Patient-Centric Appointment Scheduling System: Design & Development Case Study

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1.Introduction

This case study focuses on the development of an Appointment Scheduling System for a healthcare platform, designed to improve the booking experience for both users (patients) and support staff. The system was built by understanding the challenges faced by users, as highlighted through detailed user stories, ensuring that each feature addresses real-world problems.

2.Problem and Approach

The application addresses several key challenges identified from the user stories:

- Complex navigation and difficulty reading important information outdoors, especially for older adults.
- Lack of instant support for appointment changes.
- Limited doctor information before booking and confusion with doctor-centric slot selection.
- The solution focuses on simplicity, clarity, and real-time communication, with a design that caters to users' varying needs and age groups.

3.Key Features

- **Upcoming Appointment Notification Bar:** Displays the user's next appointment prominently on the home screen.
- **Vibrant Colours:** Used for highlighting important information like date and time to ensure easy readability.
- **Instant Support:** A message icon for quick access to AI or human support.
- **Time Slot-Centric Booking:** Doctors are displayed based on the selected time slots, reducing confusion.
- **Doctor Information:** Essential details about the doctor are available before booking.
- **User-Provider Communication:** Clear communication between users and support staff is essential. Users can confirm appointments via messages, and support staff can notify users of changes. A phone call feature also allows direct contact for immediate inquiries.

This case study will cover the application’s features, functionality, and the metrics used to measure success.

4.Patient Stories

1. Difficulty Tracking Upcoming Appointments

As a user, I often struggle to remember the details of my next appointment because I have to navigate through multiple screens, which is time-consuming and confusing.

2. Hard to Read Information Outdoors for Older Adults

As an older patient, I find it hard to see important details like appointment date and time when I'm outside in bright sunlight or when the text blends in too much with the background.

3.Lack of Instant Support for Questions

As a user, I feel frustrated when I have questions or need assistance because I don’t know where to quickly find help or whom to contact within the application.

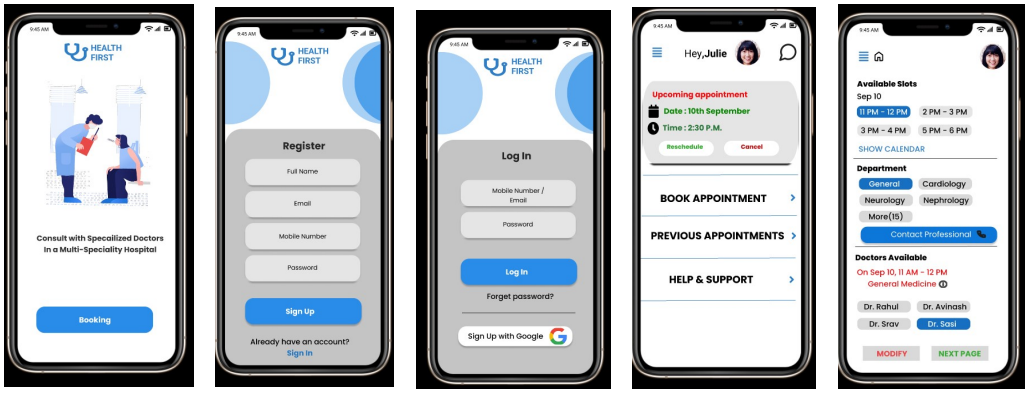
4.Insufficient Doctor Information Before Booking

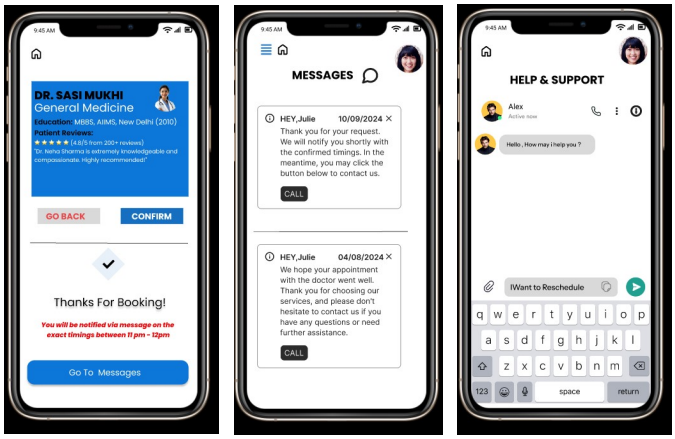
As a user, I sometimes feel uncertain about booking an appointment because I don’t have enough information about the doctor, such as their qualifications or background, which makes me hesitant.

