Software Requirements Specification

for

Healthcare System

Version 1.0 approved

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Software Engineering (Agile Methodology)

Abstract

The healthcare industry requires efficient, accurate, and secure management of patient information to provide quality medical services. Traditional healthcare systems largely depend on manual record keeping, paper-based documentation, and fragmented data management, which often lead to delays, data loss, and human errors. To overcome these challenges, a **Healthcare Management System (HMS)** is proposed using the **Agile software development model**, which ensures flexibility, continuous improvement, and faster delivery of functional modules.

The Healthcare Management System is a web-based application designed to automate and manage various healthcare operations such as patient registration, appointment scheduling, doctor management, medical record maintenance, and administrative tasks. The system provides a centralized platform where patients, doctors, and administrators can interact efficiently. Patients can register, book appointments, and view their medical history, while doctors can access patient details, update diagnoses, and manage treatment records. Administrators can manage users, appointments, and system data securely.

The use of the **Agile methodology** allows the project to be developed in incremental iterations known as sprints. Each sprint focuses on delivering a working module, enabling continuous feedback from users and stakeholders. This approach improves system quality, adaptability to changing requirements, and reduces development risks. Regular testing and reviews are conducted at the end of each sprint to ensure reliability and correctness of the system.

The proposed system enhances data accuracy, reduces paperwork, and improves operational efficiency within healthcare organizations. It ensures secure storage of sensitive medical information and provides quick access to records when needed. The system also improves communication between patients and healthcare providers, leading to better patient care and satisfaction.

In conclusion, the Healthcare Management System using the Agile model offers a modern, flexible, and efficient solution for healthcare data management. It demonstrates how Agile practices can be effectively applied to develop scalable and user-friendly healthcare applications that meet real-world requirements and support future enhancements.

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2.1 Introduction

Healthcare services require accurate data management, quick access to patient information, and efficient coordination between doctors, patients, and staff. Traditional healthcare systems rely heavily on paperwork, which is time-consuming and error-prone. A Healthcare Management System automates these processes and improves service quality.

2.2 Problem identification

- Manual patient records are difficult to manage and retrieve
- Appointment scheduling is slow and inefficient
- High chances of data loss and human error
- Lack of centralized patient and doctor information

2.3 Need of the Project

- To digitize patient and medical records
- To improve appointment and treatment management
- To reduce paperwork and manual errors
- To provide quick and secure access to healthcare data

2.4 Project Scheduling

- Requirement Gathering
- Sprint Planning
- System Design
- Development (Sprint-wise)
- Testing
- Deployment and Review

2.5 Objectives

- To manage patient records digitally
- To schedule doctor appointments efficiently
- To store medical history securely
- To improve healthcare service quality
- To ensure data accuracy and accessibility

3.1 Purpose

To develop a digital Healthcare Management System that automates patient, doctor, appointment, and medical record management using Agile methodology.

3.2 Scope

- Patient registration and record management
- Doctor and staff management
- Appointment scheduling
- Medical history tracking
- Secure data access

3.3 Hardware Requirements

- **Processor:** Intel Core i3 or equivalent
- **RAM:** 4 GB or more

- **Hard Disk:** 500 GB or more
- **Monitor:** 15-inch or higher
- **Keyboard and Mouse:** Standard input devices

3.4 Software Requirements

- **OS**: Windows 10 / Linux
- **Database:** MySQL
- **Languages:** HTML, CSS, JavaScript, PHP / Java
- **Browser:** Google Chrome
- **Server:** XAMPP / Apache

3.5 Tools Used:

- **Visual Studio Code** – Code development
- **MySQL Workbench** – Database management
- **Google Chrome** – Testing
- **Figma / Draw.io** – Diagrams
- **Postman** – API testing

3.6 Software Process Model:

- **Requirement Analysis:** Gather and analyze the functional and non-functional requirements of the system.
- **System Design:** Create ER diagrams, DFDs, class diagrams, and design the database structure.
- **Implementation / Coding:** Develop the platform using the chosen programming languages and tools.
- **Testing:** Perform unit testing, integration testing, and system testing to ensure the system works as expected.

4.1 Data Dictionary

A **Data Dictionary** is a centralized repository that describes all the data elements used in the system, including their types, formats, and purpose. It helps in understanding how data is stored, processed, and accessed within the Travel Booking Platform. The data dictionary ensures consistency, reduces redundancy, and aids developers and testers in managing data effectively.

4.2 ER Diagram

- Shows relationships between:
- Patient
- Doctor
- Appointment
- Medical Records
- Billing

4.3 Data Flow Diagram (DFD)

- **Patient** → Appointment → Doctor
- **Doctor** → Diagnosis → Medical Records
- **Admin** → Data Management

4.4 Use Case Diagram

Actors:

- Patient
- Doctor
- Admin

Use Cases:

- Register patient
- Book appointment
- View medical history
- Manage records

4.5 Class Diagram

Classes:

- Patient
- Doctor

- Appointment
- MedicalRecord
- Admin

5. Implementation

5.1 Program Code

- Patient registration module
- Appointment scheduling module
- Doctor management module
- Medical records module
- Admin management module

5.2 Output Screens

- Login/Register Page
- Patient Dashboard
- Doctor Dashboard
- Appointment Screen
- Medical Records Screen

6. Testing

6.1 Test Data

- Sample patient details
- Doctor profiles
- Appointment dates
- Medical records

6.2 Test Cases

- Patient registration test
- Login validation test
- Appointment booking test
- Data retrieval test

6.3 Test Results

- All modules executed successfully
- Data stored accurately
- No major errors found

7. User Manual

7.1 How to Use the Project

- Login/Register
- Book appointment
- View medical history
- Doctor updates diagnosis
- Admin manages system

7.2 Screen Layout and Description

- Simple navigation
- Form-based input
- Dashboard-based access

8. Applications and Limitations

Applications:

- Hospitals
- Clinics
- Medical centers
- **Limitations:**
- Requires internet
- Data security depends on serve
- .Limited scalability

9. Conclusion

The Healthcare Management System provides an efficient and reliable solution for managing healthcare operations digitally. It improves patient care, reduces paperwork, and ensures accurate data handling using Agile methodology.

9.2Future Enhancements

- Mobile application support
- AI-based diagnosis assistance
- Online payment integration
- Cloud-based data storage

10Bibliography & References

- Pressman – Software Engineering

- W3Schools
- MySQL Documentation
- Agile Manifesto