Power BI Assignment 3

1. **List and explain different PowerBi products?**

ANS: Power BI is a suite of business analytics tools developed by Microsoft. It empowers organizations to create insightful and interactive dashboards and reports to gain valuable insights from their data. The Power BI suite consists of several products and components that work together to enable data visualization, analysis, and sharing. Here are some of the key Power BI products:

- Power BI Desktop:
- Power BI Desktop is a Windows application that allows users to create and design interactive reports and dashboards. It provides a wide range of data connectivity options, data transformation capabilities, and data visualization tools. Users can build complex data models, write custom measures using DAX (Data Analysis Expressions), and create compelling visualizations with interactive features.

- Power BI Service (Power BI online):
- The Power BI Service is a cloud-based platform where users can publish, share, collaborate, and view reports and dashboards created with Power BI Desktop. It offers features for data exploration, collaboration, and real-time data dashboards. With the Power BI Service, users can access their reports from anywhere and any device, share them with others, and manage access permissions.

- Power BI Mobile Apps:
- Power BI provides mobile apps for iOS and Android devices, allowing users to access and interact with their reports and dashboards on the go. The mobile apps offer an optimized experience for smaller screens, touch-based interactions, and offline access to data for viewing when there's no internet connection.

- Power BI Report Server:
- Power BI Report Server is an on-premises solution that allows organizations to host and manage Power BI reports and dashboards within their own infrastructure. This is particularly useful for organizations with strict data compliance or security requirements that prefer to keep their data on-premises rather than in the cloud.

- Power BI Embedded:
- Power BI Embedded is designed for developers and ISVs (Independent Software Vendors) to integrate Power BI capabilities directly into their applications. It enables embedding interactive reports and dashboards into custom applications, providing end-users with seamless data visualization and analysis without leaving the application.

- Power BI Data Gateway:

- The Power BI Data Gateway is a bridge that facilitates secure and encrypted communication between the Power BI Service and on-premises data sources. It allows users to access and refresh data from sources behind the organization's firewall, ensuring data remains up to date in the cloud-based reports and dashboards.

- Power BI Premium:
- Power BI Premium is a licensing option that provides dedicated resources for organizations to deploy Power BI. It includes enhanced performance, larger data storage capacity, and the ability to share reports and dashboards with a broader audience without requiring each user to have a Power BI Pro license.

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

ANS: Power BI was developed by Microsoft to address several limitations of Excel when it comes to data analysis, visualization, and reporting. While Excel is a powerful tool for handling data, it does have some limitations that Power BI overcomes. Here are some of the key limitations of Excel that Power BI helps solve:

- Scalability and Performance: Excel may become slow and cumbersome when dealing with large datasets or complex calculations. Power BI is designed to handle large volumes of data and is optimized for performance, enabling users to create interactive reports and dashboards with fast response times.

- Data Modeling: Excel's data modeling capabilities are limited compared to Power BI. Power BI provides advanced data modeling tools, such as relationships between tables, calculated columns, and measures using DAX, allowing users to create more sophisticated data models for analysis.

- Data Refresh: Excel requires manual data refreshing, which can be time-consuming and prone to errors. Power BI offers automated data refresh options, ensuring that reports and dashboards always display the latest data from connected data sources.

- Real-time Data: Power BI allows users to connect to real-time data sources, enabling them to create dynamic dashboards that reflect up-to-the-minute information. Excel lacks native support for real-time data connections.

- Interactive Dashboards: While Excel can create static charts and tables, it lacks the interactive capabilities of Power BI dashboards. Power BI enables users to create dynamic and interactive visualizations that respond to user interactions and selections.

- Data Collaboration and Sharing: Excel workbooks often need to be manually shared via email or file sharing services. Power BI provides a cloud-based platform for easy collaboration and sharing of reports and dashboards with colleagues, ensuring everyone has access to the latest data.

- Mobile Access: Power BI offers dedicated mobile apps for iOS and Android, providing a responsive and optimized experience for viewing and interacting with reports on mobile devices. Excel may not provide the same level of mobile-friendly functionality.

