# Power BI Assignment.

1. What is Power BI and how does it differ from Excel?

Power BI is a business analytics tool focused on data visualization, real-time updates, and sharing insights across organizations. Excel is a spreadsheet tool for data analysis and manipulation, less robust for interactive visualizations.

1. Explain the concept of data modeling in Power BI.

Involves creating relationships between different data sources, defining calculations, and establishing data hierarchies to provide a coherent data structure for analysis and reporting.

1. What are the different types of connections available in Power BI?

Import mode (data is imported into Power BI), Direct Query (live connection to the data source), and Live Connection (directly connects to a model in SQL Server Analysis Services).

1. How do you handle data transformation in Power BI?

Handled using Power Query Editor, which allows data cleansing, shaping, merging, and filtering to prepare data for analysis.

1. What is DAX (Data Analysis Expressions) and why is it important in Power BI?

A formula language in Power BI used to create custom calculations and aggregations. It's crucial for creating dynamic measures and calculated columns.

1. Can you explain the difference between calculated columns and measures in Power BI?

Calculated columns are computed row by row and stored in the table, while measures are calculated on the fly during query execution and are more efficient for large datasets.

1. How do you handle relationships between tables in Power BI?

Managed through the "Model" view where you define one-to-one, one-to-many, or many-to-many relationships, including cross-filter directions.

1. What is the purpose of a Power BI Gateway?

Allows secure data transfer between on-premises data sources and Power BI Service for scheduled refreshes and live queries.

1. How can you schedule data refresh in Power BI Service?

Set up through the dataset settings in Power BI Service, specifying the frequency and time of refreshes.

1. Explain the concept of row-level security in Power BI.

Restricts data access at the row level for users based on their roles, defined in the Power BI Desktop and enforced in the Power BI Service.

11) What is the Power BI Desktop and how does it differ from Power BI Service?

Power BI Desktop is a local application for building reports and data models, while Power BI Service is a cloud-based platform for sharing, collaboration, and online report access.

12) Explain the concept of Direct Query in Power BI.

Allows Power BI to query data directly from the source in real-time without storing it in Power BI, suitable for large datasets with frequent updates.

13) What are Power BI templates and how are they useful?

Pre-configured files (.PBIT) that contain report layout, visuals, and queries without the data, useful for standardizing report creation across teams.

14) How do you handle incremental data refresh in Power BI?

Allows only new or updated data to be loaded instead of the entire dataset, reducing refresh time and resource usage.

15) What is the role of Power Query in Power BI?

A data connection technology that allows data transformation and preparation before it's loaded into Power BI for analysis.

16) Explain the difference between calculated columns and calculated tables in Power BI.

Calculated columns are added to existing tables, whereas calculated tables are new tables created using DAX expressions.

17) How do you create custom visuals in Power BI?

Developed using the Power BI Developer Tools (Node.js, TypeScript), and then imported into Power BI for custom report visuals.

18) What are the best practices for optimizing performance in Power BI?

Use efficient DAX queries, manage data model size, enable query folding, use aggregations, and optimize data refresh strategies.

19) How can you integrate Power BI with other Microsoft products like Azure and Office 365?

Power BI can connect with Azure (e.g., Azure SQL, Azure Data Lake) and Office 365 (e.g., Excel, Teams) for enhanced data analysis and collaboration.

20) Explain the concept of aggregations in Power BI.

Allows summarization of detailed data to improve performance when dealing with large datasets, reducing the amount of data queried.

21) How do you handle error handling and data quality in Power BI?

Use Power Query for data validation, error handling steps, and using alerts in Power BI Service to manage data quality.

22) What is the purpose of Power BI Embedded and when would you use it?

Allows developers to embed Power BI reports and dashboards into custom applications, providing analytics without requiring users to switch to Power BI Service.