**Power BI Assignment 2**

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

* The Q&A function. Sometimes the fastest way to get an answer from your data is to ask a question using natural language, and that’s exactly what Q&A allows users to do, making this feature a top cited benefit in achieving self-service business intelligence.
* Dashboards, reports, and datasets are at the heart of Power BI. Users can create personalized dashboards, which combine on-premises and cloud-born data in a single view, allowing them to monitor their most important data enterprise wide and from all their business apps.
* The ability to easily embed BI and analytics in the app to deliver interactive reports and geo-map visualizations empowered by Bing maps.
* With SQL Server analysis services on-premises and Azure analysis services in the cloud, users can build robust, reusable data models, enabling consistent reporting and analyses.
* Power BI is available in three separate national cloud data centers, each offering the same level of security, privacy, compliance, and transparency as the global version of Power BI.
* The ability to connect to nearly any application or data source (literally hundreds of options), no matter whether those resources live in the cloud or on-premises. A few examples include Excel spreadsheets, GitHub, Mail Chimp, SharePoint, and Google Analytics.
* Very little engineering resources are needed to use Power BI. In fact, some instances don’t require any engineering at all. Managers simply need to create an API key and plug it into the software. If your organization already uses Microsoft systems (such as Office 365), using Power BI will feel natural as it integrates easily with Office 365 Groups and Microsoft Teams.
* Power BI is simple to use. Even basic users will find it to have a short learning curve.
* Fast turnarounds and low costs. By analyzing the most recent data, businesses can make informed decisions regarding which markets are growing and which ones are underperforming. Plus, the business retains ownership of the data always and can perform the analysis internally to save money.
* Constant innovation. The Power BI product is updated nearly every month with new features and functions.

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

* Each Power BI deployment consists of two clusters – a Web Front End (**WFE**) cluster, and a **Back-End** cluster.
* The **WFE** cluster manages the initial connection and authentication process for Power BI, using AAD (Azure Active Directory) to authenticate clients and provide tokens for subsequent client connections 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

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

* The **Back-End** cluster is 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.

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

* ASP.NET is an open source web framework, created by Microsoft, for building modern web apps and services with .NET.
* ASP.NET is cross platform and runs on Windows, Linux, macOS, and Docker.
* Base framework for processing web requests in C# or F#
* Web-page templating syntax, known as Razor, for building dynamic web pages using C#
* Libraries for common web patterns, such as Model View Controller (MVC)
* Authentication system that includes libraries, a database, and template pages for handling logins, including multi-factor authentication and external authentication with Google, Twitter, and more.
* Editor extensions to provide syntax highlighting, code completion, and other functionality specifically for developing web pages

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

* Data import

You can import data from a text file into an existing worksheet in Excel. Click the cell where you want to put the data from the text file. On the Data tab, in the Get External Data group, click From Text. In the Import Data dialog box, locate and double-click the text file that you want to import, and click Import.

With Power BI Desktop, you can easily import Excel workbooks that contain Power Query queries and Power Pivot models into Power BI Desktop. Power BI Desktop automatically creates reports and visualizations based on the Excel workbook. Once imported, you can continue to improve and refine those reports with Power BI Desktop, using the existing features and new features released with each Power BI Desktop monthly update.

* Data Transformation

Power BI Power Query Editor can be used to edit or transform data files before they get loaded into the Power BI dashboard. The Query Editor serves as an intermediate data container that allows you to modify data by choosing columns and rows, pivoting and un pivoting columns, splitting columns and rows, etc.

Power Pivot is an Excel add-in you can use to perform powerful data analysis and create sophisticated data models. With Power Pivot, you can mash up large volumes of data from various sources, perform information analysis rapidly, and share insights easily.

* Modeling

Data Modeling is one of the features used to connect multiple data sources in BI tool using a relationship. A relationship defines how data sources are connected with each other and you can create interesting data visualizations on multiple data sources.

With the modeling feature, you can build custom calculations on the existing tables and these columns can be directly presented into Power BI visualizations. This allows businesses to define new metrics and to perform custom calculations for those metrics. By clicking model tab we can create data modeling in Power BI. Power BI is ideal for building complex data models easily.

Excel has the ability to work on simple and structured data model. A Data Model integrates the tables, enabling extensive analysis using PivotTables, Power Pivot, and Power View.

* Reporting

Power BI helps to create beautiful, interactive, attractive and personalize reports.

Excel creates simple and less attractive reports than Power BI

* Service Deployment

The deployment process lets you clone content from one stage in the pipeline to another, typically from development to test, and from test to production. During deployment, Power BI copies the content from the current stage, into the target one. The connections between the copied items are kept during the copy process.

The Microsoft 365 admin center makes it easy for an administrator to deploy Office Add-ins to users and groups in their organization. Add-ins deployed via the admin center are available to users in their Office applications right away, with no client configuration required. You can use Integrated Apps to deploy internal add-ins as well as add-ins provided by ISVs. Integrated Apps also shows admins add-ins and other apps bundled together by same ISV, giving them exposure to the entire experience across the Microsoft 365 platform.

* Cost

The cost of Power BI depends on how many projects you need and the amount of power you’ll use to crunch and display your data. There are 4 Power BI subscriptions to choose from, including:

Power BI Pro Free Trial

Power BI Pro – $9.99 per user, per month

Power BI Premium Per User – $20 per user, per month

Power Bi Premium Per Capacity – $4,996 per capacity, per month

Its free version also available.

Excel is included in the Microsoft 365 Business Standard package and costs £9.40 per user per month. You also get a host of other software, including Outlook, Word, Teams and Exchange.

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

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
* Google BigQuery (Azure AD)(Beta)
* 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