EXPERIMENT 8-B

AIM: Create business report in power bi desktop using Sports Data Analysis for the following information:
Import data from various sources.
Use Power Query for data cleaning and transformation.
Create relationships between tables.
Filter and slice your data and use drill-down capabilities for deeper analysis.
Build calculated columns and measures using DAX.
Create different types of charts, tables and Use slicers and filters effectively.
Design interactive dashboards.
Analyze the data to identify meaningful insights and make data driven decisions.

Solution:
To fulfill the above given objectives we need to create business report in Power BI desktop using Sales Performance Analysis using the following steps:

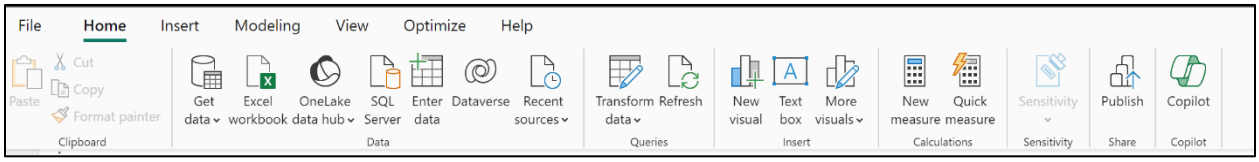
- Import data from various sources.
- Use Power Query for data cleaning and transformation.
- Create relationships between tables.
- Filter and slice your data and use drill-down capabilities for deeper analysis.
- Build calculated columns and measures using DAX.
- Create different types of charts, tables and Use slicers and filters effectively.
- Design interactive dashboards.
- Analyze the data to identify meaningful insights and make data driven decisions.

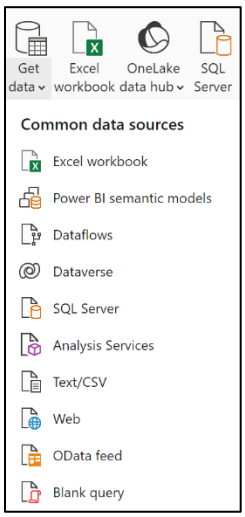
1. Import Data from Various Sources

Objective: To bring all necessary data into Power BI for analysis.

Steps:

- *Open Power BI Desktop:* Launch the Power BI Desktop application.
- *Get Data:* Click on the "Get Data" button located on the Home ribbon.
- *Choose Data Source*: Select the type of data source you want to connect to (e.g., Excel, CSV, SQL Server, SharePoint, etc.). Power BI supports a wide range of data sources including cloud-based services like Azure and web-based data.





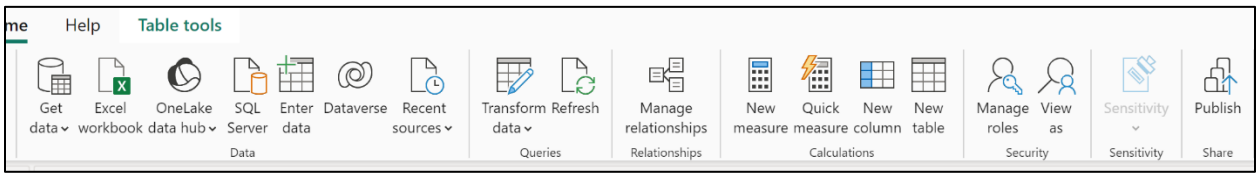
- *Connect to Data Source:* Follow the prompts to establish a connection.
- For instance, if you are importing data from an Excel file:
- Click on "Excel".
- Browse and select your Excel file.
- Click "Open".
- Load Data: In the Navigator window, select the tables or sheets you want to import and click "Load" to bring them into Power BI.
- Ensure your data is clean and well-structured in the source files.
- Power BI can handle large datasets efficiently, but consider the size and complexity of the data you're importing.

2. Use Power Query for Data Cleaning and Transformation

Objective: To prepare and clean the data for analysis.

Steps:

- Launch Power Query Editor: After importing your data, click on "Transform Data" to open the Power Query Editor.



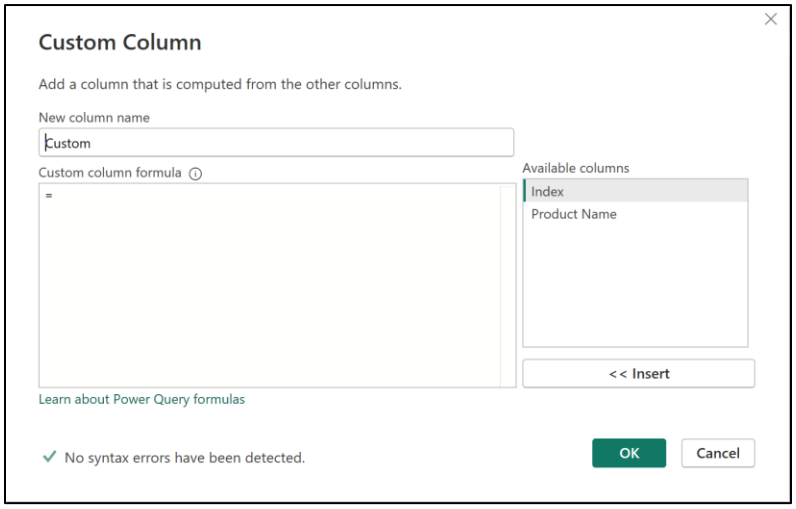
Data Cleaning:

- Filter Rows: Use the filter options on column headers to include or exclude specific rows.
- Handle Missing Values: Replace or remove missing values using the "Replace Values" or "Remove Rows" options.

