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

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1.Introduction

This case study focuses on the development of the Appointment Scheduling System for healthcare providers, designed to streamline the appointment management process and enhance communication with patients. The system was developed by understanding the specific challenges faced by providers, as identified through detailed user stories, ensuring each feature directly addresses real-world issues.

2.Problem and Approach

The application solves several key challenges faced by healthcare providers:

- Difficulty in accessing patient data quickly during calls.
- Challenges in confirming doctor availability and contacting them efficiently.
- Inefficiencies in notifying both patients and doctors about finalized appointments.
- Concerns about direct booking causing scheduling conflicts or errors.
- The solution focuses on enabling providers to manage appointments efficiently, with real-time access to patient and doctor information, and streamlined communication features to minimize errors and improve workflow.

3.Key Features

- **Provider Dashboard:** A central interface to manage patient data, doctor details, and appointment information.
- **Easy Access to Patient Data:** Quick access to patient history, including appointment details and previous interactions.
- **Doctor Availability:** Clear display of doctor availability, reducing time spent confirming schedules.
- **Booking and Notification System:** Streamlined appointment booking process with a single notification system for both patients and doctors.
- **Real-Time Communication:** Message and call options to facilitate easy communication with patients and doctors.
- **Provider-Patient Communication:** Effective communication between healthcare providers and patients is crucial for smooth appointment management. Providers can view patient details, confirm bookings, and communicate any changes directly through the application, ensuring that both parties are kept informed and up-to-date.

This case study will cover the provider side's features, functionality, and the metrics used to measure the success of these improvements.

4.Provider Stories

1.Avoiding Issues with Direct Booking

As a provider, I worry that if the app directly books appointments, it could lead to scheduling conflicts or issues when sudden changes arise. I prefer having control over the final booking process after understanding the patient’s preferred time slots and requirements to ensure everything aligns properly.

2.Need for Patient Data During Calls

As a provider, I find it challenging to provide personalized support during calls with patients because I lack easy access to their appointment history and relevant details during the interaction.

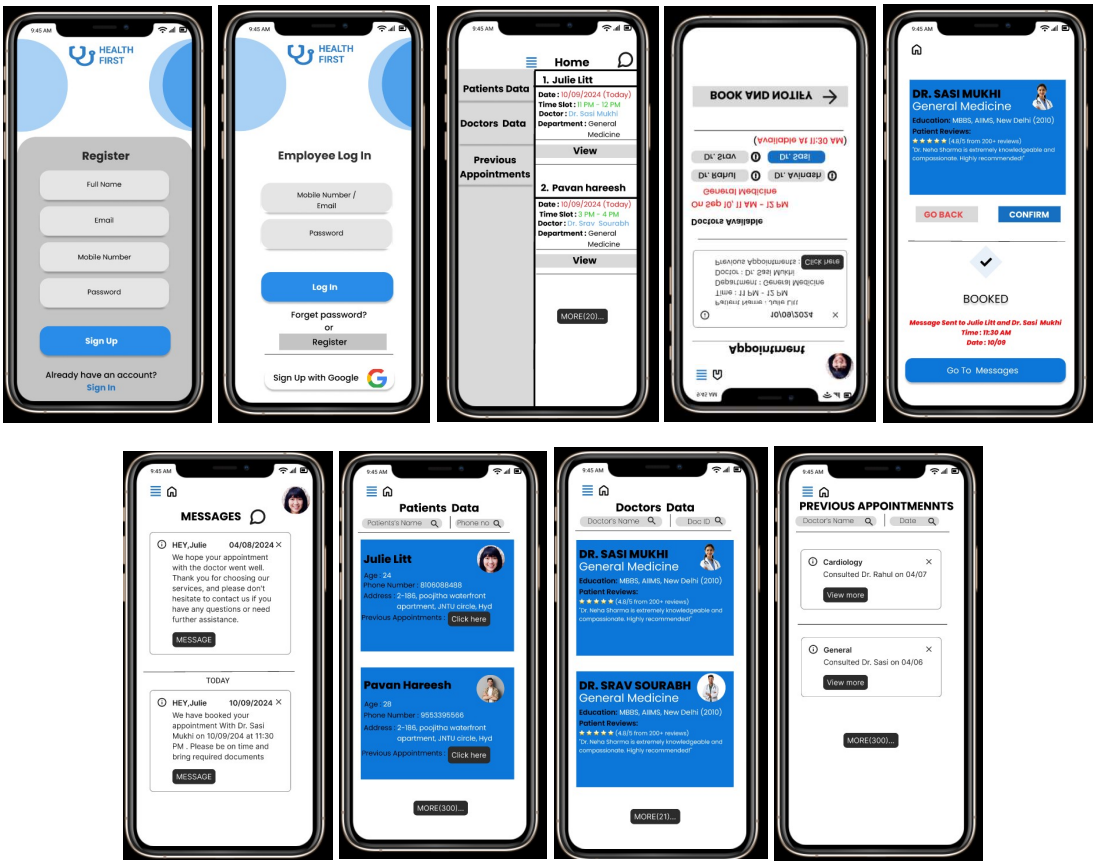
3.Difficulty Reaching Doctors for Confirmation

As a provider, I often need to check with doctors about their availability, but it can be time-consuming if their contact information isn't readily accessible when required.

4.Dual Notification Challenges:

As a provider, I find it inefficient to notify patients and doctors separately about finalized appointments, which adds unnecessary steps to my workflow and increases the risk of miscommunication.

