ArogyaMithra

Your Personal Healthcare Assistant

OOD&P Project Report

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1 Idea behind the app

ArogyaMithra, a healthcare assistant app is aimed to be designed as a user-friendly platform, efficiently managing healthcare needs and bridging the gap between users and healthcare providers. With features like appointment scheduling, video consultations, and symptom analysis, the app aims to empower users, enhancing their overall healthcare experience. The goal is to create a holistic and accessible solution that simplifies healthcare journeys and fosters collaboration between users and healthcare professionals.

2 The Problem

Many people in India, requiring regular health monitoring, medication adherence, and lifestyle modifications, struggle to access quality and affordable healthcare services due to various factors (Especially in lockdown). ArogyaMithra is an app that makes healthcare easy and accessible by offering various features such as appointment booking, doctor finding, review system, report access, schedule management, and setting customization.

3 Potential Competitors

The following are some applications who are in potential to be competitors for ArogyaMithra.
Teladoc, Amwell feature Video consultations, virtual visits, remote healthcare services.
WebMD, Ada Health feature Symptom analysis, health tracking, personalized health insights.
Zocdoc, Doximity feature Appointment scheduling, doctor discovery, patient reviews.

4 Uniqueness of ArogyaMithra

Some of the features that make our app stand out are:

- A multilingual platform that supports all Indian official languages along with English, making it accessible and user-friendly for a large population of India.
- A smart symptom checker that uses natural language processing (NLP) and artificial intelligence to analyze the user's input and suggest the most suitable doctors and treatments.

- A rating and review system that allows users to share their feedback and experiences with different doctors and clinics, helping them make informed choices and improving the quality of healthcare services.
- A secure and encrypted data storage and transmission that ensures the user's privacy and confidentiality, complying with the Indian laws and regulations on data protection.

5 End Users in the market

5.1 Number of End Users

ArogyaMithra can be considered as a **Medium-Scale** App which implies this is a healthcare assistant app with broader regional or national targeting which could potentially attract tens of thousands to tens of lakhs of users across the country.

5.2 Age Group of End Users

1. **Young Adults (18-35) :** This age group is likely to use the app for general health management, preventive care, and occasional consultations.
2. **Middle-Aged Adults (36-55) :** Individuals in this age group may use the app for managing chronic conditions, regular health checkups, and scheduling appointments.
3. **Seniors (55+) :** Older adults may use the app for healthcare management, appointment scheduling, and accessing health records.

6 Lifespan of the System

The lifespan of ArogyaMithra app will depend on various factors, including technological advancements, changes in healthcare practices, user needs, ongoing maintenance and the competitive landscape.
Typically, our app based on healthcare assistant is designed for long-term use (about 5-10 years), and with regular updates and adaptations to evolving requirements, the system can remain relevant for several years. Continuous updates, security enhancements, and adaptation to emerging technologies will play essential role in extending the life span of our app.

7 Cost of development of the project

The cost of developing the ArogyaMithra app will depend on factors such as project complexity, features, development team rates, technology stack, and any regulatory compliance considerations. Given the outlined use cases, which include features like appointment booking, online consultations, clinic visits, managing appointments, and accessing reports, the development is likely to be moderately complex.
The cost estimation will include:
Development Team: Project managers, designers, developers, and QA testers.
Technology Stack: Costs associated with selecting and implementing the necessary technologies.
Integration with Third-Party Services: If utilizing external services for video calling or other functionalities, there may be associated costs.
Regulatory Compliance: Ensuring compliance with healthcare regulations may involve additional costs.
The estimated cost could range from 5 Cr INR to 15 Cr INR.

8 Licenses required for development of the project

Here is the list of licenses needed for development of our project.

1. **License for development:** Dart, the programming language used with Flutter, also has a permissive open-source license, similar to the Flutter framework.

2. **Healthcare Regulations:** This app needs approval or registration from relevant healthcare authorities to ensure compliance with healthcare regulations and standards.

3. **Data Protection and Privacy:** To adhere to data protection and privacy laws. In India, the Personal Data Protection Bill is under consideration, and compliance with data protection principles is essential for this app.

4. **Software Licenses:** Depending on the software and libraries used, this app needs compliance with relevant open-source licenses.

5. **Payment Gateway:** As this app involves financial transactions and to integrate with approved payment gateways, this app needs to comply with relevant financial regulations.

6. **Medical Council Approvals:** The app involves providing medical advice or consultations, So it must be checked whether approval from medical councils or authorities is required.

7. **Insurance:** For considering insurance coverage, as this app may handle sensitive health data or providing healthcare services.

9 Devices required for implementation of the project

1. **Development :** For the purpose of development macOS is required for ios based platforms and windows/linux is required for android based platforms.
2. **Testing :** For testing the applications various smartphones or emulators are required.
3. **Using :** After the implementation, for using Cam/webcam and microphone are needed. As this is a server based application networking devices are also required.

10 Stakeholders and their Responsibilities

In the context of a healthcare assistant app project, various stakeholders play essential roles throughout the development life-cycle. Here are some key stakeholders and their responsibilities:

1. **Project Sponsor:**
   - Provides financial support and resources for the project.
   - Defines the project's high-level goals and objectives.
   - Ensures alignment with the overall business strategy.
   - Reviews and approves major project milestones.
2. **Product Owner:**
   - Represents the end-users and stakeholders.
   - Defines and prioritizes the product backlog.
   - Collaborates with the development team to create user stories.
   - Makes decisions regarding the product features and functionalities.
3. **Development Team (Developers, Designers, Testers):**
   - Developers: Code the app based on the requirements.
   - Designers: Create the user interface and user experience.
   - Testers: Conduct testing, identify and report bugs, ensure software quality.

4. **Project Manager:**
    - Plans and schedules project activities.
    - Manages resources and budgets.
    - Coordinates communication between team members.
    - Monitors progress and addresses risks and issues.
5. **Healthcare Professionals (Doctors):**
    - Provide insights into healthcare workflows and requirements.
    - Collaborate in designing features that align with medical practices.
    - Test and provide feedback on the usability of the app.
6. **Data Security Officer:**
    - Ensures compliance with data protection laws and regulations.
    - Defines and implements security measures for user data.
    - Conducts risk assessments related to data security.
7. **Regulatory Compliance Officer:**
    - Ensures the app complies with healthcare regulations.
    - Monitors changes in regulations and updates the development team.
    - Assists in preparing documentation for regulatory approval.
8. **UX/UI Consultant:**
    - Advises on user experience and interface design.
    - Conducts usability testing and gathers user feedback.
    - Ensures the app is intuitive and user-friendly.
9. **Marketing Team:**
    - Develops a marketing strategy for the app.
    - Creates promotional materials and campaigns.
    - Gathers user feedback for marketing insights.
10. **Customer Support Team:**
    - Provides assistance to users regarding app usage.
    - Collects and forwards user feedback to the development team.
    - Resolves user issues and concerns.

