VINAY TECH HOUSE

MSBI COURSE CONTENT

Trainer NAME: **Duration: 50-60 Hours**   **FEE:**   **Demo Date:**

COMPONENT	DURATION
SSIS	18 HRS
SSAS (MULTI,TABULAR)	16 HRS
SSRS	15 HRS
DQS	2 HRS
DWH & DATA MODEL FUNDA	3 HRS
AZURE AWARENESS	2 HRS
PROJECTS (2 PROJECTS)	6 HRS
RESUME PREP, FAQS	2 HRS

SOFTWARE AND MATERIALS (FREE)

- **DEMO SOFTWARE FOR PRACTICE**
- **PRACTICAL MATERIAL CHAPTER WISE**
- **SOFTCOPY MATERIALWITH EACH TOPIC WISE THEORY, DIAGRAMS AND OPTIMIZATIONS**
- **PDFS AND PPTS WITH DIAGRAMETIC PRESENTATIONS.**
- **VIDEOS FOR MISSING CLASSES *****

BLOGS

WWW.VINAYTECHHOUSE.COM
WWW.MSBIVINAY.BLOGSPOT.IN

PROJECTS

- **BANKING PROJECT WITH GALAXY & SNOW FLAKE**
- **RETAIL PROJECT WITH STAR SCHEMA & MIXED SCHEMA (TABULAR MODEL AND SSRS PROJECT)**

IT Data Fundamentals & MSBI

- ❖ **Data, Data Availability in IT**
- ❖ **IT data storage areas**
- ❖ **Data warehouse, BI definitions and layers**
- ❖ **MSBI existence in IT, Product services**
- ❖ **MSBI Tools and Components**
- ❖ **MSBI Opportunities**

MSBI and Competitiveness

- ❖ **What are BI, MSBI, and SSBI? Importance in the current Enterprise? Competitive advantages**
- ❖ **MSBI vs Other BI tools**
- ❖ **MSBI 2019 Vs Others (2017, 2016, and older)**
- ❖ **Hardware, Software requirements & installation**

Tools& Utilities to work with MSBI

- ❖ **SSDT, BIDS , SSMS, DQS Client /Server /Installer**
- ❖ **Sqlserver Profiler, Deployment Wizards**
- ❖ **Command Line Utilities**
  - o **DTUTIL b) DTUTILEXEC c) RS**
    - ▪ **RSCONFIG e) ASCMD etc…**

Data warehousing fundamentals

- ❖ **Data definitions**
  - o **(Data, Information, BI, Mining, ODS, DSS, Analysis, OLTP, OLAP, OLCP)**
- ❖ **Dwh Characteristics, Principles**
- ❖ **Dwh approaches (Top down/Bottom up)**
- ❖ **Dwh Life Cycle steps**
- ❖ **Data Mart & Types**
- ❖ **Data Processing Types (OLAP)**
- ❖ **Granularity and various granularities**
- ❖ **Diff between OLTP and OLAP**

Dimensional Modeling Fundamentals

- ❖ **Dimension, Dimension Table & types**
- ❖ **Fact, Fact Table & measures types**
- ❖ **Fact less fact table**
- ❖ **Various schemas (Star, Snow Flake, Galaxy & Hybrid)**
- ❖ **Surrogate key and usages in real time**
- ❖ **Model, Business, Conceptual, Logical, Physical Data Models**

Real time project tables, models and tables

DATA QUALITY SERVICES [DQS-2 hours]:

Data profiling versus DQS

- ❖ **INSTALLING Data Quality Services 2012**
- ❖ **BUILDING A KNOWLEDGE BASE**
- ❖ **BUILDING KNOWLEDGE DISCOVERY IN DQS**
- ❖ **Data Cleansing in DQS**

- ❖ **Building a Matching Policy in DQS**
- ❖ **Matching Projects in DQS**
- ❖ **Activity Monitoring ,Configuration & Security**

Practical on Data Quality and Cleansing

SQL SERVER INTEGRATION SERVICES [SSIS (Basic-Advanced):15 hours]:

SSIS-2019 Logical & Physical Architectures

- ❖ **Detailed logical architecture components.**
- ❖ **SSIS Practical architecture, Solution, Project and Package creations and executions.**
- ❖ **Connection Managers, Shared Data Sources, Parameters(2012,2014,2016,2017,2019)**

Discussion on new Features in SSIS 2016 & 2019

Balanced Data Distributor, OData v4 data sources & and Bug Fixes, Data Feed Publishing Components, Polybase, Spark Integration, Row store, separate deployment portal.

