## What is row-level security?

Row-level security restricts the data that a user can view and has access to, based on filters. For configuring row-level security, users can define rules and roles in Power BI Desktop and publish the same to Power BI Service. Also, the username() function can be used alongside table relationships to restrict the data to the current user.

## What is DAX? What are the benefits of using variables in DAX?

DAX or Data Analysis Expressions can be used to query and return data by a table expression. It is a formula language that is used to perform basic calculations and data analysis on the data in Power Pivot. Also, it is used to compute calculated columns, calculated fields, and measures. However, data cannot be inserted or modified using DAX.

**DAX Syntax**:

## What is bidirectional cross-filtering in Power BI?

Bidirectional cross-filtering in Power BI Desktop allows data modelers to determine how they want filters to flow for data using relationships between tables. With bidirectional cross-filtering, the filter context is propagated to a second related table on the other side of a table relationship. This can help data modelers solve the many-to-many problem without writing complicated DAX formulas. Thus, bidirectional cross-filtering simplifies the job for data modelers.

## How are relationships defined in Power BI Desktop?

If there are no null values or duplicate rows, relationships between tables can be defined in two ways:

- **Manually:** Users can manually define relationships between tables using primary and foreign keys.
- **With the autodetect feature:** When enabled, this inherent feature of Power BI detects relationships between tables and creates them automatically.

## Name the different connectivity modes available in Power BI?

**There are three main connectivity modes available in Power BI:**

- **SQL Server Import:** It's the default and most commonly used connectivity option in Power BI. With SQL Server Import, the user can fully utilize the Power BI Desktop. You can easily connect the SQL Server data with Power BI and run queries on it.
- **Direct Query:** Direct queries can be executed on datasets exceeding the recommended size. In this case, Power BI will only store the metadata of the source and execute direct queries on it. However, it limits the operations you can perform to prepare your data for reporting.

- **Live Connections:** Power BI Service can be used to connect with live data sources such as SQL Server Analysis Services, Power BI Datasets hosted by Power BI Service, and Azure Analysis Service. In a live connection, all the interactions will be done using direct queries.

## What are the different types of refresh options available in Power BI?

**There are four types of refresh options available in Power BI:**

- **Package Refresh:** It synchronizes your data in Power BI Desktop or Excel files between Power BI service and SharePoint Online and OneDrive.
- **Model or Data Refresh:** Refresh the data available in Power BI Service with the data stored in the original data source.
- **Tile refresh:** This feature updates the cache for Power BI tiles every 15 minutes on the dashboards.
- **Visual Container Refresh:** Used to refresh the visual containers and the visuals of cached reports once the data is changed.

## What data sources can Power BI connect to?

**Power BI can connect to various data sources but it can be categorized as follows:**

- **Files**: Power BI can import data from files like .csv, .xslx, .pbix, and .xlxm.
- **Content Packs**: Content packs are a collection of related files or documents, stored as a group. Power BI has two types of content packs – from service providers like Google Analytics, or Salesforce, and the ones created and shared by other users in the organization.
- **Connectors**: Connectors to databases and other datasets like Database and SQL, Azure SQL, etc.

## What is a comprehensive working system of Power BI?

**Power BI's working system comprises four steps:**

- **Data Importing**: The first step is to import the data and then convert it into a standard format.
- **Data Cleaning**: Once the data is assembled, it needs to be transformed or cleaned to remove unwanted data.

- **Data Visualization**: In this step, the data is visually represented on the Power BI desktop in the form of reports and dashboards with the help of powerful visualization tools.
- **Save and Publish**: Once your report is ready, you can save and publish the reports. These can be shared with users through mobile apps and the web.

## What are the different types of filters in Power BI reports?

**There are various filter types in Power BI:**

- **Visual-level Filters** – These filters work on single visualizations. They reduce the amount of data the visualization can see. These filters can filter calculations as well as data.
- **Page-level Filters** – These filters work on the report-page level. Different pages in the same report can have different page-level filters.
- **Report-level Filters** – These filters work on an entire report. They filter all visualizations and pages included in the report.

## What are the types of visualizations in Power BI?

**The following are some types of visualizations that are available in Power BI:**

- **Bar and Column Charts**: You can use these visualizations to look at a specific value across various categories.
- **Area Charts:** Area Charts help look at the magnitude of change over time.
- **Card**: Cards can be used to show the aggregate value of particular data points.
- **Doughnut and Pie Charts**: These charts help you visualize the relationship between parts of a whole.
- **Maps:** Maps show quantitative and categorical data with spatial locations.
- **Matrix:** Matrix is a type of table that helps see aggregate data easily.
- **Slicers**: A slicer is used to filter other visuals on the page.

## What are the three fundamental concepts of DAX?

**Three fundamental concepts of DAX are as follows:**

- **Syntax:** It is the formula that includes the functions. If the syntax is wrong, the result will show an error.

- **Functions:** These are arguments that a specific order to perform.
- **Context:** Contexts are of two types – Row Context and Filter Context. Row Context is applied when a formula has a function that applies a filter to identify a row in a table. Filter Context is applied when one or more filters are used to get a value.

## What is query folding in Power Query?

When the steps defined in Power Query are rendered in SQL and implemented by the source database instead of the client machine, it is known as query folding. Query folding is important for performance processing and scalability.

## Is Power BI available on-premises?

No. Power BI isn't available on-premises as a private cloud service. But, you can securely connect your on-premises data sources with Power BI and Power BI Desktop.

## Is it possible to refresh Power BI Reports after they are published to the cloud?

**Yes, it is possible. Gateways can be used to do so.**

- **For SharePoint:** Data Management Gateway
- **For Powerbi.com**: Power BI Personal Gateway

## What is the common table function for grouping data?

**SUMMARIZE()**

- This is the main groupby function in SSAS.
- You should specify tables and groups by columns instead of metrics.

**SUMMARIZECOLUMNS**

- It is the new group by function in SSAS and Power BI desktop. It is also more efficient.
- You should specify groups by table, expressions, and columns.

## Name some commonly used tasks in the Query Editor.

- **Shape Data** – You can transform your data according to your needs, to shape and clean it.
- **Pivot Columns** – You can pivot columns and then create a table with the aggregate values.
- **Connect to Data** – You can get data from various sources and transform it.
- **Group Rows** – You can group the values of various different rows in a single value by summarizing.
- **Advanced Editor** – You can modify data using Advanced Query Editor.
- **Create Custom Columns** – You can create custom columns with the help of custom formulas.

## How is data security implemented in Power BI?

A DAX expression has to be applied on a table that filters its own rows at query time. Dynamic security will involve using USERNAME functions in defining security roles. Finally, a table will be created within the model that will relate users to specific dimensions and roles.