

SQL School

Quality Training Assured

Azure BI Training

	PLAN A	PLAN B	PLAN C
Applicable For (Resume Plan)	1. Azure Data Engineer 2. Power BI	1. Azure Data Engineer 2. Power BI 3. Microsoft Fabric	1. SQL Server TSQL 2. Azure Data Engineer 3. Power BI 4. Microsoft Fabric
Power BI: Report Design, Visuals	✓	✓	✓
Power BI: M Lang, DAX for ETL	✓	✓	✓
Power BI: Cloud, Apps, Tenant	✓	✓	✓
Power BI: Report Server, Project	✓	✓	✓
DP 500, PL 300 Exams Guidance	✓	✓	✓
ADF : Azure Data Factory	✓	✓	✓
ADF : Data Imports, ETL	✓	✓	✓
Synapse: Configuration, Loads	✓	✓	✓
Synapse: ETL with ADF, DWH	✓	✓	✓
Storage: ADLS Gen 2, BLOB	✓	✓	✓
Storage: Azure Tables, ACL, IAM	✓	✓	✓
Azure Stream Analytics & Jobs	✓	✓	✓
ADB : Azure Data Bricks, Spark	✓	✓	✓
ADB : Spark Database, Data Loads	✓	✓	✓
ADB : Delta Tables, PySpark ETL	✓	✓	✓
DP 203 Exam Guidance	✓	✓	✓
Fabric Licenses, Capacity	X	✓	✓
Fabric Data Factory & ETL	X	✓	✓
Fabric Notebooks, DWH	X	✓	✓
Fabric Realtime Data Analytics	X	✓	✓
Fabric Security, Governance	X	✓	✓

TSQL: Database Basics, T-SQL	X	X	✓
TSQL : Constraints, Joins, Queries	X	X	✓
TSQL: Views, Group By, Self Joins	X	X	✓
Total Duration	11 Weeks	15 Weeks	18 Weeks

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

Azure BI Training Modules		Duration
Module 1	Azure Data Engineer (DP 203) [Azure Funda, Azure Migrations, ADF, Synapse DWH, ADLS Storage, Spark SQL, Databricks, ASA, IoT, Real-time Project]	7 Weeks
Module 2	Power BI & Big Data Analytics (PL 300) [Power BI Cloud Service, Report Server, REST API, Dashboards, Power Query, DAX, Real-time Project, Resume Guide]	4 Weeks
Module 3	Microsoft Fabric	4 Weeks
Module 4	Database Basics, SQL, T-SQL Queries	3 Weeks
Total Duration		18 Weeks

Module 1: Azure Data Engineer

(Applicable for Microsoft Fabric Plan A, B, C)

Part 1: Azure Data Factory & Synapse Analytics

Ch 1: Cloud Basics, Azure SQL

Cloud Introduction and Azure Basics; Azure Implementation: IaaS, PaaS, SaaS; 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; Azure Account, Subscription (Free); Azure SQL Server [Logical Server]; Firewall Rules and Azure Services; Azure SQL Database Deployment; Azure SQL Pool Deployment; Compute: DTU Versus DWU; Test Connections from SSMS;

Ch 2: Synapse SQL Pools (DWH)

Dedicated SQL Pools in Azure; Data Warehouse with Synapse; Massively Parallel Processing (MPP); Control Nodes and Compute Nodes; DMS: Data Movement Service; Start/Resume/Pause & Scaling; SQL Pool Config @ TSQL Scripts; Start/Resume/Pause, Scaling Options; Table Creations @ TSQL Scripts; Table Partitions: Left & Right; Distributions: Round Robin, Hash; Distributions: Replicate and Usage; Auto Indexing & Column Store; Planning for Big Data Loads; Need for ADF: Azure Data Factory;

Ch 3: Azure Data Factory, Pipelines

Azure Data Factory (ADF) Concepts; ADF Pipelines : Architecture; Integration Runtime (IR) & Use; Linked Services and Datasets; Pipeline Activities: Copy Data Tool; DIU : Data Integration Units; DTU Vs DWUs Vs DIU; ADF Pipeline with Copy Data Tool; Azure SQL DB to Synapse Data Loads; Multi Tables Data Loads with ADF; Bulk Insert, Data Copy Methods; ETL Staging: Storage Account; Staging Container Connections; DIU Allocations & Publish; ETL Pipeline Monitoring, Runs;

Ch 4: OnPremise Data Loads, Upsert

Copy Data Tool : Incremental Loads; On-Premise Data Sources with Azure; Self Hosted Integration Runtime (IR); Access Keys, Remote Linked Service; Synapse SQL Pool (DW), OnPremise; ETL Staging with Storage Account; Copy Method: Polybase - Tuning; Polybase : Big Data Loads; ETL Pipelines for Incremental Loads; Business Keys For Table Upsert; Pipeline Schedules with ADF; ETL Logging with Storage Account; Copy Method: UPSERT; DIU, DOCP & Publish; Manual Pipeline Executions in ADF;

Ch 5: File Incremental Loads in ADF

Incremental Loads with Files (BLOB); ETL Schedules: Tumbling Window; Execution Retry and Delay Options; Binary Copy, Structural Data Loads; Incremental Loads Verification Tests; Incompatible Rows & Fault Tolerance; Pipeline Compression & Tuning; Pipeline Publish, Monitor Options; Azure Monitor Resource : Metrics; ADF Metrics and Pipeline Runs; ADF: Pipeline Monitoring and Alerts; Synapse: Storage Monitoring, Alerts; Conditions, Signal Rules and Metrics; Alerts & Action Groups: Emails; Email Notifications with Azure;

