Software Requirements Specification

# Software Requirements Specification  
For Hospital Management System  
Version 1.0  
  
March 31, 2025  
  
## 1. Purpose  
  
The Hospital Management System (HMS) aims to streamline hospital operations, enhance patient care, and improve administrative efficiency. This system will provide a centralized platform for managing patient records, appointments, billing, and other critical hospital functions. The business value lies in improved patient satisfaction, reduced operational costs, and enhanced data-driven decision-making.  
  
## 2. Scope  
  
### a) System Features  
  
\* \*Clinical:\*  
 \* Patient record management  
 \* Online consultations (video conferencing, screen sharing, file transfer)  
 \* E-prescribing and drug database integration  
 \* Medication history tracking, allergy alerts, and drug interaction checks  
\* \*Administrative:\*  
 \* Appointment booking and management  
 \* Doctor schedule management  
 \* Insurance integration (claims processing and verification)  
 \* Role-Based Access Control (RBAC)  
 \* Reporting and analytics  
 \* Automated notifications (appointments, follow-ups, refills)  
 \* Secure payment processing  
\* \*Technical:\*  
 \* EHR system (secure storage, retrieval, sharing)  
 \* Secure payment gateway integration  
 \* Automated notification system  
 \* Reporting and analytics tools  
 \* Data encryption (at rest and in transit)  
 \* Multi-factor authentication  
  
### b) System Boundaries  
  
\* \*Internal Systems and Modules:\* Patient Management Module, Appointment Management Module, Billing Module, Reporting Module, User Management Module, EHR Module.  
\* \*External Integrations:\* Insurance provider systems, e-prescribing systems, drug databases, secure payment gateways, video conferencing platform.  
\* \*User Access Points and Interfaces:\* Patient portal, doctor interface, nurse interface, administrator dashboard.  
\* \*Data Flow Boundaries:\* Data exchange between internal modules, data transfer with external systems (insurance, payments), patient data access controls.  
  
### c) Out of Scope  
  
\* Automated referral process (currently manual).  
\* Inventory management.  
\* Supply chain management.  
\* Advanced AI-driven diagnostics.  
\* Mobile application development.  
  
## 3. Stakeholders  
  
\* \*Patients:\* Book appointments, access medical records, participate in online consultations.  
\* \*Doctors:\* Manage schedules, conduct online consultations, prescribe medications, access patient records.  
\* \*Nurses:\* Access patient records, assist with consultations, manage medication administration.  
\* \*Administrators:\* Oversee hospital operations, manage staff, resources, and finances, generate reports.  
\* \*Insurance Providers:\* Process claims, verify patient coverage.  
  
## 4. Features  
  
\* \*Appointment Management:\* Online booking, schedule management, automated reminders.  
\* \*Patient Management:\* Comprehensive patient records, online consultations, secure data storage.  
\* \*Administrative Operations:\* Staff management, resource allocation, financial tracking, reporting.  
\* \*Insurance Integration:\* Claims processing, coverage verification.  
\* \*EHR System:\* Secure storage, retrieval, and sharing of patient data.  
\* \*Secure Payment Processing:\* Online payments, various payment methods.  
\* \*Role-Based Access Control:\* Granular permissions for different user roles.  
  
## 5. Functional Requirements Section  
  
\* [FR-01]: Patients can book appointments online. [High]  
\* [FR-02]: Doctors can manage their schedules, including setting availability, marking leaves, and making adjustments. [High]  
\* [FR-03]: The system shall maintain patient records, including medical history, diagnoses, and treatments. [High]  
\* [FR-04]: The system shall support online consultations, including video conferencing, screen sharing, and file transfer. [High]  
\* [FR-05]: Administrators can oversee hospital operations, including managing staff, resources, and finances. [High]  
\* [FR-06]: The system shall integrate with insurance providers for claims processing and verification. [Medium]  
\* [FR-07]: The system shall implement Role-Based Access Control (RBAC) with granular permissions for each user type (patient, doctor, nurse, administrative staff). [High]  
\* [FR-08]: The system shall integrate with e-prescribing systems and drug databases. [High]  
\* [FR-09]: The system shall implement a comprehensive EHR system with features for secure storage, retrieval, and sharing of patient data (with patient consent). [High]  
\* [FR-10]: The system shall integrate with secure payment gateways and support various payment methods. [Medium]  
\* [FR-11]: The system shall implement automated notification systems for appointments, follow-ups, and medication refills. [Medium]  
\* [FR-12]: Patients can cancel or reschedule appointments online up to 24 hours before the appointment; after that, they must call. [Medium]  
\* [FR-13]: Doctors manage their schedules through a dedicated interface with automated leave and adjustment features. [High]  
\* [FR-14]: Referrals to specialists (internal/external) are handled through a manual process. [Low]  
  
## 6. Non-Functional Requirements Section  
  
\* [NFR-01]: The system shall respond to appointment booking requests within 3 seconds. [High]  
\* [NFR-02]: The system shall retrieve patient records within 10 seconds. [High]  
\* [NFR-03]: The system shall support 2000 concurrent users. [High]  
\* [NFR-04]: Patient records and communication shall be encrypted using AES-128 encryption. [High]  
\* [NFR-05]: The system shall be available 99.9% of the time. [High]  
\* [NFR-06]: The system shall be scalable to accommodate future growth in users and data. [Medium]  
  
## 7. Security Requirements Section  
  
\* [SR-01]: Implement robust security measures, including data encryption at rest and in transit, multi-factor authentication, and regular security audits. [High]  
\* [SR-02]: Ensure compliance with relevant data privacy regulations (e.g., HIPAA, GDPR). [High]  
\* [SR-03]: Implement audit logging for all system activities. [High]  
\* [SR-04]: Implement strong password policies. [High]  
\* [SR-05]: Regularly perform vulnerability assessments and penetration testing. [High]  
  
## 8. Constraints Section  
  
\* \*Technical Limitations:\* The system must integrate with existing hospital infrastructure.  
\* \*Business Rules:\* Patients can only cancel/reschedule appointments online up to 24 hours before the appointment.  
\* \*Regulatory Requirements:\* Compliance with HIPAA, GDPR, and other relevant data privacy regulations.  
\* \*Budgetary Constraints:\* The project budget is limited to $XXX,XXX.  
\* \*Time Constraints:\* The system must be deployed within 12 months.  
  
## 9. Priorities Section (MoSCoW)  
  
\* \*Must Have:\* Appointment booking, patient record management, doctor schedule management, RBAC, EHR system, security measures, compliance with data privacy regulations.  
\* \*Should Have:\* Online consultations, insurance integration, automated notifications, secure payment processing.  
\* \*Could Have:\* Advanced reporting and analytics.  
\* \*Won't Have:\* Automated referral process, inventory management, supply chain management, AI-driven diagnostics, mobile application.  
  
## 10. Additional Section  
  
\* Reporting and analytics tools to generate customized reports on various metrics (patient demographics, appointment statistics, and financial performance).  
\* Future considerations include integrating with wearable devices for remote patient monitoring.  
\* The system should be designed with modularity in mind to allow for future expansion and integration with other systems.  
\* Prerequisites: Historical patient admission data, Integration with hospital management system, Data analytics platform.  
\* Configuration Requirements: Forecasting horizon should be used (e.g., daily, weekly, monthly)?: Daily, Which external data sources should be integrated (e.g., weather data, disease outbreak data)?: Disease outbreak data.