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Software Requirements Specification (SRS) Document

MediCare Pro - Complete Clinic Management Solution

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1. Introduction

1.1 Purpose

This document specifies the software requirements for **MediCare Pro**, a complete digital clinic management system designed for healthcare professionals. The system provides functionalities for patient management, appointment scheduling, financial tracking, medical image storage, and reporting.
The purpose of this SRS is to define what the MediCare Pro system will do before moving into design and implementation. It serves as a reference for developers, testers, and stakeholders.
Version: 1.0

1.2 Document Conventions

- Requirements are labeled as **REQ-x**, where x is a sequential number.
- Headings and subheadings indicate the hierarchy of information.
- Priority levels:
    - **High:** Critical for system operation
    - **Medium:** Important but not essential
    - **Low:** Nice to have

1.3 Intended Audience and Reading Suggestions

- **Developers:** To understand system features and requirements.
- **Project Managers:** To plan and track project progress.
- **Testers:** To design test cases and validation procedures.
- **Clinic Administrators and Healthcare Staff:** To understand expected system behavior.

Readers should start with Section 1 (Introduction) and proceed to Sections 2 and 3 for a full understanding of the product features and requirements.

1.4 Project Scope

MediCare Pro is an all-in-one management platform for clinics and healthcare providers. It digitizes patient records, simplifies appointment scheduling, tracks financial performance, and securely stores medical images.
The system enhances efficiency, improves patient experience, and provides administrators with real-time insights into clinic operations.
It supports **multi-clinic management**, controlled by a **Super Admin** who oversees all system functions, clinics, users, and data.

1.5 References

- IEEE Standard for Software Requirements Specification

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2. Overall Description

2.1 Product Perspective

MediCare Pro is a **web-based standalone system** designed for medical and dental clinics. It provides a unified interface where doctors, receptionists, accountants, and super admins can manage all operations.
It replaces paper-based systems and scattered tools with a single secure platform.

System Components:

- Super Admin Panel
- Clinic Management Module
- Patient Management Module
- Appointment Scheduler
- Financial Module
- Medical Image Management Module
- Reporting and Analytics

2.2 Product Features

- Digital Patient Records
- Smart Appointment Scheduling
- Financial Tracking and Reporting

- Medical Image Management
- Multi-Clinic Management
- Real-Time Analytics
- Secure User Access (Role-Based)
- Data Encryption

2.3 User Classes and Characteristics

User Class	Description	Technical Skill	Access Level
Super Admin	Manage all clinics, users, and system data.	High	Full Access
Doctor	Views and manages patient records, treatments, and schedules.	Medium	Limited to Assigned Clinic

2.4 Operating Environment

- **Platform:** Web-based (Responsive design for PC, tablet, and smartphone)
- **Supported Browsers:** Chrome, Firefox, Safari, Edge
- **Backend:** Python (Flask)
- **Frontend:** html, CSS
- **Database:** SQL lite
- **Server OS:** Linux-based hosting (e.g., Ubuntu Server)

2.5 Design and Implementation Constraints

- Must comply with healthcare data privacy regulations.
- Secure HTTPS communication required.
- Multi-user concurrent access supported.
- Database must support transactional integrity.
- Use role-based access control for all modules.

2.6 User Documentation

- User Manual (PDF and online help)

- Quick Start Guide for Clinics
- Admin Training Videos
- FAQ and Troubleshooting Guide

2.7 Assumptions and Dependencies

- Users have reliable internet access.
- Cloud-based hosting will be used for data storage.
- Third-party libraries for charting, PDF export, and calendar functions.
- Integration with email or SMS API for appointment reminders.

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3. System Features

3.1 Feature: Super Admin Management

3.1.1 Description and Priority

The Super Admin has full control over all system modules.
Priority: High

3.1.2 Stimulus/Response Sequences

- Super Admin logs in → Dashboard displays all clinics and activity stats.
- Adds a new clinic → System creates clinic profile and admin account.
- Manages users → Can deactivate, edit, or reset credentials.

3.1.3 Functional Requirements

- **REQ-1:** System shall allow Super Admin to add, edit, and delete clinic profiles.
- **REQ-2:** System shall allow Super Admin to manage users (admins, doctors, staff).
- **REQ-3:** System shall provide real-time system performance and activity dashboards.
- **REQ-4:** System shall allow the Super Admin to view all financial reports across clinics.
- **REQ-5:** System shall allow Super Admin to manage data backups and system settings.