Command Line Utilities Utilization

- ❖ **Various environments operations of packages using a) DTUTIL b) DTEXECUI c) DTEXEC**

ETL Operations in SSIS (Data Flow Task) (Extract, Transform and Load)

- ❖ **Objective of Dataflow and process flow**
- ❖ **In memory model and performance tips**
- ❖ **Aggregate, Data Conversion, Derived column ,Character Map, Audit, Merge, Merge Join, Union All, Sort, Multicast Conditional Split, Oledb command, Lookup Fuzzy lookup, Copy column, Pivot, Un pivot Term Extract, Term Lookup, CDC, Data Cleansing, Script Component, Checksum (2014)**

Configurations and Parameters in DWH

- ❖ **Various ways of configuring SSIS packages**
- ❖ **User interactions for incremental load**
- ❖ **Parameters and environments in Catalog DB**

SSIS ETL, Windows and Sql Server Admin tasks (Control Flow Tasks and Operations)

- ❖ **Looping usages (For Each loop, For loop and various scenarios (Files, Datasets, XMLs, Excels)**
- ❖ **Transactional operations and Parallel processing implementation using Sequence container**
- ❖ **Using File System to move, copy, create folders**
- ❖ **Execute Sql for Single, Multi SQL, Procedure, functions with Various parameters and implementing DML, DDL statements**
- ❖ **Working on Master, Child Packages using Execute Package task and variables**
- ❖ **Expression task for evaluations, iterations**
- ❖ **Using Script task for customized operations**
- ❖ **Execute process task for Zip, Exe Operations**
- ❖ **Profiling and cleansing the data using Data Profiler, DQS cleansing operations.**
- ❖ **Controlling tasks using Precedence Constraints**

Debugging, Logging and Event handling

- ❖ **Trouble shooting and Bottlenecks identification using DataViewer, BreakPoin and Hit count**
- ❖ **Log Providers and Catalog Logging.**
- ❖ **Implementing Basic, Verbose and Performance**
- ❖ **Event vs Error Handling, real time handling**

Versioning and scheduling in DWH projects

- ❖ **SSIS versioning, other versioning tools**
- ❖ **SSIS Scheduling, other versioning tools jobs, Proxy and Sqlserver agent account**

Implementing SCDs, CDC in DWH using restarts, transactions and data tracking

- ❖ Using Check points to configure restarts and preserve operations
- ❖ Implementing Transactions for historical and business evaluations
- ❖ Implementing Slowly Changing Dimensions in Data warehouse using No, Full and Partial chches
- ❖ No history tracking of dimension (Type1)
- ❖ Full history track and methods (Type2)
- ❖ Partial history track and need (Type3)
- ❖ Manual Implementation of SCDs, Incremental (Delta) Loading.
- ❖ Change data capture in data warehouse tables for the events insert, update and delete on OLTP

Security, Deployment in real time projects

- ❖ Security in various ways (Password protection & Role based security), DBA role in security
- ❖ Package deployment using manifest file

    (File System, Sqlserver deployment)
- ❖ Project deployment using Catalog database (SSDB) and explaining various features

Bottlenecks, Performance Tuning

- ❖ Production issues in real time, other pkg issues
- ❖ Bottleneck, various ways to identify bottlenecks
- ❖ Tuning Source, Destination, Transformation, Package and System level.
- ❖ Data pipeline optimization, in memory model
- ❖ Execution trees, memory buffer optimization

SQL SERVER ANALYSIS SERVICES [SSAS (Basic-Advanced):15 hours]:

BISM (Business Intelligence Semantic Model) role in analysis and data mining

- ❖ SSAS 2019, 2017 and 2016 discussions.
- ❖ Installation of SSAS, Analysis Modes
- ❖ Multidimensional model and real time usage
- ❖ Tabular mode and real time usage
- ❖ Power Pivot and real time usage
- ❖ Over view of SSBI, Multidimensional Model, Tabular Model and Power Pivot
- ❖ What is OLAP, Types of OLAP (MOLAP, ROLAP, DOLAP, HOLAP)
- ❖ Project, Modeling, Designing & Solution

Multi-dimensional model (Cube Data mart) creation in real time with various settings

Developing Analysis Services Multi Dimension

Faster retrieval of data using Aggregates design and Usage based optimization

- ❖ Working with Designing Aggregations
- ❖ Normal Mode and advanced mode

Corporate Solution with SSDT tools, Command lines

- ‣ Data source view creation
- ‣ Add / Remove tables
- ‣ Design / Diagram panes
- ‣ Named calculations
- ‣ Named Queries
    Relationships
- ❖ Identifying dimensions with types (Date, Time, Regular, Scenario etc…)
- ❖ Creating, Deploying and Processing of cubes Working with Designing Aggregations
- ❖ Normal Mode and advanced mode

Effective relationships (Dim & Fact)

- ❖ Working with Dimension Usage Wizard
- ❖ Real time usages of various relationships (Regular, Referenced, Fact etc…)

Kimball approach of Facts, Dimensions add / removal (configuring measures and dimensions)