5.Confusion with Doctor-Centric Slot Selection

As a user, I find it difficult to choose an appointment because the process focuses on selecting a doctor first, which sometimes doesn't align with my preferred date and time. I wish I could see available doctors based on my chosen date, time, and department to make scheduling easier.

5. Prototype





Link to the prototype: https://www.figma.com/proto/2mFxmScdeBr61NqtR8qAvv/Health-first-user?node-id=12-151&node-type=canvas&t=mfttP7Cdajm9ODSg-1&scaling=scale-down&content-scaling=fixed&page-id=0%3A1&starting-point-node-id=1%3A2

Note:

- Please restart the prototype using the button at the bottom-left corner. Ensure all pages are viewed by checking the page number at the bottom-centre (e.g., 1/9). For the best experience, open the prototype on a desktop.
- Additionally, click on empty spaces to discover the available keys for navigating between pages. Please note that this is a prototype, and not all keys are functional.

6.Use Cases

1. Home Page Use Case:

Description:

The home page provides users with a clear overview of their upcoming appointment, immediate actions (reschedule, cancel), and quick access to communication tools.

Functionalities:

- Display user's name and greeting.
- Show upcoming appointment details in a notification bar (time, date, and options to reschedule or cancel).
- Instant access to the message icon for AI/chat support.
- Quick links to Book Appointment, Previous Appointments, and Help & Support sections.

User Flow:

- **Trigger:** User logs in and is directed to the home page.

- **Actions**: View upcoming appointment, interact with message icon, or navigate to other sections.

2. Book Appointment Page Use Case

Description:

This page allows users to select time slots, department, and doctor, with easy navigation to ensure a quick booking process.

Functionalities:

- Default display of available time slots with the option to select different dates.
- Select from four departments, or click 'More' to see all departments.
- Display available doctors based on selected time slot and department.
- User can select doctor, view detailed info (photo, name, education), and proceed to confirm booking.

User Flow:

- **Trigger:** User clicks “Book Appointment” from the home page.
- **Actions:** Select time slots, department, and doctor; click "Modify" to change selections or "Next" to confirm.

3. Verify and Confirm Page Use Case

Description:

Users verify appointment details and confirm the booking. Notifications about appointment confirmation are displayed.

Functionalities:

- View doctor’s profile (photo, name, education, reviews).
- Option to go back and modify the booking.
- Confirmation message with the note that timing will be provided via message.

User Flow:

- **Trigger:** User clicks "Next" from the Book Appointment page.
- **Actions:** Confirm doctor details, click "Confirm" to finalize the booking, and be notified via the message section.

4. Previous Appointments Page Use Case

Description:

Allows users to view their previous appointments with details such as department, date, and time.

Functionalities:

- Display a list of past appointments.
- Option to click “View More” for detailed information on each appointment.

User Flow:

- **Trigger:** User clicks “Previous Appointments” from the home page.
- **Actions:** View past appointments, click "View More" for details.

5. Help & Support Page Use Case

Description:

Enables users to access AI-powered chat or contact human support for assistance.

Functionalities:

- AI greets the user with a “How may I help you?” message.
- Option for the user to type and interact with AI or request human support.

User Flow:

- **Trigger:** User clicks “Help & Support” from the home page.
- **Actions**: Interact with AI, or request human support via call.

6.Messages Page Use Case

Description:

The Messages page enables users to receive appointment-related notifications and interact with support (AI or human) for rescheduling, modifying, or cancelling their appointments.

Functionalities:

- Displays appointment confirmation messages, including exact timings.
- AI-powered chat for rescheduling, modifying, or cancelling appointments.
- Option to connect with human support if the user requires more assistance.
- Notification of appointment updates and reminders.

User Flow:

- **Trigger:** User clicks the message icon on the home page.
- **Actions:**
  - View appointment details and timings.
  - Interact with AI for assistance.
  - Option to connect with human support by initiating a phone call.
  - Receive notifications about appointment changes, reminders, or new messages.

