**System Purpose**

The Hospital Management System is developed to streamline and automate various functions within a hospital. Its primary goal is to improve efficiency, ensure accurate recordkeeping, and deliver better patient care. By bringing together all departments—medical, administrative and operational into a unified platform, the system eliminates paperwork, minimizes human error, and enhances coordination across all stakeholders.

**Key Functionalities**

The system offers several critical functionalities:

* **Patient Registration and Management**: Stores and manages patient name, contact details, and medical history.
* **Doctor and Staff Management**: Handles details of medical staff, including their roles, departments, and contact info.
* **Appointment Scheduling**: Allows patients to schedule appointments with available doctors based on their specialty and schedule.
* **Medical Records Management**: Records diagnoses, treatments, visit dates, and other medical interactions for each patient.
* **Billing and Payment Tracking**: Maintains billing information, calculates charges, and tracks payment status with optional insurance integration.
* **Insurance Management**: Records insurance providers, policies, and links them to patients for automated billing calculations.
* **Prescription and Medicine Management**: Enables doctors to prescribe medicines, tracks dosage and inventory levels.
* **Feedback and Ratings**: Allows patients to submit feedback and rate their experiences with doctors and hospital services.
* **Room Allocation and Management**: Tracks room availability and types (ICU, General, etc.) to manage patient admissions.
* **Diagnostic Test Results**: Stores lab test outcomes and links them to patient profiles for later review

**Types of Users**

There are four primary types of users in the system:

* **Administrators** oversee the system setup, manage user accounts, and handle overall hospital configuration.
* **Doctors** interact with the system to view their schedules, access patient records, enter diagnoses, and prescribe treatments.
* **Staff Members** use the system to register patients, book appointments, allocate rooms, and manage billing.
* **Patients** can access the system to view their appointments, prescriptions, test results, and submit feedback.

**Major Entities and Their Interactions**

The system is built around several core entities, each representing a real-world component of hospital operations:

1. **Patients** are at the heart of the system. They interact with multiple entities such as doctors, appointments, prescriptions, billing records, and test results. Patients can also have insurance providers linked to their profiles.
2. **Doctors** are linked to departments and maintain schedules that determine their availability. They interact with patients during appointments, create medical records, prescribe medications, and can receive feedback.
3. **Departments** categorize doctors by their specialties, such as Cardiology or Pediatrics. Each doctor belongs to a department.
4. **Appointments** connect patients with doctors. These appointments have dates, times, and statuses like scheduled, completed, or cancelled.
5. **Medical Records** document the interaction between a patient and a doctor. They contain diagnoses, treatments, and visit dates.
6. **Billing** records the financial transactions associated with patient care. It includes billing amounts, dates, and whether the amount has been paid. These may be supported by insurance providers.
7. **Insurance Providers** store details of companies offering health coverage. These are linked to patients through a separate patient-insurance entity.
8. **Medicines** are items prescribed by doctors. Their usage is tracked through prescriptions, which also store dosage, frequency, and time periods.
9. **Prescriptions** associate a patient, doctor, and medicine. They include instructions on how the medication should be used.
10. **Feedback** is submitted by patients regarding doctors. It contains ratings and comments, helping to monitor service quality.
11. **Rooms** represent the hospital’s facilities. Each room has a type (e.g., General, ICU) and availability status, used when admitting or moving patients.
12. **Schedules** define when each doctor is available during the week. They enable the system to allow appointment bookings only during valid time slots.
13. **Test Results** are created when a patient undergoes diagnostic procedures. These results are stored with the test name, findings, and the test date.

**Conclusion:**

This system is a complete and well structured database of Hospital and it includes all the aspects that a hospital have. The complete working can be described as;

a new patient registers with hospital staff and is assigned a room. The staff books an appointment with a doctor based on their availability. After examination, the doctor adds a diagnosis to the medical record and prescribes medicines. The billing department generates the bill, potentially linked to the patient’s insurance provider. Later, lab tests are conducted and results stored. The patient then logs in to view their treatment history and leaves feedback for the doctor.