Healthcare Management System	Software Requirement Specification

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Contents

1. Introduction

The Healthcare Management System (HMS) is an advanced web-based platform that simplifies healthcare operations and empowers healthcare providers. Prioritizing data-driven decision support, telemedicine, and patient involvement, the HMS aims to improve the efficiency and impact of healthcare services. It offers a resilient solution for healthcare institutions, allowing them to enhance patient care and operational efficiency. The HMS is built to remain flexible and responsive to the constantly evolving healthcare environment, ensuring that healthcare organizations can meet the ever-changing industry requirements while delivering top-tier patient care.

1.1 Purpose

The Software Requirement Specification (SRS) document for the Healthcare Management System (HMS) serves the purpose of offering a comprehensive and clear description of the essential requirements and goals of the system. It defines the system's features, functionalities, and performance standards, ensuring a shared understanding among all stakeholders, including healthcare professionals, administrators, and patients.

This SRS document plays a crucial role as a formal agreement between the client and the development team. It sets the foundation for subsequent decision-making and quality assurance throughout the system's development life cycle. Essentially, it acts as a guiding roadmap for the development process, leading to the creation of a robust platform that optimizes healthcare procedures, empowers healthcare professionals, and improves patient care and operational efficiency.

1.2 Scope

The Healthcare Management System (HMS) project is an extensive initiative focused on the development of a comprehensive web-based platform. This platform's primary objective is to streamline and enhance various facets of healthcare management and delivery. The project encompasses a wide range of functionalities, including, but not limited to, patient record management, appointment scheduling, integration of telemedicine services, data-driven decision support, effective inventory and resource management, report generation and dashboard capabilities, seamless communication tools, user-specific dashboards, patient engagement features, rigorous security and privacy compliance, a notification system for appointment management, support for healthcare analysis and research, and the provision of a dedicated help desk service.

These integrated features collectively aim to provide a holistic and efficient solution tailored to the needs of healthcare professionals, administrators, and patients. The ultimate goal is to improve the overall quality of healthcare services and management comprehensively.

1.3 Intended Stakeholder

The primary stakeholder of the Healthcare Management System (HMS) is the BJIT Academy. The BJIT Academy holds a significant interest in the successful implementation and utilization of the HMS.

1.4 References

Reference	Location
Requirement Specification	

1.5 Definitions, Acronyms, and Abbreviations

Term/Acronym	Definition
System	Abbreviation of system
API	Application Programming Interface
SRS	Software Requirement Specification
HMS	Healthcare Management System

2. Overall Description

The Healthcare Management System (HMS) is an advanced software solution designed to enhance the management of healthcare services within institutions. It serves as a centralized platform, consolidating various aspects of healthcare management into a single interface. By incorporating intelligent automation and workflows, the HMS enables healthcare organizations to plan, coordinate, and monitor their services with greater efficiency. It replaces traditional manual methods and paperwork with technology, resulting in smoother operations, reduced errors, and improved healthcare management. Whether it's maintaining patient records or scheduling appointments, the HMS revolutionizes the way healthcare services are administered. It offers a user-friendly interface for administrators, healthcare professionals, and patients, simplifying healthcare management. With the HMS, healthcare organizations can embark on a new era of management, increasing productivity, leveraging data for informed decisions, and delivering superior patient care.

2.1 Overview

This segment doesn't outline specific criteria but instead provides a background for the general factors impacting the product and its detailed criteria, which are fully articulated in section 3. Here is a summary of the project.

1. The Healthcare Management System (HMS) is desicgned to serve as a comprehensive and user-friendly platform for overseeing healthcare services within the organization. It stands as an integrated solution catering to the requirements of healthcare providers and administrators engaged in healthcare management. The primary objective of the HMS is to streamline and improve every facet of healthcare service management, spanning patient care, operational efficiency, and data analysis.

2. **Product Functions:** The Healthcare Management System should have the following features:

    -   Manages patients' data.

    -   Facilitates doctor information and appointment management.

    -   Manages medicines, equipment inventory and tracks expiration dates.

