

# SQL School <sup>TM</sup>

## Quality Training Assured

### SSIS Training Plans

	PLAN A	PLAN B	PLAN C
Course Includes	1. SSIS [ETL, DWH]	1. T-SQL Queries 2. SSIS [ETL, DWH]	1. T-SQL Queries 2. SSIS [ETL, DWH] 3. Azure Data Factory
SSIS: Control Flow, Data Flow; SSIS DB	✓	✓	✓
SSIS: Static & Dynamic Connections	✓	✓	✓
SSIS: ETL, Data Warehouse Design	✓	✓	✓
SSIS: Transformations, Data Loads	✓	✓	✓
SSIS: Data Cleansing, Lookups	✓	✓	✓
SSIS: Catalog Databases, Usage	✓	✓	✓
SSIS: Deployments, Migrations	✓	✓	✓
SSIS : Star & Snowflake Schemas	✓	✓	✓
SQL : Basics, DDL, DML, SELECT	X	✓	✓
T-SQL : Constraints, Normal Forms	X	✓	✓
T-SQL: Joins, Group By, Queries	X	✓	✓
T-SQL: Merge, Pivot, Date-Time	X	✓	✓
T-SQL: Excel Integrations, Pivot Charts	X	✓	✓
ADF : Azure Data Factory Architecture	X	X	✓
ADF : Azure Data Warehouse Concepts	X	X	✓
ADF : Massively Parallel Processing	X	X	✓
ADF : Copy Data Tool, ADF Portal	X	X	✓
ADF : Incremental Loads using SPs	X	X	✓
ADF : SSIS Migrations to Azure	X	X	✓
<b>Total Course Duration</b>	<b>2.5 Weeks</b>	<b>5 Weeks</b>	<b>8 Weeks</b>

## Module 1: Basics, SQL Server & T-SQL Concepts (For SSIS Plans B, C)

### Chapter 1: SQL SERVER INTRODUCTION

Data, Databases and RDBMS Software; Database Types : OLTP, DWH, OLAP; Microsoft SQL Server Advantages, Use; Versions and Editions of SQL Server; SQL : Purpose, Real-time Usage Options; SQL Versus Microsoft T-SQL [MSSQL]; Microsoft SQL Server - Career Options; Database Engine Component and OLTP; BI Components, Data Science Components; ETL, MSBI and Power BI Components; Course Plan, Resume, Project; 24 x 7 Lab; Software Installation Pre-Requisites;

### Chapter 2: SQL SERVER INSTALLATIONS

System Configuration Checker Tool; Versions and Editions of SQL Server; SQL Server Pre-requisites : S/W, H/W; SQL Server 2016 / 2017 Installation; SQL Server 2019 Installation; Instance Name; Instances : Types; Default Instance, Named Instances; Port Numbers; Service and Service Account; Authentication Modes and Logins; FileStream, Collation Properties;

### Chapter 3: SSMS Tool, SQL BASICS - 1

SQL Server Management Studio; Local and Remote Connections; System Databases: Master and Model; MSDB, TempDB, Resource Databases; Creating Databases : Files [MDF, LDF]; Creating Tables in GUI; Data Insertion & Storage; SQL : Real-time Usage; DDL, DML, SELECT, DCL and TCL Statements; Data Storage, Inserts - Basic Level; SELECT; Table Data Retrieval;

### Chapter 4: SQL BASICS - 2

Creating Databases & Tables in SSMS; Single Row Inserts, Multi Row Inserts; Rules for Data Insertion Statements; SELECT Statement @ Data Retrieval; SELECT with WHERE Conditions; AND and OR; IN and NOT IN; Between, Not Between; LIKE and NOT LIKE; UPDATE Statement; DELETE & TRUNCATE; Logged and Non-Logged Operations; ADD, ALTER and DROP Statements;

### Chapter 5: SQL BASICS - 3, T-SQL Introduction

Schemas : Group Tables in Database; Using Schemas for Table Creation; Using Schemas in Table Relations; Table Migrations across Schemas; Default Schema : "dbo"; Import and Export Wizard; Bulk Operations; Excel File Imports / Exports; SQL Server Native Client; Executing SSIS Packages, Data Loads; Local and Global Temporary Tables; # & ## Prefix; Temporary Vs Permanent Tables;

