EASY

Q. What is Power BI?

Power BI is a business analytics tool developed by Microsoft that helps you turn multiple unrelated data sources into valuable and interactive insights. These data may be in the form of an Excel spreadsheet or cloud-based/on-premises hybrid data warehouses. You can easily connect to all your data sources and share the insights with anyone.

Q. Why should we use Power BI?

Because Power BI provides an easy way for anyone, including non-technical people, to connect, change, and visualize their raw business data from many different sources and turn it into valuable data that makes it easy to make smart business decisions.

Q. Difference between Power BI and Tableau

Both tableau and Power BI are the current IT industry's data analytics and visualization giants. Yet, there are a few significant differences between them. You will now explore the important differences between Tableau and Power BI.

Tableau	Power BI
Tableau uses MDX for measures and dimensions	Power BI uses DAX for calculating measures
Tableau is capable of handling large volumes of data	Power BI is qualified only to handle a limited amount of data
Tableau is best suitable for experts	Power BI is suitable for both experts and beginners
Tableau User Interface is complicated	Power BI User Interface is comparatively simpler

Tableau is capable of supporting the cloud with ease.	Power BI finds it difficult, as its capacity to handle large volumes of data is limited.

Q. Difference between Power Query and Power Pivot

The differences between Power Query and Power Pivot are explained as follows:

Power Query	Power Pivot
Power Query is all about analyzing data.	Power Pivot is all about getting and Transforming data.
Power Query is an ETL service tool.	Power Pivot is an in-memory data modeling component

Q. What is Power BI Desktop

Power BI Desktop is an open-source application designed and developed by Microsoft. Power BI Desktop will allow users to connect to, transform, and visualize your data with ease. Power BI Desktop lets users build visuals and collections of visuals that can be shared as reports with your colleagues or your clients in your organization.

Q. What is Power Pivot?

Power Pivot is an add-on provided by Microsoft for Excel since 2010. Power Pivot was designed to extend the analytical capabilities and services of Microsoft Excel.

Q. What is Power Query?

Power Query is a business intelligence tool designed by Microsoft for Excel. Power Query allows you to import data from various data sources and will enable you to clean, transform and reshape your data as per the requirements. Power Query allows you to write your query once and then run it with a simple refresh.

Q. Describe the components of Microsoft's self-service BI solution.

Self-service business intelligence (SSBI) is divided into the Excel BI Toolkit and Power BI.

9. What is self-service BI?

SSBI is an abbreviation for Self-Service Business Intelligence and is a breakthrough in business intelligence. SSBI has enabled many business professionals with no technical or coding background to use Power BI and generate reports and draw predictions successfully. Even non-technical users can create these dashboards to help their business make more informed decisions.

Q. What is DAX?

DAX stands for Data Analysis Expressions. It's a collection of functions, operators, and constants used in formulas to calculate and return values. In other words, it helps you create new info from data you already have.

Q. What are Filters in Power BI?

The term "Filter" is self-explanatory. Filters are mathematical and logical conditions applied to data to filter out essential information in rows and columns. The following are the variety of filters available in Power BI:

- Manual filters

- Auto filters

- Include/Exclude filters

- Drill-down filters

- Cross Drill filters

- Drillthrough filters

- Drillthrough filters

- URL filters–transient

- Pass-Through filters

Q. What are Custom Visuals in Power BI?

Custom Visuals are like any other visualizations, generated using Power BI. The only difference is that it develops the custom visuals using a custom SDK. The languages like JQuery and JavaScript are used to create custom visuals in Power BI.

Q. What is GetData in Power BI?

Get Data is a simple icon on Power BI used to import data from the source.

Q. Mention some advantages of Power BI.

Some of the advantages of using Power BI:

- It helps build an interactable data visualization in data centers

- It allows users to transform data into visuals and share them with anyone

- It establishes a connection for Excel queries and dashboards for fast analysis

- It provides quick and accurate solutions

- It enables users to perform queries on reports using simple English words

Q. List out some drawbacks/limitations of using Power BI.

Here are some limitations to using Power BI:

- Power BI does not accept file sizes larger than 1 GB and doesn't mix imported data accessed from real-time connections.

- There are very few data sources that allow real-time connections to Power BI reports and dashboards.

- It only shares dashboards and reports with users logged in with the same email address.

- Dashboard doesn't accept or pass user, account, or other entity parameters.

