**Power BI Assignment 3**

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

Power BI is a business analytics tool developed by Microsoft. It provides a suite of products and services that enable organizations to visualize and analyze their data. Here are some of the different Power BI products:

1. **Power BI Desktop:** Power BI Desktop is a Windows application that allows users to create and publish reports and visualizations. It provides a rich set of data modeling and visualization capabilities, allowing users to connect to various data sources, transform and shape data, and create interactive reports and dashboards.
2. **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, scheduled data snapshots, and the ability to create and manage content packs for sharing reports with others.
3. **Power BI Mobile:** Power BI Mobile is a mobile app available for iOS and Android devices. It allows users to access their Power BI reports and dashboards on the go, view and interact with visualizations, and receive notifications and alerts based on data-driven conditions.
4. **Power BI Report Server:** Power BI Report Server is an on-premises reporting solution that allows organizations to host and manage Power BI reports within their own infrastructure. It enables users to create, publish, and view reports locally, without the need for cloud connectivity.
5. **Power BI Embedded**: Power BI Embedded is a developer platform that allows developers to integrate Power BI capabilities into their own applications. It provides APIs and SDKs that enable embedding interactive reports and dashboards, enabling users to access and analyze data within custom applications.
6. **Power BI Premium:** Power BI Premium is a capacity-based licensing option that provides enhanced performance, scalability, and dedicated resources for Power BI workloads. It allows organizations to allocate resources to specific users and provides additional features such as paginated reports and AI capabilities.
7. **Power BI Dataflows:** Power BI Dataflows is a data preparation tool that allows users to extract, transform, and load (ETL) data from various sources into a centralized data store. It provides a self-service data integration experience and supports data refresh and data lineage.
8. **Power BI Report Builder:** Power BI Report Builder is a standalone tool that allows users to create paginated reports, also known as SQL Server Reporting Services (SSRS) reports. It provides a familiar authoring environment for creating pixel-perfect, printable reports with advanced formatting and layout options.
9. **What limitations of Excel, Microsoft solved by PowerBi?**

Power BI was introduced by Microsoft to address several limitations of Excel in the context of business intelligence and data analytics. Some of the key limitations of Excel that Power BI aims to solve include:

1. **Scalability and Performance:** Excel has limitations in handling large datasets and complex calculations. Power BI, on the other hand, is designed to handle big data and perform advanced analytics efficiently. It can connect to a wide range of data sources, process large volumes of data, and provide faster query and data refresh capabilities.
2. **Data Modeling and Transformation:** Excel has limited capabilities for data modeling and transformation. Power BI provides robust data modeling features, such as relationships between tables, calculated columns, and measures. It also offers intuitive data shaping capabilities, allowing users to clean, transform, and combine data from multiple sources easily.
3. **Data Collaboration and Sharing:** Sharing Excel files can lead to version control issues, data inconsistency, and security concerns. Power BI offers a centralized and collaborative platform where users can publish reports and dashboards to a shared workspace. It provides controlled access to data and allows real-time collaboration, ensuring that everyone works with the same up-to-date information.
4. **Data Visualization and Interactivity:** Excel provides basic charting and visualization options, but Power BI offers a wide variety of visualizations and interactive features. Power BI enables users to create rich, interactive dashboards with drill-down capabilities, filters, slicers, and custom visuals. It enhances the user experience and makes data exploration more intuitive and insightful.
5. **Real-time Data and Integration:** Excel lacks built-in capabilities for real-time data analysis and integration with external systems. Power BI supports real-time data streaming and integration with a wide range of data sources, including cloud-based services, databases, and APIs. It allows users to connect to live data feeds, perform real-time analysis, and automate data refresh.
6. **Mobile and Cross-Platform Support:** While Excel has limited functionality on mobile devices, Power BI provides a dedicated mobile app that enables users to access and interact with reports and dashboards on smartphones and tablets. Power BI also supports cross-platform compatibility, allowing users to access and collaborate on data from different devices and operating systems.
7. **Explain PowerQuery?**

Power Query is a data transformation and preparation tool that is a part of Microsoft Power BI, as well as other Microsoft products such as Excel and Power Automate. It allows users to connect to various data sources, perform data transformations, and shape the data for analysis and reporting purposes. Here's an explanation of Power Query's key features and capabilities:

1. **Data Source Connectivity:** Power Query supports connecting to a wide range of data sources, including databases, files (such as Excel, CSV, and JSON), web services, SharePoint lists, and more. It provides a user-friendly interface for selecting and connecting to these data sources.
2. **Data Transformation:** Once connected to a data source, Power Query enables users to transform and clean the data using a visual interface. It offers a wide range of transformation functions and operations, such as filtering rows, removing duplicates, sorting data, splitting columns, merging tables, and performing calculations.
3. **Data Shaping and Modeling**: Power Query allows users to shape and model the data according to their specific requirements. It supports advanced data shaping operations like pivoting, unpivoting, grouping, and aggregating data. Users can define relationships between tables and create calculated columns and measures to enhance data analysis capabilities.
4. **Query Dependencies:** Power Query provides a query dependency view, allowing users to visualize and manage the relationships between queries. This helps in understanding the data flow and ensuring proper sequence and dependencies among different queries.
5. **Formula Language:** Power Query uses a formula language called "M" for defining data transformations. The M language is expressive and provides a wide range of functions and operators for manipulating data. Users can create custom functions, variables, and reusable code snippets to streamline their data transformation workflows.
6. **Query Folding:** Power Query supports query folding, which is a performance optimization technique that pushes data transformations back to the data source. When possible, Power Query generates optimized queries that are executed by the underlying data source, reducing the amount of data transferred over the network and improving performance.
7. **Data Refresh and Automation:** Power Query provides options for automating data refresh and scheduling data retrieval from data sources. Users can define refresh intervals and specify credentials to access secure data sources. This ensures that reports and dashboards are always up-to-date with the latest data.
8. **Integration with Power BI and Excel:** Power Query is tightly integrated with Power BI and Excel, allowing users to leverage its capabilities in these applications. Users can create queries in Power Query and load the transformed data into Power BI reports or Excel worksheets for further analysis and visualization.
9. **Explain PowerMap?**

