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

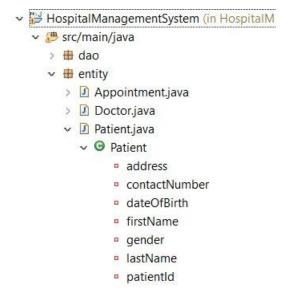
- Custom exceptions created:
- PatientNotFoundException
- DoctorNotFoundException
- AppointmentNotFoundException
- Used try-catch blocks to handle SQL and input errors gracefully.

• 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

```
    → W HospitalManagementSystem (in Hospital
    → Src/main/java
    → dao
    → entity
    → Appointment.java
    → Appointment
    □ appointmentDate
    □ appointmentId
    □ description
    □ doctorId
    □ patientId
```

• Project Outputs:

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clipse-workspace - HospitalManagementSystem/src/main/java/com/hexaware/mainmod/MainModule.java - Eclipse IDE
 File Edit Source Refactor Navigate Search Project Run Window Help
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 # Reckage Explorer × Jrr JUnit □ 등 1 2 2 CustomerDAO. ② MainModulejava № HospitalMana. ② HospitalSer. ② MainModulejava × ½ 1 package com.hexavare.mainmod;
   HexaWare_April
                                                                                              mport java.util.List;
                                                                                                                                                                                                                                                                                    main(String[]): void
                                                                                              public class MainModule {
    public static void main(String[] args) {
        HospitalServiceImpl service = new HospitalServiceImpl();
        Scanner sc = new Scanner(System.in);
}
   √ 🔛 HospitalManagementSystem
     ✓ 🌁 src/main/java
        while (true) {
   System.out.println("\n== Hospital Management Menu ==");
   System.out.println("1. Get Appointment by ID');
   System.out.println("2. Get Appointments for Patient");
   System.out.println("3. Get Appointments for Doctor");
   System.out.println("4. Schedule Appointment");
   System.out.println("5. Update Appointment");
   System.out.println("6. Cancel Appointment");
   System.out.println("7. Exit");
   System.out.println("7. Exit");
   int choice = sc.nextInt();
        Doctor.java
             Patient.java
       > Description
> Description
> Description

✓ A com.hexaware.mainmod

             MainModule.iava
          try {
    switch (choice) {
        rece 1:
                                                                                                                              case 1:
    System.out.print("Enter Appointment ID: ");
    int id1 = sc.nextInt();
    Appointment a = service.getAppointmentById(id1);
    > @ src/main/resources
> M JRE System Library [JavaSE-1.8]
    > Maven Dependencies
                                                                                       Problems & Javadoc Declaration Coussele X

MainModule [laws Application] Colleges Admining 2/pooch plugindorg eclipse just jopenjdkhotspot.jre.full.win32x86_54_210.6x20250130-0529 jre.bininjavaw.exe (18-Apr-2025, 75/75) am elapsed: 00228) [pict 17 === Hospital Ranagement Menu ===
1. Get Appointment by ID
2. Get Appointment by ID
3. Get Appointment for Patient
3. Get Appointments for Patient
5. Update Appointment
5. Update Appointment
6. Cancel Appointment
7. Exit
Enter your choice: 6
  > 🔂 JunitHexaWareDemo
   > Final_Project (2)
                                                                                        . Exit
Enter your choice: 6
Enter Appointment ID to cancel: 105
Cancelled
                                                                        H 🔚 🥞 🔯 🧿 🧁
Type here to search
                                                                                                                                                                                                                   (?)
                                                                                                                                                                                                                                            🥞 28°C Haze 🗥 ⊙ 🦟 🗉 💤 ⊄») ENG 18-04-20;
```

• 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\bi

=== 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: 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
```