

Software Requirement Specification for eDoc (A Hospital Management System)

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1. Introduction:

1.1. Purpose:

Efficient management of the clinical, financial, and administrative aspects of a healthcare facility is the aim of a hospital management system (eDoc). eDoc seeks to improve patient care, simplify procedures, and maximize resource use. It functions as a centralized platform for the management of appointments, patient data, inventory, billing, and provider-to-provider communication. Through the automation of repetitive operations and provision of decision support tools, HMS enhances workflow effectiveness, minimizes errors, and guarantees regulatory compliance. It also encourages patient participation, backs data-driven decision-making, and makes it easier for healthcare delivery to continuously improve quality. All things considered, HMS is essential to improving the general efficacy, efficiency, and caliber of hospital healthcare services.

1.2. Scope of the Project:

A Hospital Management System (eDoc) project's scope includes, but is not limited to, developing software modules for electronic health records (EHR), patient management, appointment scheduling, billing and invoicing, inventory management, and reporting. It also involves integrating these modules into an organized structure that satisfies the particular demands and specifications of the medical facility. In addition, user training, data migration from current systems, customization to fit certain workflows, and continuous technical support and maintenance are all included in the project scope. In addition, the scope might include putting in place security measures to protect patient data, making sure that laws and regulations like HIPAA (Health Insurance Portability and Accountability Act) are followed, and making sure that the system is scalable to allow for future expansion and technological improvements.

2. Overall Description:

2.1. Product Perspective:

The future scope of the Hospital Management System includes continuous enhancements for improved interoperability with emerging healthcare technologies, integration of artificial intelligence for predictive analytics and personalized care, and expansion of telemedicine capabilities to enhance remote patient monitoring and virtual consultations.

2.2. Product Functions:

The Hospital Management System's product functions are explained in further detail below:

2.2.1. Admin Functions:

2.2.1.1. *Patient Registration:*

- Admins can oversee and manage the registration process for new patients.
- They have the authority to create and manage unique patient identifiers.

2.2.1.2. *Appointment Scheduling:*

- Admins can have control over the overall appointment scheduling system.
- They manage the appointment calendar for doctors and other staff members.

2.2.1.3. *Electronic Health Record Management:*

- Admins have access to and manage the storage of electronic health records (EHRs) for patients.

2.2.1.4. *Billing and Invoicing:*

- Admins generate bills and invoices for services rendered.
- They oversee the integration with insurance systems for claims processing and manage billing and payment transactions.

2.2.1.5. *Staff Management:*

- Admins manage employee profiles, roles, and schedules.
- They handle shift assignments, leave management, and performance evaluation for staff.

2.2.2. Doctor Functions:

2.2.2.1. *Appointment Scheduling:*

- Doctors can view and manage their appointment schedules.

2.2.2.2. *Electronic Health Record Management:*

- Doctors have access to patient EHRs, including medical history, diagnoses, medications, lab results, and treatment plans.

2.2.3. User Functions:

2.2.3.1. Patient Registration:

- Users (patients) can register and provide essential demographic information.

2.2.3.2. Appointment Scheduling:

- Users can schedule appointments with healthcare providers.

