**National University of Computer and Emerging Sciences**

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Database Project Proposal

**Hospital Resource Management System**

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CL2005 Database Systems Lab

Spring 2025

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1. **Introduction:**

The **Hospital Resource Management System** is a database-driven application designed to help hospitals manage their resources effectively. It provides real-time tracking, scheduling, and allocation of resources to ensure optimal utilization and improve patient care

1. **Functionalities:**

Here are the main features of the system:

**1. Real-Time Resource Tracking**

* Track the availability of hospital resources such as:
  + **Beds:** Monitor the occupancy status of hospital beds (occupied, vacant, or reserved).
  + **Medical Equipment:** Track the location and availability of equipment (e.g., ventilators, MRI machines).
  + **Staff:** Monitor the availability and schedules of doctors, nurses, and other staff members.

**2. Resource Scheduling and Allocation**

* Automatically allocate resources based on patient needs and priority.
* Schedule surgeries, appointments, and procedures based on resource availability.
* Send notifications to staff when resources are allocated or become available.

**3. Integration with Patient Admission System**

* Link the resource management system with the patient admission system to:
  + Automatically assign beds to incoming patients.
  + Allocate medical equipment based on patient requirements.
  + Assign staff to patients based on their expertise and availability.

**4. Inventory Management**

* Track the usage and availability of medical supplies (e.g., medicines, syringes, gloves).
* Generate alerts when supplies are running low and need to be restocked.

**5. Reporting and Analytics**

* Generate reports on resource utilization, patient occupancy, and staff performance.
* Provide insights into bottlenecks and areas for improvement.

**6. Role-Based Access Control**

* Ensure that only authorized personnel can access and modify resource data.
* Define roles for administrators, doctors, nurses, and support staff.

**7. Web Interface**

* Provide a user-friendly interface for accessing the system via web browsers.
* Enable staff to update resource status in real-time using their devices.

**3. Technology Stack:**

Here’s a suggested technology stack for building the system:

**Database**

* **Relational Database:** Microsoft SQL Server for structured data storage.

**Backend**

* **Programming Language:** Python, Node.js.

**Frontend**

* **Web Framework:** React.js

**Cloud Integration:** Not decided yet

**AI Integration:** Not decided yet

**4. Use Cases:**

* **Hospitals:** Manage beds, equipment, and staff for efficient patient care.
* **Clinics:** Schedule appointments and allocate resources for outpatient services.
* **Emergency Rooms:** Track and allocate resources in real-time during emergencies.

**5. Benefits:**

* **Improved Efficiency:** Optimize resource utilization and reduce wait times.
* **Enhanced Patient Care:** Ensure that patients receive timely and appropriate care.
* **Cost Savings:** Reduce wastage of resources and improve operational efficiency.
* **Data-Driven Decisions:** Use analytics to make informed decisions about resource allocation.

**6. Final Remarks:**

This project can make a significant impact on healthcare delivery by streamlining resource management and improving patient outcomes.