SQL Server Security

SQL Server security framework, defining users, defining roles for users and determining access to users

Some important exceptions in this field:

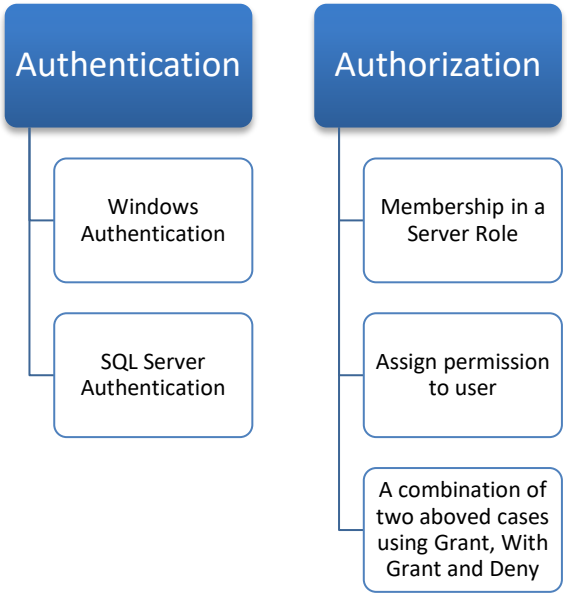
- Securable
  These are objects which can to be access and control, like Tables, Views, Stored Procedures.
- Principle
  Objects like users with an access to resources
- Schema
  Schema is a category and it is for tables dbo by default. By assigning a special schema to some tables, we can enhance not only access to tables, but also make maintenance easier.
  Create schema NameOfSchema is the equivalent script to creating a schema

SQL Server Security framework

It controls the management of access to Securable via Authentication and Authorization. In fact, the security concept includes two main subjects:

1. Authentication-log in
   Which users allows connect to database?
2. Authorization-Permissions
   Which accesses and limitations has an user, when he/she connect to a database?.

Authentication and Authorization in Microsoft SQL Server will be done in two and three ways respectively.



Security and Synonym

Synonym is an alternative for other objects. It can be in a database or even other server and helps security. Here, we see script to create synonym and work with it.

```
--create synonym
create synonym for MyServer.MyDatabase.MySchema.MyTable;

drop synonym if exists MyNameTable;

--Authentication: create user for login
create user [myUser] for login [myUser]

GO
--Authorization: allow a user to access to tables,... with GRANT
GRANT select on [dbo].[MyNewTable] to [myUser]
```

SQL Server Profiler

In a simple word, SQL Server Profiler is a tool to monitor which is happening on our server.

SQL Server Profiler is an interface to create and manage traces and analyze and reply trace results. In fact, it is a tool of monitoring for tracing everything that happened on database. It helps us to find bottlenecks and find where blocking is happened, where system is locked and where heavy queries with high cost ran on databank. Whereas, we should find a solution for it that is called as “Performance tuning”.

We can execute SQL Profiler by two following ways

- SQL Server Management Studio/Tools/SQL Server Profiler
- Run Window/Profiler

How we can allow users to work with SQL Server Profiler?

Use DatabaseName

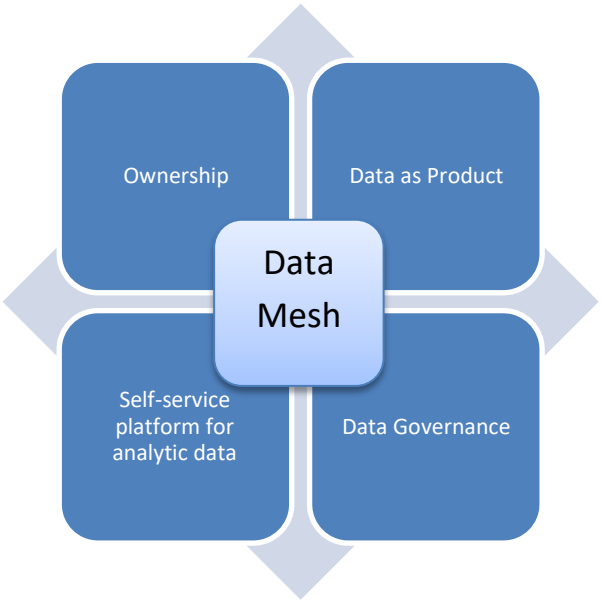
Grant Alter Trace to User’s Name;

How we have defined and implement **Data Mesh** in BAS?

Data Mesh is a cultural and organizational shift for data management focusing and emphasizing the authority of localized data management. In fact, Data mesh is an approach that defines responsibilities across separate domain teams and their data products.

It units several concepts intended to make data more and more accessible and usable to business domains.

We have defined our Data Mesh in Behavaran Gil System and empowered our team with more security.



What means the four key concepts?

