Hospital Patient Record System

A Digital Solution for Modern Healthcare Management

Team Members: [Tarangika, Roopesh, Nikhil, Asif, Jaswanth, Nishu]

Guide: [Jaswanth Parlapalli]

Department of Ai and Machine Learning

Introduction to the Hospital Patient Record System

A Hospital Patient Record System (HPRS) is a sophisticated software application designed to manage, store, and retrieve patient information digitally. It centralises critical data, ensuring accuracy and accessibility for healthcare professionals.

Why Digital Record Management?

- Enhances patient care through rapid information access.
- Boosts operational efficiency by reducing administrative burdens.
- Minimises errors associated with manual data entry and retrieval.
- Ensures data security and compliance with regulatory standards.

Our project focuses on developing a robust, user-friendly HPRS to streamline patient data management within healthcare facilities, addressing common challenges faced by hospitals today.

Problem Statement: The Challenges of Traditional Record Keeping

Time-Consuming Processes

Manual record keeping involves extensive paperwork, leading to significant delays in patient registration, updates, and retrieval of critical information. This directly impacts efficiency and patient waiting times.

Data Vulnerability

Physical records are susceptible to loss, damage, or misplacement. Human errors in transcription or filing can compromise data integrity, leading to serious consequences in patient care.

Slow Information Retrieval

Locating specific patient details in large, paper-based archives is often a laborious and time-intensive task, especially during emergencies where quick access is vital.

Lack of Prioritisation

Existing manual systems often lack the capability to quickly prioritise patients based on the urgency of their medical condition, which can delay critical interventions in emergency situations.

Project Objectives: Enhancing Patient Data Management

1 Accurate Digital Records

To develop a system capable of maintaining precise and up-to-date digital records for all patients, ensuring data consistency and reliability.

2 Rapid Data Access

To enable quick retrieval and efficient updating of patient data, reducing wait times and improving the speed of healthcare delivery.

3 Priority-Based Management

To implement a feature allowing healthcare staff to prioritise patients (High, Medium, Low) based on their medical condition, optimising emergency response and resource allocation.

4 Reduce Paperwork

To significantly decrease reliance on physical documents, thereby saving staff time, reducing administrative overheads, and contributing to a more sustainable, paperless environment.

Key Features of the HPRS

Core Functionalities

- **Admit Patient:** Seamlessly add new patient records with comprehensive demographic and medical details.
- **Discharge Patient:** Efficiently remove patient records upon discharge, ensuring accurate status updates.
- **Search Patient:** Quickly locate patient records using their name, facilitating fast access to information.

Advanced Features

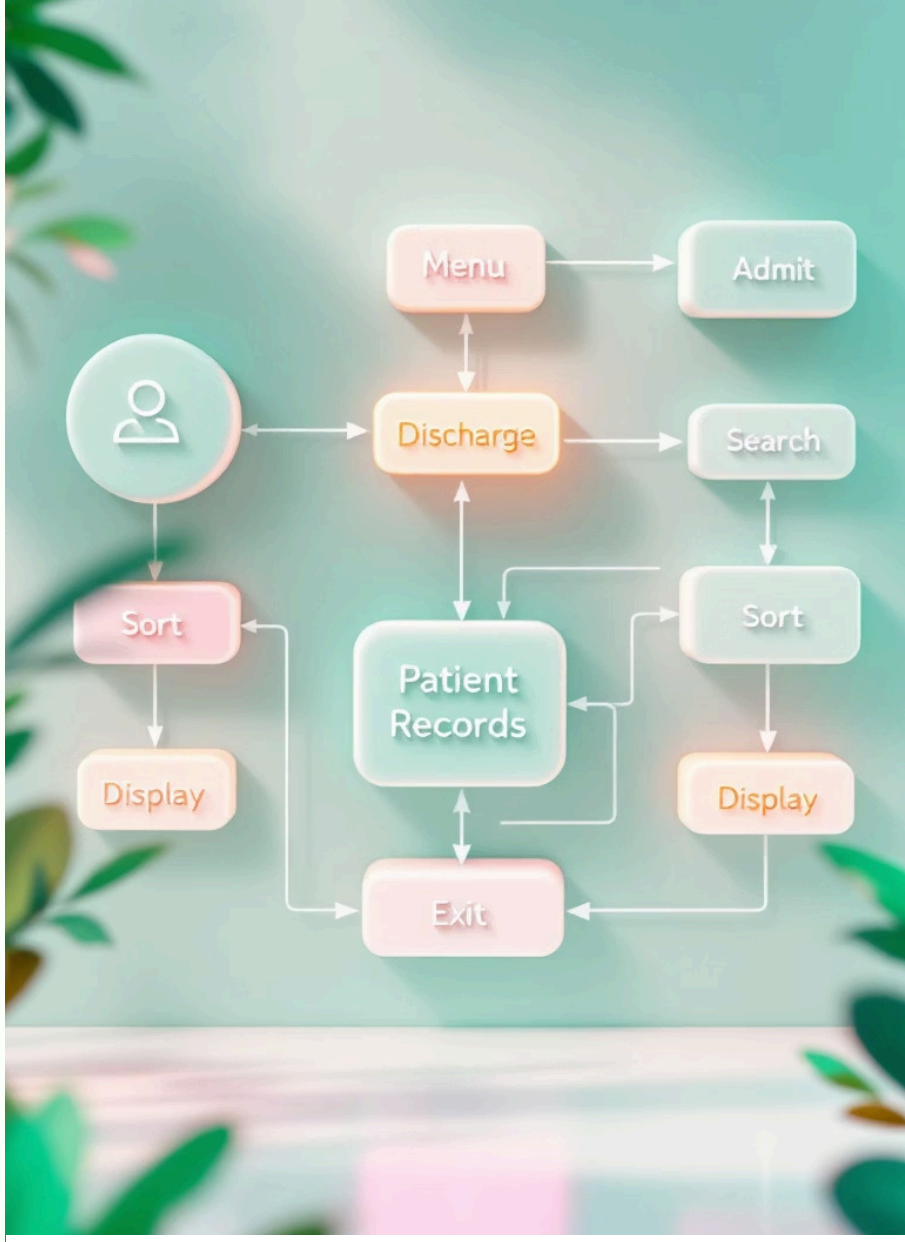
- **Priority Sorting:** Sort patients by medical priority (High ↔️ Low) to manage urgent cases effectively.
- **Display Records:** View all patient records in a clear, tabular format for easy overview and analysis.
- **Secure & User-Friendly Interface:** A menu-driven system designed for ease of use, ensuring data security and integrity.

