Hospital Management System Documentation

Project Title   :   **Hospital Management System**
Student Names   :   **Mohsin Ahmed, Aeliya Haider, Abdul Raffay**
Semester   :   **1st Semester 2024, Department of CS**
University   :   **Salim Habib University**
Submission Date :   **26 January 2025**

---

2. Introduction

Project Overview

The **Hospital Management System** is a console-based C++ program designed to manage basic hospital operations. It allows users to record and access patient records, including their medical history and diagnosis information. This program features a login system for authentication, ensuring only authorized personnel can access or modify data. Key operations include adding patient details, updating diagnosis information, viewing full medical history, and retrieving hospital information.

Purpose

This project was chosen to explore the practical application of file handling, structs, and user interaction in C++. It highlights how programming fundamentals can be utilized to develop real-world systems. Additionally, this project introduces the importance of creating user-friendly interfaces for managing sensitive data.

---

3. Objectives

1. To understand file handling concepts in C++.
2. To develop a user-friendly program for hospital record management.
3. To practice using functions, loops, and conditional statements in C++.

4. Tools and Technologies

- Programming Language **:** C++

- Compiler : Code::Blocks, Dev-C++, Visual Studio, or any C++ compiler.

- Operating System **:** Windows (recommended for full-screen mode).

5. Project Design

Flowchart

Simplified Workflow:

1. User logs in.
2. Main menu is displayed with options:
    - o Add new patient record.
    - o Append diagnosis information.
    - o View full patient history.
    - o Display hospital information.
3. Based on the user's choice, the respective module executes.
4. User can exit the system or return to the main menu.

Pseudocode

```
Start
  Display login screen
  Authenticate user
  If login successful:
      Display main menu
      Loop until user exits:
          If choice is "Add New Patient":
              Collect and save patient details
          Else if choice is "Append Diagnosis":
              Open and append details to selected patient file
          Else if choice is "View History":
              Display full history of selected patient
          Else if choice is "Hospital Info":
              Display hospital information
          Else if choice is "Exit":
              Terminate program
  End Loop
End
```

6. Implementation

Program Explanation

- **Login System**: Ensures only authorized users can access the system.
- **File Handling**: Saves patient data and allows appending of diagnosis details using file streams.
- **Modules**:
    1. Adding a new patient.
    2. Appending diagnosis information.
    3. Viewing complete patient history.
    4. Displaying hospital information.

Key Concepts Used:

- **Structs:** Used to define patient and diagnosis information.
- **File Handling:** For creating, appending, and reading patient files.
- **Loops and Conditional Statements:** To control program flow and validate user input.
- **System Commands:** For clearing the screen and pausing execution.

Complete Code

Refer to the attached file "HospitalManagementSystem.cpp" for the full source code.

7. Testing

Test Cases

Input	Expected Output	Actual Output
Password: pass	Access Granted	Access Granted
Option: 1 (Add Patient)	Prompts for patient details, saves successfully	Works as expected
Option: 2 (Append Diagnosis)	Prompts for details, appends to file successfully	Works as expected
Option: 3 (View History)	Displays full patient history	Works as expected
Option: 5 (Exit)	Displays Thank You message and exits	Works as expected

8. Results

The Hospital Management System successfully:

1. Allows adding and storing patient data.
2. Enables appending diagnosis information.
3. Displays patient history and hospital information.
4. Provides a simple and secure login system.

9. Screenshot

I. **Decorative Border:**

-   The program starts with an aesthetically
    designed border using special characters (@
    and _) to give a structured look.

-   **Welcome Message:**

    -   It displays **"WELCOME TO HOSPITAL MANAGEMENT SYSTEM"** in the center,
        ensuring a professional and user-friendly introduction.

-   **Slogan:**

    -   The line **"YOUR HEALTH IS OUR FIRST PRIORITY"** highlights the purpose of the
        system, ensuring users that the program is designed for efficient hospital management.

-   **Developers' Credit:**

    -   The message **"-Brought To You by MR, AELIYA, RAFFAY"** acknowledges the
        contributions of the developers:
        -   **Mohsin Ahmed (MR)**
        -   **Aeliya Haider**
        -   **Abdul Raffay**

-   **User Prompt:**

    -   The line **"Press any key to continue . . ."** instructs the user to proceed further by
        pressing any key.