11. **System Administrator:**

    - Manages the deployment and maintenance of the app infrastructure.
    - Monitors system performance and addresses technical issues.
    - Ensures system availability and reliability.

11 Whether the project is centralised or decentralised

This application is a decentralised project as it does not rely on a single entity or a owner.This app works on a network where there would be person to person(P2P) interactions between patients and doctors. This app also needs license from corresponding governments. So a single owner cannot control or own the app.

12 Use Case Diagram

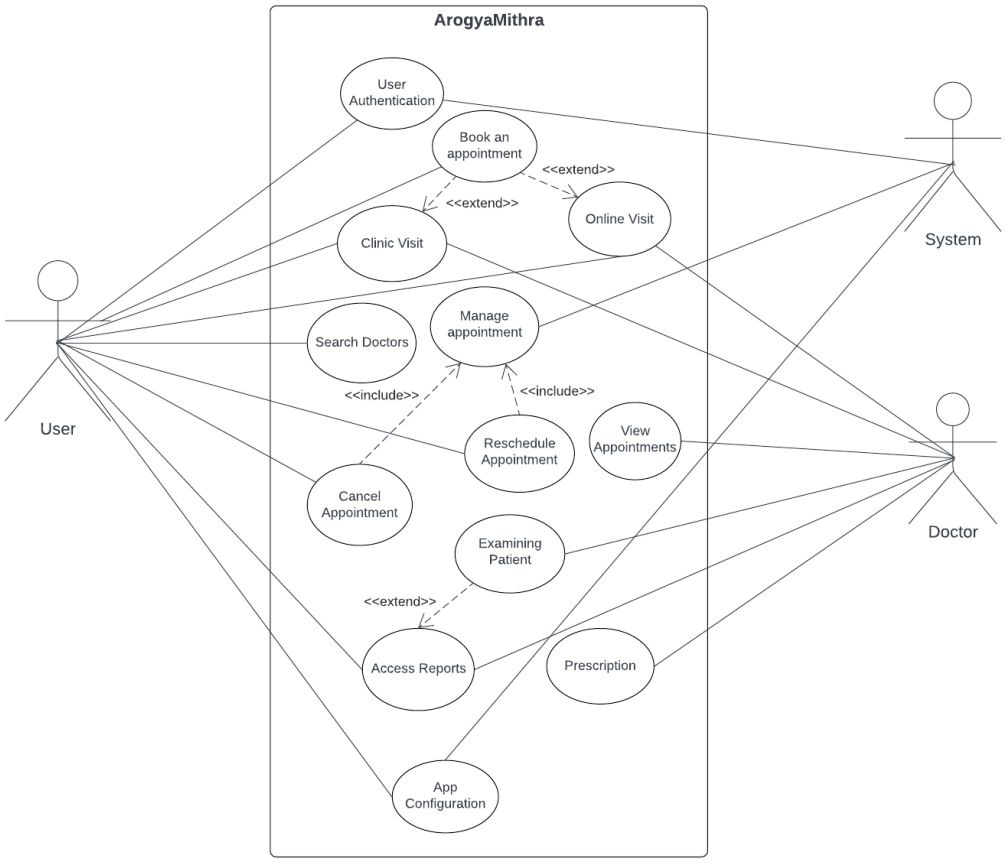

Figure 1: Use Case Diagram

12.1 Actors:

User, System, Doctor

12.2 Use cases:

Authentication, Booking appointment, Doctor search, Scheduling, Patient examination, Access to reports, App configuration