Ch 6: ADF Data Flow - 1

Data Flow Task, Data Flow Activity; Transformations with Data Flow; Spark Cluster For Debugging; Cluster Node Configurations; Spark Cluster Types & Sizing; Transaction Optimized - Capacity; Memory Optimized - Capacity; Data Cleansing with ADF; Data Orchestration with Data Flow; SELECT Transformation & Options; Conditional Split Transformation; UNION, SELECT Transformation; Spark Cluster For Pipeline Executions; Pipeline Monitoring & Run IDs; Adding Data Flow into Pipelines;

Ch 7: ADF Data Flow - 2

ADF Pipelines For ETL Operations; Data Flow Tasks, Activities in Synapse; JOIN & EXISTS Transformations; Aggregate & Group By Transformations; Window Functions, Rank in Data Flow; Rank / DenseRank / Row Number; Derived Column Transformation; Lookup, Surrogate Key, Parse; Type Convert, Cast Transformations; Reusing Data Flow Tasks in Synapse; Pipeline Validations & Executions; Inline Datasets, Schema Drift; Data Deduplication with ADF; DFT Optimization Techniques; Data Flow Task - Staging, Logging;

Ch 8: Azure Synapse Analytics

Azure Synapse Analytics Resource; Azure Synapse Analytics Workspace; Managed Resource Group, SQL Account; Synapse Workspace & Synapse Studio; Operations with Synapse Workspace; ADLS Gen 2 Storage Account, Container; Synapse Studio: Scripts & Pipelines; Dedicated SQL Pools : Creation, Use; Synapse Tables, Data Loads with TSQL; COPY INTO

Statements with T-SQL; Row Terminator and Compressions; T-SQL Queries and Aggregations; Aggregation Data Loads in Synapse; Creating Synapse Pipelines with TSQL; Stored Procedure Activity & Triggers;

Ch 9: Synapse Analytics with Spark

Synapse Pipelines: Performance Advantage; Pivot Transformation For Normalization; Generate Pivot Column, Aggregations; Pivot Transformation & Pivot Setting; Pivot Key Selection, Value and Nulls; Pivoted Columns and Column Pattern; Column Prefix, Help Graphic, Metadata; Denormalized Data and Aggregations; Apache Spark Pool in Azure Synapse; Spark Cluster Nodes: Vcores, Memory; Notebooks : Purpose, Usage Options; Python Notebooks For Remote Access; Creating Databases in Apache Spark Pool; Data Loads from Dedicated SQL Pools; PySpark Code for Data Operations, Writes;

Ch 10: Synapse Security & Parameters

Azure Active Directory (AAD) Users, Groups; IAM: Identity & Access Management; Synapse Workspace Security with RBAC; ADF Security: RBAC, Owner, Contributor; Azure Synapse SQL Pool Security: Logins; Creating SQL Logins & Users : master; SQL Users in Azure SQL DB and SQL Pool; Grant, Control, Revoke: Security Roles; Parameters - Creation and Use in Pipelines; Dynamic Connections with Credentials; User Name and Password Connectivity; Dynamic Dataset Configurations; Pipeline Expressions with Parameters; Resource Classes and Usage with SQL Pool;

Ch 11: Change Data Capture (CDC)

Change Data Capture (CDC) Data Loads; Incremental Loads with CDC Types; SQL Server CDC : ETL Load Dates; Pipeline Expression, Data Window; JSON Parameters, Pipeline Scheduling; ETL Optimization Techniques; Serverless Pool in Azure Synapse; Connections, Use with Serverless Pool; Using Azure OpenDatasets in Synapse; OPENROWSET and BULK Data Loads; Working with Parquet Files in Synapse; Python Notebooks (Pyspark) in Synapse;

Part 2: Azure Data Lake Storage & Stream Analytics

Ch 1: Azure Fundamentals - Storage

Azure Resources: Storage Components; Storage Resources and Properties; Resource Groups & Subscriptions; Azure Storage : Files, Tables and ETL; Azure Storage Account & Use; Data Lake Storage Account (ADLS); Advanced Options: HNS Property; Resource Location, Resource Group; Azure Portal: Deployment Verifications; Azure Portal: Deployment Verification; Storage Account : Basic Properties; Overview Page: Status, HNS State; Azure Storage : Access Options; Azure Storage Explorer Tool; Explorer Tool : Configuration; Azure Subscription : Filter Options;

Ch 2: Azure Storage Operations

BLOB: Binary Large Objects; Storage Browser and Service Pages; Storage Browser: Container Creation; Storage Browser: Folder, File Uploads; Service Page: Container Creation; Service Page: Folder, File Uploads; Container, Folder, File Properties; Limitations with Storage Portal; Azure Data Explorer Tool : Usage; Container: Creation, Properties; File Uploads, Edits and Access URLs;

Azure Storage Explorer Tool Usage; Azure Account Options in Explorer; Directory Creation, File Operations; Limitations with Explorer Tool;

Ch 3: Azure Storage Security, ACLs

Azure Data Lake Storage Security Options; Shared Access Keys: Primary, Secondary; SAS Key Generation: Container, Tables; SAS Key Permissions, Validation Options; Access Keys: Account Level Permissions; Azure Active Directory: Users, Groups; Azure AD Security: RBAC, IAM, ACLs; Owner Role, Contributor, Reader Role; Azure Data Lake Storage Security; ACL : Access Control Lists & Security; Azure BLOB Storage Containers & ACLs; Folder Level and File Level Security; ACL Permissions: Read, Write, Execute; Access Policy: Creation, Realtime Use; rwacdl; Azure Principals, CORS;

