POWER BI DESKTOP   POWER BI SERVICE

Many Data Sources

Modeling & Relationships

Measures & Calculated Columns (DAX)

Roles Creation

Power Query

Calculated Columns (M code only)

Visualization Tools (Custom, bookmarks, interactions, etc.)

Limited Data Sources

Dashboards

Apps & Workspaces

Gateways & Dataflows

Roles Management

Power Bi Questions

1. Explain the Power BI component (Query Editor, Relationship View, Data, Report View, Power Query, M-language, and DAX)

Power Query Editor - is one of the important Power BI Components. With Power Query, you can connect to data from a wide range of data sources. You can read data from databases. We can use Power Query as an ETL tool to extract, transform and load our data into the data model. Data prepping and cleaning is an important phase to data analytics and power query makes it easier for us to complete this process. Microsoft Power Query gives us a very user-friendly graphical Interface to change data as we want to.

Relationship View – <mark>demonstrates the majority of the tables, segments, and connections in your model.</mark> This portion of the tool is very useful when we work with a large number of tables that have complex connections between them. Here we can get a sense of the big picture of the relationship between the data. <mark>We can delete and create relationships to form snowflake or star schema models.</mark> A <mark>model can have one to many relationships, many to many, and many to one relationship. We can also have more than one relationship between two tables but only one can be active at a time and the remaining must be inactive.</mark>

Data View – <mark>helps you inspect, explore and understand data in your Power BI Desktop model.</mark> Here we look at the data after it has been loaded into the model. Before creating a visual sometimes, we need to see what exactly is in a table or column in order to better plan and organize the way we want to represent the data through visuals. <mark>We also need this feature specially when we are trying to calculate a special measure, this way we can see what exactly is in the data.</mark> We can filter data in data views by simply using the drop-down icon at the column name. We can filter individual values by using the check marks in the boxes next to the individual values, or we can use advanced filters based on the data in the column.

Report View – <mark>is the first of the three views in the PBI Desktop. Here we see the empty canvas in sheet one near which we can add extra sheets</mark>. To the right of the canvas, we see the visualizations container with different visuals that we can use to create reports and dashboards with PBI.

M Language – <mark>M stands for Mash-up, as power query is all about connecting to various different data sources and mashing them up.</mark> M code is the language behind the scenes of power query. Power Bi has a very user-friendly graphical interface, however we can also use the M language to get specific results in Query Editor, and in other cases we can always take a look at the automatically generated code through the advanced editor window in the home tools of the power query to get an idea of what is happening as it is quite easy to understand it since it is basically English like language.

Dax Language- stands for data analytics expressions. Is a programming language that is used throughout Microsoft Power Bi Desktop for creating calculated columns, measures and custom tables. It is a collection of functions, operators and constants that can be used in a formula or expression to calculate or return one or more values. There are several types of Dax functions that we can use including: Time Intelligence functions, aggregate functions, iterative functions (Statistic functions), Information functions, Filter Functions, Math Functions, Parent Child Functions, and Text functions.

2. What are the Building Blocks in Power BI?

The building blocks of Power Bi are:

a)   **Visualizations** – a type of chart built by Power Bi Designers. Because they are highly interactive one can slice, filter, highlight, change, and even drill down into visualizations.

b)   **Datasets** – is a collection of data that designers import or connect to and use to build reports and dashboards. Each dataset represents a single source of data.

c)   **Dashboard** – is a single screen with tiles of interactive visuals, text, and graphics. A dashboard collects your most important metrics, on one screen, to tell a story or answer one question.

d) **Report** – <mark>is more than one page of interactive visuals, text, and graphics that together make up a single report. Power Bi bases a report on a single dataset.</mark> Often the designer organizes the report pages to address a central area of interest or answer a single question.

e) <mark>**App** – is a way for designers to bundle and share related dashboards, reports and datasets together.</mark>

<mark>**3. What are the different types of filters in Power BI Reports?**</mark>

<mark style="background-color: #00ff00">**4. What types of data types are available in Power BI?**</mark>

<mark>**Text** – A Unicode character data string. We can have strings, numbers or dates represented in text format.</mark> Each Unicode character is 2 bytes.

<mark>**True/False** – A Boolean value of either true or false.</mark>

Decimal Number – Represents a 64 bit (8 Bytes) floating point number. The most common number type. It also handles whole numbers not just fractional ones. The largest precision handled is 15 digits long. The decimal separator can occur anywhere in the number.

Fixed Decimal number- is also known as decimal type, this data type has a fixed location for the decimal separator. The decimal separator has 4 digits to its right and allows for 19 digits of significance.

Whole number – Represents a 64 bit (8 Byte) integer value. It allows for 19 digits for positive or negative value. Because it is an integer it can not hold digits to the right of the decimal place.

Percentage – Fundamentally the same as decimal number type, but it has a mask to format the values in the column as a percentage in the power query editor.

Date/Time – Represents both date and time value. Underneath the date/time value is stored as a decimal number type so we can convert between the two. The time portion of a date is stored as a fraction to whole multiplies of 1/300 seconds (3.33 ms). Dates between the years 1900 and 9999 are supported.

Date – Represents just a date no time portion. When converted into the model, a Data is the same as a Date/Time value with zero for the fractional value.

Time – Represents just time no date portion. When converted into the model a time value is the same as Date/Time value with no digits to the left of the decimal place.

Date/Time/Timezone – Represents a UTC date/time with a time zone offset. It is converted into Date/Time when loaded into the model. The power bi model doesn't adjust the time zone based on a users location or locale etc. If a value of 09:00 is loaded into the model in USA, it will display it as 09:00 wherever the report is opened or viewed.

Duration – Represents a length of time. It is converted into a decimal number type when loaded into the model. As a decimal number type it can be added or subtracted from Date/Time field with correct results.

5. Append Query – This operation creates a single table by adding the contents of one or more tables to another, and aggregates the column headers from the tables to create schema for the new table. We can find the Append queries command on the home tab in the Combine group. On the drop menu we have two options:

A) Append Queries displays the append dialog box to add additional tables to the current query

B) Append Queries as new – displays the append dialog box to create a new query by appending multiple tables.

6. Merge Query – This operation joins two existing tables together based on matching values from one or multiple columns. There are two options to perform merges:

a) Merge Queries: Displays the merge dialog box with the selected query as the left table of the merge operation.

b) Merge Queries as New: Displays the merge dialog box without any preselected tables for the merge operation and creates a new query out of the Merge.

There are several types of joins that we can use to perform different merges:

   Left Outer, Right Outer, Full Outer, Inner, Left Anti, Right Anti

   Left Outer - join all from the first table matching from second

   Right Outer - join all from second table, matching from the first

   Full Outer - join all rows from both tables

   Inner Join - join only the matching rows from both tables

   Left Anti - join unique rows that are only in the first table

Fuzzy matching allows you to match not only exact data but we can match similar data as well. We can specify the similarity, by example: ignore the case, combine text parts etc

7. What is grouping? How can you use it?

We can group data points in order to better view, analyze and explore data trends in our visuals. We can also define the bin size to put values into equally sized groups that enable us to visualize data in more meaningful ways. This is called binning. We can't use binning or data grouping for measures but we can for other columns.

There are many ways we can group the data. To start we can select the column that we want to group and when the column tools appear we can click on the Data Groups command. From there we can fill the dialog box where we can decide on the group name, group type: bin or list. For bins we can specify the type to be either size of bins or number of bins. For lists we can manually select the values we want to put in a specific group.

