SQL School™

Quality Training Assured

Complete Practical; Real-time Job Oriented Training

Snowflake Training

	PLAN A	PLAN B	PLAN C
Training Details	**1. Snowflake**	**1. SQL Server, TSQL** **2. Snowflake**	**1. SQL Server, TSQL** **2. Snowflake** **3. Azure Data Engineer**
Snowflake: Cloud & DWH	✓	✓	✓
Snowflake: DWH Architecture	✓	✓	✓
Snowflake: DWH & ETL Concepts	✓	✓	✓
Snowflake: Partitions & Tuning	✓	✓	✓
Snowflake: Security & Tuning	✓	✓	✓
Snowflake: Backups & HA DR	✓	✓	✓
Snowflake: Streams, Stages	✓	✓	✓
Snowflake: SnowSQL, Upserts	✓	✓	✓
Snowflake: Snow Pipes	✓	✓	✓
Snowflake: SnowSQL Concepts	✓	✓	✓
Snowflake: Variables & Tasks	✓	✓	✓
Snowflake: File Formats, Stages	✓	✓	✓
Snowflake: Azure Cloud Integrations	✓	✓	✓
TSQL: Database Basics, T-SQL	X	✓	✓
TSQL : Constraints, Joins, Queries	X	✓	✓
TSQL: Views, Group By, Self Joins	X	✓	✓
TSQL: SPs, Udf, Transactions	X	✓	✓
ADF : Azure Data Factory	X	X	✓
ADF : Data Imports, ETL	X	X	✓
ADF : Data Flows, Wrangling	X	X	✓
ADF : Transformations, ETL	X	X	✓
Synapse: Configuration, Loads	X	X	✓
Synapse: ETL with ADF, DWH	X	X	✓
Synapse: MPP, DWH, Tuning	X	X	✓
Storage: ADLS Gen 2, BLOB	X	X	✓
Storage: Az Tables, Shares, ACL	X	X	✓
Azure Stream Analytics & Jobs	X	X	✓
IoT Hubs and Event Hubs, ETL	X	X	✓
ADB : Azure Data Bricks, Spark	X	X	✓
ADB : Architecture, Data Loads	X	X	✓
ADB : SparkSQL, Jobs, Parameters	X	X	✓
ADB : Delta Tables, PySpark ETL	X	X	✓
Total Duration	4 Weeks	7 Weeks	14 Weeks

Trainer: **Mr. Sai Phanindra T** [18+ Yrs of Real-time Exp]. Profile @ linkedin.com/in/saiphanindra

Training Module		Duration	Plan A	Plan B	Plan C
Module 1	Snowflake	4 W	☐	☐	☐
Module 2	SQL & Database Concepts	3 W	X	☐	☐
Module 3	Azure Data Engineer (ETL Admin)	7 W	X	X	☐
Total Duration			**4 W**	**7 W**	**14 W**

Module 1: Snowflake

Applicable for All Plans

Ch 1: Introduction to Cloud & Snowflake

Database Introduction & Database Types; OLTP, OLAP and Warehouse Databases; Need for Data Warehouses; Advantages; Popular Database Technologies; Popular Data Warehouse Technologies; Need for Cloud & Remote DWH Store; Cloud Implementation Types & Usage; SaaS: Infrastructure As A Service; PaaS: Platform As A Service; SaaS: Software As A Service; Snowflake Cloud: Introduction; Snowflake: Popular SaaS Platform; Cloud Data Warehouse Concepts; Advantages, Dependencies;

Ch 2: Snowflake Account & Editions

Creating Snowflake Account (Cloud); Snowflake Trail Account: Limitations, Uses; Snowflake Account Components; Cloud Platform: Azure, AWS, Google Cloud; Regions and Availability with Snowflake; Snowflake Editions, Credits; UI Usage; Default Accounts; Web UI & Snow Sight; Snowflake Storage: Ondemand, Capacity; Snowflake Editions and Comparisons; Standard Edition: Features, Advantages; Enterprise Edition: Features, Advantages; Business Critical Edition: Features, Usage; Virtual Private Edition (VPS) & Pricing; Snowflake Pricing: Ondemand Vs Capacity;

Ch 3: Architecture, Warehouse (DWH)

Snowflake Architecture & Compute; Shared Disk, Shared Nothing Architecture; Cluster Nodes and Snowflake Clusters; CPU & Memory Resources in Clusters; Disk Storage and Network Communication; Storage Layer and Cloud Service Layer; Database Query Layer & Data Cycle; Snowflake Data Warehouse Architecture; MPP: Massively Parallel Processing; Compute and Storage Components; Column Store and Virtual Warehouse; Data Warehouse Creation in SnowSight; Classic UI with Snowflake; Navigations; Data Load and Billing; Auto Suspend;