II. **Title:**

- o The top displays **"HOSPITAL MANAGEMENT SYSTEM"**, maintaining a professional look.
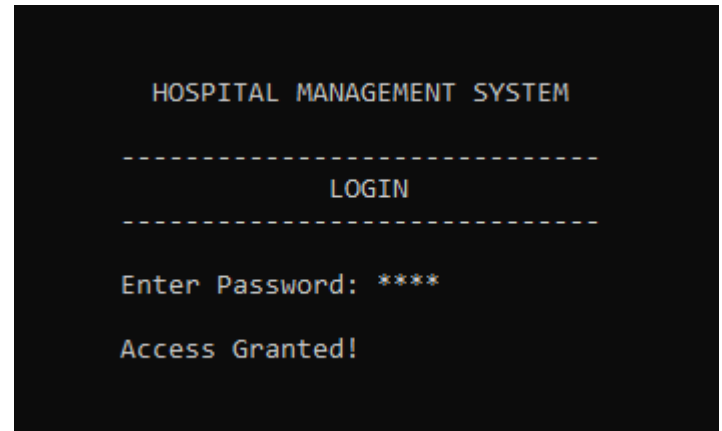

2. **Login Section:**

- o A dashed line separates the title from the login functionality.
- o The text **"LOGIN"** indicates that the user must authenticate to proceed.

3. **Password Input:**

- o The system prompts the user with **"Enter Password: ****"**, ensuring a secure login process where the password is hidden (masked with *).

4. **Successful Login Message:**

- o After entering the correct password, the system grants access by displaying **"Access Granted!"**.
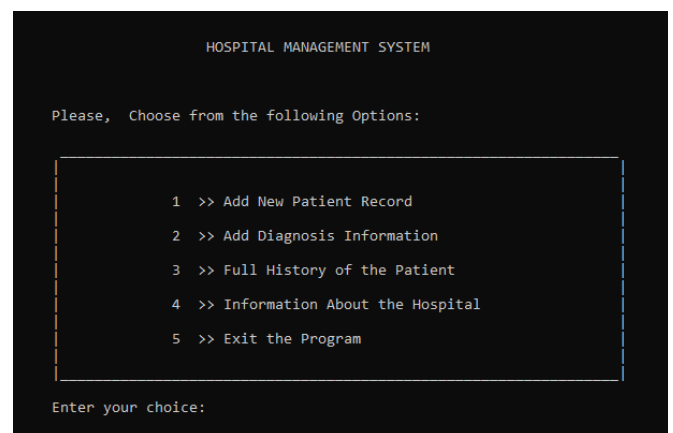
Purpose of This Screen:

- • This login screen ensures that **only authorized users** can access the hospital management system.
- • It enhances **security** by preventing unauthorized access to sensitive patient data.

III. **Title:**

- o The top displays **"HOSPITAL MANAGEMENT SYSTEM"**, keeping the interface professional.

2. **Instruction for the User:**

- o The system prompts: **"Please, Choose from the following Options:"**, guiding users to select an action.

3. **Available Options:**
   - The menu is neatly enclosed within a box for better visibility.
   - Users can enter a number (1-5) to choose an option:
     1. **Add New Patient Record** – Allows users to input new patient details.
     2. **Add Diagnosis Information** – Enables the addition of medical diagnosis for existing patients.
     3. **Full History of the Patient** – Displays complete details of a patient, including previous records.
     4. **Information About the Hospital** – Provides general details about the hospital.
     5. **Exit the Program** – Closes the system safely.
4. **User Input Prompt:**
   - The system waits for user input with **"Enter your choice:"**, allowing interaction.

Purpose of This Screen:

- Serves as the **navigation hub** for the system.
- Enables users to **access and manage** different aspects of hospital data efficiently.

IV. **Title & Date/Time:**

- The top right corner shows the current date and time: **Tue Jan 28 21:34:42 2025**, keeping track of when the data was recorded.

User Input Prompt:

- The system prompts the user to enter the patient's file name, in this case, **"Mohsin"**.

Patient Details:

- The information is structured clearly with labeled fields:
    - **Name:** MOHSIN
    - **Address:** PECHS KARACHI
    - **Contact Number:** 03432676142
    - **Age:** 19
    - **Sex:** MALE
    - **Blood Group:** A+
    - **Medical History:** Previously suffered from **Typhoid**.
    - **Patient ID:** F24CSC009 (A unique identifier for the patient).

Confirmation Message:

- The system displays **"Information Saved Successfully"**, confirming that the record has been stored.

User Interaction:

- The system prompts **"Press any key to continue..."**, allowing the user to proceed to the next action.

Purpose of This Screen:

- Confirms successful entry of a patient's medical information.
- Ensures organized record-keeping with essential patient details.
- Provides a structured format for future reference in the hospital database.

V. **Title & Timestamp:**

- The top section displays **"Information about Mohsin"** with the timestamp **Tue Jan 28 21:34:42 2025**, ensuring accurate record-keeping.

Patient Details:

- The system displays previously saved details, including:
    - **Name:** MOHSIN
    - **Address:** PECHS KARACHI
    - **Contact Number:** 03432676142
    - **Age:** 19
    - **Sex:** MALE
    - **Blood Group:** A+
    - **Medical History:** Typhoid
    - **Patient ID:** F24CSC009

Newly Added Medical Information:

- **Symptoms:** High Fever
- **Diagnosis:** Malaria
- **Prescribed Medicine:** NIXAN
- **Admission Required?:** YES
- **Ward Type:** B2

Confirmation Messages:

- The system confirms that **"B2 ward is allotted Successfully"**, ensuring proper patient accommodation.
- The prompt **"Press any key to continue..."** allows the user to proceed further.