13 Sequence Diagram

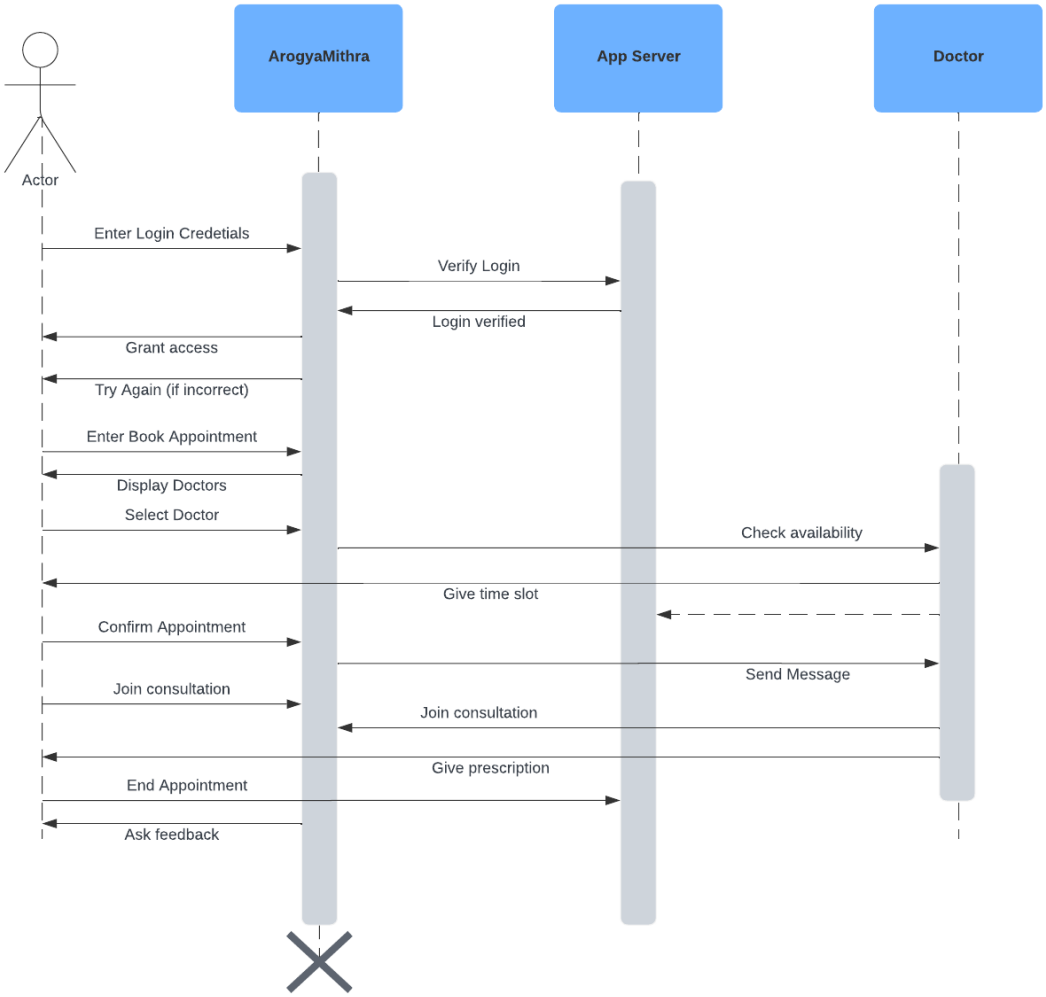

Figure 2: Sequence Diagram

14 Class Diagram

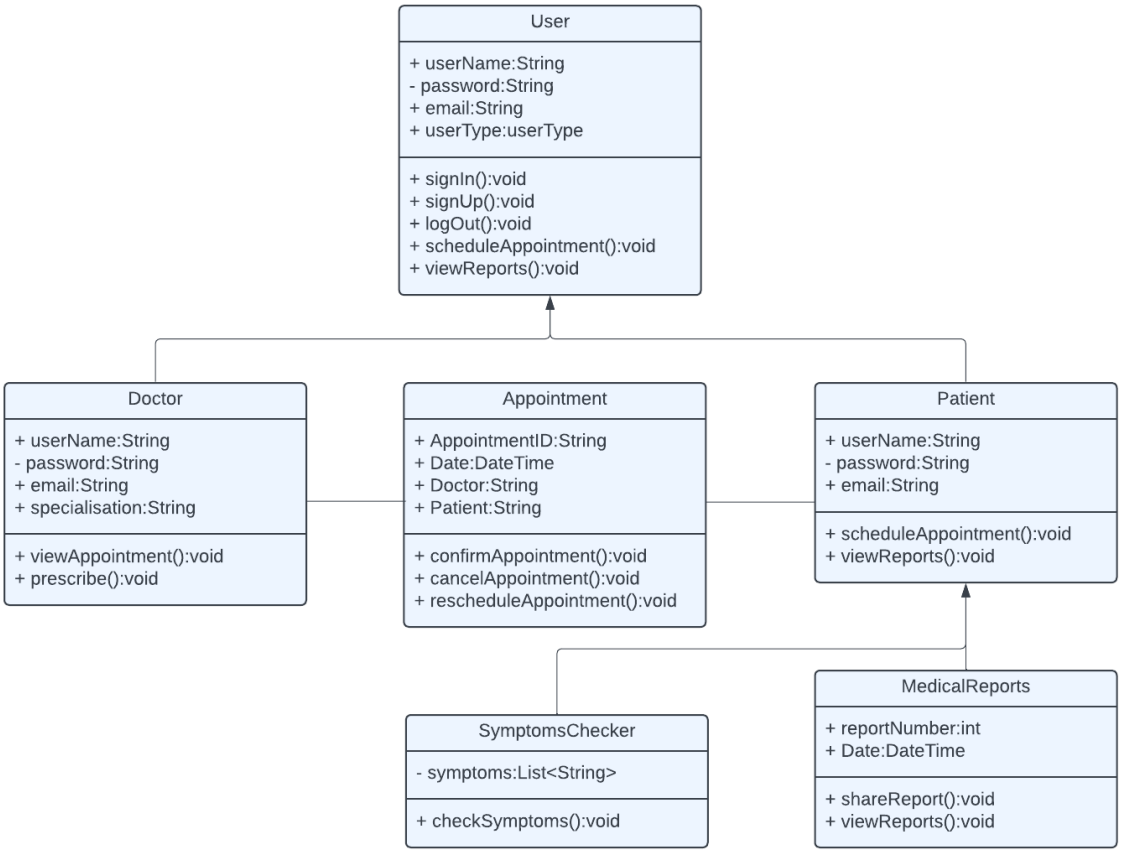

Figure 3: Class Diagram

15 Modules of the project

Following are the modules of our project with their respective objectives and brief overview.

1. **User Authentication and Authorization**
   Enables secure user account creation, login, and role-based access control.
   Implements robust authentication mechanisms, including secure password storage. Utilize role-based access control to define and manage permissions for different user roles such as patients, doctors, and administrators.

2. **Symptom Checker**
   Implements a symptom checker module to assist users in inputting symptoms and receiving suggestions for potential medical conditions, along with doctor recommendations.
   An algorithm to analyze user-input symptoms and generate relevant health information. Integrate a database of common symptoms and associated conditions. Utilize machine learning or AI to enhance accuracy over time.

3. **Appointment Scheduling**
   Facilitates users in scheduling clinic visits or online consultations with doctors, providing features for preferred time slots and appointment confirmation.
   An intuitive and user-friendly interface for appointment scheduling, allowing users to choose available time slots, view doctor availability, and receive instant confirmation. Ensure seamless integration with the calendar system.

4. **Doctor Directory**
   Provides a comprehensive directory of doctors with detailed profiles, specialties, and user reviews. Enable users to search for doctors based on various criteria.
   A searchable and filterable database of doctors, including profiles, specialties, availability, and user reviews. Implement a user-friendly interface for efficient exploration and selection.

5. **Video Consultation**
   Integrates secure video calling functionality for online consultations between patients and doctors, ensuring compliance with healthcare regulations.

6. **Reports and Medical Records**
   Allows users to view and manage their medical reports and records securely within the app, establishing a structured healthcare data storage system.
   A secure and organized storage system for medical reports and records. Ensure compliance with healthcare data privacy regulations. Include features for easy retrieval, viewing, and sharing of medical information.

7. **Appointment History and Tracking**
   Enables users to track their appointment history, view upcoming appointments, and receive timely reminders. Include features for canceling or rescheduling appointments.
   A user-friendly dashboard displaying appointment history, upcoming appointments, and reminders. Implement features for appointment management, allowing users to modify or cancel appointments as needed.

