**Power Bi Assignment 3**

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

**Ans**. **Power Bi** is a suite of business intelligence tools and services developed by Microsoft. It offers a range of products to help users analyze, visualize, and share data. Here are the main **Power Bi** products:

**Power Bi** Desktop: **Power Bi** Desktop is a powerful desktop application that allows you to create interactive reports and visualizations. It provides a rich set of data modeling, transformation, and visualization capabilities, enabling you to connect to various data sources, create relationships between tables, design custom visuals, and publish reports to the **Power Bi** service.

**Power Bi** Service (**Power Bi** online): **Power Bi** Service, also known as **Power Bi** online, is a cloud-based service that allows you to publish, share, and collaborate on **Power Bi** reports and dashboards. It provides features like scheduled data refresh, data alerts, and natural language querying. Users can access reports and dashboards through web browsers or mobile apps, and collaborate with others by sharing and commenting on the content.

**Power Bi** Mobile: **Power Bi** Mobile is a mobile application available for iOS and Android devices. It allows users to access and interact with **Power Bi** reports and dashboards on the go. With **Power Bi** Mobile, you can view, filter, and share reports, receive notifications on data changes, and annotate dashboards to provide feedback.

**Power Bi** Report Server: **Power Bi** Report Server is an on-premises solution that allows you to host and manage **Power Bi** reports within your organization's infrastructure. It provides a way to deploy and share **Power Bi** reports securely within your organization's network, without relying on the cloud-based **Power Bi** service.

**Power Bi** Embedded: **Power Bi** Embedded is a platform-as-a-service (PaaS) offering that enables developers to integrate **Power Bi** capabilities into their own applications. It provides APIs and SDKs for embedding **Power Bi** reports, dashboards, and tiles into custom applications, allowing users to visualize and interact with data without leaving the application's context.

These are the main **Power Bi** products that cater to different needs and scenarios, whether you are a business analyst, data scientist, developer, or end user. Each product offers specific features and functionalities to enhance data analysis, visualization, and collaboration.

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

**Ans.**  Microsoft **Power Bi** was developed to address several limitations of **Excel** in the context of data analysis and visualization. Here are some key limitations that **Power Bi** helps to overcome:

Scalability: **Excel** has limitations in handling large volumes of data and can become slow or crash when dealing with millions of rows of data. **Power Bi**, on the other hand, is designed to handle big data scenarios and can efficiently process and analyze large datasets.

Data modeling and relationships: **Excel** has limited capabilities for managing complex data relationships and creating data models. **Power Bi** provides robust data modeling capabilities, including the ability to establish relationships between different tables and create calculated measures and columns using Data Analysis Expressions (DAX).

Real-time data analysis: **Excel** is primarily a static tool, and it can be challenging to perform real-time data analysis and visualization. **Power Bi** allows for real-time or near real-time data connectivity, enabling users to create live dashboards and reports that update automatically as new data is added or modified.

Data visualization: **Excel** provides basic charting and visualization capabilities, but it may not be suitable for creating sophisticated and interactive visualizations. **Power Bi** offers a wide range of visualizations, including interactive charts, maps, and custom visuals, allowing users to present data in a more compelling and intuitive manner.

Collaboration and sharing: While **Excel** supports sharing and collaboration to some extent, it can be challenging to maintain data consistency and version control when multiple users are working on the same file. **Power Bi** provides a centralized platform for sharing and collaboration, allowing users to publish reports and dashboards to the **Power Bi** service and share them with others securely.

Data source connectivity: **Excel** supports connectivity to various data sources, but it often requires manual data extraction, transformation, and loading processes. **Power Bi** offers seamless connectivity to a wide range of data sources, including databases, cloud services, and APIs, with built-in capabilities for data transformation and modeling.

By addressing these limitations, **Power Bi** provides a more comprehensive and efficient solution for data analysis, visualization, and collaboration compared to **Excel**.

1. **Explain PowerQuery?Top of Form**

**Ans.** Power Query is a data connectivity and data transformation tool that is integrated into various Microsoft products, including Excel, Power BI, and Power Automate (formerly known as Microsoft Flow). It allows users to extract, transform, and load (ETL) data from a wide range of sources for further analysis and visualization.

Here are the key features and capabilities of Power Query:

Data Source Connectivity: Power Query supports connecting to various data sources, including databases (SQL Server, Oracle, MySQL, etc.), files (Excel, CSV, XML, JSON, etc.), online services (SharePoint, Salesforce, Azure, etc.), and more. It provides a unified interface to connect to these sources and retrieve data.

Data Transformation: Power Query offers a powerful set of tools to transform and shape data according to your needs. It allows you to perform tasks such as filtering, sorting, merging, splitting, aggregating, pivoting, and appending data. Power Query also includes a graphical user interface for easily applying transformations, as well as an advanced formula language called "M," which provides extensive capabilities for data manipulation.

Data Cleansing: Power Query helps clean and normalize data by providing features like removing duplicates, handling missing values, changing data types, and applying data quality rules. It offers built-in functions for data profiling, which helps identify data inconsistencies and anomalies.

Query Dependencies: Power Query allows you to create reusable query steps and manage query dependencies. This means you can build a sequence of data transformation steps and apply them to multiple data sources or refresh them when the underlying data changes. It promotes efficiency and maintainability in your data preparation workflows.

Data Mashup: Power Query enables data mashup, which refers to combining data from multiple sources into a single unified dataset. It supports merging or appending data from different tables or files, performing joins, and creating relationships between data tables.

Custom Functions: Power Query allows you to create custom functions using the M formula language. These functions can be used to encapsulate specific data transformation steps or calculations, making it easier to reuse and maintain complex logic across multiple queries.