Ch 4: SQL Database Migrations

OnPremise SQL Server to Azure Migration; SSMS Tool, SQL Database Installation; Source Database Scripts & Validations; BACPAC File Generation: SSMS Tool; Table Selection & Advanced Options; Azure Data Lake Storage, SSMS Access; Azure Storage Container, BACPAC Files; IAM and Account Key Authentication; Azure SQL Server Creation From Portal; Azure SQL Database Deployment; DTU : Data Transaction Units, Pricing; Azure Firewall Configuration, Security; Azure SQL Database Imports (bacpac); Azure SQL Server with ADLS Containers; Azure SQL DB Migrations, Verification;

Ch 5: Azure Tables & Replication

Azure Tables - SchemaLess Design; Azure Tables: Creation, Data Inserts; Tables, Entities, Properties Concepts; Structured, Relational Data Storage; Azure Tables: GUI, Data Types; Azure Tables: Big Data Imports; Data Edits, Queries, Delete Operations; Odata Options (REST API), End Points; Azure Storage: Replications, DR Options; LRS: Locally Redundant Storage; GRS: Globally Redundant Storage; ZRS: Zone Redundant Storage; Replication Options and Advantages; Replication Verification, Modifications; Storage Endpoints, Failover Partner;

Ch 6: Azure Stream Analytics, IoT

Azure Stream Analytics Real-time Use; Real-time Data Processing, Events; Ingest, Deliver & Analysis Operations; Azure Stream Analytics Jobs Concept; Understanding Input, Output Options; SAQL Queries: Stream Analytics Jobs; IoT: Internet Of Things, Real-time Data; Need for IoT Hubs and Event Hubs; Conditional Split Transformation; Creating IoT Device for Data Inputs; Creating Azure Stream Analytics Job; Stream Analytics for Historical Data; Azure SQL Database for ASA Jobs; SAQL: Query Formatting, Validation; Historical Data Upload, ASA Jobs; Stream Analytics Job Monitoring;

Ch 7: Azure 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; Output Aliases with ADLS Gen 2; SAQL Query, 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 : Executions & LIVE Data; On-Premise App Integration, ASA Jobs;

Ch 8: Storage Architecture, Queues

Azure Storage Account : Architecture; Etag: Replication & Encryption Use; BLOB Types: Block, Append & Page; Access Tiers: Hot, Cool, Cold Types; Archive Access Tier & Retention; Legal Hold & Time Bound Access; Pricing : HNS, Security, Encryption; EndPoint URL & Read-Only Use; Azure File Share Service (Files); Mounting Files From On-Premise; SMB File Share : Hot, Optimized; Azure Queue Service & Messages; Message Queues : Operations; Storage Explorer Tool with Shares; Azure Storage Services: ETL Needs;

Ch 9: Monitoring & Key Vaults

Azure Monitor, Metrics & Activity 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; Azure Alerts & Conditions, Notifications; Signal Logic Conditions and Emails; Key Vaults Types: Standard & Premium; Secret Page, Key Backups, Key Restores; Azure Key Vaults - Name and Vault URI; Inbuilt Managed Key and Azure Key Vault; Key Vaults Types: Standard & Premium; Secret Page, Key Backups, Key Restores; Managed Identity with ETL Process;

Part 3: Azure Databricks & Spark, Python

Ch 1: Azure Intro, Azure Databricks

Azure Cloud : SaaS, PaaS, PaaS & IaaS; Azure Cloud : Storage, ETL Resources; Azure Databricks : Compute Resources; Need for Azure Databricks (ADB); Azure Databricks : Purpose & Config; Azure Databricks Service Creation; Azure Databricks Components; Azure Databricks Workspace, Usage; Spark Cluster Configurations, Capacity; Driver Nodes, Worker Nodes in Spark; Cluster Types : Personal, Unrestricted; CPU, Memory & IO Resources; Virtual Machines (VM) for Clusters; Databricks : Runtime & DBFS Storage; DBFS : Files, Tables with Spark DB;

Ch 2: SparkDatabase, SQL Notebooks

DBFS : File Uploads from ON-Premise; Creating Spark Tables; Spark DB; Data Explorer: HIVE Metastore; Data Explorer: Spark Database, Tables; Notebooks: SQL, Python and Scala; Creating SQL Notebooks in Databricks; Creating User Defined Spark Databases; Connecting / Using Spark Databases; Spark SQL : Big Data Loads; Spark SQL : Database & Table List; Spark SQL : Data Aggregations, Jobs; Spark SQL : Data Analytics, Reports; Analytics: X, Y Axis, Group By; Notebooks : Export, Import, Clone; Notebooks : Storage & Versions;

Ch 3: Python Intro, Data Loads

Python : Introduction, Real-time Use; Python For ETL and DWH; Python For Azure: Data Engineer; Python Data Frames & Purpose; Python Dataframes - Pandas; Python with Spark Integrations; PySpark for DDL and ETL; PySpark Versus SQL Notebooks; Reading DBFS Data into Spark; Creating Dataframes for ETL; Temporary Views & Dataframes; Spark Temp Views: Aggregations; Spark Table Loads, HIVE Data; dataframe.write.format(); Parquet Tables with Spark DB;

Ch 5: PySpark Widgets & Spark

Widgets : Notebook Parameters; dbutils.widget module : Text, Combo; Dropdown, Multi Select Parameters; dbutils help(), get() & remove(); Dataframes, Spark SQL @ Variables; Python Data Frames, Spark SQL; Reading Parameters Values; Parameters Versus Variables; Using Parameters For Temp Tables; Using Parameters for Spark Tables; Data Storage and HIVE Metastore; Reading Parameterized Data; Format Strings with PySpark; Dynamic Queries with Spark SQL; Aggregations and f Strings;

