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POWER BI

Interview Questions
Part-1



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Power BI Interview Questions & Insights



**Master the
Questions, Crack
the Interview!**

Power BI Basics

I. What is Power BI?

Power BI is a data visualization and business intelligence tool from Microsoft. It helps users connect to different data sources, clean and transform the data, and create interactive reports and dashboards. With Power BI, it's easy to analyze data and share insights with others in a simple and visual way.

2. What are the main components of Power BI?

Power BI has several key components that work together to help us create, share, and view data reports:

Power BI Desktop – This is where we create reports and dashboards on our computer.

Power BI Service – This is the online (cloud) platform where we publish and share reports with others.

Power BI Mobile – This is the mobile app to view reports on phones and tablets.

Power BI Gateway – This connects Power BI to our company's local data, so we can keep reports updated.

Power BI Report Server – This is used when a company wants to store reports on its own servers, not in the cloud.

Power BI Embedded – This lets developers add Power BI reports inside websites or apps.

3. What are the different data sources supported by Power BI?

Power BI supports a wide variety of data sources. These include:

Databases: Like SQL Server, MySQL, Oracle, and PostgreSQL.

Cloud Platforms: Such as Azure SQL Database, Google Big Query, and Amazon Redshift.

Files: Like Excel, CSV, JSON, XML, and even PDF.

Online Services: Power BI can connect to services like SharePoint, Salesforce, and Google Analytics.

Other Sources: It also supports web data, REST APIs, OData feeds, and Power BI datasets.

4. What is the difference between Power BI Desktop and Power BI Service?

Feature	Power BI Desktop	Power BI Service
What is it?	A free Windows application used to create reports locally.	A cloud-based platform to view, share, and collaborate on reports.
Usage	Used for data modeling, cleaning, and designing visuals.	Used mainly to consume, share, schedule, and collaborate on reports.
Data Processing	Performs transformations using Power Query and DAX.	Mostly handles report refreshes and scheduling.
Storage	Saves files as .pbix on your local computer.	Saves reports in the cloud (Power BI workspace).
Publishing	Reports are published from Desktop to the Power BI Service.	Hosts published reports and allows sharing with others.

5. What are the different versions of Power BI?

Power BI Free – This is good for individuals. You can create reports and dashboards, but can't share them with others.

Power BI Pro – A paid version for teams. It allows you to share, collaborate, and schedule data refreshes.

Power BI Premium – Made for large organizations. It gives better performance, more storage, and allows sharing with users who don't have a Pro license.

Power BI Embedded – Meant for developers. You can embed Power BI reports into your own apps or websites.

Power BI Report Server – Used when companies want to keep everything on-premise instead of cloud. It works with SQL Server licenses.

6.What is Power BI Report Server?

Power BI Report Server is an on-premises reporting solution for organizations that prefer to keep their data behind a firewall instead of using the cloud.

- It allows users to create, store, and manage Power BI reports, paginated reports, and mobile reports on their own servers.
- Reports can be accessed via a web browser or Power BI mobile app.
- It is included with Power BI Premium licensing.

7. What is Power Query?

Power Query is a data transformation and ETL (Extract, Transform, Load) tool in Power BI.

- It helps users **connect, clean, reshape, and transform** data before loading it into Power BI.
- It supports multiple data sources like **Excel, SQL, APIs, and cloud databases.**
- It uses a formula language called **M Language** for advanced data transformations.

8. What is Power Pivot?

Power Pivot is a data modeling component in Power BI that allows users to:

- Create relationships between tables. Use DAX (Data Analysis Expressions) for advanced calculations.
- Handle large datasets efficiently by using in-memory compression.
- Power Pivot is essential for building complex analytical models in Power BI.

9. What is Power View in Power BI?

Power View is an interactive data visualization feature in Power BI that allows users to create dynamic reports and dashboards.

- It supports charts, graphs, maps, and tables.
- Users can filter and highlight data dynamically.
- It was originally available in Excel and SharePoint but is now integrated into Power BI Desktop.

10. What is Power Map in Power BI?

Power Map is a 3D data visualization tool in Power BI that helps users plot geographic data on a map.

- It enables users to create animated visualizations of data over time.
- It supports Bing Maps for location-based analysis.
- It is now integrated into Power BI as Map and Filled Map visuals.