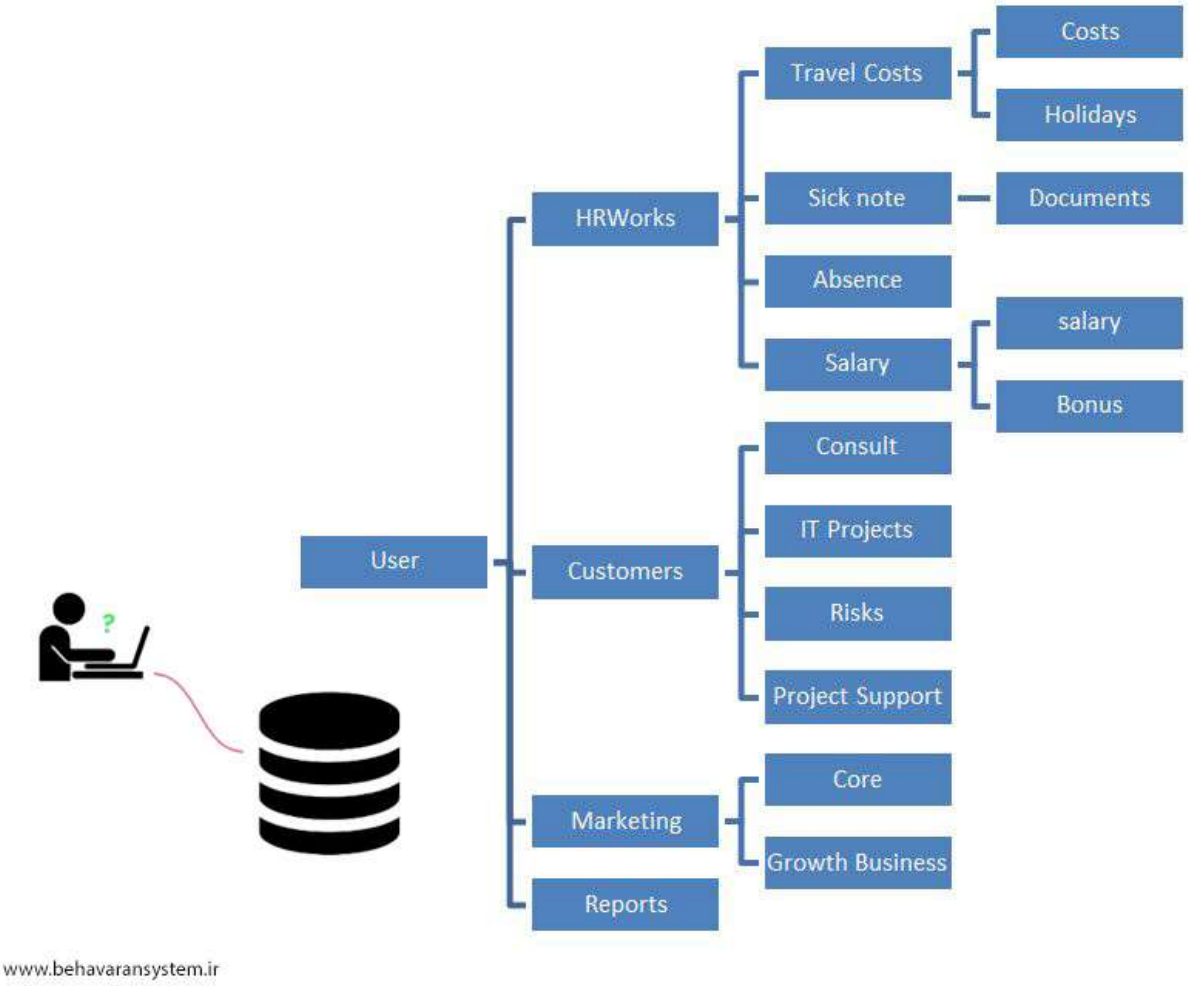
1. Ownership. In a Data Mesh, whoever produces the data takes ownership of its distribution to all who want to use it.

2. Data as product. It must be easy to find and use by data consumers (business users, developers, APIs) and must fulfill the Contract between the provider and consumer.

3. Self-Service platform for analytic data. We use OLAP as an online analytical processing, data mining and reporting tool. In other words, we utilize SSAS (SQL Server's Analysis Services).

