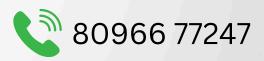


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## **Data Integration & Analytics Training**

#### **SQL, Power BI & ADF Curriculum**

#### Power BI - Introduction

- Business Intelligence
- Power BI History and Introduction
- Power BI Desktop and User Interface
- Understanding Power Query, Power Pivot and Power View
- Components of Power BI
- Building Blocks of Power BI
- Power BI Workflow
- Understanding the Power BI architecture and components
- Installing and setting up Power BI Desktop
- Get Data from Various Data sources.
- Detailed Understanding about Import Mode, Direct Query Mode, and Live Connection
- Introduction to Power Query Editor
- ETL Extract, Transform and Load
- Power Query User Interface
- The Queries Pane, Data view, Query Settings Pane, and Formula Bar
- Advanced Editor
- How to apply changes and Load to Power Pivot Model



# **Data Modelling**

- Overview of Data Modelling
- Relationships
- Cardinality
- Manage relationships.
- Normalization
- Active and Inactive Relationships
- Cross filter
- BI-Directional Relationship
- Role Playing Dimension
- Calendar or Date Table
- Date Table Using Power Query
- Date Table Using Power Query Script
- Date Table Using DAX
- Date Table Using DAX Script
- Calendar and Calendar Auto Functions





## **Data Transformation**

- Get data from Various Data sources.
- Data source settings
- Deal with Queries
- Manage Columns and Reduce Rows, Sort Data
- Split Column in different ways, Group by
- Detect and change Data types.
- Create a table using Enter data.
- Table transformations
- Combine Files, Merge Queries and Append Queries.
- Move and Rename Columns
- Pivot and Unpivot Columns
- Fill up and Fill Down
- Replace Values and Errors
- Merge Columns
- Format and Extract Text
- Column From Examples
- Custom Column
- Invoke Custom Column
- Conditional Column
- Index Column
- Duplicate Column
- Add Column Functions related to Text, Number and Date & time.
- Parameter
- Column Quality
- Column Distribution
- Column Profile
- Query Dependencies
- Advanced Editor





#### DAX

- Introduction to DAX
- DAX Operators
- Types of Operators
- Calculated Columns
- Measures
- Implicit and Explicit Measures
- DAX Functions
- Aggregated Functions
- Date and Time Functions
- Information Functions
- Logical and Parent Child Functions
- Relationship and Text Functions
- Table Manipulation Functions
- Time Intelligence Functions
- New Calculation
- Quick Measure





#### **Data Visualization**

- Report View UI, Visual Interactions
- Filter Types, Slicers
- Grouping, Binning and Sorting
- Hierarchies , Drill Down and Drill Through
- Formatting
- Visualization of Categorical Data
- Visualization of Trend Data
- Visualization of KPI Data
- Visualization of Maps
- Custom Visualizations
- Best Practices

### **Reporting - Projects**

- Reports Creation
- Extraction, Transformation and Loading
- Data Modelling
- Visualization
- Formatting
- Publishing the report to Power Service
- Best Practices





#### **Data Distribution - Power BI Service**

- Power BI Service Introduction
- Interface and Sharing of Reports
- Score Card
- My Workspace
- Dashboard Creation
- Pin Visuals and Pin Live Pages
- Formatting and Sharing Dashboard
- Data Gateways
- Types of Gateways
- Roles in workspace
- Scheduled Refresh
- Scheduled Refresh using Power Automate





## **MS SQL Server**

- SQL Server Introduction
- ER model & Relational model
- Databases, Schemas, and Tables
- Datatypes
- SQL Commands
- Keys and Constraints,
- Cascading referential integrity constraints
- Alter commands
- Identity, scope identity, ident current
- Joins
- Set operators Union, Union all, Intersect, Except
- Aggregation functions
- Group By, Having, Order By, Like operator
- Select into statement, insert into
- String functions, Date and time functions
- Subquery
- Exists and Not Exists





# **MS SQL Server**

- CTE
- Views
- Temporary tables
- Stored procedures
- User defined functions
- Cross Apply and Outer apply
- Window functions
- Indexes
- Computed columns
- Transactions
- Try catch Blocks
- Cube, Rollup, and Grouping sets
- Case and When Statement
- Merge statement
- Cursors
- DDL Triggers and DML triggers





# **Big Data Concepts**

- What is Big Data?
- The 4 Vs of Big Data: Volume, Velocity, Variety, and Veracity
- Importance of Big Data in modern business
- Introduction to Cloud
- Public vs Private vs Hybrid Clouds
- Database vs Data warehouse vs Data Lake vs Data Lakehouse

# **Azure Data Factory**

#### 1. Introduction to Azure Data Factory

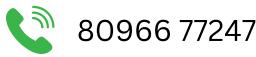
- Overview of Azure Data Factory (ADF)
- Key features and benefits
- Use cases and scenarios
- •Hands-on Lab: Setting up your Azure Data Factory environment