II. What is Power BI Mobile?

Power BI Mobile is the mobile application version of Power BI that allows users to view and interact with reports and dashboards on their smartphones or tablets.

- Available for iOS, Android, and Windows devices.
- Supports real-time data monitoring and notifications.
- Allows users to annotate and share reports directly from the app.

12. What are the types of Power BI visuals?

- **Bar and Column Charts:** Used for comparing categorical data.
- **Line Chart:** Shows trends over time.
- **Pie and Donut Charts:** Displays proportions.
- **Table and Matrix:** Shows detailed data in tabular format.
- **Card:** Displays a single value or KPI.
- **Map:** Displays geographical data (Filled Map, ArcGIS, etc.).
- **Treemap:** Represents hierarchical data using nested rectangles.
- **Gauge Chart:** Used for KPIs and progress tracking.
- **Scatter and Bubble Charts:** Show relationships between variables.
- **Waterfall Chart:** Used for understanding financial or sequential data changes.
- **Custom Visuals:** Additional visuals from the Power BI Marketplace.

13. What is a Power BI Dataset?

A Power BI Dataset is a structured collection of data that has been imported, connected, or transformed within Power BI for analysis and visualization.

- It can be sourced from databases, Excel, APIs, and cloud services.
- Supports Direct Query, Import Mode, and Live Connection for data refresh.
- Datasets can be shared and reused across multiple reports.

14. What are the advantages of using Power BI?

Power BI offers several benefits, including:

- 1. Ease of Use:-** Simple drag-and-drop interface for building reports and dashboards.
- 2. Multiple Data Sources:-** Connects to databases, Excel, APIs, cloud platforms like Azure, and more.
- 3. Interactive Visualizations:-** Offers a variety of charts, graphs, maps, and custom visuals.
- 4. Data Refresh & Automation:-** Supports scheduled data refreshes for real-time and up-to-date insights.
- 5. Cloud & On-Premises Access:-** Accessible via Power BI Service (cloud) and Power BI Report Server (on-premises).
- 6. Security & Compliance:-** Enables Row-Level Security (RLS) and integrates with Azure Active Directory for secure access.

15. What is Power BI Gateway?

Power BI Gateway is a bridge that connects on-premises data sources to the Power BI Service without moving the data to the cloud.

- It enables automatic data refresh from SQL databases, Excel files, and other on-premise sources.
- There are two types of gateways:
 - Personal Mode (for individual use)
Standard Mode (for team or enterprise use)
 - Personal Mode (for individual use)
Standard Mode (for team or enterprise use)

It is essential for organizations needing real-time data updates in Power BI dashboards while keeping data stored securely on local servers.

Data Sources and Data Connections

16. What is the difference between Power BI Personal and Enterprise Gateway?

Feature	Personal Gateway	Enterprise Gateway
Use Case	Individual users	Enterprise-wide data access
Installation	Installed per user on a personal computer	Installed on a central server for multiple users
Security	Less secure, as credentials are stored locally	More secure, with centralized authentication
Data Sources	Supports only Import mode	Supports both Import and DirectQuery mode
Scheduled Refresh	Cannot be used for scheduled refresh	Supports scheduled refresh
Sharing	Cannot be used for shared datasets or reports	Supports shared reports and datasets

17. How do you connect Power BI to a cloud-based data source?

- **Open Power BI Desktop:** Start by launching Power BI on your computer.
- **Click Home → Get Data → More:** Navigate to the Home tab, click on Get Data, then select More to see all available data sources.
- **Choose a Cloud Service:** Select the cloud service you want to connect to, such as Azure, Google BigQuery, Snowflake, Salesforce, or SharePoint Online.
- **Enter Required Credentials:** Provide the necessary authentication details like OAuth, API Key, or database credentials based on the selected service.
- **Select and Load Data:** Choose the desired dataset or table and click Load to import it into Power BI for analysis.
- **For Power BI Service:** Use Dataflows for managing cloud-based data connections, and use Gateways when connecting to on-premises data sources.

