Experiment 1: Getting Started - Tableau Workspace, Tableau terminologies, basic functionalities.

Objective:

Familiarize yourself with Tableau workspace and basic functionalities using the provided sample data file.

Materials Needed:

- Tableau Desktop installed on your computer.

- Sample data file: Sample Data File.

Procedure:

1. Download the Sample Data File:

- Click on the link to download the sample data file.

- Save the file (named sample-data-10mins.xlsx) to a convenient location on your computer.

2. Open Tableau Desktop:

- Launch Tableau Desktop from your Start menu (Windows) or Applications folder (macOS).

3. Connect to the Sample Data:

- **Start a New Project:**

  o On the Tableau Home screen, click on "Connect" to a data source.

- **Import the Data:**

  o Under the "Connect" pane on the left, click on "Microsoft Excel."

  o Navigate to the location where you saved the sample-data-10mins.xlsx file and select it.

  o Click "Open" to load the data into Tableau.

4. Explore the Data:

- **Data Source Tab:**

    o Tableau will open the "Data Source" tab where you can see a preview of the data.

    o Ensure that the data is correctly loaded and displayed. You can inspect different sheets or tables within the Excel file.

5. Create a Basic Visualization:

- **Navigate to a New Worksheet:**

    o Click on the "Sheet 1" tab at the bottom of the screen to open a new worksheet.

- **Build a Simple Visualization:**

    o Drag a dimension (e.g., Category) from the Data Pane on the left to the Rows shelf.

    o Drag a measure (e.g., Sales) from the Data Pane to the Columns shelf.

    o Tableau will automatically generate a basic chart (e.g., a bar chart showing sales by category).

6. Format the Visualization:

- **Adjust Titles and Labels:**

    o Click on the chart title to edit it.

    o Right-click on axis labels or data points to format them (e.g., changing font size or color).

7. Save Your Work:

- **Save the Workbook:**

    o Click on "File" in the Menu Bar and select "Save As."

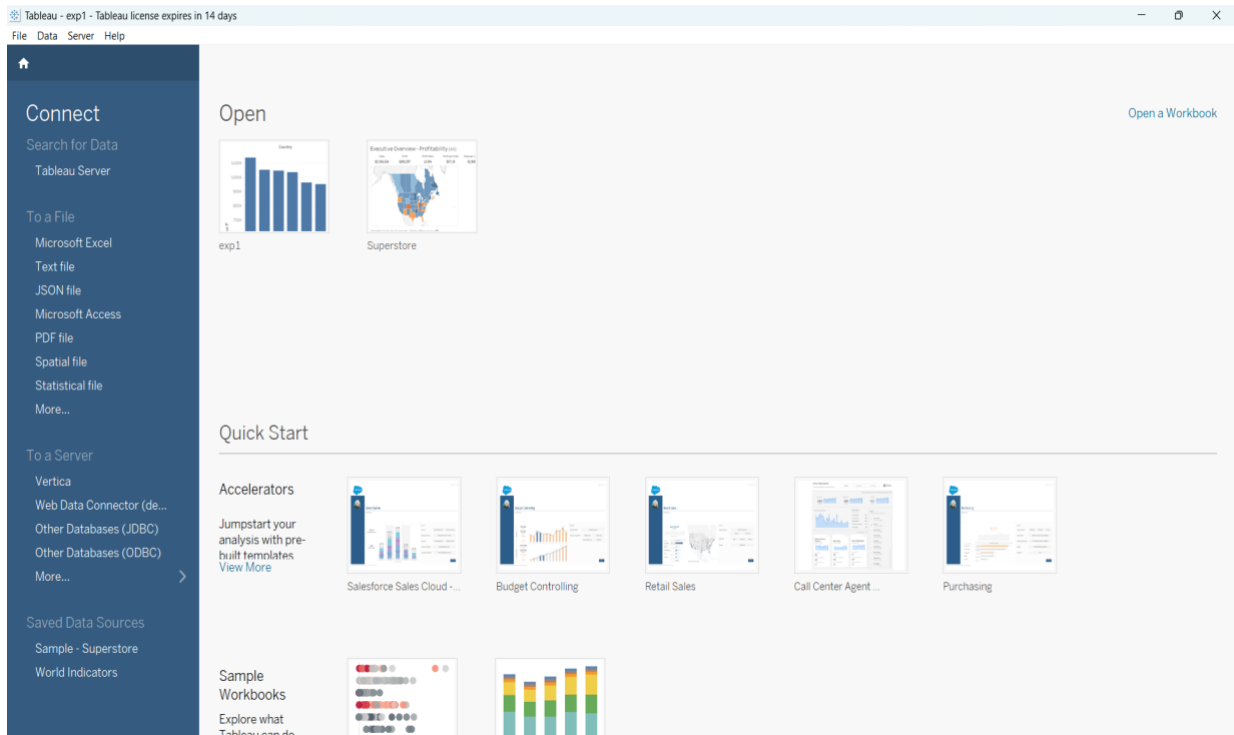   o Choose a location on your computer, provide a name for the file, and click "Save."

8. Practice Exercise:

- Create a bar chart showing sales by category using the sample data.

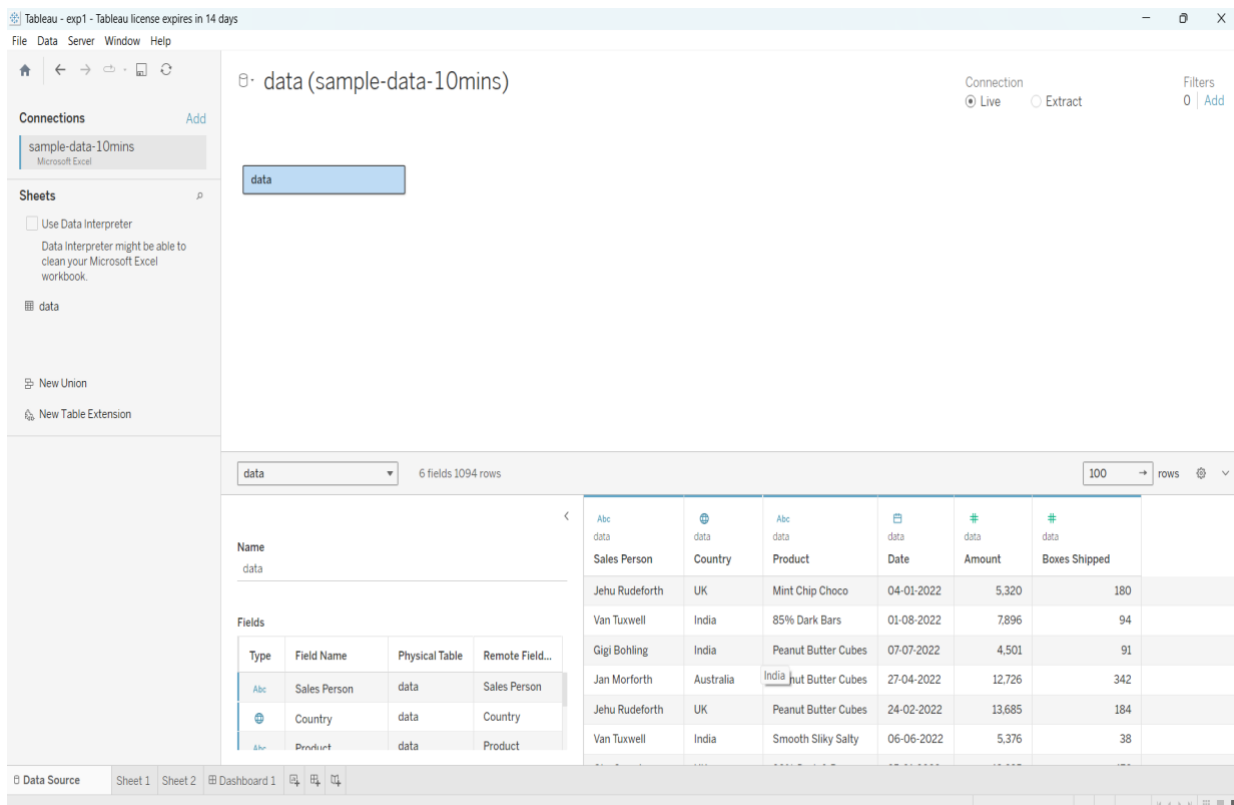- Save your workbook and take a screenshot of your chart.

[Type here]

Screenshots/Illustrations:

- **Tableau Home Screen:** Tableau Home screen with the "Connect" pane.
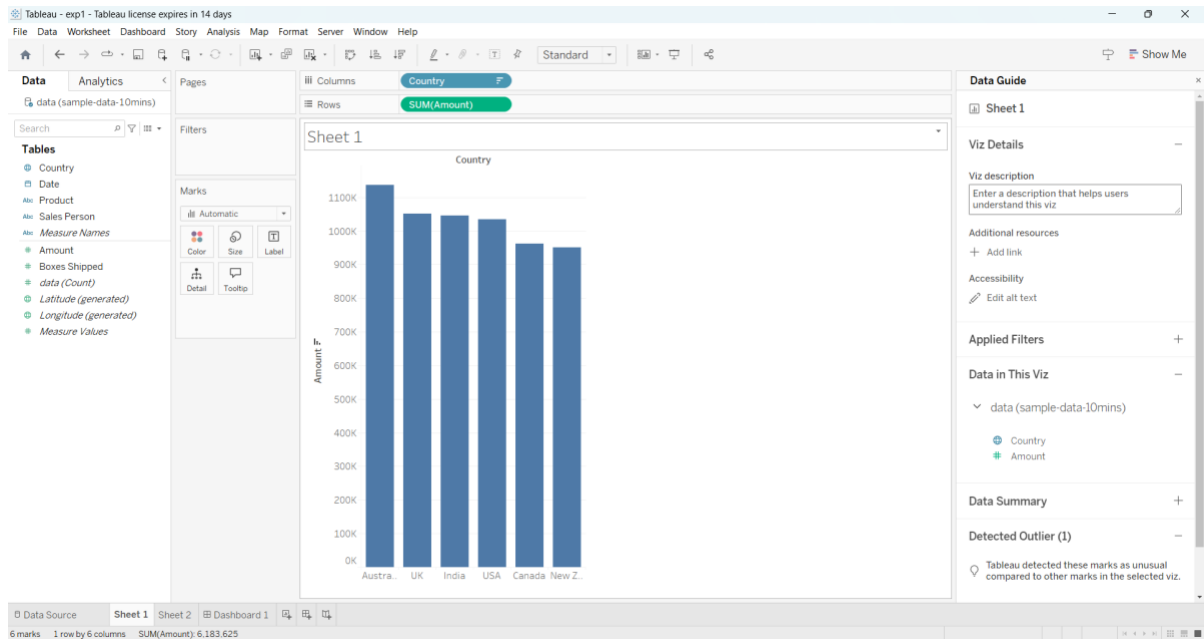

- **Data Source Tab:** Show the data preview from the Excel file.

- **Basic Visualization:** Include a screenshot of the bar chart created from the sample data.

Expected Outcome:

- You should be able to connect Tableau to an Excel data source, create a basic visualization, and save your workbook.

