

**DES PUNE UNIVERSITY**  
**School of Engineering and Technology**  
**Computer Engineering and Technology**  
**Program: B.Tech. Computer Science and Engineering**

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<b>Subject:</b> DSV			
<b>Assignment No.:</b> 5			
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**1. Title:**

**Hierarchical visualization.**

**1. What is hierarchical visualization.**

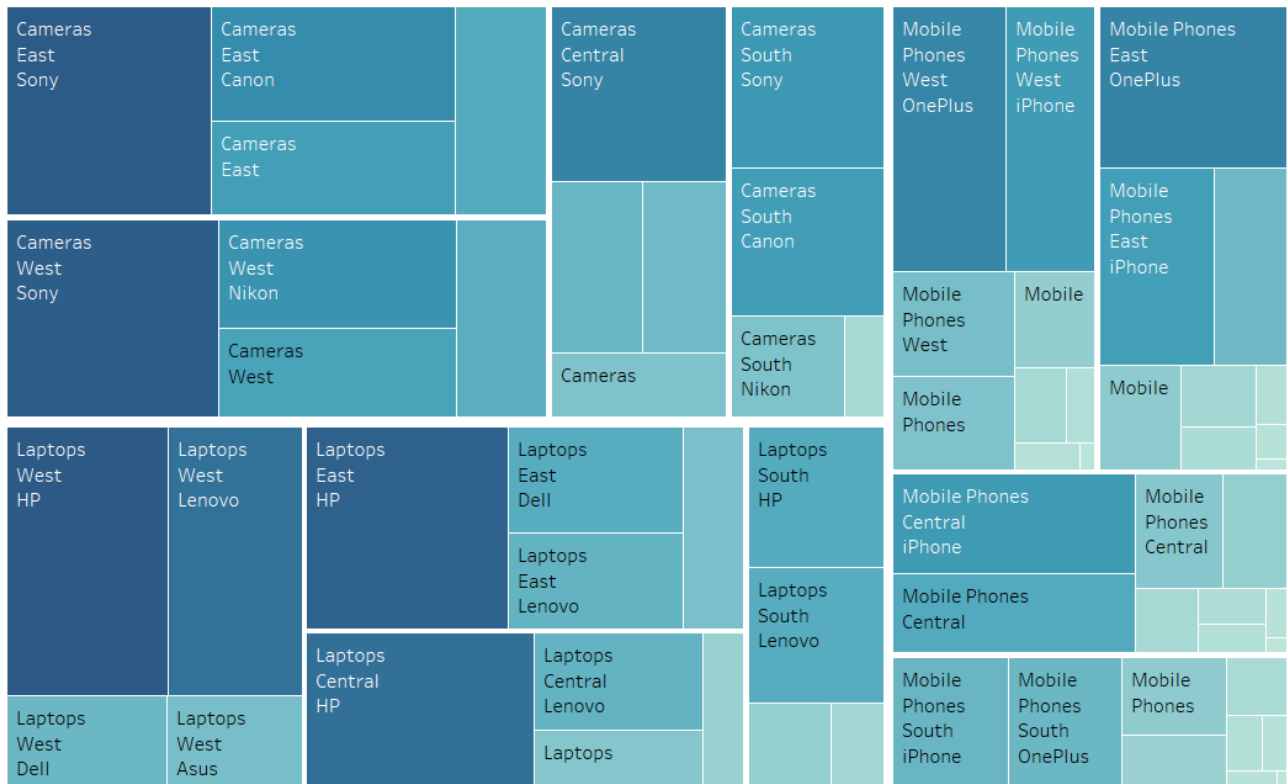
**:- Hierarchical visualization is a technique used to represent hierarchical data structures visually. It helps in understanding complex relationships between parent and child elements. Common techniques include treemaps and ring charts.**

**2. Information about about tree maps and Ring charts:-**

**Treemaps**

Treemaps are a type of visualization that displays hierarchical data as nested rectangles. The size of each rectangle represents the value of the data element, and the color can represent additional attributes.

