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# Microsoft Power BI

## **Power BI Syllabus**

### **Power BI Complete Introduction**

- Power BI Introduction
- Data Visualization, Reporting
- Business Intelligence(BI), Traditional BI, Self-Serviced BI
- Cloud Based BI, On Premise BI
- Power BI Products
- Power BI Desktop (Power Query, Power Pivot, Power View)

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- Flow of Work in Power BI Desktop
- Power BI Report Server, Power BI Service, Power BI Mobile
- Flow of Work in Power BI / Power BI Architecture
- A Brief History of Power BI
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## **PBI Desktop Installation, PBI Desktop &Service Overview**

- Power BI Desktop Installation
- Building Blocks of Power BI
- Datasets, Visualizations, Reports, Dashboards, Tiles
- Power BI Desktop User Interface
- Fields Pane, Visualizations pane, Ribbon, Views, Pages Tab, Canvas
- Overview of Power Query / Query Editor – Extract, Transform & Load Data
- Connecting to Data Sources, Establish connection to the Excel source
- Importing Data into Power BI or Query Editor
- Transforming the Data using Power Query
- Model the Data using Power Pivot – Relationship View
- Creating New Measures and New Columns using DAX – Data View
- Visualizing the Data using Power View and Power Maps – Report View
- Saving and Publishing the Visuals or Reports
- Logon to Power BI Service
- View the Reports in PBI Service and Share the reports

## **Power Query**

### **Introduction to Power Query – Extract, Transform & Load**

- Data Transformation, Benefits of Data Transformation
- Shape or Transform Data using Power Query
- Overview of Power Query / Query Editor, Query Editor User Interface
- The Ribbon (Home, Transform, Add Column, View Tabs)
- The Queries Pane, The Data View / Results Pane, The Query Settings Pane, Formula Bar
- Advanced Editor – Complete ETL Code

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- Saving Your Work – Applying ETL Changes – Loading into Power Pivot Model
- Power Query Conceptually

## **Datatypes and Filters in Power Query**

- Datatypes, Changing the Datatype of a Column
- Filters in Power Query
- Auto Filter / Basic Filtering
- Filter a Column using Text Filters
- Filter a Column using Number Filters
- Filter a Column using Date Filters
- Filter Multiple Columns

## **Inbuilt Column Transformations**

- Remove Columns / Remove Other Columns
- Name / Rename a Column
- Reorder Columns or Sort Columns
- Add Column / Custom Column
- Split Columns
- Merge Columns
- PIVOT, UNPIVOT Columns
- Transpose Columns

## **In built Row Transformations**

- Header Row or Use First Row as Headers
- Keep Top Rows, Keep Bottom Rows
- Keep Range of Rows
- Keep Duplicates, Keep Errors
- Remove Top Rows, Remove Bottom Rows, Remove Alternative Rows
- Remove Duplicates, Remove Blank Rows, Remove Errors
- Group Rows / Group By

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## Combine Queries (Append Queries & Merge Queries)

### Append Queries / Union Queries

- Append Queries
- Append Queries as New
- Append 2 or more files individually with different queries
- Appending multiple files of same type from a folder using single query
- Query Options
- Copy Query, Paste Query
- Delete Query, Rename Query
- Enable Load, Include in report Refresh
- Duplicate Query, Reference Query
- Move to Group, Move Up, Move Down

### Merge Queries / Join Queries

- Merge Queries, Merge Queries as New
- Default Types of Joins / Join Kinds / Merge Type
- Left Outer (all from first, matching from second)
- Right Outer (all from second, matching from first)
- Full Outer (all rows from both)
- Inner (only matching rows)
- Left Anti (rows only in first)
- Right Anti (rows only in second)
- Cartesian Join or Cross Join

## Power Pivot

### Power BI Data Modeling – Relationship View

- Data Modeling Introduction
- Relationship, Need of Relationship
- Relationship Types / Cardinality in General

