PowerBI 1st Lesson:

1. Power BI is **Microsoft's business intelligence (BI) and data visualization tool** that helps you connect to different data sources, transform raw data into meaningful insights, and share interactive reports and dashboards. It's widely used by data analysts, business users, and decision-makers for reporting and analytics.

   The Three Main Components of Power BI:

1. **Power Query**
   - Used for **data extraction, transformation, and loading (ETL)**.
   - Lets you clean, reshape, and prepare data before analysis.
2. **Power Pivot**
   - The **data modeling engine** in Power BI.
   - Allows you to build relationships between tables and write **DAX (Data Analysis Expressions)** formulas for calculations and measures.
3. **Power View (and Visualization Layer)**
   - The **visualization component** of Power BI.
   - Lets you create **interactive charts, graphs, dashboards, and reports** to represent your data.

2.

PowerBI dashboard is a very powerful way of tracking. Imagine there is a company that produces different types of sweets like chocolate, mini cakes, cookies and other type of sweets and with making PowerBI dashboard we can track how many sweets are sold during the week/month/year. It helps us to analyze which type of sweet is mostly sold. For example, cookies and in which regions our products are mostly sold. It helps us to analyze. In general, it helps to business to track everything in real time.

Another business case can be tracking the KPIs of employers in the company. So, the head can see which employers are actively working and how many products are sold by each employer. With doing this head can come to the decision to add bonuses to certain employers or the vice versa, head can make redundant some other employers who are not contributing to the company's growth.

3.PowerBI Desktop can be installed from Microsoft Store or another way is from the official website of Microsoft.

4.PowerBI desktop is the free version of PowerBi where we can transform, analyze, and m model data, also we create our dashboards and reports on it before publishing them on the internet or before sharing. PowerBI Service is the cloud version where we can upload our ready

report or dashboard. Also, PowerBI Service lets us to collaborate with others and also gives the chance to show report with company's other employers or users.

5. **.pbix**

- This is the main file format created in **Power BI Desktop**.
- It contains the data model, queries, relationships, DAX calculations, and report visualizations.

There's also another extension worth knowing:

- **.pbit** → A **Power BI template file** (similar to .pbix but without the actual data, only the structure, queries, and model).

  Project/report file → .pbix
- **Template file** → .pbit

6.Power Query is used for data extraction, transformation and loading (ETL) also it gives the chance to clean, reshape and prepare data before analysis.

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

The only reason I can see is that, in Excel a lot of manual formulas should be written to build dashboards and it takes a lot of time. Also, Excel is mostly used for small amount of data while PowerBI is used for huge data and it's a lot easier than Excel to build reports.

8. Describe one limitation of the free version of Power BI.

I know that free version of PowerBI does not let us to collaborate and share with others.

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

A **published report** in Power BI Service is a report that was first created in Power BI Desktop and then uploaded to the Power BI cloud platform. When you publish a report, it becomes available online in Power BI Service, where users can open it in a web browser or mobile app without needing the Desktop version. Published reports are interactive, so viewers can use filters, slicers, and drill-through options to explore the data.

10. How does Power BI Mobile enhance accessibility?

Power BI Mobile enhances accessibility by making reports and dashboards available anytime and anywhere through mobile devices. Instead of being limited to a desktop computer, users can access live data from their phones or tablets using the Power BI Mobile app. This means

managers, analysts, or field workers can make decisions on the go with the most up-to-date information.

11. Compare Power BI with Tableau—pros and cons.

Power BI vs Tableau

1. Ease of Use

- **Power BI (Pro):**
    - User-friendly and intuitive, especially for people familiar with Excel.
    - Quick to learn for beginners.
- **Power BI (Con):**
    - Advanced customizations can feel limited compared to Tableau.
- **Tableau (Pro):**
    - Very flexible, powerful for creating customized and complex visualizations.
    - Excellent drag-and-drop interface for deep exploration.
- **Tableau (Con):**
    - Steeper learning curve than Power BI.

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2. Data Handling Capacity

- **Power BI (Pro):**
    - Handles large datasets but works best with Microsoft ecosystem (SQL Server, Azure, Excel).
- **Power BI (Con):**
    - Can slow down with extremely large datasets compared to Tableau.
- **Tableau (Pro):**
    - Strong performance with very large and complex datasets.
- **Tableau (Con):**
    - Requires stronger hardware for optimal performance.

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3. Cost

- **Power BI (Pro):**
    - Much cheaper. Power BI Pro is around **$10–$15/user/month**.
    - A good option for small to medium businesses.
- **Power BI (Con):**
    - Some advanced features require **Premium** (which is expensive).
- **Tableau (Pro):**
    - Offers powerful enterprise-grade features.
- **Tableau (Con):**
    - More expensive: **$70+/user/month**, which can be costly for small teams.

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4. Integration

- **Power BI (Pro):**
    - Deeply integrated with Microsoft products (Excel, Teams, Azure).
- **Power BI (Con):**
    - Slightly less seamless when integrating with non-Microsoft tools.
- **Tableau (Pro):**
    - Works very well across a wide range of data sources (cloud, SQL, APIs).
- **Tableau (Con):**
    - Integrations may require extra setup compared to Power BI in Microsoft environments.

12.

Power BI integrates seamlessly with Azure services to provide advanced analytics and reporting. Data stored in **Azure SQL Database, Azure Synapse Analytics, or Azure Data Lake** can be directly connected to Power BI for real-time analysis and visualization. Azure Machine Learning models can be embedded into Power BI reports to add predictive insights. Azure Active Directory manages user authentication and secure access to reports. In short, Power BI uses

Azure as a backbone for **data storage, advanced analytics, and security**, enabling businesses to build scalable and intelligent BI solutions.

13.

In Power BI, a **gateway** is a bridge that connects on-premises data sources (like SQL Server, Oracle, or Excel files stored locally) to Power BI Service in the cloud. It is needed when you want to refresh or use data that is stored within your organization's network without moving it to the cloud. In short, gateways allow secure data transfer between **on-premises systems** and **Power BI cloud services** for up-to-date reporting.

14.

I would convince a company to adopt Power BI by showing that it saves both time and money while improving decision-making. Unlike Excel, where reports require manual updates, Power BI automates data refresh and reporting, reducing employee hours spent on repetitive tasks. It can handle large datasets efficiently and integrate with multiple data sources, ensuring faster and more accurate insights. The ability to share interactive dashboards across teams improves collaboration and leads to quicker, data-driven business decisions. In short, the investment in Power BI pays off through **lower reporting costs, higher productivity, and better decisions that drive revenue growth**.

15.

Power BI offers several security features to protect sensitive data. It uses **Azure Active Directory (AAD)** for user authentication and role-based access control. **Row-Level Security (RLS)** ensures users only see the data relevant to them. Data is protected with **encryption at rest and in transit**, while **sensitivity labels and data loss prevention (DLP)** policies help classify and safeguard confidential information. Additionally, administrators can manage sharing permissions and monitor usage through audit logs. In short, Power BI combines authentication, access control, encryption, and compliance tools to keep sensitive data secure.