Software Requirements Specification (SRS)

1. Title Page:

- **Project Title:-**The Doctor Appointment Booking Website
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- **Date of Submission-13.8.2025**

2. Abstract:

Our Doctor Appointment Booking Website is designed to remove barriers and makes booking appointments faster and easier. The primary objective of The Doctor Appointment Booking Website is to make scheduling appointments more convenient and efficient through a platform that allows patients to easily schedule medical appointments with doctors. We aim to create a Web-based platform to improve convenience, efficiency, and connectivity, helping reduce no-shows during appointments and enable a more accessible healthcare environment.

The system allows patients to browse doctor profiles, check available time slots, and book appointments from their device. It will also send automated reminders to reduce missed appointments and maintain a history of past bookings.

3. Table of Contents:

4. Introduction:

In today's connected world, technology and patient-focused care must work hand in hand. Our Doctor Appointment Booking Website is designed to transform how patients and healthcare providers interact. With features like cross-platform access, smart scheduling, and secure data sharing, it removes common barriers and makes booking appointments faster and easier. The goal is to improve convenience, efficiency, and connectivity, helping create a more accessible and modern healthcare experience.

4.1 Purpose

The primary objective of The Doctor Appointment Booking Website is to develop a convenient and efficient platform that allows patients to easily schedule medical appointments with doctors. The site aims to simplify the booking process by providing real-time availability, eliminating the need for phone calls or in-person visits to clinics, thus saving time for both patients and healthcare providers.

This project is highly relevant to the community as it addresses common challenges such as long waiting times, appointment overlaps, and communication gaps between patients and doctors. By streamlining the appointment process, the site enhances access to healthcare services, reduces missed appointments, and contributes to better patient management. Ultimately, it promotes timely medical consultations and improves the overall healthcare experience for users.

4.2 Scope

The Doctor Appointment Booking Website is designed to provide an easy-to-use digital platform for scheduling doctor appointments. The system enables patients to browse doctor profiles, check available time slots, and book appointments seamlessly from their smartphones or computers. Additionally, it sends automated reminders to reduce missed appointments and maintains a history of past bookings.

Key Features:

1. User registration and secure login.
2. Doctor profile browsing by specialization and location
3. Real-time appointment scheduling with available time slots
4. Automated appointment reminders via notifications or email
5. Appointment history and cancellation options
6. Admin panel for managing doctors, patients, and appointments

How project will benefit society:

This system enhances access to healthcare by simplifying appointment management, reducing waiting times, and minimizing no-shows. It facilitates better communication between patients and healthcare providers, improving overall patient satisfaction and operational efficiency.

4.3 Definitions, Acronyms, and Abbreviations

- **Site** – Short for "Website," referring to the Doctor Appointment Booking Website being developed.
- **UI (User Interface)** – The part of the system that users interact with, including screens, buttons, and navigation elements.
- **UX (User Experience)** – The overall experience and ease of use when interacting with the site.
- **API (Application Programming Interface)** – A set of functions and protocols that allow software components to communicate with each other (e.g., for sending notifications or authentication).
- **DBMS (Database Management System)** – Software used to store, manage, and retrieve data such as doctor profiles, appointments, and patient records.
- **Authentication** – The process of verifying a user's identity, typically via username and password.
- **Admin** – An administrator with elevated privileges who manages doctors, patients, and appointments within the system.
- **Patient** – A user who registers on the site to book medical appointments.
- **Doctor** – A healthcare provider registered in the system who offers appointments to patients.
- **Cross-platform** – The ability of the site to run on multiple operating systems (Android, iOS, Web).
- **Notification** – An alert sent to a user via email, SMS, or website alert to remind or inform them of appointments.

4.4 References

- Online Appointment System (OAS) Impact, Frontiers in Digital Health , 2025
- Smart Healthcare Appointment System, International Journal of Research Publication and Reviews
- Doctor Appointment System, International Conference on Innovative Computing & Communication (ICICC), presented December 19, 2024.

5. Overall Description

5.1 Product Perspective
This system is designed to provide online doctor appointment booking and management. It connects patients, doctors, and optionally administrators through a centralized platform.

5.2 Product Functions
- Patients can search doctors by specialty, availability, and location.
- Allows patients to book, reschedule or cancel appointments.
- Allows doctors to manage their profiles.
- Appointment schedule management for doctors.
- Notifications and reminders for appointments.
- Feedback and review system.

5.3 User Classes and Characteristics
There are three types of users who will interact with the system:
1. Patients
2. Doctors
3. System Administrators

5.4 Operating Environment
The system will operate on any standard device. It will be accessible via standard Web Browsers like Chrome, Firefox, Edge, and others.

5.5 Design and Implementation Constraints
- The proposed system must be completed before the deadline.
- Limited resources for hosting, maintenance, and third-party APIs (e.g., payment gateway).
- Knowledge of web development, database management, and cybersecurity is required.
- Some users may not have access to the internet or be unable to use devices.

