Programming Applications with Databases

Exercise Set 1

This Exercise Set is intented to help you understand the SQL basics. All exercises should be based on the AdventureWorksLT example database.

1. Prepare a query which returns a list of cities where goods have been already delivered based on SalesOrderHeader.ShipToAddressID. Results should be sorted and with eliminated duplicates.
   [1p]

2. Prepare a query which returns two columns: product model name (ProductModel.Name) and the number of products for the model, however, only items for with the number greater than 1 should be included. Please explain the consequences in case the name would be selected as a grouping value.
   [1p]

3. Prepare a query which returns three columns: city name (table Address), number of customers from the city, number of SalesPersons supporting customers from the city.
   [1p]

4. Product categories constitutes a tree structure. We can expect that all products are assigned to categories which are leaves in the tree. Prepare a query which returns two columns: category name and product name for products which are assigned to categories which are *not* leaves in the tree. If needed, please prepre appropriate test data.
   [2p]

5. Prepare a query which returns three columns: last name and first name of a customer (Customer) and amount of money that the customer saved thanks to the received discounts (SalesOrderDetail.UnitPriceDiscount).
   [2p]

6. Add column CreditCardNumber to the table Customer. Ensure that NULL values are not allowed. Please check what other validation rules can be applied by using CHECK clause.
   [1p]

7. Create tables *M1(K INT, V VARCHAR(20))* and *S1(K INT, MFK INT, V VARCHAR(20))* where *K* is a primary key and *MFK* is a foreign key to the table *M*. Now, create tables *M2* and *S2* where the only difference is that *M2* has a primary key based on two columns: *K1* and *K2* and *S2* has an appropriate foreign key. Add some test data, check whether foreign key contraint is working properly. Finally, add *ON UPDATE* and *ON DELETE* clauses and show the difference where different values *NO ACTION*, *SET NULL* or *CASCADE* are introduced.
   [2p]

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