Power BI Assignment 2

1. Explain the advantages of Natural Queries in Power BI with an example?

Ans :- The fastest way to get an answer from your data is to perform a search over your data using natural language. The Q&A feature in Power BI lets you explore your data in your own words using natural language. Q&A is interactive, even fun. Often, one question leads to others as the visualizations reveal interesting paths to pursue. Asking the question is just the beginning. Travel through your data, refining or expanding your question, uncovering new information, zeroing in on details, or zooming out for a broader view. The experience is interactive and fast, powered by an in-memory storage.

Advantages of Natural Queries in Power BI

This is helpful for users who aren't technically inclined since they can access insights easily with this feature.

You can find insights that might not exist in your report but exist in your model based on the measures you've already created.

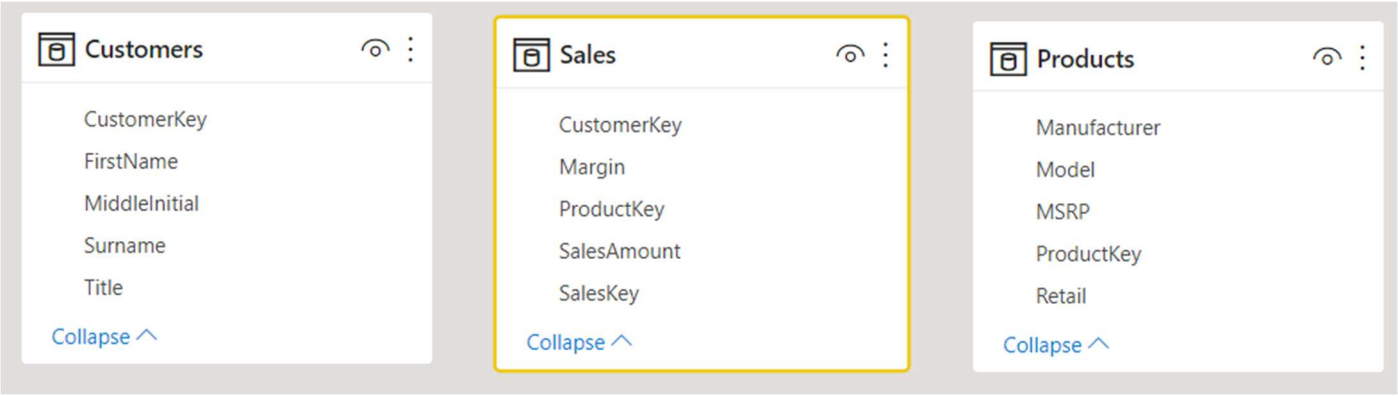
Add missing relationships
Rename tables and columns
Fix incorrect data types
Mark year and identifier columns as Don't Summarize
Choose a Data Category for each date and geography column

Example : Add missing relationships

If your model is missing relationships between tables, neither Power BI reports nor Q&A can interpret how to join those tables. Relationships are the cornerstone of a good model. For example, you can't ask for the "total sales for Seattle customers" if the relationship between the *orders* table and the *customers* table is missing. The following images show a model that needs work, and a model that is ready for Q&A.

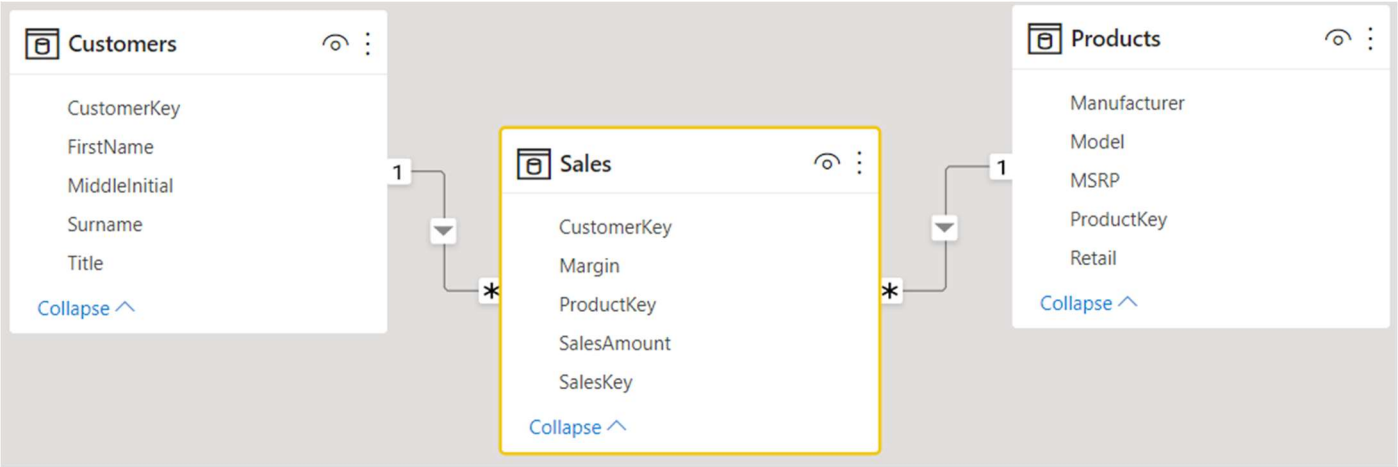
Needs work

In the first image, there are no relationships between the Customers, Sales, and Products tables.



