**Power BI Assignment 3**

1. List and explain different PowerBi products?

Ans-

Power BI is a suite of business intelligence (BI) tools developed by Microsoft. It offers a range of products and services that allow users to analyze, visualize, and share data insights. Here are the main Power BI products:

\* Power BI Desktop: Power BI Desktop is a Windows application that serves as the primary development environment for creating Power BI reports and visualizations. It provides a powerful set of tools for data modeling, data transformation, and report creation.

\*Power BI Service: Power BI Service, also known as Power BI Online or Power BI Cloud, is a cloud-based service that allows users to publish, share, and collaborate on Power BI reports and dashboards. It provides features such as data refresh, sharing and embedding options, and administration capabilities.

\*Power BI Mobile: Power BI Mobile is a set of mobile applications available for iOS and Android devices. It enables users to access and interact with their Power BI reports and dashboards on the go, providing a responsive and touch-friendly experience.

\*Power BI Report Server: Power BI Report Server is an on-premises reporting solution that allows organizations to host Power BI reports within their own infrastructure. It provides a secure and controlled environment for managing and distributing reports to users within the organization.

\*Power BI Embedded: Power BI Embedded is a platform-as-a-service (PaaS) offering that allows developers to integrate Power BI reports and dashboards into their own applications. It provides APIs and SDKs for embedding Power BI content, enabling developers to create custom data visualizations and incorporate Power BI functionality within their applications.

\*Power BI Dataflows: Power BI Dataflows is a self-service data preparation feature that allows users to connect, transform, and load data from various sources into a common data model. It provides capabilities for data cleansing, transformation, and data lineage, making it easier to create and maintain data pipelines for analysis and reporting.

\*Power BI Premium: Power BI Premium is a licensing option that provides dedicated capacity and enhanced features for organizations with demanding Power BI needs. It offers increased data storage, higher data refresh rates, and the ability to share reports with external users without requiring them to have a Power BI Pro license.

1. What limitations of Excel, Microsoft solved by PowerBi?

Ans-

\*Power BI was developed by Microsoft to address certain limitations of Excel when it comes to handling large volumes of data, complex data modeling, and creating interactive visualizations. Here are some of the limitations of Excel that Power BI helps to overcome:

\*Scalability: Excel has limitations in handling large datasets, especially when it comes to performance and responsiveness. Power BI is designed to handle much larger volumes of data efficiently, leveraging technologies such as data compression and columnar storage, allowing users to work with extensive datasets without sacrificing performance.

\*Data modeling: Excel has limited capabilities for complex data modeling. Power BI provides robust data modeling capabilities, including relationships between tables, calculated columns, measures, and hierarchies. This allows users to create more sophisticated and structured data models for analysis.

\*Data integration: Excel requires manual data entry or copying and pasting data from various sources, which can be time-consuming and prone to errors. Power BI offers data integration capabilities, allowing users to connect to a wide range of data sources, including databases, cloud services, and online applications. It supports automated data refresh and transformation, enabling users to work with up-to-date and consolidated data.

\*Visualizations: While Excel offers basic charting and visualization options, it can be limited in creating interactive and visually appealing dashboards and reports. Power BI provides a rich library of customizable visualizations and interactive features. Users can create dynamic reports, drill-down into data, apply filters, and build interactive dashboards that facilitate data exploration and analysis.

\*Collaboration and sharing: Excel workbooks are typically shared as files, making collaboration challenging and version control complex. Power BI offers a cloud-based service (Power BI Service) where users can publish and share reports and dashboards. It enables real-time collaboration, allowing multiple users to work on the same report simultaneously and providing version history and access control.

\*Mobile experience: Excel is not optimized for mobile devices, and viewing or interacting with Excel files on mobile can be difficult. Power BI provides dedicated mobile apps (Power BI Mobile) that offer a responsive and touch-friendly experience, allowing users to access and interact with their reports and dashboards on smartphones and tablets.

By addressing these limitations, Power BI offers a more specialized and powerful platform for data analysis, visualization, and collaboration compared to Excel, particularly for organizations dealing with large datasets and complex analytical needs.

1. Explain PowerQuery?

Ans-

Power Query is a powerful data transformation and preparation tool developed by Microsoft. It is a feature available in various Microsoft products like Power BI, Excel, and Power Automate. With Power Query, users can connect to different data sources, perform data transformations, and load the transformed data for analysis and reporting purposes.

Power Query offers a wide range of functionalities to manipulate and shape data. It supports connectivity to various data sources including databases, spreadsheets, web services, and more. Users can extract data from these sources, apply transformations such as filtering, sorting, merging, and splitting columns, and perform calculations using a formula language called "M."

The Query Editor interface provides a visual environment where users can build and refine their data transformation steps. They can preview the changes in real time, modify or reorder the steps, and navigate through the applied transformations. Power Query also includes query folding, an optimization technique that pushes data transformation operations to the data source's engine, improving performance.