Experiment 2: Connecting to Data Source-Connecting to Database, Different types of Tableau Joins.

Objective:

Understand how to connect Tableau to a data source (Excel) and perform different types of Tableau joins (Inner, Left, Right, Full Outer) to combine multiple tables.

Materials Needed:

- Tableau Desktop installed on your computer.
- [Tableau Joins File Excel Dataset](#) from GitHub (download it directly from the GitHub page).

Procedure:

1. Download the Data File:

- Download the file Tableau Joins File.xlsx from the GitHub repository.
- Save the file to your local machine for easy access.

2. Open Tableau Desktop:

- Launch Tableau Desktop on your computer.

3. Connect to the Excel Data Source:

- In the Tableau Start page, under **Connect**, select **Microsoft Excel**.
- Navigate to the location where you saved the downloaded file, Tableau Joins File.xlsx, and click **Open**.

4. Data Source Tab:

- Tableau will open the **Data Source** tab, displaying the Excel sheets available in the file
- Drag the Demographics table to the workspace.
- Next, drag the Job Title table to the right of Orders. Tableau will automatically suggest a **Join**.

5. Performing Different Types of Joins:

- Tableau will default to an **Inner Join**.

- **Edit the Join Type:**

  - o Click on the small **Venn diagram** icon between the two tables to edit the join type.

  - o You will see options for:

    - ▪ **Inner Join**: Only includes rows that match in both tables.

    - ▪ **Left Join**: Includes all rows from the left table and matching rows from the right.

    - ▪ **Right Join**: Includes all rows from the right table and matching rows from the left.

    - ▪ **Full Outer Join**: Includes all rows from both tables, matching where possible.

- **Experiment with Join Types:**

  - o Try changing the join type by selecting different options (Inner, Left, Right, and Full Outer) to see how the data changes.

  - o **Join Condition:** The common field between the two tables is typically Employee Id.

6. Explore the Data After Joining:

- After selecting the appropriate join type, Tableau will display the combined data.

- You can also apply filters to limit the data if needed.

7. Create a Visualization Using the Joined Data:

- Navigate to a new worksheet by clicking on **Sheet 1**.

- **Build a Simple Visualization**:

  - o Drag Category from the Orders table to **Rows**.

  - o Drag Sales from the Orders table to **Columns**.

  - o Drag Returned from the Returns table to **Color** to visualize how many items have been returned across different categories.

8. Formatting the Visualization:

- **Change Chart Type:** You can right-click the chart and change it to a bar chart or pie chart based on your preferences.
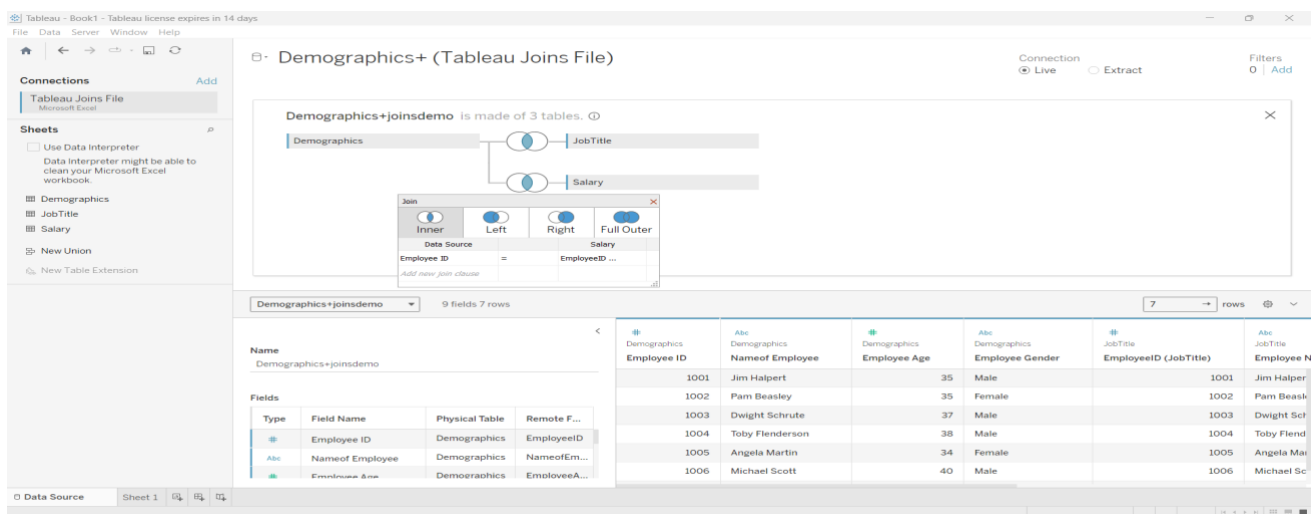
- **Adjust Labels and Colors:** Right-click on the labels and select **Format** to adjust fonts and colors as needed.
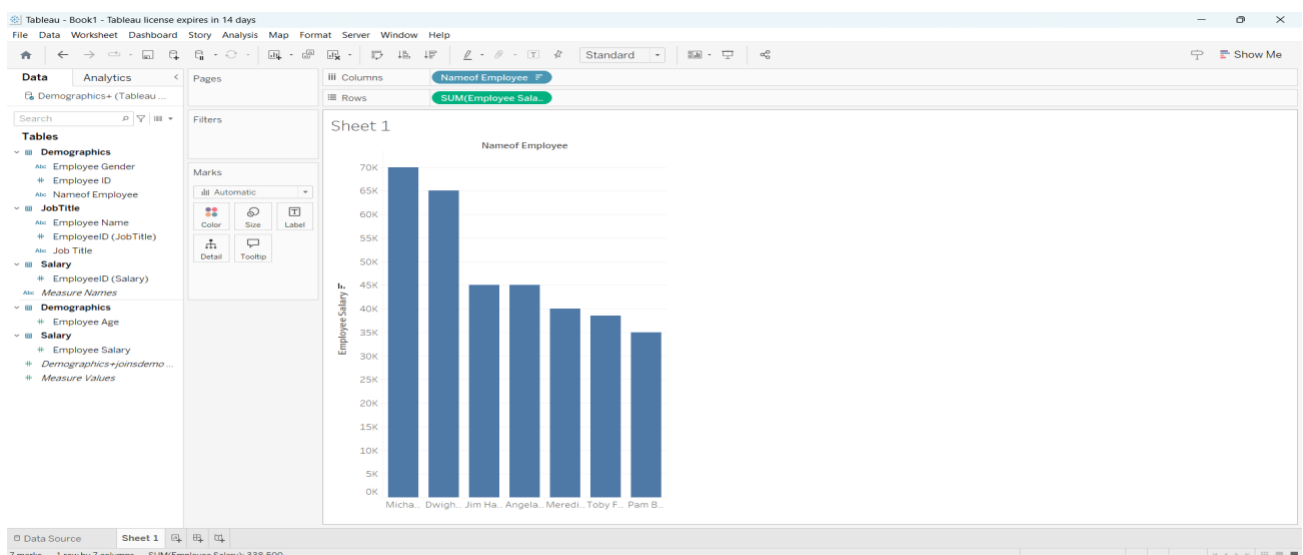
9. Save Your Tableau Workbook:

- Save your Tableau workbook by going to **File > Save As**.

- Name your file (e.g., Tableau_Joins_Analysis.twb) and save it to your computer.

Screenshots/Illustrations:

- **Data Source Tab:** Show a screenshot of the joined tables in the Data Source tab.

- **Visualization:** Include a screenshot of the visualization you created using the joined data.

Expected Outcome:

- You will learn how to connect to an Excel data source, perform various types of joins, and create a visualization using the combined data from multiple tables.

Experiment 3: Creating a View - Formatting Charts, Adding Filters, Creating Calculated Fields, and Defining Parameters.

Objective:

To create and format charts in Tableau, apply filters, create calculated fields, and define parameters using the provided **Sales and Category** Excel file.

Materials Needed:

- Tableau Desktop installed on your computer.

- The provided Excel file with **Sales** and **Category** data: Download the file here.

Procedure:

1. Open Tableau Desktop:

- Launch Tableau Desktop.

2. Connect to the Data Source:

- In Tableau, under the **Connect** pane on the left, click on **Microsoft Excel**.

- Select the file (sales_category_data.xlsx) from your system.

- After loading the data, the sheet will appear in the **Data Source** tab.

3. Creating a Basic View (Bar Chart):

- **Drag Fields to Build the Chart:**

    o Drag Category from the Data Pane to the **Rows** shelf.

    o Drag Sales to the **Columns** shelf.

    o Tableau will automatically create a **bar chart** showing total sales for each category.

4. Formatting the Chart:

- **Change the Title:**

    o Double-click on the chart title to rename it (e.g., "Total Sales by Category").

- **Modify Colors:**

    o Right-click on the chart and select **Format** to modify the chart's colors, fonts, or borders.

5. Adding Filters:

- **Drag Fields to Filters:**

  - o Drag Category to the **Filters** shelf.

  - o In the filter dialog box, select the categories you want to display (or leave all selected).

- **Show the Filter:**

  - o Right-click on the Category filter in the **Filters** shelf and choose **Show Filter**. This adds an interactive filter control to the dashboard.

6. Creating Calculated Fields:

- **Define a Calculated Field:**

  - o Go to **Analysis > Create Calculated Field**.

  - o Name the calculated field **Sales Growth**.

  - o In the formula editor, enter a calculation. For example, if we had previous year sales, you could calculate growth. For now, use a placeholder calculation:

    Formula: [Sales] * 1.1

  - o This calculation increases the sales by 10% to simulate sales growth.

- **Use the Calculated Field:**

  - o Drag the newly created Sales Growth field from the Data Pane to the **Columns** shelf. It will create a comparison between Sales and Sales Growth.

7. Defining Parameters:

- **Create a Parameter:**

  - o Right-click on the Data Pane and select **Create Parameter**.

  - o Name the parameter **Sales Threshold**.

  - o Set the **Data Type** to **Float** or **Integer**, and define a range (e.g., from 1000 to 5000).

