**Power BI Assignment 2**

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

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

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

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

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

Data import

Data transformation

Modeling

Reporting

Server Deployment

Convert Models

Cost

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

Answers to Assignment 2

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

* It provides immediate assistance on the question you want to ask, with no guesswork or technical knowledge required to get started with using the tool.

After selecting a dataset, you’re presented with a search box you can type in, but it’s not blank. Guided NLQ provides a list of options for possible questions, then guides you through each step in formulating the query. You can choose your own

path through the question by typing what you want to ask, using your mouse to choose an option, or both.

* It makes it easy to ask complex questions.
* Simplifying employee access to BI data. ...
* Driving deeper business insights. ...
* Reducing confusion about analytics results. ...
* Applying structure to unstructured data.

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

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 front-end cluster acts as a medium between the client and the on-cloud servers in the Power BI data flow diagram. After the initial connection and authentication using Azure Active Directory, the client can interact with the datasets located across the globe.
* 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.

Power BI Architecture

The WFE cluster uses Azure AD to authenticate clients and provide tokens for subsequent client connections to the Power BI service. Power BI uses the Azure Traffic Manager (Traffic Manager) to direct user traffic to the nearest datacenter. Traffic Manager directs requests using the DNS record of the client attempting to connect, authenticate, and to download static content and files. Power BI uses the Azure Content Delivery Network (CDN) to efficiently distribute the necessary static content and files to users based on geographical locale.

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

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.

The Back-End cluster determines how authenticated clients interact with the Power BI service. The Back-End cluster manages visualizations, user dashboards, datasets, reports, data storage, data connections, data refresh, and other aspects of interacting with the Power BI service

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

**Data Sources**

An important component of Power BI is its vast range of data sources. You can import data from files in your system, cloud-based online data sources or connect directly to live connections. If you import from data on-premise or online services there is a limit of 1 GB. Some commonly used data sources in Power BI are: Excel, CSV/text,SQL,snowflakes ETC

**Power BI Desktop**

Power BI Desktop is a client-side tool known as a companion development and authoring tool.

This desktop-based software is loaded with tools and functionalities to connect to data sources, transform data, data modeling and creating reports.

You can download and install Power BI Desktop in your system for free. Using Power BI Desktop features, one can do data cleansing, create business metrics and data models, define the relationship between data, define hierarchies, create visuals and publish reports.

**Power BI Service**

Power BI Service is a web-based platform from where you can share reports made on Power BI Desktop, collaborate with other users, and create dashboards.

It is available in three versions:Free version,Pro version, and Premium Version

Power BI Service is also known as, **“Power BI.com”**,**“Power BI Workspace”,** **“Power BI Site”** and **“Power BI Web Portal”**. This component also offers advanced features like natural language Q&A and alerts **Power BI Report Server**

The Power BI Report Server is similar to the Power BI Service. The only difference between these two is that Power BI Report Server is an on-premise platform. It is used by organizations who do not want to publish their reports on the cloud and are concerned about the security of their data.

Power BI Report Server enables you to create dashboards and share your reports with other users following proper security protocols.

**Power BI Gateway**

This component is used to connect and access on-premise data in secured networks. Power BI Gateways are generally used in organizations where data is kept in security and watch. Gateways help to extract out such data through secure channels to Power BI platforms for analysis and reporting

**Power BI Mobile**

Power BI Mobile is a native Power BI application that runs on iOS, Android, and Windows mobile devices. For viewing reports and dashboards, these applications are used

**Power BI Embedded**

Power BI Embedded offers APIs which are used to embed visuals into custom applications.

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

Data import:

Microsoft Excel has limitations when it comes to handling large datasets and complex data models. Power BI can handle big data sets and has more advanced data visualization options. It also allows for collaboration and sharing of reports with other users. Excel has limitations in the amount of data it can work with. In contrast, Power BI can handle much larger amounts of data. Power BI can connect to a large number of data sources, while Excel's connectivity capacity is limited. Also, unlike Excel, Power BI can be easily used from mobile devices.

**Data transformation**

Excel is used to organize data, transform it and perform mathematical operations and calculations. On the other hand, Power BI was conceived as a business intelligence and data visualization tool for businesses. Excel has limitations in the amount of data it can work with.

**Modeling**

Power BI is better suited for analyzing large datasets and gaining enterprise-wide insights, while Excel excels at manipulating and formatting smaller datasets. Power BI connects directly to data warehouses, databases, and cloud data sources to pull in massive amounts of data.

**Reporting**

Power BI has faster processing than Excel. Power BI dashboards are more visually appealing, interactive and customizable than those in Excel. Power BI is a more powerful tool than Excel in terms of comparison between tables, reports or data files.

Server Deployment

Excel has limitations in the amount of data it can work with. In contrast, Power BI can handle much larger amounts of data. Power BI can connect to a large number of data sources, while Excel's connectivity capacity is limited. Also, unlike Excel, Power BI can be easily used from mobile devices.

Convert Models

Power BI can handle big data sets and has more advanced data visualization options. It also allows for collaboration and sharing of reports with other users. Microsoft Excel can handle large amounts of data, it may struggle with complex data models and relationships.23 Mar 2023

Cost

Power BI Desktop is free to download and use for personal use, but it takes $10 per month per user to share reports with others. Since we already have Excel, we need to spend additional money to procure this and build dashboards.

6) **Data sources in PowerBI**

Excel, Text/CSV, XML,JSON, Oracle Database, IBM DB2 Database, MYSQL Database, Snowflakes, PostgreSQL Database, Sybase Database, Teradata Database, SAP HANA Data, SAP Business Warehouse server, Amazon Redshift, Impala, Google Big Query (Beta), Azure SQL Database, Salesforce Reports, Google Analytics, Facebook, GitHub, Google Analytics,