Coding Challenge: Hospital Management System Documentation

D: 18/10/2024   ~ P325_Sarvesh Sharma

Project Overview:

- **Purpose:** A hospital management system designed to efficiently manage patient appointments, doctors, and associated records.
- **Technologies Used:** Python, MSSQL

Directory Structure: S:\GIT\Hexawarwe_CodingAssessment\CodingChallenge Hospital Management System

- **main**: contains the main execution module **MainModule.py**
- **dao**: data access object classes for interacting with the database
- **entity**: classes representing the tables defined in SQL i.e., **Patient**, **Doctor**, **Appointment**
- **myexceptions**: custom exceptions
- **util**: contains utility classes **DBConnection** for database connection

S:\GIT\Hexawarwe_CodingAssessment\CodingChallenge Hospital Management System

├── main

│   ├── __init__.py

│   └── MainModule.py

├── dao

│   ├── __init__.py

│   ├── IHospitalService.py

│   └── HospitalServiceImpl.py

├── entity

│   ├── __init__.py

```
|   ├── Patient.py

|   ├── Doctor.py

|   └── Appointment.py

├── myexceptions

|   ├── __init__.py

|   └── PatientNumberNotFoundException.py

├── util

|   ├── __init__.py

|   └── DBConnection.py

├── HospitalManagement_DB.sql

└── venv
```

Project Flow:

- **Database Setup**
  - Created SQL file **HospitalManagement_DB.sql** to define three main tables: `Patient`, `Doctor`, and `Appointment`.
- **Entity Classes**
  - Defined classes for `Patient`, `Doctor`, and `Appointment`.
  - Each class contains attributes and getter setter methods.
- **DAO Implementation**
  - Developed an interface `IHospitalService` and its implementation `HospitalServiceImpl`
  - Methods implemented include fetching appointments, scheduling, updating, and canceling appointments.
- **Utility Class**
  - Created **DBConnection.py** to manage database connections
- **Exception Handling**
  - Implemented **PatientNumberNotFoundException** for handling cases where a patient number does not exist
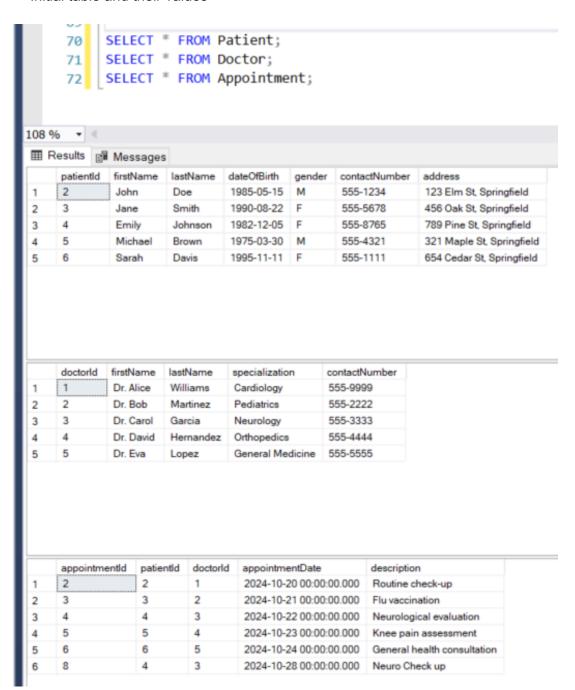- **Main Application Logic**
  - Developed a menu-driven interface for user interactions.
  - Allowed users to retrieve appointments by ID, get appointments for specific patients or doctors, schedule, update, and cancel appointments.

- **Sample Data**
  - Inserted sample data into the database for testing

Outputs:

=> Initial table and their values

```
70  SELECT * FROM Patient;
71  SELECT * FROM Doctor;
72  SELECT * FROM Appointment;
```

108 %

Results | Messages

	patientId	firstName	lastName	dateOfBirth	gender	contactNumber	address
1	2	John	Doe	1985-05-15	M	555-1234	123 Elm St, Springfield
2	3	Jane	Smith	1990-08-22	F	555-5678	456 Oak St, Springfield
3	4	Emily	Johnson	1982-12-05	F	555-8765	789 Pine St, Springfield
4	5	Michael	Brown	1975-03-30	M	555-4321	321 Maple St, Springfield
5	6	Sarah	Davis	1995-11-11	F	555-1111	654 Cedar St, Springfield

	doctorId	firstName	lastName	specialization	contactNumber
1	1	Dr. Alice	Williams	Cardiology	555-9999
2	2	Dr. Bob	Martinez	Pediatrics	555-2222
3	3	Dr. Carol	Garcia	Neurology	555-3333
4	4	Dr. David	Hernandez	Orthopedics	555-4444
5	5	Dr. Eva	Lopez	General Medicine	555-5555

	appointmentId	patientId	doctorId	appointmentDate	description
1	2	2	1	2024-10-20 00:00:00.000	Routine check-up
2	3	3	2	2024-10-21 00:00:00.000	Flu vaccination
3	4	4	3	2024-10-22 00:00:00.000	Neurological evaluation
4	5	5	4	2024-10-23 00:00:00.000	Knee pain assessment
5	6	6	5	2024-10-24 00:00:00.000	General health consultation
6	8	4	3	2024-10-28 00:00:00.000	Neuro Check up

