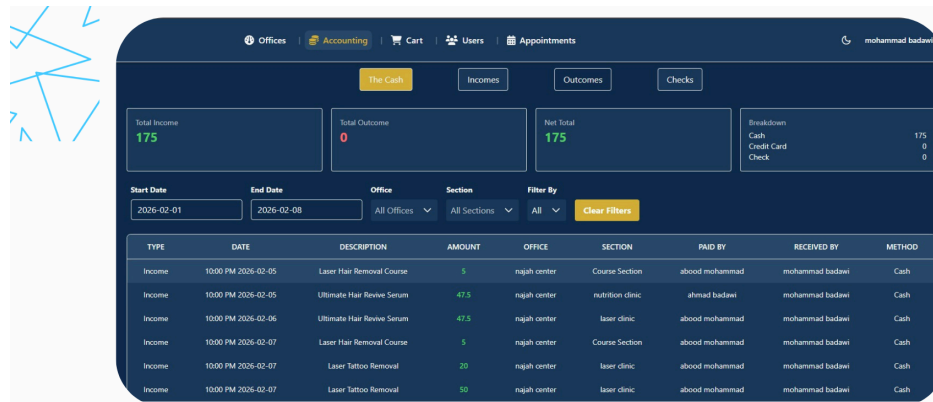
**The Enrollment Details dashboard tracks student payments, remaining balances, and payment history. It also allows admins to record student absences, view enrollment contracts, and add performance comments.**

Figure 57: Enrollment Details — payments, absences, and student management



## Accounting Dashboard

The Accounting dashboard provides a comprehensive financial overview summarizing Total Income, Total Outcomes, Net Total, and a breakdown by payment method (Cash, Credit Card, Check). The transaction log records every payment with its type, date, description, amount, office, section, payer, receiver, and payment method. Filters by date range, office, and section enable precise financial tracking and reporting.

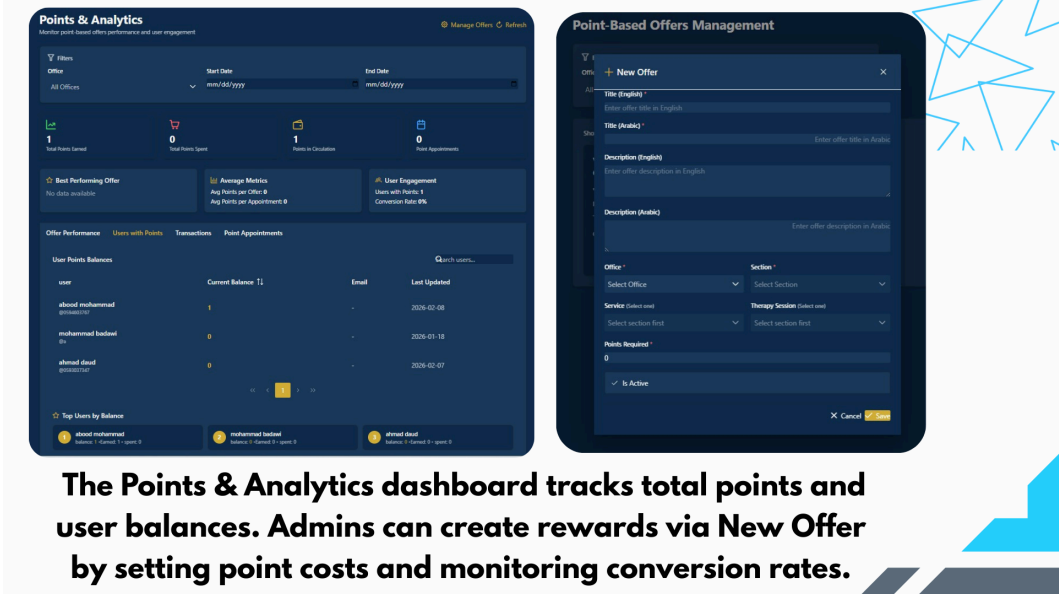


**The Accounting dashboard summarizes Income, Outcomes, and Net Total. It logs every transaction by source (Course, Product, or Session) and allows filtering by date or office for precise tracking.**

Figure 58: Accounting Dashboard — financial summary, transactions, and filtering

## Points & Analytics Dashboard

The Points & Analytics dashboard monitors the loyalty program's performance including total points earned, total points spent, points in circulation, and point appointments. Tabs display offer performance, users with points and their balances, transaction history, and point-based appointments. Admins can create new point-based offers by setting titles (bilingual), descriptions, office/section/service assignment, and points required.