5.6 Assumptions and Dependencies
- Users (patients/doctors) will have internet access and basic digital literacy.
- Payment gateway and notification services (SMS/email) will be available and reliable.
- Doctors will maintain accurate availability schedules.
- System depends on third-party tools (e.g., hosting services, authentication APIs).

6. Specific Requirements

6.1 Functional Requirements

- **FR1**: The system shall allow new users (patients and doctors) to register and create an account with unique credentials.
- **FR2**: The system shall authenticate users through secure login with username and password.
- **FR3**: The system shall allow patients to browse doctor profiles by specialization, name, and location.
- **FR4**: The system shall display real-time availability of doctors' appointment slots.
- **FR5**: The system shall allow patients to book appointments with selected doctors.
- **FR6**: The system shall allow patients to cancel or reschedule previously booked appointments.
- **FR7**: The system shall send automated reminders and notifications to patients for upcoming appointments.
- **FR8**: The system shall allow doctors to set, update, or block their availability schedules.
- **FR9**: The system shall allow doctors to view their daily, weekly, and monthly appointment schedules.
- **FR10**: The system shall provide an appointment history log for patients and doctors.
- **FR11**: The system shall allow the admin to manage doctor and patient accounts.
- **FR12**: The system shall allow the admin to add, edit, or remove doctor profiles.
- **FR13**: The system shall ensure secure storage and retrieval of patient and appointment data using a database.
- **FR14**: The system shall generate summary reports of appointments for admin usage.
- **FR15**: The system shall provide logout functionality for all users.