8. **Dashboard for Doctors**
   Provides a dedicated dashboard for doctors to efficiently manage their appointments, access patient records, and stay informed.

9. **Settings and Preferences**
   Includes a settings module for users to manage their account settings, set notification preferences, and customize other personal configurations.

Figure 4: Launch Screen

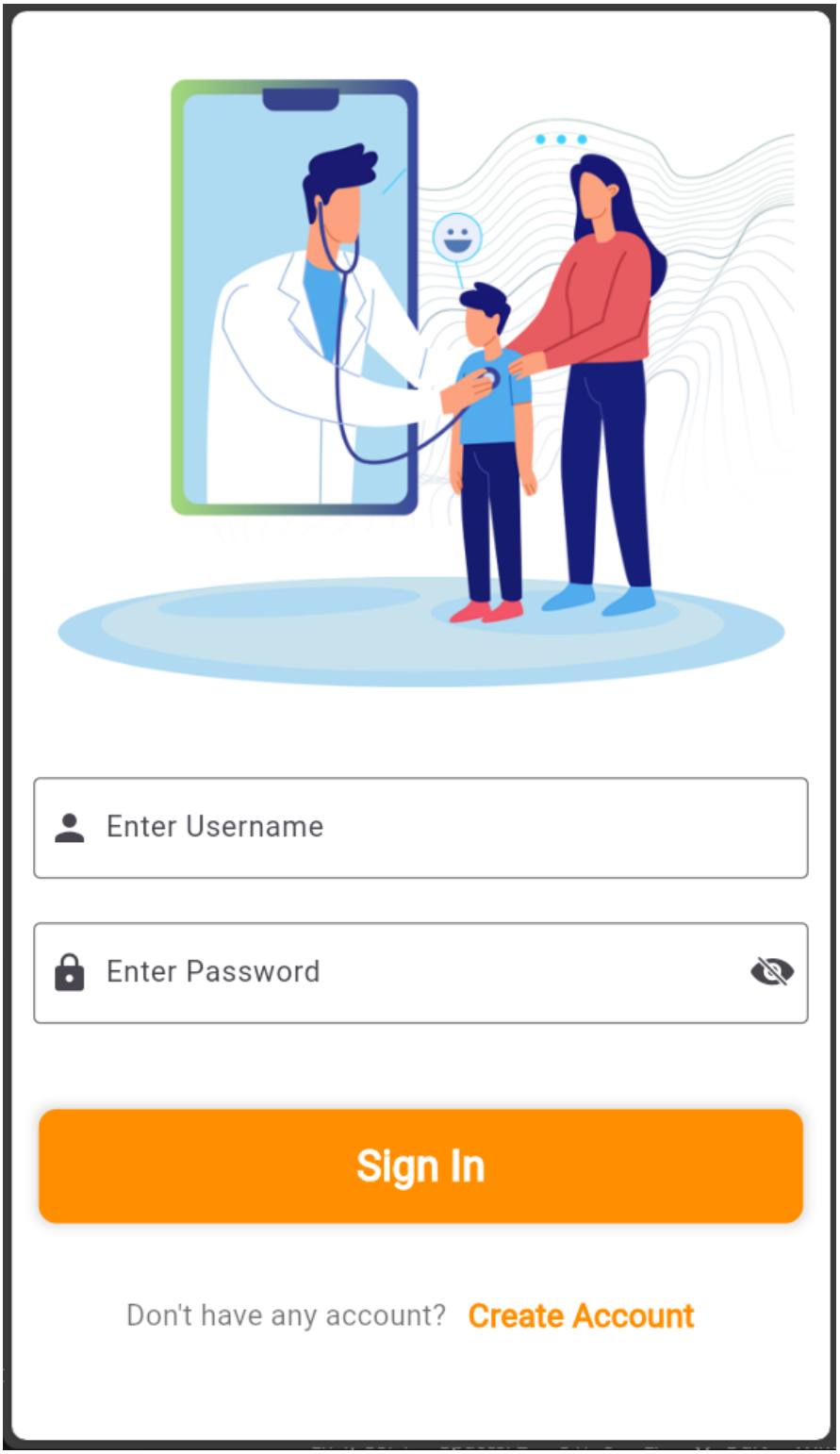

Figure 5: Sign in Screen

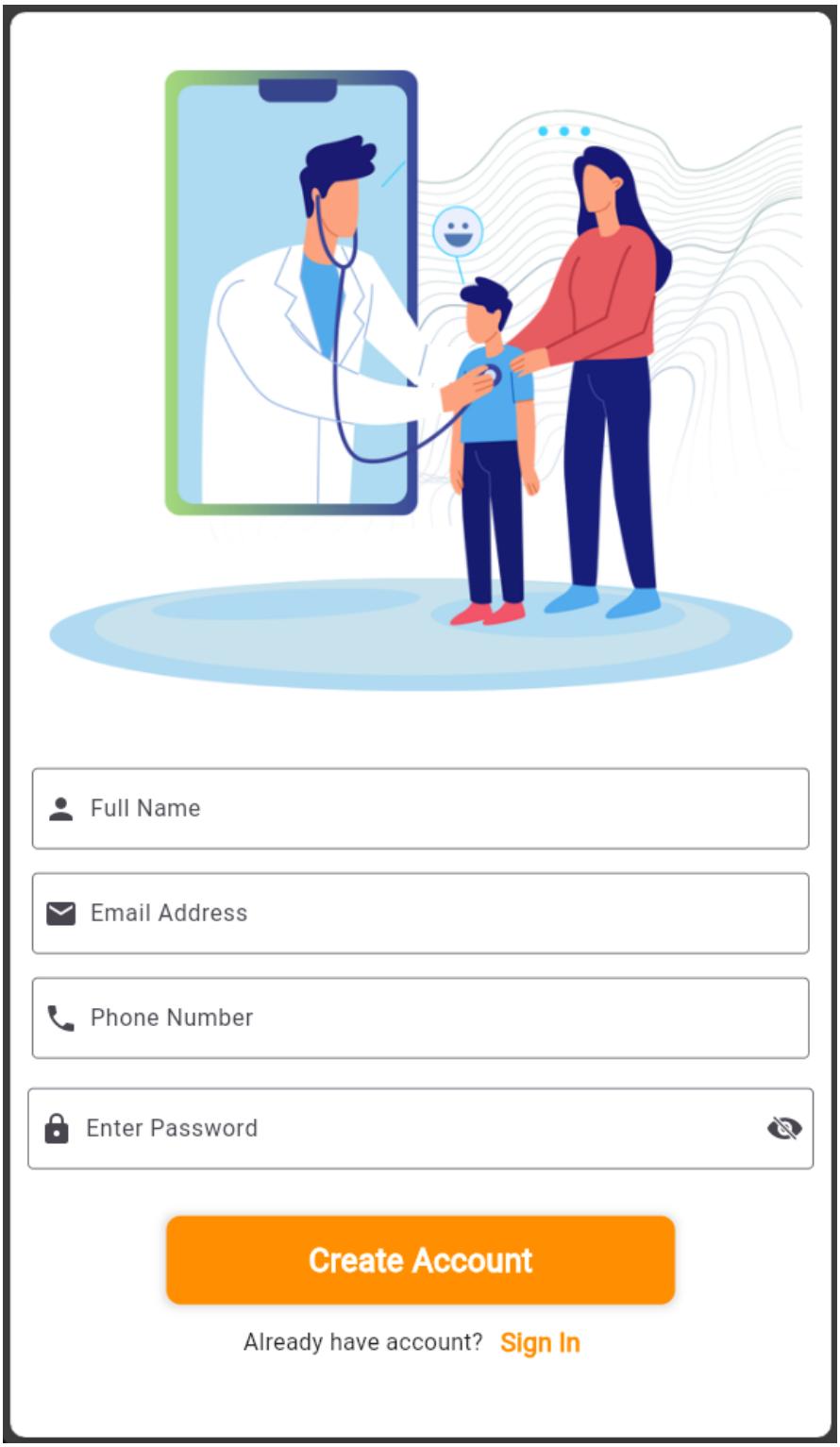

Figure 6: Sign up Screen

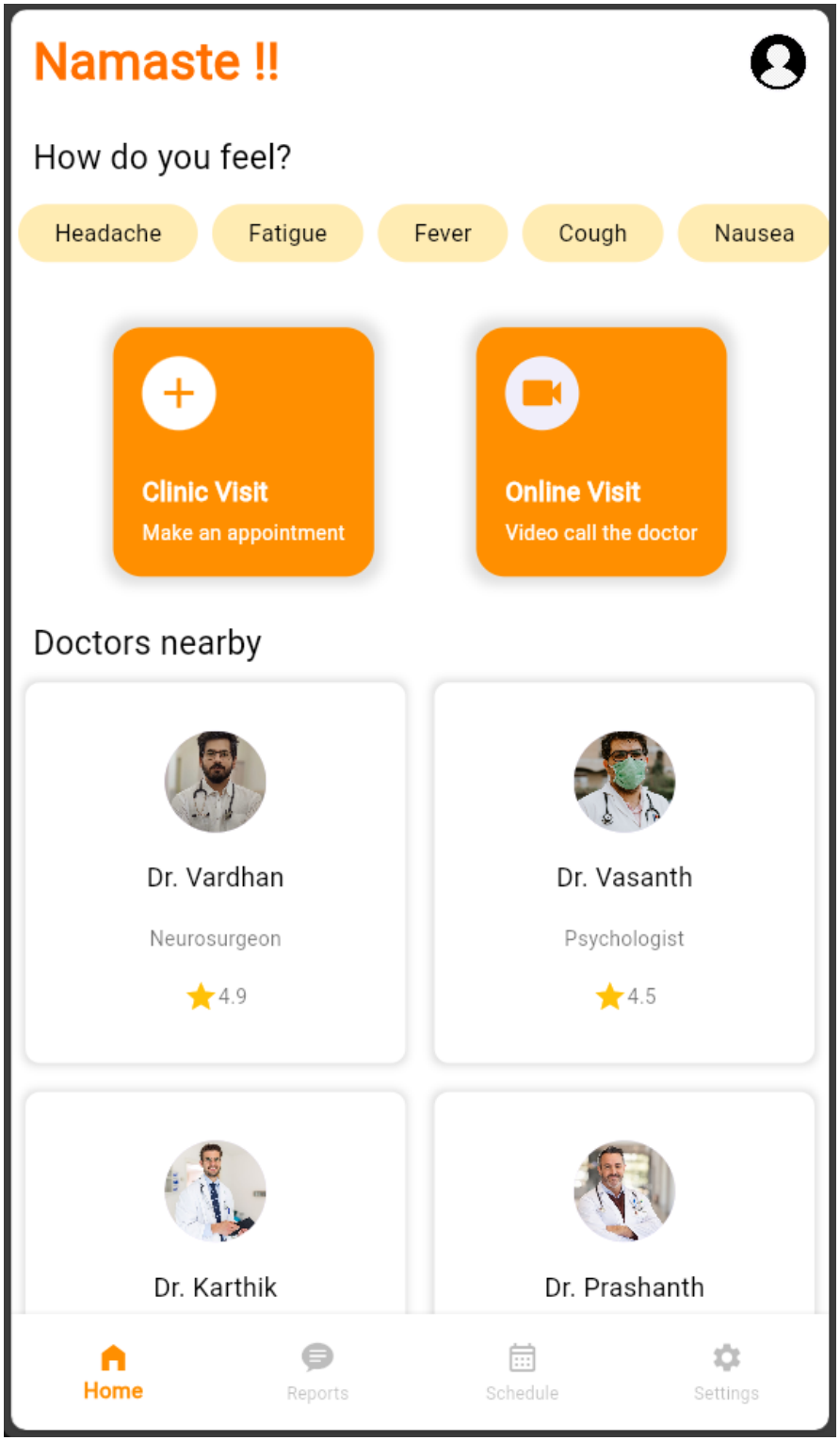

