DAYANANDA SAGAR ACADEMY OF TECHNOLOGY AND MANAGEMENT

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

DATA VISUALIZATION LABORATORY MANUAL

Academic year 2024-2025 (Odd Semester)

Semester –I

Course code: **MAEC17**

DATA VISUALIZATION LABORATORY

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HOD-MCA

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Principal

Vision of the Institute

To be a Centre of excellence in education, research & training and to produce citizens with exceptional leadership qualities to serve national and global needs

Mission of the Institute

To achieve our objectives in an environment that enhances creativity, innovation and scholarly pursuits while adhering to our vision.

Vision of MCA Department

Nurture Continuous Learning through research and innovations in the field of Computer Science, Technology and Applications, to build competent professionals.

Mission of MCA Department

- Create a learning environment to motivate students to build strong technology skills.
- Promote value based ethical practices in all facets of learning
- Instill Entrepreneurial collaborative thinking through structured interventions and industry participation.

Program Education Outcome (PEO's):

PEO1: Analyze real life problems, design computing systems appropriate to its solutions that are technically sound, economically feasible and socially acceptable.

PEO2: Exhibit professionalism, ethical attitude, communication skills, team work in their profession and adapt to current trends by engaging in lifelong learning.

PEO3: Demonstrate Leadership and Entrepreneurship Skills by incorporating organizational goals.

Program Outcome (PO's):

PO1 (Foundation Knowledge): Apply knowledge of mathematics, programming logic and coding fundamentals for solution architecture and problem solving.

PO2 (Problem Analysis): Identify, review, formulate and analyze problems for primarily focusing on customer requirements using critical thinking frameworks.

PO3 (Development of Solutions): Design, develop and investigate problems with as an innovative approach for solutions incorporating ESG/SDG goals.

PO4 (Modern Tool Usage): Select, adapt and apply modern computational tools such as development of algorithms with an understanding of the limitations including human biases.

PO5 (Individual and Teamwork): Function and communicate effectively as an individual or a team leader in diverse and multidisciplinary groups. Use methodologies such as agile.

PO6 (Project Management and Finance): Use the principles of project management such as scheduling, work breakdown structure and be conversant with the principles of Finance for profitable project management.

PO7 (Ethics): Commit to professional ethics in managing software projects with financial aspects. Learn to use new technologies for cyber security and insulate customers from malware

PO8 (Life-long learning): Change management skills and the ability to learn, keep up with contemporary technologies and ways of working.

Program Specific Outcomes (PSO's):

PSO1: The graduates of the Program will have skills to develop, deploy and maintain applications for desktop, web, mobile, cloud, and cross platforms using modern tools and technologies.

PSO2: The graduates of the program analyze the societal needs to provide novel solutions through technological-based research.

Course Learning Objectives:

Sl No	Course Objectives
1	Understand the principles and importance of PowerBI and Tableau
2	Familiarize with the PowerBI and Tableau interface and its components
3	Learn how to clean, transform, and model data using PowerBI and Tableau tools
4	Learn how to import data from various sources into PowerBI and Tableau
5	Understand the principles of dashboard design

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	**Understand** the principles of effective data visualization and the importance of visual storytelling in data analysis.	L1	U/R
CO2	Apply the concepts of Power BI's and Tableau to clean, transform, and model data	L2	A
CO3	**Analyze** between various data visualization techniques and choose the most appropriate one for a given dataset or business scenario.	L3	AN
CO4	**Evaluate** the performance and efficiency of Power BI and Tableau dashboards and reports, identifying areas for optimization.	L4	E
CO5	**Design** and build customized, interactive dashboards that meet specific business needs.	L5	C

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-
CO3	-	3	-	-	-	-	-	-	-	-	-
CO4	-	-	3	-	-	-	-	-	-	3	-
CO5	-	-	-	-	3	-	-	3	-	-	3

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Continuous Assessment Tests (IAT)	
	IAT-1	IAT-2
	50 Marks	50 Marks
Apply	10	20
Analyze	10	10
Evaluate	10	10
Create	20	20