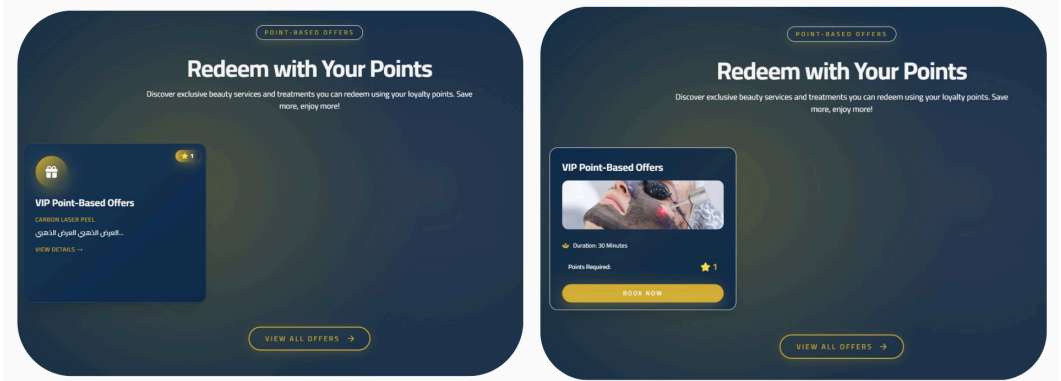


**The Points & Analytics dashboard tracks total points and user balances. Admins can create rewards via New Offer by setting point costs and monitoring conversion rates.**

Figure 59: Points & Analytics — loyalty system dashboard and offer management

**Point Redemption**

Customers can redeem their earned loyalty points for exclusive beauty services and treatments. The 'Redeem with Your Points' section on the homepage showcases available point-based offers with their duration, points required, and a direct 'Book Now' button.



**The points earned by the customer can be used for booking .**

Figure 60: Point-Based Offers — redemption section on the homepage



## Notification System (Admin)

The notification system allows admins to send targeted in-app messages to specific users. The notification form captures a title, message body, and recipient selection. An option to 'Send SMS if push notification fails' provides fallback delivery. Admins can select users from the management dashboard and send bulk or individual notifications.