18. What is the difference between DirectQuery and Import Mode?

Feature	DirectQuery	Import Mode
Use Case	Large datasets that change frequently	Smaller datasets or when speed is crucial
Data Storage	Queries data live from the source	Stores data in Power BI
Performance	Slower, as it queries the database live	Faster, as data is preloaded
Data Refresh	No need for scheduled refresh; always live	Requires scheduled refreshes

19. How do you connect Power BI to an Excel file?

To connect Power BI to an Excel file, follow these simple steps:

Open Power BI Desktop.

Go to the Home tab and click on **Excel** under the **Get Data** section.

Browse your computer and select the **Excel file** you want to use.

Once it opens, you'll see a list of sheets and tables—select the one(s) you need.

Then click **Load** to import the data **directly**, or click **Transform Data** to open **Power Query** if you want to clean or modify the data before loading.

20. How do you connect Power BI to SQL Server?

To connect Power BI to a SQL Server database, follow these steps:

1. **Open Power BI Desktop.**
2. **Go to the Home tab → click Get Data → choose SQL Server.**
3. **Enter the Server Name and optionally the Database Name.**
4. **Choose your connection mode:**
 - Import to load data into Power BI.
 - **Direct Query** to run live queries directly on **SQL Server.**
5. **Click OK, then select the tables you need and load the data.**

21. How do you refresh data in Power BI?

To refresh data in Power BI, you can do it in two main ways—in Power BI Desktop and Power BI Service:

In Power BI Desktop:

- Click the Home tab → click Refresh to update the data.
- If you're using DirectQuery, data is updated automatically every time you interact with visuals.

In Power BI Service (app.powerbi.com):

- Go to the workspace, find your dataset.
- Click More Options (...) → select Refresh Now to refresh manually.
- To automate updates, go to Dataset Settings → configure Scheduled Refresh.

For On-Premises Data Sources:

Use a Power BI Gateway (Personal or Standard mode) to enable scheduled refreshes from your local or on-premises systems.

22.What are the different file formats supported for importing data into Power BI?

Power BI can connect to a wide variety of file types, including

- Excel Files – **.xls, .xlsx**
- CSV Files – **.csv**
- JSON Files – **.json**
- XML Files – **.xml**
- Text Files – **.txt**
- Parquet Files – **.parquet** (commonly used in big data)
- PBIX Files – Power BI Desktop files
- ODS Files – **Open Document Spreadsheet**

23. Can Power BI connect to live streaming data?

Yes, Power BI supports live streaming data through several methods:

- **Azure Stream Analytics** – Processes real-time data from IoT devices, apps, and sensors, and sends it directly to Power BI.
- **Power BI REST API** – Allows developers to push real-time data into Power BI datasets using custom applications.
- **Streaming Datasets** – Enables live data feeds directly into dashboards without storing the data in Power BI.
- **PubNub Integration** – Connects Power BI to PubNub real-time streams for instant updates.

24. How do you handle large datasets in Power BI?

- **Use DirectQuery Mode** – Keeps large data at the source and queries it on demand.
- **Apply Aggregations** – Pre-aggregate data to reduce the amount processed at runtime.
- **Optimize DAX Queries** – Write efficient DAX measures to minimize calculation time.
- **Reduce Cardinality** – Lower the granularity of data where possible to improve compression and performance.
- **Partition Data with Incremental Refresh** – Load only new or changed data instead of reloading everything.
- **Optimize the Data Model** – Remove unused columns and use a star schema for better performance.
- **Use Composite Models** – Combine Import mode for frequently used data and DirectQuery for real-time or large datasets.

25.What is the Common Data Service (CDS) in Power BI?

The Common Data Service (CDS) is a cloud-based data storage platform used by Power BI, Power Apps, and other Power Platform tools. It stores data in a standardized and secure way, making it easier to build and integrate business applications.

Key Benefits of CDS:

- Centralized data storage for consistency across apps.
- Secure and role-based access control to protect sensitive data.
- Seamless integration with Power BI, Power Apps, and Power Automate.
- Reduces the need for complex ETL processes by using a standardized schema.

26. What is the use of the "Merge Queries" function?

The Merge Queries function in Power BI is used to combine data from two tables based on a common key, similar to SQL joins. It's commonly used in Power Query Editor for integrating data from different sources.

