

# SQL School <sup>TM</sup>

## Quality Training Assured

### SQL DBA TRAINING

Complete Practical; Real-time Job Oriented Training

#### Training Plans

|  | PLAN A           | PLAN B                 | PLAN C                               |
|--|------------------|------------------------|--------------------------------------|
| Description  | SQL DBA          | SQL DBA +<br>Azure DBA | SQL DBA +<br>Azure DBA +<br>Power BI |
| Course Curriculum                                    | Chapters 1 to 27 | Chapters 1 to 38       | Chapters 1 to 56                     |
| Completely Practical, Real-time                      | ✓                | ✓                      | ✓                                    |
| SQL Server, DB, Agent Architecture                   | ✓                | ✓                      | ✓                                    |
| Query Tuning, Ticketing, 3 <sup>rd</sup> Party Tools | ✓                | ✓                      | ✓                                    |
| DB Repairs, Security Management                      | ✓                | ✓                      | ✓                                    |
| Migrations, Updates, Upgrades                        | ✓                | ✓                      | ✓                                    |
| Clustering & Always - On Availability                | ✓                | ✓                      | ✓                                    |
| HA - DR, Clustering, Always-On (AAG)                 | ✓                | ✓                      | ✓                                    |
| New Features: SQL 2016, 2017, 2019                   | ✓                | ✓                      | ✓                                    |
| SLA-OLA Reports, Incident Management                 | ✓                | ✓                      | ✓                                    |
| Azure SQL Database Migration (Admin)                 | X                | ✓                      | ✓                                    |
| Azure SQL DB Security and HA-DR                      | X                | ✓                      | ✓                                    |
| Azure Power Shell and Azure CLI                      | X                | ✓                      | ✓                                    |
| LINUX and Windows Virtual Machines                   | X                | ✓                      | ✓                                    |
| <b>MCSA Certification Exams : Guidance</b>           | X                | ✓                      | ✓                                    |
| Azure Data Access for Data Analysis                  | X                | X                      | ✓                                    |
| Basic to Advanced Data Analytics, Reports            | X                | X                      | ✓                                    |
| Power BI Design, Data Modeling, Security             | X                | X                      | ✓                                    |
| Power BI Cloud Administration, Gateways              | X                | X                      | ✓                                    |
| Power BI Report Server Administration                | X                | X                      | ✓                                    |
| Gateway Management, Administration                   | X                | X                      | ✓                                    |
| <b>TOTAL DURATION</b>                                | 6 Weeks          | 9 Weeks                | 13 Weeks                             |

**Trainer : Mr. Sai Phanindra T** : 15+ Yrs of Real-time Exp. Profile @ [linkedin.com/in/saiphanindra](https://www.linkedin.com/in/saiphanindra)

# SQL DBA Training Course Plan

| Training Module   |   | Dur | SQL DBA Plan A | SQL DBA Plan B | SQL DBA Plan C |
|---|---|-----|----------------|----------------|----------------|
| Module 1  | Core SQL DBA [HA-DR, AlwaysOn, Errors, Upgrades]            | 6 W | ✓              | ✓              | ✓              |
| Module 2  | <b>Azure SQL DBA</b> [Migrations, HA-DR, PowerShell, Linux] | 3 W | X              | ✓              | ✓              |
| Module 3  | <b>Power BI</b> Report Design, Cloud & Server Admin         | 4 W | X              | X              | ✓              |
| <b>Total Duration [Including Real-time Project, Resume]</b> |   |     | <b>6 W</b>     | <b>9 W</b>     | <b>13 W</b>    |

## Module 1: CORE SQL DBA

**Includes:** Basics, Architecture, Jobs, Security, Errors, Solutions, HA-DR, Always-On, Upgrades, SLA-OLA

|   |
|---|
| <p><b>Chapter 1: INTRODUCTION, INSTALLATIONS</b></p> <p>Introduction to Databases, DBMS; Microsoft SQL Server : Advantages, Use; Versions and Editions of SQL Server; SQL DBA Job Roles, Responsibilities; Routine Maintenance DBA Activities; Emergency SQL DBA Activities; SQL Server Pre-requisites : S/W, H/W; SQL Server 2019/2017/2016 Installation; Default Instance, Named Instances; Port Numbers, Instance Differences; Service and Service Account Use; Authentication Modes and Logins; Firewall Configuration in Real-time; SQLServr.exe &amp; SQLBrowser.exe;</p> |
| <p><b>Chapter 2: SSMS TOOL, SQL BASICS - 1</b></p> <p>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 &amp; Storage; SQL : Real-time Usage; DDL, DML, SELECT, DCL and TCL Statements; Data Storage, Inserts - Basic Level; SELECT; Table Data Retrieval; Limitations with SSMS GUI Options;</p>   |
| <p><b>Chapter 3: SQL BASICS - 2</b></p> <p>Creating Databases &amp; 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 &amp; TRUNCATE; Logged and Non-Logged Operations; ADD, ALTER and DROP Statements; Aliases and Batch Statements;</p>   |
| <p><b>Chapter 4: SCHEMAS, TEMPORARY TABLES</b></p> <p>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; # &amp; ## Prefix; Temporary Vs Permanent Tables;</p>   |
| <p><b>Chapter 5: CONSTRAINTS &amp; INDEXES BASICS</b></p> <p>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 &amp; Increment; Database Diagrams; Relationships Verification; Indexes : Basic</p>  |

