1ST ANSWER

UNDERSTANDING DATA, WHAT IS DATA, WHERE TO FIND DATA, FOUNDATIONS FOR BUILDING DATA VISUALIZATIONS, CREATING YOUR FIRST VISUALIZATION?

1. Understanding Data

WHAT IS DATA?

Data is raw information, facts, or statistics collected for reference or analysis.

WHERE TO FIND DATA?

Public datasets (Kaggle, Data.gov, Google Dataset Search)

Company databases, surveys, or APIs

2. Foundations for Building Data Visualizations

Understand the Purpose: Define the problem or question you want to answer.

Choose the Right Data: Use relevant, clean, and complete data.

Know Your Audience: Tailor your visualization for clarity and understanding.

3. Steps to Create Your First Visualization in Tableau

Step 1: Install and Open Tableau

Download and install Tableau Public (free) or Tableau Desktop.

Open Tableau and start a new project.

Step 2: Import Your Data

Click “Connect” to load your dataset (Excel, CSV, etc.).

Verify fields in the Data Source tab.

Step 3: Clean and Prepare Data

Remove duplicates or null values.

Rename fields for better clarity.

Step 4: Drag and Drop to Create

Go to the worksheet tab.

Drag a dimension (e.g., Category) to the Columns shelf.

Drag a measure (e.g., Sales) to the Rows shelf.

Step 5: Choose a Visualization Type

Use the Show Me panel to pick charts (bar, line, pie).

Step 6: Add Details

Use color, size, or filters for deeper insights.

Drag fields to the Marks card to customize.

Step 7: Finalize and Publish

Add titles, labels, and tooltips for better understanding.

Save and share the dashboard or publish it online (Tableau Public).

2ND ANSWER

GETTING STARTED WITH TABLEAU SOFTWARE

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1. Using Data File Formats

- Tableau supports various file formats like Excel (.xls, .xlsx), CSV, JSON, SQL databases, and more.
- Choose a format that best represents your data and is easy to clean.

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2. Connecting Your Data to Tableau

- Open Tableau and click on **"Connect"**.
- Select your file type (Excel, Text File, etc.) or connect to a live database.
- Load the file and preview the data in the **Data Source** tab.

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3. Creating Basic Charts

Line Chart:

- Drag a **dimension** (e.g., Date) to the Columns shelf.
- Drag a **measure** (e.g., Sales) to the Rows shelf.
- Tableau automatically generates a line chart for continuous data.

Bar Chart:

- Drag a **dimension** (e.g., Product Category) to the Columns shelf.
- Drag a **measure** (e.g., Profit) to the Rows shelf.
- From the **Show Me** panel, choose the bar chart option for a clean view.

Tree Map:

- Drag a **dimension** (e.g., Region) to the Marks card as Text.
- Drag a **measure** (e.g., Sales) to Size and Color in the Marks card.
- Choose **Tree Map** from the **Show Me** panel for a proportional layout.

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4. Using the Show Me Panel

- The **Show Me** panel offers a variety of visualizations based on selected data.
- Highlight fields in your worksheet, then click on a chart type to preview.
- Suggestions appear grayed out if additional data fields are required.

3rd ANSWER

AGGREGATE FUNCTIONS IN TABLEAU

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1. What are Aggregate Functions?

- Aggregate functions summarize or calculate values across multiple rows of data.
- Examples: SUM, AVG, COUNT, MIN, MAX, etc.

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2. Common Aggregate Functions in Tableau

SUM:

- Adds up all the values in a field.
  Example: Total Sales = SUM(Sales)

AVG (Average):

- Calculates the average of all values.
  Example: Average Profit = AVG(Profit)

COUNT:

- Counts the number of rows or items.
  Example: Total Orders = COUNT(Order ID)

MIN:

- Finds the smallest value.
  Example: Minimum Discount = MIN(Discount)

MAX:

- Finds the largest value.
  Example: Maximum Sales = MAX(Sales)

MEDIAN:

- Determines the middle value in a dataset.

Standard Deviation (STDEV):

- Measures data variability.

Variance (VAR):

- Measures the spread of data values.

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3. How to Use Aggregate Functions in Tableau

Step 1: Drag Fields to Shelves

- Drag a measure (e.g., Sales) to the Rows shelf.

Step 2: Apply an Aggregate Function

- Right-click on the field in the Rows or Columns shelf.
- Select “Measure” and choose the desired aggregation (SUM, AVG, etc.).

Step 3: Customize the Aggregation

- You can change the aggregation type from the drop-down menu on the Marks card or the shelf.

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4. Aggregations in Calculated Fields

- Create calculated fields using aggregate functions.
  Example**:**

SUM(Sales) / COUNT(Orders)

This calculates the average sales per order.

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5. Using Aggregate Functions in Visualizations

- Use aggregate measures in charts to show summaries like total sales, average profit, etc.
- Combine dimensions (e.g., Region) with aggregates for comparative analysis.

4TH ANSWER

APPLYING NEW DATA CALCULATIONS OF YOUR VISUALIZATIONS, FORMATTING VISUALIZATIONS, FORMATTING TOOLS AND MENUS , FORMATTING SPECIFIC PART OF THE VIEW.