**Treemap**



## Interpretation:

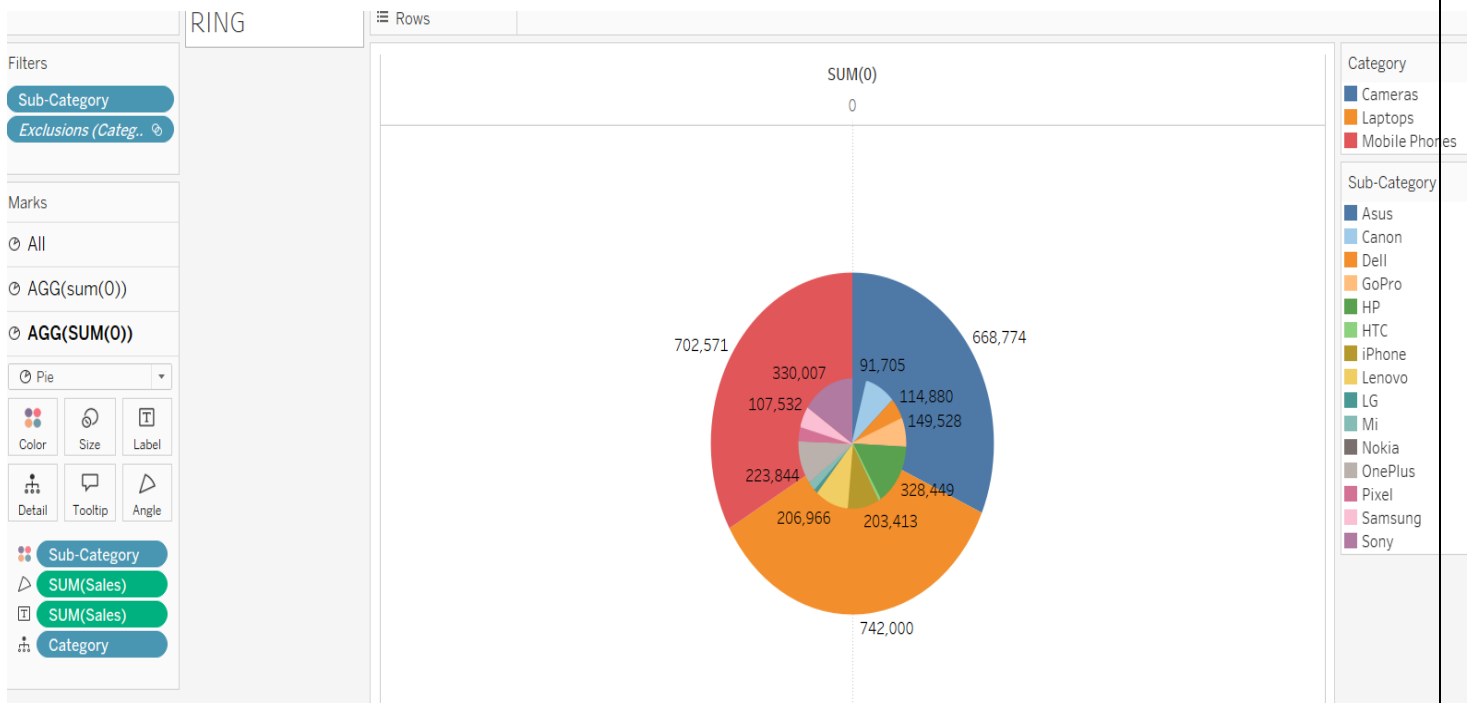
- **Sales:** The visualization helps identify the top-performing regions, countries, and product categories based on their size.
- **Profit Margin:** The color coding helps identify which categories are more profitable. For example, darker colors might represent higher profit margins.

## Additional Insights (Hypothetical):

- **Regional Performance:** You can quickly identify regions with the highest sales and profit margins.
- **Product Category Performance:** You can see which product categories are driving sales and profitability.
- **Country-Level Analysis:** You can drill down to the country level to identify specific countries contributing to high sales or profit margins.