Q. What are some differences in data modeling between Power BI Desktop and Power Pivot for Excel?

Power Pivot for Excel supports only single directional relationships (one to many), calculated columns, and one import mode. Power BI Desktop supports bi-directional cross-filtering connections, security, calculated tables, and multiple import options.

Q. Name the different connectivity modes available in Power BI?

There are three main connectivity modes used in Power BI.

- SQL Server Import
  An SQL Server Import is the default and most common connectivity type used in Power BI. It allows you to use the full capabilities of the Power BI Desktop.

- Direct Query
  The Direct Query connection type is only available when you connect to specific data sources. In this connectivity type, Power BI will only store the metadata of the underlying data and not the actual data.
- Live Connection
  With this connectivity type, it does not store data in the Power BI model. All interaction with a report using a Live Connection will directly query the existing Analysis Services model. There are only 3 data sources that support the live connection method - SQL Server Analysis Services (Tabular models and Multidimensional Cubes), Azure Analysis Services (Tabular Models), and Power BI Datasets hosted in the Power BI Service.

Q. What are the various types of refresh options provided in Power BI?

Four important types of refresh options provided in Microsoft Power BI are as follows:

- Package refresh - This synchronizes your Power BI Desktop or Excel file between the Power BI service and OneDrive, or SharePoint Online.

- Model or data refresh - This refreshes the dataset within the Power BI service with data from the original data source.

- Tile refresh - This updates the cache for tile visuals every 15 minutes on the dashboard once data changes.

- Visual container refresh - This refreshes the visible container and updates the cached report visuals within a report once the data changes.

Q. Name the data sources can Power BI can connect to?

Several data sources can be connected to Power BI, which is grouped into three main types:

- Files

It can import data from Excel (.xlsx, .xlxm), Power BI Desktop files (.pbix) and Comma-Separated Values (.csv).

- Content Packs

These are a collection of related documents or files stored as a group. There are two types of content packs in Power BI:

- Content packs from services providers like Google Analytics, Marketo, or Salesforce and Content packs are created and shared by other users in your organization.

- Connectors

Connectors help you connect your databases and datasets with apps, services, and data in the cloud.

Q. What is a dashboard in Power BI?

A dashboard is a single-layer presentation sheet of multiple visualizations reports. The main features of the Power Bi dashboard are:

- It allows you to drill through the page, bookmarks, and selection pane and also lets you create various tiles and integrate URLs

- A dashboard can also help you set report layout to mobile view.

Q. Explain how relationships are defined in Power BI Desktop?

Relationships between tables are defined in two ways:

- Manually - Relationships between tables are manually defined using primary and foreign keys.

- Automatic - When enabled, this automated feature of Power BI detects relationships between tables and creates them automatically.

Q. Can you have more than one functional relationship between two tables in a Power Pivot data model?

No. There can be multiple inactive relationships, but only one active relationship between two tables in a Power Pivot data model. Dotted lines represent inactive relationships, and continuous lines represent active relationships.

Q. Can you have a table in the model which does not have any relationship with other tables?

Yes. There are two main reasons why you can have disconnected tables:

- The table is used to present the user with parameter values to be exposed and selected in slicers

- It uses the table as a placeholder for metrics in the user interface

Q. What is the CALCULATE function in DAX?

The CALCULATE function evaluates the sum of the Sales table Sales Amount column in a modified filter context. It is also the only function that allows users to modify the filter context of measures or tables.

Moving ahead, you will step up to the following Power BI Interview Questions from the Intermediate Level.

MEDIUM

Q. Where is data stored in Power BI?

Most of the time, power BI gets assisted by the cloud to store the data. Power BI can use a desktop service. Microsoft Azure is used as the primary cloud service to store the data.

1. Azure SQL Database
2. Azure Blob Storage

Q. What is row-level security?

Row-level security limits the data a user can view and has access to, and it relies on filters. Users can define the rules and roles in Power BI Desktop and also publish them to Power BI Service to configure row-level security.

Q. Why should you apply general formatting to Power BI data?

Users can use general formatting to make it easier for Power BI to categorize and identify data, making it considerably easier to work with.

Q. What are the different views available in Power BI Desktop?

There are three different views in Power BI, each of which serves another purpose:

- Report View - In this view, users can add visualizations and additional report pages and publish the same on the portal.
- Data View - In this view, data shaping can be performed using Query Editor tools.
- Model View - In this view, users can manage relationships between complex datasets.

