**Case Study: Hospital Management System**

**Context:**

You are required to develop a console-based Hospital Management System using Core Java. The application will allow hospital staff to manage patient records and perform various business operations related to hospital management. The application will utilize Java Collections for storing patient records, implement Object-Oriented Programming principles, and include exception handling to manage potential errors.

**Requirements:**

**Features:**

1. **Admit and Discharge Patients:**
   * Allow staff to admit new patients to the hospital.
   * Allow staff to discharge patients from the hospital.
2. **Update Patient Details:**
   * Allow staff to update details of existing patients, such as diagnosis and treatment information.
3. **Search for Patients:**
   * Allow staff to search for patients by name, ID, or condition.
   * Display the search results with patient details.
4. **Assign and Manage Beds:**
   * Allow staff to assign beds to admitted patients.
   * Manage bed availability and occupancy status.

**Classes and Objects:**

1. **Patient Class:**
   * Attributes: id, name, age, gender, diagnosis, treatment, admissionDate, dischargeDate.
   * Methods: Constructors, getters and setters, toString method.
2. **Bed Class:**
   * Attributes: bedNumber, occupied (boolean indicating if the bed is occupied).
   * Methods: Constructors, getters and setters, toString method.
3. **HospitalManager Class:**
   * Attributes: HashMap<Integer, Patient> patients, HashMap<Integer, Bed> beds.
   * Methods:
     + admitPatient(Patient p, int bedNumber): Admits a patient to the hospital and assigns a bed.
     + dischargePatient(int patientId): Discharges a patient from the hospital and frees up the bed.
     + updatePatientDetails(int patientId, Patient updatedPatient): Updates details of an existing patient.
     + searchPatient(String keyword): Searches for patients based on the keyword.
     + assignBed(int patientId, int bedNumber): Assigns a bed to a patient.
     + Helper methods for input validation and exception handling.

**Deliverables:**

1. Complete source code for the Hospital Management System.
2. Documentation including:
   * How to run the application.
   * Instructions for each feature.
   * Explanation of the exception handling implemented.
3. A brief report on the application design and how Object-Oriented principles were applied.

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