Data Transformation:

- Change Data Types: Ensure columns have the correct data types (e.g., dates, numbers, text). Right-click on the column header and select "Change Type".
- Add Custom Columns: Use the "Add Column" tab to create new columns using custom formulas.

To create custom columns: Add required columns using Custom column of Add column



5. Build Calculated Columns and Measures Using DAX

Objective: To perform advanced calculations and derive new insights from your data.

- DAX (Data Analysis Expressions) is a powerful language for creating complex calculations and aggregations.

Steps:

- *Open Data View*: Click on the "Data" icon on the left sidebar to view your tables.
- *Create Calculated Column:*
- *New Column:* Click on "New Column" in the "Home" ribbon of table view.

- *DAX Formula*: Enter a DAX formula to define the new column.
  For example, to calculate profit margin: Profit Margin = DIVIDE([Profit], [Sales]).
- *Create Measures:*
- New Measure: Click on "New Measure" in the "Home" ribbon of table view.
- *DAX Formula*: Define a measure using DAX.
  For example, to calculate total sales: Total Sales = SUM(Sales[Amount]).
- Calculated columns are evaluated row by row, whereas measures are aggregated calculations.

6. Create Different Types of Charts, Tables, and Use Slicers and Filters Effectively

Objective: To visualize data in various forms to communicate insights clearly.

Steps:
Add Visualizations:

- *Select Visualization Type*: From the "Visualizations" pane, choose a chart type (e.g., bar chart, line chart, pie chart).
- *Drag Fields*: Drag and drop fields onto the visual to populate it with data.

Customize Visuals:

- *Format Visual:* Use the "Format" pane to customize the appearance of the visual (e.g., colors, labels, titles).
- *Add Legends and Tooltips:* Enhance visuals by adding legends and tooltips for better clarity.

Use Slicers and Filters:

- *Slicers:* Add slicers to allow users to filter data dynamically.
- *Filters:* Apply visual-level, page-level, or report-level filters as needed

7. Design Interactive Dashboard

Objective: To create a user-friendly and interactive interface for data exploration.
Ensure the dashboard is intuitive and user-friendly.
Interactive elements should enhance the user experience without overwhelming them.

Here's a step-by-step guide on how to create each of the six visualizations in the Power BI dashboard:

1. Count of Medal by Team (Bar Chart)

- Visualization Type: Bar Chart.

- Steps:

  1. Drag the "Team" field into the Axis.
  2. Drag the "Medal Count" field into the Values.
  3. Sort the data by medal count in descending order.
  4. Customize the visual:
     - Adjust the data labels to show the exact count of medals.
     - You can format the bar colors to distinguish between teams (e.g., different shades).
  5. Add a scroll bar if you have too many teams to display clearly on one screen.

- Additional Features:

  - Add a slicer for Year or Medal Type (Gold, Silver, Bronze) to filter the chart.

2. Count of Season by Games (Treemap)

- Visualization Type: Treemap.

- Steps:

1. Drag "Season" or "Games" into the Group section of the Treemap.

2. Drag the "Medal Count" field into the Values section.

3. The treemap will automatically display the games by size according to the number of medals won in each game.

4. Adjust the colors for better visual clarity between different seasons.

- Additional Features:

- Consider adding a slicer to filter by Year or Country to analyze the medals for specific games.

3. Count of Season by Year (Pie Chart)

- Visualization Type: Pie Chart.

- Steps:

1. Drag the "Year" field into the Legend section of the pie chart.

2. Drag "Medal Count" into the Values section.

3. The pie chart will show the proportion of medals won in different years.

4. Customize the chart:

- Add data labels to show the percentage of each year’s contribution.

- Adjust the colors for different years.

- Additional Features:

- You can add a slicer to filter the data by Season (Summer/Winter) or Country.

4. Count of Event by City (Bar Chart)

- Visualization Type: Bar Chart.

- Steps:

1. Drag "City" into the Axis.

2. Drag "Event Count" into the Values.

3. Customize the visual:

- Sort the bar chart by event count.

- Add data labels to show the number of events hosted by each city.

4. Adjust the bar colors to highlight the cities with the most events.

- Additional Features:

- Add a slicer for Year or Sport to filter the cities by specific conditions.

5. Count of Sport by Sex (Donut Chart)

- Visualization Type: Donut Chart.

- Steps:

1. Drag the "Sex" field into the Legend section.

2. Drag "Sport Count" or "Athlete Count" into the Values section.

3. Customize the visual:

- Adjust the slices to show the proportion of male vs. female participants in sports.