Ch 4: Snowflake Databases & Tables

Snowflake Databases and Data Storage; Need for Snowflake Warehouse, Compute; Database Objects and Hierarchy; Snowflake Worksheet Parameters; Database Creation with Snowflake UI; Retention Time, DB List & Connections; Permanent and Transient Databases; Snowflake Tables and their Usage; Permanent, Transient & Temp Tables; Creating Tables with SnowSight; Describe Options, Data Inserts; CREATE TABLE AS SELECT; Cloning Tables, Case Sensitivity Options; Collation, ALTER, DROP & UNDROP;

Ch 5: Time Travel & Transient Tables

Time Travel Feature in Snowflake; DML Operations and Silent Audits; Continuous Data Protection Life Cycle; Invoking Time Travel Feature in Snowflake; Timestamp, Offset & Query ID Options; Time Travel

using Offset Feature; Time Travel using Query ID Feature; Data Recovery using TIMESTAMP; Using OFFSET options in Real-world; Fail Safe and UNDROP Operations; Transient Tables and Real-time Usage; Permanent Table; Restrictions with Permanent Tables; Identical Names and Naming Conflicts;

Ch 6: Schemas and Session Context

Schemas: Creation, Real-time Usage; Permanent and Transient Schemas; Managed Schemas in Real-time Usage; Verifying and Cloning Snowflake Schemas; Invoking Schemas & Cloning Operations; ALTER SCHEMA.. IF EXISTS Options; Creating, Working with Managed Schema; Snowflake Sessions (Workspaces); Session Context: Role and Warehouse; Session Context: Database & Schema; Working with Fully Qualified Names; CTAS: Create Table As Select; Data Loading with GUI, SQL Scripts; Using Query and History Tab in GUI;

Ch 7: Constraints and Data Types

Snowflake Constraints, Data Validations; NULL and NOT NULL Properties; Unique, Primary and Foreign Keys; Working with Named Constraints; Single Column, Multi Column Constraints; Inline and Out Of Line Constraints; Table Constraints Types, Real-time Use; Constraint Properties: ENFORCED; DEFERRED, IMMEDIATE Options; Numeric, String and Binary Data Types; Boolean Data Types and Usage; Date and Time Data Types; Semi Structured Data Types; Geospatial & Variant Data Types;

Ch 8: Snowflake Cloning (Zero Copy)

Cloning Operations with Snowflake; Zero Copy and Schema Level Cloning; Real-time Uses: Cloning in Snowflake; Snapshot Concept, Metadata Options; Possible Objects for Snowflake Clone; Permissions for Snowflake Cloning; Accessing, Controlling Cloned Objects; Real-time Considerations @ Cloning; Storage Layer and Metadata Layer; Cloning with Foreign Key Constraints; Cloning Snowflake Databases; Cloning Snowflake Schemas, Tables; Security and MANAGE GRANTS; Cloning and COPY GRANTS Options;

Ch 9: Snowflake Procedures & Views

Snowflake Procedures and Functions; Creating and Using Stored Procedures; Using CALL Command in Snowflake; SQL and JavaScript Options with SPs; Snowflake Deferred Name Resolution; Overloading with Snowflake SPs; Transactions & Injection; Variables & CALL Command; Using execute() with Procedures; sqlText:command, createStatement; Cursoring Operations; Dynamic DML Operations with SPs; Loops & next.scan(); RETURN and RETURNS Statements; Views & Query Storage; DML and SELECT Operations on Views; Regular Views; System Predefined Views; Recursive Views; Parameterized Views;

Ch 10: Security Management

Security Management Concepts; Security Entities with Snowflake; Securable Objects, Users & Roles; Privileges and Privilege Groups; Snowflake Security Hierarchy; Organization, Account, Users, Roles ;Schema, Tables, Other DB Objects; Creating and Using Roles, Users; System Defined Roles and Usage; Role Hierarchy and Dependency; Creating and Working with Users; Auditing Users and Password Policy; RBAC: Role Based Access Control; DAC: Discretionary Access Control;

Ch 11: Snowflake Transactions

Working with Transactions (ACID); Atomicity, Consistency, Isolation; Durability and Data Storage Options; Transaction Types with Snowflake; Implicit, Explicit and Auto Commit; BEGIN TRANSACTION & COMMIT; DDL Statements and Transactions; BEGIN WORK Versus START; current_transaction() and Usage; to_timestamp_ltz and Usage; Failed Transactions with SPs; Batches Versus Transactions;

Transactions with Stored Procedures; Scoped and INNER Transactions;

Ch 12: Snowflake Streams & Audits

Working with Snowflake Streams; Stream Object and DML Auditing; Snapshot Creation, Offset Options; METADATA$ACTION Parameter; METADATA$ISUPDATE Parameter; METADATA$ROW_ID Parameter; Stream Types: Standard Stream; Append Only Stream & Usage; Insert Only Stream & Usage; Data Flow with Snowflake Streams; Auditing INSERT, UPDATE, DELETE; show streams; desc streams; Streams on Transient Tables; Time Travel; Using Stream Tables;

