Data Mastery with SSAS and MS SQL Server 2022

Course Description :

This comprehensive training course aims to equip participants with the knowledge and skills needed to effectively use SQL Server Analysis Services (SSAS) for building and managing analytical data models. Participants will explore both multidimensional and tabular data models, learn how to query and optimize their performance, and integrate SSAS with other BI tools. The course covers the latest features and enhancements in MS SQL Server 2022 and provides practical, hands-on learning experiences.

Duration : 40 hours (5 days)

Prerequisites :

- Basic knowledge of SQL and relational databases
- Understanding of data warehousing concepts
- Familiarity with Microsoft SQL Server

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Module 3: Setting Up SSAS

- Installation and Configuration: Multidimensional vs. Tabular Mode
- Understanding SSAS Architecture
- Overview of SSAS Tools: SSMS, SSDT, PowerShell

Module 4: Multidimensional Analysis and Data Modeling

- Introduction to Multidimensional Analysis
- Comparison with Tabular Models
- Data Sources and Data Source Views
- Steps to Create a Multidimensional Database

Module 5: Creating and Managing Cubes

- What is a Cube?
- Steps to Create a Cube
- Best Practices for Cube Design: Partitioning, Aggregations
- Managing and Maintaining Cubes

Module 6: Working with Dimensions and Measures

- Configuring Dimensions: Role-Playing Dimensions
- Defining Attribute Hierarchies
- Implementing Sorting and Grouping for Attributes
- Slowly Changing Dimensions: Type 1, Type 2, Type 3
- Working with Measures: Calculated Measures
- Working with Measure Groups

Module 7: Processing and Deploying SSAS Models

- Processing Options: Parallel Processing
- Deploying Models: On-Premises vs. Azure Analysis Services
- Incremental Processing

Module 8: Querying SSAS

- MDX Fundamentals
- Adding Calculations to a Cube
- Using MDX to Query a Cube
- Introduction to DAX (Data Analysis Expressions)
- Advanced DAX Concepts: Time Intelligence, Row Context vs. Filter Context
- Using DAX to Create Calculated Columns and Measures in a Tabular Data Model

Module 9: Performance Optimization

- Monitoring and Tuning Performance: SQL Server Profiler, Extended Events
- Using Aggregations
- Partitioning Strategies for Large Datasets
- Best Practices for Performance

Module 10: Security and Administration

- Implementing Security in SSAS: Row-Level Security
- Managing Roles and Permissions
- Backup and Restore Strategies: Cloud-Based Backup Options

Module 11: Advanced Topics

- Advanced MDX and DAX Queries: Practical Examples
- Real-Time Data Analysis with SSAS: DirectQuery Mode
- Integration with Other BI Tools: Power BI, Excel, Tableau

Module 12: SSAS Tabular Models

- Introduction to Tabular Models
- Creating and Managing Tabular Models
- Differences between Multidimensional and Tabular Models
- When to Use Tabular vs. Multidimensional

Module 13: Cloud Integration

- Azure Analysis Services Overview
- Advantages of Cloud-Based SSAS
- Data Refresh Strategies: Incremental Refreshes

Module 14: Error Handling and Troubleshooting

- Common Issues and Resolutions
- Debugging and Logging in SSAS