*Cloud-Based Healthcare Management System (CBHMS)*

Requirements

American University of Sharjah

College of Engineering

Computer Science and Engineering

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# Introduction

## System Overview

To develop a secure, scalable, and efficient cloud-based healthcare management system that offers a centralized platform for the storage, retrieval, and real-time updating of patient records and other healthcare data.

# Functional Requirements

FR 1. User Authentication & Authorization:

FR 1.1. System shall support a multi-factor authentication process for Patients, Doctors, and Administrators.

FR 1.2. System shall provide role-based access controls, allowing access to specific data based on the user's role (Patient, Doctor, Administrator).

FR 2. Patient Records Management:

FR 2.1. System shall provide a feature to store a comprehensive list of patient data, including demographics, medical histories, medications, allergies, radiology images and lab results.

FR 2.2. System shall allow users to search for patient records based on Patient ID.

FR 2.3. System shall display a comprehensive patient profile that displays demographics, medical histories, medications, allergies, radiology images and lab results

FR 3. Real-time Data Update:

FR 3.1. System shall allow users to enter and retrieve patient data (demographics, medical histories, medications, allergies, radiology images and lab results) in real-time.

FR 3.2. system shall send push notifications or alerts to relevant users when significant changes or updates are made to patient data.

FR 4. Medical Resource Management

FR 4.1. System shall allow administrators to add hospitals to the system and upload and update the number of doctors present, their specialty, and their schedules as well as medical facilities their availability.

FR 4.2. System shall allow doctors to upload their schedules.

FR 4.3. System shall allow patients to check different hospitals for doctors and facility availability.

FR 5. Analytics & Reporting:

FR 5.1. System shall provide an analytics dashboard with functionalities to extract correlations between demographics and medical histories, correlations between medical histories and lab results and correlations between medical histories and medications to help with predictions, and support data-driven decisions.

# Non-Functional Requirements

NFR 1. Security

NFR 1.1. All stored data must be encrypted at rest and in transit.

NFR 2. Usability

NFR 2.1. The user interface should be intuitive and easy to navigate.

NFR 2.2. The system should provide clear error messages and guidance for resolution.

NFR 2.3. All services are reachable with maximum of 2-3 clicks

NFR 3. Availability

NFR 3.1. The system should aim for at least 99.9% uptime.

NFR 3.2. Service disruptions should be minimal and well communicated to users.

NFR 4. Scalability

NFR 4.1. The system should be able to accommodate an increasing number of users and data without degradation of performance.

NFR 5. Performance

NFR 5.1. Search queries within the system should return results within seconds.

NFR 5.2. The system should load user interfaces and data promptly.

NFR 6. Maintainability

NFR 6.1. The system should be modular and easy to update without causing disruptions.

NFR 6.2. System updates should be communicated and scheduled during off-peak hours.

NFR 7. Data Integrity

NFR 7.1. Data should be stored and retrieved without any alteration or loss.

NFR 8. Backup & Disaster Recovery:

NFR 8.1. System shall perform regular and automated backups of all stored data.