8. Explain Custom Column – We have the Option of adding a custom column to our query with custom column command. We can use this command if we need more flexibility for adding a new column using the Power Query M formula language. The custom column dialog box contains different fields where we can add the name for the new column, and we can choose the data type from a drop down menu next to it. Next, we have an available column list underneath the data type drop down menu where we can select the columns to enter to the custom column formula box to create the new formula using Power Query M formula.

#	Custom Column	Calculated column
1	We use M language to create a custom column in query editor	We use dax language to create calculated column in data view in power bi desktop
2	Custom column requires a refresh of the whole table and might take longer	It is faster because it does not require a refresh of the whole table
3	The size of the custom column in PQ is smaller – because it compresses	The size of the dax calculated column is bigger – it does not compress

4	You can view custom column in power query and in the data model as well	You can only view the calculated column in the data model, not in the power query.

9. How to setup hierarchy in Power BI

A Hierarchy is a set of fields categorized in a hierarchical way that one level is the parent of another level. Values of a parent level can be drilled down to the lower level. For example we can have category, subcategory and product.

To create a hierarchy we right click on the field that we want to be the highest level in the hierarchy and select Create Hierarchy from the menu. After that we can see a new hierarchy created with the name of the selected field + the word hierarchy. And will have the sign of a hierarchy in it. To add another level in the hierarchy we can simply just drag the next field to the hierarchy field header or we can right click on the next field and use Add to hierarchy from the menu.

10. Explain Unpivot in Power BI- Unpivot helps us to transform columns into attribute-value pairs, where columns become rows. Power Query will always create the attribute-value pairs by using two columns:

*Attribute: The name of the column headings that were unpivoted

*Value: The values that were underneath each of the unpivoted column headings.

Unpivoting helps power BI to better understand and make sense of the data. Usually excel files have this kind of data where we can use unpivoting.

11. Difference between SUM and SUMX function?

 Sum(column) is a simple aggregation function that will add every value in a single column and return the result. It only requires the column name to be performed. It summarizes the value based on a filter context. For example if I have a measure that calculates the sum of total sales. This measure will simply calculate the total sum across the entire table when there is no filter selected. And if i use a filter for my visualization then it will calculate the sum of the filtered context.

Sumx(table, expression) It has two parameters, the table name and the expression we want to calculate. Sumx is an iterator function which means that it will iterate through every row of a specific table and run the expression for that record, it stores the result of that into a temporary

memory. We can also use All and Allexcept functions to specify the table in sumx to add more flexibility in our choices.

12. Can you describe the differences between the calculated measure and the calculated column?

#	Calculated column	Calculated measure
1	Evaluated at each row	Evaluated at the granularity they are plotted at
2	We use cc in the context of a table	We use cm in the context of visualizations

3	Data is stored in the memory and take up more storage in database	They are not stored in memory
4	Better to use with arithmetic operations on top of data we have in our model	Better to use them in calculating aggregates such as sum or avg of column

Even though they look similar, columns and measures are very different. The value of a calculated column mis computed during data refresh, it does not depend on the user interaction from the report whereas a Measure operates on aggregations of data defined by the current \7context which depends on the filters applied from the user in the visualizations tab.

13. What is Data Gateway? Explain the difference between Personal and Enterprise gateway

A Gateway is a software that facilitates access to data that resides on a private, on-premises network, for subsequent use in a cloud service like Power BI. It is like a gatekeeper that listens for connection requests, and grants them only when a user's request meets certain criteria (such as whether they are allowed to use the gateway). This lets organizations leave databases and warehouses on their on-premises networks, yet securely use subsets of that data to create compelling reports and dashboards in Power BI.

A Gateway also secures access and data <u>by encrypting and compressing all the data</u> that passes through it, as well as any passwords used to connect to data sources.

On Premises data gateway acts as a bridge, providing quick and secure data transfer between on-premises data (data that is not in the cloud) and the Power BI, Microsoft Flow, Logic Apps and Power APPs services.

<u>On-Premises Data Gateway **Enterprise Mode**</u> - Allows multiple users to connect to multiple on-premises data sources. With a single gateway installation, you can use an on-premises data gateway with all supported services. This gateway is well-suited to complex scenarios in which multiple people can access multiple data sources.

<u>On-Premises Data Gateway **Personal Mode**</u> - Allows one user to connect to sources and can't be shared with others. An on-premises data gateway on personal mode can be used only with Power BI. This gateway is well suited to scenarios in which you're the only person who creates the reports, and you don't need to share your data sources with others.

<u>Virtual Network Data Gateway</u> - Allows multiple users to connect to multiple data sources that are secured by virtual networks. No installation is required because it is a Microsoft Managed Service. This Gateway is well suited for complex scenarios in which multiple people access multiple data sources.

14. How to implement RLS (Row Level Security) in Power BI?

ROW LEVEL SECURITY - with power bi can be used to restrict data access for given users. Filters restrict access at the row level and you can define filters within roles. In the Power BI Service, members of a workspace have access to datasets in the workspace. RLS doesn't restrict this data access.

You can configure RLS for data models imported into Power BI with Power BI Desktop. You can also configure RLS on datasets that are using Direct Query such as sql server. For Analysis Services or Azure Analysis Services live connections, you configure Row-level security in the model not in Power BI Desktop. The security option will not show up for live connection datasets.

To define roles we need to:

- Import Data into Power BI Desktop report or configure Direct Query Connection (We can not define roles within Power BI Desktop for Analysis Services live Connections. We need to do that within the analysis services model.

- From the Modeling tab we select Manage Roles.

- From the Manage Roles window, select Create.

- Under Roles provide a name for the role.

- Under Tables, select the table to which you want to apply a DAX rule.

In the Table filter Dax expression box enter the Dax expressions. This expression returns a value of true or false. For example: [Entity ID] = "Value". *Note: You can*

use username() within this expression. Be aware that username() has the format of DOMAIN\username within Power BI Desktop. Within the Power BI Service and Power BI Report Server, it's in the format of USER PRINCIPAL NAME (UPN). Alternatively, you can use userprincipalname(), which always returns the user in the format of their userprincipal name, username@contoso.com

After you have created the DAX expression, select the checkmark above the expression box to validate the expression.

Select Save

You can't assign users to a role within Power BI Desktop. You assign them in Power BI Service. You can enable dynamic security within Power BI Desktop by making use of username() or userprincipalname() DAX functions and having proper relationships configured.

By default row level security filtering uses single-directional filters, whether the relationships are set to single direction or bi-directional. You can manually enable bi directional cross filtering with row level security by selecting the relationship and checking the Apply security filter in both directions. Select this option when you have also implemented dynamic row level security at the server level, where row level security is based in a username or login ID.

Validate the roles within Power BI Desktop - After you have created your roles, test the results of the roles within Power BI Desktop.

From Modeling tab select View As - The view as roles window appears, where you see the roles you've created

Select a role you created, and then select OK to apply that role - The report renders the data relevant for that role.

You can also select Other users and supply a given user - It is best to supply the User Principal Name as that's what the PBI Service and PBI Report Servers use. Within PBI Desktop, Other Users display different results only if you're using dynamic security based on your DAX expressions.

Select OK.

Note: The View As role feature doesn't work for Direct Query models with Single Sign-On (SSO) enabled.

Manage Security on Your Model

To Manage Security on your Data Model, open the workspace where you saved your report in the Power BI service and do the following steps:

In the PBI Service, select the More options menu for the dataset. This menu appears when you hover on a dataset name, whether you select it from the navigation menu or the workspace page.

Select Security - this will take you to the row level security page where you add members to a role you created in Power BI Desktop. Only the owners of the dataset will see Security. If the Dataset is in a Group, only Admins of the group

will see the security option. You can only create or modify roles within Power BI Desktop.

