Programming Applications with Databases

Exercise Set 3

1. There is data in a table (pick some table from AdventureWorksLT with significant amount of data) and this data should be copied to another table with the name {*tablename*}_Backup. Show the difference in time execution between standard SQL query and cursors by creating 2 appropriate examples and running appropriate tests.
   [1p]

2. Explain the difference between 3 main types of cursors: static, dynamic, keyset. Execute the presented during lecture example *03-rodzaje-kursorow.sql* and explain the results.
   [1p]

3. Consider the following tables: *Products(ID, ProductName)*, *Prices(ProductID REF Products(ID), Currency REF Rates(Currency), Price)*, *Rates(Currency, PricePLN)*. Note that a product price may not be declared in all known currencies, but it always is declared in PLN as a reference. Prepare a script based on cursors to update the *Prices* table based on *Rates* table. In case there is a row in *Prices* which references a currency that no longer exists in *Rates*, the row should be removed.
   [2p]

4. In the AdventureWorksLT database there is a table SalesLT.Customer with a ModifiedDate attribute. Create a trigger which ensures that in case of customer data modification the actual server date and time is taken.
   [1p]

5. In the AdventureWorksLT database there is a table SalesLT.Product with StandardCost and ListPrice attributes. Create a table which will hold the cost and price history including the date and time when the change occurred (ensure the table name is consistent with the whole schema). Then create a trigger which will register all changes (and only changes) in StandardCost and ListPrice values including the mentioned date and time. Finally, we want to get a report where we can see all costs and prices with periods of time when they were in effect – think what more is needed to get that kind of report (if anything).
   Hint: consider the full lifecycle of the product from creating to deleting.
   [2p]

6. The most common use case for INSTEAD OF triggers is operating on views. Understand and execute the example presented in `https://www.sqlservertutorial.net/sql-server-triggers/sql-server-instead-of-trigger/`. During classes present the whole scenario with explanations.
   [1p]

7. Using triggers implement the foreign key policy in the following extended version: having book and specimen one-to-many association ensure that book may have maximum 5 specimens.
   [1p]

8. Explain the concept and present appropriate example for recursive triggers (the one from the attached examples can be reused).
   Hint: the following code can be used to check the recursive triggers status:

```
SELECT name AS 'Database name', is_recursive_triggers_on AS 'Recursive Triggers Enabled'
FROM sys.databases
```

   [1p]

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