Ch 13: Snowflake Tasks, Partitions

Snowflake Tasks and Real-time Use; Snowflake Serverless Compute Model; User Managed & Snowflake Managed; Tasks Tree: Root and Link Concepts; Directed Acyclic Graph (DAG); Tasks Schedules and RESUME Options; CREATE, ALTER, DESCRIBE, SHOW; CREATE TASK … AFTER Statement; ALTER TASK … ADD AFTER Statement; CRON Syntax with Tasks, Procedures; Virtual Warehouse Concepts (DWH); Multi Cluster Warehouse Config; Client Utilities, Drivers & Connectors; Auto Scale Options, Billing (Pricing);

Ch 14: SnowSQL and Variables

SnowSQL: Concepts, Client Installation; SnowSQL Tool: Configuration Options; SnowSQL: Account Authorization; DDL, DML and SELECT Operations; Snowflake SQL Query Syntax Format; SnowSQL Command Line Options; Working with DB, Schema and Tables; Snowflake Variables, Batch Processing; Snowflake SQL Data Types, Usage; DECLARE, LET, BEGIN and END; EXECUTE IMMEDIATE, FOR, END FOR; Creating Warehouse, Database, Tables; Granting Permissions, Query Execution; Writing Output to Files (Win, MAC OS);

Ch 15: Snowflake Partitions, Stages

Snowflake Partitions, Real-time use; Service and Storage Layer Concepts; Micro Partition with DML, CDC; Cluster Key: Usage, ReClusters; Depth and Overlap Properties; Internal Partition Types & Usage; List, Range and Hash Partitions; SYSTEM$CLUSTERING_INFORMATION; Snowflake Stages and Usage; Internal and External Stages; User Stages : Creation, Usage; Table Stages: Creation, Usage; Internal Named Stages, Usage; COPY Command, Bulk Data Loads;

Ch 16: Azure & External Stages

Working with Azure Storage; Azure Subscription, Resources; Create, Use Azure Storage Account; Storage Containers, BLOB Data; Using SnowSQL with Azure BLOB; SAS [Shared Access Signature]; Using SAS Key and FILE PATH; External Stages in Snowflake; File Formats: Creation, Usage; Creating & Using External Stages; Azure Storage with BLOB; COPY INTO Command; Listing Stages; Snowflake Patterns & RegEx;

Ch 17: SnowPipes, Incremental Loads & Unloads

Snowflake SnowPipes: Incremental Loads & SnowPipe; Creating Azure Account For BLOB; Creating Container, Generate SAS Key; Creating Azure Queue and Event Grid; Notification Integration in Snowflake; Integrations: Show, Describe, Use; Azure Active Directory & IAM; Linking Azure AD with Snowflake; Enterprise Application, Authentication; File Formats with Regular Expr; External Data Stages; Data Unloading Concepts; PUT and GET with SnowSQL; Bulk Unloads; Data Preparation & Stages; Data Unloading to User Stages; Data Unloading to Table Stages;

Ch 18: Power BI with Snowflake, Exams

Power BI: Big Data Analytics Tool; SnowSQL Tool: Configuration Options; Installing and Configuring Power BI; Snowflake Data Access with Power BI; Data Warehouse and Database Access; Schema and Table Data Formatting; Snowflake Datasets: Power Query, ETL; **Guidance for Snowflake Certifications;**

Real-time Project

Phase1: Legacy Data Systems; Heterogeneous Data Platforms; File Data Sources;
Phase2: Designing DWH in Snowflake; Incremental Loads; Capacity Planning; External Data, Integrations; Snow Pipes and Azure BLOB;
Phase 3: Data Visualizations, Analytics; End to End Implementations; Project Solution & FAQs; Resume & Certification Guidance;

Module 2: Database Basics, SQL, T-SQL Queries

Applicable for **Snowflake** Plans B & C

Chapter 1: DATABASE INTRODUCTION & BASICS

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 2022, 2019, 2017 Installation; SQL Server Instances; Instance Name & Instance Types; Default Instance, Named Instances; Port Numbers; Services and Authentication; Authentication Modes & SQL 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; Relationships Verification and Links; Indexes : Basic Types and Creation; Index Sort Options, Search Advantages; Clustered and Non Clustered Indexes; Primary Key and Unique Key Indexes;

REAL-TIME CASE STUDY - 1 (SALES & RETAIL)

Chapter 7: JOINS Basics & LINKED SERVERS

JOINS: Real-time usage; Table Data Comparisons; INNER JOINS For Matching Data; OUTER JOINS For (non) Match Data; Left Outer Joins; Right Outer Joins - Example Queries; FULL Outer Joins; One-way & Two Way Comparisons; Join Unrelated Tables; CROSS JOIN and CROSS APPLY; Linked Servers Configurations; Linked Servers: RPC Settings & Tests; Linked Servers, Remote Joins in TSQL; Multi Server Connections, DB Access; 2 Part, 3 Part, 4 Part Name Conventions;