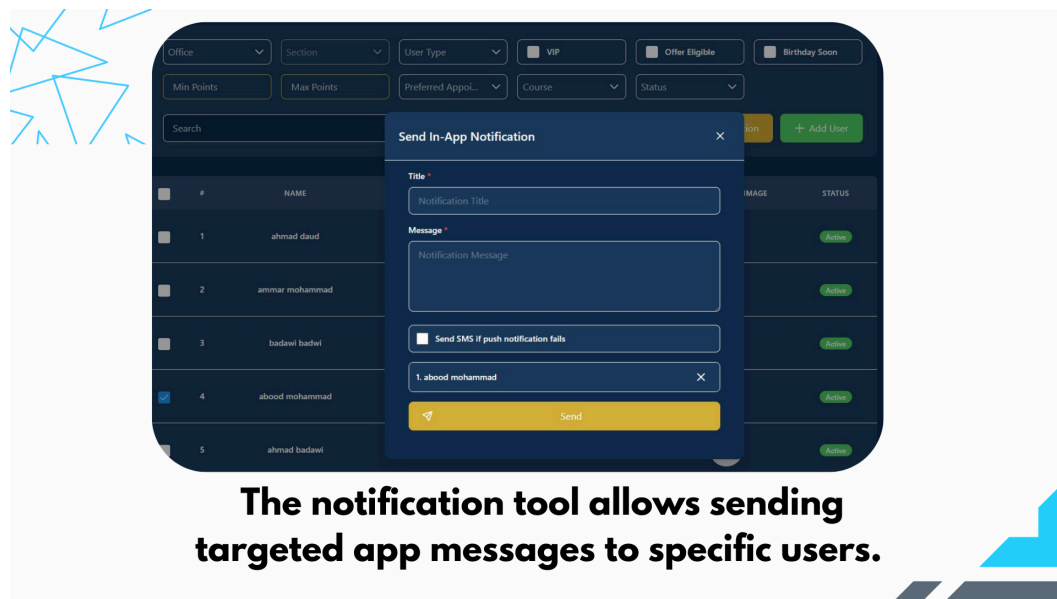
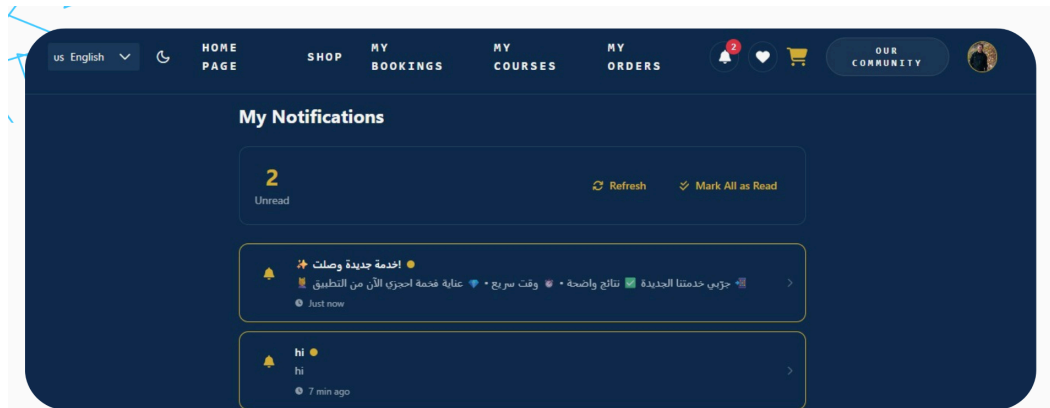


Figure 61: Send In-App Notification — targeted messaging to users

## User Notifications View

Users receive notifications with unread count indicators. Each notification displays the title, message, and timestamp with options to mark as read or refresh the list. The web notification page provides a clean interface for managing all received notifications.

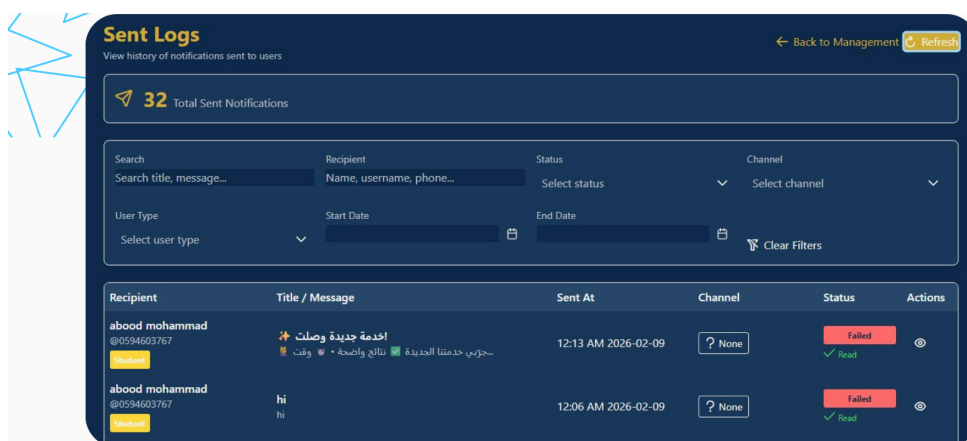


**The notification was successfully sent to the user.**

Figure 62: User Notifications — notification inbox with unread indicators

### Sent Logs

The Sent Logs dashboard archives all sent notifications with their recipient information, message content, send timestamp, delivery channel, status (Read/Failed), and action buttons. Advanced filters by search term, recipient, status, channel, user type, and date range enable comprehensive notification auditing.



