SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

Health Data Information & Management System Mobile Application (HDIMS)

1. Introduction

1.1 Purpose of this Document

This document serves as the comprehensive Software Requirements Specification (SRS) for the Health Data Information & Management System (HDIMS) mobile application. It outlines the system's objectives, functionalities, constraints, and interfaces, ensuring that all stakeholder needs are clearly defined. This SRS will guide the development team and provide clarity to stakeholders, developers, and project managers regarding the scope and requirements of the HDIMS project.

1.2 Scope of the Document

The scope covers all aspects of HDIMS development, including system functionalities, features, interface requirements, performance metrics, and constraints. The HDIMS application is designed to facilitate health data management, appointment scheduling, health monitoring via wearable devices, and enhanced communication with healthcare professionals. The project aims for deployment on both Android and iOS platforms within a 12-month timeline and an estimated budget of $300,000.

1.3 Overview

The HDIMS mobile application will enable patients, doctors, and administrators to securely and efficiently interact with health data. Key functionalities include health record management, appointment scheduling, health monitoring through wearables, prescription management, and patient-doctor communication. The application aims to enhance healthcare delivery by improving accessibility and efficiency through mobile technology.

2. General Description

2.1 Product Perspective

The HDIMS mobile application operates as a standalone system while integrating with external health services, such as Electronic Health Records (EHRs), lab results, and wearable devices (e.g., smartwatches). The application is designed for accessibility on smartphones running iOS and Android platforms.

2.2 Product Features

- **Patient Health Records**: Manage and share medical history, diagnoses, prescriptions, and lab reports.

- **Appointment Scheduling**: Seamlessly book and manage appointments.
- **Health Monitoring**: Sync data from wearables to track vital health metrics.
- **Prescription Management**: Facilitate electronic prescriptions shared with pharmacies.
- **Notifications**: Real-time alerts for appointments and health updates.
- **Doctor Profiles & Reviews**: Access doctor profiles and patient reviews.
- **Admin Dashboard**: Provide oversight tools for user management and app performance monitoring.

2.3 User Characteristics

- **Patients**: Individuals managing personal health data and seeking medical services.
- **Doctors**: Healthcare providers managing patient records and consultations.
- **Administrators**: Users overseeing application operations, including user roles and appointments.

2.4 System Features

- Secure user registration and login
- Comprehensive patient health record management
- Robust appointment booking functionality
- Integration with wearable devices for health tracking
- Notification system for reminders and alerts
- Doctor profiles with rating capabilities
- Administrative tools for system management

3. Functional Requirements

3.1 User Registration & Authentication

- Users can sign up using email or phone numbers.
- Multi-factor authentication (MFA) to enhance security.

3.2 Patient Health Records Management

- Ability to upload and store medical records.
- Doctors can retrieve patient records to make informed decisions.

3.3 Appointment Management

- Patients can book, reschedule, or cancel appointments.
- Doctors can approve or deny appointment requests.

3.4 Health Monitoring Integration

- Synchronize data from wearables to track metrics such as heart rate and activity levels.

3.5 Prescription Management

- Doctors can issue electronic prescriptions.
- Patients can share prescriptions with pharmacies.

3.6 Notification System

- Push notifications for appointment reminders, prescription updates, and health alerts.

3.7 Doctor Profile & Reviews

- Patients can view doctor profiles.
- Patients can rate and review doctors based on their experiences.

3.8 Admin Dashboard

- Tools to manage users, appointments, and monitor app performance analytics.

4. Interface Requirements

4.1 Software Interfaces

- **APIs**: REST APIs for backend communication.
- **Health Device Integration**: Utilize Google Fit or Apple HealthKit APIs.
- **Cloud Storage**: Secure storage solutions, such as AWS or Google Cloud.

4.2 User Interfaces

- Intuitive graphical user interface (GUI) designed for responsiveness across both Android and iOS devices.

4.3 Communication Interfaces

- Secure communication via HTTPS with SSL/TLS encryption.
- Push notifications managed through Firebase (Android) and Apple Push Notification service (iOS).

5. Performance Requirements

Requirement	Specification
Response Time	Load within 3 seconds; critical features within 5 seconds
Concurrent Users	Support up to 10,000 simultaneous users
Storage	Initial capacity of 100 GB
Error Rate	Maintain a maximum error rate of 0.1%

6. Design Constraints

- **Algorithm Limitations**: Some algorithms may be restricted by device capabilities.
- **Hardware Requirements**: Compatibility with iOS 12 and above, Android 8 and above.
- **Development Tools**: Utilize React Native for cross-platform efficiency.

7. Non-Functional Requirements

- **Security**: Encrypt all patient data in transit (HTTPS) and at rest (AES-256).
- **Portability**: Ensure compatibility across both Android and iOS platforms.
- **Reliability**: Achieve a minimum uptime of 99.9%.
- **Scalability**: Design for future scalability to support millions of users.
- **Data Integrity**: Implement data validation processes to ensure data accuracy and prevent corruption.

8. Preliminary Schedule and Budget

8.1 Schedule

Phase	Duration
Phase 1 - Requirements & Design	2 months
Phase 2 - Development	6 months
Phase 3 - Testing & QA	2 months
Phase 4 - Deployment & Maintenance	Ongoing

Total Project Duration: 12 months

8.2 Budget

Item	Cost
Development Costs	$200,000
Testing & Quality Assurance	$50,000
Deployment & Marketing	$30,000
Miscellaneous & Contingencies	$20,000

Total Estimated Budget: $300,000

9. Conclusion

The Health Data Information & Management System (HDIMS) mobile application aims to revolutionize healthcare management by offering a robust, secure, and user-friendly platform for managing health records, scheduling appointments, monitoring health metrics, and enhancing communication between patients and healthcare providers. This document provides a comprehensive roadmap for developing the HDIMS application, ensuring that all functional, performance, and non-functional requirements are clearly defined. By adhering to this SRS, the development team will be equipped to deliver a high-quality solution that meets stakeholder expectations, improves healthcare outcomes, and sets a new standard in mobile health technology.

UML DIAGRAMS

CLASS DIAGRAM