Chapter 8: VIEW, PROCEDURE, FUNCTION BASICS

Views : Syntax & Creation; Testing and Reporting with Views; Views in Real-time; System Predefined Views, Audits; Functions: Syntax & Creation; Functions in Real-time; Procedures: Syntax & Creation; Testing & Using Stored Procedures; Parameters & Dynamic Joins; System Objects, Metadata: sp_help, sp_helpb, sp_helptext, sp_pkeys, sp_rename;

Chapter 9: TRIGGERS & TRANSACTIONS

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

Chapter 10: DB ARCHITECTURE & GROUP BY

Database Architecture: Data Files; Database Architecture: Log Files; Primary and Secondary Data Files; Log Files Creation and Realtime Use; Creating and Using Filegroups; Linking Tables with Filegroups; Scripting Database and Objects; GROUP BY: Importance, Realtime Use; GROUP BY Queries and Aggregations; Group By Queries with Having and Where Clause; WHERE and HAVING in T-SQL; Group By in Data Audits; Group By with Joins, Audits;

Chapter 11: TSQL QUERIES: GROUP BY, JOINS

Joins with Group By Queries in TSQL; Joining 3 Tables with Group By; Joining 4 Tables with Group By; Multi Table Joins with Table Aliases; Table & Column Aliases with Joins; Joins with HAVING Conditions; Joins with WHERE & Aggregations; Joins with Sub Queries, Formatting; Joins with IIF() Function, Conditions; Joins with CASE Statement Conditions; UNION and UNION ALL Operator; Storing Queries in Database Views; Office Data Connections, Excel Reports;
Manual Data Refresh & Reports;

Chapter 12: ER MODELS, NORMAL FORMS

First Normal Form and Atomicity; Second Normal Form, Candidate Keys; 3rd Normal Form Multi Value Dependency; Boycee-Codd Normal Form : BNCF; Fourth Normal Form Realtime Advantages; Self Reference Keys and 4 NF Usage; 1:1, 1:M, M:1, M:M Relationship Types; MERGE Statement - Comparing Tables; WHEN MATCHED and NOT MATCHED; Incremental Load with MERGE Statement; UPSERT Operations with MERGE; Stored Procedures for Merge Statement; DML Operations with ON Keyword; Tuning / Optimizing Merge Statement;

REAL-TIME CASE STUDY - 2 (Sales & Retail) with ROW_NUMBER(), RANK()

Module 3: Azure Data Engineer

Chapter 1: Cloud Introduction & Azure Basics

Azure Implementation: IaaS, PaaS, SaaS, Benefits of Azure Cloud Environment, Azure Data Engineer: Job Roles, Azure Storage Components, Azure ETL & Streaming Components, Need for Azure Data Factory (ADF), Need for Azure Synapse Analytics, Azure Resources and Resource Types, Resource Groups in Azure Portal, Azure SQL Server [Logical Server], Firewall Rules and Azure Services, Connections with SSMS & ADS Tools, DB Migration: OnPremise to Azure, Schema Migration & Data Migration;

Chapter 2: Synapse SQL Pools

Dedicated SQL Pools in Azure; Enterprise Data Warehouse with Synapse; DWU: Data Warehouse Units, Resources; Massively Parallel Processing (MPP); Control Nodes and Compute Nodes; SQL Pool Access from SSMS Tool; T-SQL Queries @ SQL Pools; Start/Resume/Pause, Scaling Options; Creating Tables in Azure SQL Pool; Compression, MAX DOP & Indexes; Distributions: Round Robin, Hash; Distributions: Replicate and Usage; Data Imports; Dynamic Views with PDW; Data Loads Monitoring, Resource Class;

Chapter 3: Azure Data Factory Concepts

Azure Data Factory (ADF) Concepts; Hybrid Data Integration at Scale; ADF Pipeline Components & Usage; Configure ADF Resource in Azure; Understanding ADF Portal and IR; Linked Services and Connections; Datasets and Tables / Files for ETL; ADF Pipelines: Design, Publish & Trigger; ADF Pipeline with Copy Data Tool; Creating Azure Storage Account; Storage Container, BLOB File Uploads; Data Loads with Azure BLOB Files; DIU Allocations & Concurrency; Linked Services, Datasets; Pipeline Trigger, Author and Monitor;

Chapter 4: ADF Pipelines & Polybase

Copy Data Tool For ETL Operations; Azure SQL DB to Synapse Data Loads; Working with Multi Tables Data Loads; Query Options for Source Datasets; Transformations with Copy Data Tool; Rename, Rearrange & Remove Options; Pipeline Execution: DTU & DOCP; ADF Pipeline

Monitoring Options; ADF Pipelines: Execution Settings; ADF Logging Options & Storage Account; Compression Option, DOP and DOCP; ETL Staging & Performance; Staging with Storage Account, Container; ADF Pipeline Monitoring; Polybase;

Chapter 5: OnPremise Data Loads with ADF

On-Premise Data Sources with Azure; Self Hosted Integration Runtime (IR); Access Keys, Remote Linked Services; Synapse SQL Pool (DW) with OnPremise; Staged Data Copy and Performance; Pipeline Executions and Monitoring; Pipeline RunIDs and Audits / Tracing; Incompatible Rows Skips, Fault Tolerance; Incremental Loads with Files (BLOB); Pipeline Executions and Schedules; Regular Schedules and Tumbling Window; Execution Retry and Delay Options; Binary Copy, Last Modified Date in Blob; Automated Loops and Trigger Schedules; Incremental Loads Verification Tests;