5.Prototype



Link to the Prototype: https://www.figma.com/proto/mWMPqPNKDiA0EkX1uott73/Health-first-Provider?node-id=1-620&node-type=canvas&t=xgaubLPJ79TsXC0i-1&scaling=scale-down&content-scaling=fixed&page-id=0%3A1

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

Description: The home page displays an index on the left with three sections: Patient Data, Doctor Data, and Previous Appointments. It allows the provider to view patient information, manage appointments, and navigate between different sections.

Functionalities:

- Index with three sections: Patient Data, Doctor Data, and Previous Appointments.
- Displays patient data with appointment details: name, date, time, doctor, and department.
- "View" button to go to detailed appointment pages.

User Flow:

- Provider logs in and lands on the Home Page.
- The index allows navigation to Patient Data, Doctor Data, or Previous Appointments.
- The provider clicks "View" to see appointment details for a specific patient.

2. Appointment Page

Description: The appointment page lets the provider view and manage a patient's appointment, select a doctor, and confirm or notify the patient.

Functionalities:

- Displays patient details (name, age, contact, etc.).
- Highlights the selected doctor and shows their available times.
- "Book" or "Notify" options to confirm the appointment.

User Flow:

- Provider clicks "View" on the Home Page to go to the Appointment Page.
- They select a doctor and view their availability.
- The provider clicks "Book" or "Notify" to confirm the appointment.

3. Message Page

Description: The message page allows the provider to communicate with the patient regarding appointment details, rescheduling, or notifications.

Functionalities:

- Direct messaging system with patients.
- AI chat support and human contact option.
- Displays message history with the patient.

User Flow:

- After confirming the appointment, the provider clicks "Go to Messages".
- The provider can chat with the patient or use AI support.
- Message history is displayed for easy reference.

4. Patient Data Page

Description: The Patient Data page enables the provider to search for patient details using their name or phone number.

Functionalities:

- Search bars to find patients by name or phone number.
- Displays patient's profile with contact info and previous appointments.
- "Previous Appointments" link to view detailed appointment history.

User Flow:

- Provider clicks Patient Data from the Home Page index.
- The provider searches for a patient.
- Clicks on the patient's profile to view details and previous appointments.

5. Doctor Data Page

Description: The Doctor Data page allows the provider to view all available doctors, their specialties, and their schedules.

Functionalities:

- Displays a list of doctors with their specialties.
- Shows the doctor's available time slots for appointments.

User Flow:

- Provider clicks Doctor Data from the Home Page index.
- The provider views the list of doctors and selects one to view their availability.

6. Previous Appointments Page

Description: The Previous Appointments page displays a history of appointments, helping the provider track patients' treatment history.

Functionalities:

- Displays past appointment details including patient name, department, doctor, and time.
- "View More" option to see full appointment details.

User Flow:

- The provider clicks Previous Appointments from the Home Page or any other page.
- The provider views a list of past appointments and clicks "View More" for additional details.

7. Functional Requirements

1.Provider Authentication and Registration:

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

2.Home Page:

- Displays a provider's dashboard with quick access to sections like "Patient Data," "Doctor Data," and "Previous Appointments."
- Displays patient appointment details, including name, time, department, and doctor.
- Displays a list of multiple patients' data with the option to view more detailed information.
- Allows providers to access messages and communicate with patients directly or through AI support.

3.Appointment Management:

- Displays detailed patient appointment data with options to view patient history and book appointments.
- Provides access to doctors' availability for confirming bookings.
- Displays the selected doctor's profile, including their name, department, available times, and previous patient reviews.
- Confirms appointments and notifies both the patient and doctor about the scheduled appointment.

4.Patient Data:

- Allows providers to search for patients using their name or phone number.
- Displays detailed patient information, including name, age, phone number, address, and appointment history.
- Provides a "View Previous Appointments" option for detailed patient history.

5.Doctor Data:

- Displays a list of doctors available for appointments, including their specialty and availability.
- Allows the provider to search for doctors by name or specialty.
- Providers can view the doctor's profile, including education, availability, and past reviews.

6.Previous Appointments:

- Lists previous appointments with patient name, department, date, and time.
- Provides a "View More" option for detailed appointment information.

7.Messages:

- Displays an in-app messaging system for communication with patients and AI support.
- Allows providers to escalate to a human agent for further support when needed.

8.Navigation:

- All pages, except the home page, include a home icon for easy navigation back to the provider's dashboard.

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.Avoiding Issues with Direct Booking (Control over Final Booking Process):

Metric: Reduced scheduling conflicts by 25% through provider-controlled appointment confirmations.

Goal: Ensure that providers have the ability to confirm or reject appointments based on patient preferences, ensuring alignment and reducing errors in the booking process.

2.Need for Patient Data During Calls (Access to Patient History):

Metric: Increased provider satisfaction by 30% through easy access to detailed patient data (name, contact, appointment history) during calls.

Goal: Allow providers to view patient data quickly during calls, reducing wait times and improving call efficiency.

3.Difficulty Reaching Doctors for Confirmation (Easy Access to Doctor Contact Info):

Success Metric: Reduced delays by 20% in confirming doctor availability via streamlined contact info access.

Goal: Provide quick access to doctor details to allow providers to efficiently confirm availability for appointments.

4.Dual Notification Challenges (Efficient Notification System for Patients and Doctors):

Success Metric: Reduced notification errors by 15% through a single notification system for both patients and doctors.

Goal: Streamline appointment confirmation and notification processes to avoid redundant communication steps and minimize scheduling mistakes.

These metrics will help track the success of your provider-side features and ensure that each problem is addressed with measurable outcomes.