Perform the data visualization operations using Tableau to get answers to various business questions on Retail dataset. a. Find and Plot top 10 products based on total sale b. Find and Plot product contribution to total sale c. Find and Plot the month wise sales in year 2010 in descending order d. Find and Plot most loyal customers based on purchase order e. Find and Plot yearly sales comparison f. Find and Plot country wise total sales price and show on Geospatial graph

1. Load the Dataset into Tableau

1. **Open Tableau Desktop** or **Tableau Public**.

2. **Connect to your data**:

    o   Click **"Connect"** on the left side of the screen.

    o   Select **"Microsoft Excel"** or **"Text File"** (if it's a CSV file) from the available connectors.

    o   Navigate to the file location, select your dataset (e.g., Online Retail.xlsx or RetailData.csv), and click **Open**.

3. Tableau will automatically load the data and display it in the **Data Source** tab.

4. Once loaded, click **Sheet 1** at the bottom to start creating visualizations.

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2. a. Top 10 Products Based on Total Sale

1. **Calculate Total Sales** (if not already done):

    o   In Tableau, go to the **Data pane** (left side), right-click anywhere in the empty space under your dataset name, and choose **Create Calculated Field**.

    o   Name it Sales and input the formula:

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[Quantity] * [UnitPrice]

    o   Click **OK**.

2. **Create a Bar Chart for Top Products**:

  - Drag **Description** (or **StockCode** if product name is long) from the **Data pane** to **Rows**.

  - Drag the calculated **Sales** field from the **Data pane** to **Columns**.

  - Tableau will automatically create a **Bar Chart**.

3. **Sort Products by Sales**:

  - Hover over the **Sales** axis at the top and click the **sort icon** (descending order).

  - Alternatively, right-click on the **Sales** axis and select **Sort**, then choose **Descending**.

4. **Filter Top 10 Products**:

  - Drag **Description** to the **Filter** shelf.

  - In the Filter dialog, click on the **Top** tab.

  - Choose **By Field → Top 10 by Sum of Sales**.

  - Click **OK**.

5. **Adjust and Add Titles**:

  - Adjust the chart as necessary.

  - Right-click on the sheet name **(Sheet 1)** and rename it **"Top 10 Products by Sales"**.

  - Click **Worksheet → Show Title** and add an appropriate title such as "Top 10 Products Based on Total Sales".

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2. b. Product Contribution to Total Sale

1. **Drag Product Description to Rows**:

  - Drag **Description** from the **Data pane** to **Rows**.

2. **Sales in Columns**:

  - Drag **Sales** (calculated earlier) to **Columns**.

3. **Change Marks Type to Pie**:

- In the **Marks** dropdown, select **Pie** (instead of Automatic).

4. **Add Sales to Angle**:

   - Drag **Sales** to **Angle** in the Marks card to determine the size of each pie slice.

5. **Add Labels**:

   - Drag **Sales** to **Label** to display the actual values.

6. **Change Table Calculation** to Percentage:

   - Right-click the **Sales** field in **Label** or **Angle**.

   - Select **Quick Table Calculation → Percent of Total**.

7. **Add Color to Distinguish Products**:

   - Drag **Description** to **Color** in the Marks card.

8. **Rename the Sheet**:

   - Rename the sheet to **"Product Contribution to Sales"**.

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2. c. Month-wise Sales in 2010 (Descending Order)

1. **Extract Year and Month from InvoiceDate**:

   - Drag **InvoiceDate** to **Columns**.

   - Right-click on **InvoiceDate → Month** (or select "Exact Date" if you want precise months).

2. **Filter for 2010**:

   - Drag **InvoiceDate** to **Filters**.

   - Click **Year →** select **2010** (or manually filter dates for the entire year).

3. **Add Sales to Rows**:

   - Drag **Sales** to **Rows**.

4. **Sort Sales in Descending Order**:

   - Click on the **Sales axis** and sort descending by total sales.

5. **Format and Adjust**:

- o Right-click the **Sales** axis → **Sort**, then select **Descending**.

- o Use a **Bar Chart** or **Line Chart** for better visualization.

6. **Rename the Sheet**:

- o Rename it to **"Month-wise Sales in 2010"**.

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2. d. Most Loyal Customers by Order Count

1. **Create a Count of Orders**:

- o Drag **CustomerID** to **Rows**.

- o Drag **InvoiceNo** to **Columns**.

- o Right-click on **InvoiceNo** → choose **Measure** → **Count Distinct**.

2. **Sort by Order Count**:

- o Sort the **CustomerID** or **Order Count** in descending order by right-clicking on the **Order Count axis** and selecting **Sort**.

3. **Filter for Top N Customers**:

- o Right-click **CustomerID** → **Filter**.

- o In the **Top** tab, choose **Top N** by **Order Count** (e.g., Top 10).

4. **Adjust Marks Type**:

- o Select a **Bar Chart** from the **Show Me** panel.

5. **Rename the Sheet**:

- o Rename to **"Most Loyal Customers by Order Count"**.

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2. e. Yearly Sales Comparison

1. **Drag Year from InvoiceDate to Columns**:

- o Drag **InvoiceDate** to **Columns**.

- o Right-click and select **Year**.

2. **Add Sales to Rows**:

o   Drag **Sales** to **Rows**.

3. **Choose Chart Type**:

   o   Choose **Bar Chart** or **Line Chart** for comparing sales across years.

4. **Optionally Add Breakdown**:

   o   Drag **Country** to **Color** to break down sales by country or region.

5. **Rename the Sheet**:

   o   Rename to **"Yearly Sales Comparison"**.

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2. f. Country-wise Total Sales on a Geospatial Map

1. **Generate the Map**:

   o   Drag **Country** to **Rows**. Tableau will recognize it as a geographical field and generate a map.

2. **Add Sales to the Map**:

   o   Drag **Sales** to **Color** and **Size** on the **Marks** card.

3. **Format the Map**:

   o   Click on **Size** in the **Marks card** and adjust the bubble size.

   o   Click **Color** to choose a color palette that makes the data stand out.

4. **Rename the Sheet**:

   o   Rename to **"Sales by Country (Map)"**.

Final Step: Create a Dashboard

1. **Create a New Dashboard**:

   o   Click on the **New Dashboard** button at the bottom (next to sheets).

   o   Drag and drop each sheet (e.g., **Top 10 Products**, **Sales by Country**) onto the dashboard.

2. **Arrange and Format**:

   o   Resize and arrange the charts for a clean layout.

- Add **titles** and **annotations** for clarity.

3. **Save and Publish**:

- Save your Tableau workbook as .twbx or export it as an image or PDF.