3.2 Feature: Patient Management

3.2.1 Description and Priority

Enables clinics to maintain detailed, secure patient records.
Priority: High

3.2.2 Stimulus/Response Sequences

- Receptionist enters patient details → System saves securely.
- Doctor views patient record → System displays complete treatment history.

3.2.3 Functional Requirements

- **REQ-6:** System shall allow adding, updating, and searching patient profiles.
- **REQ-7:** System shall maintain treatment history and financial data per patient.
- **REQ-8:** System shall allow uploading and viewing of medical images.

3.3 Feature: Appointment Scheduling

3.3.1 Description and Priority

Smart scheduling system with conflict detection and color-coded calendar.
Priority: High

3.3.2 Functional Requirements

- **REQ-9:** System shall prevent double booking for the same time slot.
- **REQ-10:** System shall mark missed appointments and allow easy rescheduling.
- **REQ-11:** System shall send reminders via email/SMS before appointments.

3.4 Feature: Financial Management

3.4.1 Description and Priority

Manages income, expenses, payments, and financial reports.
Priority: High

3.4.2 Functional Requirements

- **REQ-12:** System shall record every payment and expense automatically.
- **REQ-13:** System shall generate monthly income/expense/profit reports.

- **REQ-14:** System shall show outstanding balances for patients.

3.5 Feature: Medical Image Management

3.5.1 Description and Priority

Secure storage and professional viewing of X-rays, photos, and lab results.
Priority: Medium

3.5.2 Functional Requirements

- **REQ-15:** System shall support image upload and viewing for each patient visit.
- **REQ-16:** System shall store images in encrypted form.
- **REQ-17:** System shall support image zoom and full-screen viewing.

3.6 Feature: Reporting and Analytics

3.6.1 Description and Priority

Provides insights into clinic performance, finances, and patient trends.
Priority: Medium

3.6.2 Functional Requirements

- **REQ-18:** System shall display patient and financial trend charts.
- **REQ-19:** System shall generate downloadable reports (PDF, Excel).