Chapter 6: ADF Data Flow - 1

Limitations with Copy Data Tool; Data Flow Task, Data Flow Activity; Transformations with Data Flow; Spark Cluster For Debugging; Cluster Node Configurations; Data Preview Options with DFT; SELECT Transformation & Options; JOIN Transformation and Usage; Conditional Split Transformation; Aggregate & Group By Transformations; Synapse Sink Options with DFT; DFT Optimization Techniques; Pipeline Debug Runs and ETL Testing; Spark Cluster For Pipeline Executions; Pipeline Monitoring & Run IDs;

Chapter 7: ADF Data Flow - 2

ADF Pipelines For ETL Operations; Data Flow Tasks and Activities in Synapse; Pivot Transformation For Normalization; Generating Pivot Column, Aggregations; Pivot Transformation and Pivot Settings; Pivot Key Selection, Value and Nulls; Pivoted Columns and Column Pattern; Column Prefix, Help Graphic & Metadata; Window Functions & Usage in Data Flow; Rank / DenseRank / Row Number; Over Clause and Input Options; Derived Column Transformations; Exists & Lookup Transformations; Reusing Data Flow Tasks in Synapse; Pipeline Validations & Executions;

Chapter 8: Azure Synapse Analytics

Azure Synapse Analytics Resource; Azure Synapse Analytics Workspace; Managed Resource Group, SQL Account; SQL Admin Account and its Purpose; Operations with Synapse Workspace; ADLS Gen 2 Storage Account, Container; Synapse Studio (Synapse Portal); Dedicated SQL Pools & Spark Pools; Creating Dedicated SQL Pools; Synapse Tables, Data Loads with T-SQL; COPY INTO Statements with T-SQL; Clustered Column Store Indexes; Compressions; Aggregation with Data Loads in Azure Synapse;

Chapter 9: Synapse Analytics with Spark

Apache Spark Pool in Azure Synapse; Spark Cluster Nodes: Vcores, Memory; Creating Spark Clusters @ Synapse Studio; Python Notebooks For Remote Access; Creating Databases in Apache Spark Pool; Data Loads from Dedicated SQL Pools; Table Creations, Aggregation Operations; PySpark Code for Data Operations, Writes; Serverless Pool in Azure Synapse; Connections, Usage with Serverless Pool; Using Azure OpenDatasets in Synapse; OPENROWSET and BULK Data Loads;

Azure Storage Account : Data Analysis; Working with Parquet Files in Synapse; Python Notebooks (Pyspark) in Synapse;

Chapter 10: Incremental Loads @ Synapse

Incremental Loads with Synapse Studio; Multi Table Merge Operations; On-Premise Data Sources & Timestamps; Azure SQL DB Destinations, Watermarks; Watermark Table Usage & Audits; Stored Procedures for Timestamp Updates; Table Data Type and Dynamic MERGE; SQL Queries for Datasets and Fetch; Lookup Activity and its Usage un Synapse; Expressions in ADF Portal for Lookup; Expressions in ADF Portal for Source; Output Pipeline Expression, Data Window; Concat Function, Run IDs Expressions; JSON Parameters, Pipeline Scheduling; Pipeline Validation, Trigger and Monitoring;

Chapter 11: Optimizations, Power Query

ADF ETL with GUI : Power Query; Power Query Resource Creation, Use; Source Data Configurations & Settings; Rename, Remove, Pivot, Group By, Order; Index, Filter, Remove Error Rows; Using Power Query Activity, ADF Pipelines; Spark Cluster Configurations for Pipelines; Concurrency, Big Data Recommendations; Storage Optimization Techniques; ETL Optimization Techniques; SQL Pool (Synapse) Optimizations; Indexes, Partitions, Distributions, DOP; Pipeline Optimization Techniques; Partitions, DOCP, Compressions, DIU; Staging, Polybase and Core Counts;

Chapter 12: Pipeline Monitoring, Security

Azure Monitor Resource and Usage; Pipeline Monitoring Techniques; ADF: Pipeline Monitoring and Alerts; Synapse: Pipeline Monitoring and Alerts; Synapse: Storage Monitoring and Alerts; Conditions, Signal Rules and Metrics; Email Notifications with Azure; Concurrency, Big Data Recommendations; Azure Active Directory (AAD) Users, Groups; IAM: Identity & Access Management; Synapse Workspace Security with RBAC; ADF Security with RBAC: Owner, Contributor; Azure Synapse SQL Pool Security: Logins; Users, Roles and Resource Classes (RC); Assigning RCs to Users. Object Level Security;