Ready for Q&A

In the second image, relationships are defined between the tables.



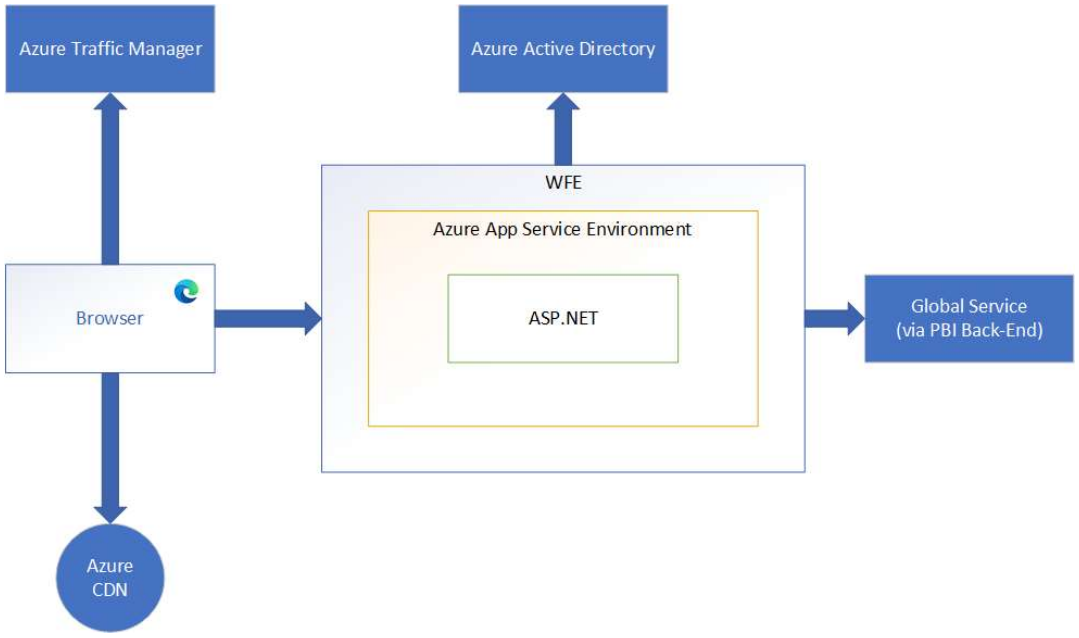
2. Explain Web Front End(WFE) cluster from Power BI Service Architecture?

Ans :- The Power BI service is built on **Azure**, Microsoft's cloud computing infrastructure and platform. The architecture of the Power BI service is based on two clusters:

- The Web Front End (**WFE**) cluster. The **WFE** cluster manages the initial connection and authentication to the Power BI service.
- The **Back-End** cluster. Once authenticated, the **Back-End** handles all subsequent user interactions. Power BI uses Azure Active Directory (Azure AD) to store and manage user identities. Azure AD also manages data storage and metadata using Azure BLOB and Azure SQL Database, respectively.

Web front-end cluster (WFE)

The WFE cluster provides the user's browser with the initial HTML page contents on site load, as well as pointers to CDN content used to render the site in the browser.



A WFE cluster consists of an ASP.NET website running in the Azure App Service Environment. When users attempt to connect to the Power BI service, the client's DNS service may communicate with the Azure Traffic Manager to find the most appropriate (usually nearest) datacenter with a Power BI deployment. For more information about this process, see Performance traffic-routing method for Azure Traffic Manager.

Static resources such as *.*js*, *.*css*, and image files are mostly stored on Azure Content Delivery Network (CDN) and retrieved directly by the browser. Note that Sovereign Government cluster deployments are an exception to this rule, and for compliance reasons will omit the CDN and instead use a WFE cluster from a compliant region for hosting static content.

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

Ans := The back-end cluster is the backbone of all the functionality available in Power BI. It consists of several service endpoints consumed by Web Front End and API clients as well as background working services, databases, caches, and various other components.

The back end is available in most Azure regions, and is being deployed in new regions as they become available. A single Azure region hosts one or more back-end clusters that allow unlimited horizontal scaling of the Power BI service once the vertical and horizontal scaling limits of a single cluster are exhausted.