    -   Schedules doctor appointments and optimizes resource allocations.

    -   Offers a patient dashboard, appointment scheduling, and feedback sharing.

    -   Sends notifications for appointments, test results, and important updates.

    -   Provides quick access to information with robust search.

    -   Offers diagnosis and treatment suggestions based on patients' data.

    -   Aggregates patient data for research and analytics.

    -   Enables remote consultations and video conferencing.

3. **User Characteristics**: The Healthcare Management System (HMS) is designed to accommodate a diverse set of user groups, including administrators, patients, doctors, pharmacists, researchers, and equipment managers, each with their unique characteristics and needs.

    -   **Administrators**: Responsible for system management, may have advanced technical skills.

    -   **Patients**: Varied in age, technical proficiency, and health conditions.

    -   **Doctors**: Healthcare professionals with different specialties.

    -   **Pharmacists**: Handling medications, diverse in experience.

    -   **Researchers**: Conducting medical studies, requiring data analysis skills.

    -   **Equipment Managers**: Responsible for medical equipment management, with technical knowledge.

4. **Constraints**: The development and implementation of the Healthcare Management System (HMS) project might confront the following constraints.

- **Time and Budget Constraints**: The project must be developed within a predetermined timeframe and allocated budget to ensure timely completion and efficient resource utilization.

- **Legal and Ethical Restrictions**: The HMS must strictly adhere to legal and ethical guidelines when handling patient and healthcare data, ensuring compliance with data protection laws and privacy regulations. Constraints may arise due to limitations on the use of certain personal health information and restrictions related to patient data privacy.

- **Training and Adoption**: Sufficient time should be allocated for training administrators, patients, doctors, and equipment managers on how to effectively use the HMS and adapt to the new system.

5.   Assumptions and Dependencies for the Healthcare Management System (HMS) can include:

- **Users' Access and Connectivity:**

  o   Administrators, patients, doctors, researchers, and equipment managers should have access to a computer, tablet, or mobile device with a stable internet connection to interact with the HMS platform.

  o   Users are expected to possess basic computer literacy skills, enabling them to navigate the system and perform essential tasks comfortably.

- **System Integration and Dependencies:**

  o   The HMS may rely on external services or APIs for various functions, including email communication, data retrieval, or user authentication, to enhance its features and capabilities.

- **Data Accuracy and Availability:**

  o   The HMS operates under the assumption that the data provided by patients, healthcare professionals, and administrators is accurate, reliable, and up to date for effective healthcare management.

  o   The system relies on the availability of precise healthcare details, appointment schedules, medical records, and other relevant information to facilitate healthcare services and resource allocation.

- **Technical Expertise and Resources:**

  o   The development team responsible for the HMS project should possess the essential technical expertise and resources required to design, develop, and maintain the healthcare management platform.

  o   Adequate development tools, hardware, and software infrastructure should be accessible to support the project's technical requirements, ensuring the smooth operation of the healthcare management system.

- **Compliance and Legal Considerations:**

  o   The HMS operates under the assumption that the organization strictly adheres to relevant data protection and privacy laws when handling patient and healthcare data.

  o   The system design and implementation should comply with all applicable regulations and guidelines governing healthcare data management and patient privacy to ensure legal and ethical usage of healthcare information.

- **User Training and Support:**

  o   The HMS project assumes that user training materials and support resources will be made available to administrators, patients, doctors, pharmacists, researchers, and equipment managers to ensure effective system usage.

  o   Users of the HMS should have access to help documentation, FAQs, or support channels to address any questions or issues that may arise during their interactions with the system. This ensures that users can receive assistance and guidance as needed.

2.2 Technical platform

The technical platform for the Healthcare Management System (HMS) may include the following components:

- **Operating System:** The HMS will be developed as a web-based platform, ensuring compatibility with modern web browsers and future updates.

- **Development Environment:** An integrated development environment (IDE) like Visual Studio Code or Eclipse may be used for system development and debugging.

- **Programming Languages:** Primary programming languages for the HMS may include Java for backend development and HTML/CSS/JavaScript/React for the user interface.