Working with Members

Add Members - you can add a member to the role by typing in the email address or name of the user or security group. You can't add Groups created in Power BI. You can add members external to your organization.

You can use the following groups to set up row level security:

Distribution Group

Mail-enabled Group

Security Group

Note: Office 365 groups are not supported and cannot be added to any roles.

Remove Members - You can remove members by selecting the x next to their name.

Validating the role within the Power BI service - you can validate that the role you defined is working correctly in the Power BI service by testing that role.

Select More Options (...) next to the role.

Select Test data as role

You'll see reports that are available for this role. Dashboards aren't shown in this view. In the page header, the role being applied is shown.

Within Power BI Desktop - username() will return a user in the format of DOMAIN\User and userprincipalname() will return a user in the format of user@contoso.com

Within Power BI Service - username() and userprincipalname() will both return the user's User Principal NAme (UPN). This looks similar to an email address.

The Row Level Security roles are applied to members who are assigned to the Viewer Role in the workspace. Even if Viewers are given Build permissions to the dataset the RLS still applies.

Workspace members assigned: Admin, Member, Contribute have edit permissions to the dataset and, therefore, RLS doesn't apply to them.

Considerations and limitations:

If you previously refined roles and rules in the Power BI service, you must re-create them in Power BI Desktop.

You can define RLS only on the datasets created with Power BI Desktop. If you want to enable RLS for datasets created with Excel, you must convert your files to Power BI Desktop files pbix files first.

Service principals cannot be added to an RLS role. Accordingly, RLS won't be applied for apps using a service principal as the final effective identity.

Only import and Direct Query connections are supported. Live connections to the Analysis Services are handled in the on-premises model.

The Test As, View As role feature doesn't work for Direct Query models with Single Sign On SSO enabled.

Issue: Multiple Rows and limited relationships - You get an error message if you belong to multiple RLS roles and at least one of those roles relies on a limited relationship(where there is no guaranteed "one" side (many to many or models created from multiple data sources)).

Workaround: If feasible don't put any user into multiple RLS roles. And Define RLS roles only on one source group. Or it is necessary for a user to belong to multiple RLS roles, make sure all RLS filters set in the roles are defined on tables from a single source group.

Question: Can I use RLS to limit the columns or measures accessible by my users?

Answer: No, if a user has access to a particular row of data, they can see all the columns of data for that row.

Question: Does RLS let me hide detailed data but give access to data summarized in visuals?

Answer: No, you secure individual rows of data but users can always see either the details or the summarized data.

Question: My data source has already defined security roles, what is the relationship between these and RLS?

Answer: The answer depends on whether you're importing data or using Direct Query. If you are importing Data into your PBI Dataset, the security roles in your data source aren't used. In this case you should define RLS to enforce security rules for users who connect to Power BI. If you

are using Direct Query, the security roles in your data source are used. When a user opens a report, Power BI sends a query to the underlying data source, which applies security rules to the data based on the user's credentials/

15. What is Role? Explain Manage Role. - We can define roles and rules within Power BI Desktop. When we publish the report to Power BI Service we also publish the role definitions. A defined role will allow a certain user to access the report based on the specified rules. Manage Roles tab in the Modeling Toolbar will allow us to create and define new roles that will be implemented to the users of the report.

16. Explain Power BI Services in details - Power BI Service is a cloud based business intelligence service designed to help users visualize, analyze and share data in a centralized online environment. With Power BI service users can:

Connect to online or on-premise data sources

Build or publish reports and dashboards

Collaborate through shared workspaces

17. What is the difference between Power BI Pro and Premium license(Minimum 8 pts)?

#	Power BI PRO	POWER BI PREMIUM
1	9.99 $ per user per month	20 $ Per User per month,
2	Model size limit 1GB	Model size limit 100GB
3	Refresh Rate 8 per day	Refresh Rate 48 per day
4	Does not allow Paginated RDL Reports	Allows Paginated RDL Reports
5	Does not support Advanced AI features	Supports Advanced AI features
6	Does not support Application lifecycle management	Supports application lifecycle management
7	No XMLA endpoint read/write connectivity	Supports XMLA endpoint read/write connectivity

8	Does not support all dataflow services	Supports all Dataflow services:, linked entities, direct query, computed entities, enhanced compute engine.

18. Custom Visualizations in Power BI - Although Power BI comes with many built in or out of the box visuals that are available in the visualization pane of both Power BI Desktop and Power BI service sometimes we need other visuals to complete our analysis and Microsoft has offered us the ability to get custom visualizations that are available either for free or with purchase options in Microsoft App Source. Here visuals are created by Microsoft and Microsoft Partners and they are validated by the App Source Validation team. We can download these visuals directly to the visuals pane.

19. How to refresh Power Reports in BI? - We first need a gateway in order to be able to refresh data in the cloud (Power BI service). Then we can go to Workspaces, choose the Workspace and select Datasets. Next hover with the mouse over on the right side of the dataset that we want to use three icons will appear. The first one allows us to request an on demand refresh and the second button says schedule a refresh. We can also click on the third icon which is the three ellipsis sign and a menu will appear from which we can choose settings. Next we can choose scheduled refresh option and fill in the dialog box.

20. Explain incremental refresh in Power BI -

21. How to configure Power BI report scheduled refresh - You specify refresh options in Power BI service using: Gateway Connection, Data Source Credentials, and Scheduled Refresh.

22. What are the aggregation functions? Aggregation functions help us learn basic statistics for a specified column we have different function such as Min, Max, Average, Sum, Median etc however we can get these values without creating columns or measures. For example if we have sales column or scores we can right the field in the visuals and choose from the list how we want the number to show.

23. How to Publish Reports in Power BI? In the home section in Power BI Desktop we have the option to use Publish Command or we can choose File> Publish> Publish to Power BI. We enter the email and Sign in to the email we use for Power BI Service. Then it will ask about the destination of publishing either My Workspace or Workspaces.

A Power BI report stores its data into the memory which is managed by the Microsoft SQL Server Analysis Services (SSAS) engine.

24. Ways to share your work in Power BI - There are many ways to share your work in Power BI:

We can send the pbix file to who we want to share it with,

We can save the file as a pdf file and share our reports

If we use Power BI service we can share the report as a Power Point File

We can export data to .xls or .csv and share it

Publish it to Power BI service in Workspace and invite people to see it

Create an APP is better in case we want to share it with people that are not our colleagues where they can click and see the visuals byt they can not edit it

We can also publish it to the WEB

25. Explain Import vs Direct query?

PBI Direct Query – when using the direct query method of connection, no data is imported into power bi so we are always querying data that is present in the data source itself.

Advantages of using Power Bi Direct Query:

Data timing- data is queried from the data source so you are getting the most up do date data. The*Data size limits*- import caches are limited to 1 GB dataset (can be increased in premium). report refreshes occur every hour but we can specify it to be every 15 minutes.

Smaller file footprint – Since you are not caching your data when using direct query, your Power Bi desktop files are much smaller and easier to work with.

Less Storage- No cache means not having to store that compressed data on power bi service, so you don't need as much storage capacity on Service.

Disadvantages of using Direct Query:

Slower Performance – Because you are querying the data source at run time, you might be competing with other users for bandwidth.

*Limited transformation*s– You are not able to use all the normal Power Query transform ation features. Particular Dax functions are not available in this method as well. Limits your ability to manipulate data in the data model as it gets rid of the data view section. So if your data is In poor condition and needs a lot of transformations, sometimes Direct query is not the viable option.