Types of Joins Available:

- Inner Join – Only matching records from both tables.
- Left Outer Join – All records from the first table, and matching records from the second.
- Right Outer Join – All records from the second table, and matching ones from the first.
- Full Outer Join – All records from both tables.
- Anti Joins – Returns only the non-matching records (left or right).

Steps to Use Merge Queries:

- Open Power Query Editor → click Merge Queries.
- Select the two tables and choose the common column (key).
- Pick the appropriate join type and click OK.
- Expand the merged column to include the fields you want from the second table.

27. How do you clean data using Power Query in Power BI?

Power Query in Power BI offers a wide range of tools to clean and transform data before loading it into your report. Here are some common data cleaning steps:

Key Data Cleaning Techniques in Power Query:

Remove Null Values – Filter out rows with missing or empty values.

Remove Duplicates – Eliminate duplicate records to ensure data integrity.

Change Data Types – Convert columns to the correct format like Date, Number, or Text.

Trim and Clean Text – Remove extra spaces, invisible characters, or formatting issues.

Replace Values – Find and replace specific values within a column.

Merge and Append Queries – Combine data from multiple tables or sources.

Add Custom Columns – Use formulas to create calculated or conditional columns.

28. How do you split a column in Power BI?

To split a column in Power BI, you use the Power Query Editor. This is useful when dealing with unstructured or semi-structured data like full names, addresses, or codes.

Steps to Split a Column:

- **Open Power Query Editor.**
- Select the **column** you want to **split**.
- Click on **Split Column** in the Transform tab.
- Choose your **splitting** method:
- **By Delimiter** (e.g., comma, space, dash).
- **By Number of Characters** (for fixed-width data).
- Click **OK** to apply the changes.
- **Rename** the **new columns** if needed for clarity.

29. How do you remove duplicate values in Power BI?

To remove duplicate values in Power BI, use the Power Query Editor.

Steps

- Open Power Query Editor by clicking Transform Data.
- Select the column(s) where you want to remove duplicates.
- Go to the Home tab → click Remove Duplicates.
- Click Close & Apply to save and load the cleaned data.

30. What is a relationship in Power BI?

A relationship in Power BI defines how two or more tables are connected through a common column, usually a key like Customer ID or Product ID. Relationships allow Power BI to combine data from different tables for accurate analysis and reporting.

Example:

If you have a Sales table and a Customers table, you can create a relationship between them using the Customer ID. This enables you to analyze sales data by customer details like name, region, or category.

Why Relationships Matter:

- Enable cross-table analysis
- Support filter propagation in visuals
- Help maintain a clean, normalized data model

31. What is the difference between M Language and DAX in Power BI?

M Language and DAX (Data Analysis Expressions) are both used in Power BI, but they serve different purposes:

Feature	M Language	DAX
Used In	Power Query Editor	Power BI Data Model (Reports/Visuals)
Purpose	Cleans, transforms, and shapes data before loading	Performs calculations and analysis after data is loaded
Syntax	Functional and step-by-step	Formula-based, similar to Excel
Execution Time	Runs before data is loaded into the model	Runs after data is loaded
Example	Table.TransformColumn (Source, {"Column1", Text.Upper})	SUM(Sales[Amount])

32.What are the different types of relationships in Power BI?

Power BI supports three types of relationships between tables to connect and analyze data effectively:

1. One-to-Many (1:M)

- Most common type.
- One record in Table A matches multiple records in Table B.
- Example: One Customer → Many Orders.

2. Many-to-Many (M:M)

- Used when multiple records in one table relate to multiple records in another.
- Example: A Product can belong to many Categories, and a Category can have many Products.

3. One-to-One (1:1)

- One record in Table A has exactly one matching record in Table B.
- Example: A Product table linked to a Product Details table.
- inactive (can be activated in DAX using USERELATIONSHIP()).

33. What is a Star Schema in Power BI?

A Star Schema is a simple and recommended data modeling structure in Power BI where:

A central Fact Table (e.g., Sales) holds numeric data like revenue, quantity, etc.

Multiple Dimension Tables (e.g., Date, Product, Customer, Region) store descriptive data related to the fact.

