**Power BI Assignment 2**

1. **Explain the advantages of Natural Queries in PowerBi with an example?**

### 1. **Advantages of Natural Queries in Power BI with an Example**

Natural Queries in Power BI enable users to ask questions in plain English using the **Q&A feature**. This is part of Power BI's AI capabilities, allowing non-technical users to query data without needing to know how to write complex formulas or code.

**Advantages**:

* **Ease of Use**: Non-technical users can interact with data by asking questions in natural language.
* **Faster Insights**: It provides quick insights without the need for advanced skills in data modeling or querying.
* **Intuitive Experience**: Users can explore data by typing questions like “What are the total sales for 2023?” and get instant results as visual charts or tables.

**Example**:  
A user might type "Total sales by region for 2023" into the Q&A box in Power BI, and Power BI will generate a visual chart displaying sales data split by region for the year 2023.

**2. Explain Web Front End(WFE) cluster from Power BI Service Architecture?**

### 2. **Web Front End (WFE) Cluster in Power BI Service Architecture**

The **Web Front End (WFE)** cluster is the part of the Power BI service architecture that handles authentication and initial user requests. When a user interacts with the Power BI service (e.g., logs in or loads a dashboard), the WFE cluster manages these requests.

**Key Roles**:

* **Authentication**: WFE authenticates users via Azure Active Directory (AAD).
* **Routing Requests**: After authentication, it routes the user’s requests to the correct back-end service or data source.
* **Web Application Gateway**: WFE provides a web interface for users to interact with the Power BI Service.

**3. Explain Back End cluster from Power BI Service Architecture?**

### 3. **Back-End Cluster in Power BI Service Architecture**

The **Back-End Cluster** in Power BI Service is responsible for the heavy lifting, including managing data, reports, and user sessions.

**Key Roles**:

* **Data Storage**: Manages data models and datasets, as well as storing report and dashboard metadata.
* **Data Refresh and Query Processing**: Handles scheduled data refreshes and real-time query processing from the web interface.
* **User Session Management**: Keeps track of the user's interactions and current state.
* **Content Delivery**: Delivers content like dashboards, reports, and datasets to users after they’ve been authenticated.

### 4. What ASP.NET component does in Power BI Service Architecture?

### 4. **Role of ASP.NET Component in Power BI Service Architecture**

The **ASP.NET component** in Power BI Service Architecture is responsible for managing the web interface and API services. It’s a core part of the web-based delivery of content.

**Roles**:

* Provides a framework for building the web interface that users interact with in Power BI Service.
* Supports APIs that allow for communication between the front end (user interactions) and the back end (data management and processing).
* Manages HTTP requests and responses between the browser and Power BI services.

5. **Compare Microsoft Excel and PowerBi Desktop on the following features: Data import Data transformation Modeling Reporting Server Deployment Convert Models Cost**

### 5. **Comparison Between Microsoft Excel and Power BI Desktop**

| **Feature** | **Microsoft Excel** | **Power BI Desktop** |
| --- | --- | --- |
| **Data Import** | Can import from various sources like text, CSV, databases, and web data. However, more limited for complex data types. | Supports a wide range of data sources, including databases, APIs, cloud services, and big data systems. |
| **Data Transformation** | Basic transformation capabilities using formulas and Power Query. | Advanced data transformation with Power Query, built-in M language, and ETL features. |
| **Modeling** | Basic modeling with PivotTables, Data Models, and formulas. | More advanced modeling with relationships, calculated tables, measures (DAX), and hierarchies. |
| **Reporting** | Provides static reporting (charts, PivotTables). Interactivity is limited. | Fully interactive, dynamic reports with visuals like charts, graphs, and KPIs. Drill-down features. |
| **Server Deployment** | No direct server deployment option. Files can be shared via SharePoint, OneDrive, etc. | Can be deployed to Power BI Service for sharing, collaboration, and automated data refreshes. |
| **Convert Models** | Data models can be created but converting complex models or importing external models is limited. | Can convert Excel models to Power BI models easily. Provides rich modeling capabilities. |
| **Cost** | Excel is part of the Office suite. Costs vary depending on the Office 365 plan. | Power BI Desktop is free. However, Power BI Pro and Premium licenses are required for sharing and advanced features. |

### 6. **20 Data Sources Supported by Power BI Desktop**

Here’s a list of common data sources supported by Power BI Desktop:

1. Excel
2. Text/CSV
3. XML
4. JSON
5. SQL Server Database
6. Oracle Database
7. MySQL Database
8. PostgreSQL Database
9. Azure SQL Database
10. Azure Data Lake Storage
11. SharePoint List
12. Dynamics 365
13. Salesforce
14. Google Analytics
15. Adobe Analytics
16. OData Feed
17. Web (scraping web data)
18. SAP HANA
19. Facebook
20. R Script

These data sources provide a comprehensive way to pull in data from various platforms and systems to create meaningful analyses in Power BI.