

Hospital system task

You are asked to build a basic **Hospital System** that keeps track of:

- Patients
- Doctors
- Appointments
- Specializations



Functional Requirements

1. Create Classes with Encapsulation

Each class should have private fields and public properties.



Doctor class

- Id (int)
- Name (string)
- Specialization (string)
- AvailableAppointments (List of DateTime)



Patient class

- Id (int)
- Name (string)
- Age (int)
- PhoneNumber (string)



Appointment class

- AppointmentId (int)
- Doctor (Doctor object)
- Patient (Patient object)
- AppointmentDate (DateTime)



Use **encapsulation** to hide data using private fields and expose it via properties.

2. Use Inheritance

Create a base class: Person

Make Doctor and Patient inherit from Person. Add method overriding:

- Doctor: DisplayInfo() → shows name, age, and specialization
- Patient: DisplayInfo() → shows name, age, and contact info

3. Manage Lists of Objects

Create and use the following lists:

- List of doctors
- List of patients
- List of appointments

Then implement methods for:

- Adding a new patient
- Adding a new doctor
- Booking an appointment (select doctor and patient from lists)
- Displaying all appointments
- Showing available doctors by specialization

4. Conditional logic

- Prevent double-booking a doctor
- Add a Hospital class that manages all data (e.g., List<Doctor>, List<Patient>)
- Let user search for appointments by patient name or date