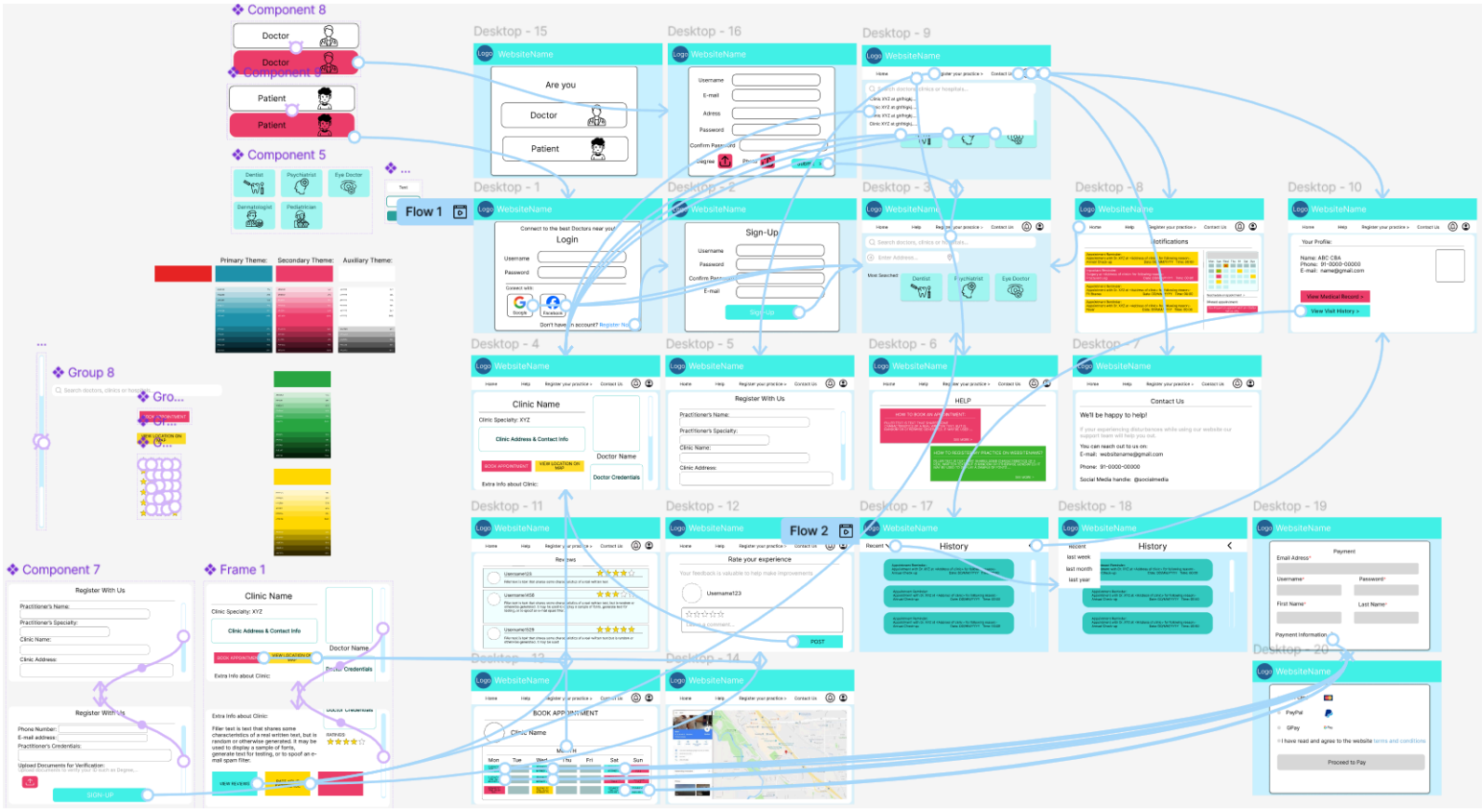
6.2 Non-Functional Requirements

- **NFR1 (Performance):** The system shall support a minimum of 500 concurrent users without significant performance degradation.
- **NFR2 (Reliability):** The system shall maintain at least 99% uptime, with backup and recovery mechanisms for unexpected failures.
- **NFR3 (Scalability):** The system shall be capable of handling an increasing number of users, doctors, and appointments as the user base grows.

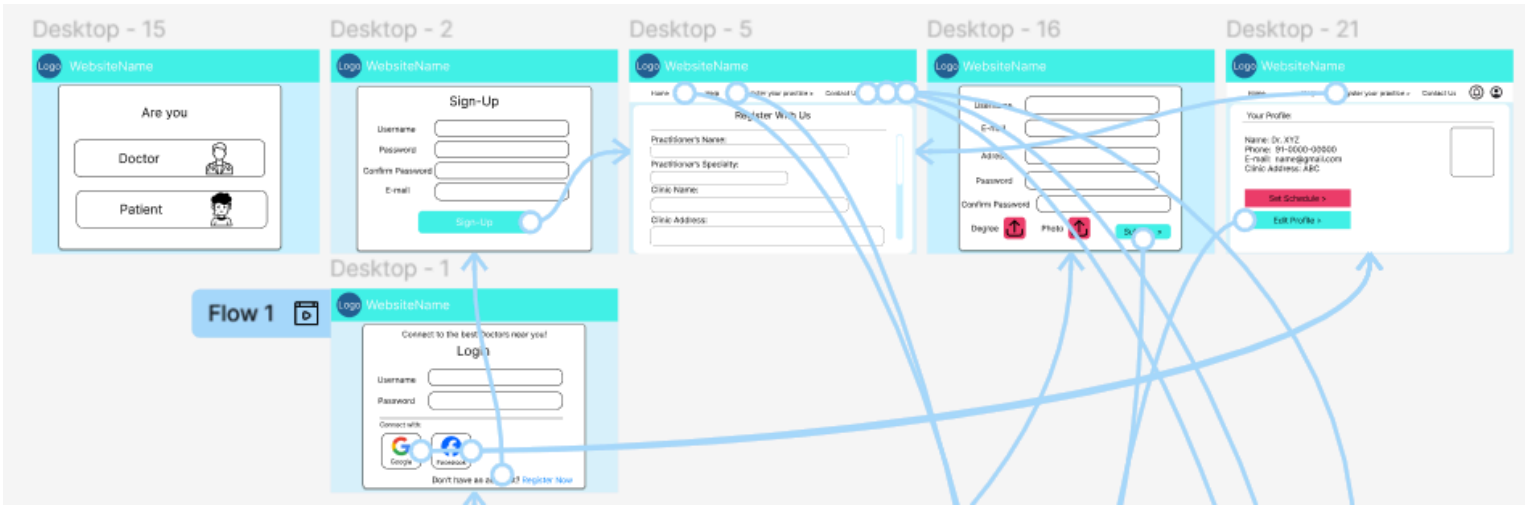
- **NFR4 (Security):** The system shall ensure secure login, encrypted data transmission (HTTPS), and role-based access control.
- **NFR5 (Usability):** The site shall have an intuitive and user-friendly interface that requires minimal training for first-time users.
- **NFR6 (Maintainability):** The system shall be modular and easily maintainable to allow future updates and feature enhancements.
- **NFR7 (Portability):** The system shall run smoothly on Android, iOS, and web browsers without compatibility issues.
- **NFR8 (Response Time):** The system shall load and display appointment details within 3 seconds under normal conditions.
- **NFR9 (Data Privacy):** The system shall comply with healthcare data privacy standards to protect sensitive patient and doctor information.
- **NFR10 (Availability):** The system shall be accessible 24/7, except during scheduled maintenance.

