**SQL Database Project: Real Estate Company Database**

**Basic Info and Project Components**

* **Project:** Building a comprehensive SQL database for a real estate company.
* **Objective:** Create a database to manage properties, clients, agents, developers, and transactions.
* **Tools and Techniques:**
  + **SQL Server:** Used for database creation and management.
  + **T-SQL:** Used for creating triggers, procedures, and functions.
  + **Database Components:**
    - Tables: Cities, PropertyTypes, TransactionStatuses, Properties, Clients, Agents, Transactions, AgentCommissions, Developers, LeaseContracts.
    - Views: ActiveTransactionsOverview, ActiveClientsInCities, MonthlyTransactionStats, ExpensivePropertyAvgPrices, AgentActivity, CityAvgPropertyPrices, ClientCountInCities.
    - Functions: FindClientTransactions, FindAgentLeaseContracts, FindRecentTransactions, FindTopClientsByTransactions.
    - Stored Procedures: UpdateLeaseStartDate, AddNewClient, UpdatePropertyPrice, FindTopClientsByTransactions.
    - Triggers: ValidateClientData, InsertNewAgent.

**Steps**

1. **Database Setup:**
   * Drop existing database if it exists.
   * Create new database FirmaNieruchomosci.
2. **Table Creation:**
   * **Cities:** Stores city names, countries, and population.
   * **PropertyTypes:** Defines property types (apartments, houses, plots, offices).
   * **TransactionStatuses:** Stores transaction statuses (ongoing, completed, canceled).
   * **Properties:** Detailed information about properties including address, price, and status.
   * **Clients:** Client information including contact details and city.
   * **Agents:** Agent information including contact details and working city.
   * **Transactions:** Records property transactions including client, agent, date, and amount.
   * **AgentCommissions:** Stores commission information for agents.
   * **Developers:** Information about developers including contact details.
   * **LeaseContracts:** Details of rental contracts including property, client, dates, and rent.
3. **Data Insertion:**
   * Insert sample data for cities, property types, transaction statuses, properties, clients, agents, transactions, commissions, developers, and lease contracts.
4. **View Creation:**
   * **ActiveTransactionsOverview:** Shows active transactions with details.
   * **ActiveClientsInCities:** Shows the number of active clients per city.
   * **MonthlyTransactionStats:** Monthly transaction statistics.
   * **ExpensivePropertyAvgPrices:** Average prices of expensive properties by city.
   * **AgentActivity:** Agent activity including transaction count and commissions.
   * **CityAvgPropertyPrices:** Average property prices by city.
   * **ClientCountInCities:** Number of clients per city.
5. **Function Development (T-SQL):**
   * **FindClientTransactions:** Returns transactions for a given client.
   * **FindAgentLeaseContracts:** Returns lease contracts handled by a given agent.
   * **FindRecentTransactions:** Returns the most recent transactions.
   * **FindTopClientsByTransactions:** Returns clients with the highest number of transactions.
6. **Stored Procedure Implementation (T-SQL):**
   * **UpdateLeaseStartDate:** Updates the start date of a lease contract.
   * **AddNewClient:** Adds a new client if they don't already exist.
   * **UpdatePropertyPrice:** Updates the price of a property if it is active.
   * **FindTopClientsByTransactions:** Returns clients with the highest number of transactions.
7. **Trigger Creation (T-SQL):**
   * **ValidateClientData:** Ensures email and phone format validity for clients.
   * **InsertNewAgent:** Validates agent data before insertion.

**Skills Highlighted:**

* **Database Design and Management:**
  + Created a normalized database schema with relational integrity.
  + Implemented indexes to optimize query performance.
  + Utilized views for simplified data access and reporting.
* **Advanced SQL Techniques:**
  + Developed complex T-SQL functions and procedures for dynamic data retrieval and manipulation.
  + Created triggers to enforce data validation rules and maintain data integrity.
* **Data Analysis and Reporting:**
  + Designed views to provide insightful data summaries and statistics.
  + Utilized SQL for comprehensive data analysis, supporting business decision-making.

This project demonstrates proficiency in SQL Server database design, advanced T-SQL query writing, and data management, essential for effective data analysis and reporting.