1. Applying New Data Calculations to Your Visualizations

Step 1: Create a Calculated Field

- Go to the Data Pane, click the drop-down menu, and select "Create Calculated Field".
- Enter your formula. Example:

Profit Ratio = SUM(Profit) / SUM(Sales)

Step 2: Use the Calculation in a Visualization

- Drag the calculated field into Rows, Columns, or Marks.
- Combine it with other dimensions or measures for analysis.

Step 3: Verify and Adjust

- Tableau will flag errors in your formula. Fix issues before applying.
- Check if the visualization reflects the intended calculation.

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2. Formatting Visualizations

Step 1: Access Formatting Tools

- Right-click anywhere on the worksheet and select "Format".
- Use the Format Pane to adjust fonts, borders, and shading**.**

Step 2: Format Axes and Headers

- Right-click on an axis or header and choose "Edit Axis" or "Format".
- Customize font size, alignment, or axis range.

Step 3: Adjust Colors and Marks

- Use the Marks Card to format:

    - Drag fields to Color for color-coded categories.
    - Drag to Size to emphasize data points.

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3. Formatting Tools and Menus

Format Pane

- Font: Change font type, size, and color.
- Alignment: Adjust text alignment (left, center, or right).
- Shading: Add background colors to rows or columns.
- Borders: Add or remove borders to tables or charts.

Show Me Panel

- Automatically applies optimal formatting for selected chart types.

Annotations and Tooltips

- Right-click a data point and select "Annotate" for notes.
- Customize tooltips to display key insights when hovering over data.

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4. Formatting Specific Parts of the View

Step 1: Select the Element

- Click on the specific part (e.g., axis, title, legend).

Step 2: Apply Formatting

- Right-click and choose "Format".
    - Change titles to bold or add a descriptive subtitle.
    - Adjust legend colors to make categories distinct.

Step 3: Fine-Tune with Grid Lines and Borders

- Use the Format Pane to modify grid lines, borders, or separators for better readability.

5th ANSWER

. EDITING AND FORMATTING AXES, MANIPULATING DATA IN TABLEAU DATA, PIVOTING TABLEAU DATA.

1. Editing and Formatting Axes

Step 1: Editing Axes

- Edit Titles: Double-click on an axis title to rename it.
- Adjust Range: Right-click the axis and select "Edit Axis" to manually set the minimum and maximum range.
- Reverse Axis: Check the "Reversed" option in the Edit Axis dialog for inverted visuals.

Step 2: Formatting Axes

- Access Format Options: Right-click the axis and select "Format".
- Font & Alignment: Change font style, size, and alignment in the Format Pane.
- Tick Marks: Customize major/minor tick marks in the Format Pane under "Scale".

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2. Manipulating Data in Tableau

Step 1: Create Calculations

- Use Calculated Fields for new measures.
  Example:

Sales Growth = (SUM(Sales) - LOOKUP(SUM(Sales), -1)) / LOOKUP(SUM(Sales), -1)

- Drag the calculated field into the visualization to apply it.

Step 2: Filter Data

- Drag a field to the Filters Shelf and set conditions.
- Use Quick Filters to allow interactive data selection.

Step 3: Group and Combine Data

- Select multiple values in a field and right-click to Group them.
- Use Data Blending to combine data from multiple sources.

Step 4: Sorting and Hierarchies

- Drag fields to Rows/Columns for sorting.
- Create hierarchies by dragging related fields together (e.g., Year → Month → Day).

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3. Pivoting Tableau Data

Step 1: Select the Data to Pivot

- Go to the Data Source tab.
- Highlight the columns you want to pivot by holding the Ctrl key.

Step 2: Apply Pivot

- Right-click the selected fields and choose "Pivot".
- Tableau combines the selected columns into two new columns:
    - Pivot Field Names: Original column headers.
    - Pivot Field Values: The data from each column.

Step 3: Use Pivoted Data

- Use the Pivot Field Names as a dimension and Pivot Field Values as a measure in your visualizations.

6TH ANSWER

STRUCTURING YOUR DATA, SORTING AND FILTERING TABLEAU DATA, PIVOTING TABLEAU DATA.

1. Structuring Your Data in Tableau

Step 1: Clean and Organize Data

- Remove Unnecessary Fields: In the Data Source tab, delete irrelevant columns.
- Rename Fields: Right-click fields to give them meaningful names.
- Change Data Types: Right-click a field and choose "Change Data Type" (e.g., from string to number or date).

Step 2: Create Hierarchies

- Drag related fields into one another (e.g., Region > Country > City) to create hierarchies.
- This enables drill-down capabilities in your visualizations.

Step 3: Data Grouping

- Group similar categories into one.
    - Select values you want to group, right-click, and choose "Group".

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2. Sorting and Filtering Tableau Data

Step 1: Sorting Data

- Sort by Field: Right-click a field in Rows/Columns shelf and select "Sort".
- Sort in Ascending/Descending Order: Choose Ascending or Descending in the Sort dialog.

- Custom Sorting: For custom order, drag and drop the values directly in the view.