Purpose of This Screen:

- Provides a detailed update on a patient's medical condition.
- Ensures structured and efficient hospital record-keeping.
- Confirms patient admission and medicine allocation.

VI. **Title:**

- The heading **"Information about the Hospital"** ensures clarity on the purpose of this screen.

Hospital Overview:

- **AMRR Hospital** is part of **HILL Hospitals**, a Pakistani hospital chain founded by **Dr. Mohsin in 1983**.
- The group operates in multiple countries, including **Pakistan, Sri Lanka, Bangladesh, Canada, Nigeria, Mauritius, Qatar, Oman, and Kuwait**.
- Several hospitals under this group hold **international healthcare accreditation from the Joint Commission International (JCI), USA**.
- The hospital has pioneered **telemedicine services**, launching a pilot project in **2000 in RAFFAY home village**.
- **HILL Hospitals currently operate in 120 countries worldwide**.

Awards and Recognition:

- A **stamp was issued on November 2, 2009**, recognizing the hospital's service.

- Their **"Billion Hearts Beating"** campaign, in collaboration with **Times of Pakistan**, won the **"Global Award for Brand Excellence"** and **"Campaign of the Year Award"** at the **World Brand Congress 2024 in Karachi**.
- **Aeliya (Co-founder)** received:
    - **"Insurer of the Year Award" (2023)**
    - **"Innovation of the Year Award" (2022) from Asia Insurance Review**

User Interaction:
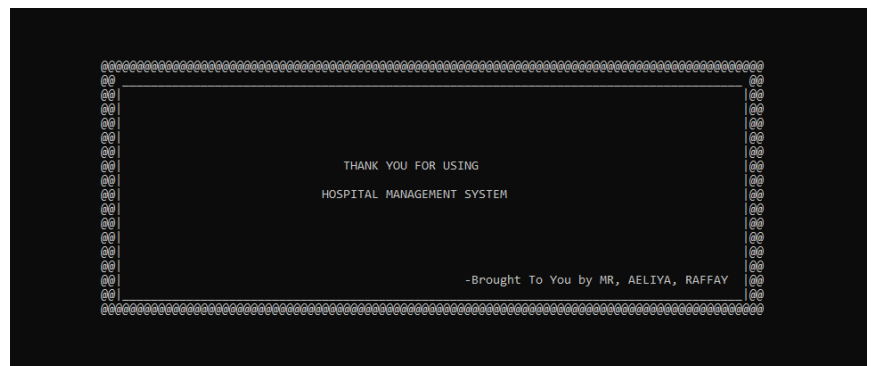
- The system prompts **"Press any key to continue..."**, allowing users to proceed further.

Purpose of This Screen:

- Provides background and achievements of the hospital.
- Highlights international presence and recognitions.
- Ensures transparency regarding hospital credibility.

VII. **Thank You Screen – Hospital Management System**
This screenshot displays the final message of the Hospital Management System, thanking users for their interaction and signaling the conclusion of their session.

Explanation of the Screenshot:
Title:
The screen is titled "Thank You for Using Hospital Management System," ensuring a warm and professional closure to the user experience.

Content Overview:

- The system expresses gratitude to the user for utilizing its services.
- It conveys professionalism and emphasizes the hospital's commitment to ensuring a seamless experience.

Additional Information:

- The message reinforces the organization's value of prioritizing patient care and user satisfaction.
- A footer note reminds users to contact hospital support for any additional queries.

User Interaction:

- The screen prompts "Press any key to exit," allowing users to gracefully close the system.

Purpose of This Screen:

- Marks the end of the session with a positive and professional tone.
- Ensures users leave with a sense of satisfaction and a reminder of the hospital's dedication to excellence.

---

10. Conclusion

Working on this project provided valuable insights into programming fundamentals and their application in real-world scenarios. We learned how to use file handling to store and retrieve data efficiently, design user interfaces for practical usage, and implement a secure login system. Debugging and testing were crucial aspects of ensuring program reliability and functionality.

This project enhanced our understanding of C++ programming and encouraged teamwork and problem-solving skills. We look forward to applying these learnings to more complex projects in the future.

---

11. Future Enhancements

1. **Graphical User Interface (GUI):** Replacing the console-based interface with a GUI for better usability.

2. **Database Integration:** Using databases like MySQL for more efficient and secure data management.

3. **Search Functionality:** Adding a feature to search for patients by name or ID.

4. **Enhanced Security:** Implementing role-based access control for different types of users.

5. **Reports Generation:** Allowing users to generate and export reports for patient records.

6. **Multi-language Support:** Providing the interface in multiple languages to cater to diverse users.