**Database Implementation Project: HealthyLife Hospitals**

**Scenario:**

You have been hired as a database developer for HealthyLife Hospitals. The management requires a comprehensive database to manage patient admissions, diagnoses, wards, and related information. This database will aid in analyzing patient admissions, understanding common diagnoses, and optimizing hospital operations. Your task is to design, implement, and populate a database, and write queries to extract valuable insights from the data.

**Project Requirements:**

**Step 1: Database Design**

1. **Tables to Create:**
   * **tblPatient**
     + PatientID (Primary Key)
     + Forename
     + Surname
     + DateOfBirth
     + Gender
     + Postcode
   * **tblAdmission**
     + AdmissionID (Primary Key)
     + PatientID (Foreign Key referencing tblPatient)
     + AdmissionDate
     + DischargeDate
     + SpecialtyCode (Foreign Key referencing tblSpecialty)
     + WardCode (Foreign Key referencing tblWard)
     + MethodOfAdmissionCode (Foreign Key referencing tblMethodOfAdmission)
     + GPPracticeCode (Foreign Key referencing tblGPPractice)
   * **tblSpecialty**
     + SpecialtyCode (Primary Key)
     + SpecialtyName
   * **tblWard**
     + WardCode (Primary Key)
     + WardName
     + WardType (e.g., ICU, General, Endoscopy Suite, etc.)
   * **tblMethodOfAdmission**
     + MethodOfAdmissionCode (Primary Key)
     + MethodOfAdmissionType (e.g., Elective, Emergency, GP, etc.)
   * **tblDiagnosis**
     + DiagnosisCode (Primary Key)
     + DiagnosisDescription
     + AdmissionID (Foreign Key referencing tblAdmission)
   * **tblGP**
     + GPCode (Primary Key)
     + GPName
     + GPPracticeCode (Foreign Key referencing tblGPPractice)
   * **tblGPPractice**
     + GPPracticeCode (Primary Key)
     + PracticeName
     + PracticePostcode
2. **Relationships:**
   * Establish relationships using foreign keys as specified in the table structures.

**Step 2: Data Insertion**

1. **Populate the tables** with realistic sample data. Ensure there are enough records to allow meaningful queries (at least 100 records for admissions, patients, and diagnoses).

**Step 3: T-SQL Queries**

1. **Patient and Admission Details:**
   * List all patients with their details (ID, Name, Gender, Date of Birth, Postcode).
   * Retrieve the total number of admissions per patient.
2. **Admission Analysis:**
   * For hospital admissions with a discharge date in the financial year 2014/15 (01/04/2014 to 31/03/2015), find the maximum length of stay where the admission ward was the Endoscopy Suite, and the method of admission type was Elective.
   * Retrieve the total number of admissions for each ward in the financial year 2015/16.
3. **Diagnosis and Treatment:**
   * What was the most common primary diagnosis (include the code and description) for hospital admission episodes where the discharge date was in the financial year 2015/16 (01/04/2015 to 31/03/2016), the method of admission type was Emergency, and the patient lived in the SK2 postcode area?
   * For hospital admissions with a discharge date in the financial year 2015/16 (01/04/2015 to 31/03/2016), what was the primary diagnosis (include the code and description) that resulted in the longest average length of stay where the method of admission type was Emergency or NonElective, and there were at least 100 hospital admission episodes with that primary diagnosis?
4. **GP and Practice Analysis:**
   * For hospital admissions with an admission date in the financial year 2015/16 (01/04/2015 to 31/03/2016), which GP Practice was responsible for the largest number of hospital admission episodes with a method of admission of GP?
5. **Comprehensive Episode Analysis:**
   * Generate a list of hospital admission episodes where:
     + The admission date (2nd episode) is within 7 days of a discharge date (1st episode) where the PatientID is the same, but the AdmissionID is different.
     + The admission date of the 2nd episode is after the discharge date of the 1st episode.
     + The method of admission type of the 1st episode is Elective, and the method of admission type of the 2nd episode is Emergency.
     + The specialty code of both admission episodes is the same.
   * The list should include the following columns:
     + PatientID
     + 1st episode AdmissionID
     + 1st episode DischargeDate
     + 1st episode MethodOfAdmissionType
     + 1st episode SpecialtyCode
     + 2nd episode AdmissionID
     + 2nd episode AdmissionDate
     + 2nd episode MethodOfAdmissionType
     + 2nd episode SpecialtyCode
     + A calculated column that shows the number of days between the discharge date of the 1st episode and the admission date of the 2nd episode
6. **Additional Data Retrieval:**
   * Retrieve the list of all patients who had more than one admission in the financial year 2015/16.
   * Calculate the average length of stay for all admissions in each ward for the financial year 2015/16.
   * List the top 5 specialties with the highest number of admissions in the financial year 2015/16.
   * Find the GP with the most patients admitted to the hospital in the financial year 2015/16.
   * Retrieve the list of all patients who were admitted to the ICU ward and their corresponding diagnoses.

**Submission:**

1. **Save your SQL scripts** Prepare a documentation on Medium or GitHub of your project.
2. **Show some visuals in Excel.**
3. **Submit your project** folder by the due date specified.

**Grading Criteria:**

1. **Database Design:** Proper design and relationships (30%)
2. **Data Insertion:** Accurate and sufficient sample data (20%)
3. **T-SQL Queries:** Correctness and efficiency of the queries (30%)
4. **Documentation:** Clear comments and documentation within the SQL scripts (10%)
5. **Presentation:** Neatness and organization of the Excel file (10%)