- **Create a Filter Using the Parameter:**

  - o Create a new calculated field named **Above Threshold** with the following logic:

  IF [Sales] > [Sales Threshold] THEN "Above Target" ELSE "Below Target" END
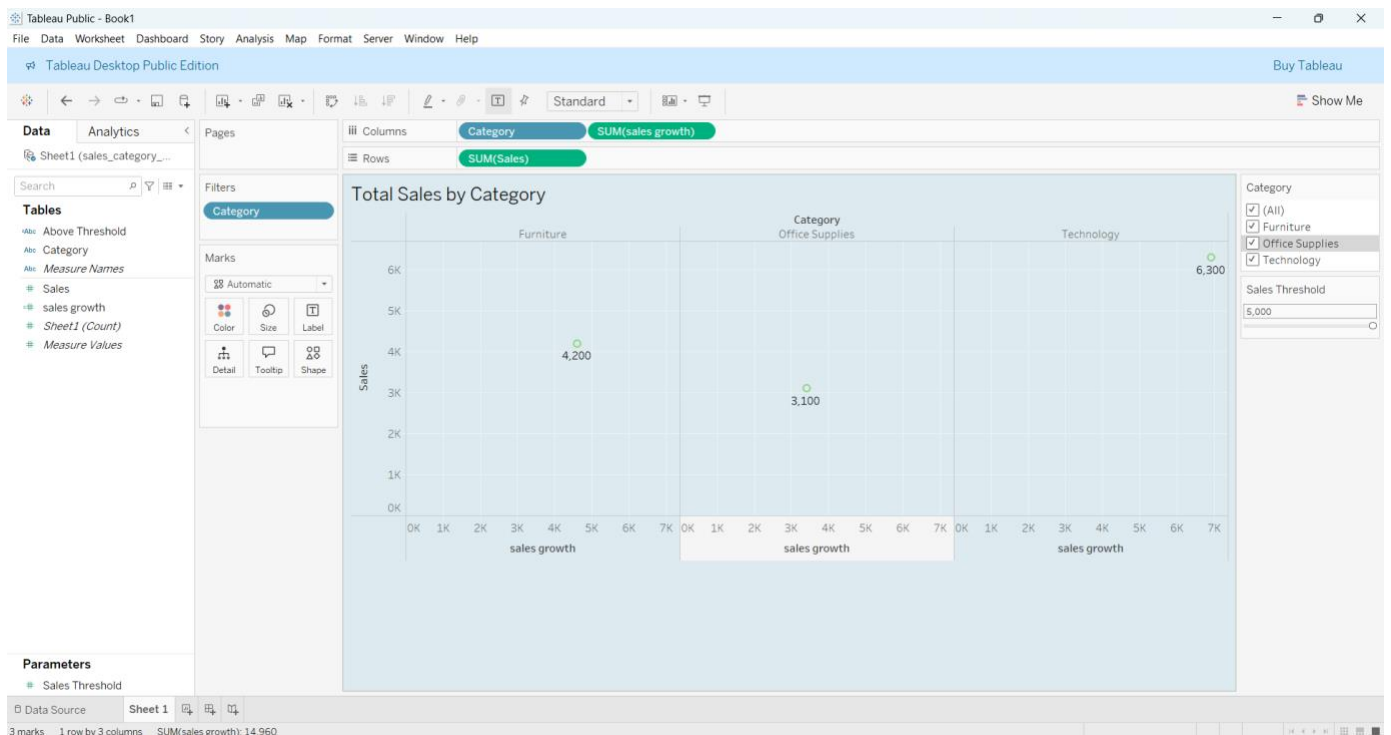
- **Show Parameter Control:**

  o Right-click on the Sales Threshold parameter and choose **Show Parameter Control**. This will add an interactive parameter slider to adjust the threshold for sales.

8. Save the Tableau Workbook:

- Go to **File > Save As**.

- Name the file (e.g., Experiment3_SalesCategory_Workbook.twb) and save it.

Screenshots/Illustrations:

Expected Outcome:

You will have created a bar chart, applied filters, used a calculated field for sales growth, and defined a parameter to filter sales data dynamically.

Experiment 4: Components of Dashboard, Understanding how to place worksheets in Containers, Action filters and its types.

Objective:

To design a Tableau dashboard with multiple views, arrange worksheets in containers, and use action filters for an interactive storytelling experience.

Materials Needed:

- Tableau Desktop
- Excel file: [Download the file here](#)

Procedure:

1. Open Tableau Desktop and Connect to Data:

1. Open Tableau Desktop.
2. Under **Connect**, click on **Microsoft Excel**.
3. Select the excel file.
4. Tableau will load the dataset into the **Data Source** tab.

2. Create Individual Views:

Bar Chart: country by amount

1. Go to **Sheet 1**.
2. Drag Country to the **Rows** shelf.
3. Drag Amount to the **Columns** shelf.
4. A **horizontal bar chart** displaying sales by category will appear.

Bar Chart: Profit by Region

1. Go to **Sheet 2**.
2. Drag Sales Person to the **Rows** shelf.
3. Drag Amount to the **Columns** shelf.

3. Build a Dashboard:

1. Click **New Dashboard** to create a new dashboard.
2. Drag the worksheets into the dashboard canvas.

3. Adjust the layout by using containers to organize the charts.

4. Add Action Filters:

1. Go to **Dashboard > Actions**.

2. Click **Add Action > Filter**.

3. Set up the filter action by selecting one view to filter the other charts (

4. Choose **Select** as the action type and configure the source and target sheets.
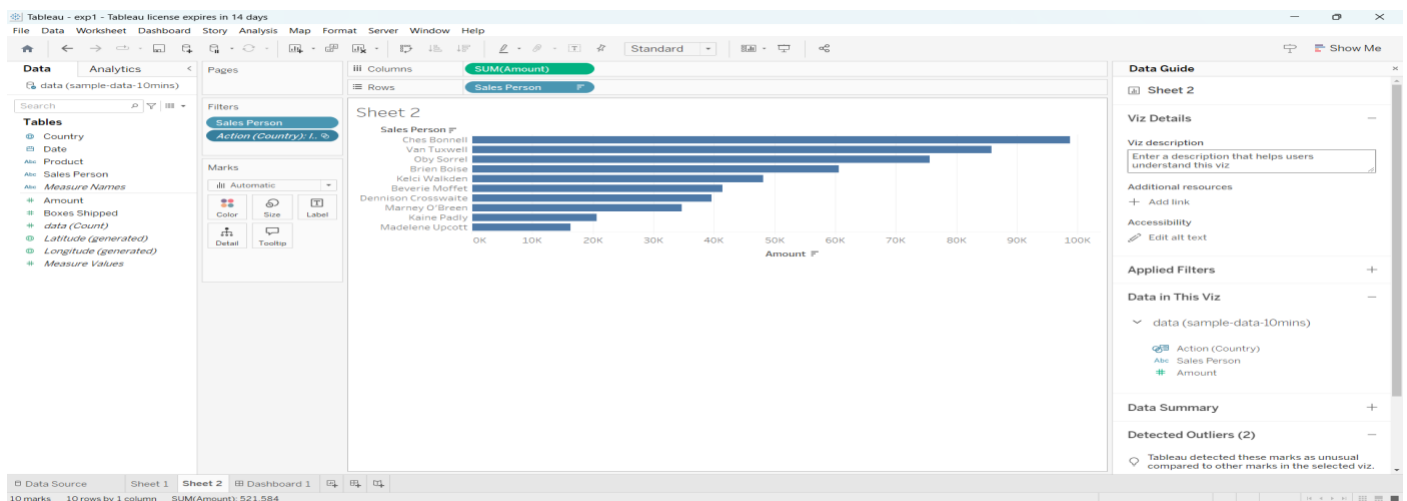
5. Save and Export:

1. Save the Tableau dashboard by going to **File > Save As**.

2. Optionally, export the dashboard as a PDF or image for reporting purposes.
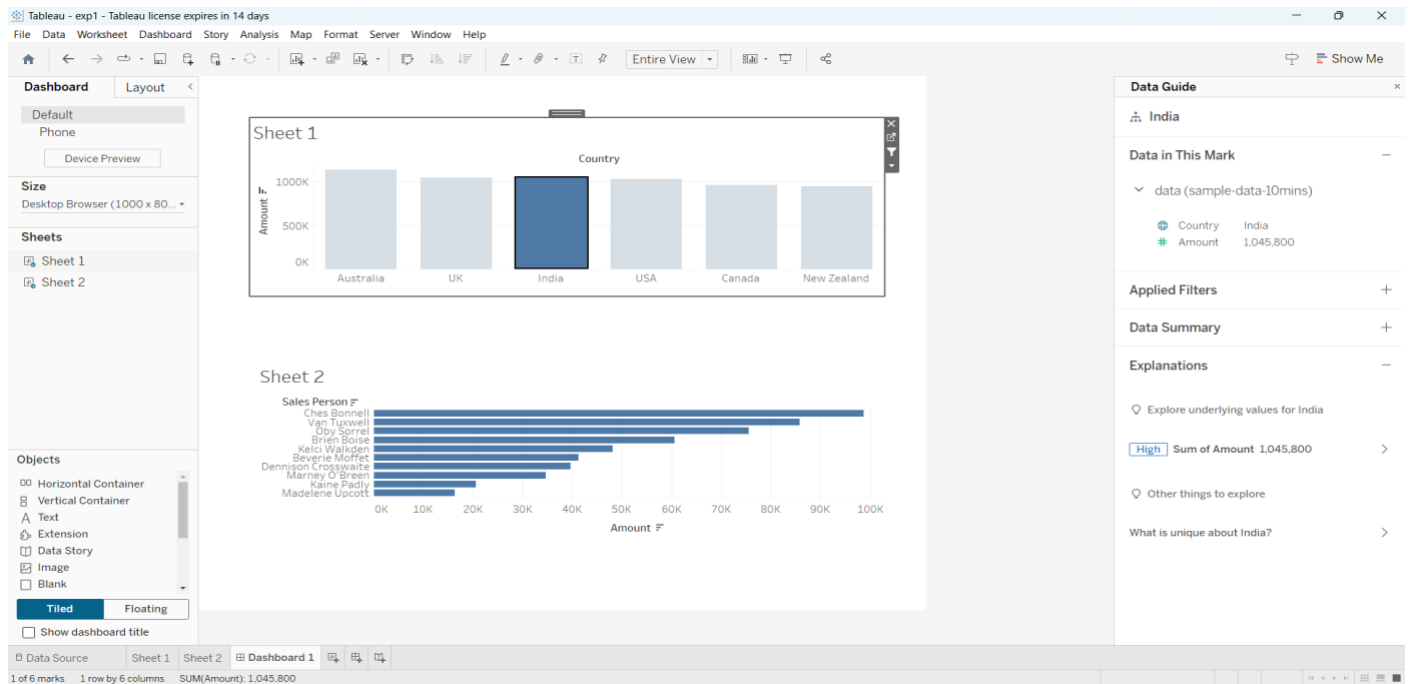
Screenshots/Illustrations:

Sheet1:
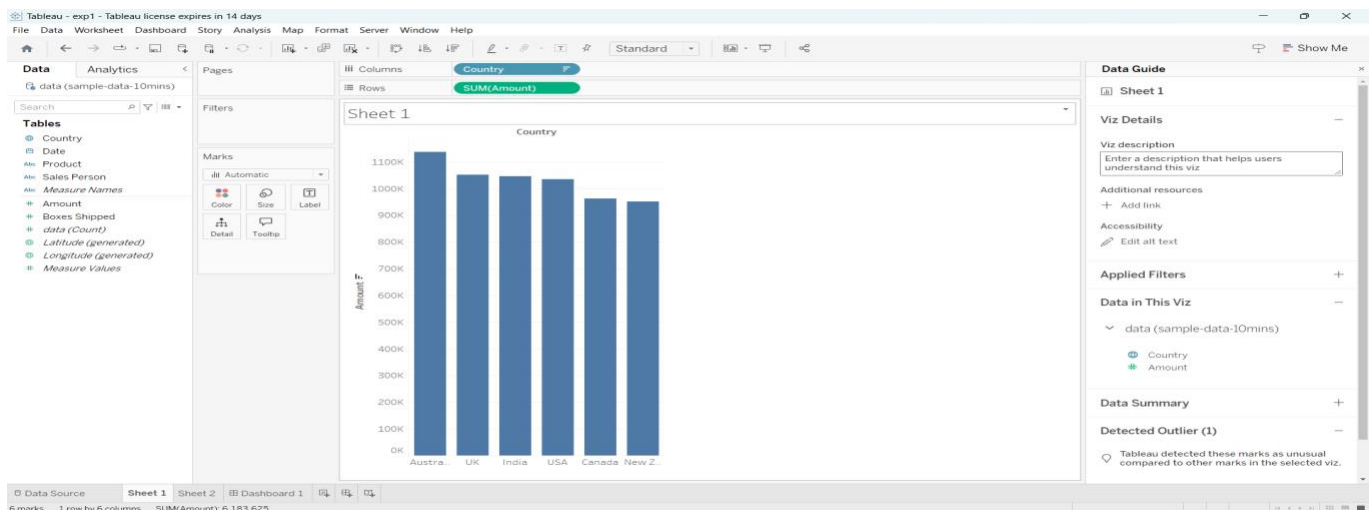
Sheet2:

Dashboard:

Expected Outcome:

You should have a fully interactive Tableau dashboard

Experiment 5: Introducing Power BI-–Components and the flow of work. Power BI Desktop Interface-The Report has five main areas.