### Chapter 6: CONSTRAINTS & INDEXES BASICS

Constraints and Keys - Data Integrity; NULL, NOT NULL Property on Tables; UNIQUE KEY Constraint; PRIMARY KEY Constraint; FOREIGN KEY Constraint, References; CHECK Constraint; DEFAULT Constraint; Identity Property : Seed & Increment; Database Diagrams and ER Models; Indexes : Basic Types and Creation; Clustered and Non Clustered Indexes; Primary Key and Unique Key Indexes;

### Chapter 7: JOINS and TSQL Queries : Level 1

JOINS; INNER JOINS For Matching Data; OUTER JOINS For (non) Match Data; Left Outer Joins; Right Outer Joins; FULL Outer Joins; One-way & Two Way Comparisons; "ON" Conditions; NULL, IS NULL; CROSS JOIN and CROSS APPLY; Join Options: Merge, Loop and Hash Joins;

### Chapter 8: GROUP BY, T-SQL Queries : Level 2

GROUP BY Queries and Aggregations; Group By Queries with Having Clause & Where Clause; WHERE and HAVING in T-SQL; Rollup : T-SQL Queries; Cube : Usage and T-SQL Queries; UNION and UNION ALL; EXISTS; Sub Queries; Joins with Group By Queries; Nested Sub Queries; UNION and UNION ALL; Nested Sub Queries with Group By, Joins; Comparing WHERE, HAVING Conditions;

### **Chapter 9: JOINS & T-SQL Queries : Level 3**

GetDate, Year, Month, Chapter Functions; Date & Time Styles, Data Formatting; DateAdd and DateDiff Functions; Cast and, Convert Functions in Queries; String Functions: SubString, Relocate; Len, Upper, Lower, Left and Right; LTrim, RTrim, CharIndex Functions; MERGE Statement - Comparing Tables; WHEN MATCHED and NOT MATCHED; IIF() Function for Value Compares; CASE Statement : WHEN, ELSE, END; ROW\_NUMBER() and RANK() Queries; Dense Rank and Partition By;

### **Chapter 10: VIEW, PROCEDURE, FUNCTION BASICS**

Views : Types, Usage in Real-time; System Predefined Views and Audits; Listing Databases, Tables, Schemas; Functions : Types, Usage in Real-time; System Predefined Functions, Audits; DBId, DBName, ObjectID, ObjectName; Variables & Parameters; System Predefined Procedures; Parameters; Sp\_help, Sp\_helpdb and sp\_helptext; sp\_pkeys, sp\_rename and sp\_help;

### **Chapter 11: TRIGGERS & TRANSACTIONS**

Triggers Real-world Usage; FOR/AFTER Triggers; INSTEAD OF Triggers; INSERTED, DELETED Memory Tables; DML Automations using Memory Tables; Read Only Tables; Enable Triggers and Disable Triggers; ACID Properties; Auto Commit; EXPLICIT & IMPLICIT; COMMIT and ROLLBACK; Open Transactions; Query Blocking Scenarios @ Real-time; NOLOCK and READPAST Lock Hints;

### **Chapter 12: ER MODELS, NORMAL FORMS**

Normal Forms for Entity Relationships; First, Second, Third Normal Forms Usage; Boyce-Codd Normal Form: BNCF : Usage; 4 NF, EKNF, ETNF. Functional Dependency; Multi-Valued, Transitive Dependencies; Composite Keys and Composite Indexes; 1:1, 1:M, M:1, M:M Relationship Types; SQL Queries Access in Reporting Tools; Office Data Connection Files; Excel Pivot Reports; SQL Queries in BI Tools; FETCH OFFSET, NEXT ROWS; Data Refresh (Manual, Automated);

## **REAL-TIME CASE STUDY – 2 (Sales & Retail), EXCEL INTEGRATION**

## **Module 2: SQL Server Integration Services (SSIS)**

{For SSIS Plans A, B, C}

### **Chapter 1: SSIS INTRODUCTION & INSTALLATION**

Need for SQL Server Integration Services (SSIS) & ETL / DWH; Advantages of SSIS for Data Loads, Operations, ETL, Warehouse; SSIS Tools : SSDT (SQL Server Data Tools), ETL Wizards; SSIS Design / Development and LIVE (Deployment) Environment; Understanding Data Warehouse (DWH) Design and ETL Process; DWH and ETL Structures, Implementations with MSBI SSIS; SSIS ETL Operations for Data Reads, Data Cleansing, DWH; Data Warehouse (DWH) Design Principles and Design Plan; SSIS 2019 and SSIS 2017 : SSIS Database Installations; SSIS Database & Catalog Folders - Purpose, Usage, Passwords; SSIS Catalog Database (SSIS DB) : Creation, Verification; SSDT Tool: SQL Server Data Tools - SSDT / Visual Studio Shell; SSDT Installation and Verification of SSIS Templates; Basic Vocabulary - SSIS, ETL, DWH, Data Flow, Data Buffer; SSIS Package Environment and Project Creation; SSIS Project Templates - Verifications; Version Control and SSIS Design Plan - Tools Usage;