7. External Interface Requirements

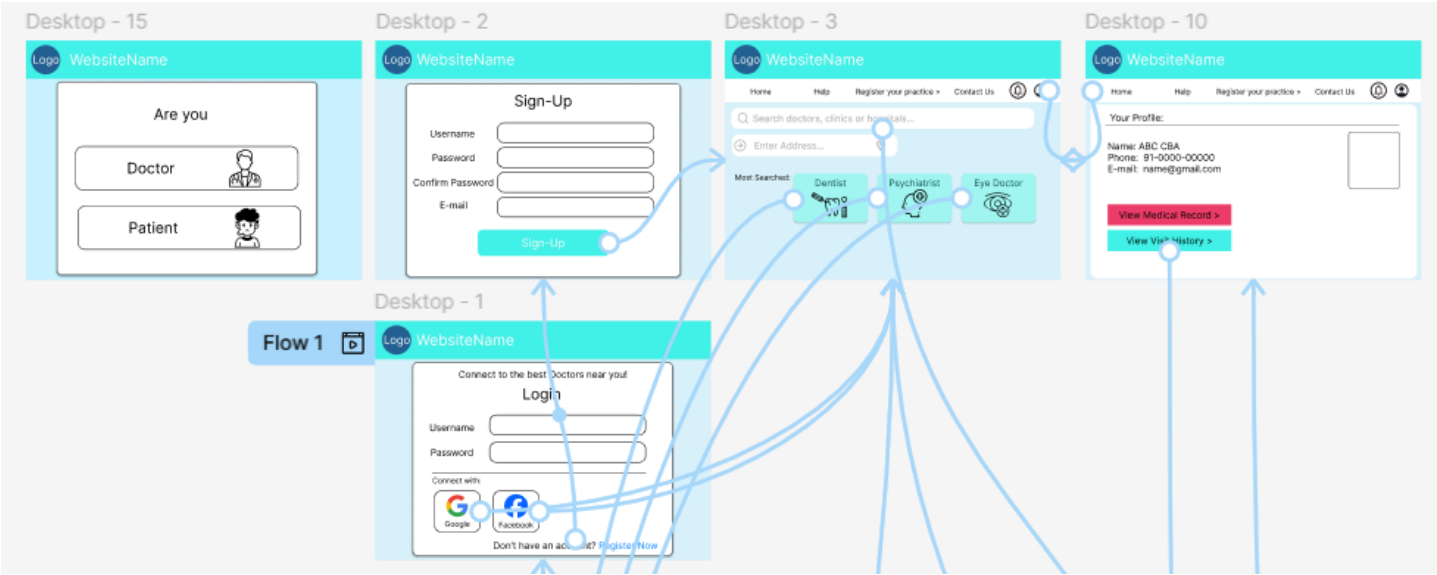
7.1 User Interfaces



Doctor Login & Registration:



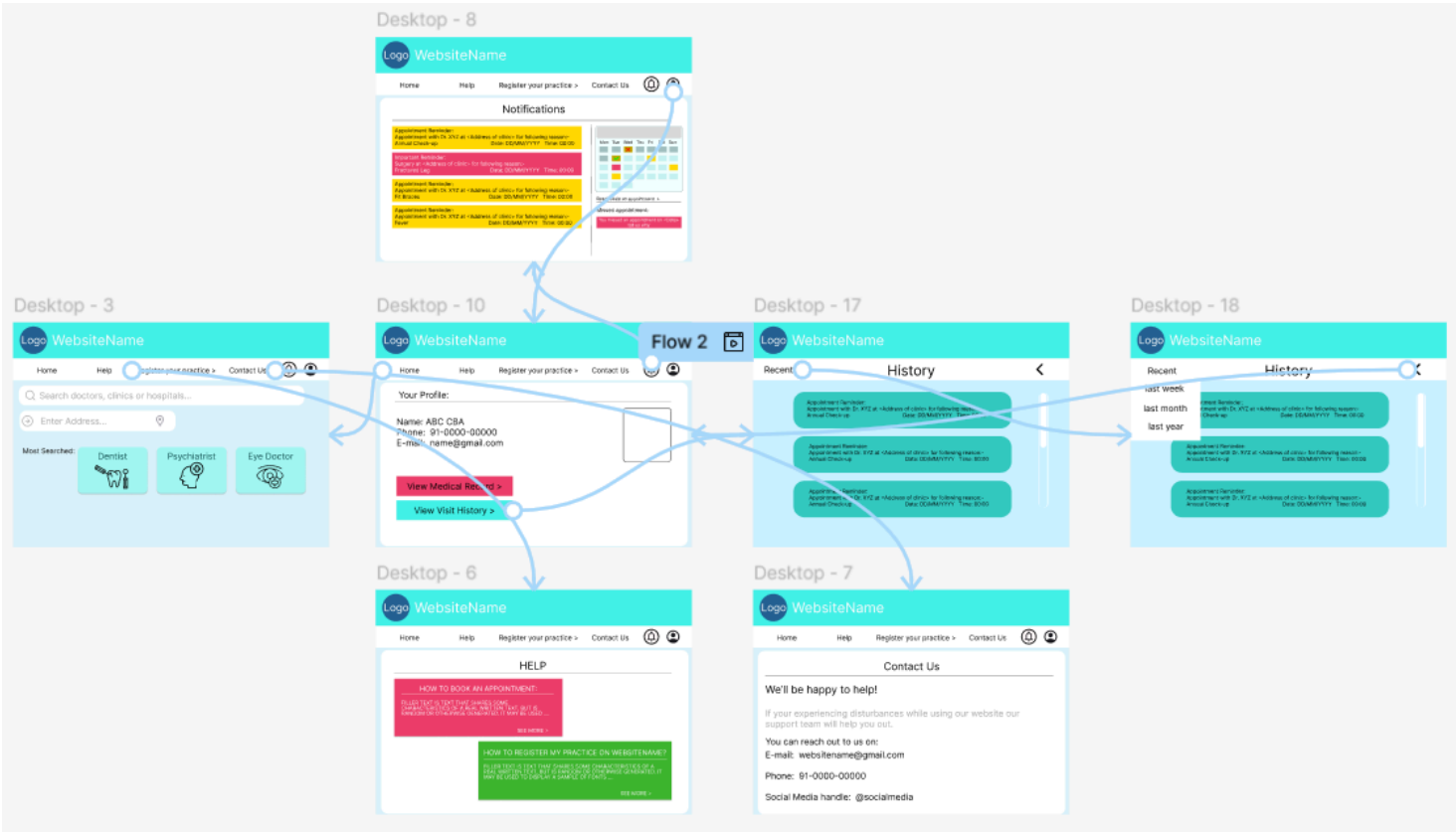
User Login & registration:



