

Healthcare Appointment Booking

P2. Database Design, Conceptual Model

Group 14	NUID
Aman Malawade	002762202
Santosha Nagaratnakar Chakkapalli	002798165
Shreya Bage	002837742
Yu Du	002290656
Kartik Shanbhag	002273864

Link to Github:

<https://github.com/karshan26/HealthCare-Appointment-Booking.git>

Business Problem:

In today's healthcare scene, appointment scheduling and overall healthcare management are filled with inefficiencies and obstacles. Medical facilities frequently face double bookings, appointment cancellations, excessive wait times, and disconnected communication between patients and healthcare providers. These concerns not only cause patient irritation, but they also have an impact on medical staff productivity and effectiveness.

Furthermore, integrating electronic health records (EHR) adds another level of complication. To obtain patient information, healthcare providers must deal with several systems and platforms, which can lead to decision-making delays and treatment errors.

Addressing these issues necessitates a holistic solution that streamlines appointment scheduling, optimises doctor availability, enables seamless communication, and assures secure access to electronic health records.

Entities, Relationships and Key Decisions:

- ***Appointment:***

Attributes: Appointment ID (pk), Date and Time, Appointment Status

The "Appointment" entity in the Healthcare Appointment Booking system is a critical component for scheduling and managing medical appointments. It has a variety of features that collect critical information about each encounter, facilitating effective communication between patients and healthcare providers.

- ***EHR (Electronic Health Records)***

Attributes: Record ID (pk), Record Details

Electronic Health Records (EHR) are a significant preserve of patient medical information in the healthcare system, allowing for efficient and safe access to critical healthcare data. The Record ID maintains data integrity while also allowing for the quick retrieval and management of patient-specific health information.

- ***Patients***

Attributes: Patient ID (pk), Contact Info, Address, medical history (Boolean yes/no)

The "Patients" entity in the healthcare system contains critical information about individuals receiving medical care. Each patient is assigned a unique Patient ID, which simplifies data management. Contact Information and Address facilitate communication and appointment coordination, whilst the Medical History characteristic shows the presence of relevant records for healthcare professionals to make educated decisions, hence improving efficiency and quality of care.

- ***Services***

Attributes: Service type, Details

The Services entity in the Healthcare Appointment Booking system categorises additional medical offerings post appointment by Service Type and provides further information for each service. This allows for more effective organisation and documentation, resulting in faster service delivery and informed decision-making for both healthcare providers and patients.

- ***Billing***

Attributes: Receipt ID (pk), Invoice number, Date, Transaction status

Attributes include receipt ID (pk), invoice number, date, and transaction status.

Essential features of the Healthcare Appointment Booking system's billing entity are Receipt ID (Primary Key), Invoice Number, Date, and Transaction Status. Receipt ID identifies each transaction, whereas Invoice Number records billing information. The Date specifies when the transaction occurred, while the Transaction Status indicates the present status, ensuring effective financial administration and tracking within the system.

- **Insurance**

Attributes: Insurance ID (pk), Carrier Details, Plan Details, Premium, Approval Status, Out-of-pocket maximum

The Insurance entity in the Healthcare Appointment Booking system has the following essential attributes: Insurance ID (Primary essential), Carrier Details, Plan Details, Premium, Approval Status, and Out-of-pocket Maximum. Each insurance record is identified uniquely by its Insurance ID, and the insurance provider is specified by Carrier Details. Plan

- **Scope of Treatment**

Attributes: Treatment_ID (pk), Medical specialty, Treatment Name, Treatment Type

Appointment Booking system's Scope of Treatment entity has all of the necessary characteristics to specify treatment options and parameters. Treatment Type, Description, Cost, Duration, and Treatment ID (Primary Key) are some of these attributes. Each treatment record is uniquely identified by its Treatment ID, and the sort of therapy provided—such as consultations, therapies, or procedures—is classified by its treatment record. The terms "Description," "Duration," and "Cost" denote the further information regarding the therapy, its anticipated length, and the related costs. These attributes help the healthcare system make decisions about treatment options and criteria and communicate them clearly.

- **Practice Location**

Attributes: Location ID (pk), Address, Practice name, Operating hours

The Location ID (Primary Key), Address, Practice Name, and Operating Hours are attributes of the Practice Location entity in the Healthcare Appointment Booking system. Each practice site is individually identified by its site ID, and its physical location is specified by its Address. The name of the medical institution or practitioner that is in operation at the site is indicated by the practice name. The practice's operating hours specify the times that it is available for appointments and services. These attributes make it easier for the healthcare system to efficiently schedule and coordinate appointments at various practice sites.

- **Doctor**

Attributes: Doctor ID (pk), Specialization Name, Availability, Qualifications, Reviews/Rating, Background

The Doctor entity in the Healthcare Appointment Booking system consists of the following: Availability, Qualifications, Reviews/Rating, Background, Specialization Name, and Doctor ID (Primary Key). Each doctor's ID is unique, their specialty name denotes their area of competence in medicine, and their availability shows when appointments are available. Qualifications provide specific qualifications, Reviews/Ratings represent patient opinions, and Background provides professional experience. These features make it easier to schedule appointments with qualified healthcare providers.

- **Staff**

Attributes: Staff ID (pk), Staff type, Contact details, Role/Position

Appointment Booking system's Staff entity has the following attributes: Role/Position, Contact Details, Staff ID (Primary Key), and Staff Type. Each employee is uniquely identified by their Staff ID, and their work inside the healthcare facility is classified by their Staff Type. Communication channels are provided by the Contact Details, and their Role/Position outlines their duties. These features facilitate staff coordination and administration inside the system.

- **Notifications**

Attributes: Notification type, Date and time, Urgency Level

Notification Type, Date and Time, and Urgency Level are attributes of the Notification entity in the Healthcare Appointment Booking system. Notification Type classifies the many kinds of notifications, including urgent alerts or appointment reminders. The notification's generation time is indicated by the Date and Time. The notification's urgency level denotes its importance or priority. These attributes make it easier for the system to respond quickly and effectively.

- **Analytics and Reports**

Attributes: Report ID (pk), Report Type, Data source, Report details

Attributes: Report ID (pk), Report Type, Data source, Report details
Report ID (Primary Key), Report Type, Data Source, and Report Details are attributes in the Analytics and Reports entity of the Healthcare Appointment Booking system. Each report is individually identified by its Report ID, and the sort of analysis or information offered is classified by Report sort. The source of the data used in the report is indicated by the data source. Report Details offer detailed information or analysis-derived insights. These features make it possible for the system to generate and provide analytical insights and reports, which helps with performance evaluation and well-informed decision-making.

ERD Link:

https://drive.google.com/file/d/1hn3KQjawwN8QVIH_THdGodOfR1H8W9qy/view?usp=sharing