- ❖ Working with Measures, Measure Groups, Members and Dimensions in data warehouse
- ❖ Measures format using various properties
- ❖ Configuring Dimensions, taking all attributes, composite keys, Duplicate Attribute Keys
- ❖ Discretization feature, Sort order
- ❖ Hierarchies, levels, members, performance improvement features implementation
- ❖ Linking dimensions, gathering / collecting calculations, KPIs and actions

Semantic operations on Cube and its functionalities in DWH

- ❖ Writing various calculations using MDX
- ❖ Preparing script with multiple members
- ❖ Pros and cons of various members
- ❖ Implement Key Performance Indicators for effective report analysis
- ❖ Pull model analysis with Actions.
- ❖ Perspectives/Translations to restrict visibility and for multi-language translation

Parallel processing of data using Fact Partitions and various ways of processing

- ❖ Implementing Partitions (Table and Query)
- ❖ Usage of various storage modes
- ❖ Proactive Caching.

- ❖ Cube, Fact and Dimension table processing
- ❖ (Full, Clear, Data, Incremental, Add, Index, update, Default etc...)
- ❖ Proactive cache solution for fresh update
- ❖ Lazy Aggregations & UBO in Partitions, Performance Settings
- ❖ Writeback option to save OLTP analysis
- ❖ Writeback Partitions - Cube & Dim, UPDATES
- ❖ Using MDX Expressions and Queries for WBT

Working with MDX and components

- ❖ What is MDX, Identifiers, Expressions, Literals
- ❖ Data Types, Operators,
- ❖ Functions (twelve types of functions)
- ❖ MDX language reference DDL, DML etc...
- ❖ MDX multi-function operators
- ❖ Sub cube expressions
- ❖ Member, Measure, Tuple, Set features
- ❖ Advanced Time and Date functions for cumulative preceding and following analysis
- ❖ MDX expressions in SSDT
- ❖ MDX Querying against OLAP Cube

(Due to space issue, all features are not mentioned)

SSAS Deployment, real time methods

- ❖ BIDS / SSDT deployment
- ❖ SSAS deployment wizard
- ❖ XMLA method of deployment
- ❖ Backup and Restore
- ❖ SSAS synchronization wizard
- ❖ AMO objects (Analysis Services Management Objects)

Data Analysis Extensions [DAX]

- ❖ Need of DAX in tabular models, Excel
- ❖ Expressions in DAX
- ❖ Identifiers, Literals and Operators
- ❖ Functions and various types of functions

(Due to space issue, all features are not mentioned)

SSAS Cube and MDX Performance tuning

- ❖ Production issues while cube processing
- ❖ Memory, Time and threads issue at MDX
- ❖ SSAS Database and Cube Audits - Query Logs
- ❖ Security Audits and Need for Optimizations
- ❖ DB Audits, Usage Based Optimization
- ❖ Aggregations, Usage Based Optimization Options (MOLAP) and Filters
- ❖ Partitions, Query binding
- ❖ Named Calculations, Queries and Named Sets
- ❖ Flight Recorder Settings, Query Logs
- ❖ Data Sampling Intervals and MDX Query Tuning
- ❖ 100% Aggregations (FULL), CPU and Space issues

- ❖ Writeback Tables. MDX Transactions - COMMIT / ROLLBACK
- ❖ Subcube - Creation, Advantages Usage. Subcube - DESCANDANTS, PARENT & MEMBER Functions
- ❖ SSAS threads, taking required number
- ❖ SSAS Trace Monitoring & Sql server Profiler

SSAS-TABULAR MODEL CONCEPTS

- ❖ Workspace Database , Workspace Server , Direct Query , Backup to disk
- ❖ Installation steps , error mechanisms and error rectification process

- ❖ Creating a tabular model and setting model prop
- ❖ Adding data to the model , renaming tables, filtering columns, Rename Columns
- ❖ Monitoring relationships , Providing relationships
- ❖ Create Hierarchies
- ❖ Create partitions
- ❖ Create perspectives
- ❖ Create Roles
- ❖ Create KPIs
- ❖ Deployment
- ❖ Using in Excel Power Pivot and PowerView

Explaining by constructing a real time tabular model

SQL SERVER REPORTING SERVICES [SSRS (Basic-Advanced):15 hours]:

SSRS Architecture and Components

- ❖ SSRS 2019, 2017 and 2014 discussions.
- ❖ SSRS Reporting Components (Report Server, Report Manager, and Databases etc...)
- ❖ SSRS Models(Push and Pull)
- ❖ SSRS report store and retrieve flow

SSRS Administration (Tools and Configuration files) and Management

- ❖ RS Manager Configuration Tool
- ❖ Configuration Files for install and configure
- ❖ SharePoint mode of explanation & install
- ❖ Create / modify Report manager / Server / Database Creation and Monitoring