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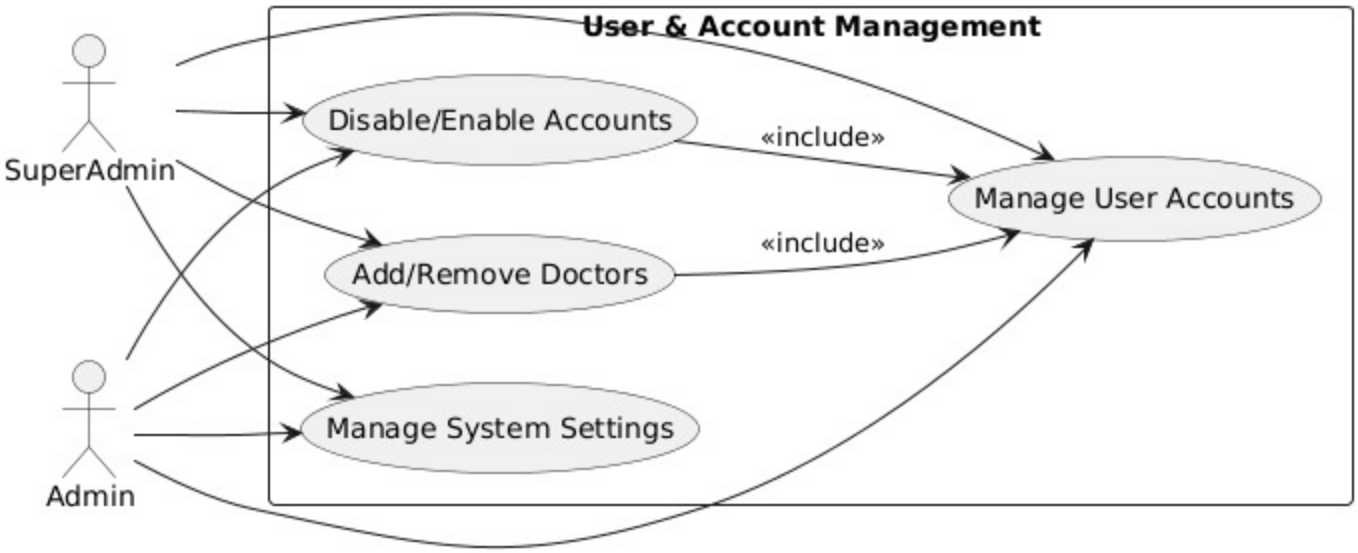
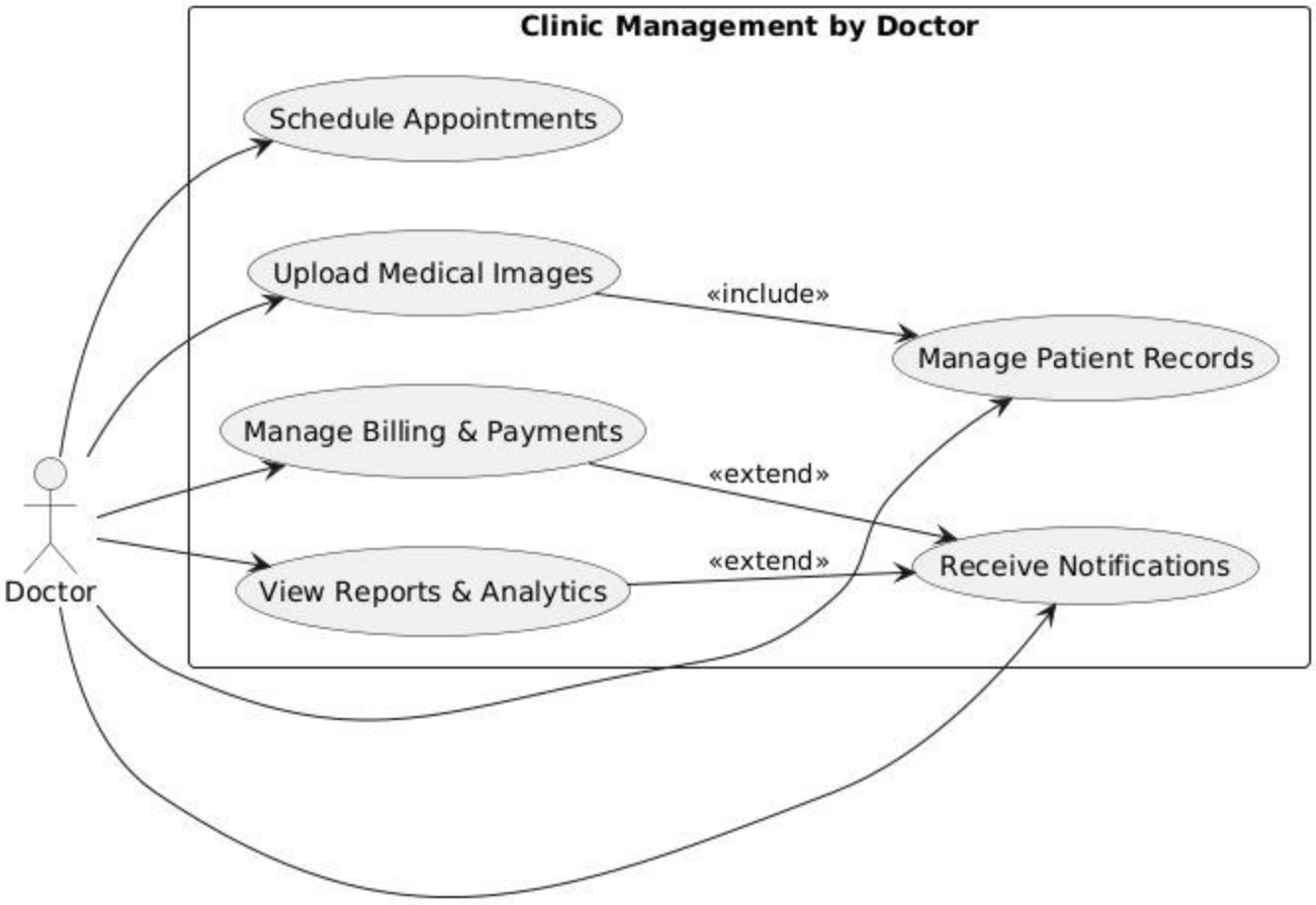
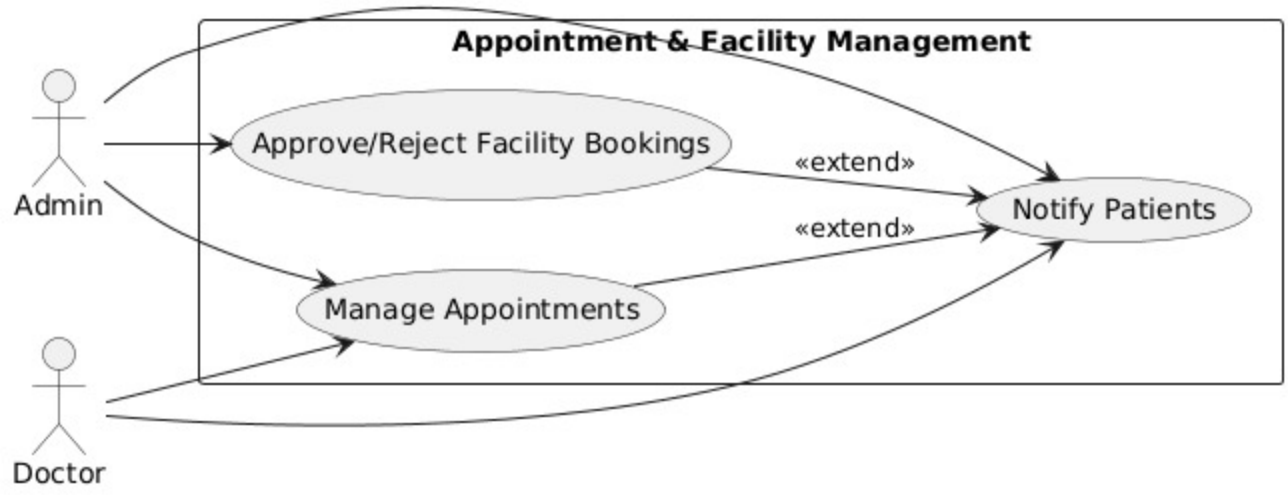
4. Use Case


