Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

Department of CSE-ICB

A.Y. 2024-25

Class: B.E, Semester VII

IDA

Exp-7

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Roll No.: T001

Aim- Tableau for data presentation

Theory:

In a data presentation experiment using **Tableau**, the theoretical background focuses on understanding how data visualization improves the interpretability, comprehension, and decision-making process when working with complex datasets. Here are key components to cover in your theoretical framework:

1. Introduction to Tableau

Tableau is a powerful, user-friendly data visualization tool used for business intelligence, analytics, and data exploration. It enables users to convert raw data into interactive and shareable dashboards that provide actionable insights. Tableau is widely recognized for its ability to create intuitive, dynamic, and visually appealing charts, graphs, and maps.

2. Importance of Data Visualization

Data visualization is essential because it helps:

- **Simplify complex datasets**: Tableau uses graphical representations (charts, graphs, and dashboards) to make data patterns and trends more accessible.
- **Enhance data comprehension**: Visuals help people understand data more quickly and efficiently than raw numbers.

- **Support decision-making**: Well-designed visuals reveal critical insights that guide data-driven decisions.

Key theoretical support for data visualization can be drawn from **cognitive psychology** and **visual perception** theories, which state that people process visual information more effectively than text.

3. The Tableau Architecture

Tableau follows a client-server architecture comprising the following layers:

- **Data layer**: Connects to various data sources such as Excel, SQL databases, and cloud platforms.
- **Data engine**: A proprietary in-memory data engine that supports fast querying and analysis.
- **Presentation layer**: Creates and displays interactive visualizations and dashboards, allowing users to interact with the data.
- **Server and cloud components**: Facilitate sharing and collaboration across teams via Tableau Server or Tableau Cloud.

4. Key Features of Tableau for Data Presentation

- **Data Connectivity**: Tableau connects to numerous data sources, including SQL, Excel, cloud-based data (like Google Analytics), and Big Data systems like Hadoop.
- **Drag-and-drop interface**: Users can build visualizations with little or no programming knowledge using the drag-and-drop feature.
- **Interactivity**: Tableau allows for interactive filters, drill-downs, and dynamic dashboards.

- **Storytelling with Data**: Tableau's storytelling feature helps create a sequence of visualizations to narrate a story, guiding the audience through data insights.

5. Types of Visualizations in Tableau

Tableau offers several visualization types:

- **Bar Charts**: Best for comparing categorical data.
- **Line Charts**: Suitable for time series data.
- **Scatter Plots**: Used for showing relationships between two variables.
- **Heat Maps**: Provide a color-coded view to display trends across two dimensions.
- **Geographical Maps**: Represent data geographically, useful for location-based insights.
- **Dashboards**: Combine multiple visualizations into one view, offering comprehensive insight.

6. Data Presentation and Design Principles

Data visualization is not just aboutaesthetics but about communicating information effectively.Tableau's designs follow principles such as:

- **Clarity**: Avoid clutter by only including necessary visuals.
- **Emphasis**: Highlight key insights using color or size contrasts.
- **Consistency**: Use consistent chart types, scales, and formatting for easier comparison.
- **Simplicity**: Keep designs simple, ensuring the audience can quickly grasp the information.

