**Power BI Assignment 3**

Q1. List and explain different PowerBi products ?

Ans. Power BI is a suite of business analytics tools developed by Microsoft that enables organizations to visualize data, share insights, and make informed decisions. The Power BI product suite includes several offerings designed to cater to different user needs and scenarios. Here are the main Power BI products and their explanations:

**1. Power BI Desktop:**

* Description: Power BI Desktop is a free, downloadable application for Windows that allows users to create interactive reports and data visualizations. It provides a robust environment for data preparation, modeling, and designing reports and dashboards.
* Use Case: Data analysts and report authors use Power BI Desktop to create customized and complex reports with advanced visualizations.

**2. Power BI Service (Power BI online):**

* Description: Power BI Service is a cloud-based platform where you can publish, share, and collaborate on Power BI reports and dashboards. It allows users to access and interact with reports from anywhere using a web browser.
* Use Case: Business users, managers, and stakeholders access and collaborate on reports created in Power BI Desktop through the Power BI Service.

**3. Power BI Mobile:**

* Description: Power BI Mobile is a set of mobile applications available for iOS and Android devices. It allows users to access their Power BI reports and dashboards on the go, enabling real-time insights and data-driven decision-making.
* Use Case: Users who need to access and interact with reports while away from their desktop computers using Power BI Mobile.

**4. Power BI Report Server:**

* Description: Power BI Report Server is an on-premises solution for publishing, managing, and delivering Power BI reports and dashboards within an organization's private network. It is suitable for organizations with strict data security and compliance requirements.
* Use Case: Enterprises or organizations that cannot store data in the cloud and require on-premises hosting of their Power BI reports use Power BI Report Server.

**5. Power BI Embedded:**

* Description: Power BI Embedded is a development platform that allows developers to integrate Power BI reports and dashboards directly into custom applications, websites, or portals. It provides APIs for programmatic access.
* Use Case: ISVs (Independent Software Vendors) and developers use Power BI Embedded to build and embed analytics capabilities into their own applications for end customers.

**6. Power BI Premium:**

* Description: Power BI Premium is a capacity-based licensing option that offers enhanced performance, dedicated resources, and additional features over the free Power BI service. It is designed for organizations with large-scale or enterprise-level Power BI deployments.
* Use Case: Organizations with a significant number of Power BI users and higher data processing needs choose Power BI Premium to ensure optimal performance and scalability.

**7. Power BI Pro:**

* Description: Power BI Pro is a per-user subscription that allows individual users to create, publish, and collaborate on reports in the Power BI service. It provides more advanced sharing and collaboration capabilities compared to the free version.
* Use Case: Small to medium-sized businesses or departments within larger organizations use Power BI Pro to enable report creation and sharing among a limited number of users.

These different Power BI products cater to various user needs and deployment scenarios, ranging from individual report creation to large-scale enterprise solutions. Organizations can choose the combination of products that best suits their analytics requirements and budget.

Q2. What limitations of Excel, Microsoft solved by PowerBi?

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

**1. Handling Large Datasets:**

* Excel Limitation: Excel has limitations on the amount of data it can handle efficiently. Large datasets can slow down performance and even lead to crashes.
* Power BI Solution: Power BI is designed to handle large volumes of data more efficiently. It uses a highly compressed data model that allows for faster data processing and analysis.

**2. Data Transformation and Cleansing:**

* Excel Limitation: Data cleansing and transformation tasks in Excel can be time-consuming and require complex formulas or manual processes.
* Power BI Solution: Power BI includes robust data transformation and cleansing capabilities through its Power Query Editor, making it easier to prepare and shape data for analysis.

**3. Data Modeling:**

* Excel Limitation: Excel lacks advanced data modeling features, making it challenging to create complex relationships between tables and establish hierarchies.
* Power BI Solution: Power BI provides a dedicated Data Modeling interface that allows users to create relationships, hierarchies, and calculated columns more easily. It also supports more advanced data modeling concepts.

**4. Interactive Visualizations:**

* Excel Limitation: Excel's charting and visualization capabilities are somewhat limited compared to Power BI, making it less suitable for creating interactive and visually appealing reports and dashboards.
* Power BI Solution: Power BI offers a wide range of interactive and customizable visualizations, including drill-through, cross-filtering, and slicers, to create dynamic and engaging reports.

**5. Real-Time Data Analysis:**

* Excel Limitation: Excel is primarily designed for static data analysis and lacks native support for real-time data connections and streaming analytics.
* Power BI Solution: Power BI supports real-time data streaming, enabling users to connect to live data sources and visualize data as it's updated, making it suitable for monitoring and dynamic reporting.

**6. Collaboration and Sharing:**

* Excel Limitation: Sharing Excel files for collaboration can be cumbersome, with version control issues and limited options for secure sharing.
* Power BI Solution: Power BI Service provides a cloud-based platform for publishing and sharing reports and dashboards securely. It offers fine-grained access control and collaboration features.

By addressing these limitations, Power BI provides a more powerful and efficient platform for data analysis, reporting, and visualization, particularly for organizations dealing with large datasets and complex reporting requirements.

Q3. Explain PowerQuery ?

**Ans.** Power Query is a data transformation and preparation tool integrated into Microsoft products like Excel and Power BI. It helps users connect to various data sources, retrieve data, clean, shape, and transform it, and then load the transformed data for analysis and reporting. It simplifies the data preparation process, making it easier to work with data from different sources and ensure its quality and consistency.

