**POWER BI CLASS: 11/02/2025**

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**AN OVERVIEW OF POWER BUSINESS INTELLIGENCE**

Power BI is a business intelligence (BI) and data visualization tool developed by Microsoft that enables users to connect, transform, analyze, and visualize data from multiple sources. It helps businesses make data-driven decisions through interactive dashboards and reports.

Key Features

1. Data Connectivity – Connects to various data sources (databases, cloud services, Excel) with live or imported data options.
2. Data Transformation & Modeling – Uses Power Query for data cleaning, shaping, and creating relationships between datasets.
3. Data Visualization – Offers diverse visual elements (charts, graphs, maps, tables) for interactive reporting.
4. AI-Powered Insights – Leverages AI for trend analysis, anomaly detection, and natural language queries.
5. Real-time Analytics – Displays real-time data updates from streaming sources for business monitoring.
6. Collaboration & Sharing – Enables secure sharing of reports within organizations and integrates with Microsoft Teams, SharePoint, and Power Automate.

Components of Power BI

* Power BI Desktop – A Windows application for creating reports and dashboards.
* Power BI Service (Cloud) – A web-based platform for sharing and collaboration.
* Power BI Mobile – Apps for accessing reports on smartphones and tablets.

Benefits

* User-Friendly – Requires no advanced coding skills.
* Scalable – Suitable for both small businesses and enterprises.
* Seamless Integration – Works with Excel, Azure, SQL Server, Google Analytics, etc.
* Cost-Effective – Offers free and paid plans.
* Automation – Automatically refreshes data for up-to-date reports.

Use Cases

* Finance – Budgeting, forecasting, and performance tracking.
* Sales & Marketing – Customer segmentation and sales analysis.
* Healthcare – Patient data analytics and resource management.
* Retail – Inventory management and demand forecasting.
* Manufacturing – Supply chain monitoring and quality control.

Power BI Data Modeling

* Fact & Dimension Tables – Fact tables store measurable data, while dimension tables hold descriptive information.
* Relationships & Cardinality – Defines how tables relate (One-to-Many, Many-to-Many, One-to-One).
* Hierarchies – Enables drill-down analysis for better navigation.
* Data Aggregation & Summarization – Uses DAX formulas for calculations (Measures, Calculated Columns).

Power BI is a powerful, user-friendly, and cost-effective tool for transforming raw data into meaningful insights.

Link for date creation: kindly cope below date and keep it safe on your pc

//Create Date Dimension

(StartDate as date, EndDate as date)=>

let

//Capture the date range from the parameters

StartDate = #date(Date.Year(StartDate), Date.Month(StartDate),

Date.Day(StartDate)),

EndDate = #date(Date.Year(EndDate), Date.Month(EndDate),

Date.Day(EndDate)),

//Get the number of dates that will be required for the table

GetDateCount = Duration.Days(EndDate - StartDate),

//Take the count of dates and turn it into a list of dates

GetDateList = List.Dates(StartDate, GetDateCount,

#duration(1,0,0,0)),

//Convert the list into a table

DateListToTable = Table.FromList(GetDateList,

Splitter.SplitByNothing(), {"Date"}, null, ExtraValues.Error),

//Create various date attributes from the date column

//Add Year Column

YearNumber = Table.AddColumn(DateListToTable, "Year",

each Date.Year([Date])),

//Add Quarter Column

QuarterNumber = Table.AddColumn(YearNumber , "Quarter",

each "Q" & Number.ToText(Date.QuarterOfYear([Date]))),

//Add Week Number Column

WeekNumber= Table.AddColumn(QuarterNumber , "Week Number",

each Date.WeekOfYear([Date])),

//Add Month Number Column

MonthNumber = Table.AddColumn(WeekNumber, "Month Number",

each Date.Month([Date])),

//Add Month Name Column

MonthName = Table.AddColumn(MonthNumber , "Month",

each Date.ToText([Date],"MMMM")),

//Add Day of Week Column

DayOfWeek = Table.AddColumn(MonthName , "Day of Week",

each Date.ToText([Date],"dddd"))

in

DayOfWeek

DATA MODELING

Data modeling is the processes that involve connection of two or more tables on the platter of relationships that exist between tables.

CATEGORY OF TABLES

* 1. Flat table: it is a single table of data that contain a lot of columns as data point. It is usually generated from enterprise software to Microsoft excel.
  2. Fact table: this is a mother table through which all other tables are connected in order to generate meaningful modeling and report.
  3. Dimension table: it contains descriptive attributes that define how a fact show roll up.

Example: Date table, Customer table, Geography table

* 1. Snowflake table: it is a table model from dimension table in order to make meaningful query analysis.

Relationship: means connection between two or more tables usually, fact and dimension tables.

Types of relationships are:

1. One to many relationship
2. One to one relationship
3. Many to many relationship

Star schema

It is a system of building both fact table(s) and dimension tables to give optimal query result.