### **Coding Challenge: Hospital Management System**

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## • Modules Implementation

### • Patient Management

Patient registration with details like name, age, gender, and contact information.

View, update, and delete patient records.

## • Doctor Management

Register and manage doctors with specialization, experience, and availability.

List doctors by specialization.

### • Appointment Scheduling

Book, view, and cancel appointments between patients and doctors.

Check availability of doctors before booking.

#### • Treatment Record

Add treatment details after appointments.

Maintain history of treatments for each patient.

### • Technologies Used

• Programming Language: Java

• Database: MySQL

• IDE: Eclipse

• Design Pattern: DAO (Data Access Object)

### • DAO Interfaces & Implementations

HospitalService & HospitalServiceImpl

### • Exception Handling

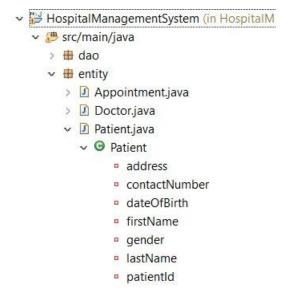
- Custom exceptions created:
- PatientNotFoundException
- DoctorNotFoundException
- AppointmentNotFoundException
- Used try-catch blocks to handle SQL and input errors gracefully.

### • Utility Classes

- DBConnectionUtil Manages database connections.
- ValidationUtil Input validations.
- DateUtil Formats and parses date inputs.

# 1. Define 'Patient' class with the following confidential attributes:

- a. patientId
- b. firstName
- c. lastName;
- d. dateOfBirth
- e. gender
- f. contactNumber
- g. address



# 2. Define 'Doctor' class with the following confidential attributes:

- a. doctorId
- b. firstName
- c. lastName
- d. specialization
- e. contactNumber



# 3. Appointment Class:

- a. appointmentId
- b. patientId
- c. doctorId
- d. appointmentDate
- e. description

```
    ✓ Ib HospitalManagementSystem (in Hospital)
    ✓ Ib src/main/java
    → Ib dao
    ✓ Ib entity
    ✓ If Appointment.java
    ✓ If Appointment
    If appointmentDate
    If appo
```

### • Project Outputs:

```
💽 eclipse-workspace - HospitalManagementSystem/src/main/java/dao/HospitalServiceImpl.java - Eclipse IDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              O
File Edit Source Refactor Navigate Search Project Run Window Help
□ □ B Outline X
   > 😂 HelloWorld
> 🔀 HexaWare_April
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P = 12 8 x3 0 x4 8
                                                                                                                                                                                                                                                                                                                                                                                                                                               dao
✓ → HospitalServiceImpl
                                                                                                                                                       3⊖ import entity.Appointment;
4 import util.DBConnUtil;
     hexawarejava
    HospitalManagementSystem

### src/main/java
                                                                                                                                                                                                                                                                                                                                                                                                                                                         getConnection(): Connection
getAppointmentByld(int): Appointmen
                                                                                                                                                            import java.sql.*;
import java.util.ArrayList;
import java.util.List;
             ∨ 曲 dao

    a getAppointmentsForDoctor(int): List<A</li>
    a scheduleAppointment(Appointment): b
    a updateAppointment(Appointment): bo

▼ ☑ HospitalServiceImpl.java

    G HospitalServiceImply
    HospitalService.java

                                                                                                                                                    9
10 public class HospitalServiceImpl implements IHospitalService {
11
120 private Connection getConnection() throws SQLException {
                                                                                                                                                                    private Connection getConnection() throws SQLException {
    return DBConnUtil.getConnection();

→ 

⊕ entity

                                                                                                                                                                                                                                                                                                                                                                                                                                                           a cancelAppointment(int) : boole
                 > ① Appointment.java
> ② Doctor.java
> ② Patient.java
                                                                                                                                                                      PatientNumberNotFoundException.java
                   > [] MainModule.java
                   > ① DBConnUtil.java
> ② DBPropertyUtil.java
                                                                                                                                                                                                                                                                                                                                                                                                                             ■ X ¾ 📭 🔐 🤛 🗗 🗗 🕆 🖰 - 🗆
       > Maven Dependencies
                                                                                                                                              MainModule [Java Application] C\Users\Admin\p2\poor\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86.64_21.0.6.v20250130-0529\jre\bin\javaw.exe (17-Apr-2025, 3:31:47 pm elapsed: 0:24:52) [pid: 2-24]
                                                                                                                                              MamModule Java Appireation (_CUBERS_AG = Hospital Management Henu == 1.6 ect Appointment by ID = 2.6 ect Appointments for Patient 3.6 ect Appointments for Doctor 4.5 chedule Appointment 5. Update Appointment 5. Update Appointment 6. Cancel Appointment 7. Exit
            pom.xml
  > B JunitHexaWareDemo

☑ JunitTestingDemo

  > TechShop_Final_Project (2)
                                                                                                                                             .. exit
Enter your choice: 6
Enter Appointment ID to cancel: 106
Cancelled
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Type here to search
```