Ch 6: Architecture, Workflows

Driver Nodes, Worker Nodes, DBUs; RDD : Resilient Data Distribution; DAG : Directed Acyclic Graph; Hadoop HDES and Spot Instance; Cluster Manager, Master Node; RDDS, Worker, Executor & Slave; Hadoop HDES & Databricks Runtime; Databricks Optimization Techniques; Spot Instance, Photon Acceleration; All Purpose Cluster, Job Cluster; Databricks Jobs: Creation & Tasks; Jobs with Parameters, Executions; Task Dependency & Notifications; Continuous & Manual Schedules; Active Jobs, Recent Run Jobs, Monitor;

Ch 7: Databricks Security, Scala

Azure Databricks Security Operations; Azure Active Directory (Azure AD); AD Users and RBAC with IAM; Owner, Contributor & Reader Roles; Workspace Admin Permissions; Notebook Permissions & Share; Workflow Security, HTTP Path; User Tokens & ServerName; Scala : Differences with PySpark; Scala : Variables Declaration, Usage; SparkSQL with Scala Notebooks; Temp Views with Scala Notebooks; Aggregations with Scala Notebooks; Visual Data Analytics with Scala; PySpark to Scala Conversions;

Ch 8: Scala with ADLS, Azure SQL

Data Imports with Azure SQL DB; Using Scala for Big Data Loads; Spark SQL Queries @ Temp Views; Variables, display(), spark.read(); Scala Transformations, display(); JSON, AVRO and DBFS Mounts; fs.azure.sas.container @ ADLS; dataframe.write.jdbc() & JVM; JDBC Connection, DataframeWriter; Data Extraction, SQLContext; Spark Context and Spark Session; SQLServerDriver with Scala; ADLS with Scala Notebooks; Parameters (Widgets) with Scala; Compare Python with Scala;

Ch 9: DeltaLake Incremental Loads, DWH

Azure DeltaLake Implementation; ACID Properties, Upsert Advantages; Delta Engine Optimizations & Uses; Pipeline Creation: JSON Files in DBFS; Delta Tables Creation, Data Loads; Spark Cluster Settings: Auto Optimize; Auto Compact, Delta Table Optimize; JSON Files, Delta Streaming Location; Joins and Merge with Delta Tables; Incremental Loads, Delta Tables; Create & Use DWH with Databricks; Upsert (Merge) with Spark Tables; Big Data & Jupyter Notebooks; Databricks with Data Factory (ADF); Pipelines with Databricks Notebooks; End to End Implementations;

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); Handling Unstructured Data in ADF; End to End Workflows, Automations; Azure Logic Apps: Automated Workflows; Visual Designer & Prebuild Templates; Server Less Integrations in Azure; Workflow, Triggers and Actions; Managed Connectors, Integrations; ARM Template : Deployments; ARM Templates : ADF, ADLS;

ADLS with Spark Databases; Aggregations with Big Data Loads; Parameterized ETL Sources; Parameterization & Workflows; Python Notebooks to Scala; Azure SQL DB Connections; ARM Templates & JSON; Project Requirement; Project Solution, FAQs; Concept wise FAQs; Resume Guidance; Mock Interviews (1 to 1); DP 203 Certification Guidance; DP 203 Sample Papers (Latest);

Module 2: Power BI

(Applicable for Microsoft Fabric Plan B, C)

Ch 1: POWER BI INTRODUCTION

Power BI : Introduction to Analytics; Power BI Tools Suite, Advantages; Power BI : Career Options, Plan; Power BI Developer Job Role; Microsoft Data Analyst Job Role; Big Data Analyst Job Role; Power BI Data Analyst (PL 300); Data Engineer*, Power BI (DP 500 *); Artificial Intelligence (AI) Visuals; AI Enabled Power BI Features; Course - Lab Plan with Design Tools; Need for Power Query & DAX; Power BI Licensing Types; Power BI Cloud - Advantages; Power BI Report Server Advantages;

Ch 2: Basic Report Design

Power BI Eco System: Architecture; Data Sources & Types in Real-world; Report Types: Interactive, Paginated; Analytical Reports & Mobile Reports; Data Sources : File, Database, Web; Visualizations : Report Shapes; Power BI Design Tools, Requirements; Power BI Desktop Tool : Installation; Desktop Interface: Overview, Canvas; Get Data, Data View, Report View; In-Memory Xvelocity Database; Basic Visuals: Table, Tree Map; Data Labels, Legend, Category; Local Store: PBIX & PBIT Files; Data Points and Tooltips;

Ch 3: Visual Interaction, Visual Sync

Visual Interaction with Data Points; Disabling / Enabling Interactions; Edit Interactions: Format Options; Spotlight and Focus Mode; Report Export to CSV, PDF; Tooltip Options and Usage; Working with Pages in PBI; Rename, Duplicate, Hide Pages; Slicer Visual : Real-time Usage; Orientation, Selection Properties; Slicer Settings : Tiles & Slider; Single & Multi Select, Header; Number, Text, Show Summary; Date Slicer and Value Selections; Slicer List, Dropdowns & Clear; Visual Sync Limitations with Slicer;

Ch 4: Grouping & Hierarchies

Grouping : Visuals with Pdf Sources; List Grouping and Binning Options; Grouping Static / Fixed Data Values; Grouping Dynamic / Changing Data; Bin Size and Bin Limits (Max, Min); Bin Count and Grouping Options; Group with Bins & Clustering; Group, Layer with Selection Pane; Creating