Q4. Explain PowerMap?

**Ans.** Power Map, previously known as 3D Maps, is a data visualization tool in Microsoft Excel. It allows users to create interactive and visually engaging geographical or 3D visualizations of their data on a map. With Power Map, you can plot data points on a globe or custom map, apply various visualizations, and create dynamic tours to explore data spatially and temporally. It's a useful tool for uncovering insights and patterns in geographic data and is often used for location-based analysis and storytelling.

Q5. How powerBi eliminated the need to host SharePoint Server on premises?

**Ans.** Power BI has not eliminated the need for hosting SharePoint Server on premises, but it has provided an alternative solution for organizations looking to move their data and reporting to the cloud. While Power BI and SharePoint can complement each other, they serve different purposes, and organizations may choose one or both based on their specific requirements. Here's how Power BI has impacted the need for hosting SharePoint Server on premises:

**Cloud-Based Reporting**:

* Power BI is a cloud-based business intelligence platform that allows organizations to create, share, and collaborate on reports and dashboards without the need for on-premises infrastructure.
* Organizations that primarily require reporting and data visualization may find that Power BI meets their needs without the need to maintain and host SharePoint Server on premises.

**Scalability and Performance**:

* Power BI offers scalable cloud solutions, such as Power BI Premium, which can handle large volumes of data and provide optimal performance for data analysis and reporting.
* In contrast, SharePoint Server on premises may require significant hardware resources and maintenance to achieve similar scalability and performance.

**Integration with On-Premises Data:**

* Power BI provides various options for connecting to on-premises data sources securely, such as using the Power BI Gateway or Azure Data Gateway. This enables organizations to leverage their existing data infrastructure while still benefiting from cloud-based reporting.

**Collaboration and Sharing:**

* Power BI Service, the cloud-based component of Power BI, offers advanced collaboration and sharing features, making it easier for teams to collaborate on reports and dashboards, even if they are working remotely.
* SharePoint Server also offers collaboration features, but Power BI Service is specifically designed for modern data visualization and reporting.

**Hybrid Deployments**:

* Some organizations may choose a hybrid approach, using both Power BI and SharePoint. In this scenario, SharePoint can be used for document management, intranet, and other collaboration needs, while Power BI is used for advanced data analytics and visualization.

Q6. Explain the updates done in Power Bi Service(power BI 2.0) as compared to older version ?

**Ans.** Power BI Service 2.0 has a number of updates and improvements over the older version, including:

* New visuals: Power BI Service 2.0 includes a number of new visuals, including the Waterfall Chart, the Treemap visual, and the Sunburst visual. These new visuals provide new ways to visualize data and tell stories.
* Improved performance: Power BI Service 2.0 has been optimized for performance, making it faster and more responsive than the older version. This is especially noticeable when working with large datasets or complex reports.
* Enhanced security: Power BI Service 2.0 includes a number of new security features, such as sensitivity labels and row-level security. These features help organizations to protect their data and ensure that it is only accessible to authorized users.
* Improved collaboration: Power BI Service 2.0 makes it easier for users to collaborate on reports and dashboards. Users can now share reports with others and provide feedback directly in the service.
* New features for developers: Power BI Service 2.0 includes a number of new features for developers, such as the ability to write custom visuals and connectors. These features make it easier for developers to extend the functionality of Power BI and create custom solutions for their organizations.
* In addition to these general updates, Power BI Service 2.0 also includes a number of specific improvements for different types of users. For example, there are new features for data analysts, business users, and IT professionals.
* Overall, Power BI Service 2.0 is a significant improvement over the older version. It offers new features, improved performance, and enhanced security. This makes it a more powerful and versatile tool for business intelligence and analytics.
* Here are some specific examples of updates that have been made to Power BI Service 2.0:
* Conditional formatting based on string fields: This new feature allows users to apply conditional formatting to string fields, such as text and date fields. This can be used to highlight specific values or trends in the data.
* Smart Narrative visual summary icon: This new icon appears in the Smart Narrative visual when there is a summary available. This makes it easier for users to quickly identify the key takeaways from the data.
* Formatting image width in table and matrix: Users can now format the width of images in table and matrix visuals. This allows them to control how much space images take up in the report.
* Update your base theme in Power BI: Users can now update their base theme in Power BI. This allows them to apply a consistent look and feel to all of their reports.
* Report theme validation on custom theme import: Users can now validate custom themes before importing them into Power BI. This helps to ensure that the themes are compatible with Power BI and will not cause any problems.
* Text box visual indentation: Users can now indent text boxes in reports. This can be used to create more structured and readable reports.
* New accessible report themes: Power BI now includes a number of new accessible report themes. These themes are designed to be easier for users with disabilities to read and understand.
* Customize visible pages in the Page navigator visual: Users can now customize the visible pages in the Page navigator visual. This allows them to control which pages are displayed to users when they click on the visual.
* Sensitivity labels now supported in PDF export from Desktop: Sensitivity labels can now be exported to PDF from Power BI Desktop. This makes it easier for users to share reports with others while still protecting sensitive data.
* Enhanced row-level security editor: The row-level security editor has been enhanced to make it easier for users to manage row-level security rules.