**1) What is Power BI?**

Power BI is a business analytics service by Microsoft that enables users to visualize and share insights from their data. It provides interactive visualizations, business intelligence capabilities, and allows users to create reports and dashboards for data-driven decision-making.

**2) Why Use Power BI?**

Power BI is used because it offers:

* **Data Connectivity**: Connects to a wide range of data sources.
* **Data Transformation**: Simplifies data preparation and modeling.
* **Interactive Dashboards**: Enables the creation of visually compelling and interactive dashboards.
* **Cloud-Based Service**: Allows sharing and collaboration in real-time.
* **AI Capabilities**: Provides built-in AI tools for advanced analytics.

**3) Difference Between Pro and Premium**

* **Power BI Pro**: A per-user license that allows for content creation, collaboration, and sharing within the Power BI service. Ideal for small to medium-sized teams.
* **Power BI Premium**: A capacity-based license that offers enhanced performance, larger data volumes, and more advanced features. It's designed for larger organizations and allows sharing content with users without requiring them to have a Pro license.

**4) What are the Building Blocks of Power BI?**

The building blocks of Power BI include:

* **Visualizations**: Graphical representations of data (e.g., charts, maps).
* **Datasets**: Collections of data used to create visualizations.
* **Reports**: Multi-page views consisting of various visualizations.
* **Dashboards**: Single-page views that aggregate visualizations from multiple reports.
* **Tiles**: Single visualizations or elements pinned to a dashboard.

**5) Power BI Components**

* **Power BI Desktop**: A Windows-based application for creating reports and data models.
* **Power BI Service**: A cloud-based service for sharing, collaboration, and online data visualization.
* **Power BI Mobile Apps**: Mobile applications for viewing and interacting with Power BI content on mobile devices.
* **Power BI Gateway**: A bridge between on-premises data sources and the Power BI service, enabling data refresh.
* **Power BI Report Server**: An on-premises server for hosting and managing Power BI reports.

**6) What is Power Query in Power BI?**

Power Query is a data connection technology in Power BI that allows users to discover, connect, combine, and refine data across a wide variety of sources. It provides an intuitive interface for transforming raw data into a usable format for analysis.

**7) What is a Power BI Report?**

A Power BI report is a multi-page document that contains a collection of visualizations (e.g., charts, graphs, tables) that represent various insights from a dataset. Reports allow for deep data analysis and are highly interactive.

**8) What are Relationships in Power BI?**

Relationships in Power BI define how tables in a data model are connected to each other. They determine how data from different tables is combined in reports and visualizations. Relationships can be one-to-one, one-to-many, or many-to-many.

**9) Difference Between Star Schema and Snowflake Schema**

* **Star Schema**: A type of database schema that has a central fact table connected directly to dimension tables. It's simple, easy to understand, and optimized for querying.
* **Snowflake Schema**: An extension of the star schema where dimension tables are normalized into multiple related tables, leading to a more complex structure but reducing redundancy.

**10) How Do You Handle Many-to-Many Relationships in Power BI?**

Many-to-many relationships in Power BI are handled by creating an intermediary table known as a bridge table that contains unique values from both tables to establish a relationship. This allows proper aggregation and reporting of data from both tables.

**11) What are the Different Ways to Connect to Data Sources in Power BI?**

Power BI offers several ways to connect to data sources, including:

* **Direct Import**: Load data directly into Power BI.
* **DirectQuery**: Query data in real-time from the source without importing it.
* **Live Connection**: Connect to a data source and use its existing data model.
* **Dataflows**: Use Power BI Dataflows for ETL processes and connecting to various sources.

**12) What is DirectQuery in Power BI?**

DirectQuery is a connectivity option in Power BI that allows users to query data in real-time directly from the data source without importing it into Power BI. This is useful for working with large datasets that are updated frequently.

**13) What is Cardinality and Types of Cardinality?**

Cardinality in Power BI refers to the uniqueness of data values in a column and defines the nature of relationships between tables:

* **One-to-One (1:1)**: Each row in Table A relates to a single row in Table B.
* **One-to-Many (1**

**)**: A single row in Table A relates to multiple rows in Table B.

* **Many-to-One (M:1)**: Multiple rows in Table A relate to a single row in Table B.
* **Many-to-Many (M)**: Multiple rows in Table A relate to multiple rows in Table B.

**14) Types of Joins in Power BI**

* **Inner Join**: Returns rows that have matching values in both tables.
* **Left Outer Join**: Returns all rows from the left table and matching rows from the right table. Non-matching rows in the right table will result in NULLs.
* **Right Outer Join**: Returns all rows from the right table and matching rows from the left table. Non-matching rows in the left table will result in NULLs.
* **Full Outer Join**: Returns all rows when there is a match in either table. Non-matching rows will result in NULLs for the missing side.

**15) Things to Keep in Mind While Developing a Power BI Model**

* **Data Quality**: Ensure that the data is clean and free of duplicates or errors.
* **Data Relationships**: Carefully define relationships between tables to avoid issues in data aggregation and reporting.
* **Performance Optimization**: Use techniques like query folding, efficient data modeling, and DAX optimization to improve performance.
* **Security**: Implement Row-Level Security (RLS) and other security measures to protect sensitive data.
* **Scalability**: Design the model to handle large datasets and consider future data growth.
* **User Experience**: Focus on creating intuitive and user-friendly dashboards and reports.