Power Query enables users to clean and cleanse data by removing duplicates, handling missing values, and formatting data types. It also supports advanced features like custom functions and query parameters, allowing users to create reusable transformations and dynamic queries.

1. Explain PowerMap?

Ans-

Power Map (or 3D Maps) allowed users to create interactive and visually appealing geospatial visualizations by plotting data on maps. Users could import geographic data, such as addresses or coordinates, from Excel or other sources and display them on a 3D globe or a flat map. The data points could be represented as bubbles, columns, heat maps, or region-based shading, providing insights into geographical patterns and trends.

Users could customize the visualization by adjusting colors, sizes, and animations based on data values or time. Power Map also allowed users to create tours, which were interactive presentations that guided viewers through the data and visualizations. Users could navigate the map, zoom in and out, and rotate the view to explore the data from different angles.

It is important to note that since Power Map has been deprecated, Microsoft recommends using other mapping and geospatial visualization options available within Power BI, such as the built-in map visualizations or integrating with external mapping services like Bing Maps or ArcGIS. These options offer more advanced and up-to-date features for geospatial analysis and visualization within the Power BI ecosystem.

1. How powerBi eliminated the need to host SharePoint Server on premises?

Ans-

Power BI has significantly reduced the need for hosting SharePoint Server on-premises by providing a cloud-based solution for data analysis, visualization, and collaboration. Here are several ways Power BI eliminates the need for SharePoint Server on-premises:

\* Cloud-based Architecture: Power BI is built as a cloud-based service, hosted on Microsoft Azure. This means organizations can leverage the power and scalability of the cloud without the need to set up and maintain their own infrastructure, including SharePoint Server.

\*Data Storage and Management: Power BI provides its own data storage and management capabilities. Instead of relying on SharePoint Server for storing and managing data, organizations can directly store their data in the Power BI cloud service, eliminating the need for maintaining SharePoint databases.

\*Data Refresh and Integration: Power BI supports data refresh from various data sources, both on-premises and in the cloud. Organizations can connect directly to their data sources, schedule data refreshes, and keep their reports and dashboards up to date without the need for SharePoint Server as an intermediate data repository.

\*Sharing and Collaboration: Power BI offers robust sharing and collaboration features. Users can share reports and dashboards with colleagues and external stakeholders, control access and permissions, and collaborate in real-time. This eliminates the need for SharePoint Server as a collaboration platform for sharing and distributing reports.

\*Embedded Analytics: Power BI allows organizations to embed Power BI reports and dashboards into other applications or websites. This means that organizations can integrate Power BI directly into their existing systems without relying on SharePoint Server for embedding analytics capabilities.

While SharePoint Server still provides its own set of features and functionalities for content management and collaboration, Power BI offers a comprehensive cloud-based solution specifically tailored for data analysis and visualization. By leveraging Power BI, organizations can reduce the complexity, maintenance, and infrastructure costs associated with hosting SharePoint Server on-premises for data-driven insights and reporting.

1. Explain the updates done in Power Bi Service (power BI 2.0) as compared to older version?

Ans-

Here are the information on the updates and enhancements introduced in Power BI Service (the cloud-based platform) compared to its earlier versions. Here are some notable updates:

\*Modernized User Interface: Power BI Service underwent a significant user interface redesign, providing a more intuitive and modern experience. The interface became more consistent with other Microsoft products, offering improved navigation, menu organization, and overall aesthetics.

\*Paginated Reports: Power BI Service introduced support for paginated reports, allowing users to create and publish pixel-perfect, print-ready reports. Paginated reports are suitable for scenarios where precise formatting and large-scale distribution of reports are required.

\*AI-powered Features: Power BI Service incorporated various AI-powered capabilities. These include AI-driven insights, which automatically identify trends, outliers, and anomalies in data, and AI visuals like Key Influencers and Decomposition Tree for enhanced data exploration.

\*Power BI Apps: Power BI Apps replaced the earlier concept of content packs. Apps provide a streamlined way to package and distribute dashboards, reports, and datasets to specific users or groups. Apps enable easier content discovery, installation, and maintenance.

\*Sharing and Collaboration Enhancements: Power BI Service introduced improved sharing and collaboration features. Users gained the ability to share content directly with external users without requiring them to have a Power BI Pro license. Collaboration features like commenting, @mentioning, and sharing dashboards within Teams were also enhanced.

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DirectQuery and Composite Models: Power BI Service introduced support for DirectQuery and Composite Models. DirectQuery enables real-time analysis by connecting directly to the data source, while Composite Models allow combining DirectQuery, Import, and other connectivity modes within a single report.

\*Power Automate Integration: Power BI Service integrated tightly with Power Automate (formerly Microsoft Flow). Users can create automated workflows triggered by Power BI events or embed Power BI visuals within Power Automate flows for data-driven actions.

These are just a few examples of the updates introduced in Power BI Service over time. Microsoft continues to enhance Power BI with regular updates, introducing new features, performance improvements, security enhancements, and usability refinements to meet the evolving needs of users and organizations.