Types and Creation; Clustered and Non Clustered Indexes; Primary Key and Unique Key Indexes;

### **Chapter 6: JOINS and AUDITS**

JOINS - Table 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 and Two Way Comparisons; "ON" Conditions; Join Unrelated Tables; NULL, IS NULL in Joins; CROSS JOIN and CROSS APPLY; Join Options: Merge, Loop and Hash Joins; Performance Advantages;

### **Chapter 7: VIEWS, PROCEDURES, FUNCTIONS BASICS**

Views : Types, Usage in Real-time; System Predefined Views and Audits; Listing Databases, Tables, Schemas; Functions : Types, Usage in Real-time; Scalar, Inline and Multi-Line Functions; System Predefined Functions, Audits; DBId, DBName, ObjectID, ObjectName; Variables & Parameters; User & System Predefined Procedures; Parameters; Sp\_help, Sp\_helpdb and sp\_helptext; sp\_pkeys, sp\_rename and sp\_help; When to use Which Database Objects;

### **Chapter 8: TRANSACTIONS, LINKED SERVERS**

Linked Servers and Real-time Usage; Creating Linked Servers in SQL Server; Security Options and Access Options; Data Access, RPC and RPC Out Settings; Linked Servers for Remote Joins; Using Aliases with Linked Servers; Table Data Replication using Triggers; Transactions : Types, ACID Properties; Transaction Types and AutoCommit; EXPLICIT & IMPLICIT Transactions; COMMIT and ROLLBACK; Open Transaction Scenarios & Cause; Query Blocking Scenarios @ Real-time; NOLOCK and READPAST Lock Hints;

### **Chapter 9: SERVER ARCHITECTURE, DB ARCHITECTURE**

Server Architecture and Protocols; Database Engine and Query Processor; Parser, Optimizer, SQL & DB Manager; Storage Engine Components, SQL OS; Transaction Services, Buffer Manager; Lock Manager, IO Manager, MDAC;CLR, WAL, Lazy Writer, Checkpoint; Database Architecture - Data Files; Database Architecture - Log Files; Primary (mdf), Secondary Files (ndf); Filegroups; ReadOnly Filegroups; Database Files : Size, Location; Pages, Extents. Uniform, Mixed Extents; Transaction Log File [LDF], LSN, VLF;

### **Chapter 10: BACKUPS - DB, FILE, FILEGROUP**

Database Backups; Filegroup Backups; Log File Backups; COPY\_ONLY Backups; Mirror Backups; Split Backups; FORMAT; Partial Backups and Backup Media Files; UNLOAD; INIT; FORMAT; VERIFY; SKIP; Compression; Checksum; RetainDays; Stats; ContinueOnError and Backup Validations; Backup History Tables in MSDB – Joins; Backup Audits. HOT and COLD Backups; Backup Devices Usage; Database Recovery Models; **Common Errors and Solutions**

### **Chapter 11: RESTORES & DB RECOVERY**

Restore Phases – COPY, REDO, UNDO; RECOVERY and NORECOVERY Options; STANDBY; REPLACE Options in Restores; File; File Group and Meta Data Restores; Backup Verifications using GUI; Scripts; FILELISTONLY and VERIFYONLY Options; HEADERONLY; STATS; UNLOAD; STOPAT; PARTIAL / PIECEMEAL Restores – Use; Tail Log Backups. UNDO; REDO Phases; Restores using GUI and T-SQL Scripts; MOVE Options for File Level Restores; Point-In-Time Restore; Checkpoint LSN; Standby Restores and Read-Only State; **Common Errors and Solutions**

### **Chapter 12: JOBS, MAINTENANCE PLANS**

SQL Server Agent Service & Agent XPs; SQL Agent Jobs - GUI; Script Creations; Job Steps - Creation; Edits

and Parse; Job Executions; Disable/Enable Options; Job History Purge. Job Activity Monitor; Database Maintenance - Backup Jobs; Maintenance Plans; Backup Cleanup & History Cleanup Jobs; Backup Strategies For Minimal Data Loss; Backup Options: Block Size; Transfer Size; DB Mail Configurations and Alert System; DB Mail Profiles; SMTP Email Accounts; Operators; Job Notifications

### **Chapter 13: SECURITY MANAGEMENT**

Authentication Types & Modifications; Windows Logins & SQL Server Logins; Logins - Users Mapping, DB Access; Server Roles & Database Roles - Usage; Object, Column and Schema Security; GRANT, WITH GRANT, DENY, REVOKE; CONTROL, OWNERSHIP, Authorization; Data Encryption: Keys and Certificates; Job Security : Credentials and Proxies; Using Proxies for SSIS Jobs, Repl Jobs; Detecting and Resolving Orphan Users; Containment Databases; Security Scripts; DMVs for Security Audits, Orphan Users;