#### 2. Different Kinds of Integration Runtimes

- Definition and purpose of Integration Runtimes (IR)
- Types: Azure, Self-hosted, and Azure-SSIS Integration Runtime
- When and how to use each type
- Hands-on Lab: Setting up different types of Integration Runtimes

#### 3. Linked Services

- What are Linked Services?
- How to create and manage Linked Services
- Examples of commonly used Linked Services
- Best practices for securing Linked Services
- Hands-on Lab: Creating and managing Linked Services





#### 4. Data Sets

- Definition and role of Data Sets in ADF
- How to create and configure Data Sets
- Examples and best practices
- Hands-on Lab: Creating and managing Data Sets

### 5. Pipelines

- Introduction to Pipelines
- Components of a Pipeline
- How to create and manage Pipelines
- Best practices for designing efficient Pipelines
- Hands-on Lab: Building your first Pipeline

#### 6. Parameters vs Variables

- Differences between Parameters and Variables
- How and when to use Parameters and Variables
- Practical examples
- Hands-on Lab: Using Parameters and Variables in a Pipeline





#### 7. Copy Data

- Overview of the Copy Data tool
- Step-by-step guide to copying data
- Common scenarios and troubleshooting
- Hands-on Lab: Copying data between different data stores

## 8. Data Flow Activity

- Introduction to Data Flow in ADF
- Building and managing Data Flows
- Examples of Data Flow transformations
- Best practices for optimizing Data Flows
- Hands-on Lab: Creating a Data Flow with transformations

### 9. Configure Azure Integration Runtime

- Setting up Azure Integration Runtime
- Configuration options and best practices
- Common issues and resolutions
- Hands-on Lab: Configuring Azure Integration Runtime





## 10. Configure Self Hosted Integration Runtime

- Overview of Self Hosted IR
- Steps to configure and manage Self Hosted IR
- Migration tips and tricks
- Hands-on Lab: Configuring Self Hosted Integration Runtime

# 11. System Assigned and User Assigned Managed Identities

- Explanation of Managed Identities
- Differences between System Assigned and User Assigned Managed Identities
- Implementation and use cases
- Hands-on Lab: Implementing Managed Identities in ADF

### 12. Lookup and Metadata Activity

- Introduction to Lookup and Metadata Activity
- How to configure and use these activities
- Practical examples
- Hands-on Lab: Using Lookup and Metadata Activity in Pipelines





### 13. For Each Activity

- Understanding For Each Activity
- Configuration and use cases
- Best practices and examples
- Hands-on Lab: Implementing For Each Activity in a Pipeline

## 14. Fail Over, Validate

- Strategies for Failover in ADF
- Validation mechanisms and best practices
- Examples and common pitfalls
- Hands-on Lab: Implementing failover and validation in Pipelines

### 15. IF, Switch, Until

- Conditional activities in ADF: IF, Switch, Until
- How to configure and use each activity
- Practical scenarios and examples
- Hands-on Lab: Using IF, Switch, and Until activities in Pipelines





### 16. Set and Append Variable

- Using Set and Append Variable activities
- Configuration and best practices
- Examples and use cases
- Hands-on Lab: Setting and appending variables in a Pipeline

#### 17. Stored Procedure

- Executing Stored Procedures in ADF
- Configuration and usage
- Best practices and troubleshooting
- Hands-on Lab: Executing a Stored Procedure in a Pipeline

## 18. Different Kinds of Triggers

- Overview of Triggers in ADF
- Types: Schedule, Tumbling Window, Event-based
- How to create and manage Triggers
- Best practices for trigger management
- Hands-on Lab: Creating and managing different types of Triggers





### 19. Monitoring and Managing Pipelines

- Tools for monitoring Pipelines
- Debugging and troubleshooting techniques
- Hands-on Lab: Monitoring and managing Pipeline runs

## 20. Advanced Topics

- Incremental data loading
- Handling schema changes
- Integration with other Azure services (e.g., Azure Synapse, Databricks)
- Hands-on Lab: Implementing an end-to-end data integration solution

### 21. Power Query Activity

- Introduction to Power Query in ADF
- Building and managing Power Query transformations
- Practical examples and use cases
- Best practices for using Power Query
- Hands-on Lab: Implementing Power Query transformations in a Pipeline





#### 22. Real-world Case Studies

- Case study 1: Data migration from on-premises to cloud
- Case study 2: Building a data warehouse with ADF
- Case study 3: Integrating ADF with other Azure services

#### 23. Best Practices

- Design best practices for ADF
- Security best practices
- Performance optimization tips
- Troubleshooting common issues

#### 24. Additional Resources

- Documentation and tutorials
- Blogs and articles
- Community forums and support

#### 25. Q&A Sessions

- Regular Q&A sessions to address participant questions
- Dedicated time for troubleshooting and discussion

#### 26. Certification Preparation

- Overview of relevant Azure certifications
- Study tips and resources
- Practice exams and sample questions

This comprehensive curriculum covers all essential aspects of Azure Data Factory, including advanced topics and hands-on practice.