- **Frameworks and Libraries:** Relevant frameworks and libraries, such as Spring Boot for backend development and React.js for front-end, may be utilized to enhance system functionality and development efficiency.

- **Database:** A database management system like MySQL may be employed to store and retrieve data relevant to patient records, appointments, healthcare information, and other critical data.

- **Security:** The HMS will implement robust security measures including encryption, user authentication, and authorization to safeguard sensitive patient and healthcare data and maintain privacy.

- **User Experience:** The system will prioritize user experience, featuring an intuitive and user-friendly interface, straightforward navigation, and responsive performance for healthcare professionals, administrators, and patients.

- **Mobile Device Compatibility:** The system should undergo testing and optimization to ensure compatibility and optimal performance across various mobile devices, including smartphones and tablets, guaranteeing seamless access and usability for all users.

These are some of the key technical components that may be part of the technical platform for the HMS system. The technical platform should be chosen and implemented in a way that ensures the system meets the needs and requirements of the end-users and stakeholders.

3. Functional Requirements

The functional requirements of the Healthcare Management System (HMS) are as follows:

1. Allow users to register with personal and healthcare information.

2. Enable users to schedule and manage appointments with healthcare professionals.

3. Support inventory management for medicines and medical equipment.

4. Provide notification and alert system for appointment reminders and updates.

5. Implement a user-friendly interface for data input and access.

6. Enable users to access personalized health tips and set health goals.

7. Facilitate user data analytics and predictive health information.

8. Offer a help desk for quick information retrieval and support.

9.   Include a robust search feature for healthcare-related information.

10.   Allow for telemedicine integration, enabling remote consultations.

3.1   Overview

This section sums up in the below table the main functionalities or services provided by the system, which will be detailed in the following sections.

Serial No	Main Features	Description
1	Patient Data Management	Patient registration/login with necessary information.
2	Consultant/Doctor Data Management	Healthcare professionals can register with necessary information including specialties, qualifications, and availability.
3	Pharmaceutical Inventory Management	Pharmacists and equipment managers can manage medicines and medical equipment data.
4	Appointment Scheduling and Resource Allocation	The system should have a robust appointment scheduling system for both in-person and telemedicine appointments.
5	Community Portal	The system should offer patients a user-friendly interface to access health data, schedule appointments, and set wellness goals. It fosters community engagement by enabling patients to share experiences and progress within the healthcare institute.
6	User Notifications and Alerts	The system should have a notification system for healthcare professionals and patients for appointment reminders, test results, and important updates.
7	Help Desk	Patients can quickly find doctors and access Help Desk resources, while admin/staff users can perform robust searches for various information.
8	Clinical Decision Support System (CDSS)	The system should have a CDSS that analyzes patient data to suggest diagnoses, treatment plans, and medication recommendations.
9	Healthcare Analytic and Research	The system should have a module for aggregating patients' data to support medical research and epidemiological studies.
10	Telemedicine Integration	The system should integrate a telemedicine module for remote consultations and video conferencing with healthcare professionals.

3.1.1. Patient Data Management

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_001	The Patients can register using the following fields: first name, last name, email, contact no, address, sex, date of birth, blood group and password.	Essential	Server might not be available	TC_001
HMS_002	Patients can create their health information which includes weight, height, blood pressure, sugar level and goal weight.	Essential	None	TC_002
HMS_003	Patients can login using their email and password.	Essential	Patient may not be registered	TC_003
HMS_004	Patients can update their profiles.	Essential	Server might not be available	TC_004
HMS_005	Patients can logout from their account.	Essential	Server might not be available	TC_005

3.1.2 Consultant/Doctor Data Management

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_006	Doctors can register by entering their personal and professional details, including first name, last name, email, contact number, address, sex, specializations, qualifications, and a secure password.	Essential	Server might not be available	TC_006
HMS_007	Registered doctors can access their accounts by logging in using their email and password.	Essential	Doctor may not be registered	TC_007
HMS_008	Doctors can maintain and update their professional profiles.	Essential	Server might not be available	TC_008
HMS_009	Doctors can schedule and manage appointments.	Essential	Server might not be available	TC_009
HMS_010	Doctors can check their appointment list using a doctor's portal.	Essential	Server might not be available.	TC_010