- Customization and Embedding: Power BI allows for greater customization and embedding capabilities, making it easier for developers to integrate Power BI reports and dashboards into custom applications, portals, or websites. Excel does not provide the same level of integration possibilities.

- Data Source Connectivity: While Excel supports various data sources, Power BI has a more extensive range of native connectors and integration with cloud-based services, making it easier to connect to different data sources without complex data imports.

- Time to Insights: Power BI provides a more streamlined and user-friendly experience for creating data visualizations and reports, reducing the time it takes to gain insights from data compared to Excel's traditional formula-based approach.

- Overall, Power BI complements Excel's capabilities by offering a modern, cloud-based, and business intelligence-focused platform that addresses many limitations faced by Excel users when dealing with large and complex datasets for data analysis and reporting.

3.Explain PowerQuery?

ANS: In Power BI, Power Query is a data transformation and data preparation tool that is tightly integrated into the Power BI Desktop application. It allows users to connect to various data sources, clean, transform, and shape the data before loading it into the Power BI data model. Power Query is a critical component of the data acquisition and transformation process in Power BI, helping users to create efficient and meaningful data models for their reports and dashboards. Here's how Power Query works in Power BI:

- Power Query in Power BI allows users to connect to a wide range of data sources, including databases, Excel files, SharePoint lists, web services, cloud-based data sources, and more. It offers numerous connectors, making it easy to access data from various sources and combine them into a single dataset.

- Query Editor:
When users connect to a data source in Power BI, Power Query opens the Query Editor, which is a user-friendly interface for data transformation. The Query Editor displays the data in a tabular format, and users can apply various data transformation steps through a series of menus and options.

- Data Transformation:
In the Query Editor, users can perform various data transformation operations on their data. They can filter and sort data, remove duplicates, change data types, pivot and unpivot data, merge and append tables, add custom columns using M language or Power Query formulas, and much more.

- M Language and Power Query Formula Language (M or Power Query Formula Language):
Behind the scenes, Power Query uses a functional scripting language called "M" or "Power Query Formula Language" to define the data transformation steps. While users can perform most tasks using the Query Editor's graphical interface, they can also use M code for advanced data transformation scenarios or to create custom functions.

- Applied Steps:
As users apply data transformation steps in the Query Editor, each step is recorded in the "Applied Steps" pane. The Applied Steps list shows the sequence of transformations applied to the data, and users can review, modify, or delete any step at any point during the data preparation process.

- Data Load:
Once users have prepared the data using Power Query, they can load the transformed data into the Power BI data model. The data model is a centralized repository that holds the data used to build reports and dashboards in Power BI.

- Data Refresh:
Power Query maintains a connection to the original data source, allowing users to schedule data refreshes in Power BI. This ensures that the data in the reports and dashboards remains up to date with the latest data from the source.

4.Explain PowerMap?

ANS: Power Map is a 3D geospatial data visualization feature in Power BI that allows users to create interactive and immersive maps with geographic and temporal data.It enables users to plot data points on a 3D map, visualize trends over time, and create compelling visualizations with their data.

Here's how Power Map works in Power BI:

- Data Source Selection: To create a Power Map in Power BI, users need to have a dataset with geographical or spatial data. This data can include addresses, countries, cities, or latitude and longitude coordinates. Users can import their data into Power BI using various methods, such as connecting to a data source, importing from a file, or using Power Query to transform and prepare the data.

- Creating a Power Map Visualization: Once the data is loaded into Power BI, users can create a Power Map visualization by selecting the appropriate fields for location, time (if applicable), and other data attributes. Power BI will automatically detect the location data and plot it on the map accordingly.

- Geographic Mapping: Power Map uses Bing Maps as its base map to display the geographical data. Users can zoom in and out, pan, and navigate the 3D map to explore the data from different angles and perspectives.

- Time Series Animation: If the data includes a time dimension, users can enable time series animation in Power Map. This allows users to visualize changes in the data over time, with the map animating and displaying data points as they evolve through different time periods.