Step 2: Filtering Data

- Apply Filter: Drag a field to the Filters Shelf.
- Set Filter Conditions:
    - Choose “All values” or specific conditions (e.g., date range, categories).
    - Use Quick Filters for user interactivity on the dashboard.
    - Right-click a filter and choose "Show Filter" to display it on the view.

Step 3: Top N Filters

- In the Filter dialog, select "Top" and choose the number of top records you want to display (e.g., Top 10 products).

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3. Pivoting Tableau Data

Step 1: Select the Columns to Pivot

- Go to the Data Source tab.
- Highlight multiple columns (hold Ctrl to select multiple).

Step 2: Pivot the Data

- Right-click the selected columns and choose "Pivot".
- Tableau will create two new columns:
    - Pivot Field Names (original column names).
    - Pivot Field Values (the data from those columns).

Step 3: Use Pivoted Data in Visualizations

- Drag the Pivot Field Names into the Columns shelf (as dimension).
- Drag the Pivot Field Values into the Rows shelf (as measure).

Practical Tips

- Data Structure: Ensure data is in a “long” format (one row per observation) for easier analysis.
- Filtering: Combine multiple filters (e.g., by date, category, or region) for deeper insights.
- Pivoting: Pivot data when you have wide data tables (multiple columns representing similar measures).

7TH WEEK

7. Advanced Visualization Tools in Tableau

Using Filters

- Filter by Dimension: Drag a field to the Filters Shelf and select the values you want to include.
- Filter by Measure: Set a range or condition for continuous fields (e.g., filter sales > $1000).
- Context Filters: Apply a filter as a context to limit other filters. Right-click on the filter and select "Add to Context".

Using the Detail Panel

- The Detail panel on the Marks card provides additional information about each data point.
- Add dimensions to the Detail shelf to display more granular information without affecting visualization type.

Using the Size Panel

- Size controls the size of marks in your visualization.
- Drag a measure (e.g., Sales) to Size to size your data points proportionally.

Customizing Filters

- You can format filters (like list or dropdown style) by right-clicking the filter and choosing "Customize".
- Show filter controls on the view to allow user interaction with the dashboard.

Using and Customizing Tooltips

- Tooltips appear when hovering over data points.
- Customize tooltips by clicking "Tooltip" on the Marks card to display specific information.
- Use calculated fields inside tooltips for dynamic content.

Formatting Your Data with Colors

- Drag a field (e.g., Region, Sales) to Color on the Marks Card to apply color coding.
- Adjust color palettes by right-clicking on Color in the Marks card and selecting Edit Colors.

8TH WEEK

8. Creating Dashboards & Storytelling

Creating Your First Dashboard and Story

- Create a Dashboard: Go to the Dashboard tab and click "New Dashboard".
- Drag and drop different sheets or visualizations onto the dashboard canvas.
- Create a Story: Combine multiple dashboards or sheets into a storytelling format. Use the Story tab to create a sequence of views.

Design for Different Displays

- Use "Device Preview" to ensure your dashboard looks good on different devices (desktop, tablet, phone).
- Optimize layout with flexible containers to adjust based on the screen size.

Adding Interactivity to Your Dashboard

- Actions: Add interactivity by linking actions. Go to Dashboard > Actions to set filter, highlight, or URL actions.
- Users can click on elements in the dashboard to filter data dynamically.

Distributing & Publishing Your Visualization

- Publish: Share your dashboard by publishing it to Tableau Server or Tableau Online.
- Export: Export dashboards as images, PDF, or Excel files.
- Embed: Embed the dashboard on websites or in applications using Tableau's embedding options.

9TH WEEK

9. Tableau File Types, Publishing, and Sharing

Tableau File Types

- .twb: Tableau Workbook file (does not include data).
- .twbx: Tableau Packaged Workbook (includes data, images, and workbook).
- .tde/.hyper: Tableau Data Extract file (for offline use and faster performance).

Publishing to Tableau Online

- Publish: After creating your visualization, go to Server > Tableau Online and select Publish Workbook.
- Set permissions for user access.

Sharing Your Visualizations

- Share visualizations by embedding them in websites, emails, or blogs.
- Export: Save workbooks as PDFs or images for sharing offline.

Printing and Exporting

- Print: Directly print your dashboard or visualization by going to File > Print.
- Export to Image: Export static images of your visualization for reports.
- Export to PDF: Export the entire dashboard to a PDF for presentation or printing.

10TH WEEK

10. Creating Custom Charts

Cyclical Data and Circular Area Charts

- Cyclical Data: Data that follows a repeating cycle (e.g., months, days of the week). Use a circular bar chart to visualize these cycles.
- To create, use “Pie Chart” combined with cyclic data (e.g., months or hours).

Dual Axis Charts

- Dual Axis: Combine two different measures on the same axis, such as Sales and Profit.
    - Drag one measure to Rows and the other to Columns.
    - Right-click on one axis and select "Dual Axis".
    - Synchronize axes if necessary by right-clicking one of the axes and selecting "Synchronize Axis".
    - Customize each axis and visualization type independently for a richer view.