DAX language and data model creation for Power BI and SQL Server Analysis Services

Course code: GOC644

As part of this training, you will become familiar with the DAX language in the context of Power BI Desktop and SQL Server Analysis Services Tabular. With knowledge of DAX, you will learn to fully leverage the capabilities of data processing and querying in Power BI Desktop or SQL Server Analysis Services (SSAS). You will learn how to properly design and implement a data model that will serve as the data source for your reports and BI solutions. You will be introduced to basic DAX functions, which will be used to create calculated columns and measures, and you will learn how to distinguish between them correctly. Furthermore, you will understand what calculation context is and how to work with time-based calculations. The training will also include an introduction to data model optimization and security. Examples will be primarily demonstrated in Power BI Desktop for interactivity, but we will also look at the small differences when using SSAS and Power Pivot for Excel.

What you will learn
- You will get familiar with the DAX language, its principles, used data types, and basic operators
- You will learn how to create your own data model, work with calculated columns, measures, and properly distinguish between them
- You will master working with commonly used functions in DAX
- You will understand how calculation context affects the results of applied functions
- You will learn how to secure the model and find out where to start with its optimizations

Required prior knowledge
- Basic knowledge of data warehouse operations
- Basic knowledge of relational databases
- Basic knowledge of Power BI or SQL Server Analysis Services

Course outline
1 Introduction to using the DAX language
- Introduction to applications and services where the DAX language can be used
- Demonstration of usage in Microsoft Power BI, SQL Server Analysis Services Tabular, and Power Pivot for Microsoft Excel

2 Creating a data model
- Explanation of the impact of relationships between tables
- Demonstration of working with hierarchies
- Connection modes

3 Introduction to the DAX language
- Explanation of the philosophy and principles of the DAX language
- Introduction to the operators used
- Overview of available data types and formats
- Explanation of the behavior of blank

4 Areas of application for the DAX language
- Calculated columns
- Measures
- Calculated tables
- Visual calculations

5 Calculation context
- Explanation of the terms Execution context, Filter context, and Row context
- Difference between iterators and calculated columns
- Introduction to the CALCULATE function with examples

6 Working with time

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- Introduction to time intelligence in the DAX language
- Overview of functions for working with time

7 Introduction to data model optimization
- Troubleshooting slow pages
- Overview of the most common mistakes to avoid

8 Data security and Row Level Security
- Introduction to data security in the DAX model
- Demonstration of working with Row Level Security

9 Application of the DAX language in other tools
- Introduction to Visual Studio for SSAS (SQL Server Analysis Services)
- Demonstration of Power Pivot for Microsoft Excel