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- One-to-One, One-to-Many (or Many-to-One), Many-to-Many
- AutoDetect the relationship, Create a new relationship, Edit existing relationships
- Make Relationship Active or Inactive
- Delete a relationship
- Cross filter direction (Single, Both), Assume Referential Integrity

### Enhancing the Data Model – DAX

- What is DAX, Calculated Column, Measures
- DAX Table and Column Name Syntax
- Creating Calculated Columns, Creating Measures
- Implicit Vs Explicit Measures
- Calculated Columns Vs Measures
- DAX Syntax & Operators
- DAX Operators
- Types of Operators
- Arithmetic Operators, Comparison Operators, Text Concatenation Operator, Logical Operators

### DAX Functions Categories

- Date and Time Functions
- Logical Functions
- Text Functions
- Math & Statistical Functions
- Filter Functions
- Time Intelligence Functions

### DAX Date & Time Functions

- YEAR, MONTH, DAY
- WEEKDAY, WEEKNUM
- FORMAT (Text Function) à Month Name, Weekday Name
- DATE, TODAY, NOW

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- HOUR, MINUTE, SECOND, TIME
- DATEDIFF, CALENDAR
- Creating Date Dimension Table

## **DAX Text Functions**

- LEN, CONCATENATE (&)
- LEFT, RIGHT, MID
- UPPER, LOWER
- TRIM, SUBSTITUTE, BLANK

## **DAX Logical Functions**

- IF
- TRUE, FALSE
- NOT, OR, IN, AND
- IFERROR
- SWITCH

## **DAXMath and Statistical Functions**

- INT
- ROUND, ROUNDUP, ROUNDDOWN
- DIVIDE
- EVEN, ODD
- POWER, SIGN
- SQRT, FACT
- SUM, SUMX
- MIN, MINX
- MAX, MAXX
- COUNT, COUNTX
- AVERAGE, AVERAGEX
- COUNTROWS, COUNTBLANK

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## **DAX Filter Functions**

- CALCULATE
- ALL
- RELATED

## **DAX Time Intelligence Functions**

- Time Intelligence Introduction
- TOTALMTD, TOTALQTD, TOTALYTD
- PREVIOUSDAY, PREVIOUSMONTH, PREVIOUSQUARTER, PREVIOUSYEAR
- NEXTDAY, NEXTMONTH, NEXTQUARTER, NEXTYEAR
- SAMEPERIODLASTYEAR
- YOY Growth
- MOM Growth

## **Power View**

### **Report View / Power View**

- Report View User Interface
- Fields Pane, Visualizations pane, Ribbon, Views, Pages Tab, Canvas
- Visual Interactions
- Interaction Type (Filter, Highlight, None)
- Visual Interactions Default Behavior, Changing the Interaction

### **Filters in Power View**

- Filter Types
- Visual Level Filters, Page Level Filters, Report Level Filters, Drill Through Filters
- Filter Sub Types
- Basic Filtering, Advanced Filtering, Top N, Relative Date Filtering
- Numeric field filters, Text field filters, Date and Time field Filters

### **Grouping, Binning & Sorting**

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- Grouping and Binning Introduction
- Using grouping, Creating Groups on Text Columns
- Using binning, Creating Bins on Number Column and Date Columns
- Sorting Data in Visuals
- Changing the Sort Column, Changing the Sort Order
- Sort using column that is not used in the Visualization
- Sort using the Sort by Column button

### **Hierarchies and Drill-Down Reports**

- Hierarchy Introduction, Default Date Hierarchy
- Creating Hierarchy, Creating Custom Date Hierarchy
- Change Hierarchy Levels
- Drill-Up and Drill-Down Reports
- Data Actions, Drill Down, Drill Up, Show Next Level, Expand Next Level
- Drilling filters other visuals option

### **Power BI Visualizations**

- Visualizing Data, Why Visualizations
- Visualization types, Field Wells
- Visuals for Filtering, Visualizing Categorical Data, Visualizing Trend Data
- Visualizing KPI Data, Visualizing Tabular Data, Visualizing Geographical Data
- Leveraging Power BI Custom Visuals

