Healthcare Management System

Using Agile Methodology

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1. Abstract

A Healthcare Management System is a digital platform designed to manage patient records, appointments, medical history, billing, and hospital operations efficiently. With the increasing demand for quality healthcare services, hospitals and clinics require reliable, secure, and flexible software systems. This project focuses on developing a Healthcare Management System using the **Agile Software Development Methodology**, which ensures faster development, continuous improvement, and better alignment with user needs.

Traditional healthcare software systems are often complex, time-consuming to develop, and difficult to modify once deployed. Agile methodology addresses these challenges by dividing the project into small development cycles known as **sprints**. Each sprint delivers a functional module such as patient registration, appointment scheduling, medical records management, or billing. Regular feedback from doctors, staff, and patients helps improve the system continuously.

The Healthcare Management System allows patients to book appointments, view medical reports, and receive notifications. Doctors can access patient history, update prescriptions, and manage schedules. Admin staff can handle billing, manage hospital resources, and maintain records. Agile practices like sprint planning, daily stand-up meetings, sprint reviews, and retrospectives help the development team stay organized and quickly respond to changes.

The system improves healthcare service quality by reducing paperwork, minimizing errors, and improving communication between patients and healthcare providers. It also enhances operational efficiency by automating routine tasks and centralizing data management.

This project demonstrates how Agile methodology helps in building scalable, secure, and user-friendly healthcare systems. It also provides hands-on experience in teamwork, iterative development, and real-world software project management.

Future enhancements may include AI-based diagnosis support, telemedicine integration, and cloud-based data storage for better accessibility and scalability.

2. Introduction

2.1 Introduction

A Healthcare Management System helps hospitals and clinics manage patient and medical data digitally. Agile methodology is used to ensure flexible and efficient system development.

2.2 Problem Identification

Traditional healthcare systems rely on manual processes that are slow, error-prone, and inefficient.

2.3 Need of the Project

A modern healthcare platform is required to provide fast, accurate, and secure medical services.

2.4 Project Scheduling

PHASE	DURATION
PLANNING	2 Days
DEVELOPMENT	8 Days
TESTING	3 Days
REVIEW	2 Days
DOCUMENTATION	1 Day

2.5 Objectives

- Manage patient records digitally
- Improve healthcare service quality
- Use Agile methodology
- Ensure data security
- Enable real-time updates
- Enhance patient satisfaction

3. Software Requirement Specification (SRS)

3.1 Purpose

To develop a secure and flexible Healthcare Management System using Agile methodology.

3.2 Scope

Useful for hospitals, clinics, doctors, and patients.

3.3 Hardware / Software Requirement

Hardware:

- 4GB RAM

- Intel i3 or above

- 500GB HDD

Software:

- Windows 10

- Java / Web Technologies

- MySQL

- VS Code / Eclipse

3.4 Tools

- HTML, CSS, JavaScript

- Java / Python

- MySQL

- Git

- Agile Tools (Jira / Trello)

3.5 Software Process Model

Agile Model

- Sprint Planning

- Daily Stand-up

- Sprint Review

- Sprint Retrospective

4. System Design

4.1 Data Dictionary

Field	Type	Description
PatientID	int	Unique patient ID
Name	String	Patient name
Doctor	String	Assigned doctor
AppointmentDate	Date	Visit date
Status	String	Active / Discharged

4.2 ER Diagram

Patient → Appointment → Doctor

4.3 DFD

User → Healthcare System → Database → Reports

4.4 Diagrams

- Use Case Diagram

- Activity Diagram

- Flowchart

5. Implementation

5.1 Program Code

Modules developed in sprints:

- Patient Registration

- Appointment Scheduling

- Medical Records

- Billing System

- Admin Dashboard

5.2 Output Screens

- Login Page

- Patient Dashboard

- Appointment Booking

- Medical Report View

- Billing Page

6. Testing

6.1 Test Data

Input	Expected Output
Invalid Patient ID	Error Message
Empty Fields	Validation Error
Wrong Appointment Date	Warning

6.2 Test Result

All features worked correctly after sprint-based testing.

7. User Manual

7.1 How to Use

1. Login to the system

2. Register patient details

3. Book appointment

4. View medical reports

5. Generate bills

7.2 Screen Layout

Web-based interface with simple and secure navigation.

8. Project Applications & Limitations

Applications

- Hospital Management

- Clinic Systems

- Medical Records

- Patient Care

Limitations

- Internet dependency

- Limited offline support

- Requires strong data security

9. Conclusion & Future Enhancement

The Healthcare Management System developed using Agile methodology provides a reliable and efficient solution for digital healthcare services. Agile ensures faster delivery, better quality, and continuous improvement.

Future Enhancements:

- AI diagnosis tools

- Telemedicine services

- Cloud data storage

- Mobile health app

10. Bibliography & References

- Agile Manifesto
- Scrum Guide
- Healthcare IT Websites
- GeeksForGeeks
- IEEE Journals