Figure 7: Home Screen

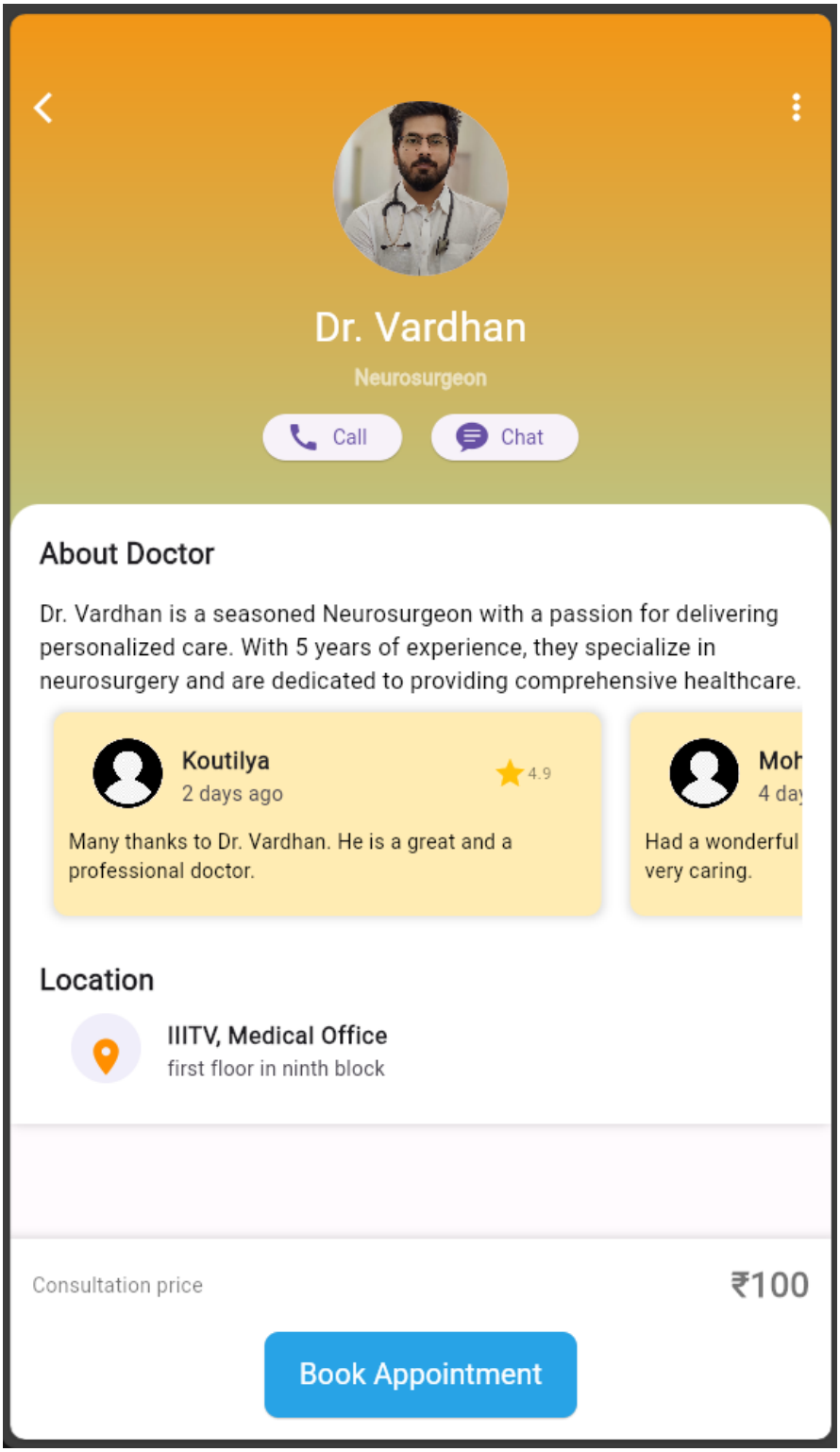

Figure 8: Appointment Screen

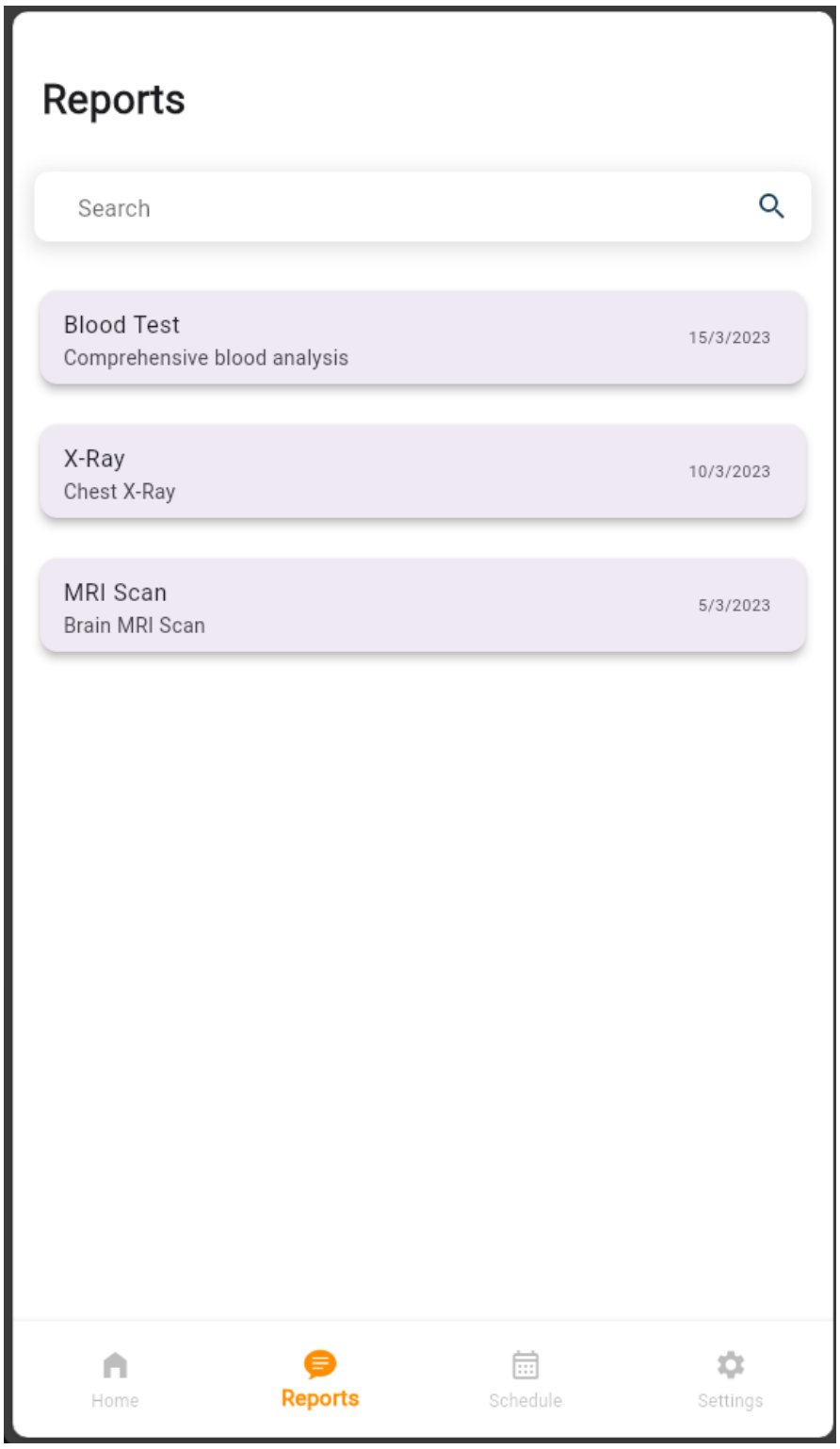

Figure 9: Reports Screen

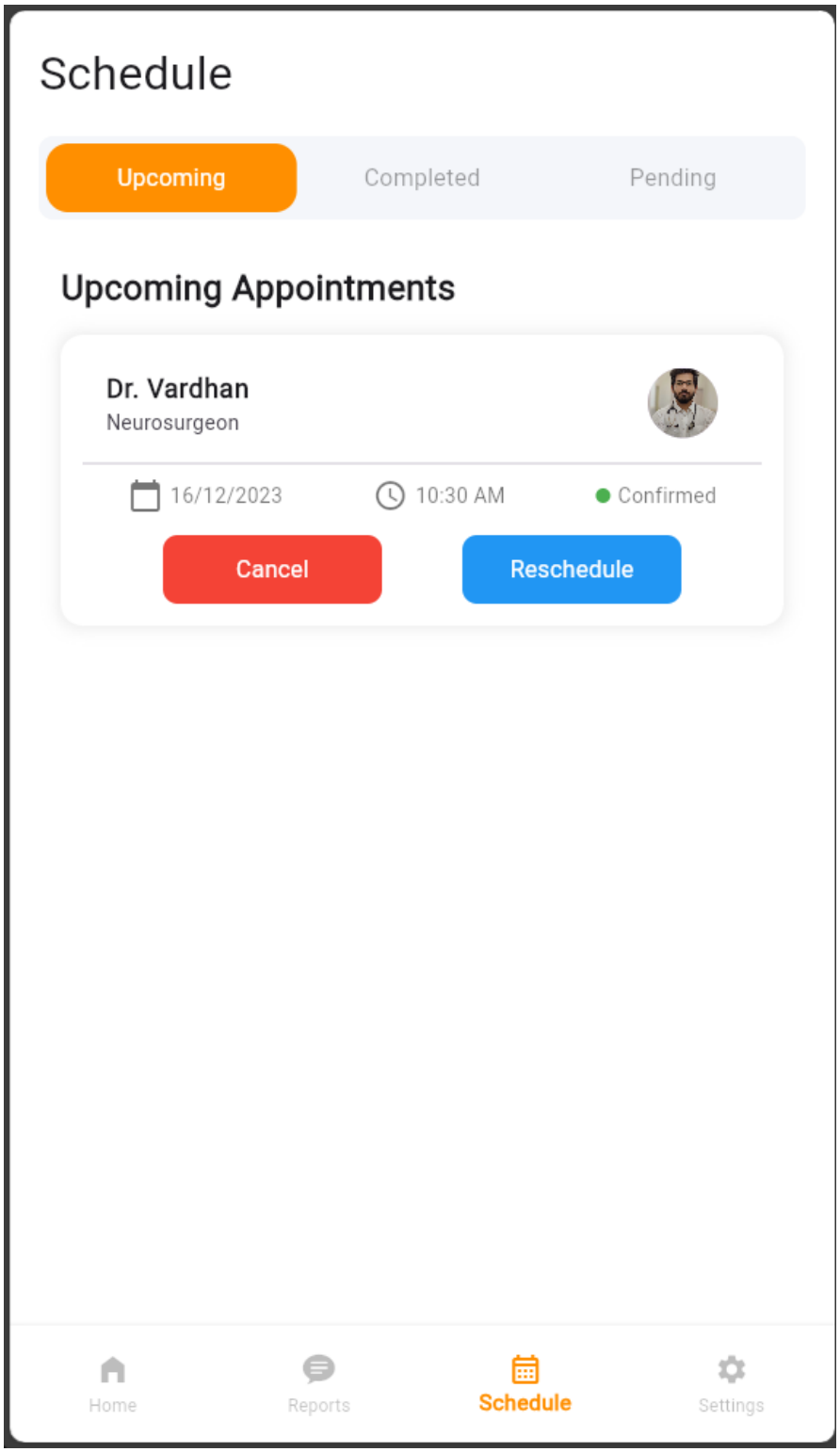