### **Chapter 14: DATABASE MIGRATIONS, INCIDENT MANAGEMENT (IM)**

CDW : Copy Database Wizard @ SSMS; Database Detach and Attach Options; FORATTACH, sp\_single\_file\_attach\_db; SMO Method and Database Scripting; CDW SSIS Packages, SSIS Proxies Use; Scheduling Database Migration Jobs; Database Migrations & Orphan Users; SLA and OLA Process For SQL DBAs; Ticketing Tools, Priority Tickets; Immediate, High, Normal Priorities; Impact, Urgency and SLA Metrics; Licensing and Pricing Options; Versions, Editions Comparisons;

### **Chapter 15: Tuning 1 - AUDITS & INDEXES**

Audit Long Running Queries @ DMVs and DMFs; Activity Monitor and Query Statistics; Logical I/O, Physical I/O, Database I/O, Wait Time; Recent Expensive Queries, Active Expensive Queries; Plan Handle & Execution Time; Server Dashboards; Query Store - Settings and Advantages. Options; Indexes: Architecture; B Tree Structure, IAM [Root]; Clustered & Non Clustered; Included, Column store, Online; Filtered, Covering, Indexed Views; Fill Factor & Pad Index;

### **Chapter 16: Tuning 2 - PARTITIONS, INDEX MANAGEMENT**

PARTITIONS Mechanism : Advantages, Performance; Partition Functions and Partition Schemes ; Partitioning Un-partitioned Tables; Partition Compression: ROW, PAGE; Statistics : Auto Creation & Updates; Index Management : Internal, External Fragmentation; Fragmentation Audits : DMFs and Thresholds; Index Reorganization and Index Rebuild Options; Database Maintenance Plans (DMP) For Index Reorg; Page Count, Last Used. Fast, Sampled / Detailed Scan; Statistics & Index Management : Degree Of Parallelism; Resumable Indexes: ONLINE, RESUME; PAUSE & RESUME in Index Rebuilds;

### **Chapter 17: Tuning 3 - TUNING TOOLS, LOCKS, ISOLATION LEVELS**

Tuning Tools; SQL Profiler - Tuning Template; DTA Tool; Perfmon Counters; Index Scan, Index Seek, Tables Scan, Spooling; Query Costs : IO, CPU Cost, SubTree Cost, Operator Cost; NUMA Nodes, IO Affinity; Parameter Sniffing; Execution Plan; Shared (S), Intent Shared (IS); Exclusive (X), Intent Exclusive (IX); Update (U), Metadata Lock (MD); Schema Lock; SP\_WHO2, SP\_LOCK, sysprocesses; Isolation Levels - Read Committed, Read Uncommitted; Serializable, Snapshot, Repeatable Read; Read Committed Snapshot; Deadlock Simulation, Prevention & Avoidance;

### **Chapter 18: HEALTH CHECKS, REAL-TIME ISSUES & SOLUTIONS**

Alerts : Creation and Notifications; DB Suspect Event Alerts (023); Perfmon Counters for Alerts; Log Space, Memory, Tempdb Alerts; Scheduling Alerts & Notifications; Allocation Errors, Consistency Errors;

DBCC ShowContig, Extent Fragmentation; Trace Flags and EstimateOnly; DBCC Page: GAM, SGAM and PFS; Consistency Errors : Cause & Solutions; Allocation Errors : Cause and Solutions; Log Space Issues and Log Rebuilds; Memory & TempDB Issues, Solutions; DBCC ShrinkDB and Page Restores;

## MOCK INTERVIEW - 2

### Chapter 19: REPLICATION For HA - LEVEL 1

Replication Architecture and Topology; Publication Types - Purpose; Importance; DB Articles; Publications; Subscriptions; Distribution DB Configuration; Snapshots; Snapshot Replication and Repl Agents; Adding Articles to Existing (LIVE) Replica; PUSH; PULL Subscriptions. N/W Shares; Transactional Replication Configuration; Log Reader Agent - Configuration; Keys; Tracer Tokens Latency; Ranking Options; Replication Monitor - Usage; Replication Warnings and Agent Alerts;

### Chapter 20: REPLICATION For HA - LEVEL 2

Merge Replication and Merge Agent Job; Replication Conflicts and ROWGUIDCOL; Subscription Reinitialization; Expiry Setting; Server Subscription & Client Subscription; Peer-Peer Replication Connections; Nodes; NodeID and Conflict Detection Options; Replication Options on Conflicts: sp\_MSRepl; sp\_changedbowner; backup initialization; Replication Conflicts and Priority; Replication Verify - Rowcount; Checksum; Disabling; Cleaning Replication; Replication Strategies for HA and DR Plan; Replication for Load Balancing; **Common Errors and Solutions**