**The Sent Logs dashboard archives all notifications, tracking their status as Read or Failed.**

Figure 63: Sent Logs — notification delivery tracking and audit



## AI-Powered Chat Assistant

The HMSS platform integrates an AI-powered chat assistant accessible from both the web and mobile applications. The AI assistant provides instant support by answering user queries about products, services, courses, office locations, and available treatments. It returns detailed information including descriptions, prices, schedules, images, and Google Maps links for office locations. The assistant is contextually aware of the system's data and can provide accurate, up-to-date information about available offerings.

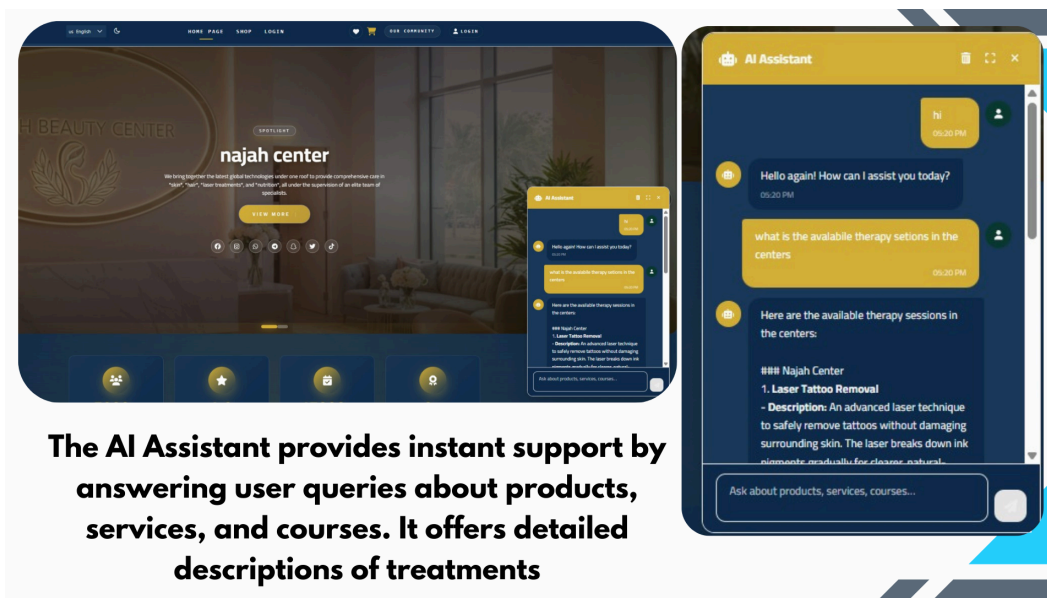


Figure 64: AI Chat Assistant — web interface answering therapy session queries

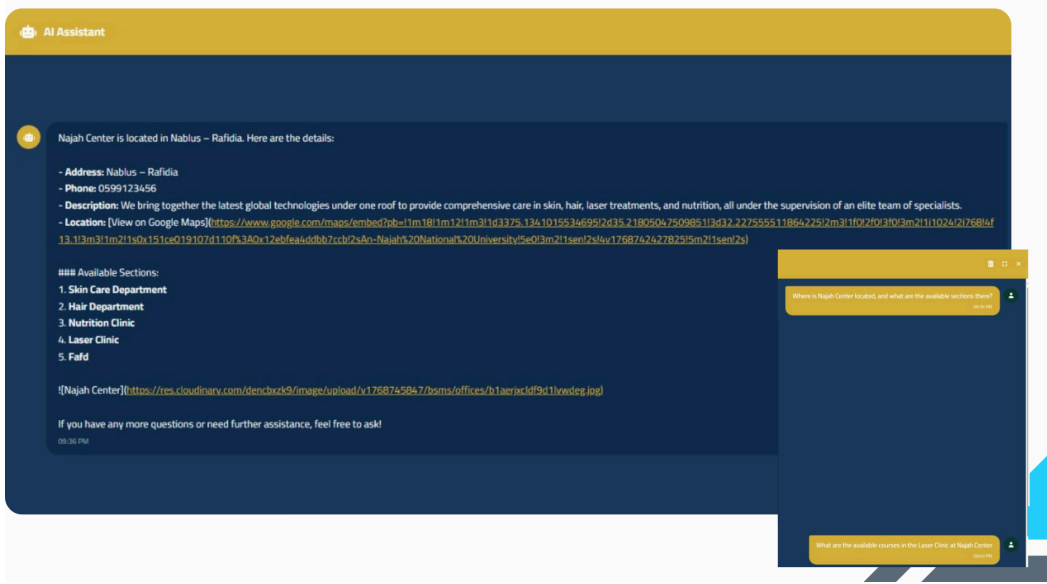


Figure 65: AI Assistant — detailed office information with sections and location

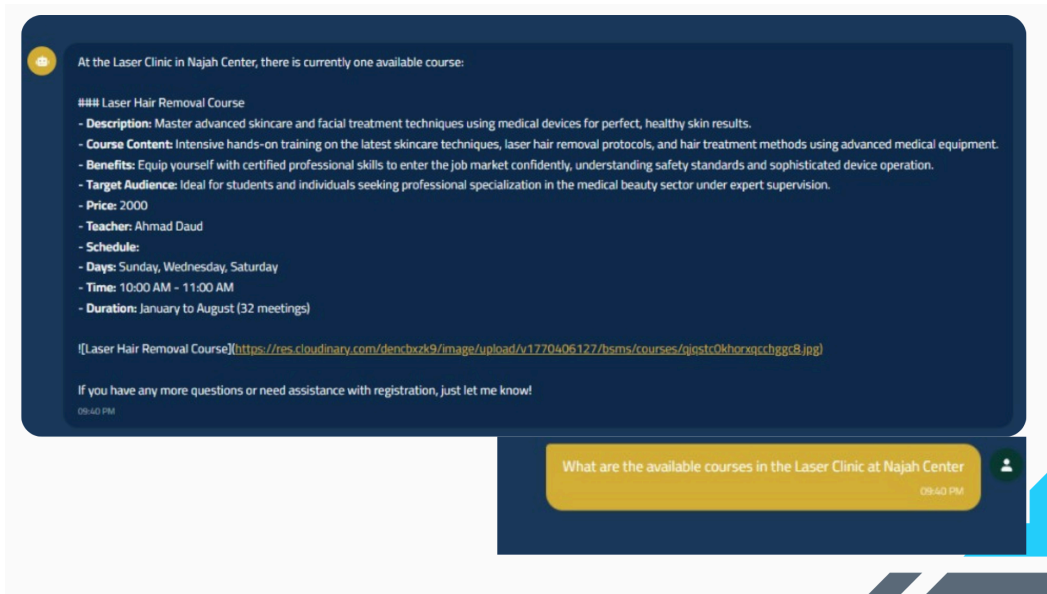


Figure 66: AI Assistant — course details with schedule, teacher, and pricing

## Chapter 5

### 5.1 Testing

The HMSS system was tested using a combination of manual testing and user acceptance testing to ensure functionality, usability, and reliability across all platforms.

#### 5.1.1 Functional Testing

Each feature module was tested individually to verify correct behavior:

- Authentication: Login, signup, OTP verification, password reset, and session management were tested across web and mobile platforms.
- E-commerce: Product browsing, filtering, cart operations, checkout, order placement, cancellation, and return requests were verified end-to-end.
- Booking System: The 3-step booking wizard was tested with various office/section/service combinations, ensuring correct availability checking and appointment creation.
- Course Management: Course enrollment, payment tracking, attendance recording, and notification delivery were tested for both admin and student perspectives.
- Admin Dashboard: All CRUD operations for products, offices, sections, users, and appointments were tested with proper permission enforcement.
- Notifications: In-app notification delivery, read status tracking, and sent log recording were verified.
- AI Chat: The AI assistant was tested with various queries to ensure accurate and contextual responses.

#### 5.1.2 Cross-Platform Testing

The system was tested on multiple platforms to ensure consistent behavior:

- Web: Chrome, Firefox, and Edge on desktop; Chrome and Safari on mobile browsers.
- Mobile: Tested on both Android and iOS devices using Expo Go during development and standalone builds for production testing.
- RTL Testing: Arabic language mode was tested across all pages to verify correct RTL layout, text alignment, and content translation.