Objective:

- Understand the components and workflow of Power BI.

- Familiarize yourself with the Power BI Desktop interface and its five main areas.

Procedure:

1. **Open Power BI Desktop:**

   o Launch the Power BI Desktop application.

2. **Familiarizing with Power BI Desktop Interface:** Power BI Desktop has five main areas:

a. Ribbon:
This is located at the top of the interface and includes options such as Home, Insert, Modeling, View, and Help.

b. Report View:
The workspace where visualizations are created and formatted. It contains Pages that let you have multiple reports on different tabs.

c. Data View:
This area allows you to inspect and interact with the imported data, including adding calculated columns and measures.

d. Model View:
Used for managing relationships between different tables in the data model.

e. Fields Pane:
Located on the right, this displays available datasets, tables, and fields. Fields are dragged to the workspace to create visualizations.

3. **Connecting to Data:**

   o Click on Get Data from the ribbon and select your data source (e.g., Excel, SQL Server, or CSV file).

   o Use this sample dataset to follow the experiment.

4. **Loading Data:**

   o   After selecting the data file, click Load to import the dataset into Power BI. The dataset will appear in the Fields Pane.

5. **Creating a Simple Report:**

   o   Drag a field from the Fields Pane onto the Report View. Create a basic visualization such as a Bar Chart to visualize your data.
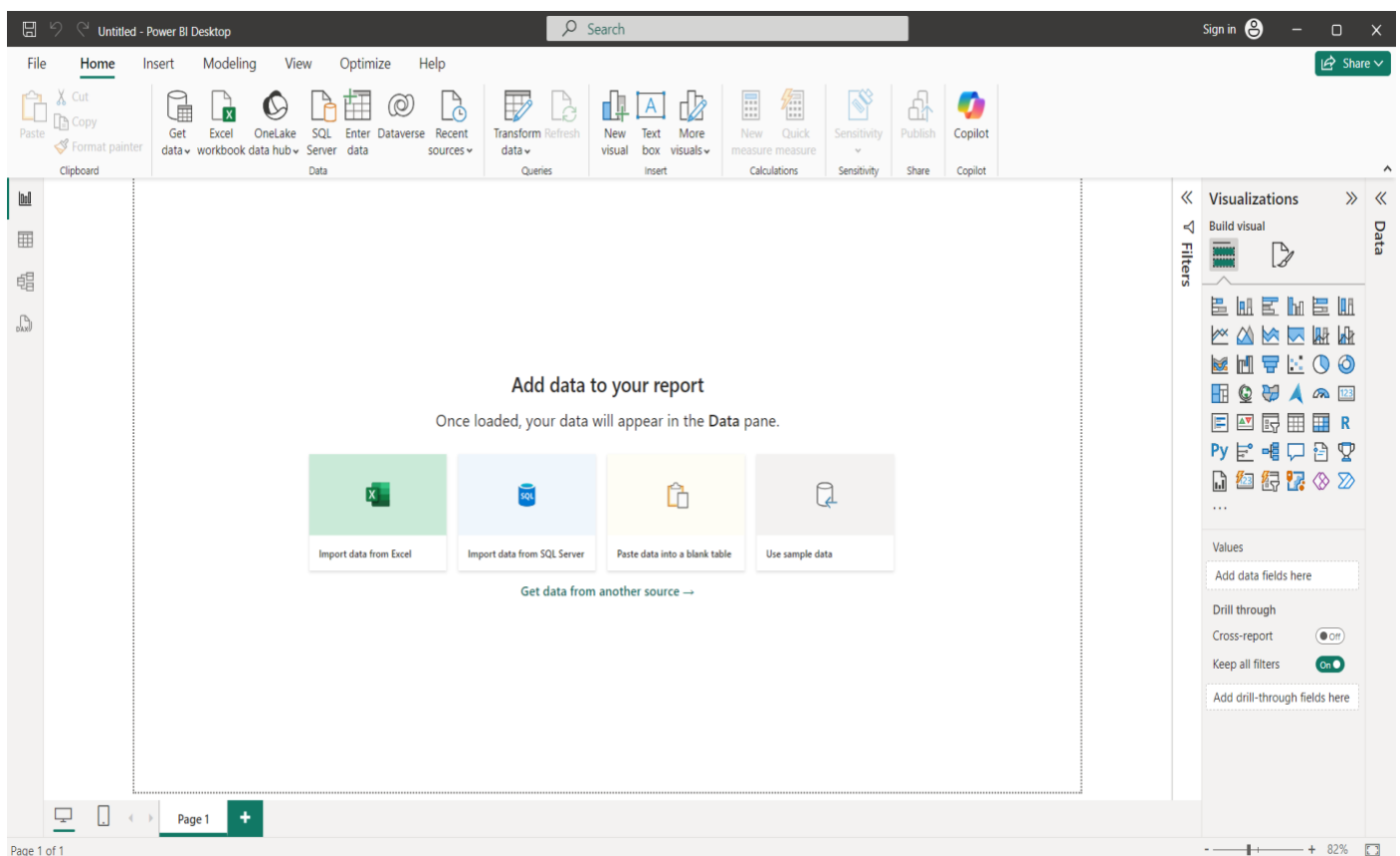
6. **Exploring Visualizations:**

   o   In the Visualizations Pane, experiment with creating various types of charts (Bar, Pie, Line Charts) using the dataset.
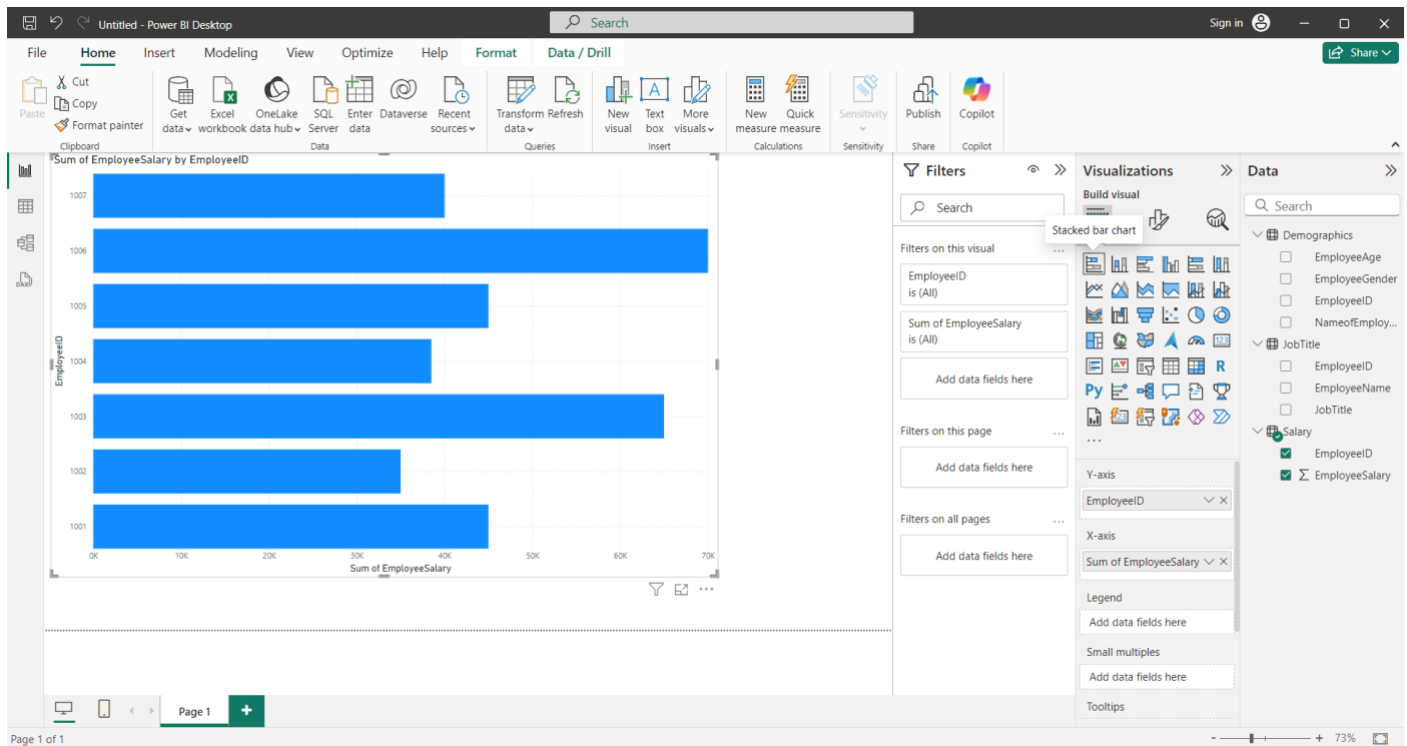
7. **Saving and Publishing:**

   o   Save the report by clicking File > Save.

   o   Optionally, publish the report to Power BI Service by clicking Publish in the ribbon.

Screenshots/Illustrations:

[Type here]

Expected Outcome:

- You will understand the components of Power BI and the basic workflow.

- You will be able to load and visualize data in Power BI.

- You will create and save a basic report.

Experiment 6: Querying Data from CSV - Query Editor, Connecting the data from the Excel Source, Clean, Transform the data.

Objective:

- Connect Power BI to a CSV data source.

- Clean, transform, and load data using the Query Editor.

Procedure:

1. **Open Power BI Desktop**
   Launch Power BI Desktop.

2. **Connecting to CSV Data Source**
   Click **Home** > **Get Data** > **Text/CSV**.link
   Locate and open your CSV file.
   Click **Load** after reviewing the preview.

3. **Opening Query Editor**
   Click **Home** > **Transform Data**.
   The **Query Editor** will open.

4. **Cleaning and Transforming Data**

   o **Remove unnecessary columns**: Select columns > Right-click > **Remove Columns**.

   o **Renaming columns**: Double-click column headers > Enter new names.

   o **Changing data types**: Select columns > **Data Type** in the ribbon > Choose type.

   o **Filtering rows**: Click drop-down in column headers > Apply filters.

