**Case Study: Doctor Appointment Management System**

**Problem Statement:**

Design and implement a Doctor Appointment Management System using Oracle SQL and PL/SQL. The system will be used to manage patients, doctors, appointments, and medical records. Your task is to create the necessary database schema, populate the database with sample data, and develop PL/SQL procedures to handle patient admissions, appointment scheduling, and generating medical reports.

**Requirements:**

1. **Patient Management**:
   * Implement the functionality to add, update, delete, and search for patients.
   * Ensure that each patient has attributes such as PATIENT\_ID, FIRST\_NAME, LAST\_NAME, DOB, GENDER, PHONE\_NUMBER, and EMAIL.
2. **Doctor Management**:
   * Implement the functionality to add, update, delete, and search for doctors.
   * Ensure that each doctor has attributes such as DOCTOR\_ID, FIRST\_NAME, LAST\_NAME, SPECIALIZATION, PHONE\_NUMBER, and EMAIL.
3. **Appointment Management**:
   * Implement the functionality to schedule, reschedule, and cancel appointments.
   * Ensure that each appointment has attributes such as APPOINTMENT\_ID, PATIENT\_ID, DOCTOR\_ID, APPOINTMENT\_DATE, APPOINTMENT\_TIME, and STATUS.

**Tasks:**

1. **Design the Database Schema**:
   * Create the Patients, Doctors, and Appointments tables with the appropriate fields and constraints.
   * Define primary keys and foreign keys to maintain data integrity.
2. **Populate the Database with Sample Data**:
   * Insert sample records into the Patients, Doctors, and Appointments tables to facilitate testing of the system.
3. **Develop PL/SQL Procedures**:
   * Create a procedure to handle patient admissions. The procedure should insert a new patient record.
   * Create a procedure to handle appointment scheduling. The procedure should insert a new appointment record.
   * Create a procedure to generate medical reports, including details such as patient information, doctor information, appointment details, and medical records.

**Expected Outcomes:**

1. **Patients Table**:
   * Contains all information about the patients in the system.
2. **Doctors Table**:
   * Contains details of all doctors in the hospital.
3. **Appointments Table**:
   * Tracks the appointment history, including appointment details and status.
4. **PL/SQL Procedures**:
   * Efficiently manage patient admissions, appointment scheduling, and generating medical reports, maintaining accurate records in the database.

**Deliverables:**

1. SQL scripts to create the Patients, Doctors, and Appointments tables.
2. SQL scripts to insert sample data into the tables.
3. PL/SQL scripts for the procedures to handle admissions, appointments, and generate medical reports.
4. Documentation explaining how to set up and use the system, including how to run the PL/SQL procedures.

**Database Schema:**

1. **Patients Table**:
   * **PATIENT\_ID**: Number, Primary Key
   * **FIRST\_NAME**: Varchar2(50)
   * **LAST\_NAME**: Varchar2(50)
   * **DOB**: Date
   * **GENDER**: Varchar2(10)
   * **PHONE\_NUMBER**: Varchar2(15)
   * **EMAIL**: Varchar2(100)
2. **Doctors Table**:
   * **DOCTOR\_ID**: Number, Primary Key
   * **FIRST\_NAME**: Varchar2(50)
   * **LAST\_NAME**: Varchar2(50)
   * **SPECIALIZATION**: Varchar2(100)
   * **PHONE\_NUMBER**: Varchar2(15)
   * **EMAIL**: Varchar2(100)
3. **Appointments Table**:
   * **APPOINTMENT\_ID**: Number, Primary Key
   * **PATIENT\_ID**: Number, Foreign Key References Patients(PATIENT\_ID)
   * **DOCTOR\_ID**: Number, Foreign Key References Doctors(DOCTOR\_ID)
   * **APPOINTMENT\_DATE**: Date
   * **APPOINTMENT\_TIME**: Varchar2(10)
   * **STATUS**: Varchar2(20)

**Case Study Task:**

* **Design**: Create the database schema as provided.
* **Implement**: Insert sample data into the tables.
* **Develop**: Write PL/SQL procedures for handling patient admissions, appointment scheduling, and generating medical reports.
* **Test**: Test the procedures with various scenarios (e.g., admitting a patient, scheduling an appointment, generating reports, ensuring proper updates).