Project: **"Digital Hospital Management System"**

Final Project Report:

DIGITAL HOSPITAL MANAGEMENT SYSTEM

Course:

Programming Fundamentals (Fall 2025)

Team Members:

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➢ Project Overview

The Digital Patient and Appointment Management System is a console-based application developed in C++ to address the inefficiencies of manual record-keeping in healthcare facilities. The system automates patient registration, appointment scheduling, and billing to ensure secure data persistence and rapid access to medical information.

➢ Problem Statement

Many hospitals rely on fragmented or manual systems, which leads to:
Excessive staff time consumed by administrative tasks.
Reduced quality of service due to data errors.
Lack of data integrity and difficulty in accessing historical patient records quickly.

➢ System Architecture and Design

The system follows a structured, modular design to ensure clarity and ease of maintenance.

Core Data Structures

Structs:

A Patient structure was defined to group related data, including id, name, age, and disease.

Vectors:

The std::vector is utilized as the primary dynamic data structure to store patient records, appointments, and billing information.

Key Modules

Authentication:

A secure login loop that requires a username and password to access administrative features.

Patient Management:

Functions to add new patients and search for existing records using a unique ID.

Appointment Scheduling:

A system to link appointments directly to patient IDs.

Billing and Payments:

A module to generate bills and track status as "PAID" or "UNPAID".

File I/O (Persistence):

The system uses loadAllData() upon startup and saveAllData() after every modification to ensure data is stored in external text files.

➢ Implementation Details

The project was developed using C++ and tested across various IDEs (VS Code/DevC++).

Sample Logic Flow:

Addition:

When adding a patient, the system captures the ID, name, age, and disease, then increments the record count.

Search:

The system iterates through the records to find a matching ID and displays the corresponding patient details.

➢ Conclusion

The Digital Hospital Management System successfully meets the objectives of the Programming Fundamentals course. By implementing modular functions, dynamic data structures, and persistent file storage, the system provides a reliable tool for automating hospital operations and improving data integrity

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