# Project Title: Hospital Management System

# Overview

This project implements a hospital management system for a network of five hospitals. Built using object-oriented principles in C++, the system replicates real-world hospital operations such as patient admission, staff assignment, pharmacy coordination, and billing processes. It aims to demonstrate structured software development using modular class design and real-world data management.

# Core Features

* Hospital Branches: The system manages five independent hospital branches. Each branch supports up to 20 patients and has at least 3 doctors and 5 nurses assigned.
* Patients: Patients receive unique IDs upon admission. Their personal data, diagnosis, treatments, attending doctors, and admission duration are tracked. Discharge requires doctor authorization.
* Doctors: Up to 50 doctors, each with unique IDs, can be assigned to patients. Each patient has one primary doctor and may have multiple consulting doctors.
* Nurses: A total of 60 nurses may be assigned, with each nurse limited to caring for a maximum of two patients.
* Pharmacies: 20 pharmacies provide medication to any hospital. Pharmacies bill hospitals directly, and billing records are maintained.

# Technical Implementation

* Developed in C++ using object-oriented design principles (encapsulation, inheritance, polymorphism).
* Major classes include: HospitalBranch, Patient, Doctor, Nurse, Pharmacy, and HospitalSystem.
* Integrated with MySQL for persistent data storage. The ConnectMySQL module manages all database interactions.
* Uses CMake for cross-platform project configuration and build automation.

# Innovative Features

* Database Integration: MySQL integration enables data persistence and simulates real-time hospital database operations.
* GitHub Collaboration: The team utilized GitHub for efficient version control, task coordination, and code sharing, ensuring smooth and organized group development.
* Modular Class Design: Components are clearly separated by functionality, improving maintainability and scalability.

# Conclusion

The Hospital Management System is a robust and scalable simulation of a hospital network management system. It demonstrates practical use of object-oriented design and database integration to meet real-world software engineering standards. The integration of a MySQL database ensures persistent storage and realistic data handling. Although a graphical user interface was initially planned, the team focused on effective collaboration through GitHub, using it for code sharing, version control, and seamless updates among team members. These enhancements reflect thoughtful innovation and contribute to the project's completeness and quality.