CIE Course Assessment Plan

CO's	Marks Distribution						Total Marks	Weightage
	Test 1			Test 2				
CO1	5	-	-	5	-	-	10	10%
CO2	10	-	10	-	--	-	20	20%
CO3	-	10	-	10	--	-	20	20%
CO4	10	-	10	-	10	-	30	30%
CO5	10	-	-	-	-	10	20	20%
Total	35	10	20	15	10	10	100	100

Computer Lab Rules and Regulations

DO's

- Come prepared to the Lab.
- Submit your Records to the faculty and sign in the Log Book on entering the Lab
- Observation books have to be brought for all the labs.
- Backlog exercises to be executed after completing regular exercises.
- Regularly attend all the labs
- Put the chairs back to its position before you leave.
- Treat all the devices with care and consideration.
- Behave in a responsible manner at all times and maintain silence.
- Before leaving the lab shut down the system and rearrange the chairs
- Keep your premises clean

DON'T

- Use Mobile phones and pen drives
- Move around in the lab during the lab session.
- Tamper System Files or Try to access the Server.
- Write Records in the Lab
- Change the system assigned to you without the notice of the Lab Staff.
- Write on the table or mouse pads.
- Do not install or download any software or modify or delete any system files on any lab computers.

COURSE PLAN

List of Programs

Power BI

Program 1: Global Superstore Sales

1. Create a bar chart to show top 5 products based on selling price
2. Create a bar chart to show the bottom 5 products based on selling price
3. Create a column chart to show the top 10 customers
4. Create a KPI chart for all of your continuous variables
5. Create a donut chart for sales by market
6. Create a donut chart for sales by segment
7. Create a map chart to show the sum of sales by region

Step 1: Import Global Superstore Sales dataset into Power BI

- Open Power BI Desktop
- Click on Get Data and select the appropriate data source (Excel, CSV, Database, etc.)
- Load the dataset into Power BI
- Perform any additional transformations, if necessary

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- Donut Chart
- Map Chart
- Bar Chart
- Column Chart
- KPIs

Data Selection for Visuals

Visual	Data Selection
KPI Cards	Total Sales Total Quantity
Bar Chart	Top 5 profit making products
Bar Chart	Bottom 5 profit making products
Column Chart	Top 10 Customers
Donut Chart	Sales by Market Sales by Segment
Map Chart	Sales by Region

Add Filters and Interactivity

- Use slicers for users to filter by

- Ensure visuals are interactive so users can drill down or click to get more details

Step 3: Design the layout and Aesthetics

- Choose a theme for consistent colors and font styles
- Arrange the visuals logically so users can easily understand the flow of information
- Provide clear titles and axis labels to make the dashboard user-friendly

By following these steps, you will have a comprehensive Power BI dashboard that provides valuable insights into customer segmentation, forecasting, sales overview and so on.

Program 2: Amazon Prime Video

Analysis of Amazon Prime Dataset:

1. Create a Donut chart to show the percentage of movie and tv shows
2. Create an area chart to shows by release year and type
3. Create a horizontal bar chart to show Top 10 genre
4. Create a map to display total shows by country
5. Create a text sheet to show the description of any movie/movies.
6. Build an interactive Dashboard.

Step 1: Import Amazon Prime Video dataset into Power BI

- Open Power BI Desktop
- Click on Get Data and select the appropriate data source (Excel, CSV, Database, etc.)
- Load the dataset into Power BI
- Perform any additional transformations, if necessary

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- Donut Chart
- Map Chart
- Bar Chart for genre distribution
- Line Chart for ratings by release year
- KPIs for key metrics

Data Selection for Visuals

Visual	Data Selection
KPI Cards	Total Titles Total Ratings Total Genres Total Directors Start Year / End Year
Bar Chart	Genres by total shows
Bar Chart	Ratings by total shows
Donut Chart	Movies and TV Shows
Map Chart	Total shows by country

