1. Introduction to Power BI

What is Power BI?

- **Power BI** is a suite of business analytics tools that allow you to connect to, transform, visualize, and analyze data.
- It helps you make data-driven decisions by creating interactive reports and dashboards.
- Power BI consists of three main components:
    1. **Power BI Desktop** (for creating reports).
    2. **Power BI Service** (for sharing and collaboration).
    3. **Power BI Mobile** (for accessing reports on mobile devices).

Key Features of Power BI:

- **Data Import**: Import data from various sources like Excel, SQL Server, Web, and more.
- **Data Transformation**: Clean and transform raw data into usable formats using Power Query.
- **Data Modeling**: Create relationships between different datasets, calculated fields, and measures using DAX.
- **Visualization**: Create visual reports, charts, graphs, and dashboards.
- **Sharing and Collaboration**: Publish reports to Power BI Service and share with stakeholders.

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2. Power BI Interface Overview

Power BI Desktop Interface:

- **Ribbon**: Where you find most of the tools, including options for importing data, creating visualizations, and managing queries.
- **Fields Pane**: Displays all the data tables and fields you have imported or created in your Power BI project.
- **Visualizations Pane**: Where you can choose different types of visualizations (bar charts, pie charts, tables, etc.) to represent your data.
- **Report Canvas**: The main area where you create and arrange your visualizations.

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3. Preparing the Data for Analysis (Importing and Transforming Data)

Step 1: Import Data

1. **Open Power BI Desktop**.
2. Click on **Get Data** in the ribbon.
3. Choose a data source:
    - For beginners, start with **Excel** or a **CSV** file.

- Select the file you want to use and click **Load** to import the data into Power BI.

Step 2: Power Query Editor (Data Transformation)

1. After importing, the **Power Query Editor** opens automatically.
2. Use Power Query to clean and transform your data:
   - Remove unnecessary columns.
   - Change data types (e.g., text to date).
   - Filter rows.
   - Rename columns.
3. After transforming the data, click **Close & Load** to return to the main Power BI window.

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4. Creating Basic Visualizations

Step 1: Add a Visualization

1. On the **Report Canvas**, select the type of visualization you want to create (e.g., **Bar Chart**, **Line Graph**, **Table**, etc.) from the **Visualizations Pane**.
2. Drag and drop fields from the **Fields Pane** into the **Values**, **Axis**, or **Legend** sections of the visualization to populate it with data.

Step 2: Customizing Visualizations

- You can change the colors, labels, and titles using the **Format** options.
- Add more fields or modify the visualization as needed.

Step 3: Creating Multiple Visualizations

1. Use the **Report Canvas** to create multiple visualizations for different aspects of your data (e.g., sales by region, profit over time, etc.).
2. Arrange them on the canvas to create your report layout.

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5. Saving and Publishing the Report

Step 1: Save the Report

- Once you're satisfied with your visualizations, click **File > Save** to save your report as a `.pbix` file.

Step 2: Publish to Power BI Service (optional for sharing)

- After saving your report, you can publish it to Power BI Service:
  1. Click **Publish** in the ribbon.
  2. Sign in with your Power BI account.

3. Choose a workspace to publish the report.
4. Once published, you can share your report with others via the Power BI Service.

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6. Recap & Next Steps

Summary of Key Concepts Covered:

- Introduction to Power BI and its components.
- How to import and transform data using Power Query.
- Creating and customizing basic visualizations (charts, graphs).
- Saving and sharing reports with Power BI Service.

Next Steps:

- Explore more advanced visualizations.
- Learn about creating relationships between data tables.
- Dive deeper into **DAX** (Data Analysis Expressions) for creating calculated columns and measures.

Exercise for Students:

1. Import a dataset (e.g., an Excel file with sales data).
2. Clean the data using Power Query (remove unnecessary columns, filter data).
3. Create at least three different visualizations (e.g., bar chart, line graph, and table).
4. Save your work as a `.pbix` file.
5. (Optional) Publish to Power BI Service and share the report with a peer.