=> 1 Get Appointment By ID

```
(venv) PS S:\GIT\Hexawarwe_CodingAssessment\CodingChallenge Hospital Management System\main> python .\MainModule.py

*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 1
Enter Appointment ID: 2
Appointment Found: Appointment ID: 2, Patient ID: 2,Patient Name: John Doe, Doctor ID: 1,Doctor Name: Dr. Alice Williams, Appointment Date: 2024-10-20 00:00:00,Description: Routine check-up
```

=> 2 Get Appointments for Patient

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 2
Enter Patient ID: 4
Appointments for Patient ID 4
Appointment ID: 4, Patient ID: 4,Patient Name: Emily Johnson, Doctor ID: 3,Doctor Name: Dr. Carol Garcia, Appointment Date: 2024-10-22 00:00:00,Description: Neurological evaluation
Appointment ID: 8, Patient ID: 4,Patient Name: Emily Johnson, Doctor ID: 3,Doctor Name: Dr. Carol Garcia, Appointment Date: 2024-10-28 00:00:00,Description: Neuro Check up
```

=> 3 Get Appointments for Doctor

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 3
Enter Doctor ID: 5
Appointments for Doctor ID 5
Appointment ID: 6, Patient ID: 6,Patient Name: Sarah Davis, Doctor ID: 5,Doctor Name: Dr. Eva Lopez, Appointment Date: 2024-10-24 00:00:00,Description: General health consultation
```

=> 4 Schedule Appointment for Patient ID 5 & DOctor ID 3

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 4
Enter Patient ID: 5
Enter Doctor ID: 4
Enter Appointment Date (YYYY-MM-DD): 2024-10-30
Enter Description: Increase in Knee Pain
Appointment Scheduled: Appointment ID: None, Patient ID: 5,Patient Name: None, Doctor ID: 4,Doctor Name: None, Appointment Date: 2024-10-30,Description: Increase in Knee Pain
```

	appointmentId	patientId	doctorId	appointmentDate	description
1	2	2	1	2024-10-20 00:00:00.000	Routine check-up
2	3	3	2	2024-10-21 00:00:00.000	Flu vaccination
3	4	4	3	2024-10-22 00:00:00.000	Neurological evaluation
4	5	5	4	2024-10-23 00:00:00.000	Knee pain assessment
5	6	6	5	2024-10-24 00:00:00.000	General health consultation
6	8	4	3	2024-10-28 00:00:00.000	Neuro Check up
7	9	5	4	2024-10-30 00:00:00.000	Increase in Knee Pain

=> 5 Update Appointment for APPOINTMENT id 8

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 5
Enter Appointment ID to update: 8
Enter new Patient ID: 3
Enter new Doctor ID: 2
Enter new Appointment Date (YYYY-MM-DD): 2024-10-28
Enter new Description: Pediatrics Check Up
Appointment Updated: Appointment ID: 8, Patient ID: 3,Patient Name: Emily Johnson, Doctor ID: 2,Doctor Name: Dr. Carol Garcia, Appointment Date: 2024-10-28,Description: Pediatrics Check Up
```

	appointmentId	patientId	doctorId	appointmentDate	description
1	2	2	1	2024-10-20 00:00:00.000	Routine check-up
2	3	3	2	2024-10-21 00:00:00.000	Flu vaccination
3	4	4	3	2024-10-22 00:00:00.000	Neurological evaluation
4	5	5	4	2024-10-23 00:00:00.000	Knee pain assessment
5	6	6	5	2024-10-24 00:00:00.000	General health consultation
6	8	3	2	2024-10-28 00:00:00.000	Pediatrics Check Up
7	9	5	4	2024-10-30 00:00:00.000	Increase in Knee Pain

=> 6 Cancel Appointment for Appointment ID 8

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 6
Enter Appointment ID to cancel: 8
Appointment with ID 8 has been canceled.
```

Results | Messages

	appointmentId	patientId	doctorId	appointmentDate	description
1	2	2	1	2024-10-20 00:00:00.000	Routine check-up
2	3	3	2	2024-10-21 00:00:00.000	Flu vaccination
3	4	4	3	2024-10-22 00:00:00.000	Neurological evaluation
4	5	5	4	2024-10-23 00:00:00.000	Knee pain assessment
5	6	6	5	2024-10-24 00:00:00.000	General health consultation
6	9	5	4	2024-10-30 00:00:00.000	Increase in Knee Pain

=> 7 Invalid Value

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 7
Invalid choice. Please try again.
```

=> 8 Exit

```
*** Hospital Management System ***
1. Get Appointment By ID
2. Get Appointments for Patient
3. Get Appointments for Doctor
4. Schedule Appointment
5. Update Appointment
6. Cancel Appointment
0. Exit
Enter your choice: 0
Exiting the Hospital Management System...
```