5. **Applying Changes**
   Click **Close & Apply**. The cleaned data will load.

6. **Creating Visualizations**
   Use the **Fields Pane** to drag data fields into the **Report View**.
   Create visualizations (bar chart, pie chart, etc.).

7. **Saving the Report**
   Click **File > Save**.

Screenshots/Illustrations:

Initial data:

Transformed data:

Product vs sales:

Expected Outcome:

- Data from CSV imported and transformed in Power BI.

- Dataset cleaned by removing columns, renaming, and filtering rows.

- Visualizations created from the cleaned data.

Experiment 7: Creating Reports & Visualizations-Different types of charts, Formatting charts with Title, Colors.

Objective:

- Learn how to create different types of charts in Power BI.

- Format charts with titles and colors.

Procedure:

1. **Open Power BI Desktop**
   Launch Power BI Desktop.

2. **Connect to Data Source**
   Click **Home** > **Get Data** > **CSV** or another data source.(sales_category_data.xlsx)
   Load your dataset into Power BI.

3. **Creating a Bar Chart**

   o Go to the **Visualizations Pane** on the right.

   o Click the **Bar Chart** icon.

   o Drag fields into the **Axis** and **Values** sections.

   o For example, drag **Category** to the Axis and **Sales** to Values to create a sales-by-category bar chart.

4. **Creating a Pie Chart**

   o Click the **Pie Chart** icon in the Visualizations Pane.

   o Drag **Category** to **Legend** and **Sales** to **Values**.

   o This will create a pie chart showing sales distribution by category.

5. **Formatting Charts**

   o Select a chart and go to the **Format Pane** (paint roller icon).

   o Change the **Title**, **Font Size**, and **Color** under the **Title** section.

   o Under the **Data Colors** section, adjust the colors for different data series.

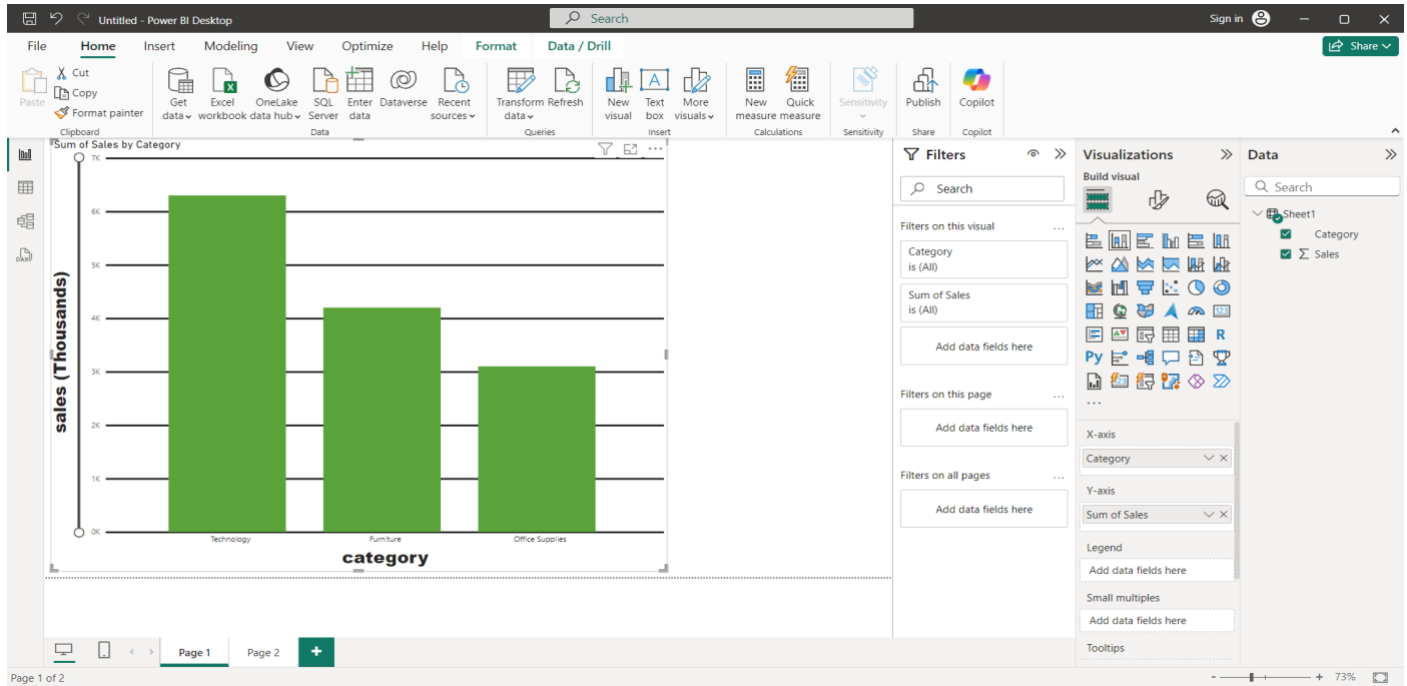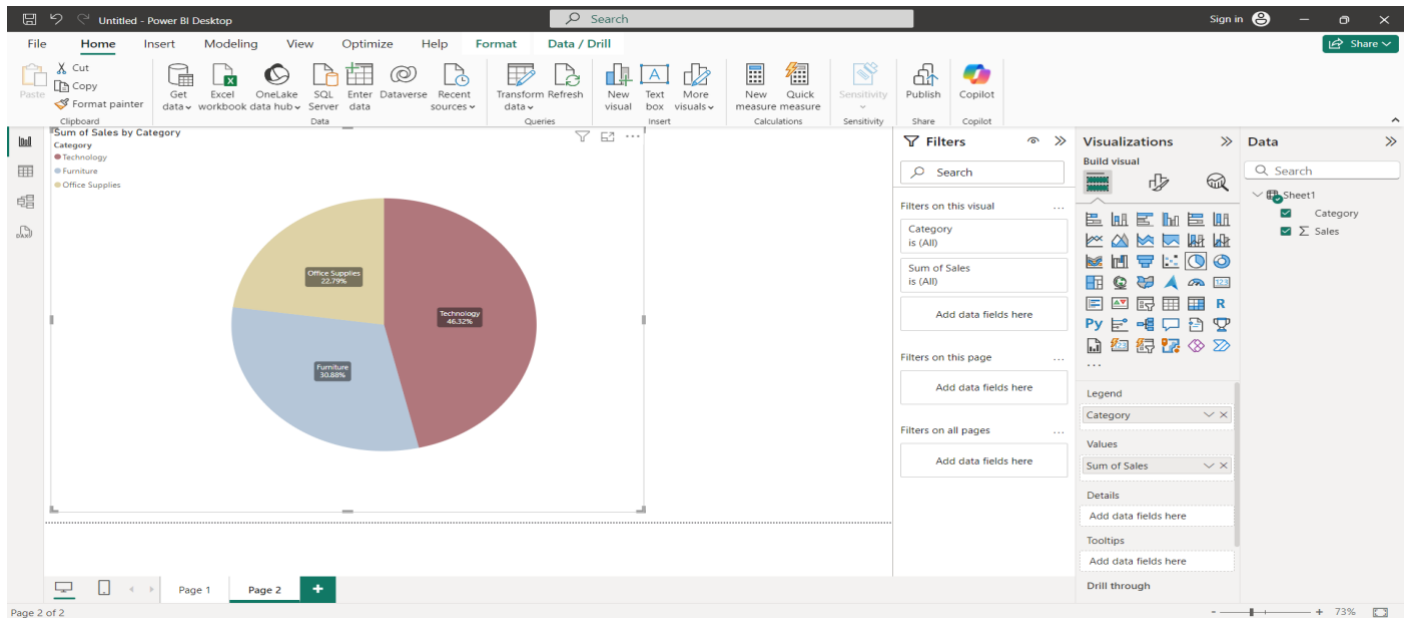6. **Saving the Report**
   Once you've created the visualizations, click **File > Save**.

Screenshots/Illustrations:

Bar chart:

Pie chart:

Expected Outcome:

- Various charts (bar, pie) created from the dataset.

- Charts formatted with custom titles and colors.

Experiment 8: Dashboards - Filters in Power BI, Formatting dashboards.

Objective:

Create and format a dashboard in Power BI to visualize sales data and apply filters, focusing on bar and pie charts.

Procedure:

1. **Open Power BI Desktop**
   Launch Power BI Desktop.

2. **Connect to the Sales Data**

   o Click **Home** > **Get Data** > **Text/CSV**. link

   o Load the **Sales Data CSV** we used previously.

3. **Creating Visualizations for the Dashboard**
   a) **Bar Chart for Sales by Category**

   o In the **Visualizations Pane**, click the **Bar Chart** icon.

   o Drag **Category** to **Axis** and **Sales** to **Values**.

   o The bar chart will show sales for each product category (Electronics, Apparel, Accessories).

   b) **Pie Chart for Sales Distribution by Product**

   o Click the **Pie Chart** icon.

   o Drag **Product** to **Legend** and **Sales** to **Values**.

   o The pie chart will show the sales distribution by each product (Laptop, Phone, Shoes, etc.).

4. **Adding Visualizations to the Dashboard**

   o Arrange the **Bar Chart** and **Pie Chart** by dragging and resizing them on the canvas.

   o Position them next to each other to create a clear dashboard layout.

5. **Adding Filters to the Dashboard**

   o In the **Filters Pane**, drag **Category** to **Filters on this page**.

o   This will allow users to filter all visuals on the dashboard based on the product category (e.g., filtering by Electronics).

6. **Formatting the Dashboard**

o   Select each chart and open the **Format Pane** (paint roller icon).

o   Customize chart titles, data colors, and borders.

o   Adjust background colors or borders for a cohesive, professional appearance.

7. **Saving the Dashboard**

o   Click **File > Save** to save your Power BI dashboard.

