**Assignment-2**

Power BI Desktop supports a wide range of data sources. Here are 20 of them:

1. **Excel Workbook**
2. Explain the advantages of Natural Queries in PowerBi with an example?
3. [**Ease of Use**: Users can ask questions in plain language without needing to know complex query syntax or database structures1](https://learn.microsoft.com/en-us/power-bi/natural-language/q-and-a-intro).
4. [**Speed**: Natural Queries provide quick answers, allowing users to gain insights rapidly without crafting detailed queries2](https://community.fabric.microsoft.com/t5/Community-Blog/Natural-Language-Query-NLQ-with-Power-BI-A-powerful-new-way-to/ba-p/3546222).
5. [**Interactive Exploration**: The Q&A feature is interactive, encouraging users to refine their questions and discover new insights as they go1](https://learn.microsoft.com/en-us/power-bi/natural-language/q-and-a-intro).
6. [**Accessibility**: It democratizes data analysis by enabling non-technical users to interact with data and generate visualizations3](https://www.excelmojo.com/power-bi-natural-language-query/).
7. [**Intelligent Assistance**: Power BI provides autocomplete suggestions and understands a wide range of natural language questions, making the process efficient and user-friendly1](https://learn.microsoft.com/en-us/power-bi/natural-language/q-and-a-intro)
8. Explain Web Front End(WFE) cluster from Power BI Service Architecture?

* Ans: **Initial Connection Management**: The WFE cluster is responsible for managing the initial connection to the Power BI service. [It acts as the entry point for users and devices attempting to access Power BI resources1](https://learn.microsoft.com/en-us/power-bi/enterprise/service-admin-power-bi-security).
* **Authentication**: It uses Azure Active Directory (AAD) to authenticate clients. [This ensures that only authorized users can access the Power BI service and that their identities are securely managed1](https://learn.microsoft.com/en-us/power-bi/enterprise/service-admin-power-bi-security).
* **Token Provision**: After successful authentication, the WFE cluster provides tokens for subsequent client connections to the Power BI service. [These tokens are essential for maintaining a secure and continuous connection throughout the user session1](https://learn.microsoft.com/en-us/power-bi/enterprise/service-admin-power-bi-security).
* **Load Balancing**: The WFE cluster also plays a role in load balancing. [It distributes incoming requests to ensure that no single server is overwhelmed, which helps maintain optimal performance and availability of the Power BI service1](https://learn.microsoft.com/en-us/power-bi/enterprise/service-admin-power-bi-security).
* [**Security**: By handling the initial connection and authentication, the WFE cluster contributes to the overall security of the Power BI service, ensuring that the backend services are protected from unauthorized access](https://learn.microsoft.com/en-us/power-bi/enterprise/service-admin-power-bi-security)

1. Explain Back End cluster from Power BI Service Architecture?

Ans: The Back-End cluster manages visualizations, user dashboards, semantic models, reports, data storage, data connections, data refresh, and other aspects of interacting with the Power BI service.

1. What ASP.NET component does in Power BI Service Architecture?
2. [**Embedding Reports**: It allows developers to embed Power BI reports into ASP.NET web applications, providing a seamless experience for users who interact with the reports within the web application context1](https://visualstudiomagazine.com/articles/2021/09/23/powerbi-report.aspx).
3. [**Handling Requests**: ASP.NET handles requests to the Power BI service, including report loading, interactions, and responding to user actions within the embedded reports2](https://powerbi.microsoft.com/en-us/blog/how-to-integrate-power-bi-reporting-into-net-apps/).
4. [**Security**: It manages authentication and authorization, ensuring that only authorized users can access the Power BI reports embedded in the ASP.NET application3](https://community.fabric.microsoft.com/t5/Desktop/Embedding-power-bi-reports-in-ASP-NET/m-p/232321).
5. [**Customization**: Developers can use ASP.NET to create custom web controls and interfaces for Power BI reports, tailoring the look and feel to match the business requirements1](https://visualstudiomagazine.com/articles/2021/09/23/powerbi-report.aspx).
6. [**Integration**: ASP.NET components facilitate the integration of Power BI dashboards and reports into other applications, such as Microsoft Teams, enhancing collaboration and accessibility](https://github.com/Tharun-VIT/Power-BI-Assignment-2)

5. Compare Microsoft Excel and PowerBi Desktop on the following features:

1. **Data Import**:
   * [**Excel**: Can import data from various sources, but with some limitations on data size and complexity1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
   * [**Power BI Desktop**: Offers more robust data connectivity options, handling larger datasets and connecting to a wide range of data sources1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
2. **Data Transformation**:
   * [**Excel**: Provides Power Query for data transformation, which is powerful but can be limited for complex transformations1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
   * [**Power BI Desktop**: Also uses Power Query but is better optimized for complex data modeling and transformation tasks1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
3. **Modeling**:
   * [**Excel**: Supports basic data modeling with PivotTables and formulas, suitable for smaller datasets1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
   * [**Power BI Desktop**: Has advanced data modeling capabilities, including relationships, custom measures, and DAX (Data Analysis Expressions)1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
4. **Reporting**:
   * [**Excel**: Offers a range of chart types and pivot charts for reporting, but with less interactive capabilities1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
   * [**Power BI Desktop**: Provides a more dynamic and interactive reporting experience with a variety of visualization options1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
5. **Server Deployment**:
   * [**Excel**: Reports can be shared via email, SharePoint, or saved on a network drive, but lacks a dedicated server for deployment1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
   * [**Power BI Desktop**: Can publish reports to the Power BI Service, which acts as a cloud-based server for deploying and sharing reports1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
6. **Convert Models**:
   * [**Excel**: Limited in converting models to other formats or applications1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
   * [**Power BI Desktop**: Allows for more flexibility in converting and reusing data models across different reports and dashboards1](https://www.datacamp.com/blog/power-bi-vs-excel-which-should-you-use).
7. **Cost**:
   * [**Excel**: Part of the Microsoft Office suite, which may require a license purchase or subscription2](https://www.theexcelexperts.com/power-bi-vs-excel/).
   * [**Power BI Desktop**: Free to use for individual users, with additional costs for Power BI Pro and Premium subscriptions for advanced features and larger deployments2](https://www.theexcelexperts.com/power-bi-vs-excel/).

6. List 20 data sources supported by Power Bi desktop.

1. **Text/CSV**
2. **XML**
3. **JSON**
4. **Folder**
5. **PDF**
6. **Parquet**
7. **SharePoint Folder**
8. **SQL Server Database**
9. **Access Database**
10. **SQL Server Analysis Services Database**
11. **Oracle Database**
12. **IBM Db2 Database**
13. **IBM Informix Database (Beta)**
14. **IBM Netezza**
15. **MySQL Database**
16. **PostgreSQL Database**
17. **Sybase Database**
18. **Teradata Database**
19. **SAP HANA Database**