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## Introduction to Power BI

I What is Power BI, and what are its three components?

Power BI - is a business intelligence tool that enables users to visualize data. These visualizations could be various kinds of charts, diagrams or dashboards that are, basically, multiple charts placed next to each other and represent closely related data.

The three main components of Power BI -

Power BI Desktop

Power BI Service

Power BI Mobile apps

 Power BI Desktop - is the primary tool for creating reports.

Power BI Service is the online cloud-based platform, where users can publish, share, and interact with reports and dashboards that were created in Power BI Desktop.

Power BI Mobile provides access to Power BI reports and dashboards on mobile devices like smart phones and tablets.

Q Name Two example use cases for Power BI dash boards.

Power BI dashboards can be used to gain deep insights into company's employees' performance. Through visual rep-



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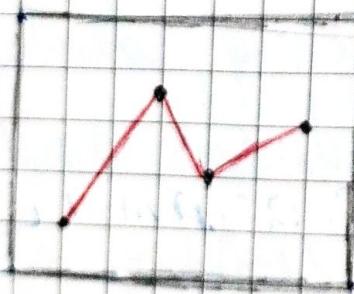
resentations HR managers or CEO's can assess company's productivity, identify weak areas and resolve them.

Second use case is Sales analysis. Sales dashboards can give comprehensive view of sales performance based on different metrics like yearly, quarterly, monthly sales, sales by region, branch and whole lot more. It can help to understand how the business is performing, identify high performing products and figure out where to focus efforts to meet sales targets or cut unnecessary costs.

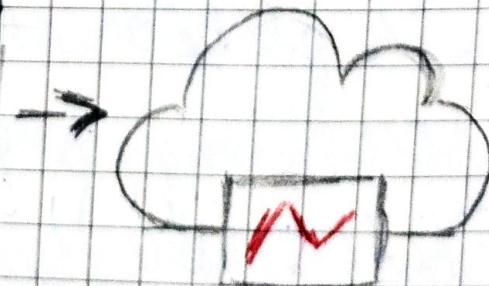
3. What is the difference between Power BI Desktop and Power BI Service?

Power BI Desktop - software that enables users to create beautiful and insightful charts and dashboards from various data sources.

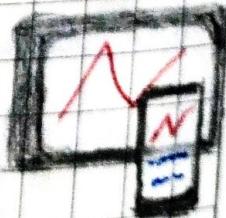
Power BI Service - is a cloud-based platform used to share and collaborate on those dashboards online with others.



PB| Desktop



PB| Service



PB| Mobile



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4. What file extension does a Power BI project use?

Power BI files can be saved in three main formats:

- .pbix
- .pbtt
- .pbip

Let's go through each one.

PBIX is the standard file format for Power BI reports, containing the data model, report visuals and data collections. It is ideal for creating, editing and sharing reports.

PBTT (Template file) is a template format that contains the structure of a Power BI report (in-

cluding visuals, layouts, and queries), but without any data.

PBIP, unlike .pbix, breaks down a Power BI report and semantic model into separate folders and files. This allows developers to manage changes using version control systems like Git, making it easier to collaborate and track modifications.

5. What is semantic model in Power BI?

Semantic model is the structured layer that organizes and defines your data so it's easy to use,



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Understand and analyze in reports. It includes:

1. Tables

2. Relationships

3. Measures & Calculations

4. Metadata (names, labels, formatting, etc)

Semantic model keeps the logic of reports and can be used to replicate it elsewhere.

6. What is the role of Power Query in Power BI?

Power Query is a ETL tool where new data goes through to be cleaned, transformed and cleaned into necessary format before it's loaded into a data model for analysis.

and reporting

Q. Why would a business prefer Power BI over Excel for reporting?

There are several reasons why Power BI might be preferred over Excel:

1. Excel has limitations in the amount of data it can work with. In contrast, Power BI can handle much larger amounts of data.
2. Power BI has faster processing than Excel.
3. Power BI can connect to a number of data sources, while Excel's connectivity capacity is limited.