Screenshots/Illustrations:
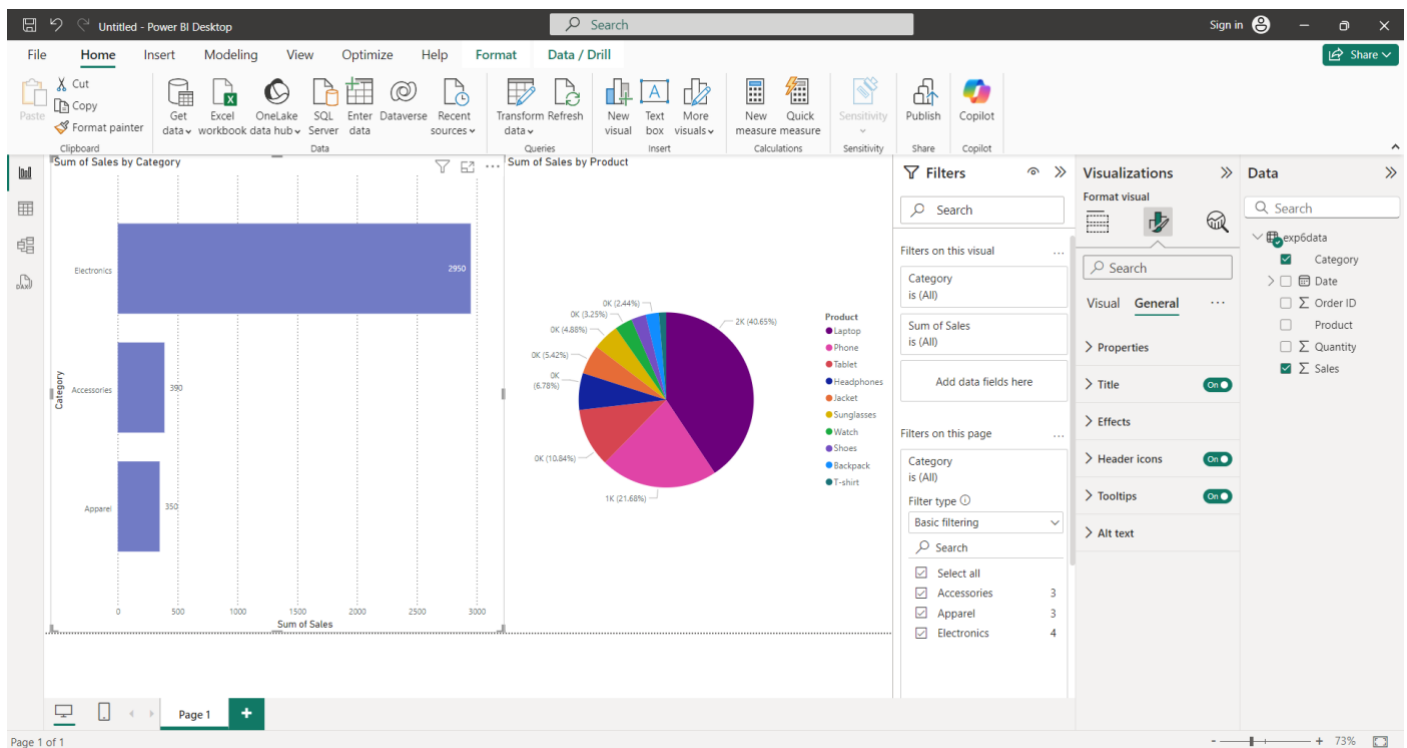
Expected Outcome:

- A dashboard with two visualizations:

    o   **Bar chart** showing sales by category,

    o   **Pie chart** showing sales distribution by product.

- A filter applied to allow users to dynamically filter by product category.

Experiment 9: Analysis of Revenue in Sales Dataset

Objective:

Perform advanced visualizations using Power BI to analyze revenue data.

Procedure:

A. **Open Power BI Desktop**
Launch Power BI Desktop.

B. **Connect to Sales Dataset**
Load the sales dataset (CSV) into Power BI by clicking **Home** > **Get Data** > **Text/CSV**.

C. **Create the Following Visualizations:**

i) Choropleth Map (Filled Map) to Show Revenue by State

- o Click the **Map** visualization in the Visualizations Pane.

- o Drag **State** to the **Location** section and **Revenue** to **Values**.

- o This will create a filled map that shows which state has the highest revenue.

ii) Line Chart to Show Revenue by Month

- o Click the **Line Chart** icon in the Visualizations Pane.

- o Drag **Month** to **Axis** and **Revenue** to **Values**.

- o This will display a line chart showing revenue trends over time.

iii) Create a Bin for Age

- o Click **Modeling** > **New Group**.

- o Select the **Age** field and create a bin with a size of 10 to group the data.

- o Use this bin to create a new dimension showing the revenue by age groups.

iv) Donut Chart for Percentage of Revenue per Region

- o Click the **Donut Chart** icon in the Visualizations Pane.

- o Drag **Region** to **Legend** and **Revenue** to **Values**.

- o Create a calculated field to show the revenue for each region, then adjust the chart for percentage display.

v) Butterfly Chart Comparing Male and Female Revenue by Product Category

1. Create Two Bar Charts:

   - In the Visualizations Pane, click the Bar Chart icon twice to create two bar charts.

   - For both charts, drag Product Category to the Axis section and Revenue to the Values section.

2. Separate Data by Gender:

   - In the Filters Pane, for the first bar chart, filter the Gender field to only show Male.

   - For the second bar chart, filter the Gender field to only show Female.

3. Reverse One of the Bar Charts:

   - Select the bar chart for Female Revenue.

   - Go to the Format Pane (the paint roller icon) and expand the Y-Axis section.

   - Turn "Reverse" to On. This will flip the direction of the bars for female revenue, creating the butterfly (or tornado) effect.

4. Align the Two Bar Charts:

   - Place the Male Revenue bar chart on the left and the Female Revenue bar chart on the right.

   - Adjust the size and position of the two charts to align them side-by-side to resemble the butterfly chart.

vi) Average Revenue per State (Calculated Field)

1. Go to Modeling > New Measure:

   o In the top menu, click on Modeling.

   o Select New Measure.

2. Enter the DAX Formula:

   o In the formula bar, type the following DAX formula:

   Average Revenue = AVERAGE(Sales[Revenue])

   o Press Enter to create the measure.

   This measure calculates the average revenue for each state in your dataset.

Categorize States as Profitable or Non-Profitable:

3. Create a New Calculated Field for Profitability:

   ○ Go back to Modeling > New Column to add a calculated column.

   ○ In the formula bar, use this DAX formula to compare each state's average revenue to a threshold value (e.g., 40,000):

   Profitability Status = IF([Average Revenue] >= 40000, "Profitable", "Non-Profitable")

4. This will categorize states as either Profitable or Non-Profitable based on the average revenue.

   Use the Calculated Field in Visualizations:

5. Create a map visualization:

   ○ Drag the State field to the Location section.

   ○ Add Profitability Status as a legend to color-code the states based on whether they are profitable or not.

   D. **Build a Dashboard**

   ○ Arrange the visuals created (choropleth map, line chart, donut chart, butterfly chart) on a dashboard.

   ○ Apply filters based on **Category** or **Region** to make the dashboard interactive.

Screenshots/Illustrations:
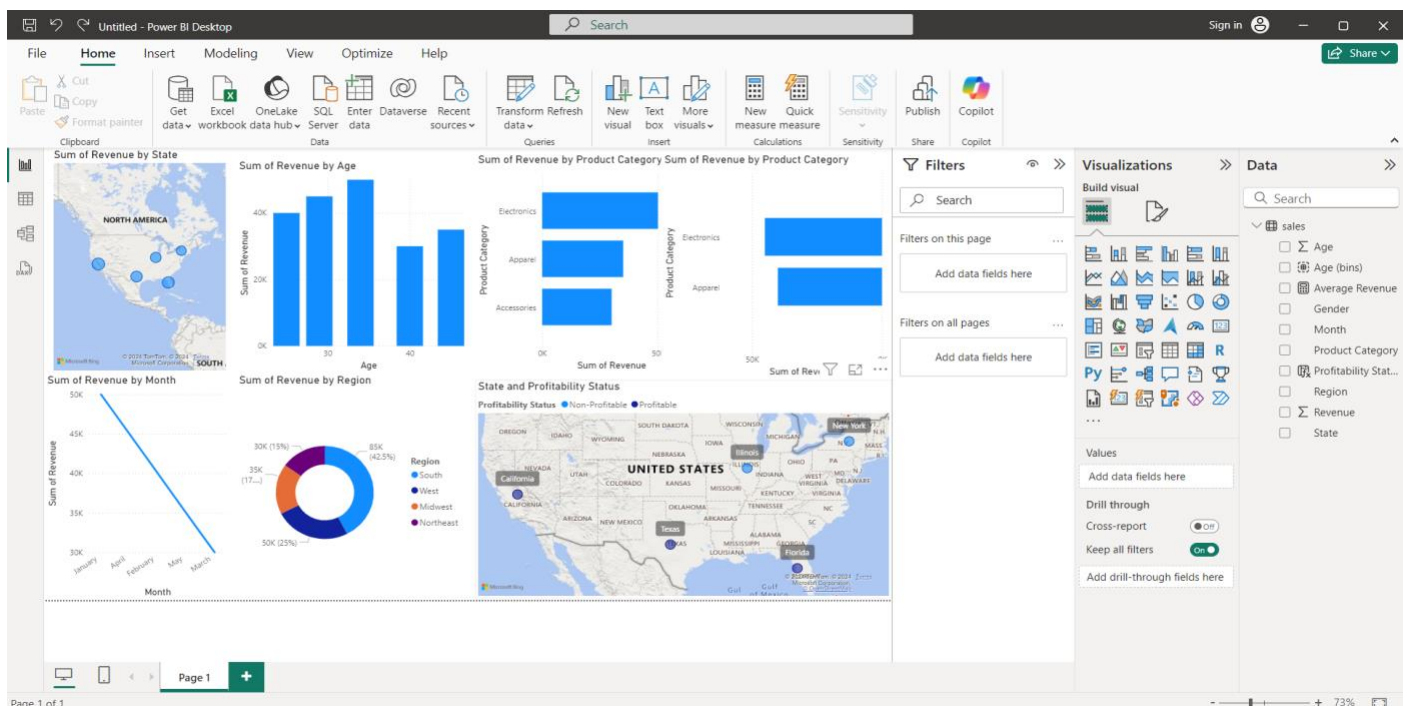
Expected Outcome:

- A Power BI dashboard showing:

    o Choropleth map of revenue by state,

    o Line chart of revenue trends over months,

    o Donut chart showing percentage revenue per region,

    o Butterfly chart comparing male and female revenue,

    o Calculated field displaying average revenue per state with profitable and non-profitable states highlighted.

Experiment 10: Analysis of GDP Dataset.

Objective:

To analyze GDP data from various countries over time using different visualizations such as symbol maps, bar graphs, pie charts, scatter plots, and an interactive dashboard.

Procedure:

1. Import Dataset:

- **Dataset**: Use a dataset with [GDP](#) data, containing the following columns:
    - Country
    - Year
    - GDP (in billions)
    - Latitude
    - Longitude
- **Load Dataset into Power BI**:
    - Open Power BI Desktop.
    - Click on **Get Data** and select **CSV** to import the dataset.
    - Load the dataset and inspect it in the data view.

2. Create Visualizations:

i) Symbol Map for Country GDP

- **Visualize GDP Data by Location**:
    1. Drag **Country** to the **Location** field.
    2. Drag **GDP** to the **Size** field.
    3. Use **Latitude** and **Longitude** in their respective fields.
    4. A symbol map will appear, showing larger symbols for countries with higher GDP.

ii) Bar Graph for Belgium's GDP (2006 – 2026)

- **Create a Bar Graph**:
    1. Drag **Year** to the **Axis** field.
    2. Drag **GDP** to the **Values** field.
    3. Apply a filter for **Country** to show only **Belgium**.
    4. You should now see the GDP trend for Belgium over the years.

iii) Pie Chart for GDP of India, Nepal, Romania, South Asia, Singapore (2010)

- **Create a Pie Chart**:
    1. Drag **Country** to the **Legend** field.
    2. Drag **GDP** to the **Values** field.
    3. Apply a filter for the **Year** field to show only **2010** data.
    4. The pie chart will now show the proportion of GDP for each country.

iv) GDP Comparison: Bhutan vs. Costa Rica

- **Create a Comparison Chart**:
    1. Drag **Country** to the **Axis** field and **GDP** to the **Values** field.
    2. Filter for **Bhutan** and **Costa Rica**.
    3. The chart will display GDP for both countries side-by-side.

v) Scatter Plot for GDP of Mexico, Algeria, Fiji, and Estonia (2004-2006)

- **Create a Scatter Plot**:
    1. Drag **GDP** to the **X-Axis** field and **Year** to the **Y-Axis** field.
    2. Drag **Country** to **Details** and select **Mexico, Algeria, Fiji, and Estonia**.
    3. Filter the data for the years **2004 to 2006**.
    4. The scatter plot will display the GDP of these countries over the selected years.