### **Chapter 2: SSIS ETL PACKAGES: EXTRACT, TRANSFORM, LOAD**

Control Flow Tasks - Architecture, Purpose and Usage; Data Flow Tasks - Architecture, Purpose and Usage;

Creating SSIS Packages For Basic Data Flow Operations; SSIS Solutions, Projects and Package Creation. Tasks; Need For Data Pipelines & Connections in Data Flow Tasks; Understanding SSIS Package (Program) Execution Process; Working with Data Flow Objects and Tasks in SSIS; Using OLE DB and SQL Server Connections - Usage; SSIS Package Creation Process - Using Control Flow Items; Using DTSX Files for SSIS Package Execution. Audits; SSIS Execution Context, SSIS Package Errors and Logs; Data Flow Transformation: Conditional Split, Expressions; Excel Connections, Sheets, & Memory References - Usage; Using Source Assistants, Destination Assistants @ SSIS; DAT File Imports, Data Flow Options, Adding Annotations; SSIS Project Configuration - Debugging, Bit Config; SSIS 64 Bit and 32 Bit Configuration Settings and Options;

### **Chapter 3: MERGE, FUZZY LOOKUP, DATA CONVERSION**

MERGE Transformation and UNION ALL Transformation; SORT Transformation, NOSORT Options, Advanced Sort; Synchronous & Asynchronous Transformations, Data Loads; Row and Partial Blocking Transformations. Buffer Reuse; Fully Blocking Transformations - Buffer Reuse Restrictions; Examples to Avoid Fully Blocking Transformation in SSIS; Bulk Load Operations and Data Import Options in SSIS; IsSorted and SortKey Positions with Advanced Options; Measuring SSIS Package performance & Resource Usage; Data Conversion Transformation and SSIS Expressions; Fuzzy Lookup Transformation, Reference Table Connections; Exact, Fuzzy & Nomatch Data Cleansing with Conditional Split; Index Creation, Maintenance for Faster Lookup Transformation; Data Conversion Transformation - Usage. Derived Columns; Data Conversion Transformation: NVARCHAR, VARCHAR Data; Threshold Values Selection, Search Delimiters and Options; Data Pipeline with \_Similarity, \_Confidence. Explicit Data Type Conversions and Usage. Error Redirections;

### **Chapter 4: PACKAGE PROPERTIES, CHECKPOINT, PIVOT**

Execute SQL Task and OLE DB Queries; Transaction Options For SSIS Executables - Package Level; Precedence Constraints - Success / Failure / Completion; SSIS Package Level Rollbacks and Restart Execution Options; SSIS Checkpoints - Purpose and Usage with Data Flow Tasks; Checkpoint Files and SSIS Logging Options - Package, Tasks; Transactions with Checkpoint File Usage in SSIS Packages; Checkpoint Options - Advantages, Usage and Limitations; FailPackageOnFailure and Checkpoint; Transaction Property : REQUIRED / SUPPORT, NOTSUPPORTED; Importing Legacy Data, Data Cleansing, Formatting; PIVOT Transformation, Data Reads, Connection Assistant; Pivot Usage Values - Purpose and Implementation. Key Values; Lineage ID in SSIS - Purpose, Usage Options. Data Mappings; Lineage IDs for Column Mapping and Pivot Keys; Data Viewer (Debugging) for Data Transfer; Explicit Data Type Conversions. Error Redirections;