Q. What are the various versions of Power BI?

- Power BI Desktop
- Power BI service
- Mobile Power BI apps for iOS and Android devices

Q. Explain the building blocks of Microsoft Power BI.

The important building blocks of Power BI are as follows:

- Visualizations: Visualization is the process of generating charts and graphs for the representation of insights on business data.
- Datasets: A dataset is the collection of data used to create a visualization, such as a column of sales figures. Dataset can get combined and filtered from a variety of sources via built-in data plugins.
- Reports: The final stage is the report stage. Here, there is a group of visualizations on one or more pages. For example, charts and maps are combined to make a final report.
- Dashboards: A Power BI dashboard helps you to share a single visualization with colleagues and clients to view your final dashboard.
- Tiles: A tile is an individual visualization on your final dashboard or one of your charts in your final report.

Q. What are the critical components of the Power BI toolkit?

The critical components of Power BI are mentioned below.

- Power Query
- Power Pivot
- Power View
- Power Map
- Power Q&A

Q. What do you mean by the content pack?

A content pack is defined as a ready-made collection of visualizations and Power BI reports using your chosen service. You'd use a content pack when you want to get up and running quickly instead of creating a report from scratch.

Q. Define bi-directional cross filtering.

Bidirectional cross-filtering lets data modelers to decide how they want their Power BI Desktop filters to flow for data, using the relationships between tables. The filter context is transmitted to a second related table that exists on the other side of any given table relationship. This procedure helps data modelers solve the many-to-many issue without having to complicated DAX formulas. So, to sum it up, bidirectional cross-filtering makes the job for data modelers easier.

Q. What are the three fundamental concepts of DAX?

Syntax

This is how the formula is written—that is, the elements that comprise it. The Syntax includes functions such as SUM (used when you want to add figures). If the Syntax isn't correct, you'll get an error message.

Functions

These are formulas that use specific values (also known as arguments) in a particular order to perform a calculation, similar to the functions in Excel. The categories of functions are date/time, time intelligence, information, logical, mathematical, statistical, text, parent/child, and others.

Context

There are two types: row context and filter context. Row context comes into play whenever a formula has a function that applies filters to identify a single row in a table. When one or more filters are applied in a calculation that determines a result or value, the filter context comes into play.

Q. Why and how would you use a custom visual file?

You will use a custom visual file if the prepackaged files don't fit the needs of your business. Developers create custom visual files, and you can import them and use them in the same way as you would the prepackaged files.

Q. What are some familiar sources for data in the Get Data menu in Power BI?

A few familiar data sources are Excel, Power BI datasets, web, text, SQL server, and analysis services.

Q. What are the categories of data types?

- All
- File
- Database
- Power BI
- Azure
- Online Services
- Other

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

- Connect to data

- Shape and combine data

- Group rows

- Pivot columns

- Create custom columns

- Query formulas

Q. What do you mean by grouping?

Power BI Desktop helps you to group the data in your visuals into chunks. You can, however, define your groups and bins. For grouping, use Ctrl + click to select multiple elements in the visual. Right-click one of those elements and, from the menu that appears, choose Group. In the Groups window, you can create new groups or modify existing ones.

Q. Explain responsive slicers in Power BI.

On a Power BI final report page, a developer can resize a responsive slicer to various sizes and shapes, and the data collected in the container will be rearranged to find a match. If a visual report becomes too small to be useful, an icon representing the visual takes its place, saving space on the report page.

Q. What is query folding in Power BI?

Query folding is used when steps defined in the Query Editor are translated into SQL and executed by the source database instead of your device. It helps with scalability and efficient processing.

Q. What is "M language."

M is a programming language used in Power Query as a functional, case-sensitive language similar to other programming languages and easy to use.

HARD

Q. What are the major differences between visual-level, page-level, and report-level filters in Power BI?

Visual-level filters are used to filter data within a single visualization. Page-level filters are used to work on an entire page in a report, and different pages can have various filters.

Report-level filters are used to filter all the visualizations and pages in the report.

Q. List the most common techniques for data shaping.

- Adding indexes

- Applying a sort order

- Removing columns and rows

Q. How is the Schedule Refresh feature designed to work?

Users can set up for an automatic refresh over data based on daily or weekly requirements. Users can schedule only one refresh maximum daily unless they have Power BI Pro. The Schedule Refresh section uses the pull-down menu choices to select a frequency, time zone, and time of day.