## Ring Charts

Ring charts, also known as circular hierarchies, are a type of visualization that displays hierarchical data as concentric rings. Each ring represents a level in the hierarchy, and the size of the segments within each ring represents the proportion of the data at that level.



### About Dataset:

The Superstore dataset is a popular dataset often used for data analysis and visualization, particularly in the context of business intelligence and data science projects. It typically includes transactional data from a fictional retail store and includes various attributes such as:

1. **Order ID:** Unique identifier for each order.
2. **Order Date:** Date when the order was placed.
3. **Ship Date:** Date when the order was shipped.
4. **Customer ID:** Unique identifier for each customer.
5. **Customer Name:** Name of the customer.
6. **Segment:** The market segment (e.g., Consumer, Corporate, Home Office).
7. **Country:** Country of the customer.
8. **City:** City of the customer.
9. **State:** State of the customer.
10. **Postal Code:** Postal code of the customer.
11. **Product ID:** Unique identifier for each product.
12. **Product Name:** Name of the product.
13. **Category:** Category of the product (e.g., Furniture, Office Supplies, Technology).
14. **Sub-Category:** More specific category within the main category.
15. **Sales:** Total sales amount for the order.
16. **Quantity:** Number of units sold.
17. **Discount:** Discount applied to the order.
18. **Profit:** Profit earned from the order.

### Use Cases

- **Sales Analysis:** Understand sales trends over time, identify top-selling products, and analyze customer buying behavior.
- **Profitability Analysis:** Evaluate which products or categories are most profitable and which are underperforming.
- **Customer Segmentation:** Group customers based on their buying patterns, which can help in targeted marketing.
- **Supply Chain Management:** Analyze shipping times and logistics to improve delivery efficiency

### Purpose of the Dataset:

Here are three key purposes of the Superstore dataset:

1. **Business Analytics Practice:** It helps analysts and students develop skills in data analysis and business intelligence.
2. **Sales and Profitability Evaluation:** The dataset allows for the assessment of sales trends and profitability, helping businesses make informed decisions.
3. **Customer Insights and Segmentation:** It enables the analysis of customer behavior and segmentation for targeted marketing strategies.

## Key Parameters used in the Visualizations:

A typical Superstore sales dataset contains details of a retail store's sales performance, with the following key parameters:

- **Order ID:** Unique identifier for each sales order.
- **Product Category:** Category of the sold product (e.g., Office Supplies, Furniture, Technology).
- **Product Sub-category:** Specific subcategories under each product category.
- **Sales:** Total sales value for each order.
- **Profit:** Profit generated from each sale.
- **Discount:** Percentage discount applied on the sales order.
- **Quantity:** Number of products sold.
- **Customer Segment:** Market segment of the customer (e.g., Consumer, Corporate).
- **Ship Mode:** Mode of shipping for each order (e.g., Standard, Express).
- **Region:** Geographic region (e.g., East, West) where the order was placed.
- **Order Date:** Date when the order was placed.

LINK:- [https://public.tableau.com/views/PranavAss5/Treemap?:language=en-US&:sid=&:redirect=auth&:display\\_count=n&:origin=viz\\_share\\_link](https://public.tableau.com/views/PranavAss5/Treemap?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link)

## Conclusion:

Hierarchical visualizations are powerful tools for understanding complex data structures. By using techniques like treemaps and ring charts, we can visually represent hierarchical relationships, identify patterns, and make data-driven decisions.

### Key Points to Remember:

- **Treemaps:** Ideal for visualizing hierarchical data with a focus on the relative size of each category.
- **Ring Charts:** Suitable for showing the proportional distribution of data across different levels of a hierarchy.
- **Data Preparation:** Clean and organized data is crucial for effective visualization.
- **Color Coding:** Use color strategically to highlight specific patterns or trends.
- **Interactivity:** Incorporate interactive elements like tooltips and drill-down capabilities to enhance user experience.
- **Contextualization:** Provide context to your visualizations to help viewers understand the underlying data and insights.

By effectively utilizing hierarchical visualizations, you can transform complex data into meaningful insights that drive informed decision-making.