Example:

If analyzing sales:

- Fact Table: Sales Data
- Dimensions: Customers, Products, Dates, Regions

Benefits of Star Schema:

- Faster performance due to fewer joins
- Simpler model – easier to understand and maintain
- Ideal for Power BI's in-memory engine

34. What is a Snowflake Schema in Power BI?

A Snowflake Schema is a normalized version of the Star Schema where dimension tables are further split into sub-dimensions.

Example:

- Instead of one Product table, you might have:
 - Products
 - Categories
 - Suppliers
- These are linked through multiple joins, forming a "snowflake" structure.

Pros:

- Saves storage by reducing redundancy
- Improves data integrity through normalization

Cons:

- Slower performance due to more joins
- Complex structure, harder to manage in Power BI

35. How do you create a Calculated Column in Power BI?

A calculated column is created using DAX and adds a new field to a table that performs row-by-row calculations.

Steps to Create a Calculated Column:

- Open Power BI Desktop.
- Select the table where you want to add the column.
- Go to the Modeling tab → click New Column.
- Write your DAX formula.
- Press Enter – the column appears in your table.



```
1 Total Sales = Sales[Quantity] * Sales[UnitPrice]
```

Use When:

- You need static, row-level calculations.
- You want to use the result in slicers, filters, or visuals.

36. How do you create a Measure in Power BI?

A measure is a DAX formula used for aggregated calculations that dynamically respond to filters and context.

Steps to Create a Measure:

- Open Power BI Desktop.
- Go to the Modeling tab → click New Measure.
- Write your DAX formula.
- Press Enter – the measure is added to your table.



```
1 Total Sales = Sales[Quantity] * Sales[UnitPrice]
```

Use When:

- You need aggregations like SUM, AVERAGE, COUNT.
- You want dynamic results that change with slicers/filters.

37.Difference Between Calculated Column and Measure:

Feature	Calculated Column	Measure
Calculation Level	Row-by-row	Aggregate (context-based)
Storage	Stored in model (increases size)	Calculated on the fly (efficient)
Use Case	Filters, slicers, visual-level fields	KPIs, summaries, totals

39. How do you handle missing values in Power BI?

Handling missing or null values is essential for clean, accurate data analysis in Power BI.

Using Power Query Editor:

1. Remove Null Values:

- Open Transform Data.
- Select the column → Home Tab → Remove Rows → Remove Blank Rows.

2. Replace Null Values:

- Go to Transform Tab → Replace Values.
- Replace nulls with default values (e.g., 0 for numbers, "Unknown" for text).

Using DAX:

- You can use IF() or COALESCE() in calculated columns or measures:



```
1 CleanedValue = IF(ISBLANK(Sales[Amount]), 0, Sales[Amount])
2 -- or --
3 CleanedValue = COALESCE(Sales[Amount], 0)
```

Ensures data integrity.

40. How do you filter data using slicers in Power BI?

A slicer is a visual filter in Power BI that lets users interactively filter data in a report.

Steps to Add a Slicer:

- Open Power BI Desktop.
- Go to the Visualizations pane → click on the Slicer icon.
- Drag a column (e.g., Region, Category, or Date) into the Field area.
- Resize and format the slicer as needed.

Types of Slicers:

- List Slicer – Displays all values in a scrollable list.
- Dropdown Slicer – More compact view.
- Date Range Slicer – Filter data by specific dates or ranges.
- Hierarchical Slicer – Filter using multiple levels (e.g., Category → Subcategory).

41. What is DAX?

DAX (Data Analysis Expressions) is a formula language used in Power BI, Excel, and SSAS for creating calculated columns, measures, and custom tables.

Key Features:

- Performs aggregations (e.g., SUM, AVERAGE, COUNT)
- Enables conditional logic (IF, SWITCH)
- Supports time intelligence (e.g., DATEADD, YEAR)
- Allows row and context-based calculations with CALCULATE, FILTER, etc.



```
1 Total Sales = SUM(Sales[Amount])
```

42. What are some common DAX functions?

DAX functions are categorized into several types:

Category	Functions
Aggregation	SUM(), AVERAGE(), COUNT(), MIN(), MAX()
Logical	IF(), SWITCH(), AND(), OR()
Filter	FILTER(), ALL(), CALCULATE(), ALLEXCEPT()
Date & Time	TODAY(), NOW(), DATEADD(), YEAR(), MONTH()
Mathematical	ABS(), ROUND(), MOD(), SQRT()
Text	CONCATENATE(), LEFT(), RIGHT(), LEN(), SEARCH()