### Chapter 21: LOG SHIPPING (HA - DR)

Log Shipping Topology for HA and DR; Primary and Secondary: Recovery Plan; Log Shipping Monitor; Jobs and Alerts; NORECOVERY Mode – Configuration; STANDBY Mode Configuration & Jobs; Log Shipping Jobs and Manual Failover; Log Shipping Mode Changes – cautions; Re-Restoring Log Backups for Recovery; LSBackup; LSCopy & LSRestore Jobs; LS Job Audits; Dashboards (Reports); TUF Files & Standby Options in LS; Broken Chains & Issues; **Common Errors and Solutions**

### Chapter 22: DB MIRRORING (HA - DR)

DB Mirroring Architecture For HA & DR; Log Shipping Versus Database Mirroring; TCP Endpoints; TCP Network Security; Heartbeat and Polling Concepts in DM; Automatic Fail-Over Procedures; Tests; PARTNER OFFLINE Conditions; Options; DB Mirroring Monitors and Commit Loads; SYNCHRONOUS & ASYNCHRONOUS; DB Mirroring & Port Configurations; Mirroring Monitor; Stop/Resume; Need for Always-On; DB Recovery without Witness.

### Chapter 23: CLUSTER CONFIGURATION

Windows Clusters For HA and DR; Domain Controller (DC) Configuration; Active Directory (AD) Accounts; Use; SAN [Storage Area Network] and LUN; Public IP Address; Private IP Address; Windows Clusters; MSCS Service; DNS Hosts - Server Manager; DNS Tools; Actions & Adding AA Hosts; SQL Clustering Service & RAID Levels; SQL Cluster Groups; Domain Accounts; Active-Active; Active-Passive Clusters; Quorum and MSDTC Disks. LUN Grows; Drains; Need for Always - On Availability;

### Chapter 24: ALWAYS ON AVAILABILITY (AAG)

Always On Availability Group [AOAG]; Synchronous and Asynchronous Modes; Policy Based Management for AOAG; Facets and Conditions for Policies; Backup Preferences; Synchronization & Automated Seeding; Data Synchronization; Port Settings; Backup Strategies; AOAG Verifications; Dashboards; Adding Availability Replica; Database; Adding Availability Listeners and DNS; Automated

Failovers; Manual Failovers; Always-On Availability Groups Health; AAA Hosts; Forward Lookup Zones;

### **Chapter 25: PATCHES, UPGRADES, CUs**

Establishing Downtime For Maintenance; Precautions for Maintenance Activities; DB Backups; Scripting and Services; Service Packs and Patch/Hotfix Activities; Cumulative Updates (CU); Hotfix Process; Instance Selectivity for Updates; Cautions; Verifications; Smoke Test and Rollbacks; SERVER Upgrades; VERSION Changes; Silent Installation & Installation Repairs; Verifications; Smoke Test and Rollbacks; System Database REBUILDS @ CMD; Silent Installation & Repairs; SQLCMD Tool, Instance Connections; DAC : Dedicated Administration Console; Service Startup Issues and Solutions;

### **Chapter 26, 27: SQL DBA PROJECT WORK**

**Routine SQL DBA Activities:** Audit Login Failures : Server Logs; Monitor Connectivity Issues; Auditing Long Running Queries; Memory Issues; PLE (Page Life Expectancy) Issues; MSDTC; Job Monitoring; Monitoring HA & DR Mechanisms; DB Refresh; Schema Refresh; Dump Files; Idle Sessions and Precautions; Index Management; Deadlock : Prevention; Monitor Server Health;

**Emergency SQL DBA Activities:** Server Down : Issues; Solutions; Database Down : Issues; Solutions; Data Synchronization : Issues; Solutions; Slow Running Queries : Issues; Solutions; Database Response : Issues; Solutions; Slow Replication : Issues; Solutions; Important Events and Errors; Hot CPU & Processor Node; Priority; CPU Thread Counts, Windows Fibers; Orphan Users; Service Startup Issues; Trace Flags; Always-On (AAG): Issues and Solutions;

## **Module 2: AZURE SQL DBA**

Includes: Azure SQL DB Architecture, Migrations, HA - DR, Security, LINUX, PowerShell, Virtual Machines

### **Chapter 28: AZURE CLOUD INTRO, CONFIGURATION**

Cloud Architecture Basics - IaaS, PaaS and SaaS; Advantages of Microsoft Cloud - Azure Platform; Azure Products and Azure Services - Marketplace; SQL Database Implementations in Azure Platform; Logical Servers, Virtual Machines, Managed Instance; Installing SSMS and Azure Data Studio (ADS) Tools; Azure Account and Free Subscriptions; Azure SQL Server (Logical Server); Firewall Settings; IP for Remote Access; Password Resets; Pricing Tiers, Access from SSMS Tool;