Power Map allowed users to plot geographical and temporal data on a 3D globe or custom maps within Excel. It provided a visually appealing and interactive way to explore and analyze data, especially when dealing with location-based information. With Power Map, users could plot data points, create heat maps, add custom regions or boundaries, and even animate data over time to reveal trends and patterns.

Power Map relied on the Bing Maps service to geocode and visualize the data. Users could connect to their data sources within Excel, select the relevant columns containing location and time data, and then use Power Map to create dynamic visualizations.

However, it's worth noting that the Power Map functionality was integrated into Power BI, Microsoft's business intelligence platform. In Power BI, similar geospatial visualization capabilities are available through the built-in mapping and visualization features, allowing users to create interactive maps and combine them with other visualizations and analytics.

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

Power BI eliminates the need to host SharePoint Server on-premises by providing a cloud-based platform for data visualization, reporting, and collaboration. Here are a few ways Power BI achieves this:

Cloud-Based Service: Power BI is a cloud-based service offered by Microsoft. Instead of hosting and maintaining SharePoint Server on-premises, organizations can leverage the Power BI cloud platform. This eliminates the need for infrastructure management, including server provisioning, maintenance, and upgrades, which can be time-consuming and resource-intensive.

Data Storage and Sharing: With Power BI, organizations can store and share data in the cloud. Power BI supports direct connections to a variety of data sources, including databases, files, and cloud services. Users can create reports, dashboards, and datasets within Power BI and securely share them with others in the organization. This eliminates the need to store and manage data within SharePoint lists or libraries, simplifying the data sharing and collaboration process.

Power BI Embedded: Power BI provides a feature called Power BI Embedded, which allows organizations to embed Power BI reports and dashboards directly into SharePoint Online sites or custom web applications. This enables users to access and interact with Power BI content seamlessly within the SharePoint environment, without the need to host and manage SharePoint Server on-premises.

SharePoint Online Integration: Power BI integrates with SharePoint Online, the cloud-based version of SharePoint. This integration allows users to embed Power BI reports and dashboards into SharePoint Online pages, create SharePoint web parts for Power BI, and leverage SharePoint's collaboration and document management capabilities alongside Power BI's data visualization capabilities.

Power BI Mobile: Power BI offers a mobile app that allows users to access their Power BI reports and dashboards on smartphones and tablets. The Power BI mobile app can be used with SharePoint Online, enabling users to access Power BI content within SharePoint sites while on the go.

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

As of my knowledge cutoff in September 2021, there isn't a specific version of Power BI referred to as Power BI 2.0. However, I can provide an overview of significant updates and improvements made to the Power BI service over time, including features introduced in newer versions. Here are some notable updates:

* 1. **Enhanced Collaboration and Sharing**: Power BI has introduced various improvements to collaboration and sharing capabilities. This includes the ability to share reports and dashboards with specific individuals, groups, or the entire organization, as well as the ability to control permissions and access levels. Power BI also introduced features like comment functionality, allowing users to provide feedback and collaborate directly within reports.
  2. **Power BI Apps**: Power BI introduced the concept of Power BI apps, which are pre-packaged collections of dashboards, reports, and datasets that can be easily shared and installed by users. This simplified the process of distributing and consuming content within organizations and improved the overall user experience.
  3. **Paginated Reports:** Power BI introduced paginated reports, which are optimized for printing or generating highly formatted reports. These reports provide pixel-perfect layouts, support for multiple data sources, and advanced features like sub-reports, repeating data regions, and complex layouts. This addition enhanced the reporting capabilities of Power BI and provided better support for traditional reporting scenarios.
  4. **Power BI Dataflows:** Power BI Dataflows were introduced to provide a self-service data preparation experience. Dataflows allow users to connect, transform, and combine data from various sources and create reusable data entities. They provide features like data lineage, data refresh scheduling, and the ability to expose dataflows as datasets for consumption in reports and dashboards.
  5. **AI Capabilities:** Power BI introduced built-in artificial intelligence (AI) capabilities that allow users to leverage machine learning algorithms and natural language processing. These AI capabilities include features like AutoML, which simplifies the process of building and deploying machine learning models, and Q&A, which enables users to ask questions about their data in natural language and get intelligent insights.
  6. **Power BI Premium:** Power BI Premium is a capacity-based licensing option that offers enhanced performance, scalability, and dedicated resources for Power BI workloads. It introduced features like paginated reports, AI capabilities, and incremental data refresh, which were previously available only with Power BI Pro.