Power Query provides a user-friendly and intuitive interface for performing data transformations and data preparation tasks. It simplifies the process of connecting to various data sources, cleaning and shaping data, and loading it into your preferred destination for analysis or visualization, whether it's Excel, Power BI, or other supported tools.

1. **Explain PowerMap?**

**Ans.** Power Map allowed users to plot geographic and temporal data on a 3D map within Excel. It provided a way to visualize data in a spatial context and create interactive tours or animations to present the data story. The tool utilized Bing Maps as the underlying mapping service to display the data.

With Power Map, you could import data with geographic or time-based attributes, such as addresses, cities, countries, or dates, and then map the data to the appropriate fields. The tool would then geocode the data and project it onto a 3D map, allowing you to explore the data from different angles and perspectives.

Power Map provided various visualization options, including column charts, bubble charts, heat maps, and region-based maps. You could customize the appearance of the visualizations, add titles, legends, and tooltips to enhance the understanding of the data.

Additionally, Power Map allowed you to create scenes and tours to guide viewers through the data. You could set up different viewpoints, apply filters, and define the order and timing of the scenes to create engaging presentations.

However, it's important to note that Power Map has been deprecated, and Microsoft now recommends using Power BI for advanced data visualization and analytics needs. Power BI offers more robust and interactive mapping capabilities through its built-in mapping visualizations and the ability to integrate with popular mapping services.

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

**Ans.** Power BI eliminated the need to host SharePoint Server on-premises by providing a cloud-based platform for data storage, collaboration, and reporting. Here's how Power BI achieves this:

Cloud-based Storage: Power BI offers cloud-based storage for datasets, reports, and dashboards. Instead of hosting and managing SharePoint Server on-premises to store and share data, Power BI provides secure and scalable cloud storage. Users can upload datasets and reports directly to Power BI, eliminating the need for local storage infrastructure.

Centralized Data Repository: Power BI serves as a centralized repository for data. It allows users to connect to various data sources, both on-premises and in the cloud, to import or establish live connections to data. The data is securely stored and managed within the Power BI service, reducing the reliance on SharePoint Server for data storage.

Seamless Collaboration: Power BI offers robust collaboration features that enable teams to work together on data analysis and reporting. Users can collaborate on reports and dashboards, share them with others, and control access rights and permissions. This collaborative environment eliminates the need for SharePoint Server's collaboration capabilities.

Interactive Reporting and Dashboards: Power BI provides a rich set of interactive reporting and dashboarding capabilities. Users can create visually appealing reports, build interactive dashboards, and share them with stakeholders. The interactive nature of Power BI's visualizations allows users to explore and analyze data in real-time, without the need for SharePoint Server's on-premises infrastructure.

Secure Data Sharing: Power BI offers secure data sharing options, allowing users to share reports and dashboards with individuals or groups within or outside their organization. Power BI provides granular control over who can access the data and what actions they can perform, ensuring data security and compliance.

Integration with SharePoint Online: While Power BI eliminates the need for hosting SharePoint Server on-premises, it seamlessly integrates with SharePoint Online. Users can embed Power BI reports and dashboards directly into SharePoint Online sites, leveraging the strengths of both platforms for data analysis, collaboration, and presentation.

By providing a cloud-based platform with powerful data storage, collaboration, and reporting capabilities, Power BI reduces the need for organizations to maintain SharePoint Server on-premises for data-related tasks. It offers a more scalable, flexible, and efficient solution for data analysis and reporting in a cloud-based environment.

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

**Ans.** Here are some key enhancements made to the Power BI service:

Improved User Interface: The Power BI service has undergone several updates to enhance the user interface and overall user experience. The interface has become more intuitive, with improved navigation, customizable dashboards, and easy access to frequently used features.

Enhanced Collaboration and Sharing: Power BI has introduced various features to improve collaboration and sharing capabilities. Users can now easily share reports and dashboards with colleagues or stakeholders, control access levels and permissions, and collaborate in real-time on shared content.

Advanced Data Connectivity: Power BI has expanded its data connectivity options, allowing users to connect to a wider range of data sources. It provides native connectors to popular cloud services, databases, and on-premises data sources, simplifying the data integration process.

Advanced Analytics and AI Integration: Power BI has integrated advanced analytics and artificial intelligence (AI) capabilities. Users can leverage built-in AI features such as automated machine learning, natural language queries, and anomaly detection to gain deeper insights from their data.

Power BI Apps: Power BI introduced the concept of Power BI apps, which are pre-built collections of dashboards, reports, and datasets designed for specific business scenarios or industries. Power BI apps streamline the process of deploying and sharing analytics content across organizations.

Paginated Reports: Power BI introduced paginated reports, which are formatted, pixel-perfect reports optimized for printing or generating PDFs. Paginated reports allow users to create highly formatted reports with rich visualizations and complex layouts.

Power Automate Integration: Power BI has deepened its integration with Power Automate (formerly Microsoft Flow), allowing users to create automated workflows and perform tasks based on data triggers or events in Power BI. This integration enhances the automation and data-driven processes within the Power BI ecosystem.

Incremental Data Refresh: Power BI introduced incremental data refresh, enabling users to refresh only the new or modified data rather than refreshing the entire dataset. This feature improves data refresh performance and reduces the time required to update large datasets.

These are just a few examples of the updates and improvements made to the Power BI service. Microsoft regularly releases updates, new features, and enhancements to provide users with a robust and evolving data analytics and visualization platform. It's recommended to visit the official Power BI website or release notes for the latest information on the updates in Power BI.