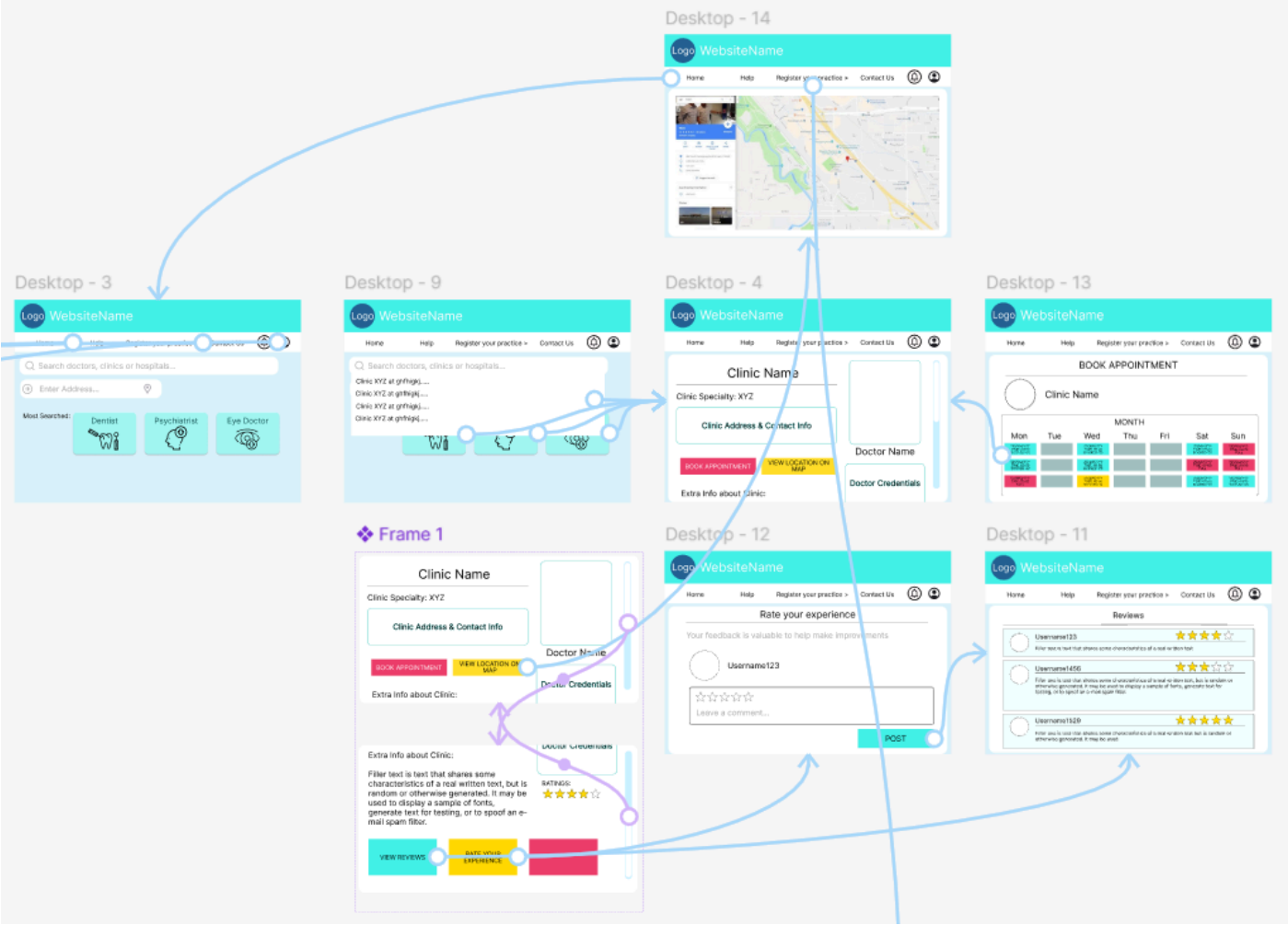
User Actions:

1. Book Appointment:

2. User Profile



3. Viewing Doctor Profile



7.2 Hardware Interfaces:

The Doctor Appointment Booking Website will be designed to run on commonly available hardware devices with internet connectivity. These devices will include:

- **Patient Devices:**
  - Desktop or laptop systems with at least 4 GB RAM, running a modern browser.
- **Doctor Devices:**
  - Desktop or laptop systems with internet access for detailed schedule management.
- **Admin Devices:**
  - Desktop or laptop computers with stable internet connectivity to access the admin panel.
  - Minimum specifications: 4 GB RAM, 64-bit processor, and modern web browser support.

- **Connectivity Requirements:**
    - Active internet connection (Wi-Fi or Mobile Data with minimum 3G, recommended 4G/5G).
    - Push notifications require continuous internet or mobile data connectivity.

7.3 Software Interfaces

The Doctor Appointment Booking Website will integrate with various software components and APIs to ensure seamless functionality. The required software interfaces include:

- **Operating Systems**
    - Windows 10 / 11 and Linux (for web-based access)
- **Browsers**
    - Chrome, Firefox, Bing, Safari, etc.
- **Database Management System (DBMS)**
    - **MongoDB** for storing user details, doctor profiles, appointment schedules, and history.
- **Authentication and Security**
    - **JWT (JSON Web Tokens)** or **OAuth 2.0** for secure user login and session management.
    - **HTTPS** protocol for secure communication.

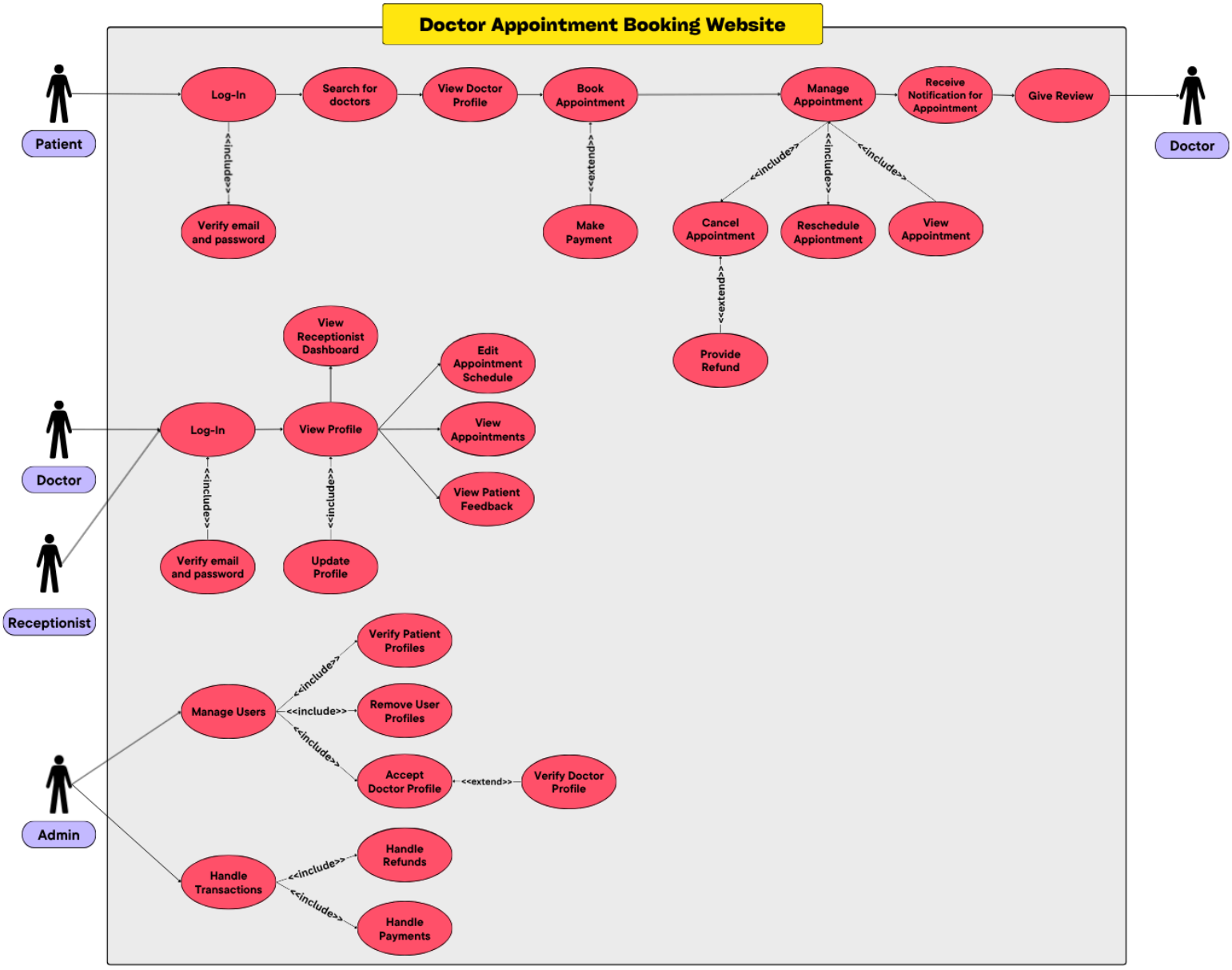
- **Notification Services**
    - **Firebase Cloud Messaging (FCM)** for push notifications on Android/iOS.
    - **SMTP (Email API)** for sending confirmation and reminder emails.
    - **SMS Gateway API** (optional) for appointment reminders.
- **Payment Integration (Future Scope)**
    - API for online consultation fee payments (e.g., Razorpay, PayPal, or Stripe).
- **Third-Party Tools**
    - **Google Maps API** for location-based doctor search.
    - **Calendar API** for syncing appointments with patient/doctor calendars.

