**Creating Dashboard with Visualization Tool Assignment**

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

* **Power BI** is a data visualization and business intelligence tool designed to create interactive reports and dashboards from various data sources.
* Unlike **Excel**, which is mainly for data analysis and spreadsheet management, Power BI focuses more on data visualization, data modeling, and large-scale data processing. Power BI also allows real-time data analysis and sharing of reports over the web.

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

* **Data Modeling** in Power BI involves organizing and connecting different data sources into a unified structure using tables and relationships. It helps create a foundation for calculations, visualizations, and reports by defining how data is related.

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

* Power BI offers two main types of connections: **Import** (data is imported into Power BI) and **Direct Query** (data remains in the source, and queries are run directly on it).

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

* Data transformation in Power BI is done using **Power Query Editor**, where you can clean, shape, and modify your data before using it in reports. You can remove duplicates, change data types, split columns, and more.

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

* **DAX (Data Analysis Expressions)** is a formula language used in Power BI for creating custom calculations, such as calculated columns, measures, and custom aggregations. It’s crucial for performing complex data analysis and creating dynamic reports.

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

* **Calculated Columns** are added to a table and calculated row by row. They are used when you need the result for each row in a table. **Measures**, on the other hand, are used for calculations that are done on aggregate data, like summing values or calculating averages.

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

* In Power BI, you manage relationships between tables using **Model View**, where you can define how tables are connected through keys (like primary and foreign keys). This allows you to create accurate and dynamic reports.

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

* A **Power BI Gateway** is used to connect on-premises data sources to Power BI Service, enabling secure data refreshments and live queries.

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

* In Power BI Service, you can schedule data refreshes through the **Settings** option, ensuring that your reports and dashboards are always up to date.

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

* **Row-Level Security (RLS)** allows you to restrict data access for certain users, ensuring they only see data relevant to them. This is set up by defining security roles and applying DAX filters.

1. What is the Power BI Desktop and how does it differ from Power BI Service?

* **Power BI Desktop** is the tool used for creating reports and data models on your local machine, while **Power BI Service** is the cloud-based platform where you share, collaborate, and view reports and dashboards online.

1. Explain the concept of Direct Query in Power BI.

* **Direct Query** allows you to connect directly to large databases without importing data into Power BI, running queries in real-time on the source data.

1. What are Power BI templates and how are they useful?

* **Power BI Templates** are pre-designed report files that can be reused with different data sources. They help standardize reports and save time.

1. How do you handle incremental data refresh in Power BI?

* **Incremental Data Refresh** allows you to only refresh new or updated data in Power BI, which is especially useful for large datasets.

1. What is the role of Power Query in Power BI?

* **Power Query** is the data connection and transformation tool in Power BI. It allows you to connect to multiple data sources, clean, transform, and load data into your model.

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

* **Calculated Columns** are individual columns in a table created using DAX formulas, while **Calculated Tables** are entire tables created from existing data using DAX.

1. How do you create custom visuals in Power BI?

* You can create custom visuals using tools like **Power BI Developer Tools**, or by importing custom visuals from the Power BI marketplace.

1. What are the best practices for optimizing performance in Power BI?

* Use appropriate data types, manage relationships effectively, reduce the complexity of DAX formulas, and limit the use of Direct Query, when possible, to optimize performance.

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

* Power BI can be integrated with **Azure** for advanced analytics and AI capabilities and **Office 365** for collaboration through tools like Teams, SharePoint, and Excel.

1. Explain the concept of aggregations in Power BI.

* **Aggregations** allow you to pre-calculate and store summary data, which can improve performance when dealing with large datasets.

1. How do you handle error handling and data quality in Power BI?

* Handle errors in Power BI using **Power Query** to clean and validate data, ensuring high-quality data in your reports.

1. What is the purpose of Power BI Embedded and when would you use it?

* **Power BI Embedded** allows you to integrate Power BI reports and dashboards into your own applications, providing users with powerful data insights within your app.