Q. What information is needed to create a map in Power Map?

Power Map can display geographical visualizations. Therefore, some location data is needed—for example, city, state, country, or latitude and longitude.

Q. Which in-memory analytics engine does Power Pivot use?

Power Pivot uses the xVelocity engine. xVelocity can handle huge amounts of data, storing data in columnar databases. All data gets loaded into RAM memory when you use in-memory analytics, which boosts the processing speed.

Q. Mention important components of SSAS

Following are some of the important Components of SSAS:

- OLP Engine:An OLAP Engine is used to extensively run the ADHOC queries at a faster pace by the end-users
- Data Drilling:It describes data Drilling in SSAS as the process of exploring details of the data with multiple levels of granularity.
- Slicers:The data Slicing process in SSAS is defined as the process of storing the data in rows and columns.
- Pivot Tables:Pivot Tables helps in switching between the different categories of data stored between rows and columns

Q. What are the three fundamental concepts of DAX?

1. Syntax: This is how the formula is written—the elements that comprise it. The syntax includes functions such as SUM (used when you want to add figures). If the syntax isn't correct, you'll get an error message.

2. Functions: These are formulas that use specific values (also known as arguments) in a certain order to perform a calculation, similar to the functions in Excel. The categories of functions are date/time, time intelligence, information, logical, mathematical, statistical, text, parent/child, and others.

3. Context: There are two types: row context and filter context. Row context comes into play whenever a formula has a function that applies filters to identify a single row in a table. When one or more filters are applied in a calculation that determines a result or value, the filter context comes into play.

Q. Name the variety of Power BI Formats.

Power BI is available mainly in three formats, as mentioned below.

1. Power BI Desktop: Open-Source version for Desktop users

2. Power BI Services: For Online Services

3. Power BI Mobile Application: Compatible with mobile devices

Q. What are the different stages in the working of Power BI?

There are three different stages in working on Power BI, as explained below.

1. Data Integration

2. Data Processing

3. Data Presentation

Data Integration

The primary step in any business intelligence is to establish a successful connection with the data source and integrate it to extract data for processing.

Data Processing

The next step in business intelligence is data processing. Most of the time, the raw data also includes unexpected erroneous data, or sometimes a few data cells might be empty. The BI tool needs to interpret the missing values and inaccurate data for processing in the data processing stage.

Data Presentation

The final stage in business intelligence is analyzing the data got from the source and presenting the insights using visually appealing graphs and interactive dashboards.

Q. Which professionals use Power BI the most?

Beginners and experts prefer Power BI in business intelligence. Power BI is used mainly by the following professionals.

- Business Analysts
- Business Owners
- Business Developers

Business Analysts

A business analyst is a professional who analyses the business data and represents the insights found using visually appealing graphs and dashboards

Business Owners

Business owners, decision-makers, or organizations use Power BI to view the insights and understand the prediction to make a business decision.

Business Developers

Business Developers are just software developers who get hired for business purposes to develop custom applications and dashboards to help the business process be smooth.

Q. What is the advanced editor?

Advanced editor is used to view queries that Power BI is running against the data sources importing data. The query is rendered in M-code. Users wanting to view the query code select "Edit Queries" from the Home tab, then click on "Advanced Editor" to perform work on the query. Any changes get saved to Applied Steps in the Query Settings.

Q. What gateways does Power BI have and why should you use them?

Gateways function as bridges between the in-house data sources and Azure Cloud Services.

- Personal Gateway: Used only by one person, data can be imported, and is only valid on Power BI Service.
- On-Premises Gateway: This is an advanced form of the Personal Gateway, supporting Direct Query and usable by multiple users to refresh data.

Q. Mention some applications of Power BI

There are multiple applications of Power BI; some of them are as follows:

- Business Analysis

- Data Analysis

- Database Administration

- IT Professional

- Data Science

Q. How can you depict a story in Power BI?

Every individual chart or visualization report generated is collected and represented on a single screen. Such an approach is called a Power BI Dashboard. A Dashboard in Power BI is used to depict a story.

Q. What are KPIs in Power BI?

KPI is abbreviated as Key Performance Indicator. Any professional organization has teams and employees follow the KPI protocols. The organizations set up KPIs for all the employees. These KPIs act as their targets. These KPIs are compared to previous performance and analyze the progress.