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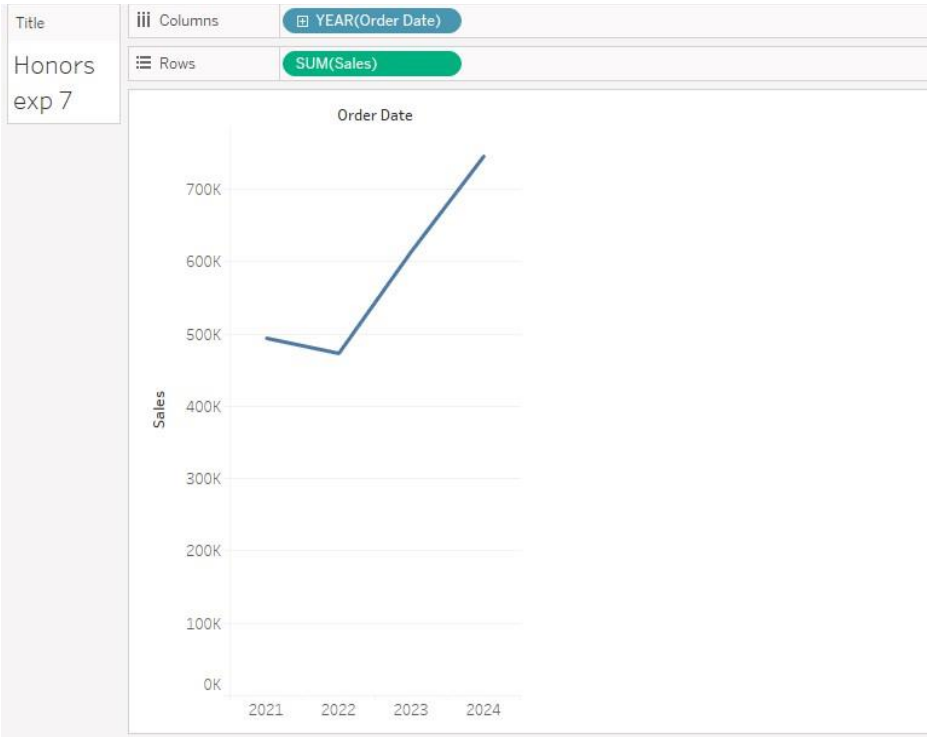
Output:



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Columns: Category
Rows: Country/Region, State/Province

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	British Columbia	1,925	91	747
	Manitoba	740	1,190	
	New Brunswick	160	66	
	Newfoundland and Labra..	515		
	Nova Scotia	233	149	
	Ontario	1,981	2,972	2,055
	Prince Edward Island	321	767	
	Quebec	730	2,188	909
	Saskatchewan	132		
United States	Alabama	6,332	4,209	8,969
	Arizona	13,525	10,006	11,751
	Arkansas	3,188	4,565	3,925
	California	156,065	142,352	159,271
	Colorado	13,243	7,899	10,966
	Connecticut	5,175	5,418	2,791
	Delaware	4,759	8,130	14,562
	District of Columbia	1,347	139	1,380
	Florida	22,987	19,519	46,968
	Georgia	8,321	26,716	14,059
	Idaho	2,595	950	837
	Illinois	28,275	19,908	31,984
	Indiana	11,497	15,735	26,333

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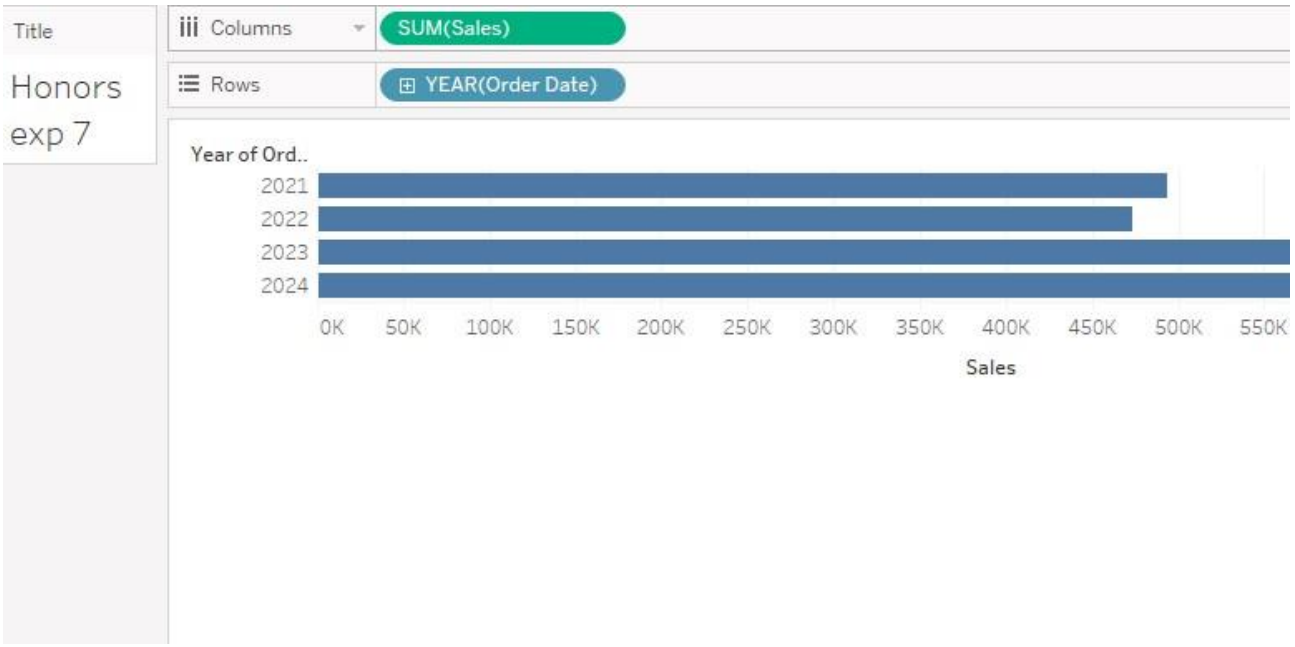