7.Functional requirements

1.User Authentication and Registration:

- The system supports user registration with email or phone number and a password.
- Provides a "Sign in with Google" option for quick login.
- Registered users can log in with valid credentials, and errors are displayed for invalid login attempts.

2.Home Page:

- Displays the user's name and a personalized greeting on the top of the dashboard.
- Shows the upcoming appointment, including date, time, and options to reschedule or cancel.
- Includes a prominent message icon for accessing in-app messaging for AI or human assistance.
- Provides quick access to "Book Appointment," "Previous Appointments," and "Help & Support" sections.

3.Appointment Booking:

- Displays available time slots for the current day, with a calendar option for selecting other dates.
- Allows users to select a department, showing up to four departments with a "More" option for additional choices.
- Filters doctors based on the selected time slots and department, highlighting the chosen options.
- Provides an overview of the selected doctor, including their name, photo, education, and reviews.
- Confirms the booking with a success message, notifying users about subsequent updates via messages.

4.Previous Appointments:

- Lists past appointments with department name, date, and time.
- Offers a "View More" option for additional details about specific appointments.

5.Help & Support:

- Features an AI chat assistant to guide users with tasks like rescheduling, modifying, or cancelling appointments.
- Allows escalation to a human agent via a call button.

6.Messaging:

- Notifies users of the exact appointment timing after confirmation via the in-app messaging system.
- Provides a "Go to Messages" option immediately after booking, allowing users to view updates or interact with the provider.

- Enables users to communicate with AI for assistance or escalate to a human agent for support directly within the messaging interface.
- All pages, except the home page, include a home icon for returning to the dashboard seamlessly.

8.Non-Functional Requirements

1.Performance:

- The splash screen must load within 2 seconds, and all user actions, such as booking or navigation, should respond within 1 second.

2.Scalability:

- The system is designed to handle up to 100,000 concurrent users without performance issues.
- Easily accommodates changes such as adding new departments or doctors.

3.Usability:

- Intuitive interface ensures accessibility for all user demographics, including older adults.
- Highlights critical information like time slots and doctor availability using visually distinct colours.

4.Reliability:

- Achieves 99.9% uptime, ensuring consistent service during peak usage hours.
- Stores user data redundantly to prevent loss during unexpected failures.

5.Security:

- Encrypts all user data during storage and transmission to protect privacy.
- Meets GDPR and HIPAA compliance standards for data protection.

6.Accessibility:

- Adheres to WCAG 2.1 guidelines for accessibility, supporting features like screen readers and adjustable font sizes.

7.Cross-Platform Compatibility:

- The application functions consistently on both Android and iOS devices.

8.Localization:

- Offers multi-language support, allowing users to select their preferred language for navigation.

9.Maintainability:

- Uses a modular architecture, enabling easy updates to features like departments, doctor details, or appointment workflows.

9.Success Metrics

1. Upcoming Appointment Notification Bar (Home Screen)

Metric: Reduction in user navigation complexity

Goal: 90% of users successfully identify their upcoming appointment directly from the Home Page notification bar without needing to navigate through multiple screens.

Measurement: Track user interaction with the appointment notification bar to measure if users are selecting the "reschedule" or "cancel" options directly from the home page.

2. Vibrant Colours for Important Information

Metric: Improved readability and engagement

Goal: 95% of users report being able to easily view and understand the date and time information for appointments in outdoor conditions, particularly for older adults.

Measurement: Survey user feedback on visual clarity, particularly for the older demographic, and track user engagement with the color-coded time slots and dates.

3. Instant Support (Messages Icon)

Metric: Increase in instant support usage

Goal: 80% of users use the Messages icon to interact with either AI or a human representative when they need support.

Measurement: Track frequency of "Messages" usage and interactions with the AI and human representatives.

4. Sufficient Doctor Information Before Booking

Metric: Higher booking confidence

Goal: 85% of users feel confident in booking an appointment after viewing the doctor's basic details (name, photo, qualifications, reviews).

Measurement: Measure the abandonment rate on the doctor selection screen, as well as post-booking user feedback about the sufficiency of the doctor's information.

5. Doctor-Centric Slot Selection

Metric: Reduction in booking errors or confusion

Goal: 90% of users report no confusion in booking slots due to the time slot-centric approach.

Measurement: Track user behaviour regarding slot selection, as well as feedback on any difficulties in selecting the appropriate doctor.