Chapter 13: Azure Storage & Containers

Storage Components in Microsoft Azure; Azure Storage Services and Types - Uses; High Availability, Durability & Scalability; Blob: Binary Large Object Storage; General Purpose: Gen 1 & Gen 2 Versions; Blobs, File Share, Queues and Tables; Data Lake Gen 2 Operations with Azure; Azure Storage Account Creation; Azure Storage Container: Usage; Azure Data Explorer: Operations; File Uploads, Edits and Access URLs; Azure Storage Explorer Tool Usage; Azure Account Options in Explorer; Directory Creation, File Operations; End User Access Options With Files; Data Explorer Vs Storage Explorer Tool;

Chapter 14: Azure Migrations, BLOB Imports

SQL Server (On-Premise) to Azure Migration; Source Database Scripts & Validations; BACPAC File Generation From SSMS Tool; Azure Data Lake Storage and SSMS Access; Azure Storage Container, BACPAC Files; Azure SQL Server Creation From Portal; Azure SQL DB Imports, Storage SAS Keys; Azure SQL Database Migrations, Verification; BLOB Data Access from On-Premise; Data Imports From Excel and CSV Files; BLOB Data Imports using T-SQL Queries; SAS - Shared Access Signature Generation; CSV File - Uploads, Downloads, Edits, Keys; Master Keys, Credentials, External Sources; BULK INSERT Statement and Data Imports; T-SQL Imports : Practical Limitations;

Chapter 15: Azure Tables, Shares

Azure Tables - Real-time Usage; Schema-less Design and Access Options; Structured and Relational Data Storage; Tables, Entities and Properties Concepts; Azure Tables: Creation and Data Inserts; Azure Tables in Portal - GUI and Data Types; Azure Tables: Data Imports in Explorer; Data Edits, Queries & Delete Operations; Azure Files - SMB Protocol, Creation, Usage; Shared Access, Fully Managed & Resiliency; Performance, Size Requirements for Shares; Azure Storage Explorer Tool for File Shares; Azure Queues: Message Queues, Limitations; Adding Messages, Queuing and De-Queuing; Data Access & Clear Queue from Explorer; End Points for Azure Message Queues;

Chapter 16: Azure Storage Security, Admin

Azure Data Lake Storage Security Options; Shared Access Keys - Primary, Secondary Keys; SAS Key Generation: Container, Tables, Files; SAS Key Permissions, Validation Options; Access Keys: Account Level Permissions; Azure Active Directory (AAD): Users, Groups; Azure AD Security: RBAC with IAM, ACLs; Owner Role, Contributor and Reader Role; Azure Admin Operations: Replication Options; Azure Regions and Azure Zones, Availability; Locally & Geo Redundant Storage: LRS, GRS; Read Access (RA-GRS) & Geo Zone (GZRS); Classic Deployment Model, Encryption at REST; CORS Support (Cross Origin Resource Sharing); Auditing Access and Network Access Rules; Firewalls and Advanced Threat Protection;

Chapter 17: Azure Monitoring, Power BI

Azure Monitor, Metrics & Logs; Monitoring Azure Storage Namespaces; Add KQL Metrics; Account, Blob and File; Total Ingress and Egress Metrics: Charts; Average Latency, Transaction Count; Request Breakdowns, Signal Logic Options; Azure Alerts and Conditions, Notifications; Signal Logic Conditions and Emails; Power BI Desktop Tool Installation; Binary Data and Record Data Access; Azure Data Lake Storage: Access Keys; Azure Data Lake Storage with Power BI; BLOB File Access with Power BI; Azure Tables Creation and File Imports; Azure Table Access with Power BI;

Chapter 18: Azure Stream Analytics, IoT

Azure Steam Analytics: Real-time Usage; Real-time Data Processing, Event Tracking; Ingest, Deliver and Analysis Operations; Azure Stream Analytics Jobs Concept; Understanding Input & Output Options; SAQL Queries for Stream Analytics Jobs; IoT: Internet Of Things For Real-time Data; Need for IoT Hubs and Event Hubs; Creating IoT Device for Data Inputs; Creating Azure Stream Analytics Resource; Stream Analytics Jobs for Historical Data; Azure SQL Database Options

for ASA Jobs; SAQL: Query Formatting and Validation; Historical Data Uploads, ASA Job Execution; Stream Analytics Job Monitoring Options;

Chapter 19: IoT Hubs & Event Hubs

Azure Stream Analytics For API Data; IoT Hubs & IoT Devices, Connection Strings; Raspberry APP Connections with IoT Hub; Azure Storage Account and Container; Creating Azure Stream Analytics Job; Configuring Input Aliases with IoT Hub; Configuring Output Alias with ADLS Gen 2; SAQL Query and Job Executions; Monitoring; Azure Event Hubs and Event Instances; Event Hub Namespaces, Partition Counts; Access Policies, Permissions & Defaults; RootManageSharedAccessKey & Options; Connection Strings & Event Service Bus; Telco App Installation, Executions. LIVE Data; On-Premise Integration with ASA Jobs;

