**Power BI Assignment 3**

1. List and explain different PowerBi products?

Microsoft offers several Power BI products and services that cater to various needs of organizations and individuals for data analysis, reporting, and business intelligence. Here are some of the main Power BI products and a brief explanation of each:

Power BI Desktop:

Power BI Desktop is a free Windows application used to create interactive data visualizations and reports. It allows users to connect to various data sources, perform data transformations, build data models, and design compelling visuals before publishing them to the Power BI Service.

Power BI Service (Power BI Pro and Power BI Premium):

The Power BI Service is a cloud-based platform where users can publish, share, collaborate on, and consume reports and dashboards created with Power BI Desktop. It offers both Power BI Pro and Power BI Premium licensing options.

Power BI Pro: Provides individual users or small teams with the ability to create, publish, and share reports and dashboards in a collaborative manner. It requires a monthly subscription per user.

Power BI Premium: Offers dedicated resources for larger organizations with high user counts, more data capacity, and enhanced performance. It includes features like Power BI Report Server and AI capabilities. Premium is available on a per-user or per-capacity basis.

Power BI Mobile:

Power BI Mobile is a mobile application that allows users to access and interact with Power BI reports and dashboards on their smartphones and tablets. It ensures a consistent and optimized viewing experience across various devices.

Power BI Report Server:

Power BI Report Server is an on-premises solution that enables organizations to host and manage Power BI reports within their own infrastructure. It's suitable for organizations that need to keep their data on-premises due to security or compliance reasons.

Power BI Embedded:

Power BI Embedded allows developers to embed Power BI reports, dashboards, and visuals into custom applications or websites. It's designed for ISVs and developers who want to offer analytics capabilities to their users.

Power BI Dataflows:

Power BI Dataflows enables users to connect, transform, and load data from various sources to create data entities. These entities can be reused across reports and dashboards, promoting data consistency and central management.

Power BI Premium Per User (PPU):

Power BI Premium Per User is a licensing option that provides advanced features and capabilities to individual users at a lower cost than traditional Power BI Premium. It includes dedicated cloud resources and allows users to access premium features without the need for a full Premium subscription.

Power BI Goals:

Power BI Goals is a solution for setting, tracking, and visualizing organizational goals and key performance indicators (KPIs) across teams and departments. It helps align business objectives and monitor progress.

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

Microsoft Power BI was developed to address several limitations and challenges that users encountered while using Microsoft Excel for data analysis and reporting. Some of the key limitations of Excel that Power BI helps to solve include:

Handling Large and Complex Data: Excel can struggle to handle large datasets or complex data models efficiently. Power BI is designed to handle vast amounts of data and provides more robust data modeling and optimization features.

Data Transformation and Cleanup: Excel's data manipulation capabilities, while powerful, can be time-consuming and limited for complex data transformations. Power BI's Power Query offers advanced data transformation capabilities in a user-friendly interface.

Data Refresh and Automation: In Excel, users often have to manually refresh data or rely on complex macros. Power BI allows for automated and scheduled data refresh, ensuring that reports and dashboards always reflect the latest data.

Data Relationship Management: Building and managing relationships between tables in Excel can be cumbersome. Power BI provides a dedicated interface for managing relationships, reducing the risk of errors and simplifying the process.

Version Control and Collaboration: Sharing Excel files can lead to version control issues, and real-time collaboration is limited. Power BI offers a cloud-based platform for easy sharing, collaboration, and concurrent editing of reports and dashboards.

Interactive Visualizations: While Excel provides basic charting and visualization options, Power BI offers a rich library of interactive visuals, custom visualizations, and more advanced formatting and layout options.

Performance and Scalability: As data grows, Excel's performance can degrade. Power BI is designed for better performance and scalability, making it suitable for handling large datasets and serving a broader user base.

Mobile and Cross-Device Compatibility: Excel files may not render well on mobile devices or different screen sizes. Power BI's responsive design ensures reports and dashboards look and function well on various devices.

Data Security and Access Control: Excel files can be easily shared and may lack granular access controls. Power BI provides robust data security and access control mechanisms to protect sensitive information.

Real-Time Data Integration: Power BI supports real-time data integration and streaming, allowing users to create dashboards that display data updates in near real-time, which is challenging to achieve in Excel.