### **Chapter 5: SSIS with ETL & DWH. SCD TYPE 1, TYPE 2**

Validation Events, Execution Events; Pre-Execution, Progress and Cleanup Events in SSIS; Auditing SSIS Events, Errors / Warnings / Information; Configuring and Using sysssislog System Tables; Package Debugging : Data Viewers & Breakpoints; For Each Loop Container. File Connections, Variables; Defining Variables for Connections. DFT, Control Flow Links; Dynamic Connections with Variables. Connection Strings; Connection Iterations, Connection Fetch, Index Mapping; SSIS Expressions and Usage for ETL and DWH; FOR LOOP Expressions in SSIS; InitExpression, EvalExpression, AssignExpression; SSIS Expression Builder, Functions, Evaluated Values; Data Insertions and Data Serializations with SSIS; Counter Values, Variables and Parameter Mapping; SSIS for OS Drive Operations, Loops; Using Execute SQL Task : Variables, Return Values;

### **Chapter 6: DATAWAREHOUSE (DWH) DESIGN WITH SSIS**

Introduction to Data Warehouse (DWH) - Purpose, Usage, Access; Technical Terms: Dimensions, Attributes, Members and Types; Dimension Tables, Fact Tables and Relations, Inferred Members; TYPE1 and TYPE2

Changes. ETL Implementation Techniques; Implementing Type I Changes (SCD) for DWH : Sales Scenario; Dimensional Table Design for DWH using SCD - Type 1, Type 2; Initial Data Loads with Legacy Files (DAT, TXT, CSV), Data Marts; Working with Business Keys & non Identity Key Based Columns; Surrogate Keys and Alternate Business Keys - Purpose, Usage; Identity Columns, Key Values in DWH. Business Key Limitations; Cascading Source OLTP / Stage Changes to DWH Inactive Rows; Changes to Fixed Attributes, Changing Attributes. Observations; Changes to Historical Attributes. Inferred Member Updated; ETL Date Fields, Row Status Values and Transformations; Designing Dimensions for DW - Incremental, Historical Loads; Historical Attributes, Data Delta Operations, Identification; SSIS SCD Transformation Limitations and Real-time Issues;

### **Chapter Ch 7: CHECKSUM TRANSFORMATION, DWH DESIGN**

Configuring Checksum Transformation : 2019, 2017 Versions; Checksum Transformation Logic and Parity Checks (CRC) Codes; Working with CHECKSUM Transformation & Parity Bit Columns; Generating Checksum Values For Type I, Type II ETL Changes; DWH Dimension Tables With Checksum Transformation; Working with Parity Bits, Conditional Lookup Transformation; Row Redirection Options & Lookup Match, NonMatch Output; OLE DB Command: SQL Statements; Parameter Mapping Options and Dynamic SQL for Row Updates; Cache Transformation with Memory Loads, CAW Files (VM); Memory Connections and Reuse. Lookup with Cache Options; Tuning Lookup Transformation: Caching Options, Index Options; FULL CACHE and PARTIAL CACHE. Cache Connection Manager; Pre-ETL Data Load with Memory Connections; Lookup with NOCACHE. Dependent Data Flow Tasks; Post ETL, Derived Column and Fuzzy Transformations; SSIS Package Internal Parameters; OLEDB Command with Conditional Splits, Multi Row Updates;

### **Chapter 8: CHANGE DATA CAPTURE: DWH DIMENSIONS**

Understanding CDC Tables with SQL Server Connections; DML Audits: Inserts, Deletes, Values before/after Updates; CDC Source Connections - Usage, ADO.NET Integration; CDC Control Flow Tasks and CDC State Tasks. Values; INITIAL LOAD START / END. PROCESSING RANGE; Using State Variables and Controls. Storing States; CDC Source with Net Support Changes; SSIS CDC Control Tasks and Caching, State Variables; Understanding State Variables and SSIS Logging Tables; Initial and Incremental Loads with CDC; Dynamic CDC Connections, Parameter Mapping; Integrating Control Flow and Data Flow for CDC @ ETL; CDC Splitter Transformation - Row Inserts and Updates; Master Packages and Child Packages, Derived Columns; Defining Local and Global Variables/Parameters; Parameter Bindings with Parent - Child Packages;