Hierarchies in Power BI; Independent, Dependant Drill-Down; Drill-Down with Interactive Reports; Conditional Drilldowns, Data Points; Drill Up Buttons and Operations; Expand & Show Next Level; Dynamic Data Drills Limitations;

Ch 5: Filters & Bookmarks

Filters : Types and Usage in Real-time; Visual Filter, Page Filter, Report Filter; Basic, Advanced and TOP N Filters; Category and Summary Level Filters; Data / Drill Options, DrillThru Filters; Keep All Filters" Options in DrillThru; CrossReport Filters, Include, Exclude; Drill-thru Filters, Page Navigations; Bookmarks : Report Navigations; Buttons, Images with Actions; Selection Pane, Actions, Text URLs; Show Data and See Records; Custom Tooltips, Table Visual; Table Vs Matrix : Drill-downs; Styles, Cell Properties, Databars; Conditional Formatting, Divergent;

Ch 6: Big Data Access, Visuals

OLTP Databases, Big Data Sources; Azure Database Access, Reports; Import, Direct Query & Dual Mode; Data Modeling: Do Not Summarize; Data Modeling: Currency, Relations; Power BI Architecture, Eco System; Power BI Interface for Reports; Stacked Chart, Clustered Chart; Line Chart, Area Chart, Bar Chart; 100% Stacked Bar & Column Chart; Map Visuals: Tree, Filled, Bubble; Small Multiples, Legends, Axis; Cards, Funnel, Table, Matrix; Scatter Chart : Play Axis, Labels; Waterfall Chart, Multi Row Cards;

Ch 7: POWER QUERY LEVEL 1

Power Query M Language Purpose; Power Query Architecture and ETL; Data Types, Literals and Values; Power Query Transformation Types; Table & Column Transformations; Text & Number Transformations; Date, Time and Structured Data; let, source, in statements @ M Lang; Get Data, Table Creations and Edit; ETL Operations with Power Query; Merge Transformations in Power BI; Join Kinds: Inner, Outer & Apply; Union All Transformation & Appends; Power Query Editor, Step Edits; Close & Apply Options. Report Design;

Ch 8: POWER QUERY LEVEL 2

Query Duplicate, Query Reference; Group By and Advanced Options; Aggregations with Power Query; Transpose, Header Promotion; Reverse Rows and Row Count; Data Type Changes & Detection; Replace Columns: Text, NonText; Advanced Query Edit Options; Replace Nulls: Fill Up, Fill Down; Pivot, Unpivot Transformations; Move Column and Split Column; Extract, Format and Numbers; Date & Time Transformations; Derive Year, Quarter, Month, Day; Add Column : Query Expressions; Query Step Inserts and Step Edits;

Ch 9: POWER QUERY LEVEL 3

Big Data Loads : Parameter Queries; Creating Parameters in Power Query; Parameter Data Types, Default Lists; Static & Dynamic Lists: List Queries; Convert Tables to Lists, Use Cases; Linking Parameters to Queries; Testing Parameters with Canvas; Multi-Valued Parameter Lists; Creating Lists in Power Query; Converting Lists to Table Data; Invoke Function, Type Conversions; Function Query & Parameter List; Columns From Examples, Indexes; Conditional Columns, Expressions; Disable / Enable Data Loads;

Ch 10: POWER BI CLOUD - 1

Power BI Cloud Components; App Workspaces, Report Publish; Reports & Related Datasets Cloud; Creating New Reports in Cloud; Report Publish, Report Uploads; Report Edits and New Reports; Report Actions: Downloads; Dataset Usage Options in Cloud; Dashboards Creation and Usage; Pining Visuals and Report Pages; Visual Pin Actions in Dashboards; Dashboard & LIVE Interactions; Media Tiles: Images, Custom Links; Q & A Option with Dashboards; Pin with Q & A; Standard Visuals;

Ch 11: POWER BI CLOUD - 2

Report Actions : Share, Subscribe; Report Actions : Lineage, Embed; Report Actions : Export Options; Report Actions : Public User Access; Dashboard Actions : Share, Subscribe; Dashboard Actions : Themes, Lineage; Dashboard Actions : Share, Subscribe; Favorite, Insights, Embed Code; Gateways Configuration, PBI Service; Gateway Types, Cloud Connections; Gateway Cluster, Add Data Sources; Data Refresh : Manual, Scheduled; Power Query Parameters, Gateways; DataFlows, Power Query in Cloud; Lineage, Share, Subscribe, Insights; Performance Inspector& Gateways;

Ch 12: POWER BI CLOUD - 3

Workbooks : Excel Online & Pins; Power BI Apps: Creation & Usage; Power BI Segments, Content; Navigation Screens, Audience; App Publish, Verification & Edits; Export, Share & Subscribe; List View & Lineage View Options; Power BI Scorecards: Realtime Use; Paginated Reports - Design & Usage; Power BI Report Builder Tool; Microsoft Report Builder Tool; Report Builder : Datasets, Charts; Report Builder : Bar Charts, Fields; Report Builder : Creating RDL Files; Paginated Reports : Deployments;

Ch 13: DAX Functions - Level 1;

DAX : Importance in Real-time; DAX Data Types, Syntax Rules; DAX Measures and Columns; ROW Context and Filter Context; Operators, Special Characters; DAX Functions, Vertipaq Engine; DAX Cheat Sheet : Expressions; Data Analytics with DAX; DAX Measures : Expressions; ISBLANK, IF, IN, SUM; SUMX, AVG, AVERAGEX; Data Models: Fact, Dimensions; Detecting Relations for DAX; Star & Snowflake Schemas; Data Modeling Options in DAX;