.

PBI Import – The import method of connection means that power bi will cache the data that you're connected to, creating a point in time snapshot of your data. All of the interactions and filters applied to your data will be done to this compressed cache source instead of the actual data source itself.

Advantages of using Power bi import

Performance – When you cache your data you are able to take full advantage of the vertipaq performance engine. Normally your ==report performance will be better using this method.==

Greater functionality – Unlike in direct query here you are ==able to use all M and Dax functions== ==(notably all time intelligence functions),== format fields however you desire and there are no ==limitations to data modeling.==

Multiple data sources – Using import you are able to ==combine data sources== from ==various data== ==sources.==

Disadvantages of using Power Bi Import

Delayed data – ==You can schedule up to 8 refreshes a day, but you also need to consider the== ==amount of reports you are maintaining and how big are the datasets that you are refreshing.==

Can't switch back – once you have selected import you can not switch back using direct query.

26. What is the Drawback with Import mode?

Delayed data – You can schedule up to 8 refreshes a day, but you also need to consider the number of reports you are maintaining and how big are the datasets that you are refreshing.
Data size limits- import caches are limited to 1 GB dataset (can be increased in premium).
Can't switch back – once you have selected import you cannot switch back using direct query.

27. What is Caching refresh and How to Schedule cache refresh?

28. Explain Data Model.

Data Modeling is the process of analyzing and defining all the different data your business collects and produces, as well as the relationships between those bits of data. The process of modeling your data creates a visual representation of data as it is used at your business, and the process itself is an exercise in understanding and clarifying your data requirements.

29. Explain Time Intelligence Functions

Data analysis expressions (DAX) includes time intelligence functions that enable you to manipulate data using time periods, including days, weeks, months, quarter and years, and then we can build and compare calculations over those periods. To freely manipulate with time intelligence functions we need to have a date dimension.

Date(year,month,day) - Returns the specified date in a datetime format

Datediff(start_date, end_date, interval) - returns the count of interval boundaries crossed between two dates.

Today() - returns the current date

Datesbetween(datecolumn, startdate, enddate) - returns a table that contains a column of dates that begin with the start date and continues until the end date.

Datesinperiod(date_column, start_date, Number_of_intervals, interval) - returns a table that contains a column of dates with the start date and continues for the specified number of the intervals.

Nextday(), Nextmonth(), Nextquarter(), Nextyear()

Previousday(),Previousmonth(), Previousquarter(), Previousyear()

Sameperiodlastyear(datecolumn) - returns a table that contains a column of dates shifted one year back in time from the dates in the specified dates column, in the current context.

30. Calculate Function, Filter Function, and Related Function

Calculate(expression, filter1, filter2, …) - evaluates an expression that is modified by the specified filters. The rules of calculate are that the expression can not use a nested calculate function, the expression can not use any function that scans a table or returns a table including aggregate functions.

For each column used in a filter argument, any existing filters on that column are removed and the filter used in the filter argument is applied instead.

Related(column) - returns a related value from another table. The return value is a single value that is related to the current row. This function requires that a relationship exists between the current table and the table with the related information. For example:

Filter('sales_data', RELATED('SalesTerritory'[SalesCountry])<>"United States")

Filter(table,< filter) - a boolean expression to be evaluated for each row of the table, returns a table containing only the filtered rows. Ex: [Amount] > 0 or [Region] = "France"

We can use filter to reduce the number of rows in the table that we are working with and use only specific data in calculations. Filter is not used independently but as a function that is embedded in other functions that require a table as an argument.

31. What are the content packs in Power BI?

32. DAX Functions VALUES, ALL, IF, AND, OR, SWITCH, ISBLANK, FILTER,ISFILTERED, and ISCROSSFILTERED

Values(Table_name or Column_name) - Returns a one column table that contains the distinct values from the specified table or column. Duplicate values are removed and only unique values are returned.

ALL({table, [column],[column],...}) - Returns all the rows in a table or all the values in a column ignoring any filters that might have been applied. This function is useful for clearing filters and creating calculations on all the rows in a table.

ALLEXCEPT(table, column, column,...) - Removes all the context filters on the table, except filters that have been applied to the specified columns.

IF (logical_test, value_if_true, value_if_false) - Checks if a condition provided as the first argument is met. Returns one value if the condition is true and returns another value if the condition is false.

OR function -The OR function in DAX accepts only two (2) arguments. If you need to perform an OR operation on multiple expressions, you can create a series of calculations or, better, use the OR operator (||) to join all of them in a simpler expression.

AND function - Checks whether both arguments are TRUE and returns TRUE if both arguments are TRUE. Otherwise returns false.

SWITCH(expression, value, result [,value, result]...[else]) - Evaluates an expression against a list of values and returns one of multiple possible result expressions.

ISBLANK(value) - a boolean value of true if the value is blank; otherwise false.

FILTER(table,< filter - a boolean expression to be evaluated for each row of the table>) - returns a table containing only the filtered rows. Ex: [Amount] > 0 or [Region] = "France"

We can use filter to reduce the number of rows in the table that we are working with and use only specific data in calculations. Filter is not used independently but as a function that is embedded in other functions that require a table as an argument.

ISFILTERED(columnName) - returns true when columnName is being filtered directly. If there is no filter on the column, or if the filtering happens because a different column in the same table or in a related table is being filtered then the function returns false.

ISCROSSFILTERED(columnName) - Returns true when columnName or another column in the same or related table is being filtered.

33. VAR Function

34. State the difference between Count and CountX function.

COUNT(Column) - counts the number of cells in a column that contain non-blank values and returns a whole number. The only argument allowed is a column.

It counts rows that contain numbers, dates and strings.

When the function finds no rows to count it returns a blank

Blank values in column are skipped

True/False values are not supported

This function is not supported for use in Direct Query mode when used in calculated columns or row-level security rules.

COUNTX(table, expression) - Counts the number of rows that contain a non-blank value or an expression that evaluates to a non-blank value, when evaluating an expression over a table. It returns an integer.

Countx takes two arguments. First argument must always be a table or any expression that returns a table. The second argument is the column or expression that is searched by COUNTX.

It counts rows that contain values, dates or strings. If the function does not find rows to count it returns a blank.

It does not support logical values.

This function is not supported for use in Direct Query mode when used in calculated columns or Row level security rules.

35. Difference between CALCULATE and CALCULATETABLE functions?

Calculate(expression, filter1, filter2, …) - evaluates an expression that is modified by the specified filters. The expression used as the first

File	Description	Status
🗅 File		Not started ▾
🗅 File		In progress ▾
🗅 File		Under review ▾
🗅 File		Approved ▾

 is essentially the same as a measure. The rules of calculate are that the expression can not use a nested calculate function, the expression can not use any function that scans a table or returns a table including aggregate functions.

For each column used in a filter argument, any existing filters on that column are removed and the filter used in the filter argument is applied instead.

CALCULATETABLE (expression, filter1, filter2, …) - The expression used as the first parameter must be a model table or a function that returns a table. Filters can be boolean filter expressions, table filter expressions, filter modification functions.

When there are multiple filters, they're evaluated by using AND operator, that means all conditions must be true at the same time.

Returns a table of values. And this is the main difference with Calculate() which returns a scalar value whereas calculatetable returns a table of values.

CALCULATETABLE works the same way as *CALCULATE*. The only difference is in the type of the result: *CALCULATE* computes a scalar value, whereas *CALCULATETABLE* evaluates a table expression and returns a table.
It is mostly used to create tables, for example create a table of sales, where country region is USA only, excluding other sales. But we can also use it inside a CALCULATE function, as a type of filter

36. Parameters in Power BI- Query Parameters allow users to easily make parts of the reports and data models depending on one or more parameter values. Parameters can be static where we manually input the list of values and can be dynamic and are based on a query that contains a simple list with unique values that we want to use.