1 Total Sales 2024 = CALCULATE(SUM(Sales[Amount]), YEAR(Sales[Date]) = 2024)

43. What is the difference between SUM() and SUMX()?

Function	Definition	Use Case	Example
SUM()	Adds up values	Simple aggregations	SUM(Sales [Amount])
SUMX()	Iterates row-by-row , performs a calculation , then sums	When calculation involves multiple columns	SUMX(Sales, Sales[Quantity] * Sales[Price])

44. What is the difference between **CALCULATE()** and **FILTER()** in **DAX**?

Function	Definition	Use Case	Example
FILTER()	Returns a table that meets a condition	Used in row-level filtering or when a function requires a table	FILTER(Sales, Sales[Amount] > 5000)
CALCULATE()	Changes or modifies the filter context of a calculation	Used when applying filters dynamically within a measure	CALCULATE(SUM(Sales[Amount]), Sales[Category] = "Electronics")

45. What is the difference between ALL() and ALLEXCEPT() in DAX?

Function	Definition	Use Case	Example
ALL()	Removes all filters from a column or table	Used when ignoring filters in a calculation	ALL(Sales[Category]) – removes filters from "Category" column
ALLEXCEPT()	Removes all filters except specified columns	Used to preserve filters on one or more	ALLEXCEPT(Sales, Sales[Region]) – keeps filter on "Region"

46. How do you calculate running totals in Power BI?

A running total shows the cumulative sum over a period (like days, months, etc.).

DAX Formula Example (Running Total by Date):



```
1  Running Total =  
2  CALCULATE(  
3      SUM(Sales[Amount]),  
4      FILTER(  
5          ALL(Sales[Date]),  
6          Sales[Date] <= MAX(Sales[Date])  
7      )  
8  )
```

47. How do you calculate the difference between two columns in Power BI?

You can calculate the difference using either a calculated column or a measure, depending on what you need:

For Row-Level Difference (Calculated Column):

Used when you want the difference row by row.

```
1 Difference = Sales[Revenue] - Sales[Cost]
2
```

For Aggregated Difference (Measure):

Used when you want to compare aggregated values.



```
1 Total Difference = SUM(Sales[Revenue]) - SUM(Sales[Cost])
```

48. What is the difference between EARLIER() and EARLIEST() in Power BI (DAX)?

Function	Definition	Use Case	Example
EARLIER()	Refers to the previous row context during nested row calculations	Used in calculated columns inside iterators (like SUMX)	Calculating ranks or percent of total
EARLIEST()	Refers to the outermost (first) row context in deeply nested operations	Rarely used—only in complex or multi-level nested contexts	Advanced nested logic

49. How do you perform time intelligence calculations in Power BI?

Function	Purpose	Example DAX Formula
TOTALYTD()	Calculates Year-to-Date sales	TOTALYTD(SUM(Sales[Amount]), Sales[Date])
TOTALMTD()	Calculates Month-to-Date sales	TOTALMTD(SUM(Sales[Amount]), Sales[Date])
TOTALQTD()	Calculates Quarter-to-Date sales	TOTALQTD(SUM(Sales[Amount]), Sales[Date])
SAMEPERIODLASTYEAR()	Compares to the same period last year	CALCULATE(SUM(Sales[Amount]), SAMEPERIODLASTYEAR(Sales[Date]))
DATEADD()	Shifts dates forward/backward by days/months/years	CALCULATE(SUM(Sales[Amount]), DATEADD(Sales[Date], -1, YEAR))

50. What is the purpose of the **RELATED()** function in Power BI?

The **RELATED()** function is used in Power BI to fetch a value from a related table using an existing one-to-many relationship.

When to Use RELATED():

Use it when:

- You are in the "many" side of a relationship (e.g., Orders),
- And want to pull data from the "one" side (e.g., Customers).

Example:

If you have two tables:

Customers: CustomerID, CustomerName

Orders: OrderID, CustomerID, OrderAmount



```
1 CustomerName = RELATED(Customers[CustomerName])
```




**I hope you find this helpful
and valuable.**

**Feel free to like, comment, or
share if you found this valuable.**



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