Ch 14: DAX Functions - Level 2

Quick Measures in Power BI; Average and Filtered Average; Running Totals, EARLIER(); RELATED, COUNTROWS; CALCULATE Function Conditions; ALL Members Scope & IN; Account and Time Calculations; Star Rating, DAX Expressions; Data Modeling Options in DAX1:1, 1:M and M:1 Relations; Working with Facts & Measures; Modeling : Missing Relations; Relationships & Importance; Modeling : Relation Management; Modeling with Multiple Keys;

Ch 15: DAX Functions - Level 3

DAX : Variables and Expressions; Dynamic Expressions, RETURN; Current Value, Previous Value; SELECTED VALUE, Joins; FORMAT Function with DAX; RELATED, Joins in DAX; DAX Expressions with SQL DB; Time Intelligence Functions; Date Dimension : Generation; CALENDAR(), DATESYTD(); TOTALYTD, TOTALQTD; TODAY, DATE, DAY with DAX; SELECTEDVALUE, FORMAT; Date, Time and Text Functions;

Ch 16: DAX Functions - Level 4

RLS: Row Level Security; Data Models in Power BI Desktop; DAX Roles Creation and Testing; DAX Expressions & Operators; PBIX Uploads: Power BI Cloud; Dataset Security with DAX Roles; Entity Sets and Slicing in DAX; Dataflows with Power BI; Analytical Reports - DAX Usage; Creating Data Models with DAX; Datasets in Excel and Dashboards; Using Excel Analyzer in Power BI; Power BI Data Source in Excel; Connection Strings and Refresh; Analytical Reports - Limitations;

Ch 17: Power BI Report Server

Power BI Report Server Config; SQL Server Instance Verifications; Report Server DB, Temp Database; Webservice & WebPortal URL; Uploading Interactive Reports; End User Report Share (pdf); Power BI Desktop RS Tool; Interactive Reports: Report Server; Mobile Reports : Design Options; Mobile Reports : Grids, Elements; Mobile Reports : Uploads, Edits; Paginated Reports : Deployments; Paginated Vs Interactive Reports; Paginated Vs Analytical Reports; Paginated Vs Mobile Reports; Power BI Report Server Vs Cloud;

Ch 18: Power BI Admin & AI

Power BI Cloud Management; Power BI Admin : Alerts; Workspace Management, Users; Security: Report, Dataset Levels; Security: Dataset, App Levels; Security: Workspace Options; PBI Performance Inspector; Power BI & Artificial Intelligence; Power BI & CoPilot Add-Ins; AI Visuals & Big Data Analytics; Smart Narrative and Q & A; Infographics, Icons and Labels; Key Influencer Visual in Power BI; Metrics Visual, Performance; Paginated Reports Visual;

Power BI: Real-time Project

Phase 1 : Basic Report Design

Project Requirement Analysis; Requirement Gathering, FSA; Report Design with Excel; Basic Data Modelling ; Infographics, Histograms; Analytics and Formatting;

Phase 2 : SME Level

Report Design with SQL DB; SQL Database : Joins, Views; Dual Storage Mode, SQL Queries; Data Modeling, Power Query; Dynamic Connections, Azure DB; Parameters and M Lang Scripts;

Phase 3: Deployments (Cloud, Server)

DAX Requirements, Analysis; Cloud and Report Server; Custom Visualizations; 3party Visuals & REST API; Project FAQs and Solutions; One - One Resume, Mock Interview;

Module 3: Microsoft Fabric

(Applicable for Microsoft Fabric Plan B, C)

Ch 1 : Fabrics Introduction

Big Data Analytics with Azure; Products and Services in Analytics; Microsoft Fabric - One Umbrella; Microsoft Fabric - Advantages; Unified Data Foundation; AI Powered Capabilities; OneLake:

Storage; Synapse: Engineering, Warehouse; Synapse: Data Science, Analytics; Power BI: Business Intelligence; Action platform; Data Activator; Governance; Purview;

Ch 2 : Fabric Licenses, Capacity

Fabric Workspace : Licensing; Fabric Components & Tenant; Organizational Licenses; Capacity, PPU and SKUs; Individual Licenses: Free, Pro; SKU Types: Azure & Office 365; Fabric Workspace : Activation; GUI: Walk Thru Options; Data Factory, Synapse Options; Power BI & Streaming Objects; Creating Fabric Capacity; Pause / Resume Capacity;

Ch 3: Lakehouse Concepts

What is Lakehouse?; How to configure LakeHouse?; Lakehouse Explorer Tool; Interacting with Lakehouse Items; Pipelines and Notebooks; Spark Jobs and Dataflows Gen 2; Using Lakehouse Explorer; Main View and Ribbon Area; Table Section, File Section; Data Load Options to Lakehouse; SyMS and Unidentified Area; Landing Zone, Data Processing;

Ch 4: Data Loads with Lakehouse

Large Scale Data Analytics; Onelake Metastore & Use; Workspace & LakeHouse; Lakehouse Explorer: Tables, Files; File Upload : Header, Data Types; Explorer Shortcuts in Lakehouse; File Data Load to Tables; SQL Queries in Tables; Lakehouse to SQL Endpoint; Transaction Audit: `_delta_log`; Aggregations, Visual Queries; Reports and Data Models;

Ch 5: Fabric Data Factory - 1

Fabric Data Factory & ETL; Data Ingestions & Orchestrations; Dataflows and Pipeline Options; AI Based Transformations; Data Flows: Low Code Interface; Power Query : Advantages; Pipeline Design: Copy Data; Compute and Optimizations; Connections & Datasets; Pipeline Activity: Options; Column Mapping & ETL; Canvas : Debug & Monitoring;