We can use parameters with direct query methods as well.

37. What is query folding in Power Query?

38. Explain different types of relationships.

Many to one - this type is the most common default type of relationship. The column in a given table can have more than one instance of a value, and the other related table has only one instance of a value.

One to one - the column in one table has only one instance of a particular value, and the other related table also has only one instance of the particular value.

One to many - the column in one table has only one instance of a particular value, and the other related table can have more than one instance of a value.

Many to many - with composite models, you can establish a many to many relationship between tables, which removes requirements for unique values in tables.

39. What is Bidirectional Cross-filtering in Power BI?

There are two options on cross filter direction:

Single: The most common, default direction, which means filtering choices in connected tables work on the table where values are being aggregated.

Both: For filtering purposes, both tables are treated as if they are a single table. This option works well with a single table that has many lookup tables that surround it. So it works better for a star schema model but not for snowflake or:
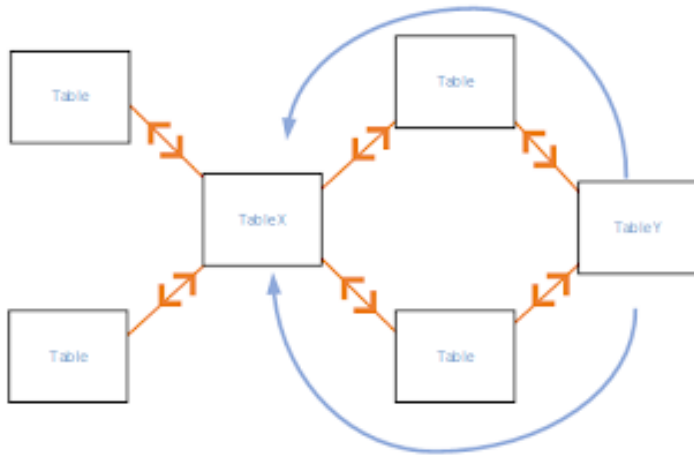
Here cross filtering would create an ambiguous set of relationships. For instance if you sum up a field from table x and then choose to filter by a field in table y, then it's not clear how the filter should travel, through the top table or the bottom one.

40. How to handle Many to Many relationships in Power BI?

41. Explain Slicer

Slicer is a type of on canvas visual filter. By default a slicer will affect all the visuals in the canvas. However if we want to we can edit the interactions by clicking on the slicer and under the tab format we select edit interactions and we can turn off the interaction on the visual where we don't want the slicer to affect.

42. State the main difference between Filter and Slicer - Both slicers and filters refine query results, but the main difference is that a slicer operates on canvas whereas filters are configured and operate in the background of reports.

43. What are Tiles in Power BI? - Tiles are single visualizations. They are one of the Power BI building blocks

44. Explain Streaming Dataset - Have limited or no history and just look at the most current values for each field. Because there is no history, there are only a few special purpose tiles for showing streaming data in dashboards. They update on change so if your data changes every second, so will the tiles.

45. Workspace

Workspace is a shared environment for a group of people. Essentially they are containers for dashboards, reports, workbooks, datasets and dataflows in Power BI. One workspace can have hundreds of dashboards, reports and datasets in it. You can add people to the power BI

workspace and give the access to edit or read the content. There are two types of workspaces one is called My Workspace and the other is called Workspaces.

My Workspace is the personal workspace for any Power BI customer to work with your own content. Only you have access to your My Workspace. You can share dashboards and reports from your My workspace. In My Workspace we can add new Report, Paginated Report, Scorecard, Dashboard, Dataset, Streaming Dataset or we can also upload a file such as .pbix, .rdl, .xlsx or .csv.

Workspaces are used to collaborate and share content with colleagues. You can add colleagues to your workspaces and collaborate on dashboards, reports, workbooks and datasets with one exception, each workspaces member needs a Power BI Pro or Premium per User license. In Workspaces we can add new Report, Paginated Report, Scorecard, Dashboard, Dataset, Dataflow, Streaming Dataset or we can also upload a file such as .pbix, .rdl, .xlsx or .csv.

46. Dataflow in Power BI Services - Dataflows are queries that run independently within Power BI Service (Power Query in CLoud) and are typically used to ingest, transform and integrate data and store the data into Common Data Model (CDM) inside Azure Data Lake storage.

Why use Dataflow:

Reuse queries across multiple power BI desktop and Service reports

Run ETL processes on specific schedules

Create Centralized data warehouse to serve as a single source of truth

How are dataflows implemented?

Create and build Dataflows in Power Service

Refresh Dataflow in Power BI service

Connect to a dataflow as a dataset in Power BI desktop

Dataflows connect raw data sources, apply a series of steps and store data as tables or entities.

47. Explain Paginated Reports

48. Explain Workspace setting and Workspace access - A workspace is a collaborating environment in power bi service. To create a workspace we can simply login to power bi service and on the menu we can select workspaces then at the bottom we can select create workspace

which we can name after in the dialog box and specify the contact for that workspace. Next once we create it we can go to the workspace and there we will see the access command on the top right. This command will allow us to enter the email addresses of users we want to share the workspace with and specify their type of "membership" in this workspace such as viewer, contributor, member or admin.

49. Bookmark in Power BI Desktop A bookmark captures the state of a report page. This includes the settings you've made to filters, slicers, and visuals on that page. Once the report page is set the way you want, give it a friendly name. Now you can return to that state of the report page with a single click. Simply select a bookmark, and Power BI takes you back to that view.

50. Drill through in Power BI Report

51. What is a Power BI app? App vs Workspace - an app is basically an official packaged content that can be distributed to a broad audience. Apps are created in workspaces, where members can access Power BI content with their colleagues before publishing the finished app to individuals, large groups of people in an organization or an entire organization. An app combines related content - dashboards, spreadsheets, datasets and reports all in one place. An app can have one or more of each content type all bundled together. **The main difference between app and workspace is that an app is mainly used for sharing where you can interact and consume the content while a workspace is mostly used for collaboration where you can edit and create content that will go into an app, add members to the space and control their rights to content within the space and make edits to an app before updating it, so user audience does not see changes until you explicitly update app.**

52. What is the direction of the relationship in PowerBI?

The direction of a relationship between the two tables indicates how the information between the table flows and how we can filter data from one table to another.

There are two types of directions when it comes to power bi dataset relationships. One is SINGLE-directional, and the other is BOTH-directional.

Single directional is a one way relationship ex. Table A is related to table B with an arrow A 1 □ *B which means One to Many relationship in a one way direction.

A one way direction means that we can filter results in one direction only, ex, from the dim table towards the facts table and not vice versa.

When we happen to have a many to many relationship, we may need to change that one way relationship to BOTH ways (sometimes), which is not recommended as it creates problems for filtering in the future.

53. Explain Premium capacities and How to manage premium capacities.

54. What is a subscription in power bi? This new feature for Pro users allows you to quickly subscribe to emails of the report pages that matter most to you. Once you're subscribed, Power BI will regularly send screenshots of that report page directly to your inbox whenever the data changes. The image in your inbox will show up exactly as it does in Power BI, and include a link to the report where you can drill into any interesting findings.