### **Chapter 9: FACT TABLE DESIGN, FACT LOADS (DWH)**

Fact Table - Design and Implementation Rules, ER Model; Fact Table Design with STAR and SNOWFLAKE Schemas; Time Dimensions - Purpose, Usage and ETL Date / Time; Generating Time Dimensions for ETL, Load Identification; Parent-Child Packages for Dimensional Loads, Control Flow; Parent-Child Packages for Dimensions & Fact Table Loads; Master Package Design: Dimension, Fact Load Integration; Inferred Members and Status for NULLs in Dimensions; Parameter Mapping @ ETL Updates, Component Properties; ETL Load Date IDs & Expressions for Dimension Keys; Error Handling & Event Handling with Master Packages; Text Qualifiers and Parameters in Master-Child Packages; Key Based Dimension LOOKUPS and Indexes. Fast Loads; SCD Implementations with Legacy Data. ETL Load Types; Fact Load Design for Initial Loads, Incremental Updates; End-to-End Data Warehouse Design: Implementation; Direct Data Loads and Data Stage Operations for DWH DBs; STAR & SNOWFLAKE Schemas for DWH - Data Modelling;

### **Chapter 10: DWH MIGRATIONS with SSIS, SCRIPT Task**

Data Warehouse Migrations with SSIS Control Flow; Using SSIS Containers and Db Integrity Task; Using Pre-

Database Migration Tasks, Precautions; Transfer Database Task and DB File Options; Online and Offline DB Transfer Options, Usage; Copy / Move Options with DWH Migrations; SMTP : Simple Mail Transfer Protocol For Emails; Using SQL Server Agent Operators, Package Events; Precedence Constraint with Containers, SSIS Tasks; Using Data Profiling Task with ADO.NET Connectors; XML Files Generation, Using SSIS Data Profiler Tool; Script Task - Purpose and Working in SSIS Control Flow; Script Task - Usage with VB.NET Programs. Compilations; Variables and Parameters with SSIS Script Task. Usage; Read Only and Read Write Variables. Expressions, Mapping; Data Flow Limitations : Solutions with .NET Scripting; SSIS Expressions and Package Debugging, Break Points; SSIS Variables and Parameters - Mapping Expressions; Using Control Flow File System Tasks and Limitations; SQLDataAdapters & System.Data.SqlClient Connections;

### **Chapter 11: SSIS PROJECT DEPLOYMENT, UPGRADES**

SSISDB Catalog Deployments - Process & ISPAC Files; SSIS Package Builds, Verification Techniques, Scripts; SSIS Project Deployment Wizard : Targets and Logging; SSIS DB Catalog Folders - Creation, Usage. Properties; SSIS DB Catalog Projects - Creation, Usage. Properties; SSIS Package Executions - Scripts, Reports, Messages; Package Validations - Scripts, Reports, 32/64 bit Options; Package Configurations - Parameter Management, Scripts; SSIS Package Jobs @ SQL Server Agent. SSIS Job Steps; SSIS Job Schedules and Notifications: Windows Event Logs; Package Security Management - SSISDB Logins and Users; Folder Level and Project Level Security Implementation; Project Migration Utilities and Package Upgrades; SSIS Package Imports and Exports with ISPAC Files; Command-Line Deployments For SSIS, Execution Utilities; SSIS Package Execution Reports; Validation Reports; SSIS Package Versions and Restores, SSIS Rollbacks;

### **Chapter 12: SSIS PROJECT [E-Commerce Domain]**

SSIS ETL & DWH with STAR Schema; SSIS ETL & DWH with SNOWFLAKE Schema; Dimension Table Design & Business Keys; Fact Table Design & Data Integrity; Incremental Data Loads with Containers; Key Lookup and Business Key Identification; Staging Tables, Master - Child Packages; SSIS Package Deployment [Catalog Deployments]; SSIS Training : Project Specifications; Project Explanation and Solution; Project FAQs and Resume Support; Chapter Wise FAQs and Answers; Concept Wise Tasks and Solutions; SSIS DWH Databases with Reports; Technical Resume Points in SSIS; End to End Implementation [MSBI];

## **Module 3: Azure Data Factory (ADF)**

{For SSIS Plan C}

### **Chapter 1: AZURE BI INTRODUCTION**

Introduction to Cloud and Advantages; Cloud Architecture and Components IaaS: Infrastructure as a Service; PaaS: Platform as a Service; SaaS: Software as a Service Microsoft Cloud Advantages : Azure; Azure Resources and ARM Concepts; Azure : Advantages and Pricing Azure Data Factory Pricing Plans; BI : Business Intelligence Terms; Database Types: OLTP, OLAP, DWH Need for MSBI and Azure BI; On-Premise BI and Self Service BI; Azure BI Components: ADF,AAS,ADLS Need for Azure BI, Comparing MSBI;