3. Build an Interactive Dashboard

- Combine all the visuals (symbol map, bar graph, pie chart, scatter plot) into a single interactive dashboard:
    1. Click on the **Dashboard** tab.
    2. Arrange the visuals on the canvas.
    3. Add slicers or filters (e.g., by year or country) to make the dashboard interactive.
    4. Ensure that interactions between charts are enabled for a dynamic user experience.

Screenshots/Illustrations:
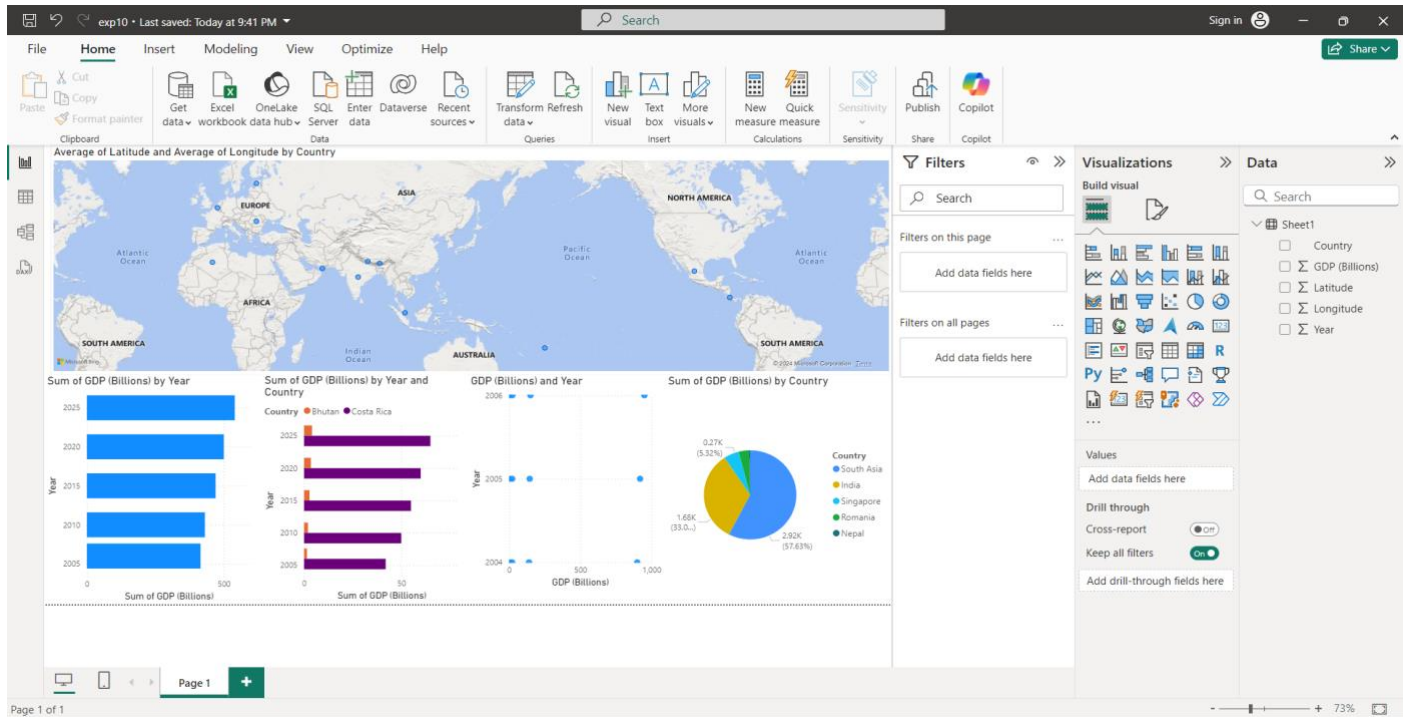
Expected Outcome:

- A **symbol map** showing the GDP values for various countries with symbols of different sizes.
- A **bar graph** displaying the GDP trend for Belgium between 2006 and 2026.
- A **pie chart** showing the GDP distribution for India, Nepal, Romania, South Asia, and Singapore in 2010.
- A **comparison chart** visualizing the GDP of Bhutan vs. Costa Rica.
- A **scatter plot** displaying the GDP of Mexico, Algeria, Fiji, and Estonia from 2004 to 2006.
- A **fully interactive dashboard** combining all these elements to provide a comprehensive view of global GDP trends.

Experiment 11: Analysis of HR Dataset

Objective:

Perform analysis on an HR dataset using Power BI to create different visualizations and calculate metrics such as attrition rate, employee count, job satisfaction, and more.

Procedure:

1. Load the HR Dataset

1. Open **Power BI Desktop**.

2. Select **Get Data** > **Text/CSV**.

3. Upload the CSV file of the HR dataset.

4. Click **Load** to import the dataset.

2. Create KPI Metrics

We'll create several key performance indicators (KPIs) to provide a summary of the dataset.

1. Go to **Modeling** > **New Measure**.

2. Create the following measures:

- **Employee Count:**

   Employee Count1 = COUNT(HR[Employee ID])

- **Attrition Count:**

   Attrition Count1 = CALCULATE(COUNT(HR[Employee ID]), HR[Attrition] = "Yes")

- **Attrition Rate:**

   Attrition Rate = DIVIDE([Attrition Count], [Employee Count], 0)

- **Active Employees:**

   Active Employees = CALCULATE(COUNT(HR[Employee ID]), HR[Attrition] = "No")

- **Average Age:**

   Average Age = AVERAGE(HR[Age])

Visualizing the KPIs:

1. Select **Card Visualizations** from the **Visualizations** pane.

2. Drag each of the KPI fields (e.g., **Employee Count**, **Attrition Count**, etc.) into separate card visualizations.

3. Lollipop Chart: Attrition Rate by Gender

To create a lollipop chart (attrition rate by gender):

1. Select **Line and Clustered Column Chart** from the visualizations pane.

2. Drag **Gender** to the **Axis** field.

3. Drag **Attrition Count** to the **Values** field.

4. Drag **Attrition Count** to the **Line Y Axis** field.

5. In the **Format** pane, change the shape and add markers to create a lollipop chart,make **Lines** width to 0px.(refer this vedio for chart)

4. Pie Chart: Attrition by Department

1. Select the **Pie Chart** visualization.

2. Drag **Department** to the **Legend** field.

3. Drag **Attrition Count** to the **Values** field.

4. Adjust colors and labels as needed in the **Format** pane.

5. Bar Chart: Employees by Age Group

1. Select the **Stacked Bar Chart** visualization.

2. Drag **Age** to the **Axis** field.

3. Drag **Employee Count** to the **Values** field.

4. Use the **Bins** feature to categorize the ages (e.g., 20-30, 31-40, etc.) by right-clicking **Age** and selecting **New Group**.

6. Highlight Table: Job Satisfaction by Job Role

1. Select the **Matrix** visualization.

2. Drag **Job Satisfaction** to the **Columns** field.

3. Drag **Employee Count** to the **Values** field.

   4. Use color formatting (in the **Format** pane) to create a heatmap-style highlight table.

## 7. Horizontal Bar Chart: Attrition by Education Field

   1. Select the **Stacked Bar Chart** visualization.

   2. Drag **Education Field** to the **Axis** field.

   3. Drag **Attrition Count** to the **Values** field.

   4. Adjust the chart to make it horizontal in the **Format** pane.

8. Donut Chart: Attrition Rate by Gender for Different Age Groups

   1. Select the **Donut Chart** visualization.

   2. Drag **Gender** to the **Legend** field.

   3. Drag **Attrition Count** to the **Values** field.

   4. Create age groups by using the **New Group** feature on the **Age** column.

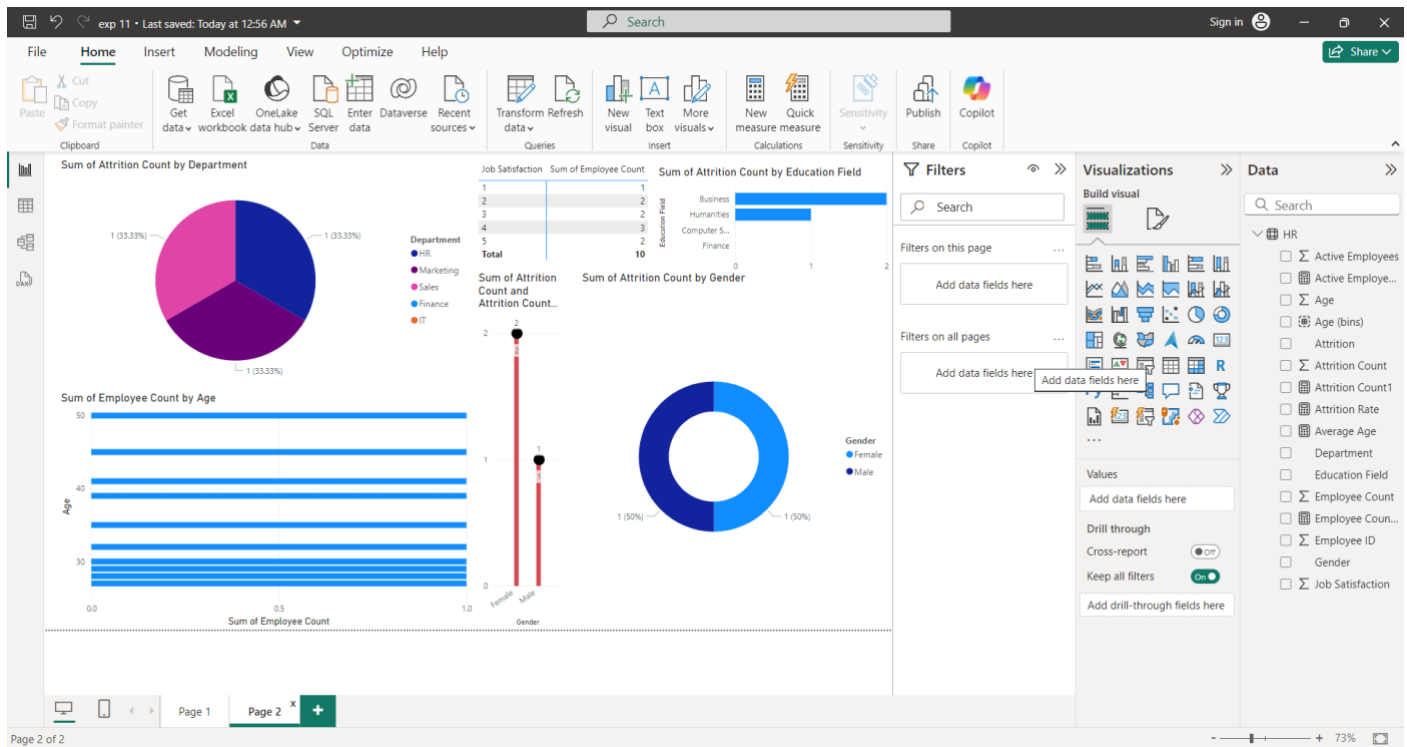   5. Filter the donut chart by the different age groups to show attrition rates by gender for each group.