7.4 Communication Interfaces

The Doctor Appointment Booking Website requires stable communication interfaces to ensure smooth interaction between patients, doctors, and the system. The following communication interfaces are supported:

- **Internet Connectivity**
  - Primary mode of communication between the website, server, and database.
  - Supports **Wi-Fi** and **Mobile Data (3G, 4G, 5G)**.
  - Minimum required speed: **1 Mbps**, recommended **5 Mbps** for smooth performance.
- **Network Protocols**
  - **HTTPS** protocol for secure client–server communication.
  - **RESTful APIs** for communication between front-end and back-end systems.
  - **TLS/SSL encryption** for protecting sensitive medical and personal data.
- **Push Notifications**
  - Real-time communication supported via **Firebase Cloud Messaging (FCM)**.
  - Requires active internet connection on mobile devices.
- **Email & SMS Services**
  - **SMTP** for sending appointment confirmations and reminders via email.
  - **SMS Gateway API** for text-based notifications.
- **Bluetooth & Offline Mode (Future Scope)**
  - The current version does **not** require Bluetooth or NFC.
  - Future versions may include **Bluetooth integration** for on-site check-ins at clinics.

8. Use Case Diagram & Description



Patient Use Cases:

1. **Log-In**
   - The patient enters login credentials to access the platform.
2. **Verify Email and Password**
   - The system authenticates the patient's login credentials. If valid, access is granted; otherwise, an error message is shown.
3. **Search for Doctors**

- The patient can search doctors by specialty, name, location, or available slots to find a suitable doctor.

4. **View Doctor Profile**
    - Displays doctor's details such as qualifications, clinic address, specialty, availability, experience, and patient reviews.
5. **Book Appointment**
    - Allows the patient to choose a doctor, select a time slot, and confirm the appointment.
6. **Make Payment**
    - Handles online payments for consultation or booking fees through secure payment gateways.
7. **Manage Appointment**
    - A patient can view, reschedule, or cancel existing appointments.
8. **Cancel Appointment**
    - Enables patients to cancel booked appointments. A refund may be granted if eligible.
9. **Reschedule Appointment**
    - Allows patients to shift the appointment to another available time slot.
10. **Provide Refund**
    - If cancellation rules are met, the system processes refunds to the patients.
11. **View Appointment**
    - The patient can check details of upcoming or past appointments for tracking and records.
12. **Receive Notification for Appointment**
    - The system sends reminders and notifications about upcoming appointments, cancellations, or reschedules.
13. **Give Review**
    - After the consultation, the patient can submit feedback and rate the doctor's services.