Q. What is a Slicer?

Slicers are an integral part of a business report generated using Power BI. The functionality of a slicer can be considered similar to that of a filter, but, unlike a filter, a Slicer can display a visual representation of all values and users will be provided with the option to select from the available values in the slicer's drop-down menu.

Q. Explain Power BI Designer.

It is a combined solution offered to upload the reports and dashboards to the PowerBI.com website for reference. It consists of Power Pivot, Power Query, and Power Table.

Q. How do you reshape data in Power BI?

Power BI offers a wide variety of data source connectivity options. Data Editor is one of the tools used to manipulate rows and columns of the data and helps you reshape it according to the requirements.

Q. What is Query Folding?

A. Query folding is a technique in Power BI where the Power Query engine pushes as much data processing as possible back to the data source, which can significantly improve query performance.

Example: If you have a SQL Server database as a data source, and you filter data using Power Query, the Power Query engine generates SQL queries that filter the data directly at the database level. This reduces the amount of data transferred to Power BI for processing.

Q. Different ways to get data from the source (not just import)?

A. Power BI allows you to connect to data sources in various ways, such as Import, DirectQuery, Live Connection, and Power BI Dataflows. Import loads the data into the Power BI model, DirectQuery keeps data in the source, Live Connection connects to Analysis Services, and Dataflows provide a way to transform and combine data in the Power BI service.

Example: You can connect to a SQL Server database using DirectQuery, where your Power BI reports query the data in real-time without importing the data into the Power BI file. This is useful when dealing with large datasets.

Q. How to deal with big data?

A. Dealing with large datasets can be challenging in Power BI. Techniques include using DirectQuery, aggregating data, optimizing data models, and enabling incremental refresh.

Example: When working with a 15 GB dataset, you may choose to use DirectQuery to avoid loading all the data into memory, or you can implement incremental refresh to load only recent data, improving report performance.

Q. How to improve your reporting efficiency?

A. To enhance reporting efficiency, you can optimize DAX calculations, minimize data model complexity, and use query folding to reduce data transfer.

Example: You can create a DAX measure to calculate total sales, but it's more efficient to create this measure once and use it in multiple visuals rather than recalculating it in each visual separately.

Q. How to publish data?

A. To publish data in Power BI, you can publish reports to the Power BI Service or Power BI Report Server. You can also share data through web embedding or export reports to different formats.

Example: After creating a Power BI report, you can publish it to the Power BI Service, where you can share it with others, set up data refresh schedules, and collaborate on reports.

Q. What is Paginated report and builder?

A. Paginated reports in Power BI are designed for printing or generating PDFs. The Paginated Report Builder is a tool for creating pixel-perfect paginated reports.

Example: You can use the Paginated Report Builder to create invoices, financial statements, or any report that needs to be printed or shared in a fixed format.

Q. Different Microsoft BI-related software's?

A. Microsoft offers a range of BI-related software, including Power BI, Excel (with Power Query and Power Pivot), SQL Server Reporting Services (SSRS), and Azure Analysis Services, each with specific BI capabilities.

Example: SQL Server Reporting Services is used for paginated reports, while Power BI is excellent for interactive and data-driven dashboards.

Q. Power BI licenses and types?

A. Power BI offers various licensing options, including Power BI Free, Power BI Pro, and Power BI Premium. Each has different features and pricing.

Example: Power BI Pro allows individual users to create and share reports, while Power BI Premium offers dedicated capacity for large-scale deployments and shared content.

DAX Cheat Seet:

Power BI for Business Intelligence
DAX Cheat Sheet

datacamp ■ Microsoft

Math & statistical functions

Filter functions

Logical functions

Date & time functions

Time intelligence functions

Relationship functions

Table manipulation functions

Text functions

Information functions

DAX statements

DAX Operators

Comparison operators	Meaning
=	Equal to
==	Strict equal to
>	Greater than
<	Smaller than
>=	Greater than or equal to
<=	Smaller than or equal to
<>	Not equal to

Text operator	Meaning	Example
&	Concatenates text values	="City"&[State]

Logical operator	Meaning	Example
&&	AND condition	([City] = "Brn") && ([Return] = "Yes")
||	OR condition	([City] = "Brn") || ([Return] = "Yes")
IN {}	OR condition for each row	Product[Color] IN {"Red", "Blue"}