Software Requirements Specification

for

Patient Health Record Management

Version 1.1

1. Introduction

1.1. Purpose

The Patient Health Record Management system is designed to revolutionize healthcare information management by establishing a centralized and secure platform for Electronic Health Records (EHR). This comprehensive system aims to elevate patient care through efficient data management, providing healthcare providers with quick and secure access to critical health information.

By consolidating patient records in a centralized repository, the system facilitates streamlined data management, ensuring that medical histories, treatment records, test results, and prescriptions are easily accessible and accurately documented. The goal is to empower healthcare professionals with timely and comprehensive insights into a patient's health journey, fostering informed decision-making and personalized care delivery.

1.2. Scope

The scope of the Patient Health Record Management system revolves around developing a centralized and secure platform for Electronic Health Records (EHR) to significantly improve healthcare management. This system will streamline the process of capturing, updating, and managing patient data, ranging from demographic information to comprehensive medical histories, treatments, and test results.

The scope extends to facilitating interoperability among various healthcare providers, ensuring seamless information exchange. Emphasis is placed on robust security measures to protect patient privacy and compliance with healthcare data protection regulations. Ultimately, the project aims to create an integrated and efficient solution that enhances patient care and empowers healthcare professionals with quick and secure access to vital health information.

1.3. Definitions, acronyms, and abbreviations

S.no	Abbreviation	Full Form
1	PHR	Patient Health Records
2	DBMS	DatabaseManagementSystem

1.4. Overview

In the coming sections of the SRS report, the client will be having a brief explanation of the product description and the perspectives, characteristics, constraints and the dependencies of the project.

1.5. References

- https://www.himss.org/
- https://www.who.int/
- https://chimecentral.org/

2. Overall Description

2.1. Perspective

The perspective of the Patient Health Record Management system lies in revolutionizing healthcare information management. From a patient's viewpoint, it promises a more connected and personalized care experience through the seamless sharing of comprehensive health records among healthcare providers. For healthcare professionals, the system offers a centralized hub for efficient data management, fostering informed decision-making and improving the quality of care. From a technological standpoint, the perspective involves creating a secure and interoperable platform that adheres to industry standards and compliance regulations, ensuring the integrity and privacy of patient

data. Overall, the project's perspective is to establish a transformative solution that enhances collaboration, accessibility, and security in healthcare information management.

2.2 Functionalities and non functionalities

Functionalities:

Patient Registration

User Authentication:

• Secure login mechanisms for healthcare professionals with rolebased access.

Demographic Information:

• Capture and store patient demographic details during the registration process.

Medical History Documentation:

- Comprehensive recording of patient medical history, including past illnesses, surgeries, and family medical history.

Treatment Records

Treatment Documentation:

• Record and manage details of prescribed treatments, medications, and therapeutic interventions.

Test Results Management:

- Integrate and manage laboratory test results and diagnostic imaging reports.

Appointment Scheduling

Appointment Booking:

• Functionality for scheduling and managing patient appointments.

Prescription Management

Medication Records:

- Track prescribed medications, dosages, and refill information.

Security and Access Control

Role-Based Access Control:

- Implement different access levels based on user roles to ensure data security.

Interoperability Data Exchange:

- Support interoperability for seamless data exchange with other healthcare systems.

Non-functionalities:

Security

Data Encryption:

- Implement encryption protocols to safeguard patient data from unauthorized access. **Access Auditing:**
- Maintain detailed audit trails to track user access and modifications to patient records.

Usability

Intuitive User Interface:

- Design a user-friendly interface for healthcare professionals to efficiently navigate and update patient records**.**

Compliance

HIPAA Compliance:

- Ensure compliance with healthcare data protection laws, particularly HIPAA regulations.

Scalability

Scalable Architecture:

- Design the system to handle a growing number of patient records and increased user activity.

Integration with Standards

HL7 and FHIR Compliance:

- Adhere to industry standards such as HL7 and FHIR to facilitate interoperability with other healthcare systems.

Data Backup and Recovery

Regular Backups:

- Implement automated backup procedures to prevent data loss and facilitate recovery.
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2.3 Constraints

Budget Constraints:

Limited financial resources may impact project scope.

Time Constraints:

Tight deadlines may limit development time.

Regulatory Compliance:

Adherence to strict healthcare regulations imposes constraints.

Interoperability Challenges:

Integrating with diverse healthcare systems may be challenging.

Data Security and Privacy Concerns:

Stringent requirements may limit certain functionalities.

Legacy Systems Integration:

Integrating with existing systems may pose challenges.

User Adoption Resistance:

Healthcare professionals may resist adopting new systems.

Scalability Considerations:

Project needs to consider scalability for growing data volume.

Technological Constraints:

Compatibility issues with existing technologies.

Staff Training and Adoption:

Time and resources for staff training may be limited.

Interdepartmental Collaboration:

Challenges in fostering collaboration between departments.

Data Migration Challenges:

Moving existing data to the new platform may present obstacles.