### **Chapter 2: INSTALLATIONS**

Server and Tools Installations; SQL Server Components and Usage; Database Engine Component and OLTP Versions and Editions of SQL Server; SQL Server and SSMS Installation Plan; SQL Server Pre-requisites : S/W, H/W SQL Server 2019 / 2017 Installation; Instance Name and Server Features; ETL, MSBI and Power BI Components Authentication Modes and Logins; SSDT Tool: SQL Server Data Tools; Azure Data Studio (ADS)

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Tool; SQL Server Connection @ SSMS; SQL Server Connection @ SSDT; SQL Server Connection @ ADS;

### **Chapter 3: SSIS & ETL BASICS**

SQL Server Integration Services Intro; Purpose of SSIS: ETL & DWH Operations; SSIS Advantages; SQL Server Data Tools & ETL Wizards; SSIS Design & Development Tools: SSDT; LIVE (Deployment) Environment, SSISDB Data Warehouse Design & ETL Process; Data Warehouse (DWH) Design Principles; SSIS Database Install & SSIS Catalog; SSIS Configuration and Encryptions; SSIS Catalog DB Creation, Verification; Basic Vocabulary: ETL, DWH, Data Flow SSIS Package Environment, SSDT Projects; SSIS Design Plan SSIS Training: Lab Plan, Resources;

### **Chapter 4: DATA FLOW OPTIONS - SSIS**

Control Flow Tasks: Architecture, Purpose; Data Flow Tasks - Architecture and Usage; SSIS Packages: Data Flow Operations Pipelines & Connections in Data Flow; SSIS Package Design and Execution; Data Flow Objects, Control Tasks; OLE DB & SQL Server Connections; SSIS Packages and Control Flow Items SSPI, Data Source and Initial Catalog; DTSX Files for SSIS Package Executions; Executions, Package Errors and Logs Data Flow Transformations, Data Splits; Excel Connections & Memory References; Source Assistants & Destination Assistants; SSIS Project Configuration & Debugging; Build & Version Control Options for SSIS;

### **Ch 5: TRANSFORMATIONS, DEPLOYMENT**

Working with Multiple Data Sources; MERGE Transformation and Realtime Use; Combining Data : MERGE Transformation UNION ALL Transformation, Usage; Using Control Flow and Data Flow; Using Data Pipelines in SSIS Using For Each Loop Container; File Iterations, Dynamic Connections; SSISDB Catalog Deployments, ISPA File SSIS Builds, Verification Techniques; Project Deployment Targets, Logging; SSIS Package Executions Reports SSIS Package Configuration Scripts; SSIS Package Jobs from SQL Agent; SSIS Job Schedules and Event Logs Security Management - SSISDB Logins;

### **Chapter 6: DATABASE MIGRATIONS TO AZURE**

Azure Storage Resources, Purpose; Azure Storage Containers, Tools; LRS, GRS and RA-GRS Azure Types RA-GRS : Hot & Cold Storage Access; Creating Containers in Azure Store; BLOB Data Files: Uploads & Downloads Storage Keys and Security Options; Azure Storage Explorer Tool; Account Configuration with ADS Tool Database and Data Migration Options; Azure Data Migrations with DMA Tool; On-Premise Database Assessments Migration Scope, Object Scripting; Schema Migration and Data Migrations; Database Exports into BACPAC Files Azure Storage Container For Imports; Database Imports using Azure Portal; Database Imports using SSMS Tool;

### **Chapter 7: AZURE DATA WAREHOUSE**

Azure Data Warehouse (ADW); Key Benefits of Azure Synapse; ADWH Resource Creation in SQL Server Scaling Options, Compute Engine; ADW Connection from SSMS Tool; Data Warehouse Details: Name, Server cDWU & DWU : Real-time Usage, Pricing; DWs and Scaling Options: DW Series; Massively Parallel Processing (MPP) Sharding Benefits with MPP in DWH; Control Node and Compute Node; Data Distribution Components in ADW DMS : Data Movement Service; Hash Functions, Distributed Tables; Round-robin Distributed Tables Replicated Tables in Azure DWH; Queries Distribution, Nodes in ADW; DMVs;

