**Medical Appointment Booking Platform**

Applied Database Technologies (DSCI - D532)

Database Constraints

by

**Ameya Dattaram Parab**

**Trishna Patil**

Indiana University Bloomington

**Database Constraints**

* **Primary Key:**

This constraint ensures distinction between two set of records. For instance, no two appointments can have the same Appointment ID, different Specialties and Schools are stored with different keys as unique identifiers.

* **Foreign Key:**

These constraints ensure that the data in one table is consistent with the data in another table. For example, the appointments table might has a foreign key that references the patients table to ensure that all bookings are associated with a valid patient as well as a foreign key that references the Doctor table.

* **Not Null:**

These constraints ensure that certain required fields, such as the patient name, email, appointment time, are not left blank. Null or missing values can hinder the analysis of the data.

* **Check:**

These constraints ensure that certain conditions are met before data is inserted or updated in the database. For example, a check constraint might ensure that the patient’s email is valid or the phone number has appropriate digits.

* **Domain:**

These constraints ensure that data is within a specified range or set of values. For example, a domain constraint might ensure that a patient's appointment time is within a suitable time in the day when the Doctor is available.

**Data Types**

Although the raw data may contain data in the text and numeric forms only, to run meaningful queries and data analysis the database needs to be designed with an appropriate data type for each field. There are various kinds of data present in the data such as

* **Text:**

These may be names, addresses, textual information; however, there are certain columns containing only a single or two characters such as gender, yes/no data and state.

* **Numbers:**

It mainly consists of identifiers and counts. While there may be data for phone numbers and zip code in the numeric formats it should be avoided to be kept as numeric as the numeric data types in the databases cannot interpret leading 0 in them which can cause data corruption.

* **Date and Time:**

The data and time information is essential for the appointment booking.

**Views:**

1. **Appointments view:**

This view could display all the bookings made in the system, including the date and time of the appointment, the patient's name, the doctor's name, and any additional details about the booking.

1. **Doctor’s information view:**

Instead of repeatedly retrieving the data a view can be created to store the basic necessary information about the doctor. This view can be used to display the details of each doctor on the appointment page.

1. **Specialties view:**

As specialties are segregated into a separate entity this view could help retrieve information about all the specialties of a particular doctor.

1. **Doctor’s experience view:**

As the data does not have any information about the doctor’s work experience, it can be calculated by subtracting the current year by the graduation year. This view will store the experience of all the doctors at once and can be retained anytime.

**Functions:**

1. **Create appointment function:**

This function could allow the user to create a new booking in the system, including the patient's information, the date and time of the appointment, the doctor's name, and any additional details.

1. **Cancel appointment function:**

This function could allow the user to cancel a booking in the system, freeing up the time slot for another patient.

1. **Search function:**

This function could allow the user to search for doctors based on specific criteria, such as the specialty, experience, location, etc.

**Procedures:**

1. **Data insert procedure:**

As the tables are normalized the data insertion in some tables involves insertion through R code and hence temporary tables are created for that. A procedure can be used to automate this process whenever new data gets added.

1. **Reports procedure:**

This procedure could generate various visualizations based on the doctor’s data, such as the specialties, number of doctors belonging to hospitals. It can be reused to modify the parameters of the plots.