3. Explain PowerQuery?

Power Query is a data transformation and data preparation tool that is part of Microsoft Power BI, Excel, and other Microsoft products. It provides a user-friendly interface for connecting to various data sources, transforming and shaping data, and loading it into your preferred destination, whether it's a Power BI report, Excel workbook, or other data analysis tool.

Key features and capabilities of Power Query include:

Data Source Connectivity: Power Query supports connecting to a wide range of data sources, including databases, files (Excel, CSV, JSON, XML, text), online services (SharePoint, Dynamics 365, Salesforce), web APIs, and more.

Data Transformation: Power Query allows you to perform various data transformation tasks without writing complex code. You can filter, sort, group, pivot, unpivot, aggregate, and merge data from different sources.

Data Cleaning and Shaping: Power Query provides tools to clean and shape data, such as removing duplicates, splitting columns, combining columns, and handling missing values. These transformations help ensure data quality and consistency.

Data Enrichment: You can enrich your data by merging or appending data from multiple sources, performing calculations, adding custom columns, and applying business rules.

Advanced Data Transformations: Power Query supports advanced transformations through its formula language, M, which allows you to create custom functions, perform complex calculations, and implement conditional logic.

4. Explain PowerMap?

Power Map allows you to create interactive 3D visualizations and animations based on geographic and time-based data.

Add a Map Visual:

In Power BI Desktop, you can add a map visual to your report by selecting the "Map" visual from the Visualizations pane. You can then drag and drop data fields onto the relevant areas in the visual.

Geospatial Data:

Similar to Power Map in Excel, you can use geographic data such as country, region, city, latitude, and longitude to plot data points on the map.

Customization:

The map visual in Power BI allows you to customize the map's appearance, including color-coding data points, adjusting map layers, and adding reference lines.

Visual-Level Filters and Interactivity:

You can add visual-level filters to your map, allowing users to interactively filter the data and focus on specific regions or data points.

Drill-Through:

You can set up drill-through actions in the map visual, allowing users to click on data points to see more detailed information or navigate to related reports.

Tooltip Information:

Customize the information displayed in tooltips when users hover over data points on the map.

Data Category:

Assign data categories to fields in your data model to enhance map-related functionality. For example, you can assign a "City" category to a field containing city names.

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

Power BI has significantly reduced the need for organizations to host SharePoint Server on-premises by offering a cloud-based business intelligence and data analytics platform that provides many of the same capabilities as SharePoint with added benefits. Here's how Power BI eliminates the need for hosting SharePoint Server on premises:

Cloud-Based Platform:

Power BI is a fully cloud-based platform that doesn't require on-premises server infrastructure. Organizations can access and use Power BI directly from the cloud, reducing the need to set up and maintain SharePoint servers on their premises.

Data Storage and Sharing:

Power BI allows users to store and share data, reports, and dashboards securely in the cloud. This eliminates the need to set up SharePoint document libraries and manage file permissions on an on-premises SharePoint server.

Data Visualization and Reporting:

Power BI provides robust data visualization and reporting capabilities similar to what SharePoint offers. Users can create interactive reports and dashboards without the complexity of setting up and maintaining SharePoint-based reporting solutions.

User Collaboration:

Power BI enables real-time collaboration and sharing of reports and dashboards. Users can collaborate on data analysis and visualizations without the need for SharePoint workspaces and collaboration features.

Integration with Other Data Sources:

Power BI integrates with a wide range of data sources, including databases, cloud services, and online applications. This eliminates the need to host SharePoint data on-premises solely for the purpose of integrating with other data sources.

Ease of Use and Adoption:

Power BI provides a user-friendly interface that is easier for business users to adopt compared to the complexity of setting up and managing SharePoint environments. Users can quickly start creating and sharing reports without extensive training.

Scalability and Performance:

Power BI is designed for scalability and performance. It can handle large datasets and user concurrency without the need to invest in and manage on-premises server hardware.

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

(1) Admin & governance

(2) Email subscriptions access via Admin API

(3) Allow sharing links to include your changes to the report

(4) Announcing Public Preview of Hybrid Tables in Power BI Premium

(5) Deployment pipelines: assign a workspace to all pipeline stages