3.1.3   Pharmaceutical Inventory Management

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_011	Pharmacists can add new medicines with the following fields: name, category, description, expiration date, manufacturer, and quantity.	Essential	Pharmacist may not be registered	TC_011
HMS_012	Equipment manager can add new medical equipment using the following fields: name, description, manufacturer and purchase date.	Essential	Equipment manager may not be registered.	TC_012
HMS_013	Pharmacists can update the availability of the medicine based on the expiration date.	Essential	None	TC_013

3.1.4   Appointment Scheduling and Resource Allocation

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier

HMS_014	The system has a robust appointment scheduling system optimizing resource allocation, including doctors and equipment to improve efficiency.	Essential	None	TC_014

3.1.5   Community Portal

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_015	There is a dashboard for patients to access their health information, schedule appointments.	Essential	May require reliable internet connection for seamless experience	TC_015
HMS_016	Patients can receive personalized health tips based on their current health condition.	Essential	May require reliable internet connection for seamless experience	TC_016
HMS_017	Patients can set health goals and track their progress	Essential	None	TC_017
HMS_018	People can share their thoughts and progress of this institute.	Essential	User may not be registered	TC_018
HMS_019	To avoid scams, the system has a validation feature which will force users to provide valid information.	Essential	None	TC_019

3.1.6 User Notifications and Alerts

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_020	The system has a notification system for healthcare professionals and patients for appointment reminders, test results, and important updates	Essential	None	TC_020

3.1.7   Help Desk

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_021	Patient can immediately search for doctor or quick guides.	Essential	May require regular updates to ensure accuracy of information	TC_021
HMS_022	This feature will be operated by admin/stuff users.	Essential	None	TC_22

3.1.8 Clinical Decision Support System (CDSS)

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_023	The system analyzes patient data to suggest diagnoses, treatment plans, and medication recommendations.	Essential	May require regular updates to ensure accuracy of information	TC_023
HMS_024	The system provides predictive analytic related to disease progression.	Essential	May require regular updates to ensure accuracy of information	TC_024

3.1.9 Healthcare Analytic and Research

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_025	The system has a module for aggregating patients' data to support medical research and epidemiological studies.	Essential	May require regular updates to ensure accuracy of information	TC_025
HMS_026	The system provides data visualization for healthcare analytic.	Essential	May require regular updates to ensure accuracy of information	TC_026

3.1.10   Telemedicine Integration

Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_027	The system has a telemedicine module for remote consultations and video conferencing with healthcare professionals.	Essential	May require stable internet connection	TC_027
HMS_028	The system has a user-friendly interface for seamless interaction during telemedicine sessions.	Essential	May require stable internet connection	TC_028

4. User Interface

UI No.	UI Name	Related Function Requirement ID	Description	Test case Identifier
HMS_UI_101	Sign In / Sign Up	HMS_001	This UI component provides a user-friendly interface for users to log in or register to the HMS portal. It includes fields for entering credentials such as username and password, along with create a new account option.	TC_101
HMS_UI_102	HMS Home	N/A	The home page serves as the landing page for the HMS system. It provides an overview of the available features and options, including navigation links to different sections of the system.	TC_102