55. Explain the Entities/table and Linked Entities/table. - Linked entities are a Premium feature, they are basically linked tables that come from dataflows. In order to edit the linked entity we can make a reference to it and then we can transform the data into a referenced entity. PBI makes it possible to link entities or tables from one dataflow to another without actually duplicating them. Avoiding duplication with linked entities makes it possible to maintain a single source of truth across your organization. Refreshing linked entities requires a power bi premium license

57.What are the Differences between visual level filters, page level filters and report level filters in Power BI.

58.How to Monitor report performance in Power BI - to see how our report is performing we can go to View in Power BI Desktop and then select Performance Analyzer. Next we click Start Recording this will record the time that it takes our visuals to load when interacting and filtering the other tiles in the report in milliseconds

59. Capacity size in Power BI Premium

60.What is an Orphaned Workspace in Power BI? - An orphaned workspace is a workspace that has no admin.

The states of a workspace are:

Active – A regular workspace that is available and accessible
Deleted – A deleted workspace that still exists in the Power BI service
Orphaned – A workspace without a user account with administrator permissions

Removing – A deleted workspace marked for permanent removal

61.Explain Capacity Nodes and Capacity workloads

62. RELATED VS RELATEDTABLE

RELATED(columnName) - works as a lookup and for it to work, there must be a relationship between the two tables. Related goes from the Many side of a relationship to the One side of a relationship. For example, in the sales table we will have many sales of a product. However in the products table each product is only listed once. So the related function moves from the many to the one side and will return a single related value.

RELATEDTABLE is a table function. Like RELATED, RELATEDTABLE requires a relationship between the two tables. RELATEDTABLE goes from the One side of a relationship to the many side. As it goes to the Many side, it is unable to return a single value, but instead it returns a table of values. The table of values that it returns can be based on filters.

The syntax for RELATEDTABLE is

= RELATEDTABLE (Expression, Filter 1, Filter 2)

63.Row Context and Filter Context in DAX

65. DAX : KEEPFILTERS, REMOVEFILTERS, and LOOKUPVALUE

66. Difference between Duplicating a Query and Referencing a Query

#	Duplicate Query	Reference Query
1	It copies the original query with all the applied steps	It copies the original query without any custom steps

2	Any changes in the original query will not affect the duplicate query	Any changes in the original query will affect the reference table
3	We can edit the source step in the duplicate query	We can not edit the source step in the reference query
4	Requires more processing because t creates a new object in the memory	It doesn't require more processing because it just acts as a pointer to the original query in the memory and does not actually create a new object.

Copy-Paste a query - is neither a duplicate nor a reference. It is similar to duplicate BUT if you copy paste a query that is SOURCED from other queries, the result is a copy of ORIGINAL queries + the queries that are its mother queries. So, let's say Query_3 is created by adding Query_1 and Query_2, than if we copy query_3 and paste it, it will be a copy of query_1 + Query_2 and a copy of query 3 ALLTOGETHER

If we copy a referenced query it will return two tables instead. For example we have table dim Date. I first reference dim Date in a new query wich will show as Dim Date 2 and that one does not have any applied steps in it. When I click Copy the Dim Date 2(reference query) and I paste it Power Bi will give me two more queries Dim Date 3 which is a copy of the original Dim Date and it shows all the applied steps that are present in the original Dim Date Query. And it will also Give Dim Date 4 which is a copy of the Referenced Dim Date 2 Query and this copy just like Dim Date 2 will not show any applied steps either. Any changes we apply in the original query will only be reflected at the reference Dim Date 2 Query. Any other changes in the rest of dim dates copy as well as reference will not affect the other queries.
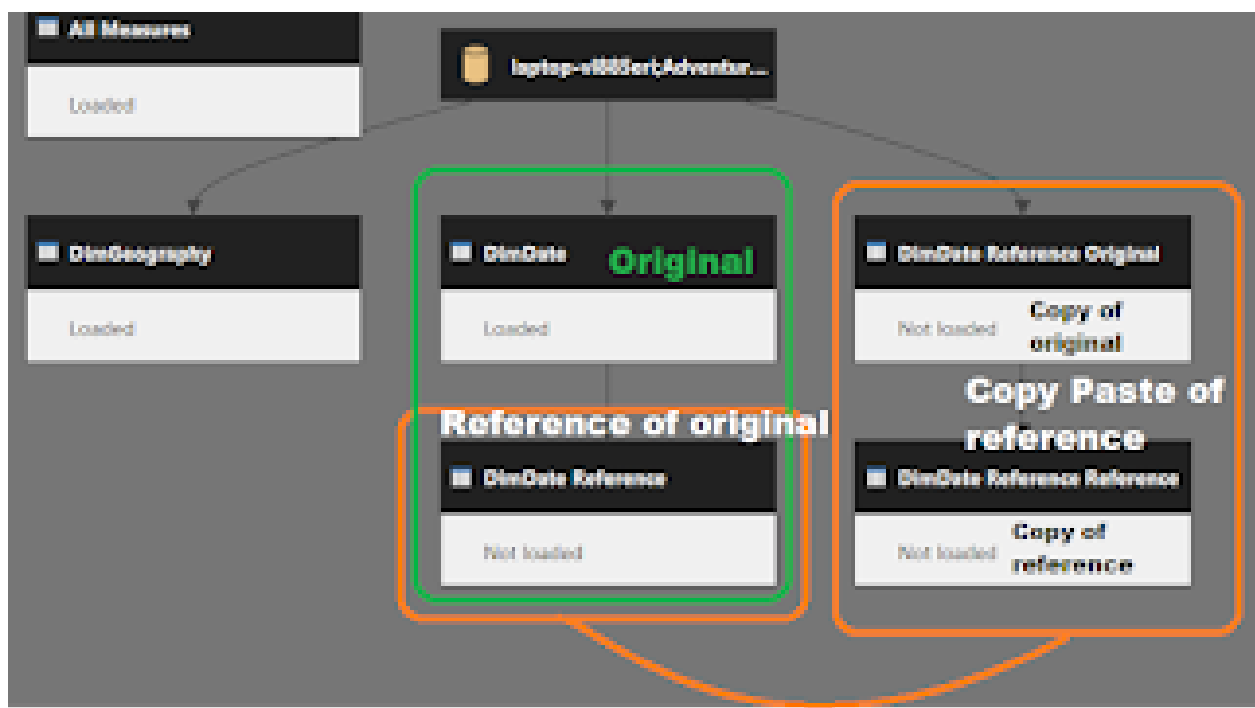
EXTRA

RANK(table, expression, value, order, ties) - Returns the ranking of a number in a list of numbers for each row in the table argument. Order 0 = descending, Order = 1 ascending. Ties

Skip = The next rank value after a tie, it is the rank value of the tie plus the count of the tied values. Ties Dense = The next rank value after a tie is the next rank value.

DATAFLOW - is a collection of tables that are created and managed in workspaces in the Power BI service. It is a managed service for executing a wide variety of data processing patterns. It can be considered as an ETL pipeline that can be used to connect to source data, transform the data by applying business rules, and then finally preparing the data to be available to visualize.

A Data flow is a simple data pipeline or a series of steps that can be developed by a developer or a business user. Using this pipeline, data can then be fetched into Power BI service from a wide variety of sources. You can consider it similar to Power Query on the Cloud. Since in Power Query Editor we cant reuse our transformations to other Power BI Reports Dataflow helps us to do just that. Therefore, with Power BI Dataflows you can easily create reusable data integration pipelines that can be used in one or more Power BI Reports. You can also share your dataflow with other users within the organization, and they can leverage the data flow as well. If you need to change the logic of the data flow all the downstream dataflows will automatically reflect the new logic.