Screenshots/Illustrations:

KPI'S:
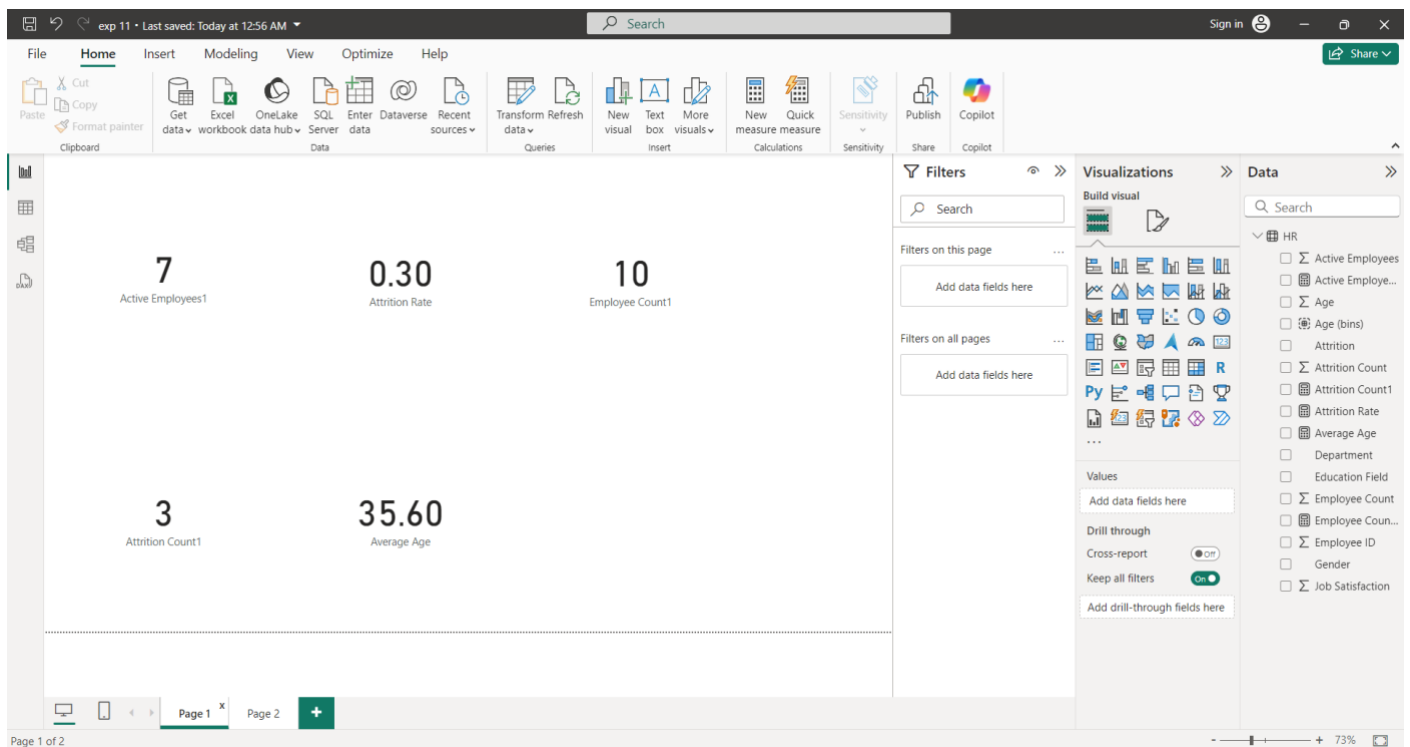
Charts:

Expected Outcome:

- A dashboard containing:

    1. KPIs for employee count, attrition rate, active employees, and average age.

    2. A lollipop chart showing the attrition rate by gender.

    3. A pie chart depicting attrition by department.

    4. A bar chart visualizing employees grouped by age.

    5. A highlight table for job satisfaction by job role.

    6. A horizontal bar chart showing attrition by education field.

    7. Multiple donut charts for attrition rate by gender, categorized by age group.

Experiment 12: Analysis of Amazon Prime Dataset

Objective:

Analyze the Amazon Prime dataset to create various visualizations using Power BI. This includes creating donut charts, area charts, bar charts, maps, text sheets, and an interactive dashboard.

Procedure:

1. Create a Donut Chart to Show the Percentage of Movies and TV Shows

1. **Load the Dataset**:

   o Load the Amazon Prime dataset into Power BI.

   o Ensure the columns like **Title**, **Type**, **Release Year**, **Genre**, and **Country** are correctly imported.

2. **Create Donut Chart**:

   o From the **Visualizations** pane, select the **Donut Chart**.

   o Drag the **Type** field (Movies or TV Shows) to the **Legend** field.

   o Drag the **Title** field to the **Values** field (this will count the number of titles per type).

   o This donut chart will now display the percentage of movies and TV shows.

2. Create an Area Chart to Show Releases by Year and Type

1. **Add an Area Chart**:

   o From the **Visualizations** pane, select the **Area Chart**.

   o Drag the **Release Year** field to the **Axis** field.

   o Drag the **Title** field to the **Values** field (this will count the number of releases).

   o Drag the **Type** field to the **Legend** field to differentiate between movies and TV shows.

2. **Customize the Chart**:

   o Adjust formatting to make the area chart visually clear, with the option to toggle between movie and TV show releases by year.

3. Create a Horizontal Bar Chart to Show the Top 10 Genres

1. **Add a Bar Chart**:

   - Select the **Stacked Bar Chart** from the **Visualizations** pane.

   - Drag the **Genre** field to the **Axis**.

   - Drag the **Title** field to the **Values** field.

   - Sort by **Title** in descending order and filter to display the **Top 10** genres.

4. Create a Map to Display the Total Shows by Country

1. **Add a Map**:

   - From the **Visualizations** pane, select the **Map** visual.

   - Drag the **Country** field to the **Location** field.

   - Drag the **Title** field to the **Values** field (this will count the total number of shows per country).

   - Power BI will display the number of shows geographically.

5. Create a Text Sheet to Show the Description of Any Movie or Show

1. **Create a Slicer**:

   - In the **Visualizations** pane, add a **Slicer**.

   - Drag the **Title** field to the slicer.

   - This will allow you to filter the visualizations by a specific movie or show.

2. **Create a Text Box**:

   - Add a **Card Visual** from the **Visualizations** pane.

   - Drag the **Description** field to the **Card Visual**. This will display the description of the selected movie or show.
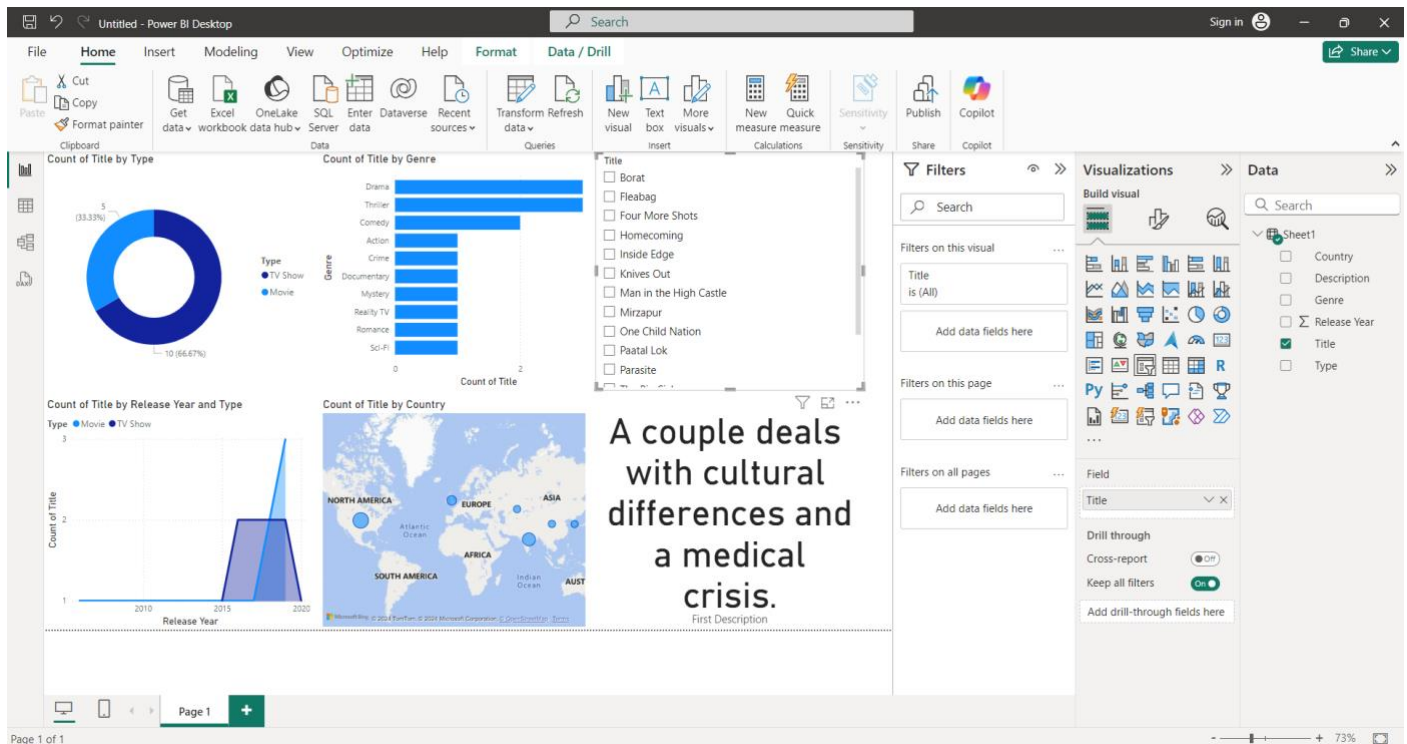
6. Build an Interactive Dashboard

1. **Combine All Visuals**:

   - Arrange the **Donut Chart**, **Area Chart**, **Bar Chart**, **Map**, and **Text Box** on a single page to create an interactive dashboard.

Screenshots/Illustrations:

Expected Outcome:

- **Donut Chart**: Shows the distribution of movies and TV shows on Amazon Prime.

- **Area Chart**: Displays the release trends by year for movies and TV shows.

- **Bar Chart**: Lists the top 10 genres in terms of number of titles.

- **Map**: Visualizes the geographic distribution of shows and movies.

- **Text Sheet**: Displays detailed descriptions of selected movies or TV shows.

- **Dashboard**: Combines all the visuals into a single interactive dashboard for easy analysis.