### **Chapter 8: AZURE DATA FACTORY - 1**

Azure Data Factory Architecture; ADF : Data Processing Components; ADF : Data Movement Components Data Pipelines and ADF Activities; Data Orchestration and Datasets; ADF Resource Creation in Azure Pipeline Concept, Linked Services; SSIS Lift and Shift with ADF; Azure Data Factory (ADF) : Purpose Creating ADF Resource in Azure, Use; Pipeline Creation and Usage Options; Copy Data Tool in ADF Portal, Use Linked Service Creation in ADF; Dataset Creation, Connection Reuse; Staging Dataset with Azure Storage ADF Pipeline;

### **Chapter 9: AZURE DATA FACTORY - 2**

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Copy Data From Azure SQL Database; Azure SQL Data Warehouse Sinks; Data Sets, ADF Data Pipelines Activities : Move & Transform for ETL; Actions and View Activity Runs; NADF Pipeline Monitoring and Refresh; ADF Triggers - Manual, Automatic; Azure Database to Azure Data Warehouse; Data Integration Units [DIU] Usage Azure Data Factory Runtime Engine; On-Premise Data Extraction and Loads; Self Hosted IR in Copy Data Tool IR Engine Installation; IR Connections & Authentication; IR Tool Configuration;

### **Chapter 10 : AZURE DATA FACTORY - 3**

Incremental Data Loads with ETL; Incremental Loads in ADF Portal; Source Data & Watermark Column Watermark Tables : Creation, Use; TimeStamp For Incremental Loads; Configuration Procedures for ETL Using Lookup Activities in ADF; Lookup Transformation with ADF; Watermark Column Extraction Activity Connections in ADF Portal; Expressions and Usage in ADF; Generating New Watermark Columns Lookup Output Row Level Audits; Stored Procedures and Dynamic Values; Parameterized Values for Data Extraction Using ADF Run IDs for Connections; Parameter Imports and Staging; Working with Lookup in ADF Output()& Item() Functions;

### **Chapter 11 : AZURE DATA FACTORY - 4**

Incremental Loads - Multiple Tables; Data Prep for Watermark Store; For Each Activity and Real-time use Lookup Activities Use in ADF; Linked Service Parameters, Use; Copy Data Activity for ETL in ADF Stored Procedure Activity for ETL; Data Pipelines Parameters in ADF; Object Name Parameters, Iterations Using Self Hosted IR Engine in ADF; Incremental Loads with Azure Storage; Dynamic Sources and Destinations Data Preview & Dynamic Content; Linked Services & Datasets Creations; ADF Pipeline Executions, Run IDs Dynamic File Formats and Connections; ADF Pipeline, Trigger Execution Runs;

### **Chapter 12: AZURE DATA FACTORY - 5**

Azure Data Lake Storage Environment; Azure Data Lake Gen 1 and Gen 2; Using ADF to get data from Data lake ADF Integration with Azure Data Store; Copy Data Performance Monitoring Monitor, Activity Runs and Options; Data Partition Recommendations in ADL; Size Limitations and ADF Activities Azure Data Warehouse Management; Threat Detection, Threat Protection; Resource classes, ADW Queries Resource Class Operations & Precedence; Backups and Restores with ADWH; Export and Import Options with ADWH TDE Option and Maintenance Schedules; Security Management, Role Based Access; Azure DWH Alerts and Rule Creations;

### **Chapter 13: AZURE DATA FACTORY – 6**

Execute SSIS Packages in Azure; Azure-SSIS Integration Runtime, SSDT; Azure-SSIS IR Creation; IR Setup and Cluster Size, Nodes; License Options, Location, Cores; Node Numbers & Parallel Executions; SSISDB Project Deployment Model; Execute SSIS Package Activity; Executing SSIS Packages in ADF; Azure Storage for SSIS Packages; Execute SSIS packages in Azure; SSIS Package Migrations to ADF; SSIS Catalog DB with ADF; On-Premise SSIS Versus Azure; SSIS Lift and Shift with ADF Branching and Chaining in ADF;

### **Chapter 14: AZURE DATA FACTORY - 7**

Using Azure Data Factory (ADF) Portal; Pipeline Creation, Resources in Portal; Pipeline Activities and Properties in ADF Linked Service Creation and Datasets; ADF Pipeline Validations in Portal; Publish Options & Pipeline Deployment Pipeline Monitoring and RUN IDs; Trigger Now and Monitoring Options; Administering Azure Data Factory Azure Data Factory Integration with SSIS; Using ADF Data with Reporting Tools; Using ADF Data in MSBI and Power BI; Working with Scale-Out Master; Working with Scale-Out Client;

## **Real-time Project, Resume Guidance**