### **Chapter 29: DATABASE MIGRATIONS, DTU, ELASTIC QUERIES**

Data Migration and Database Migration in Azure; Azure Storage : Creation & Containers; LRS, GRS and RA-GRS Azure Storage Accounts; Storage Containers, Storage Explorer Tool; Data Migration Assistant (DMA), Assessment; Migrations To Azure SQL; DB Exports & Imports with bacpac; Schema Generation & Compatibility; DTU : Data Transaction Unit, Resource Allocations; Basic, Standard & Premium Plans For SQL DB; vCore Based Purchasing : Gen 4 and Gen 5 Types; General Purpose & Business Critical Plans; Compute Tier : Provisioned and Serverless; Bounding Box Model, Elastic Pools & Queries; eDTUs and Elastic Pool, per DB Settings; Elastic Scaling with Azure SQL Databases;

### **Chapter 30: AZURE SQL DATABASE TUNING**

Azure SQL Server Level Tuning Options; Azure SQL Database Level Tuning Options; Automated Tuning Options and Peak-Loads; Force Plan, Create Index and Drop Index; Query Performance Insight, Recommendations; IO Metrics, CPU Metrics & Query Statistics; Data File IO, Log File IO, Custom Reports; Query Level Recommendations; Azure Search Service; Azure Search; Suggester and Analyzer Index Modes for Tuning; Retrievable, Facetable, Filterable Indexes; Facetable and Searchable Indexes for Tuning; Change Tracking Options, Watermark Columns;

### **Chapter 31: XEL GRAPHS, STRETCH DATABASES**

SQL Traces : Creation; SQL Traces : Event Class, Category, Filter, Conditions; Extended Events Package, Target, Action, Session; TSQL and SP Debug Events with Global Fields; XE Objects : Catalog & Dynamic Management Views; XE Profiler - Templates for Event Profiling; Comparing XE Profiler with SQL Profiler Tool; Stretch Databases in Azure SQL Databases; Stretch Databases; Table Level Migrations; Performance Levels and DSU Pricing; Data Storage and Snapshots; Geo Backup Of Tables and Hybrid Cloud Settings; Remote Data Archive Configuration in Azure; Database Master Key [DMK], Cold Data Migration; Real-time Advantages of Stretch Databases;

### **Chapter 32: ALERTS, AZURE BACKUPS & RESTORES**

Azure SQL Server Activity Log and Options; Events, Operations and Event Categories; Quick Insights from Events and Filters; Events Exports to Event Hub, Log Analytics; Log Analytics Workspace, Alert Rules; Email / SMS Notifications and Schedules; Log Analytics Settings and Azure Storage; Activity Logs and Audit Reports, Insights; Automated Backups; Long Term & Automated Backup Retentions (bacpac); Backups - Retentions, Audits. LTR Policy; Restore Points, Database Recovery; Geo-Redundant Backups in Azure; Azure Storage Explorer For Backups; Disaster Recovery (DR) Advantages in Azure;

### **Chapter 33: AZURE HA-DR – Level 1**

Failover Groups and Active Geo-Replication; Read-Write Failover Policy, Automated Failover; Geo Replication Configurations - Azure Locations; Primary-Secondary and Read / Write Modes; Geo Replication : Monitoring and Forced Failover; Azure Server Failover Process, Strategies; Automated SQL Data Sync Service and Sync Groups; HUB, MEMBER and SYNC DATABASE; Sync Direction, Sync Schema and Sync Interval; bi-directional Load Balancing and Failover; Conflict Resolution Policy;

### **Chapter 34: AZURE HA-DR – Level 2**

Azure AlwaysOn with SQL Server Clusters; Primary Node and Secondary Node Clusters; SQL Server Virtual Machines and Settings; Domain Controller (DC) Virtual Machines; Witness File Share (WFS) Settings in DC; Azure Server Failover Process, Strategies; Adding Databases to Failover Group; Always On Health Check Reports (AOAG); Configuring and Using Azure Always-On; Load Balancing with Azure Always-On; Azure Cloud Shell - PowerShellGet, Versions; Power Shell Scripts for Configurations; Power Shell Scripts for Job Schedules; Power Shell Scripts for Firewall, ARM; Azure CLI - Purpose, Real-time Use; Command Line Interface; Azure telemetry Commands; Help, Show, Create Firewall Commands;

### **Chapter 35: SECURITY MANAGEMENT, RLS**

Firewall and Virtual Network Configurations; Server-level Firewall & Database Firewall Rules; System Stored Procedures for Firewall Settings; Logins, Users, Roles and Permissions using T-SQL; Creating Logins without Logins. Containment Users; GRANT, DENY, REVOKE, WITH GRANT Permissions; Threat Detection, Transparent Database Encryption; Vulnerability Assessment, Dynamic Data Masking;

Implementing RLS - Row Level Security; Creating Users with & without Logins; Using SECURITY Schema for RLS Functions; Creating Security Predicates and Filters; Security Policies for Row Level Security; EXECUTE AS options for RLS. STATE ON/OFF;