- Add data labels to show the exact percentage or count.

4. You can use different colors to represent male (M) and female (F) athletes.

- Additional Features:

- Add a slicer for Sport or Year to filter the donut chart by specific sports or time periods.

6. Count of Medal by Age and Games (Stacked Bar Chart)

- Visualization Type: Stacked Bar Chart.

- Steps:

1. Drag the "Age" field into the Axis section.

2. Drag "Medal Count" into the Values section.

3. Drag "Games" into the Legend section to display different games in different colors.

4. Customize the visual:

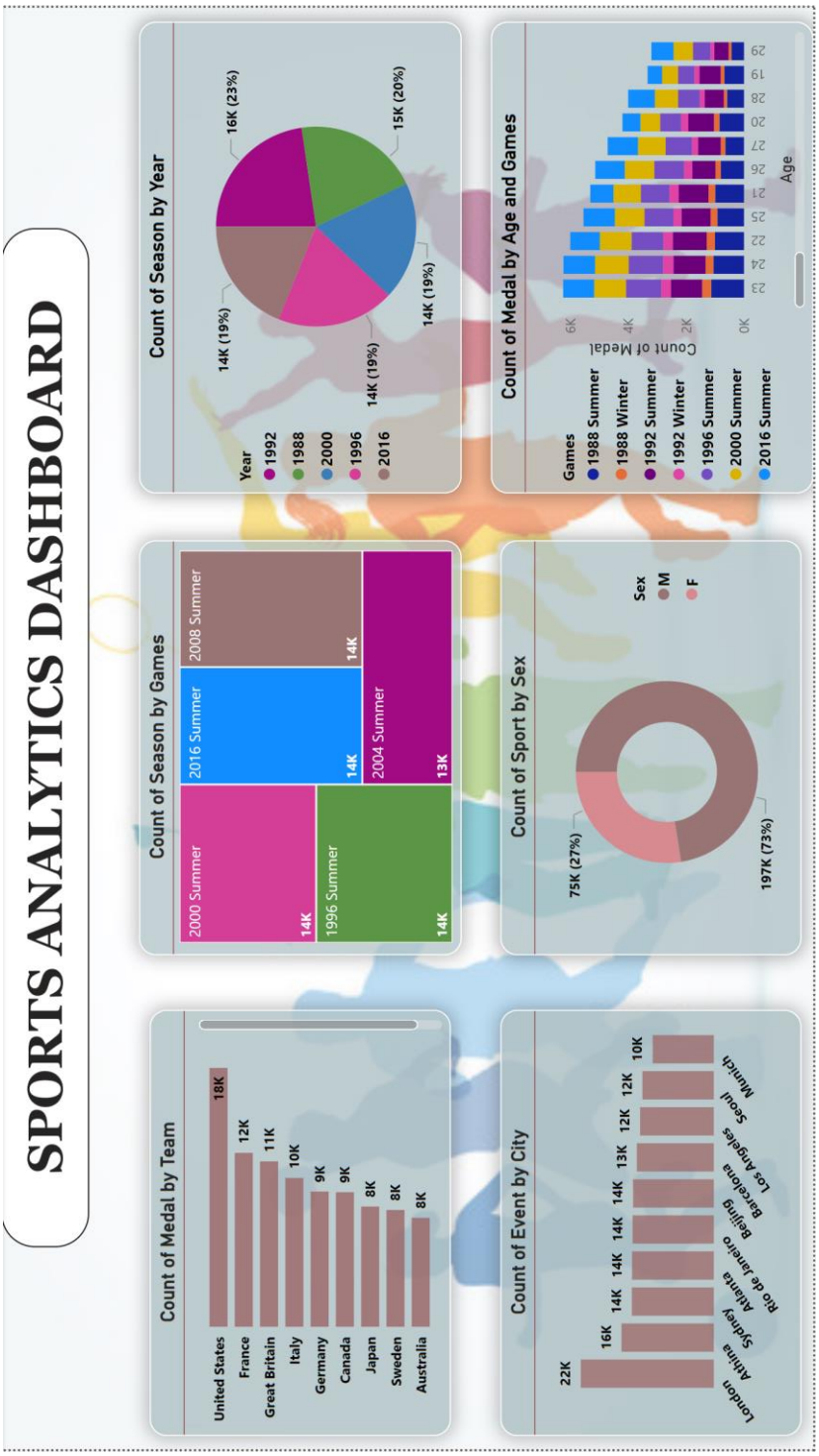
- Stack bars by the number of medals won by athletes in different age groups.

- Add data labels to show exact medal counts.

5. Adjust the colors for the games in the stacked bars for better distinction.

- Additional Features:

- Add a slicer for Sex or Sport to analyze how age influences performance across different groups.



Result :

Developed and delivered comprehensive insights from the sports data through a visually engaging and intuitive dashboard, ensuring the information was both actionable and easy to interpret for data-driven decision-making.