HMS_UI_103	User Profile	HMS_002	A screen displaying the user information based on the user type.	TC_103
HMS_UI_104	Schedule Appointments	HMS_009	A screen providing the necessary fields for the doctor to schedule appointments.	TC_104
HMS_UI_105	Doctors Portal	HMS_010	This UI component allows doctors to check the appointments based on their provided schedule and availability.	TC_105
HMS_UI_106	Inventory	HMS_011	The inventory page will help the pharmacists and equipment managers to add and manage medicine and medical equipment.	TC_106
HMS_UI_107	Notifications	HMS_019	The Notification Panel displays important notifications or alerts for users.	TC_107
HMS_UI_108	Patient Dashboard	HMS_015	A dashboard for the patients to enable access to health data, appointment scheduling, and the reception of customized wellness advice.	TC_108
HMS_UI_109	Share thoughts	HMS_018	This page provides users to share their thoughts and progress to other others.	TC_109
HMS_UI_110	Search Option	HMS_021	This UI element helps users find information based on their search criteria.	TC_110
HMS_UI_111	Recommendation Page	HMS_023	This page provides treatment plans and medications for the patient.	TC_111
HMS_UI_112	Statistics	HMS_026	This UI element displays statistical data, insights, and visualizations for all data, covering patients, doctors, treatments, and more.	TC_112
HMS_UI_113	Telemedicine Page	HMS_027	This page serves as a platform for virtual doctor-patient video conferencing.	TC_113

5. Non-Functional Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_201	The system should have a fast and responsive user interface with minimal latency. The average response time should not exceed 2 seconds, and the maximum response time should not exceed 5 seconds.	Essential	May require optimization of the code and the use of efficient algorithms to ensure good performance	TC_201
HMS_202	The system should use appropriate encryption techniques to protect user data. It should also have a secure login system to prevent unauthorized access.	Essential	May require regular security audits and updates to ensure protection against emerging threats	TC_202
HMS_203	The system should have a user-friendly interface with clear navigation and intuitive controls. It should be easy to use for users of all ages and skill levels.	Essential	May require regular user testing and feedback to improve the user experience	TC_203
HMS_204	The system should be compatible with a range of popular Android devices and should work seamlessly on both mobile and tablet devices.	Essential	May require regular testing on different devices and platforms to ensure compatibility	TC_204

5.1 Performance Requirements

1. **Response Time:**

   - A transaction's average response time should be less than 2 seconds.

   - A transaction's maximum response time should not exceed 5 seconds.

2. **Throughput:**

   ● The system must be able to process at least 50 transactions per second.

3. **Capacity:**

   ● The system must support a minimum of 10,000 concurrent users.

4. **Degradation Modes:**

   ● In the event of a degraded network connection, the system should convert to offline mode.

5. **Capital Utilization:**

   ● Memory usage should not be above 250 MB.

   ● Optimizing disk utilization will reduce storage use.

   ● The use of communications should be improved to reduce data consumption.

   ● The system should be built to reduce battery use and prevent excessive heat production.

6. **Reliability:**

   ● The system should be available at least 99.5% of the time.

   ● The system should feature error-handling capabilities to maintain stability and reduce accidents.

7. **Security:**

   ● Encryption and secure authentication measures should be used to safeguard the system against unwanted access and data breaches.

8. **Scalability:**

   ● The system should be able to accommodate an increase in the number of users and transactions without seeing a noticeable decrease in performance.

   ● Future additions and functions should be readily included into the system's design.

9. **Compatibility:**

   ● The system should be compatible with a broad variety of devices and versions and have minimum influence on device performance.

10. **Support:**

    ● The system should offer enough user assistance, including documentation, frequently asked questions, and a method for reporting problems and difficulties.

    ● The system should be regularly reviewed and updated in order to maintain optimum performance and handle any problems that may occur.

11. **Usability:**

    ● The system's UI should be straightforward and user-friendly, with easy navigation and accessible functions.

    ● With adequate support for screen readers, high-contrast mode, and other accessibility features, the system should be accessible to people with impairments.

12. **Customization:**

  ● The system should allow users to personalize their experience, including the ability to change the theme, text size, and notification settings.

13. **Reporting and Analytic:**

  ● The system should give information and insights into use trends, user behavior, and performance indicators.

  ● The system should provide real-time analytic and reporting features to aid in identifying performance problems and enhancing the user experience.

14. **Localization:**

  ● The system must support several languages to appeal to a larger audience.

15. **Integration:**

  ● To give users a full and engaging experience, the system should interact with third-party services and platforms, such as social networking and advertising.

These are a few performance requirements for an Android cricket system. Depending on the type and breadth of the system, as well as the intended audience, the requirements may vary.

