**Power BI**

**Assignment - 2**

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**Explain the advantages of Natural Queries in Power BI with an example?**  
Natural Queries in Power BI allow users to interact with their data using conversational language, making it easier to access insights without needing technical expertise. With this feature, users can ask questions in plain English, and Power BI will return relevant data visualizations or insights. For example, a user can ask, "What were the total sales in Q3 by region?" and Power BI will generate an appropriate report, enabling non-technical users to explore data effortlessly.

**Explain Web Front End (WFE) cluster from Power BI Service Architecture?**  
The Web Front End (WFE) cluster in Power BI Service architecture handles user requests coming from browsers and mobile applications. It manages the rendering of reports and dashboards, ensuring that users can access and interact with their data efficiently. The WFE also authenticates users, manages security roles, and ensures that data visualizations are rendered properly, providing a seamless user experience.

**Explain Back End cluster from Power BI Service Architecture?**  
The Back End cluster in Power BI Service is responsible for processing and managing data. It handles tasks like data refresh, query processing, and storage. This cluster ensures that all the heavy lifting related to data computation, such as applying data models, calculations, and transformations, is done in a secure, scalable environment, allowing users to interact with real-time and updated data on the front end.

**What ASP.NET component does in Power BI Service Architecture?**  
In Power BI Service Architecture, the ASP.NET component is responsible for handling web requests, session management, and routing between the front-end and back-end components. It acts as the intermediary layer that ensures data from the backend is delivered to the front-end interface while managing user authentication, authorization, and session states.

**Compare Microsoft Excel and Power BI Desktop on the following features:**

* **Data Import**:

Excel: Supports importing data from various file types (CSV, XLSX, TXT) and databases but has limitations in terms of scalability and integration.

Power BI Desktop: Offers more advanced and scalable data import options, including direct connections to a wider range of data sources such as SQL databases, web APIs, and cloud services.

* **Data Transformation**:

Excel: Provides basic data transformation capabilities (e.g., pivoting, filtering) but lacks advanced transformation features.

Power BI Desktop: Includes the Power Query editor for advanced data transformations, like merging, unpivoting, and custom column creation, with better automation for recurring tasks.

* **Modeling**:

Excel: Simple data modeling with limited relationship capabilities, often requiring manual effort.

Power BI Desktop: Offers more powerful modeling capabilities, including relationships between tables, DAX (Data Analysis Expressions) for complex calculations, and an intuitive data model view.

* **Reporting**:

Excel: Good for basic charts and tables but lacks interactive features and the ability to handle large datasets effectively.

Power BI Desktop: Provides dynamic, interactive reports with advanced visualizations and the ability to create dashboards that can interact with users' inputs.

* **Server Deployment**:

Excel: Requires manual sharing and emailing of reports; there is no centralized server deployment.

Power BI Desktop: Reports can be published directly to Power BI Service for centralized, cloud-based sharing and collaboration.

* **Convert Models**:

Excel: Models need to be manually recreated if moved from Excel to Power BI.

Power BI Desktop: Data models can be directly imported from Excel, and transformations can be carried over, streamlining the transition.

* **Cost**:

Excel: Part of the Microsoft Office package, no extra cost beyond Office subscription.

Power BI Desktop: Free for individual use, but Power BI Service requires a subscription for full sharing and collaboration features.

**List 20 data sources supported by Power BI Desktop:**

1. Excel
2. SQL Server
3. PostgreSQL
4. MySQL
5. Azure SQL Database
6. Oracle Database
7. Google Analytics
8. SharePoint Online
9. Dynamics 365
10. Salesforce
11. Web Data (via APIs)
12. CSV
13. JSON
14. XML
15. Text Files
16. OData
17. Web Services (REST API)
18. SAP HANA
19. Access Database
20. Azure Blob Storage