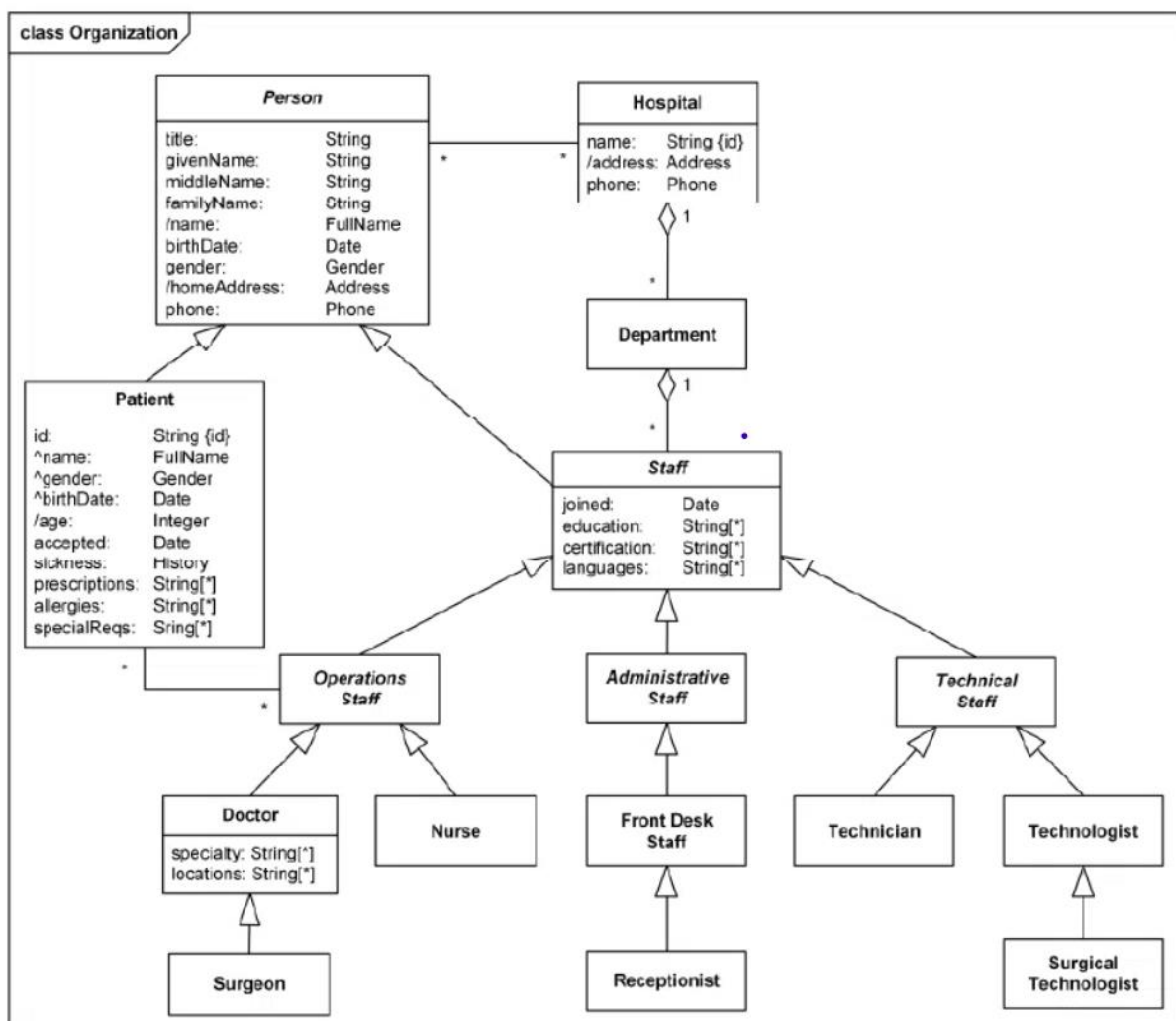
2.2.3.3. Electronic Health Record Access:

- Users have access to their own electronic health records.

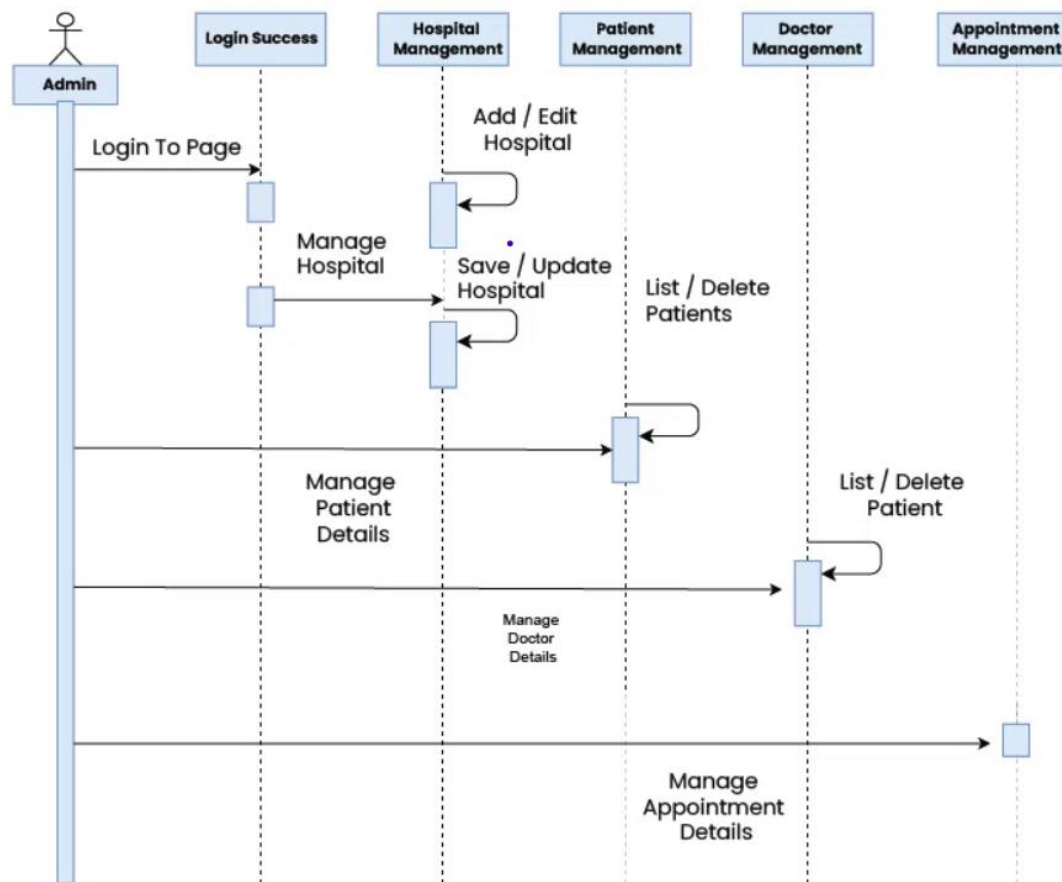
2.2.3.4. Billing and Invoicing:

- Users may interact with the system for billing inquiries and payments.

2.3. Class Diagram:



2.4. Sequence Diagram:



2.4.1. Patient Admission:

- Patient arrives at the hospital.
- Receptionist greets the patient.
- Receptionist collects patient information (name, contact details, reason for visit, insurance details, etc.).
- Receptionist verifies patient's insurance coverage.
- Receptionist assigns a unique identifier (ID) to the patient.

2.4.2. Medical Assessment:

- Nurse or medical assistant escorts the patient to the examination room.
- Nurse takes vital signs and records patient history.
- Nurse updates patient's medical record in the system.

2.4.3. Consultation with Doctor:

- Doctor reviews patient's medical history and current condition.
- Doctor performs physical examination and orders further tests if necessary.
- Doctor discusses diagnosis and treatment plan with the patient.

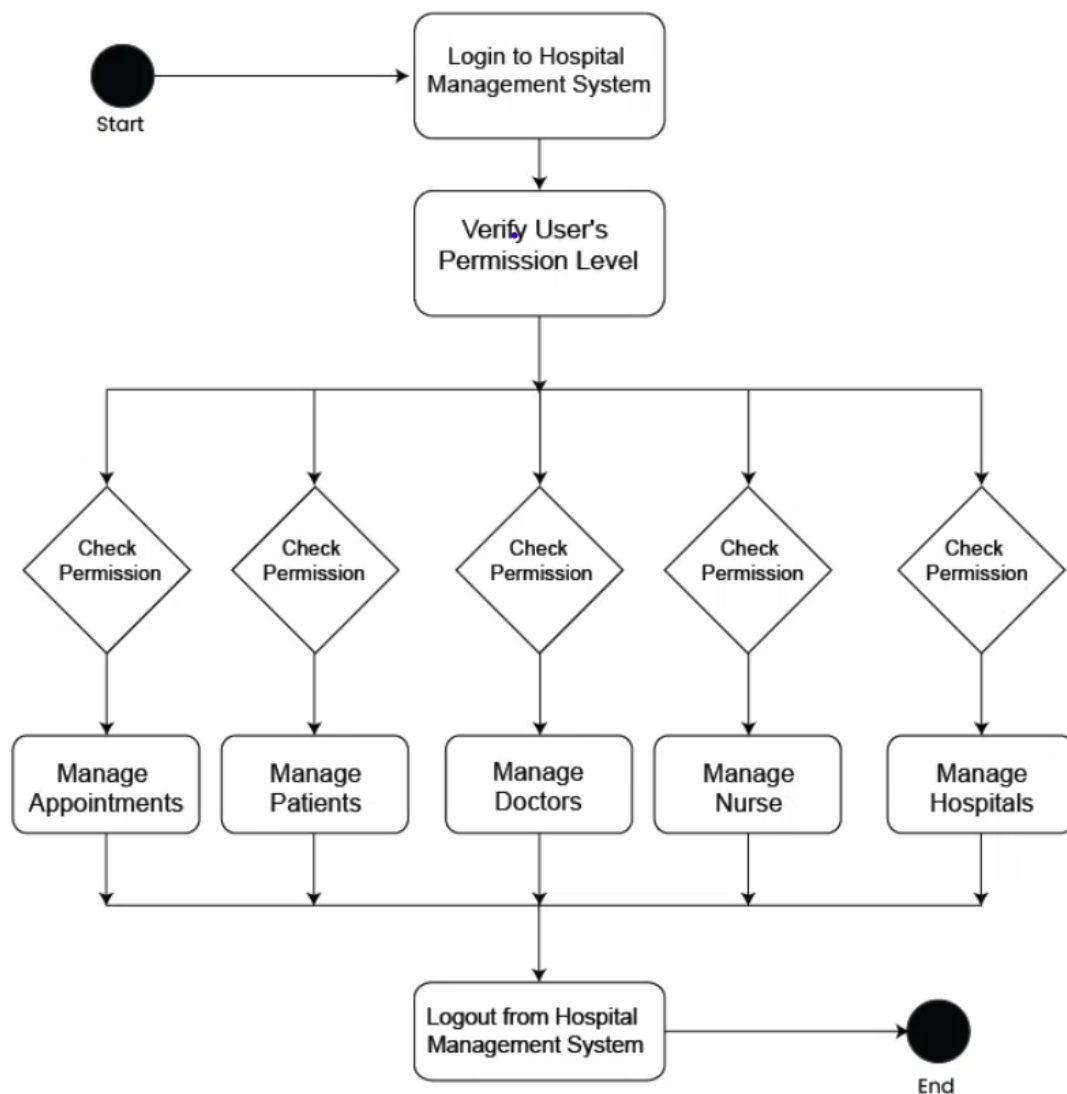
2.4.4. Treatment and Procedures:

- Nurse administers medications or treatments as prescribed by the doctor.
- Nurse schedules any necessary procedures (e.g., X-rays, scans, surgeries).

2.4.5. Patient Discharge:

- Doctor determines when the patient is ready for discharge.
- Nurse provides discharge instructions and medications.
- Receptionist handles billing and insurance claims.
- Patient leaves the hospital.

2.5. Activity Diagram:



2.5.1. User Interaction:

- Book Appointment
- Check in

- View Medical Records
- Pay Bills
- Manage Inventory
- Manage Staff
- Generate Reports
- Log Out

2.5.2. Book Appointment:

- User selects “Book Appointment.”
- System displays available doctors and time slots.
- User selects a doctor and preferred time.
- System confirms the appointment booking.

2.5.3. Check in:

- Patient arrives at the hospital.
- Receptionist greets the patient and verifies their appointment.
- Receptionist checks the patient in and assigns a queue number.

2.5.4. View Medical Records:

- User selects “View Medical Records.”
- System prompts user to enter patient ID or name.
- System retrieves and displays the patient’s medical history.

2.5.5. Pay Bills:

- User selects “Pay Bills.”
- System displays a list of outstanding bills for the user.
- User selects the bill(s) to pay and enters payment details.
- System processes the payment and updates the billing records.

2.5.6. Manage Inventory:

- Authorized staff member selects “Manage Inventory.”
- System displays options to add, update, or remove items from inventory.
- Staff member performs the desired inventory management tasks.
- System updates the inventory database accordingly.

2.5.7. Manage Staff:

- Authorized administrator selects “Manage Staff.”
- System displays options to add, update, or remove staff members.
- Administrator performs the desired staff management tasks.
- System updates the staff database accordingly.