System Architecture / Workflow

The HPRS follows a structured, menu-driven workflow to ensure intuitive user interaction and efficient data management.

Workflow Description:

- **User Interaction:** Users interact with the system via a main menu.
- **Menu Options:** The menu provides distinct options: Admit, Discharge, Search, Sort, Display, and Exit.
- **Data Storage:** All patient data is consistently stored and managed using a C struct array, ensuring structured and accessible records.



Technologies Used

Our Hospital Patient Record System is developed using foundational programming concepts and reliable development tools.

Programming Language

C

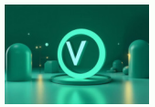
C Programming Language

Chosen for its efficiency, direct memory access, and robust performance, making it ideal for system-level applications.

Core Concepts

- **Structures:** For organising complex patient data records.
- **Arrays:** For storing multiple patient records efficiently.
- **Strings:** For handling patient names and other textual data.
- **Sorting:** For prioritising patients based on their medical condition.
- **Functions:** For modularising code and enhancing reusability.

Development Tools



- **GCC Compiler:** The standard compiler for C projects, ensuring broad compatibility and powerful debugging.
- **Code::Blocks:** An integrated development environment (IDE) providing a user-friendly interface for coding and project management.
- **VS Code:** A lightweight yet powerful source code editor with extensive extensions for C development.

Implementation: Code Structure and Functions

The HPRS codebase is structured around a central `struct Patient` and a suite of functions designed for specific data management tasks.

Data Structure: `struct Patient`

```
struct Patient {
    char name[50];
    char phone[15];
    int bed_no;
    char priority[10]; // "High", "Med", "Low"
};
```

Implemented Functions:

- `addPatient()`**:** Captures new patient details and adds them to the record system.
- `removePatient()`**:** Handles the discharge process, removing patient data from active records.
- `getPatientDetails()`**:** Retrieves and displays details for a specific patient.
- `getAllPatientDetails()`**:** Lists all currently registered patient records.
- `sortPatientsByPriority()`**:** Arranges patient records based on their assigned medical priority.
- **Menu-driven** `main` **function:** Coordinates user interaction and calls appropriate functions based on menu selections.

Sample Output / Demonstration

The interactive menu and subsequent operations illustrate the system's ease of use and functionality.

Demonstration Sequence:

1. **Menu Navigation:** Users are presented with a clear, numbered menu to select desired actions.
2. **Adding a Patient:** The system prompts for patient details and confirms successful addition.
3. **Searching:** Users can input a patient's name to quickly retrieve their record.
4. **Sorting:** Records are dynamically reordered based on priority, demonstrating real-time data organisation.
5. **Displaying Records:** All current patient records are shown in an organised table, validating data integrity and accessibility.

Key Advantages of the HPRS

Rapid Access

Instant retrieval of patient details significantly reduces administrative delays, allowing healthcare providers to focus more on patient care.

Streamlined Maintenance

Digital records are easy to update, modify, and archive, simplifying ongoing record maintenance and ensuring data accuracy.

Emergency Prioritisation

The ability to prioritise patients based on urgency ensures critical cases receive immediate attention, optimising emergency response workflows.

Reduced Errors & Paperwork

Minimises the risk of human errors inherent in manual systems and contributes to a paperless environment, enhancing efficiency and sustainability.