### **Visuals for Filtering**

- Slicer Visualization
- When to use a Slicer
- Create and format Slicer Visualization
- Hierarchy Slicer (Custom Visualization)
- When to use a Hierarchy Slicer
- Create and format Hierarchy Slicer

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- Advantages of Hierarchy Slicer

## Visualizing Categorical Data

- Create and Format Bar and Column Charts
- Create and Format Stacked Bar Chart Stacked Column Chart
- Create and Format Clustered Bar Chart, Clustered Column Chart
- Create and Format 100% Stacked Bar Chart, 100% Stacked Column Chart
- Create and Format Pie and Donut Charts
- Create and Format theTree Map Visual
- Create and Format Scatter Charts

## Visualizing Trend Data

- Line and Area Charts
- Create and Format Line Chart, Area Chart, Stacked Area Chart
- Combo Charts
- Create and Format Line and Stacked Column Chart, Line and Clustered Column Chart
- Create and Format Ribbon Chart, Waterfall Chart, Funnel Chart

## Visualizing KPI Data

- Create and Format Gauge Visual, KPI Visual
- Create and Format Card Visualization, Multi Row Card

## Visualizing Tabular Data, Geographical Data & R Script Visual

- Create and Format Table Visual, Matrix Visualization
- Create and Format Map Visual, Filled Map Visual, Arc GIS Maps Visual
- Create and Format R Script Visual

## Power BI Service

### Power BI Service Introduction

- Power BI Service Introduction, Power BI Cloud Architecture

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- Creating Power BI Service Account, SIGN IN to Power BI Service Account
- Publishing Reports to the Power BI service, Import / Getting the Report to PBI Service
- My Workspace / App Workspaces Tabs
- DATASETS, WORKBOOKS, REPORTS, DASHBOARDS
- Working with Datasets, Creating Reports in Cloud using Published Datasets
- Power BI Datasets Live Connection using Desktop
- Working with Workbooks, working with Reports, Sharing Reports

### Dashboards Development

- Creating Dashboards
- Pin Visuals and Pin LIVE Report Pages to Dashboard
- Advantages of Dashboards
- Interacting with Dashboards
- Adding Tiles to Dashboards
- Web Content, Image, Text Box, Video
- Formatting Dashboard
- Sharing Dashboard

### Data Gateways

- Introduction to Data Gateways
- How Data Gateways work
- Connect to an on premise Data Source by using a Data Gateway
- Download Data Gateway
- Installing a Data Gateway
- Types of Gateways
- On-premises Data Gateway, On-premises Data Gateway (personal mode)
- Manage Data Gateway
- Add and Remove Administrators
- Add Data Source, Add or Remove Users to a Data Source
- Refresh **On Premise** Data

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- Configuring Automatic Refresh using Schedules

## **Collaboration in Power BI using App Workspace**

- Introduction to App Workspaces
- Create an App Workspace
- Add Members to App Workspace to Collaborate
- App Workspace Access
- Admin, Member, Contributor

## **Sharing Power BI Content using Apps and Content Packs**

- Introduction to App
- Publish an App
- Update a Published App
- Manage Content in App
- Include in App, Exclude in App
- Sharing App
- Entire Organization, Specific individuals or group
- Un publishing an App
- Content Pack Introduction
- Create Content Pack
- Sharing Content Packs
- Specific Groups, My Entire Organization
- Selecting the Content / Items to Publish or Share

## **Row Level Security in Power BI**

- Introduction to Row Level Security
- Row Level Security (RLS) with DAX
- Manage Roles, Creating Roles, Testing Roles
- Adding Members to Roles in Power BI Service
- Dynamic Row Level Security

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- Creating Users Table and Adding to the Model
- Capturing users using UserName () or UserPrincipalName () DAX Functions

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