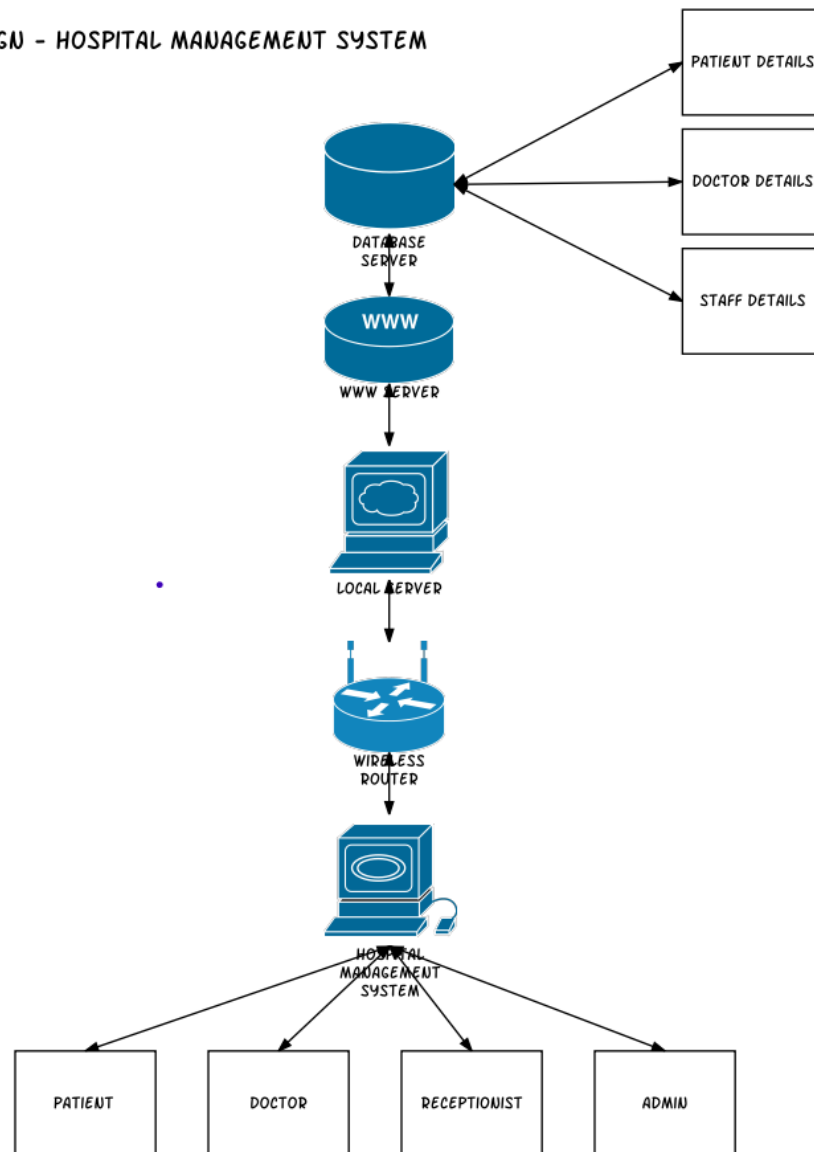
2.5.8. Generate Reports:

- Authorized user selects “Generate Reports.”
- System provides options to generate various reports such as patient statistics, financial summaries, etc.

- User selects the type of report to generate.
- System generates the report and displays it to the user.

2.6. Architectural Diagram:

ARCHITECTURAL DESIGN - HOSPITAL MANAGEMENT SYSTEM



3. Functional Requirements:

3.1. Patient Management:

- **Registration:** Ability to register new patients, including capturing personal and medical information.
- **Appointment Scheduling:** Allow patients to schedule appointments with doctors or departments.
- **Admission/Discharge:** Manage the admission and discharge process for patients.

3.2. Staff Management:

- **User Authentication:** Secure login for staff members with different access levels (admin, doctors, etc.).
- **Staff Roster:** Manage staff schedules, including doctors, and administrative personnel.

3.3. Medical Records Management:

- **Electronic Health Records (EHR):** Store and manage patient medical history, diagnoses, treatments, and test results.

3.4. Billing and Insurance:

- **Billing:** Generate bills for services rendered, including consultation fees, procedures, medications, and room charges.

4. Non-Functional Requirements:

4.1. Usability Requirements:

Our user interface should be interactive simple and easy to understand. The system should prompt for the user and administrator to login to the application for proper input criteria.

Hospital Management System shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period.

4.2. Security Requirements:

System should use secured Database.

Normal users can just read information but they cannot edit or modify anything except their personal and some other information.

System will have different types of users and every user has access constraints.

Proper user authentication should be provided.

No one should be able to hack user's password.

There should be separate accounts for admin and members such that no member can access the database and only admin has the rights to update the database.

4.3. Performance Requirements:

The system shall accommodate high number of booking and users without any fault.

Responses to view information shall take no longer than 5 seconds to appear on the screen.

4.4. Error Requirements:

eDoc shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period.