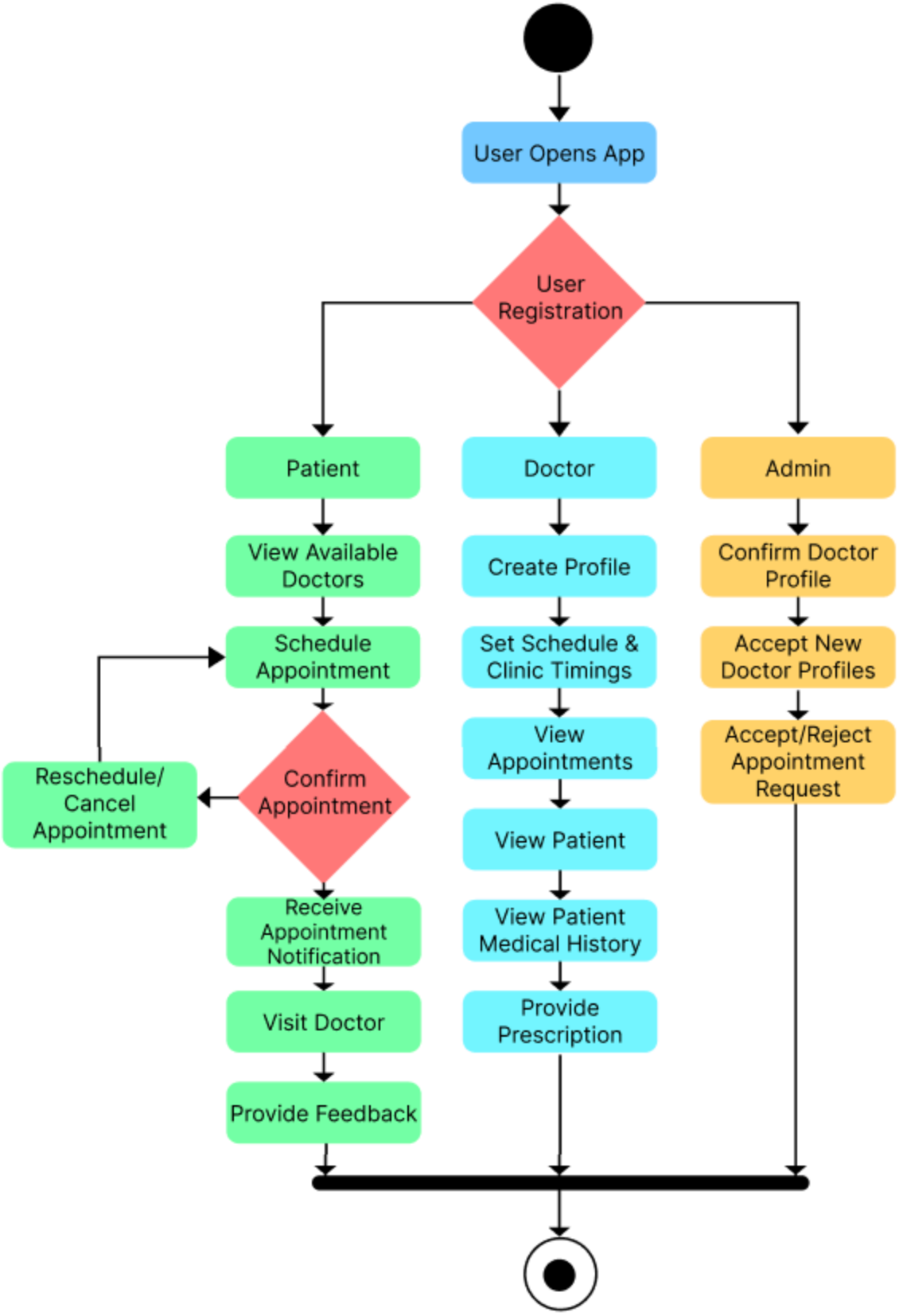
Doctor Use Cases

1. **Log-In**
    - The doctor enters login credentials to access the platform.
2. **Verify Email and Password**
    - The system validates credentials to ensure only registered doctors gain access.
3. **View Profile**
    - Doctors can view their own professional details, availability, and clinic information saved in the system.
4. **Update Profile**

- Allows doctors to update their qualifications, specialties, clinic details, and other relevant professional information.

5. **Edit Appointment Schedule**
    - Doctors can set, update, or block time slots to manage patient booking availability.
6. **View Appointments**
    - Displays a list or calendar of all patient appointments, helping the doctor plan their schedule effectively.
7. **View Patient Feedback**
    - Doctors can access feedback and ratings left by patients to evaluate service quality and improve care.

9. Activity Diagram / Flow Chart



10. References

Community Visit Reports

- Feedback collected during visits to local clinics where patients expressed difficulties in booking appointments, long waiting times, and lack of real-time scheduling systems.
- Observations highlighted the need for a digital platform to streamline communication between patients and doctors.

Survey Results

A survey conducted among 50+ community members (patients and healthcare staff) revealed:

- 72% of patients prefer mobile-based appointment booking over in-person visits.
- 65% reported missed or delayed consultations due to scheduling conflicts.
- 80% of doctors indicated the need for automated reminders to reduce no-shows.

Stakeholder Feedback

- Patients requested features such as easy doctor search, appointment history, and notification reminders.
- Doctors emphasized the need for availability management and calendar integration.
- Administrators recommended secure data management and a centralized panel for oversight.

Community Visit Photos


Make it simple
but significant