5.2   Safety Requirements

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_301	The system should not expose users to any potential harm or danger, including physical harm or psychological harm.	Essential	May require regular user testing and feedback to ensure safety	TC_301
HMS_302	The system should protect the privacy and security of user data, including personal information and login credentials.	Essential	May require regular security audits and updates to ensure data safety	TC_302
HMS_303	The system should not cause damage to the device or equipment being used to access the system.	Essential	May require regular testing and compatibility checks to ensure equipment safety	TC_303

5.3 Security Requirements

To ensure the security of the Healthcare Management System (HMS) and prevent unauthorized or malicious access, the following security measures can be implemented:

a) **Encryption:** Sensitive data, such as user passwords, financial transactions, and other confidential information, should be encrypted using robust encryption algorithms like AES or RSA. This ensures that even if the data is intercepted, it remains unreadable and protected.

b) **Access Control:** HMS should implement a strong authentication mechanism to verify the identity of users and ensure that only authorized individuals can access sensitive data. This may include implementing secure login procedures, enforcing password complexity rules, and considering multi-factor authentication for added security.

c) **Role-based Access Control:** Access to different functionalities and data within HMS should be based on user roles and permissions. Users should only have access to the modules and functions that are necessary for their specific roles, limiting the risk of unauthorized access or modification of sensitive information.

d) **Auditing and Logging:** HMS should maintain logs and records of user activities and system events. Regularly reviewing and analyzing these logs can help identify any suspicious or abnormal behavior, enabling prompt detection and response to potential security threats.

e) **Secure Communication:** Communication between the HMS system and the server should be secured using protocols like SSL/TLS to encrypt data transmission and prevent eavesdropping or tampering. Additionally, network security measures should be in place to restrict communication between different software components to minimize the attack surface.

f) **Data Integrity:** HMS should ensure the integrity of critical data by implementing mechanisms to verify the integrity of data during transmission or storage. Hashing algorithms like SHA-256 can be used to verify data integrity and detect any unauthorized modifications or tampering.

g) **Regular Security Updates:** HMS should undergo regular security updates and patches to address any identified vulnerabilities or weaknesses. Staying up to date with security patches and fixes helps to mitigate potential security risks and ensures the ongoing protection of sensitive data.

These security measures, when properly implemented, can enhance the security posture of the Healthcare Management System, safeguard sensitive data, and protect against unauthorized access or malicious activities.

REQUIREMNT ID	Requirement Description	Acceptability / Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_401	The system should use appropriate encryption techniques to protect user data, such as passwords and personal information.	Essential	May require regular security audits and updates to ensure data encryption remains secure	TC_401
HMS_402	The system should have a secure login system to prevent unauthorized access to user accounts.	Essential	May require regular security audits and updates to ensure the login system remains secure	TC_402
HMS_403	The system should check the integrity of critical data to ensure that it has not been modified or tampered with.	Essential	May require regular security audits and updates to ensure data integrity	TC_403
HMS_404	The system should have mechanisms in place to detect and respond to potential security threats, such as malware or unauthorized access attempts.	Essential	May require regular security audits and updates to ensure threat detection remains effective	TC_404

6. Design Constraints

The design constraints for the Healthcare Management System (HMS) are as follows:

1. **Software Languages and Development Tools:** HMS utilizes Spring frameworks and REST-based applications for the back-end development. The main programming language is Java. For the front-end, HMS employs React.js as the primary technology. The development tools used may include IDEs such as IntelliJ IDEA or Eclipse for back-end development and code editors like Visual Studio Code for front-end development.

2. **Architecture:** HMS follows a modern and scalable architecture, such as a micro-services architecture, to ensure modular and maintainable code. The system can be designed using a combination of frameworks and libraries, such as Spring Boot, to facilitate rapid development and enhance scalability.

3. **Platform Compatibility:** HMS should be compatible with various web browsers, ensuring cross-browser support, and accessible from different devices, including desktops, laptops, tablets, and smartphones. The design should incorporate responsive web design principles to ensure optimal user experience across different screen sizes.

