Hospital Management System Database Schema

Tables

Table 1: patients

- **Primary Key:** id
- **Fields:** full_name, date_of_birth, gender, address, phone_number

Table 2: doctors

- **Primary Key:** id
- **Fields:** full_name, specialty, phone_number

Table 3: appointments

- **Primary Key:** id
- **Fields:** patient_id, doctor_id, appointment_date, status
- **Indexes:** patient_id, doctor_id

Table 4: medical_records

- **Primary Key:** id
- **Fields:** patient_id, diagnosis, treatment, prescription, record_date
- **Indexes:** patient_id

Table 5: billing

- **Primary Key:** id
- **Fields:** patient_id, appointment_id, total_amount, billing_date
- **Indexes:** patient_id, appointment_id

Table 6: rooms

- **Primary Key:** id
- **Fields:** room_number, type, status
- **Indexes:** room_number

Table 7: room_assignments

- **Primary Key:** id
- **Fields:** patient_id, room_id, assignment_date, discharge_date
- **Indexes:** patient_id, room_id

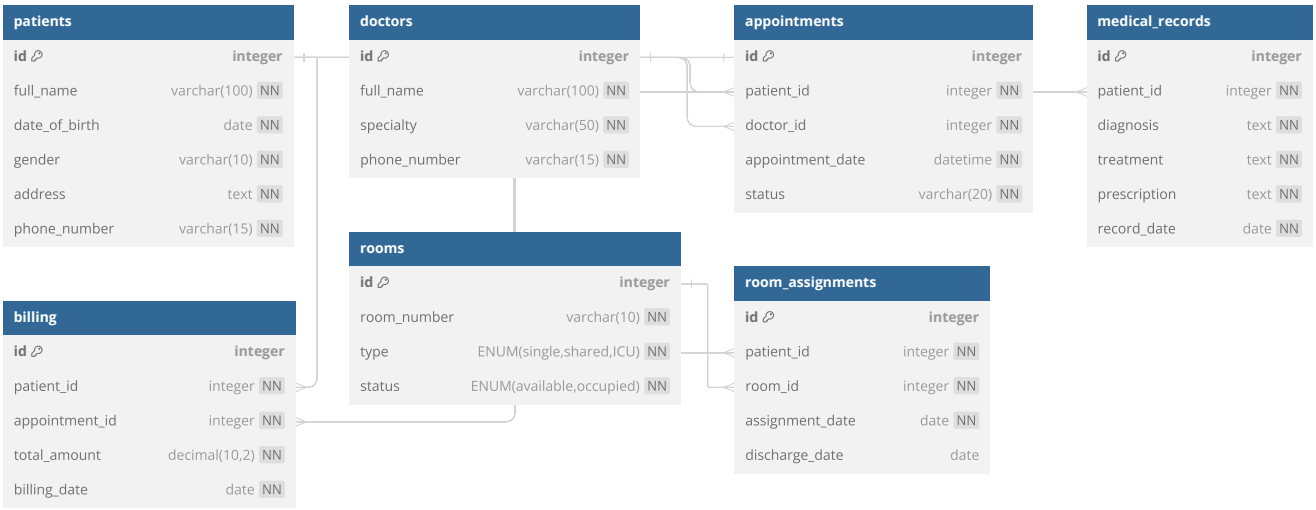
dbdiagram.io Schema

```
Table patients {
  id integer [primary key, increment]
```

```
  full_name varchar(100) [not null]
  date_of_birth date [not null]
  gender varchar(10) [not null]
  address text [not null]
  phone_number varchar(15) [not null]

  Indexes {
    id [unique]
  }
}

Table doctors {
  id integer [primary key, increment]
  full_name varchar(100) [not null]
  specialty varchar(50) [not null]
  phone_number varchar(15) [not null]

  Indexes {
    id [unique]
  }
}

Table appointments {
  id integer [primary key, increment]
  patient_id integer [not null, ref: > patients.id]
  doctor_id integer [not null, ref: > doctors.id]
  appointment_date datetime [not null]
  status varchar(20) [not null]

  Indexes {
    id [unique]
    patient_id
    doctor_id
  }
}

Table medical_records {
  id integer [primary key, increment]
  patient_id integer [not null, ref: > patients.id]
  diagnosis text [not null]
  treatment text [not null]
  prescription text [not null]
  record_date date [not null]

  Indexes {
    id [unique]
    patient_id
  }
}

Table billing {
  id integer [primary key, increment]
  patient_id integer [not null, ref: > patients.id]
```

```
  appointment_id integer [not null, ref: > appointments.id]
  total_amount decimal(10, 2) [not null]
  billing_date date [not null]

  Indexes {
    id [unique]
    patient_id
    appointment_id
  }
}

Table rooms {
  id integer [primary key, increment]
  room_number varchar(10) [unique, not null]
  type ENUM('single', 'shared', 'ICU') [not null]
  status ENUM('available', 'occupied') [not null]

  Indexes {
    id [unique]
    room_number
    status
  }
}

Table room_assignments {
  id integer [primary key, increment]
  patient_id integer [not null, ref: > patients.id]
  room_id integer [not null, ref: > rooms.id]
  assignment_date date [not null]
  discharge_date date

  Indexes {
    id [unique]
    patient_id
    room_id
  }
}
```

Image of the Schema



Use Case Queries

Query 1: List all appointments for a specific doctor on a given date:

```
SELECT a.id, p.full_name AS patient_name, a.appointment_date, a.status
FROM appointments a
JOIN patients p ON a.patient_id = p.id
WHERE a.doctor_id = :doctor_id
        AND DATE(a.appointment_date) = :date;
```

Query 2: Retrieve the medical records for a specific patient:

```
SELECT mr.id, mr.diagnosis, mr.treatment, mr.prescription, mr.record_date
FROM medical_records mr
WHERE mr.patient_id = :patient_id;
```

Query 3: Find the total amount billed to a specific patient:

```
SELECT SUM(b.total_amount) AS total_billed
FROM billing b
WHERE b.patient_id = :patient_id;
```

Query 4: List all available rooms of a specific type:

```
SELECT r.room_number
FROM rooms r
WHERE r.type = :room_type
        AND r.status = 'available';
```

Query 5: Calculate the average length of stay for patients in the hospital:

```
SELECT AVG(DATEDIFF(ra.discharge_date, ra.assignment_date)) AS
average_length_of_stay
FROM room_assignments ra;
```

Query 6: List all patients currently admitted to the hospital:

```
SELECT p.full_name, ra.assignment_date, r.room_number, r.type
FROM room_assignments ra
JOIN patients p ON ra.patient_id = p.id
JOIN rooms r ON ra.room_id = r.id
WHERE ra.discharge_date IS NULL;
```