Project Proposal

Health Management Information System (HMIS)

Project Title: *Health Management Information System (HMIS)*

Prepared By: *M Awais*

Institution: *Bahria University H-11 Campus Islamabad*

Submission Date: *30/4/2025*

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2. Abstract

Healthcare systems require efficient information management to ensure proper patient care, resource allocation, and medical decision-making. Our proposed Health Management Information System (HMIS) aims to digitalize and streamline hospital processes, including patient registration, doctor availability, and administrative operations. Through Object-Oriented Programming (OOP) concepts in C++, we develop a system that simplifies appointment booking, doctor scheduling, and user authentication for enhanced security. This project will contribute to healthcare institutions by reducing manual paperwork, improving accuracy, and enabling seamless patient management.

3. Introduction

Healthcare institutions face challenges in managing patient records, appointments, and doctor schedules manually. Errors due to inefficiencies in these processes can lead to misdiagnosis, scheduling conflicts, and administrative burdens. HMIS, developed using C++ and OOP principles, aims to automate patient-doctor interactions while offering secure administrative control. Our system integrates functionalities for patients, doctors, and admins, allowing structured data storage and seamless communication among stakeholders.

4. Project Objectives

Automate Appointment Booking: Patients can book their appointments with available doctors efficiently.

Doctor Management: Doctors' records, specializations, and schedules will be organized systematically.

Admin Authorization: Admins can update, modify, and delete doctor records through secure login.

Improve Healthcare Efficiency: Reduce manual record-keeping errors, streamline communication, and enhance data accessibility.

Ensure Data Security: Implement authentication layers for admin login and verification mechanisms.

5. Scope of the Project

Inclusions:

- Patient registration and appointment booking.
- Doctor availability tracking and schedule management.
- Admin functionality to update hospital records.
- Secure authentication for administrative control.

Exclusions:

- ❖ Advanced medical diagnostics and treatment recommendations
- ❖ Real-time patient monitoring
- ❖ Integration with external hospital systems or databases

6. Methodology

Programming Language: C++ (Object-Oriented Approach) Development Tools: GCC Compiler, Visual Studio Code OOP Design:

User (Base Class) → Patient (Derived Class)

Doctor (Derived Class)

Admin (Handles authentication and doctor record management)

Functionality:

Patients: Enter personal information, symptoms, and book an appointment.

Doctors: Manage schedule and view assigned patients.

Admins: Secure access to modify doctor records and ensure system integrity.

7. Resources and Tools

- **Development Environment:** C++ with <iostream>, <vector>, <fstream> libraries.
- **Data Storage:** File-based data management for record-keeping.
- **Hardware:** Standard computing system with a functional C++ compiler.

8. Expected Challenges and Solutions

Challenge:

Securing admin login credentials.

Solution:

Implement authentication with predefined username-password and security questions.

Challenge:

Ensuring smooth navigation for users.

Solution:

Structured menus for patients, doctors, and admins.

Challenge: Future scalability concerns.

Solution: Plan for database integration (MySQL) instead of using file-based storage.

9. Project Timeline

	Task	Duration
Phase 1	Requirement Analysis	**1** Days
Phase 2	System Design	**2** Days
Phase 3	Coding Implementation	**3** Days
Phase 4	Testing and Debugging	**2** Days
Phase 5	Final Documentation	**1** Days

10. Conclusion

- This Health Management Information System serves as a structured digital platform to automate hospital records and patient-doctor interactions. By implementing OOP techniques, the system enhances security, scalability, and efficiency.
- Future improvements could include database integration, AI-powered diagnostics, and mobile accessibility to further optimize healthcare management.

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