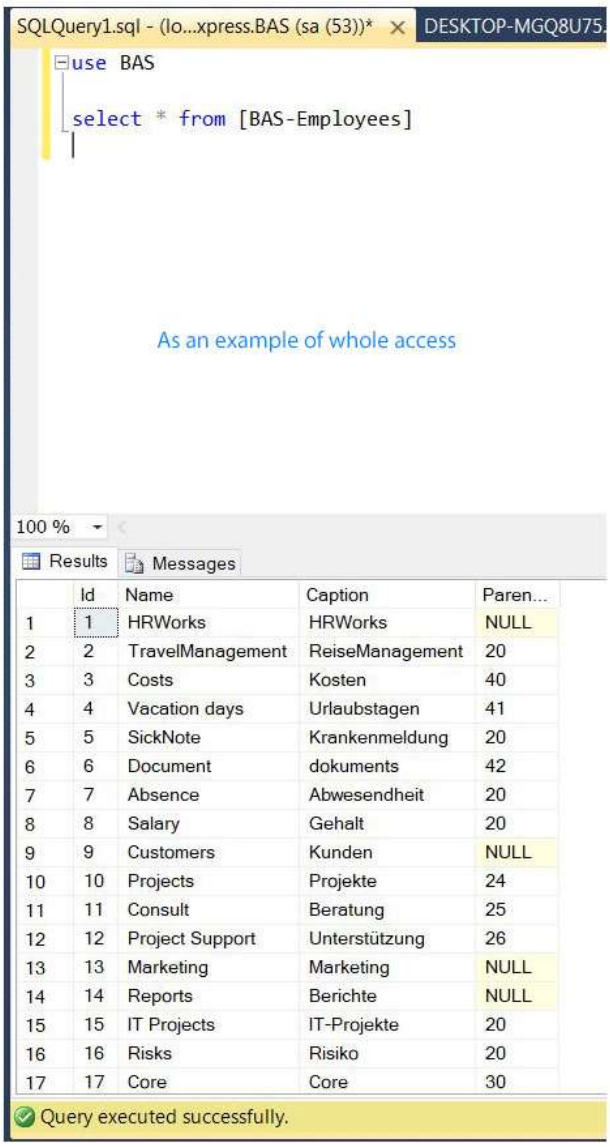
4. Data Governance. We have determined, which users can log in database (Authentication) and each user can access to which level of the data (Authorization). We do these two steps using SQL Server.

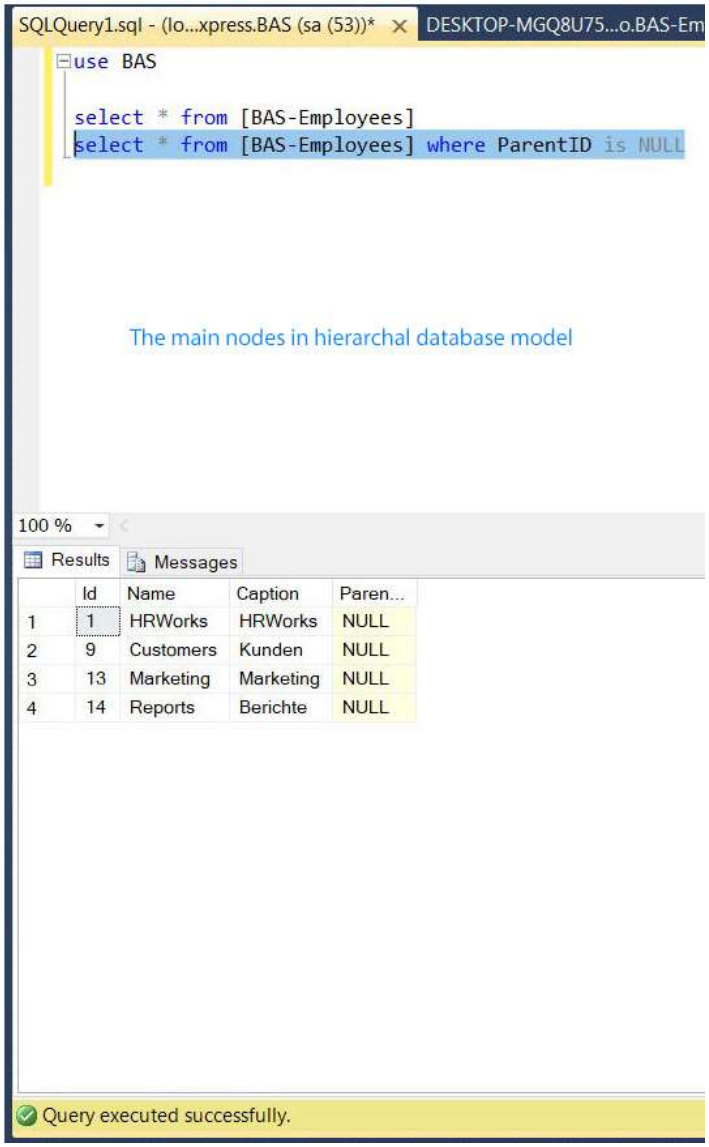
Real-world-example. Suppose that this is a **hierarchal model** for our database designed to show the level of access to different items in company for an Employee as a User.



The company started using **Microsoft SQL Server** to support users. As a result, the company is able to enhance services for users and customers in a more secure manner.

An application of SQL server security in the designed Data Mesh.





Notice that this information is only a sample for better understanding of one part of data mesh and working with SQL more purposeful.

By: Maryam Zohoori