4. Power BI dashboards are more visually appealing, interactive and customizable than those in Excel.

Basically, Power BI is a more complete application in other ways and is ideal for businesses and companies that need to analyze large amounts of data in a simple way, work collaboratively, transform data into insights and present information visually.

8. What is the one limitation of free version of Power BI?

The key limitation of free version of Power BI is that



you can't share reports  
on dashboards with others.

This requires Power BI pro  
or Power BI Premium license.

9. What is a "published report"  
in Power BI Service?

Published report is a "report"  
on a dashboard created  
in Power BI Desktop and published  
in the Power BI Service for online  
access, sharing and collaboration

10. How does Power BI Mobile  
enhance accessibility

Power BI Mobile enhances  
accessibility by allowing  
users to get access to the  
report on their mobile



devices. This means, they can access it anywhere anytime, when they don't have a PC with them, or in a hurry.

## 11. Power BI vs Tableau: Pros and Cons.

### Power BI Pros

- Cost effective: Power BI is generally more affordable
- Ease of use: User-friendly interface; ideal for beginners or those who aren't deeply technical.

### Power BI Cons

- Limited to Windows. Doesn't support Mac OS. PB service is needed.
- Can experience ~~poor~~ performance.

 mance issues with extremely large datasets.

### Tableau Pros:

- Cross-platform support
- Tends to perform better than Power BI with large datasets

### Tableau Cons:

- Generally more expensive than Power BI
- Steeper learning curve. Might be more challenging for beginners or non-technical users to master

12. How does Power BI integrate with ~~with~~ Azure services?

Power BI integrates deeply

with various Azure services to enable advanced analytics, data transformation, machine learning, and secure, scalable data storage.

Common Use case Example:

- Use Azure Data Factory to pull data from various sources
- Store it in Azure Data Lake or SQL Database
- Clean it with Databricks or Synapse
- Model it in Analysis Services
- Visualize it in Power BI
- Control access via Azure AD.



13. What is "gateway" in Power BI?

Power BI Gateway is a software tool for accessing data located on an on-premises network. This tool acts as a gatekeeper for the data source.

If anyone needs to access data located on a on-premises network from a web-based or cloud based application, the request goes through this gateway.

14. What security features does Power BI offer for sensitive data?

Power BI is equipped with a variety of security features

designed to protect user data  
here are some of these  
**Row-level Security (RLS)**

This feature allows for  
restricting data access  
for specific users based  
on their roles within ~~your~~<sup>the</sup>  
organization.

## Azure Active Directory integration

Power BI seamlessly integrates with Azure Active Directory (Azure AD), providing an added layer of security for user authentication through multi-factor authentication (MFA).

## Data Encryption

When data is stored in Power BI, it is encrypted using industry-standard protocols, protecting it from unauthorized access during storage. Moreover, when data is transmitted between Power BI and users, it is encrypted using TLS.

These are some of the security features that Power BI provides.

Importing data from a Folder.  
Combining files from a folder  
with PQ.

In order to import all files stored within a folder and append them, the best practice would be to store only those files and nothing else in this folder (as the contents of the folder changes, the query in PB I changes as well). So to choose the files go to Home → Get data → Folder, then ~~the~~ browse the folder you need.

When you are in Power Query Editor there will be files inside that folder, click on



The "Content" column has a white square on the right and combine files.

On the left, there will be a folder containing two main queries:

- Transform Sample File and
- A query containing combined tables <sup>at the bottom</sup> with the name of the folder that data is located.

The former is the sample format of the tables ~~before~~ BEFORE combining. So, if we need to make changes to the tables BEFORE appending



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we have to do it in the **Transform Sample File** gallery. Also, any changes made to this query will affect the combined query with all files ~~combined~~.

**Parsing a JSON format inside of CSV or TXT file.**

If there's a file that contains a json formmatted fields, then there's a way to parse it.

Open the file in Power Query Editor → Right-click on the column with json data → go to "Transform" → and choose JSON.

Now that column will store



records of the json data.

By clicking on the white square of the column you can choose the fields ~~from~~ you need from there