- Theme Testing: All three themes (Light, Dark, Luxury) were verified for proper color application, contrast, and readability.

### **5.1.3 User Acceptance Testing**

The system was demonstrated to potential end users (beauty center staff) who provided feedback on usability, workflow efficiency, and feature completeness. Their feedback was incorporated into subsequent development iterations.

## Chapter 6

### 6.1 Conclusion

#### 6.1.1 Summary

The HMSS (Healthcare Management & Shopping System) project successfully delivered a comprehensive digital platform for beauty centers and healthcare clinics. The system integrates e-commerce, appointment booking, course management, HR/payroll, loyalty rewards, and AI-powered assistance into a unified ecosystem accessible through both web and mobile applications.

The project achieved all its primary objectives: providing integrated clinic management, a full-scale e-commerce platform, intelligent appointment booking, an educational academy module, an advanced loyalty system, and AI-powered customer support. The platform supports six distinct user roles with appropriate dashboards and permissions, bilingual content delivery, and three customizable themes.

#### 6.1.2 Things We Learned

- Full-stack development with Django REST Framework, React, and React Native, including the challenges of maintaining feature parity across web and mobile platforms.
- Designing and implementing a complex role-based access control system that balances security with usability.
- Building bilingual (Arabic RTL / English LTR) applications with database-level content translation and dynamic UI direction switching.
- Integrating third-party services (Cloudinary for images, AI models for chat, SMS for OTP) into a production application.
- Managing complex state across multiple platforms using React Query, Context API, and JWT authentication.
- Database design for multi-tenant (multi-office) applications with complex relationships between products, appointments, courses, and users.
- The importance of iterative development, user feedback, and agile methodology in managing a large-scale project.

### 6.1.3 Recommendations

For future development and improvement of the HMSS platform, we recommend:

- Implementing real-time features using WebSockets for live appointment updates and chat functionality.
- Adding an online payment gateway (e.g., Stripe, PayPal) to complement the current cash-on-delivery system.
- Expanding the AI assistant with voice interaction capabilities.
- Implementing advanced analytics dashboards with business intelligence features.
- Adding fingerprint/biometric machine integration for employee attendance tracking.
- Developing a dedicated admin mobile application for on-the-go management.
- Implementing automated marketing campaigns based on customer segmentation and loyalty data.

## Chapter 7

### 7.1 References

15. React Documentation. (2024). React – A JavaScript library for building user interfaces. <https://react.dev/>
16. React Native Documentation. (2024). React Native – Learn once, write anywhere. <https://reactnative.dev/>
17. Expo Documentation. (2024). Expo – Build React Native apps. <https://docs.expo.dev/>
18. Django REST Framework. (2024). Django REST framework. <https://www.django-rest-framework.org/>
19. Django Documentation. (2024). Django – The web framework for perfectionists with deadlines. <https://docs.djangoproject.com/>
20. TailwindCSS Documentation. (2024). Tailwind CSS – Utility-first CSS framework. <https://tailwindcss.com/>
21. NativeWind Documentation. (2024). NativeWind – Use Tailwind CSS in React Native. <https://www.nativewind.dev/>
22. Material-UI Documentation. (2024). MUI – React UI framework. <https://mui.com/>
23. TanStack React Query. (2024). Powerful asynchronous state management. <https://tanstack.com/query/>
24. i18next Documentation. (2024). Internationalization framework. <https://www.i18next.com/>
25. Cloudinary Documentation. (2024). Image and video management. <https://cloudinary.com/documentation>
26. MySQL Documentation. (2024). MySQL Reference Manual. <https://dev.mysql.com/doc/>
27. Chart.js. (2024). Simple yet flexible JavaScript charting. <https://www.chartjs.org/>
28. Vite Documentation. (2024). Next Generation Frontend Tooling. <https://vitejs.dev/>
29. React Router. (2024). Declarative Routing for React. <https://reactrouter.com/>