Ch 6: Fabric Data Factory - 2

Fabric Studio: Copy Data Activity; Copy Assistant : Usage Options; Connections & Linked Services; serialization/deserialization; compression/decompression; Colum Mapping & Conversions; Activity Timeouts, Retries; Secure Input / Output Options; Column Mapping & Settings; Fabric Pipelines: Copy Methods; Existing Pipeline Edits, Publish; Pipeline Monitor & Logging;

Ch 7: Fabric Data Factory - 3

Fabric Studio: Data Flow Activity; Spark Clusters : Automations; Spark Cluster Debugging; Spark Cluster Sizing, Capacity; Lakehouse Table: ETL Process; ADLS File Connectors; Power Query Transformations; Power Query Profiling; In-Memory Processing, M Lang; Data Flow Optimizations; Partition Options & Tuning; Broadcast Options & Tuning;

Ch 8: Fabrics & Spark Clusters

Apache Spark Configurations; Data Engineering/Science; Sark Compute & Capacity; Node Family Settings; Memory Optimized; Transaction Optimized; Runtime Versions, Scaling; Notebooks, Concurrency; Python Libraries in Spark; Dataframes & Realtime Use; Spark SQL Queries & Data Loads; Data Visualizations & Spark;

Ch 9: Fabric Notebooks

Spark Jobs for ETL; Spark Dataframes for ETL; Inferring & Explicit Schema; pyspark.sql.types; pyspark.sql.functions; Filter, Group Data Frames; Dataframe Storage, Partition; Spark Catalog : Objects; TempView in Spark Catalog; Spark SQL API & Visualizations; Graphic Packages: PyPlot; Big Data Analytics with Spark;

Ch 10: Synapse Warehouse - 1

Fabric Datawarehouse; DWH Creation Options; Sensivity Settings; Warehouse Compute; SSMS Connections; ADS Connections; Table Creations; Warehouse Sample; Data Load Options; Warehouse Query Options; Data Aggregations; Data Analytics;

Ch 11: Synapse Warehouse - 2

Fabric Security Options; Warehouse Security Model; Warehouse Access Model; Fabric Workspace Roles; Item Permissions; Object Level Security; Sharing Warehouse; SQL Permissions; Read, Connect; SQL endpoint data; ReadAll & Build; Grant, Revoke, Deny;

Ch 12: Synapse Warehouse - 3

Zero Copy Clone in DWH; Table Clone in Synapse; Table Clone Inheritance; Create Table As Clone; Table Cloning Scenarios; Cloning : Limitations; Warehouse Performance; Statistics : Creation, Use; Leverage Stats in DWH; In-Memory & SSD Cache; Disk Cache, Important DMVs; Cold Cache & Management;

Ch 13: Synapse Realtime Analytics

Realtime Analytics in Fabric; Streaming & Time Series Data; Capture, Transform & Route; Ingest, Load and Stream; Data Integration At Scale; Creating KQL Databases; KQL Tables, Queries; BLOB Data Ingestions; Data Loads & Fabric Studio; Command Viewer Options; Partialial Data Preview; Data Exploration;

Ch 14: OneLake Concepts

Unified Data Lake in Fabric; Warehouse and Lakehouse; One Lake Workspace Management; Azure HD Insight : Security; DFS API and Connections; Fabric Workloads & Tuning; Onelake File Explorer; One Copy of Data, Data Engines; Compute and Analytics; Uni Management & Governance; Creating Lakehouse with Onelake; Data Loads with Lakehouse;

Ch 15: Microsoft Fabric with Power BI

Using Power BI with Fabric; OneLake Connections with Power BI; Power BI Desktop with Fabric; Power BI Desktop with OneLake; Power BI Desktop with LakeHouse; Power BI Desktop with Synapse; Power BI Cloud with OneLake; Power BI Datasets (LIVE); Power BI Datamarts and Usage; Dashboards with Fabric Metrics; Unified Data Foundation : OneLake; End to end Implementation Plan;

Module 4: Database Basics, SQL, T-SQL Queries

(Applicable for Microsoft Fabric Plan C)

Ch 1: DATABASE INTRODUCTION

Databases Introduction & Purpose; Database Types : OLTP, DWH, OLAP; Microsoft SQL Server Advantages, Use; SQL Server Components and Usage; Microsoft SQL Server - Career Options; Developer, DBA, Data Engineer; Data Analyst, Data Scientist Careers; SQL : Purpose, Real-time Usage Options; SQL Versus Microsoft T-SQL [MSSQL]; Course Plan, Real-time Project, Resume; 24 x 7 Online Lab for Remote DB Access; Versions and Editions of SQL Server; SQL Server Pre-requisites : S/W, H/W; System Configuration Checker Tool;

Ch 2: SQL SERVER INSTALLATION

SQL Server & SSMS Installation Plan; SQL Server Pre-requisites : S/W, H/W; SQL Server 2022 & 2019 Installation; Database Engine Feature, OLTP; Instances : Types and Properties; Default Instance, Named Instances; Service and Service Account Use; Authentication Modes and Logins; Windows Logins and SQL Logins; SQL Server Management Studio; Server Connections with SSMS Tool; Local and Remote Connections; System Databases: Master and Model; MSDB, TempDB, Resource Databases;

Ch 3: SSMS Tool, SQL BASICS - 1

Creating Databases: Files [MDF, LDF]; Creating Tables in User Interface; Data Insertion & Report in User Interface; SQL : Purpose and Real-time Usage; SQL Versus T-SQL : Basic Differences; DDL, DML, SELECT, DCL and TCL; Creating SSMS Sessions : SPID; Create, Connect Databases using SQL; Creating Tables with INT, CHAR; Data Storage, Inserts - Basic Level; Table Data Verifications with Select; SELECT Statement for Table Retrieval; Identify Databases and Tables; Identify Sessions and Session ID;

