Information Systems Security

Exercise Set 6

In order to solve the following problems any mature DBMS is allowed (e.g. Oracle, SQL Server, Postgre-SQL).

1. There is a database with the following tables: Car, Price, Region, Dealer where Prices of the same car might differ per region, moreover, every dealer might have a special price for a car better than the one per region. Using database access control capabilities propose a solution where after authenticating in a database every dealer representative can see only their own prices. We assume that every account is connected to one dealer and every dealer may have many representatives. If needed, you can change the table structure (e.g. introducing new tables) or create any other objects (e.g. functions or procedures). If that helps, we can also assume fixed number of regions (e.g. EMEA, Americas, APAC, China) or fixed number of dealers.
   [4p]

2. Describe and show a demo for encryption capabilities of your favourite DBMS (including key management).
   [3p]

3. There is database where during the working hours backups need to performed every hour. Database is also very huge, so performing full backup takes a lot of time. Using appropriate combination of full and differential backups, prepare a backup strategy. Prepare a short demo where a few backups of both types are created as well as data is recovered also using both types of backups.
   [3p]

4. Super extra bonus task. By creating appropriate application prepare a demo for Always Encrypted capability of the SQL Server. Check the details of key management.
   [+5p] (not included in total)

Paweł Rajba