User & Account Management
SuperAdmin
Admin
Disable/Enable Accounts
Add/Remove Doctors
Manage System Settings
Manage User Accounts
«include»
«include»


Clinic Management by Doctor
Doctor
Schedule Appointments
Upload Medical Images
Manage Billing & Payments
View Reports & Analytics
Manage Patient Records
Receive Notifications
«include»
«extend»
«extend»



Use Case Descriptions (IEEE Template)

Use Case ID: UC1
Use Case Name: Manage User Accounts
Primary Actor: Super Admin, Admin
Preconditions: Super Admin or Admin is authenticated and authorized.
Main Flow:

1. Actor accesses user management interface.
2. Actor views list of users.
3. Actor adds, edits, or removes user accounts.
4. Actor assigns roles and permissions.
5. System updates the user database.
6. System confirms success to the actor.
   Alternate Flows:

- If user data is invalid, system shows error and requests correction.
  Postconditions: User account database updated accordingly.

Use Case ID: UC5
Use Case Name: Manage Patient Records
Primary Actor: Doctor
Preconditions: Doctor is logged in. Patient records exist or new record creation permitted.
Main Flow:

1. Doctor searches or selects patient.
2. Doctor views patient history and previous visits.

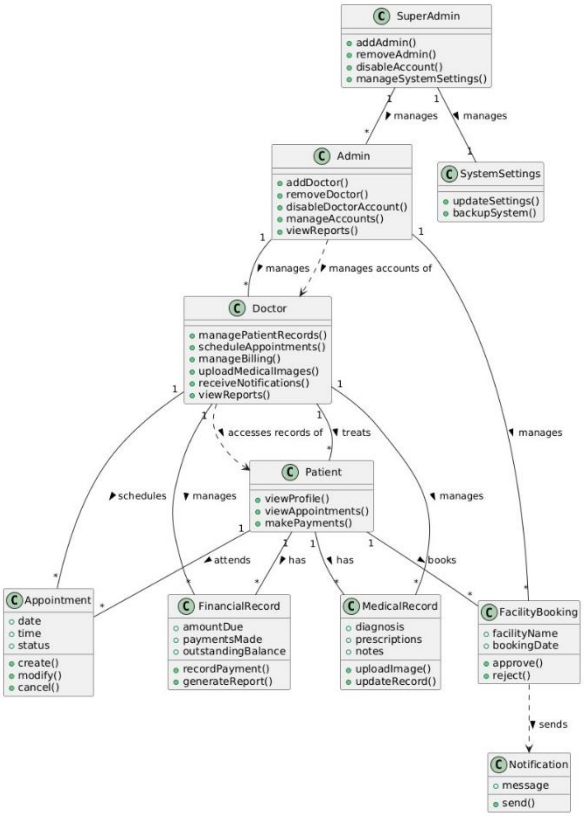
3. Doctor adds new diagnosis, prescriptions, or notes.
4. Doctor uploads medical images or lab results.
5. Doctor saves updated records.
6. System confirms the updates saved.
   Alternate Flows:

- If upload fails, doctor is notified and may retry.
  Postconditions: Patient records updated and saved securely.