- Data Layering and Customization: Users can add multiple data layers to the map, allowing for visualizing multiple data series or categories simultaneously. They can customize the appearance of data points, such as size, color, and shape, to represent additional information or trends.

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

ANS: Power BI, as a cloud-based business intelligence platform developed by Microsoft, has significantly reduced the need for organizations to host SharePoint Server on-premises for certain data reporting and visualization needs. Here's how Power BI has eliminated the need for an on-premises SharePoint Server in many scenarios:

- Cloud-based Data Storage and Sharing: Power BI operates in the cloud, which means data and reports are stored securely on Microsoft's servers. With Power BI, users can store and access their reports and dashboards directly from the cloud without the need for an on-premises SharePoint Server.

- Data Connectivity: Power BI offers a wide range of native connectors that allow users to connect to various data sources, including cloud-based services and on-premises databases. This eliminates the need to host data exclusively on SharePoint Server, as users can directly connect to data wherever it resides.

- Power BI Service Collaboration: The Power BI Service allows users to collaborate, share, and publish reports and dashboards with colleagues and stakeholders. This collaborative capability makes it unnecessary to use SharePoint as a platform for sharing reports within the organization.

- Power BI Embedded: For organizations that still use SharePoint for custom applications, Power BI Embedded provides a way to embed Power BI reports and dashboards directly into SharePoint pages. This allows users to leverage Power BI's data visualization capabilities within SharePoint without hosting the entire SharePoint Server on-premises.

- Data Refresh and Synchronization: With Power BI, data can be scheduled for automatic refresh, ensuring that reports and dashboards always display the latest information. This feature is built into the Power BI Service, removing the need for manual data synchronization using SharePoint Server.

- Scalability and Performance: Power BI's cloud-based infrastructure provides better scalability and performance for handling large datasets and complex reports compared to on-premises SharePoint Server environments.

- Power BI Report Server: For organizations with strict data compliance or security requirements, Microsoft offers Power BI Report Server, an on-premises solution that allows hosting and managing Power BI reports within the organization's own infrastructure. This allows for a hybrid approach, combining the benefits of cloud-based Power BI and on-premises reporting when needed.

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

ANS:

- Enhanced User Interface: Power BI's user interface has been refined and improved over time to make it more user-friendly and intuitive. The navigation and layout have been optimized to enhance the overall user experience.

- Expanded Data Connectivity: Microsoft has continually added new data connectors to Power BI, allowing users to connect to a broader range of data sources, including cloud services, on-premises databases, and various online services.

- Power Query Online: Power Query Online (also known as Dataflows) allows users to perform data preparation and transformation tasks directly in the Power BI service, without the need for Power BI Desktop or Excel.

- Paginated Reports: Power BI now supports paginated reports (formerly known as SQL Server Reporting Services or SSRS reports), enabling users to create and view pixel-perfect, printable reports side by side with interactive dashboards.

- Composite Models: Power BI has improved support for composite models, allowing users to combine DirectQuery and Import mode datasets in a single report for more complex data models.

- AI-powered Insights: Power BI has incorporated AI-powered insights, enabling users to discover patterns, trends, and anomalies in their data more easily.

- Dataflow Enhancements: Dataflow capabilities in Power BI have been enhanced to provide better data integration, data transformation, and data refresh options.

- Power BI Apps: The introduction of Power BI Apps allows users to bundle dashboards, reports, and datasets together and distribute them to specific audiences more effectively.

- Enhanced Collaboration: Microsoft has added features to enhance collaboration within the Power BI service, such as commenting on dashboards and reports, sharing through email subscriptions, and integration with Microsoft Teams.

- Improved Mobile Experience: Power BI mobile apps have received updates to improve performance, user experience, and mobile report creation capabilities.

- Power BI Premium Per User (PPU): The introduction of Power BI Premium Per User licensing allows individual users to access premium features without the need for a dedicated Power BI Premium capacity.