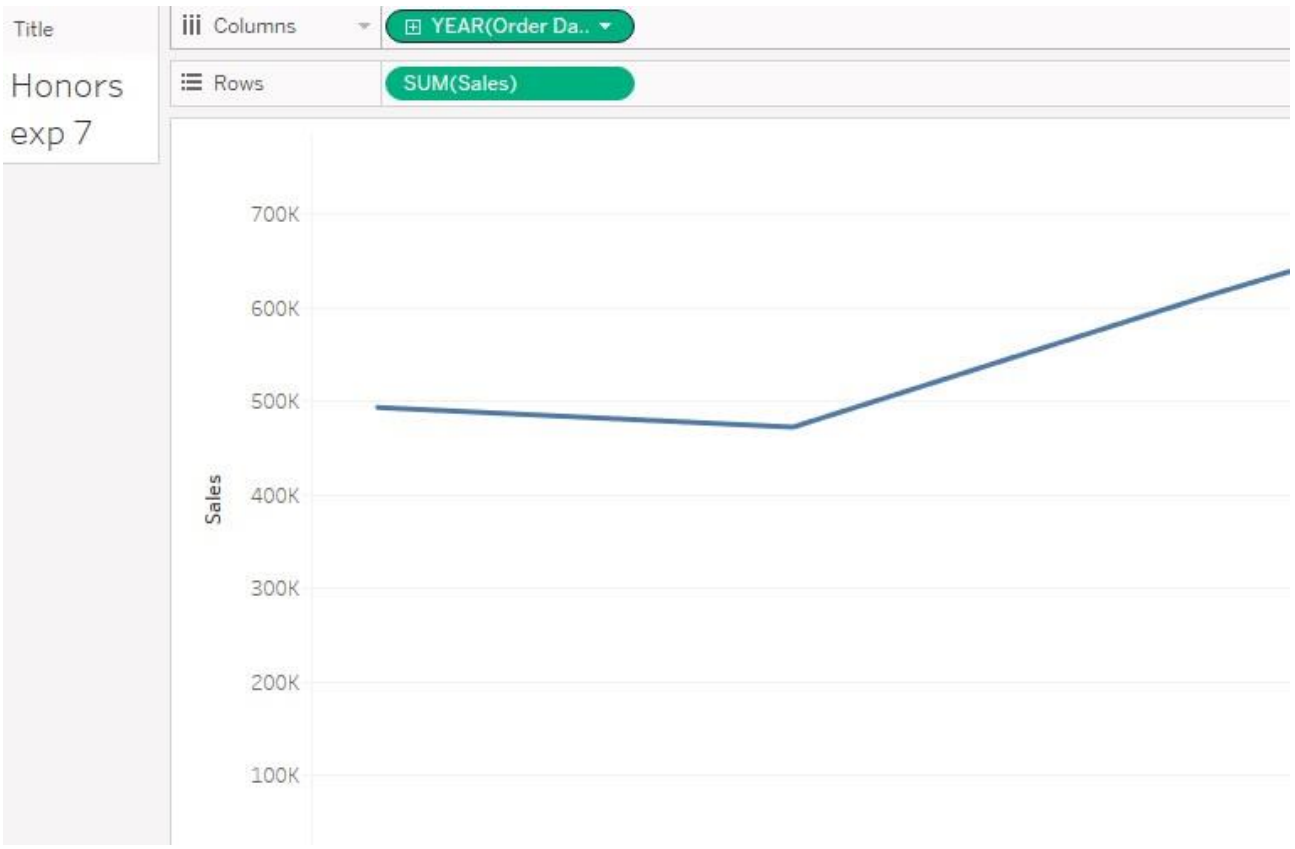

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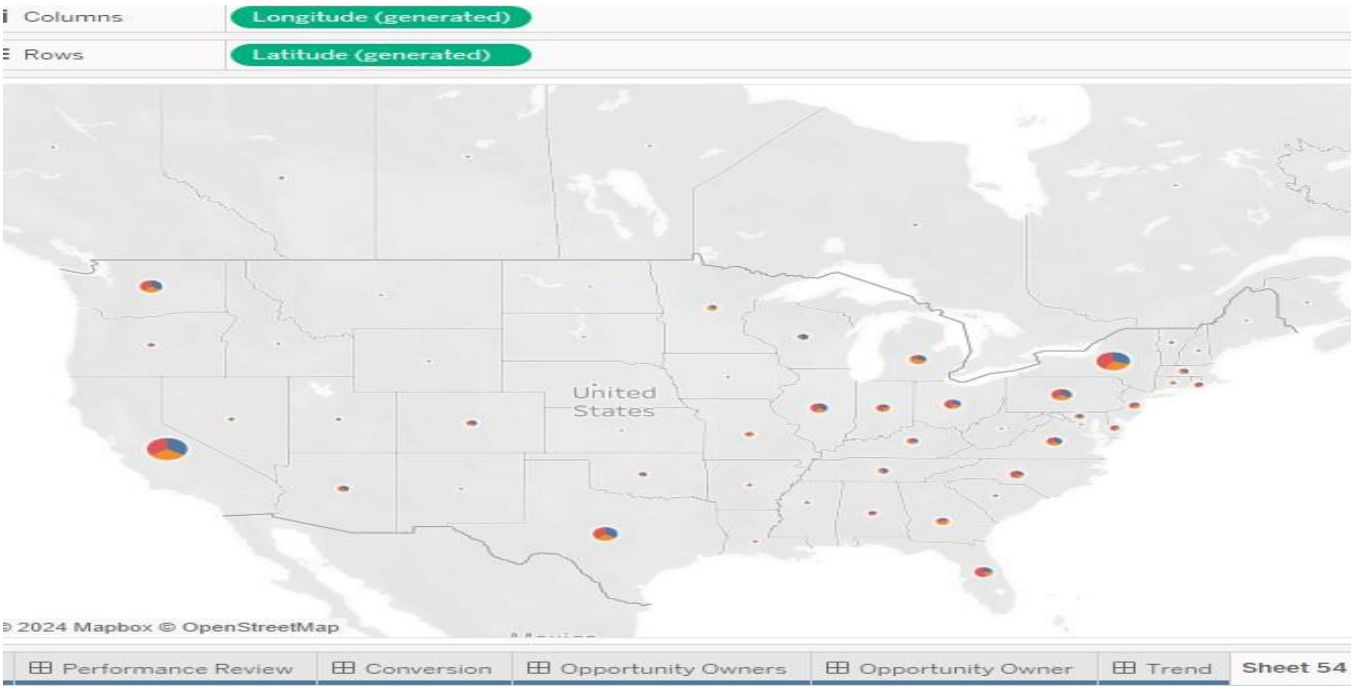

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Conclusion:

In conclusion, Tableau is a highly effective tool for creating dynamic, interactive visualizations from datasets, such as the inbuilt Sample - Superstore. By using its drag-and-drop interface, users can easily transform raw data into insightful charts and graphs. Key features like calculated fields, the Show Me panel, and dashboards enhance data analysis and presentation. Tableau simplifies complex data, making it accessible to both technical and non-technical users. Its flexibility in visual storytelling helps drive informed decision-making across various industries.

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