### **Chapter 36: AZURE VIRTUAL MACHINE - WINDOWS**

Plan for IaaS, Azure VM. Install Azure Virtual Machines; Install/Configure Windows Server, Redhat, Ubuntu; SQL Server on Azure VM - Config Settings, Elastic Pools; Resource Groups, Resource Pools and eDTUs; Verify SQL Instances in Azure VM. sysadmin Account; Azure Storage Pricing Options; DB Creation in Azure VM; Azure Virtual Machines ; Security Options; Azure SQL Database in VM to SQL Cloud; Azure SQL Database in VM to on-Prem; Deployment Automation Process, Automation; SQL Database in AWS and Google Cloud; Azure Virtual Machine; Advantages in Virtual Machines;

### **Chapter 37: AZURE VIRTUAL MACHINE – LINUX, MANAGED INSTANCES**

SQL Server on LINUX - RHEL (Red Hat Linux); Advantages of LINUX RHEL Over Windows; LINUX RHEL Security Management, Firewall; Storage, vCores and Storage Options in VM; RHEL Clusters for SQL Server on LINUX; Failover Mode and Node Majority - TCP; Deployment Models and Azure Resource Manager; RHEL Cluster Resource Manager Settings; Pacemaker and SQL Server Nodes in AG; SQL Database Managed Instance - TDE; Native Virtual Networks and Scalability; Lift - Shift LOB Applications, PaaS Infrastructure; Frictionless Migration for On-Premise; vCore Purchasing Model for Azure SQL DB; Gen 4 and Gen 5 Logical CPUs, Resource Limits; Managed Instances Vs AWS & Google Cloud; Cell Level Encryption and Always-Encrypted;

### **Chapter 38: MCSA 70-765 Guidance, Material and Sample Questions**

## **Real-time Project For your Resume, MCSA Certification Guidance**

## **Module 3: Power BI (Reports, Cloud, Server) {For SQL DBA All Plans}**

### **Chapter 39: POWER BI BASICS**

Power BI Job Roles in Real-time; Power BI Data Analyst Job Roles; Business Analyst - Job Roles; Power BI Developer - Job Roles; Power BI for Data Scientists Comparing MSBI and Power BI; Comparing Tableau and Power BI; MCSA 70-778, MCSA 70-779 Exam; Types of Reports in Real-World; Interactive & Paginated Reports; Analytical & Mobile Reports; Data Sources Types in Power BI; Licensing Plans; Power BI Training : Lab Plan; Power BI Dev, Prod Environments;

### **Chapter 40: BASIC REPORT DESIGN**

Power BI Desktop Installation; Data Sources & Visual Types; Canvas, Visualizations and Fields; Get Data and Memory Tables; In-Memory xvelocity Database; Table and Tree Map Visuals; Format Button and Data Labels; Legend, Category and Grid; PBIX and PBIT File Formats; Visual Interaction, Data Points; Disabling Visual Interactions; Edit Interactions - Format Options; SPOTLIGHT & FOCUSMODE; CSV and PDF Exports. Tooltips; Power BI EcoSystem, Architecture;

### **Chapter 41: VISUAL SYNC, GROUPING**

Slicer Visual : Real-time Usage; Orientation, Selection Properties; Single & Multi Select, CTRL Options; Slicer : Number, Text and Date Data; Slicer List and Slicer Dropdowns; Visual Sync Limitations; Disabling



Slicers; Grouping : Real-time Use, Examples; 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; Grouping Binned Data, Classification;

### **Chapter 42: HIERARCHIES, FILTERS**

Creating Hierarchies in Power BI; Independent Drill-Down Options; Dependant Drill-Down Options; Conditional Drilldowns, Data Points; Drill Up Buttons and Operations; Expand & Show Next Level Options; Dynamic Data Drills Limitations; Show Data and See Records; Filters : Types and Usage in Real-time; Visual Filter, Page Filter, Report Filter; Basic, Advanced and TOP N Filters; Category and Summary Level Filters; DrillThru Filters, Drill Thru Reports; Keep All Filters" Options in DrillThru; CrossReport Filters, Include, Exclude;

### **Chapter 43: BOOKMARKS, AZURE, MODELING**

Drill-thru Filters, Page Navigations; Bookmarks : Real-time Usage; Bookmarks for Visual Filters; Bookmarks for Page Navigations; Selection Pane with Bookmarks; Buttons, Images with Actions; Buttons, Actions and Text URLs; Bookmarks View & Selection Pane; OLTP Databases, Big Data Sources; Azure Database Access, Reports; Import & Direct Query with Power BI; Enter Data; Data Modeling : Currency, Relations; Summary, Format, Synonyms; Web & Mobile View in PBI;

### **Chapter 44: VISUALIZATION PROPERTIES**

Stacked Charts and Clustered Charts; Line Charts, Area Charts, Bar Charts; 100% Stacked Bar and Column Charts; Map Visuals: Tree, Filled, Bubble; Cards, Funnel, Table, Matrix; Scatter Chart : Play Axis, Labels; Series Clusters; Waterfall Chart; ArcGIS Maps; Infographics; Color Saturation, Sentiment Colors; Column Series, Column Axis in Lines; Join Types : Round, Bevel, Miter; Shapes, Markers, Axis, Plot Area; Data Colors; Series, Custom Series and Legends;