Chapter 20: Azure Stream Analytics Security

Securing Azure Stream Analytics Resource; RBAC: Role Based Access Control & IAM; Owner, Contributor, Reader, Resource Owner; Network Level and IP Address Security; Virtual Machine and Virtual Network Options; Port Level Configuration and Stream Apps; Data Feed Security for Event Hub, IoT Hub; Azure Virtual Machine (VM) Security Options; Azure Key Vaults & ADLS [Data Lake] Security; Azure Passwords, Keys and Certificates; Azure Key Vaults - Name and Vault URI; Inbuilt Managed Key and Azure Key Vault; Standard Type, Premium Type Azure Key Vaults; Secret Page, Key Backups and Key Restores; Adding Keys to Azure Vaults. Key Type, Size;

Chapter 21: Azure Intro, Azure Databricks

Cloud Introduction and Azure Basics For Databricks; IaaS, PaaS, SaaS; Benefits of Azure Cloud Environment; Storage, ETL and Streaming Components; Need for Azure Databricks (ADB); ETL and Data Storage Components; Databricks File System (DBFS) and Usage; Azure Databricks Service Creation; Azure Databricks Workspace Operations; Spark Cluster Configurations & Capacity; Driver Nodes and Worker Nodes in Spark; Master Node & Cluster Creation Process; Databricks Runtime Service & DBUs; File Uploads into DBFS; Table Creations; Promoting Headers, Data Type Changes; DBFS Storage Navigations;

Chapter 22: SQL Notebooks & Python

Notebooks: Concept, Usage Options; Creating SQL Notebooks in Databricks; Using DBFS Tables in SQL Notebooks; Data Access and Analytics Options; SparkSQL Queries: SELECT, GROUP BY; SparkSQL Queries: Aggregates, Conditions; Notebook Operations: Download, Clone; Notebook Operations: Upload, Reuse; SQL Notebooks with Python Code; Using DBFS Sample Data Sources (CSV); Dataframes: Creation and Real-time Use; Pandas Dataframe, Virtual Table Creation; Dataframe Data Access, Caching Options; Take() and Display() Functions in PySpark; Temporary View Creation and Access; SparkSQL Queries, Analytics, Chart Reports;

Chapter 23: Python Notebooks

Azure SQL Server Configurations; Azure SQL Database Creation; Azure Firewall Rules and IP Address; Allow Azure Services, Remote Access; Connection Tests with SSMS Tool; Python Notebooks with Azure Databricks; Data Imports and Table Creations (Code); Parquet Files and Usage in Databricks; Using Dataframes for Data Operations; SparkSQL Queries with SELECT, TOP; Establishing Connections to Azure SQL DB; JDBC Connection Strings, DataframeWriter; JDBC Properties, Port Settings & Options; Data Extraction, SQLContext & Dataframes; Pandas Data Frame for Big Data Analytics; JDBC URL Options & PySparkSQL Modules;

Chapter 24: Scala Notebooks, Transformations

Scala Notebooks with Azure Databricks; Azure SQL Database Connections with Scala; Util Properties, Connection Settings For Driver; Connection Settings for Worker Node @ Spark; Dataframe Creation and Data Access in Scala; Display Options and Data Transformations; Data Loads to Azure SQL Database Tables; Data Reads from Azure SQL DB & Analytics; Databricks Jobs : Creation Options, Usage; Job Limits, Workspace & Concurrency Limits; Notebooks with and without Parameters; Jobs with Default Parameters, Executions; Interactive, Automated Clusters for ADB Jobs; Job Schedules and Manual Executions; Active Jobs, Recently Run Jobs & Monitoring; Job Execution Reports & Workspace Options;

Chapter 25: ADB with Virtual Network

Azure Virtual Network Configuration; Azure VNets, Address Spaces & Range; Subnet and Subnet Address Range; Azure Databricks Deployments with VN; CIDR Range and IP Addresses; Public Subnet and Private Subnet; Spark Cluster Creation with ADB; End User Access using Virtual Network; Spark Cluster Notebook Operations; Notebook Exports, Imports, ReUse; SparK Cluster Configuration Changes; Power BI Connections, JDBC, User Token;Notebook Scheduling and Jobs; Interactive Clusters and Real-time Use; All Purpose Clusters and Advantages;

Chapter 26: DeltaLakes & ADF Integration

Azure Delta Lake Implementation; ACID Properties and Upsert Advantages; Delta Engine Optimizations & Uses; Pipeline Creation with JSON Files in DBFS; Delta Tables Creation, Data Loads; Spark Cluster Settings: Auto Optimize; Auto Compact and Delta Table Optimize; Delta Locations; Data Retrieval, Versions; Azure Databricks Integrations with ADF; Defining Scala Notebooks in ADB; Using Notebooks in Azure Data Factory; spark.conf.set & fs.azure.account.key; spark.read.format, Option() and Head(); dbutils() with wasbs & BLOB Data Sources; ADF Pipelines and Trigger Schedules;

