**Power BI Assignment 2**

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

The fastest way of getting an answer from the data in Power BI is by performing a search over the data using the natural language. The Q&A feature in the Power BI has made it possible to extract desired features from the data using our own words in natural language. The Q&A feature provides an experience that is interactive and fun. And quite Often, one question leads to others as the visualizations start to unravel the information and trends that starts to provide us with more insights. With the help of natural queries in Q&A options we can travel through the data and extract the different trends and we can zoom in or zoom out of the visuals.

Example: Asking questions- Which sales has highest revenue? , data filtering- Sales in last year, Top N filtering- Top 10 products based on revenue.

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

**Web Front End (WFE) cluster**- The WFE cluster manages the initial connection and authentication to the Power BI service.

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 data centre. 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.

1. **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. The Gateway Role acts as a gateway between user requests and the Power BI service. Users don't interact directly with any roles other than the Gateway Role. Azure API Management eventually handles the Gateway Role.

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

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 data centre with a Power BI deployment.

1. **Compare Microsoft Excel and Power BI Desktop on the following features**:

**Data import**: Excels connectivity to data sources is limited as compared to Power BI which can connect to large number of data sources and hence, the data import is limited in excel as compared to Power BI

**Data transformation:** Data transformation can be done in both Excel and Power BI using Power Query.

**Modelling:** Modelling is done in Excel using Power Query and Power Pivot. Establishing relationship between the various data tables in Power BI is easy and most of the times Power BI automatically generates the relationship between the various elements of the data table.

**Reporting:** Excel dashboards make it easy to perform quick overviews of data reports rather than going through large volumes of data. In Excel we can create another set of charts using built in charts. Although Power BI also has in built charts but it does not give you the functionality to customise the chart to full extent. Power BI has several set of slicers and cross filters to make reports intuitive and highly interactive. Excel also has slicers. Power BI can work on large set of data. In Excel large datasets cannot be processed properly. While sharing data the data security is kept in mind in Power BI. Data security is absent in case of Excel.

**Server Deployment:** Server Deployment possible in both Excel and Power BI.

**Convert Models:** In Excel models can be converted using Power Pivot and Power Query. In Power BI model can be converted using Power Query Editor.

**Cost:** Power BI Desktop is free to download and use for personal use but charges are required usually around 13 $ to share report with others. We also need to spend additional charges to access various functionalities and to build visuals and reports.

1. **List 20 data sources supported by Power Bi desktop**.
   * + 1. Excel Workbook
       2. Text/CSV
       3. XML
       4. JSON
       5. Folder
       6. PDF
       7. Parquet
       8. SharePoint folder
       9. SQL Server database
       10. Access database
       11. SQL Server Analysis Services database
       12. Oracle database
       13. IBM Db2 database
       14. IBM Informix database (Beta)
       15. IBM Netezza
       16. MySQL database
       17. PostgreSQL database
       18. Sybase database
       19. Teradata database
       20. SAP HANA database