Working with various Report facilities

- ❖ Report Server Wizard, Project
- ❖ Report Builder, Power View & Dashboard

Report Design, Sub Reports & Groups

- ❖ Custom Reports and Report Groups
- ❖ Column groups and row groups
- ❖ Child column and row groups
- ❖ Row Drilldown and Column Grouping
- ❖ Advanced and Static Options in SSRS

Report Security and Upgrades

- ❖ Data Source Security Credentials
- ❖ Security Options and Report Users
- ❖ Content Manager and My Reports
- ❖ Cloning Report Roles and Schedules
- ❖ Report Browser and Report Publisher
- ❖ Report (RDL) Configuration Options
- ❖ Managing Configurations Files
- ❖ RSConfig & Encryption (snk) Keys
- ❖ Scale-out Deployments in SSRS

Share point server and Power View

- ❖ Comparing PowerView and Report Builder
- ❖ Drillthrough Report Management Options
- ❖ Migrating Reports with SSRS and Excel
- ❖ Migrating Reports from 2014,2017 to 2019

Working with report layout and design

- ❖ Sub totals /Full totals , Page Breaks
- ❖ Page Footer/Header, Table Header/Footer
- ❖ Sorting, Grouping, Applying Colors, Fonts etc...

Dataset features and performance tips

- ❖ Shared dataset usage
- ❖ Table, Query, Procedure options

- ❖ Chart Based Reports and Images
- ❖ Using SSRS Expressions & Global Fields

OLTP and OLAP Reports in SSRS

- ❖ Table Reports, Tablix Properties
- ❖ Gauge Reports, Indicator Reports
- ❖ Pie Charts, Bars and Spark Lines
- ❖ Report Testing and Auto Refresh
- ❖ Map Reports and Report Dashboads
- ❖ Multiple Chart Areas in Dashboards
- ❖ Report Dashboard & Limitations
- ❖ Report Scorecards with SQL Queries
- ❖ Sparkline, Databars in Reports
- ❖ Lines, PlaceHolder usages in reports
- ❖ Images acquisition in the reports
- ❖ Exporting RDL Reports in SSRS

Excel, Map, Cube, XML Reports

- ❖ Excel reporting with DAX
- ❖ XML reporting with / without XSD
- ❖ Map Reports and Stored Procedures
- ❖ Indicators with Map Reports
- ❖ Designing Reports using OLAP DBs
- ❖ Identifying KPIs and Measures
- ❖ MDX Queries with Cube & Sub Reports,
- ❖ Scorecards with MDX and DAX
- ❖ Accessing and Controlling Reports

Report Model, Builder & Power View

- ❖ Report Model and Features
- ❖ Model and DataSets use in Report Builder
- ❖ Chart and Map Wizard in Report Builder
- ❖ Report Parts and Web Services
- ❖ Report Designer Vs Report Builder
- ❖ Publishing Report Parts with RB
- ❖ Stored Procedures with Report Builder
- ❖ Report Downloads and Edit Options
- ❖ Power Pivot & PowerView Addins
- ❖ Power View for RDLX Reports
- ❖ Understanding Data Models
- ❖ Tables, Charts and Data Bars
- ❖ SparkLines and Data-Mashup
- ❖ Report Builder Vs PowerView
- ❖ New ReportBuilder Extensions

- ❖ Import from File, Refresh Fields, Time Out
- ❖ Calculated fields, Query Fields
- ❖ Filter and Parameter usage in real time

Working with Report Definition Language (RDL)

- ❖ Identifiers, Operators, Expressions
- ❖ Functions (Built in, Date, Math and String)
- ❖ Report, Group variables with expressions

Drill Down, Drill through Analysis and Parameterization

- ❖ Parameterized Reports a. Non Queried b. Queried c. Multivalued d. Cascading e)NO parm
- ❖ Dynamic Report Parameters and Filters
- ❖ Dependent Parameters & Usage
- ❖ Multi Valued Nullable Parameters
- ❖ Report Filters - Options and Types
- ❖ Toolbox Filters and Limitations
- ❖ Sub Reports and Report Actions
- ❖ Parent-Child Report Parameters
- ❖ Jump from one to another using drill through
- ❖ Hierarchical analysis using drill down

Report Manager administrative features

- ❖ New folders, Data Sources, Folder Security
- ❖ Web site options, schedules, security
- ❖ Linking reports, Download and Replace
- ❖ Maintaining history of reports
- ❖ Report security
- ❖ Report Parts in Report Builder

Report processing, rendering performance tuning tips

- ❖ Report issues at production
- ❖ Publishing and Executing Reports
- ❖ Observing Execution Logs, Execution log views
- ❖ Creating cached Instances, cache refreshment
- ❖ Creating snapshots and Live report features
- ❖ Subscription reports (Normal, Data driven)
- ❖ SSRS components optimization

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