### **Chapter 45: POWER QUERY LEVEL 1**

Power Query Architecture and M Language; Data Types, Literals and Values; Power Query Transformation Types; Table & Column; Text & Number Transformations; Date, Time and Structured Data; List, Record & Table; let, source, in statements @ M Lang; Power Query Functions, Parameters; Invoke Functions; Get Data, Table Creations, Edit; Merge and Append Transformations; Join Kinds, Advanced Editor, Apply; ETL Operations with Power Query;

### **Chapter 46: POWER QUERY LEVEL 2**

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

### **Chapter 47: POWER QUERY LEVEL 3**

Creating Parameters in Power Query; Parameter Data Types, Default Lists; Static/Dynamic Lists For Parameters; Removing Columns and Duplicates; Convert Tables to List Queries; Linking Parameters to Queries; Parameters and PBI Canvas; Multi-Valued Parameter Lists; Creating Lists in Power Query; Converting Lists to Table Data; Advanced Edits and Parameters; Data Type Conversions, Expressions;

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|--|
| Columns From Examples, Indexes; Conditional Columns, Expressions;  |
| <p><b>Chapter 48: DAX Functions - Level 1</b></p> <p>DAX : Importance in Real-time; Real-world usage of Excel, DAX; DAX Architecture, Entity Sets; DAX Data Types, Syntax Rules; DAX Measures and Calculations; ROW Context and Filter Context; DAX Operators, Special Characters; DAX Functions, Types in Real-time; Vertipaq Engine, DAX Cheat Sheet; Creating, Using Measures with DAX; Creating, Columns with DAX; Quick Measures; SUM, AVERAGEX, KEEPFILTERS; Dynamic Expressions, IF in DAX;</p>                       |
| <p><b>Chapter 49: DAX Functions - Level 2</b></p> <p>Data Modeling Options in DAX; Detecting Relations for DAX; Using Calculated Columns in DAX; Using Aggregated Measures in DAX; Working with Facts &amp; Measures; Modeling : Missing Relations; Modeling : Relation Management; CALCULATE Function Conditions; CALCULATE &amp; ALL Member Scope; RELATED &amp; COUNTROWS in DAX; Slicing; Dynamic Expressions, RETURN; Date, Time, Text Functions; Logical, Mathematical Functions; Running Total, EARLIER Function;</p> |
| <p><b>Chapter 50: DAX FUNCTIONS - Level 3</b></p> <p>1:1, 1:M and M:1 Relations; Connection with CSV, MS Access; AVERAGEX and AVERAGE in DAX; KEEPFILTERS and CALCULATE; COUNTROWS, RELATED, DIVIDE; PARALLELPERIOD, DATEDADD; CALCULATE &amp; PREVIOUSMONTH; USERELATIONSHIP, DAX Variables; TOTALYTD , TOTALQTD; DIVIDE, CALCULATE, Conditions; IF..ELSE..THEN Statement; SELECTEDVALUE, FORMAT; SUM, DATEDIFF Examples; TOCHAPTER, DATE, CHAPTER with DAX; Time Intelligence Functions;</p>                               |
| <p><b>Chapter 51: POWER BI CLOUD - 1</b></p> <p>Power BI Service Architecture; Power BI Cloud Components, Use; App Workspaces, Report Publish Related Datasets Cloud; Creating New Reports in Cloud; Report Publish and Report Uploads; Dashboards Creation and Usage; Adding Tiles to Dashboards; Pining Visuals and Report Pages; Visual Pin Actions in Dashboards; LIVE Interaction in Dashboard; Adding Images, Custom Links; Videos &amp; Embed Links; API Data Sources; Streaming Dataset Tiles (REST API);</p>        |
| <p><b>Chapter 52: POWER BI CLOUD - 2</b></p> <p>Dashboards Actions, Report Actions; DataSet Actions: Create Report; Share, Metrics and Exports; Mobile View &amp; Dashboard Themes; Q &amp; A [Cortana], Pin Visuals; Export, Subscribe, Subscribe; Favourite, Insights, Embed Code; Featured Dashboards and Refresh; Gateways Configuration, PBI Service; Gateway Types; Gateway Clusters, Data Refresh : Manual, Automatic; PBIEngw Service; DataFlows, Power Query Expressions; Adding Entities, JSON Files;</p>          |
| <p><b>Chapter 53: EXCEL, ROW LEVEL SECURITY</b></p> <p>Import and Upload Options in Excel; Excel Workbooks and Dashboards; Datasets in Excel and Dashboards; Using Excel Analyzer in Power BI; Using Excel Publisher in PBI Cloud; Excel Workbooks, PINS in Power BI; Excel ODC Connections, Power Pivot; Row Level Security (RLS) with DAX; Need for RLS in Power BI Cloud; Data Modelling; DAX Roles Creation and Testing; Power BI Users to Roles; Custom Visualizations; Histogram, Gantt Chart, Info graphics;</p>      |
| <p><b>Chapter 54: REPORT SERVER, REPORT BUILDER</b></p>  |