Chapter 27: Databricks Integrations

Azure Databricks with Data Lake Storage; Handling Unstructured Data in Azure; Data Preparation and Staging Operations; Azure App (Service Principal) Registration; Azure Key Vault Creation & Key Usage; Service Principal Permissions @ Data Loads; Tenants and Authorization Settings; Client Credentials, Token Provider Options; Azure Databricks Clusters, Spark Notebooks; Dynamic Connections and Blob Access; Data Preparation & Big Data Ingestion; Data Extraction and ADLS Storage; show(), transformations, wasbs; Azure SQL Server & Synapse; Incremental Changes & Data Loads;

Real-time Project (End to End)

Online Retail Database Data Source; Azure Migrations and ETL Concepts; Azure SQL Pool (Synapse DWH) Tables; Apache Spark Pool : Databases, Tables; Azure Data Lake Storage (ADLS Gen 2); Azure Stream Analytics Jobs with IoT; Azure Data Bricks and DBFS, Notebooks; Big Data Analytics & Power BI Reports;

Project Requirement; Project Solution; Project FAQs; Concept wise FAQs; Resume Guidance; Mock Interviews; DP 203 Certification Guidance;

Resume, Project Oriented FAQs and Solutions

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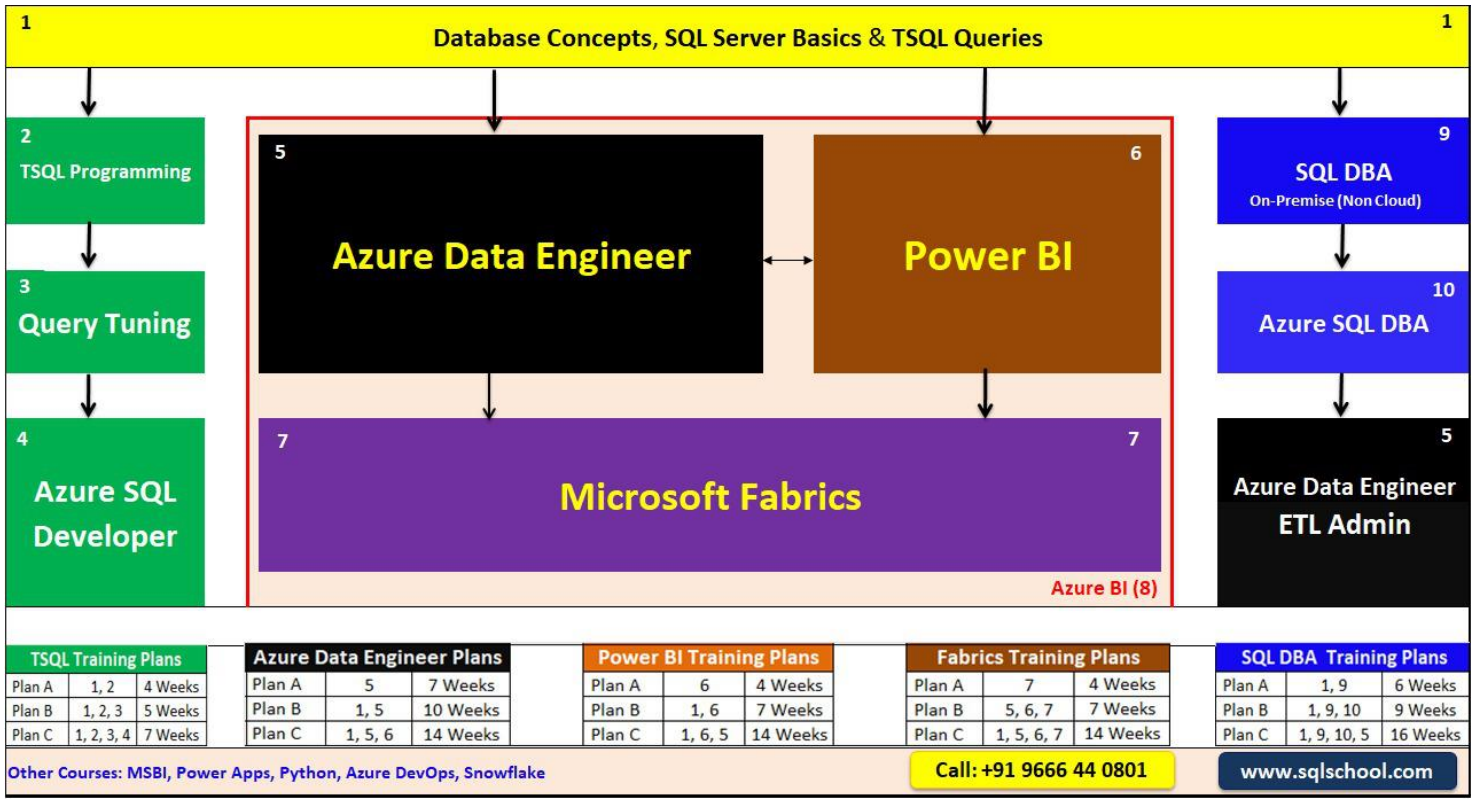

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