Dimensional Model tends to be denormalized with as many less tables as possible in a way that it makes analysis of data more natural and intuitive. A dimensional model seeks to divide your data into two big groups and thus two different types of tables in your model: facts and dimensions. We can think of a fact as an event we are trying to analyze such as a sales item transaction. This event and its frequency forms what we call the base granularity of a fact table. The fact tables usually contain the quantifiable data that we are interested in and dimension tables contain the contextual information that we wish to analyze. In a dimensional model we would generally seek to take all the contextual data and create a dimension table for each logical grouping - and then make each value there distinct.

WHAT CHART TO USE

Trend Analysis - One of the most frequently used methods for analyzing data is to track a trend over time. In this case we should use:

        Bar Graph
        Line Chart
        KPI
        Waterfall Chart
        Cards with States
        Area Chart
        Stacked Area chart
        Candlestick
        Gantt chart

COMPARISON ANALYSIS - Another method for analysing data is comparison and ranking. We compare and rank countries, regions, business segments, salesmen and sport players based on one or a set of criteria. In many cases , this shows us where we are and how we are doing. These are the types of charts we can use for comparison:

        Bar chart
        Buble chart
        Gauges
        Column Chart
        Scatter Plot
        Dot Plot
        Stacked Bar Chart
        Cluster Column
        Cluster Bar Chart
        Stacked Column

CORRELATION ANALYSIS - Relationship charts are suited for showing how one variable relates to one or numerous different variables. We use relationship charts to show how something positively affects, has no effect or negatively affects another variable. We can use these types of charts to see hoe to variables are correlated:

Scatter Plot
Bubble Chart
Line and Clustered column Chart
Line and Stacked Column Chart
Table Heat Map

DISTRIBUTION ANALYSIS - it shows how the quantitative values are distributed across their full quantitative range. Distribution charts help us understand outliers, the normal tendency and the range of information in your values. These are the different charts we can use in Distribution Analysis:

Histogram
Line Chart
Clustered Column Chart
Bar Chart
Box and Whisker
Candlestick

PART - TO - WHOLE - Analysis - Whenever we need to do part to whole analysis it is recommended that if we use pie charts we should use them displaying the values next to them as they are very difficult to visualize by human eyes if the values are very close to each other. The charts that we can use for this analysis are:

Pie Chart
Donut Chart
Stacked Column Chart
Stacked Bar Chart
Waterfall Chart
Tree Map
Heat Map
Stacked Area Chart

Power BI consists of several elements that work together :

Power BI Desktop
Power BI Service (online)
Power BI mobile apps for Windows, iOS, and Android devices
Power BI Report Builder
Power BI Report Server - where you can publish your Power BI reports, after you have created them in Power BI Desktop.

Applied Steps in Query Editor are saved in Query Settings at the View toolbar first icon and can be shared along with the query in the Power BI Service.

Data Sources that support Direct Query method of connection are basically sources that use relational database model, or have modeling engine, some of them include:

Amazon Redshift
Azure SQL Database
Azure SQL Data Warehouse
Google Big Query
Oracle Database version 12 and above
Spark
SQL Server

Analytics pane in Power BI Desktop allows us to add dynamic reference lines to visuals and provide focus for important trends or insights. We can create these dynamic lines:

X-Axis constant line
Y-Axis constant line
Min Line
Max Line

Average Line
Median Line
Percentile Line
Symmetry Shading

Below are the charts we can use at least one feature of Analytics Pane:

Scatter Chart
Area Chart
Clustered Bar Chart
Clustered Column Chart
Line Chart
Waterfall Chart
100% Stacked Bar Chart
100% Stacked Column Chart

MOST IMPORTANT VISUALS :

Bar Charts - are used to quickly highlight differences between categories, clearly show trends and outliers, and reveal historical insights and lows at a glance. Bar charts are especially effective when we have data that can be split into multiple categories. Use a bar chart to show the values of several items at a single point in time.

Line Chart - displays information as a series of data points called markers connected by straight line segments. This type of chart is often used to visualize a trend in data over intervals of time - a time series - thus the line is often drawn chronologically.

Pie Chart - is a specialized graph used in statistics. The independent variable is plotted around a circle in either a clockwise direction or a counterclockwise direction. The dependent variable, usually a percentage, is given as an arc whose measure is proportional to the magnitude of the quantity. Each arc is depicted by constructing radial lines from its ends to the center of the circle, creating a wedge chapped slice. The independent variable can attain a finite number of discrete values. The dependent variable can take any value from 0 to 100 percent.

What are the Power BI Admin Roles and Responsibilities

There are four types of admin roles related to Power BI:

Microsoft O365 (IT / Business Owner)
- Global Admin:
  - has unlimited access to all organizational features
  - Assigns roles to other users
- Billing Admin
  - Manage Subscriptions
  - Purchase Licenses
- License Admin
  - Assigns or remove licenses for users
- User Admin
  - Create and Manage Roles and Groups
  - Reset User Paswords

Power BI Service
- Power BI Admin
  - Full Access to Power BI Management Tasks
  - Enable and Disable Power BI Features
  - Report on Usage and Performance
  - Review and Manage Auditing

Power BI Premium
- Power BI Premium Admin
  - Assign workspaces to the capacity
  - Manage user permission to the capacity
  - Manage workloads to configure memory usage
  - Restart the Capacity

Power BI Embedded
- Power BI Embedded Admin
  - Assign workspaces to the capacity
  - Manage user permission to the capacity
  - Manage workloads to configure memory usage
  - Restart the Capacity

The Admin Portal allows you to:

       Monitor usage across your organization
       Manage users and access audit logs (O365 admin center)
       Configure tenant settings
       Set Capacity Settings for Power BI premium and Embedded
       Manage, View and Edit
       Emeded Codes
       Organizational Visuals
       Workspaces
       Featured Content
       Apply custom branding
       Monitor Data protection metrics and sensitivity labels

AZURE

AZURE - *is a cloud platform with more than 200 products and cloud services designed to help you bring new solutions to life such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS) that can be used for services such as analytics, virtual computing, storage, networking and much more. It can be used to replace or supplement your on-premise servers.*

Cloud Computing - provides computing services over the internet using a pay as you go pricing model. The cloud provider takes care of maintaining the underlying infrastructure for you. The cloud provides on demand access to a nearly limitless pool of raw compute, storage and networking components, speech recognition and other cognitive services that help make your application stand out from the crowd.

With Azure you can explore everything from running existing applications on virtual machines, to using new software paradigms such as intelligence bots and mixed reality. Azure also provides storage solutions that dynamically grow to accommodate massive amounts of data.

The Azure portal is a web based unified console that provides an alternative to command line tools. You can organize the Azure portal to custom fit your workflow, projects and style. With Azure portal you can manage your subscription by using a graphical user interface, you can build, manage and monitor everything from simple web apps to complex cloud deployments. You can create custom dashboards for an organized view of resources and configure accessibility options for an optimal experience.

Azure Marketplace - helps connect users with Microsoft Partners, independent software vendors and start ups that are offering their solutions and services, which are optimized to run on Azure. Azure Marketplace customers can find, try, purchase and provision applications and services from hundreds of leading service providers. All solutions and services are certified to run on Azure.

Azure Databricks - is a data analytics platform optimized for Microsoft Azure cloud service platform. Azure Databricks offers three environments for developing data intensive applications:

> Databricks SQL - provides an easy to use platform for analysts who want to run SQL queries on their data lake, create multiple visualization types to explore query results from different perspectives and build and share dashboards. Databricks Data Science and Engineering - provides an interactive workspace that enables collaboration between data engineers, data scientists, and machine learning engineers. For a big data pipeline, the data (raw or structured) is ingested into Azure through Azure data factory in batches, or streamed near real time using Apache Kafka, Event Hub or IoT Hub. This data lands in a data lake for long term persisted storage, in Azure Blob Storage or Azure Data lake Storage. As part of analytics workflow, use Azure Databricks to read data from multiple data sources and turn it into breakthrough insights using Spark
> Databricks Machine Learning is an integrated end-to-end machine learning environment incorporating managed services for experiment tracking model training, feature development and management and feature and model saving.