4. **User Experience:** HMS should provide a user-friendly and intuitive interface, enabling easy navigation, clear information presentation, and efficient interaction. The design should prioritize usability, accessibility, and responsive performance to ensure a positive user experience.

5. **Performance:** HMS should be optimized for performance, minimizing response times and resource utilization. Caching mechanisms, efficient data retrieval and processing, and optimized code implementation should be considered to enhance system performance.

6. **Data Management:** The system should employ an efficient data management approach, utilizing a relational database management system (RDBMS) such as MySQL or PostgreSQL to store and retrieve data. The design should consider data indexing, normalization, and appropriate query optimization techniques to ensure efficient data operations.

7. **Scalability:** HMS should be designed to handle a growing volume of applicants and user traffic. Scalability considerations should include load balancing, horizontal scaling, and database sharing techniques to ensure the system can handle increased usage and accommodate future growth.

8. **Security:** HMS should prioritize security measures, including encryption, secure user authentication, access controls, and protection against common security vulnerabilities. The design should follow best practices to ensure the confidentiality, integrity, and availability of applicant data.

9. **Compliance:** HMS should comply with applicable data protection and privacy regulations, such as General Data Protection Regulation (GDPR) or other local data privacy laws. The design should incorporate necessary safeguards to protect personal information and ensure compliance with legal requirements.

These design constraints provide guidelines for the development of the Healthcare Management System, ensuring a robust, scalable, secure, and user-friendly platform that meets the specific requirements.

7. Software Quality Attributes

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_501	The system should be easy to use and intuitive for users, with a clear and straightforward interface.	Essential	May require regular user testing and feedback to refine usability	TC_501

HMS_502	The system should have a fast and responsive interface, with minimal lag or delay in interactions.	Essential	May require regular performance testing and optimization to ensure high performance	TC_502
HMS_503	The system should be able to handle an increasing number of users and transactions without degradation in performance.	Essential	May require regular testing and scalability improvements to ensure scalability	TC_503
HMS_504	The system should have high availability and minimal downtime, with the ability to recover from failures and errors.	Essential	May require regular testing and reliability improvements to ensure reliability	TC_504

8. Other Requirements

Other Requirements of the Healthcare Management System (HMS) encompass additional aspects that contribute to the system's effectiveness, usability, and support. Documentation plays a crucial role, requiring comprehensive and up-to-date materials to assist both users and administrators.

REQUIREMNT ID	Requirement Description	Acceptability/ Completion Criteria	Limitations/ Constraints	Test case Identifier
HMS_601	Documentation: The system should have comprehensive and up-to-date documentation for users.	The system documentation should include user manuals, installation guides, and technical specifications.	The documentation should be written in a clear and understandable manner.	TC_601

HMS_602	Training and Support: The system should have training materials for using this website and provide technical support to users.	Training materials should be provided to users to facilitate understanding and usage of the system. Technical support should be available to address user queries and issues.	The training and support resources should be regularly updated to reflect system changes and enhancements.	TC_602
HMS_603	Data Backup and Recovery: The system should have mechanisms in place for regular data backups and recovery.	Data backups should be performed regularly to prevent data loss. The system should have procedures for data recovery in case of system failures or disasters.	The backup and recovery mechanisms should be tested periodically to ensure their effectiveness and reliability.	TC_603
HMS_604	System Compatibility: The system should be compatible with different devices and screen resolutions.	The system should be accessible and usable across various devices, such as desktops, laptops, and mobile devices.	The system may have specific limitations based on the device capabilities.	TC_604
HMS_605	Error Reporting: The system should provide a mechanism for users to report errors and issues encountered.	User data should be encrypted and stored securely. The system should implement proper access controls and protect against security threats.	The system should comply with relevant data protection and privacy regulations.	TC_605
HMS_606	Maintainability: The system should be easy to maintain, allowing for timely bug fixes and updates.	Maintainability: The system should be easy to maintain, allowing for timely bug fixes and updates.	The system should have a process in place to track reported errors and provide timely resolutions or workarounds.	TC_606