Use Case ID: UC11
Use Case Name: Manage Appointments
Primary Actor: Admin, Doctor
Preconditions: Actor is authenticated; appointment schedule exists.
Main Flow:

1. Actor views appointment calendar.
2. Actor adds, modifies, or cancels appointments.
3. System checks for scheduling conflicts.
4. System updates appointment database.
5. System sends notifications to patients and staff.
6. Actor confirms updated schedule.
   Alternate Flows:

- On conflict, system suggests alternate times.
  Postconditions: Appointment schedule updated and notifications sent.



Class Diagram Descriptions

1. SuperAdmin: Manages Admin accounts and system-wide settings. Controls overall system security and configurations.
2. Admin: Manages Doctor accounts and user permissions. Views reports and controls access at the clinic level.
3. Doctor: Combines roles of doctor, accountant, and receptionist. Manages patient records, appointments, billing, medical images, notifications, and reports.
4. Patient: Holds personal and medical information. Attends appointments and makes payments.
5. Appointment: Represents scheduled visits with attributes like date, time, and status. Created and managed by Doctors, attended by Patients.
6. MedicalRecord: Stores patient diagnosis, prescriptions, notes, and medical images. Managed by Doctors, linked to Patients.
7. FinancialRecord: Tracks payments, outstanding balances, and generates financial reports. Managed by Doctors, linked to Patients.
8. Notification: Sends messages regarding appointments, payments, or system events.
9. FacilityBooking: Manages clinic facility bookings, approval, and notifications. Managed by Admin and booked by Patients.
10. SystemSettings: Handles global system configuration and backups. Managed by SuperAdmin.

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4. External Interface Requirements

4.1 User Interfaces

- Clean, modern dashboard UI.
- Navigation menu with modules (Patients, Appointments, Finance, Reports).
- Data tables with filters, search, and export options.
- Role-based access menus (Super Admin, Clinic Admin, etc.).

4.2 Hardware Interfaces

- Compatible with desktop and mobile devices.
- No specialized hardware required except for optional scanners or imaging devices.

4.3 Software Interfaces

- Database: SQL lite
- Authentication: JWT-based session management
- APIs: RESTful API endpoints for data exchange

4.4 Communications Interfaces

- Uses HTTPS protocol for all client-server communications.

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5. Other Nonfunctional Requirements

5.1 Performance Requirements

- System must handle up to 500 concurrent users.
- Each page should load within 3 seconds under normal load.

5.2 Safety Requirements

- Regular automatic data backups.
- Fail-safe recovery mechanism in case of data corruption.

5.3 Security Requirements

- Role-based access control for all users.
- Data encryption.
- Two-factor authentication for Super Admin.

5.4 Software Quality Attributes

- **Reliability:** 99.9% uptime expected.
- **Usability:** Simple and intuitive for non-technical staff.
- **Maintainability:** Modular architecture for easy updates.
- **Scalability:** Supports adding new clinics without performance loss.
- **Portability:** Runs on major browsers and devices.

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6. Other Requirements

- Compliance with healthcare data protection laws.
- All patient-related data stored securely with limited access.

Appendix A: Glossary

Term	Definition
Super Admin	Central user controlling all system operations and clinics.
Patient Record	Digital record containing all patient-related information.
Appointment	Scheduled meeting between patient and doctor.
Financial Report	Automated summary of income, expenses, and profit.

Appendix B: Analysis Models

- **Class Diagram:** SuperAdmin, Clinic, Doctor, Patient, Appointment, Finance
- **Data Flow Diagram:** User Input → Processing → Database → Output

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Appendix C: Issues List

Issue	Description	Status
TBD-1	Integration with SMS API provider	Pending
TBD-2	Multi-language support	Future release
TBD-3	Mobile app version	Future release