Data Lake - is a central storage repository that carries big data from many sources of raw data in its native form until it is needed. It can store structured, unstructured and semi-structured data, which means data can be kept in a more flexible format for future use. A data lake is capable of

Storing and Analyzing peta-byte size files and trillions of objects. It also develops massively parallel programs easily.

XMLA ENDPOINT - First we need to understand what happens behind the scenes when we create a report in power BI desktop. A Power BI Report is a visualization element connected to an in memory dataset behind the scenes (when we use import method). The in memory dataset behind the scene has all the data loaded into memory, with all calculations, relationships and the logic to connect to the data source. When you open a pbix file, behind the scene there are two elements: a report (visualization part) and a dataset (data model). This report stores its data into the memory which is managed by the Microsoft SQL Server Analysis Services (SSAS) engine. Even if you run the Power BI Desktop on a machine that does not have SSAS installed you will see this service because Power BI Desktop automatically installs a version of SSAS with it. When we publish the report in Power BI Service the dataset is managed by a version of SSAS installed on a cloud machine. We need XMLA to connect to the SSAS local engine so XMLA endpoint creates a connectivity channel for other tools and services such as DAX studio or tableau to connect to the power bi SSAS model dataset hosted in the power bi service.

Roles for Workspaces :

<u>Viewer</u>
     Can only view a workbook, reports and dashboards;
     Can't access datasets or dataflows
     Can not edit the content.

<u>Contributor</u>
     Lift viewer restrictions
     Can publish, create, edit or delete content
     Can not add people to new roles or modify existing roles
     Can share only if the content has previously been shared (Can't share new content even if he created it)

<u>Member</u>
     Has all Contributor rights
     Add members or users with lower permission levels
     Can publish and update apps
     Can share an item or an app
     Can allow others to share

Admin

        All member rights

        Can update or delete a workspace

        Can add or remove other users (including other admins)

Data Driven Alerts - can be done in workspace and my workspace, basically whenever we work with a database, so they don't work with the pin live option into the dashboard.

Pin Live- whenever we refresh the report the dashboard will automatically be refreshed

Ways to share in Power BI:

        Print or export your report

        Share reports or dashboard (whoever gets it can interact and view but can't edit it)

        Share the workspace

        Publish an app

        Embed securely online (within your organization in house tool (intranet))

        Publish it to web (it will be public)

Performance Optimization - there are several options to consider when optimizing or troubleshooting performance issues:

        Implementing Vertical Filtering

        Preference for Custom Columns created in Power Query

        Disable "Auto date/time" in data load options settings

        Use a subset of data for development or Horizontal Filtering

        Try using more variables in DAX measures or calculations

        Disable Power Query load for non required tables

	Dataflow	Dataset
Implementation	CDM folder	Analysis Services tabular model
Storage	CSV files	Vertipaq
Metadata	Common data model - model,json	BISM
Development	Power Query Online	Power Query in PBI Desktop
Primary Purpose	Data Reuse	Data Analysis
Reuse	Acts as data source in multiple datasets	Shared datasets across workspaces
Scope of Reuse	Entity level reuse	Dataset level reuse

Mashup with other data sources	No	Yes
Used for reporting	Not directly	Yes
Reuse outside power bi	Yes through ADLSg2	Yes through XMLA
Data Access Methods	Import	Import, Direct Query
Connection methods	Import	Live Connection
Row Level Security	No	Yes

My goal is to become a solutions architect around the length of 5 years

List 5 strengths

Keep it short for how o you handle rejection

Personal weakness should be a benefit for the company what are you doing to improve it

Technical strengths - proficient in power bi, tableau ,

I don't get angry I am a very calm person

Yes i would love to provide you with my references however they are busy people I would like to ask for their permission and i can get back to you in 24 hours

Quality and time are both important

What motivates me is

INTRODUCTION

It has to last 4 to 5 min and be very interesting

9 paragraphs: #

> NO of years of experience and domains(2 domains healthcare, finance, banking, telecom)
> Power BI Products (Desktop, Service, Apps, Report builder)
> Data Sources (Different types of data sources you have worked with: azure, sql server, amazon redshift, etc)

Power BI Desktop and Query editor (explain how you transform data the etl process, i have experience with m language), then I go to Power bI desktop and worked on the data model, also dax, incorporate everything we learned that can go in the process), static dynamic row level security
Power BI Visualization - mention all the charts, custom visualizations that I have used,
Power BI Service - worked with multi[ple workspaces, dataflows, gateways, scheduled refresh, created apps,
T-SQL paragraph - joins, temp tables, store procedures, views etc
Other Skills - programming languages python, R, Tableau
Closing paragraphs oral and com skills, improve myself, confident that i will be able to excel in this project, thank you

Dynamic Row Level Security with Organizational Hierarchy Power BI - applicable to cases when employees need to be authorized to their data records only and to the data of people whom they are managing. U need a user table that has user id as well as manager id columns and then you can use path() to get the whole path for the hierarchy with a delimited text value. The ID of every employee in the path is separated in the text by a vertical line(|). We can also use Pathitem() to get a specific item in the path for example who are the level two managers and you can use this function with the lookup value function to create a calculated column for each level of the organizational hierarchy. We can also use pathcontains() which will check if an ID exists in the path or not. This is the function that we need to use in row level security.

First we use Filter() to fetch the logged in user's record:

Filter (User, [Email]=USERPRINCIPALNAME())

After finding the record for the current user, we can use MaxX or MinX to find out the ID of that user:

MaxX(Filter(User, [Email] = USERPRINCIPALNAME()),User[ID])   !!!!!!

And finally now we can use this ID in PathContains functions to check if user's ID exists n a path or not:

Pathcontains(User[Path], MaxX(Filter(User, [Email] = USERPRINCIPALNAME()) , User[ID]))

The above code we can write at the "Table filter Dax expression" when we are creating the row level security feature.

Object Level Security - OLS - enables model authors to secure specific tables or columns from report viewers. From the viewer standpoint the table or column simply does not exist. Similar to RLS, OLS also is also defined within model roles. Currently OLS definitions are not created natively in Power BI Desktop, but through external tools such as Tabular Editor that can set OLS rules on Power BI Desktop datasets or through XMLA endpoint in the service using TMSL or TOM.

Reviewing Object Level Security using Tabular Editor

First we start by creating the roles in Power BI Desktop through Manage Roles > Create then on the External Tools Ribbon click on Tabular Editor. From there on the model view select the drop down under Roles file. The roles created in the previous step will appear. Then Select the Role you wish to enable an OLS definition and edit the rule to None or Read. After you have defined object-level security for the roles, save your changes.

In Power BI Desktop publish your dataset to the Power BI Service. In the PBI Service navigate to the Security page by selecting the more options on the dataset. Then assign the members or groups to their appropriate roles and then click Save.

Difference between IF and Switch functions:

An IF-ELSE statement evaluates integer, character or boolean type.

Switch function evaluates integer and character values only.

In the case of the if else statement the function checks the condition and returns the first value as TRUE if it matches with the condition, otherwise it returns the Else value. But in the case of the switch statement it returns different results depending on the value of an expression.