Need for Report Server in PROD; Install, Configure Report Server; Report Server DB, Temp Database; Webservice URL, Webportal URL; Creating Hybrid Cloud with Power BI; Using Power BI DesktopRS; Uploading Interactive Reports; Report Builder; Report Builder For Power BI Cloud; Designing Paginated Reports (RDL); Deploy to Power BI Report Server; Data Source Connections, Report; Power BI Report Server to Cloud; Tenant IDs; Mobile Report Publisher;

**Chapter 55: MSBI INTEGRATIONS WITH POWER BI**

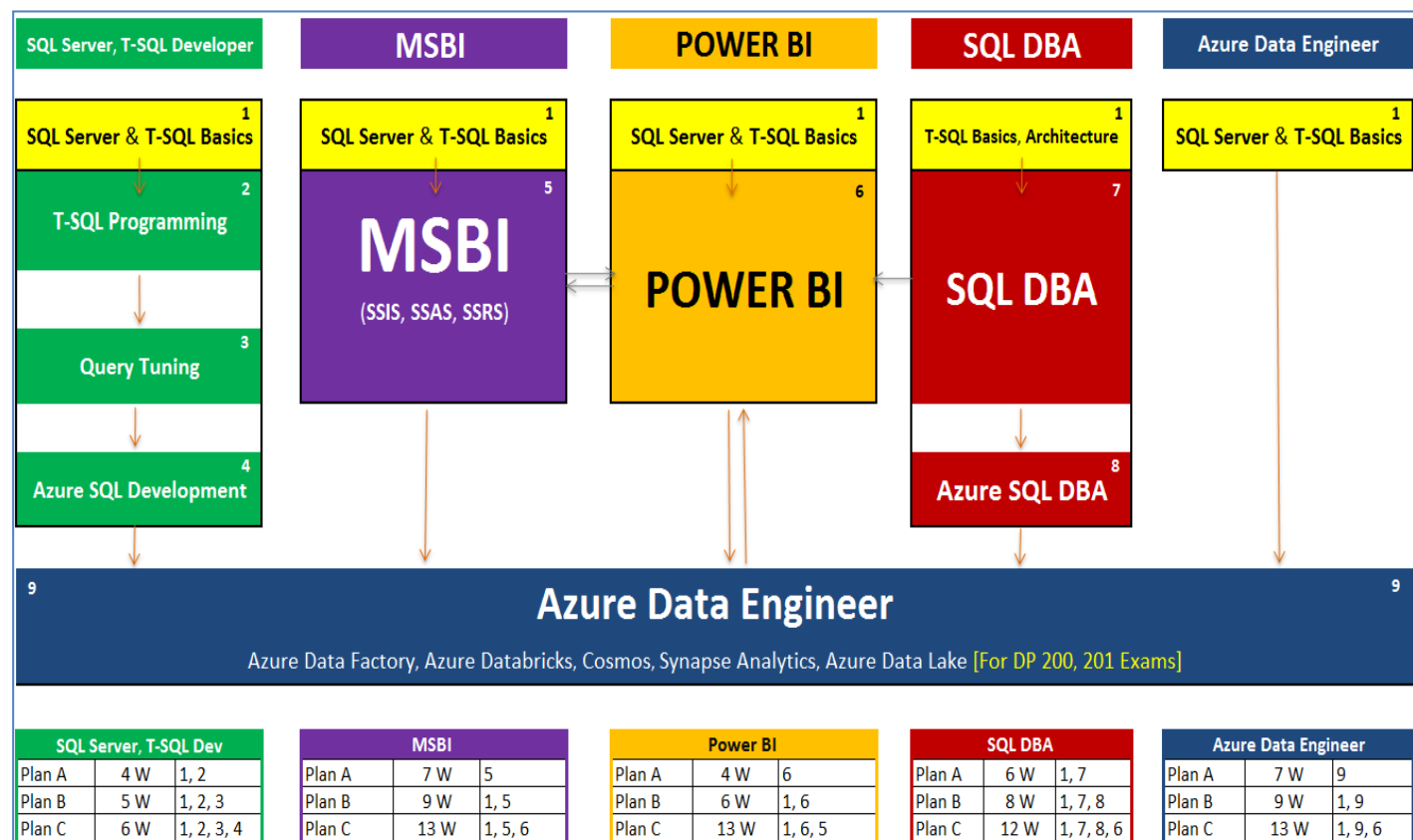
Power BI with SQL Server Source; Power BI with SQL Data Warehouse; Power BI with SSAS OLAP Server; Power BI with Azure SQL DB Source; Power BI with Azure SQL Warehouse; Power BI with Azure Analysis Server; Power BI with SSRS (RDL) Reports; Power BI Report Builder Tool; Paginated Reports Design, Use; Data Sources, Datasets, RDL; Report Publish (RDL) to Cloud; Report Verifications; Interactive Vs Paginated Reports; Configuring & Managing Alerts in Cloud;

**Chapter 56: Real-time Project [Sales & Customers]**

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