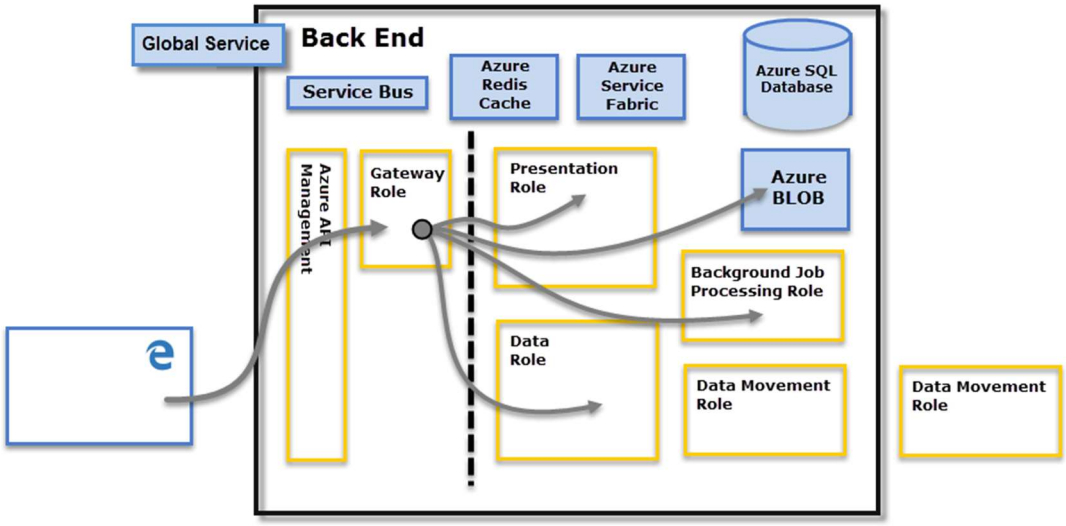
Each back-end cluster is stateful and hosts all the data of all the tenants assigned to that cluster. A cluster that contains the data of a specific tenant is referred to as the tenant's home cluster. An authenticated user's home cluster information is provided by Global Service and used by the Web Front End to route requests to the tenant's home cluster.

Each back-end cluster consists of multiple virtual machines combined into multiple resizable-scale sets tuned for performing specific tasks, stateful resources such as SQL databases, storage accounts, service buses, caches, and other necessary cloud components.

Tenant metadata and data are stored within cluster limits except for data replication to a secondary back-end cluster in a paired Azure region in the same Azure geography. The secondary back-end cluster serves as a failover cluster in case of regional outage, and is passive at any other time.

Back-end functionality is served by micro-services running on different machines within the cluster's virtual network that are not accessible from the outside, except for two components that can be accessed from the public internet:

- Gateway Service
- Azure API Management



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

Ans :- The name stands for Active Server Pages Network Enabled Technologies. ASP.NET website running in the Azure App Service Environment. When users attempt to connect to the Power BI service, the client's DNS service may communicate with the Azure Traffic Manager to find the most appropriate (usually nearest) datacenter with a Power BI deployment.

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

Data import	Excel can import data from external data sources including other files, databases, or web pages.	With Power BI Desktop, you can connect to data from many different sources. For a full list of available data sources, see Power BI data sources.
Data transformation	Transforming data means **modifying it in some way to meet your data analysis requirements**. For example, you can remove a column, change a data type, or filter rows. Each of these operations is a data transformation.	Data type changes, Filtering (rows and/or fields), Conditional Columns creation, Splitting columns, Renaming/reformatting.

Modeling	Ideal for building complex data models easily. MDX Language	Ability to work on simple and structured data models. DAX Language
Reporting	Simpler and less attractive reports than those of Power BI.	More beautiful, personalized, attractive, and interactive reports.
Cost	Payment tool.	It has a free version and a payment version

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

File data sources

The **File** category provides the following data connections:

- Excel Workbook
- Text/CSV
- XML
- JSON
- Folder
- PDF
- Parquet
- SharePoint folder

Database data sources

The **Database** category provides the following data connections:

- SQL Server database
- Access database
- SQL Server Analysis Services database
- Oracle database
- IBM Db2 database
- IBM Informix database (Beta)
- IBM Netezza
- MySQL database
- PostgreSQL database
- Sybase database
- Teradata database
- SAP HANA database
- SAP Business Warehouse Application Server
- SAP Business Warehouse Message Server
- Amazon Redshift
- Impala
- Google BigQuery
- Vertica
- Snowflake

- Essbase
- Actian (Beta)
- Amazon Athena
- AtScale cubes
- BI Connector
- Data Virtuality LDW
- Denodo
- Dremio Software
- Dremio Cloud (Beta)
- Exasol
- Indexima
- InterSystems IRIS (Beta)
- Jethro (Beta)
- Kyligence
- Linkar PICK Style / MultiValue Databases (Beta)
- MariaDB
- MarkLogic
- TIBCO(R) Data Virtualization

More data source :- https://learn.microsoft.com/en-us/power-bi/connect-data/desktop-data-sources