Ch 4: SQL BASICS - 2

Creating Tables: VARCHAR, FLOAT; Single Row Inserts, Multi Row Inserts; Rules for Data Insertion Statements; SELECT with WHERE Conditions; AND and OR Operators Usage; IN Operator and NOT IN Operator; Between, Not Between Operators; LIKE and NOT LIKE Operators; ORDER BY, TOP & OFFSET; Basic Sub Queries with SELECT; UPDATE Statement & Conditions; DELETE & TRUNCATE Statements; ALTER, ADD COLUMN Statements; DROP Statements: Table, Database;

Ch 5: SQL Basics - 3, TSQL INTRO

Database Objects : Tables and Schemas; Schemas : Group Tables in Database; Schemas : Security Management Object; Creating Schemas & Batch Concept; Using Schemas for Table Creation; Data Storage in Tables with Schemas; Data Retrieval & Usage with Schemas; Table Migrations across Schemas; Import and Export Wizard in SSMS; Data Imports with Excel File Data; Performing Bulk Operations in SSMS; Temporary Tables : Real-time Use; Local and Global Temporary Tables; # and ## Prefix, Scope of Usage;

Ch 6: Constraints, Index Basics

Constraints and Keys - Data Integrity; NULL, NOT NULL Property on Tables; UNIQUE KEY Constraints: Importance; PRIMARY KEY Constraint: Importance; FOREIGN KEY Constraint: Importance; REFERENCES, CHECK & DEFAULT; Candidate Keys and Identity Property; Database Diagrams and ER Models; Relationships Verification and Links; Indexes : Basic Types and Creation; Index Sorting and Search Advantages; Clustered and NonClustered Indexes; Primary Key and Unique Key Indexes; Need for Indexes - working with Keys;

Case Study 1: Database Design with Tables, Constraints, Keys & Relations

Ch 7: Joins Basics, TSQL Queries

JOINS - Table Comparisons Queries; INNER JOINS For Matching Data; OUTER JOINS For (non) Match Data; Left Outer Joins - Example Queries; Right Outer Joins - Example Queries; FULL Outer Joins: Realtime Scenarios; CROSS JOIN and CROSS APPLY; One way, Two way Comparisons; GROUP BY Queries, Aggregations; Group By Queries & Having Clause; Using WHERE & HAVING in TSQL; Joining Unrelated Tables in TSQL; Using Table Aliases, Column Aliases; Optimizing Join Queries with Indexes;

Ch 8: Group By, Views & Excel

Group By with Joins in TSQL; Query Execution Order & Aliases; Joins with Sub Queries, Formatting; Joins with Sub Queries, Conditions; Joining 2 and 3 Tables, Aliases; Joining more than 3 Tables; Query Execution Order in TSQL; Database Objects: Overview & Usage; Views: Types, Usage in Real-time; Creating, Executing & Verifying Views; Storing Queries in Database Views; MS Excel with SQL Server (ODC); Excel Analytics - Joins & Views; Excel Office Data Connection Reports;

Ch 9: Functions, Procedures Basics

Functions with SQL Server, TSQL; Scalar, Inline, Table Functions; Variables: Declare, Real-time Use; Creating, Executing Functions; Functions for Computations; Functions for Parameterized Joins; Procedures: Usage in Real-time; Using Parameters in SQL Server; Parameterized Joins in TSQL; Compilation with Stored Procedures; sp_help, sp_helptext, sp_helpindex; sp_helpdb, sp_rename, sp_recompile; System Views For Metadata Audits; DBID, DBName, ObjectID, ObjectName;

Ch 10: TRIGGERS & TRANSACTIONS

Triggers - Purpose, Real-world Usage; FOR/AFTER Triggers - Real time Use; INSTEAD OF Triggers - Real time Use; INSERTED, DELETED Memory Tables; Using Triggers for Data Replication; Enable Triggers and Disable Triggers; Database Level, Server Level Triggers; Transactions : Types, ACID Properties; Transaction Types and AutoCommit; EXPLICIT & IMPLICIT Transactions; COMMIT and ROLLBACK Statements; Batch Concept and Go Statement; Open Transactions in Real-time; Using Conditional Commits, Rollbacks;

Ch 11: Normal Forms, Remote Joins

First Normal Form and Atomicity; Third Normal Form & MVD Property; Boycee-Codd Normal Form : BNCF; Fourth Normal Form : Advantages; 1:1, 1:M, M:1, M:M Relationship Types; Self Reference Keys and 4 NF Usage; TSQL Self Joins, Correlated Queries; Linked Servers Configurations, RPC; Linked Servers, Remote Joins in TSQL; 2 Part, 3 Part, 4 Part Naming Styles; Remote Joins Queries and Aliases; UNION and UNION ALL Operator; Data Types: Numerical, Text Types; Date & Time Functions, DateAdd;

Ch 12: TSQL Queries, Cursors

IIF() Function with SELECT Query; CASE. WHEN..THEN..ELSE; WHEN MATCHED, NOT MATCHED; Incremental Loads, Upsert Statement; Stored Procedures: Merge Statement; Window Functions: Rank, Dense Rank; Row_Number, PartitionBy in TSQL; Duplicate Row Identification, Deletion; Grouping, Cube, Rollup, Lag, Lead; String Functions, Concat, SubString; Cursors - Basics, Data Operations; Cursors - Life Cycle & Declaration; Cursors Types, FETCH Operations; Cursors - Deallocate, Real-world Use;

Case Study 2: Joins with Group By, Sub Queries, Views, Excel Analytics

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