POWER BI

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1. What is Power BI?

Power BI is a business analytics tool developed by Microsoft that allows users to visualize data and share insights across an organization or embed them in an app or website. It provides interactive visualizations and business intelligence capabilities with an interface that is easy to use, enabling end users to create their own reports and dashboards.

2. Why use Power BI?

Power BI is used for:

- Data Visualization: It offers a range of visualization options to create insightful reports.
- Data Connectivity: Connects to multiple data sources including Excel, SQL Server, cloud services, and more.
- User-Friendly Interface: Easy to use with drag-and-drop features.
- Interactive Reports: Enables interactive data exploration and analysis.
- Collaboration and Sharing: Facilitates data sharing across teams and departments.
- Cost-Effective: Offers a range of pricing options, including free versions.

3. Difference Between Pro and Premium Power BI?**

- Power BI Pro: A per-user license that allows users to create, share, and collaborate on reports. It supports data sharing and collaboration in the Power BI Service.
- Power BI Premium: An organizational license that provides dedicated cloud resources, increased data storage, and the ability to handle large datasets. It allows for wider sharing without the need for individual Pro licenses.

4. What are the Building Blocks of Power BI?

The main building blocks of Power BI are:

- Visualizations: Graphical representations of data.
- Datasets: Collections of data used to create visualizations.
- Reports: A collection of visualizations from a dataset.
- Dashboards: Single-page interfaces that display visualizations from different reports.
- Tiles: Individual visualizations in a dashboard.

5. Power BI Components and Explain in Detail

- Power BI Desktop: A desktop application used to create reports and data models.

- Power BI Service (Cloud-based): An online platform where reports and dashboards are shared.
- Power BI Mobile Apps: Apps for mobile devices to view reports and dashboards.
- Power BI Report Server: An on-premises server to host Power BI reports.
- Power BI Gateway: Bridges for secure data transfer between on-premises data sources and the Power BI Service.

6. **What is Power Query in Power BI?**
   Power Query is a data connection technology that enables users to discover, connect, combine, and refine data across a wide variety of sources. It is primarily used for data transformation and preparation before visualizing it in Power BI.

7. **What is a Power BI Report?**
   A Power BI Report is a multi-perspective view of a dataset, with visualizations that represent different findings and insights from that data. Reports are created using Power BI Desktop and can be shared through Power BI Service.

8. **What are Relationships in Power BI?**
   Relationships in Power BI connect tables to one another. When relationships are established, data can be analyzed in a single model, which enhances the power of data analysis by enabling filtering, slicing, and calculations across multiple tables.

9. **What is the Difference Between a Star Schema and a Snowflake Schema?**
   - Star Schema: A database schema where a central fact table is connected to dimension tables. It is simpler and faster for querying.
   - Snowflake Schema: An extension of the star schema where dimension tables are normalized into multiple related tables. It reduces redundancy but can be more complex to query.

10. **How do You Handle Many-to-Many Relationships in Power BI?**
    Many-to-many relationships can be managed using a bridge table or a new feature in Power BI that allows defining relationships between tables with a "both" cross-filter direction. It helps in avoiding ambiguities and ensures correct data representation.

11. **What are the Different Ways to Connect to Data Sources in Power BI?**
    Power BI supports various data connectors, such as:
    - DirectQuery: Connects live to a data source without importing data.
    - Import Mode: Imports data into Power BI, allowing for fast queries and visualizations.

- Live Connection: Similar to DirectQuery but used specifically with certain data sources like SQL Server Analysis Services.

12. What is DirectQuery in Power BI?

DirectQuery allows users to create reports based on live data directly from the data source without importing the data into Power BI. It is useful for handling large datasets that cannot be easily imported.

13. What is Cardinality and Types of Cardinality?

Cardinality in Power BI refers to the uniqueness of data values in a column. The types of cardinality in relationships are:

- One-to-One: Each value in one table relates to one value in another.
- One-to-Many: One value in one table can relate to many values in another.
- Many-to-Many: Multiple values in one table can relate to multiple values in another.

14. Types of Joins?

Power BI supports several types of joins to combine tables:

- Inner Join: Returns only the rows with matching values in both tables.
- Left Outer Join: Returns all rows from the left table and matched rows from the right table.
- Right Outer Join: Returns all rows from the right table and matched rows from the left table.
- Full Outer Join: Returns all rows when there is a match in either table.
- Cross Join: Returns the Cartesian product of both tables.

15. Things to Keep in Mind While Developing a Model?

- Data Quality: Ensure data is clean, accurate, and reliable.
- Efficient Data Modeling: Use appropriate relationships, star schemas, and avoid complex joins.
- Performance Optimization: Consider using aggregations, DirectQuery, and managing model size.
- Security: Implement row-level security to restrict access to data.
- Consistency: Ensure consistent naming conventions and formats across the model.
- Documentation: Maintain proper documentation for understanding and future reference.