2.4 Assumptions and dependencies

Assumptions:

Internet Connectivity:

- Assumes reliable internet access for healthcare professionals to use the system.

User Device Compatibility:

- Assumes compatibility with common devices (computers, tablets, smartphones) used by healthcare professionals.

Patient Data Accuracy:

- Assumes that patient data entered into the system is accurate and up-to-date.

Regulatory Compliance:

- Assumes ongoing compliance with healthcare data protection laws and regulations throughout the project.

Staff Training:

- Assumes that adequate training will be provided to healthcare professionals for effective system utilization.

System Security Measures:

- Assumes the implementation of appropriate security measures to protect patient data.

Dependencies:

Integration with External Systems:

- Depends on successful integration with external systems, such as laboratory information systems and diagnostic imaging systems.

Data Migration:

- Depends on a smooth and accurate migration of existing patient data from legacy systems to the new platform.

Regulatory Updates:

- Depends on timely updates and compliance with any changes in healthcare data protection regulations during the project.

Availability of Technical Support:

- Depends on the availability of technical support for any issues that may arise during system implementation and usage.

User Feedback Mechanism:

- Depends on establishing a mechanism for gathering feedback from healthcare professionals for continuous system improvement.

Collaboration with Healthcare Facilities:

- Depends on collaboration with different healthcare facilities for interoperability and data exchange.

3.Specific Requirements

3.1. Functional requirements

3.1.1 Patient Registration and Demographics

User Authentication:
Secure login for healthcare professionals with role-based access.
Patient Demographic Information:
Capture and store patient demographic details during registration.

3.1.2 Medical History and Treatments

Medical History Documentation:
Comprehensive recording of patient medical history, including past illnesses, surgeries, and family medical history.

Treatment Records:

Record and manage details of prescribed treatments, medications, and therapeutic interventions.

3.1.3 Diagnostic Data Management

Test Results Integration:
Integrate and manage laboratory test results and diagnostic imaging reports.

3.1.4 Appointment Scheduling

Appointment Booking:
Functionality for scheduling and managing patient appointments.

3.1.5 Medication Management

Prescription Records:
Track prescribed medications, dosages, and refill information.

3.1.6 Security and Access Control Role-

Based Access Control:

Implement different access levels based on user roles to ensure data security.

3.1.7 Interoperability

Data Exchange:
Support interoperability for seamless data exchange with other healthcare systems.

3.2. Non- Functional requirements

3.2.1 Security and Compliance Data

Encryption:

- Implement encryption protocols to safeguard patient data**.**

Access Auditing:

- Maintain detailed audit trails to track user access and modifications to patient records.

HIPAA Compliance:

- Ensure compliance with healthcare data protection laws, particularly HIPAA regulations. **3.2.2 Usability and User Interface Intuitive User Interface:**
- Design a user-friendly interface for healthcare professionals to efficiently navigate and update patient records.

3.2.3 Scalability

Scalable Architecture:

- Design the system to handle a growing number of patient records and increased user activity. **3.2.4 Integration with Standards HL7 and FHIR.**

Compliance:

Adhere to industry standards such as HL7 and FHIR to facilitate interoperability with other healthcare systems. **3.2.5 Data Backup and Recovery Regular Backups:**

- Implement automated backup procedures to prevent data loss and facilitate recovery.
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3.3. Additional functional Requirements

3.3.1 Allergies and Immunizations Allergy

Records:

- Capture and manage information about patient allergies.

Immunization Records:

- Maintain a record of vaccinations and immunizations administered to patients.

3.3.2 Progress Notes and Annotations

Progress Notes:

- Allow healthcare professionals to add progress notes, observations, and comments to patient records.

Annotations on Diagnostic Data:

- Enable annotations and comments on diagnostic test results and imaging reports for additional context. **3.3.3 Patient Education Resources Access to Educational Materials:**

- Provide links or resources for patients to access educational materials related to their medical conditions.

Health Promotions:

Offer health promotion tips and recommendations based on patient profiles.

3.3.4 Telemedicine Integration

Telemedicine Appointments:

- Integrate functionality for scheduling and conducting telemedicine appointments.

Secure Video Conferencing:

- Implement secure video conferencing tools for remote consultations.

3.4. Additional Non-functional Requirements

3.4.1 Performance Response Time:

- System should respond within 3 seconds for common operations.

Concurrency Handling:

- Manage concurrent access to patient records with efficient handling to avoid conflicts.

3.4.2 User Training and Support Training

Modules:

- Develop comprehensive training modules for healthcare professionals on system usage.

24/7 Technical Support:

- Provide continuous technical support for system-related issues. **3.4.3 Mobile Application Mobile Accessibility:**
- Develop a mobile application for on-the-go access to patient records and functionalities.

Cross-Platform Compatibility:

Ensure compatibility of the mobile application across major platforms (iOS, Android).

3.4.4 Reporting and Analytics

Customizable Reports:

- Allow healthcare administrators to generate customizable reports on patient data and system usage.

Data Analytics Tools:

- Implement analytics tools for extracting insights into disease prevalence, treatment effectiveness, and resource utilization.