#### Get Appointment by ID

```
Problems @ Javadoc Declaration C:\Users\Admin\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.6.v20250130-0529\jre\bivecolombia === Hospital Management Menu === 1. Get Appointment by ID 2. Get Appointments for Patient 3. Get Appointments for Doctor 4. Schedule Appointment 5. Update Appointment 5. Update Appointment 6. Cancel Appointment 7. Exit Enter your choice: 1 Enter Appointment ID: 203 Appointment ID: 203, Patient ID: 103, Doctor ID: 3, Date: 2024-04-25, Description: Neurology follow-up
```

### • Get Appointment by ID

```
=== Hospital Management Menu ===

1. Get Appointment by ID

2. Get Appointments for Patient

3. Get Appointments for Doctor

4. Schedule Appointment

5. Update Appointment

6. Cancel Appointment

7. Exit
Enter your choice: 2
Enter Patient ID: 102
Appointment ID: 105, Patient ID: 102, Doctor ID: 3, Date: 2025-05-08, Description: Normal Checkup
Appointment ID: 202, Patient ID: 102, Doctor ID: 2, Date: 2024-04-22, Description: Pediatric consultation
```

# • Get Appointments for Doctor

```
=== Hospital Management Menu ===

1. Get Appointment by ID

2. Get Appointments for Patient

3. Get Appointments for Doctor

4. Schedule Appointment

5. Update Appointment

6. Cancel Appointment

7. Exit
Enter your choice: 3
Enter Doctor ID: 3
Appointment ID: 105, Patient ID: 102, Doctor ID: 3, Date: 2025-05-08, Description: Normal Checkup
Appointment ID: 203, Patient ID: 103, Doctor ID: 3, Date: 2024-04-25, Description: Neurology follow-up
```

# • Schedule Appointment

```
=== Hospital Management Menu ===

1. Get Appointment by ID

2. Get Appointments for Patient

3. Get Appointments for Doctor

4. Schedule Appointment

5. Update Appointment

6. Cancel Appointment

7. Exit

Enter your choice: 4

Enter Appointment ID: 106

Enter Patient ID: 102

Enter Doctor ID: 2

Enter Date: 2025-07-10

Enter Description: blood test

Scheduled
```

# • Update Appointment

```
=== Hospital Management Menu ===

1. Get Appointment by ID

2. Get Appointments for Patient

3. Get Appointments for Doctor

4. Schedule Appointment

5. Update Appointment

6. Cancel Appointment

7. Exit
Enter your choice: 5
Enter Appointment ID to Update: 106
Enter new Patient ID: 102
Enter new Doctor ID: 2
Enter new Date: 2025-11-12
Enter new Description: x-ray
Updated
```

### • Cancel Appointment

```
=== Hospital Management Menu ===

1. Get Appointment by ID

2. Get Appointments for Patient

3. Get Appointments for Doctor

4. Schedule Appointment

5. Update Appointment

6. Cancel Appointment

7. Exit

Enter your choice: 6

Enter Appointment ID to cancel: 106

Cancelled
```