Figure 10: Schedule Upcoming

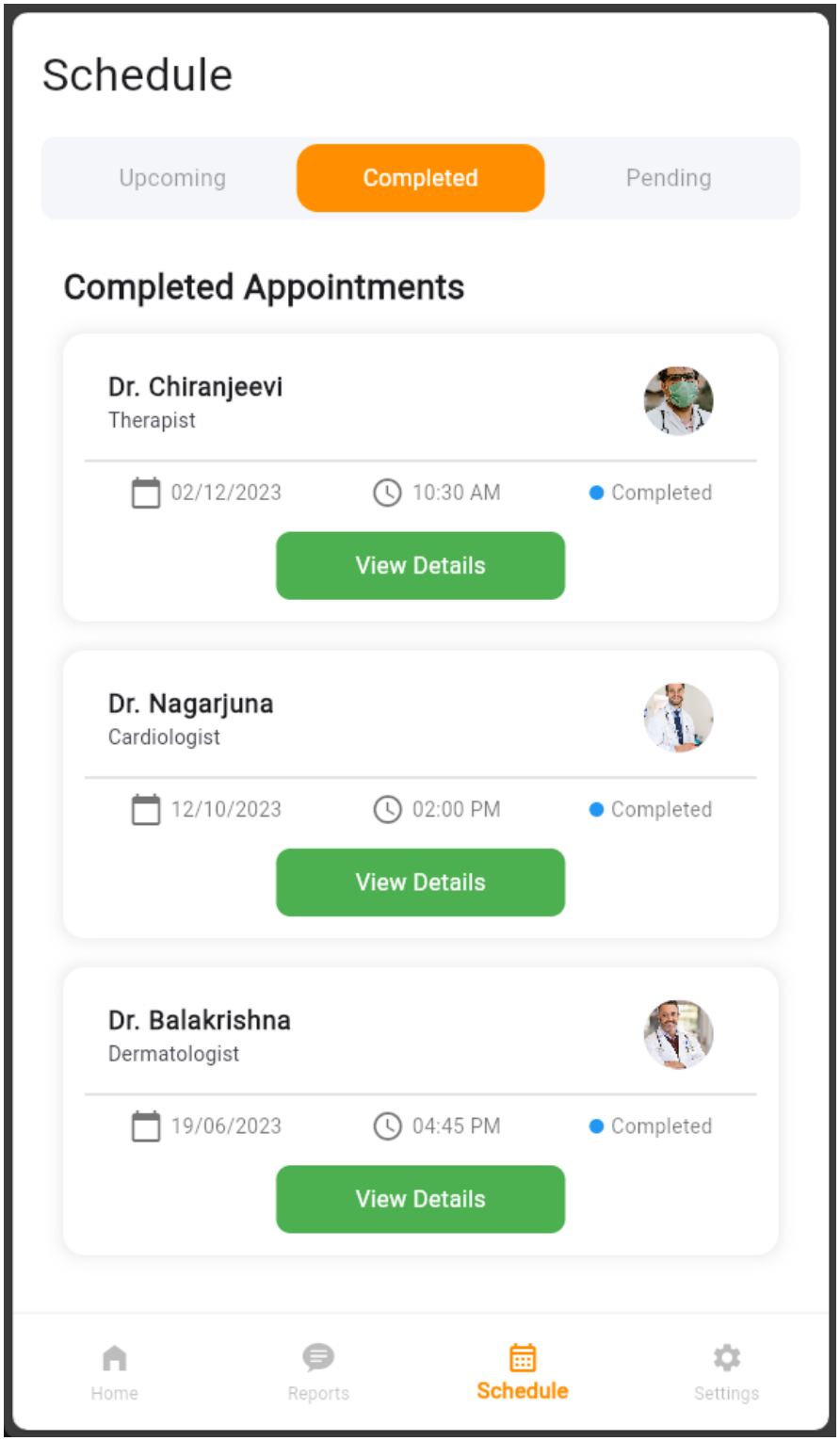

Figure 11: Schedule Completed

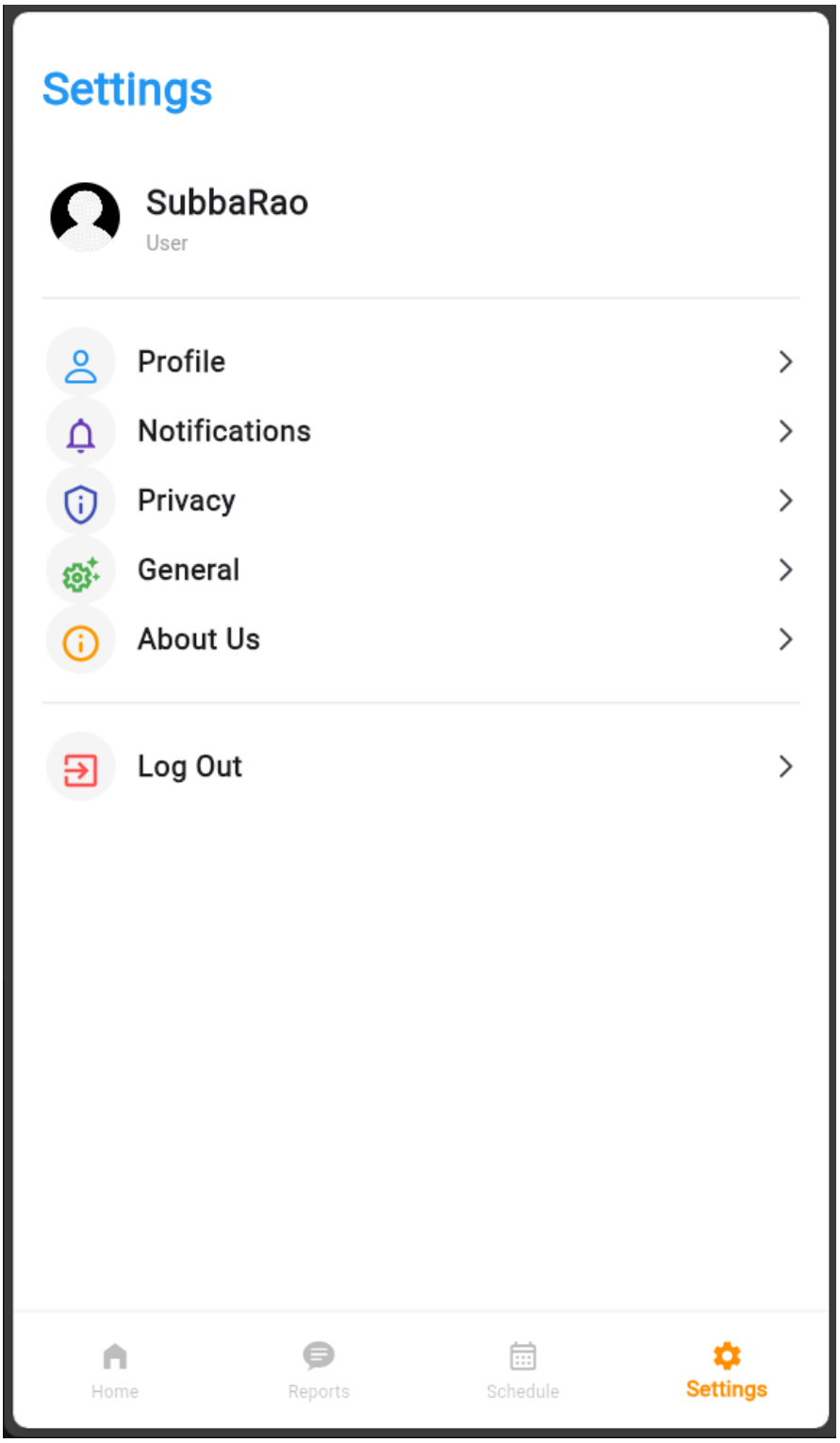

Figure 12: Settings Screen