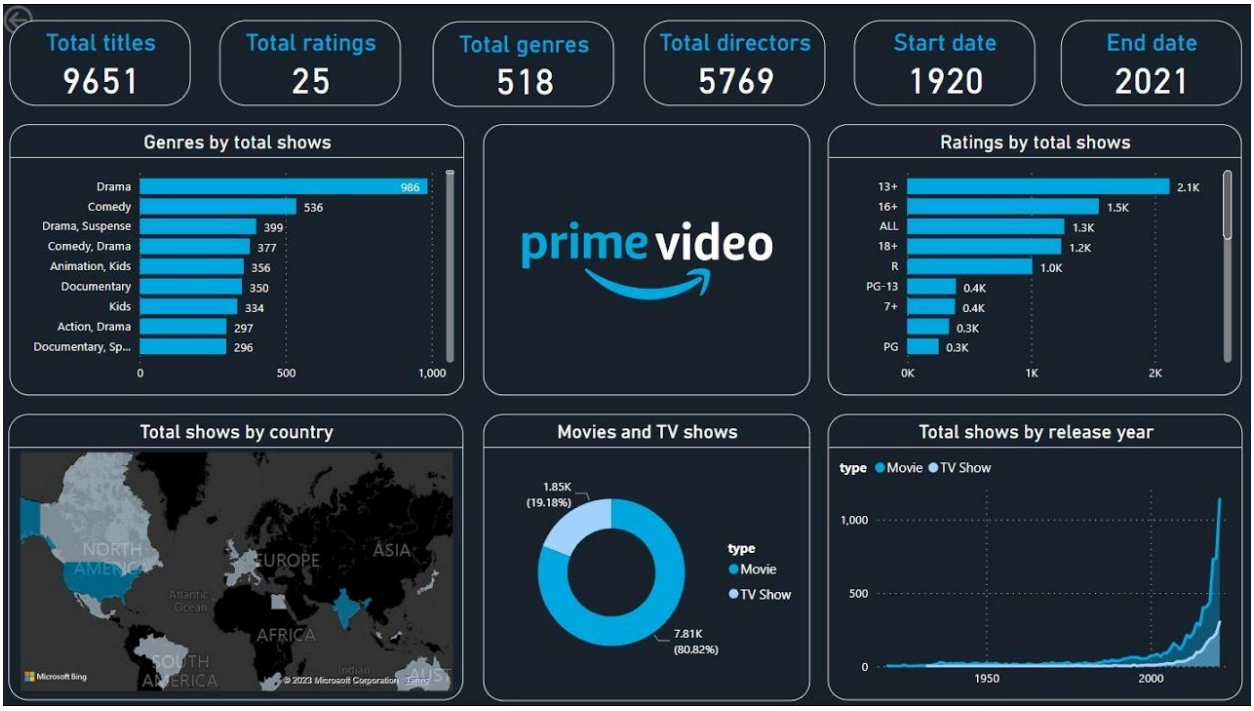
Add Filters and Interactivity

- Use slicers for users to filter by
- Ensure visuals are interactive so users can drill down or click to get more details

Step 3: Design the layout and Aesthetics

- Choose a theme for consistent colors and font styles
- Arrange the visuals logically so users can easily understand the flow of information
- Provide clear titles and axis labels to make the dashboard user-friendly

By following these steps, you'll create an insightful and interactive Amazon Prime Video Dataset Dashboard in Power BI. This will allow you to explore trends, ratings, genres, and other important metrics about the content available on Amazon Prime Video.



Program 3: Car Price Analysis

Design a dashboard for Car Price Data Analysis using Power BI filters

Step 1: Import Car Price dataset into Power BI

- Open Power BI Desktop
- Click on Get Data and select the appropriate data source (Excel, CSV, Database, etc.)
- Load the dataset into Power BI
- Perform any additional transformations, if necessary

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- Clustered Column Chart
- Donut Chart
- Tree Map
- Stacked Bar Chart
- Slicers

Data Selection for Visuals

Visual	Data Selection
Clustered Column Chart	x-axis: Car Name y-axis: Car Price
Donut Chart	Legend: Car Name Values: Horsepower
Tree Map	Category: Car Name Values: Highwaympg
Stacked Bar Chart	x-axis: Wheelbase y-axis: Car Name Legend: Stroke
Slicer	Field: Car Name Slicer Settings: Vertical List

Add Filters and Interactivity

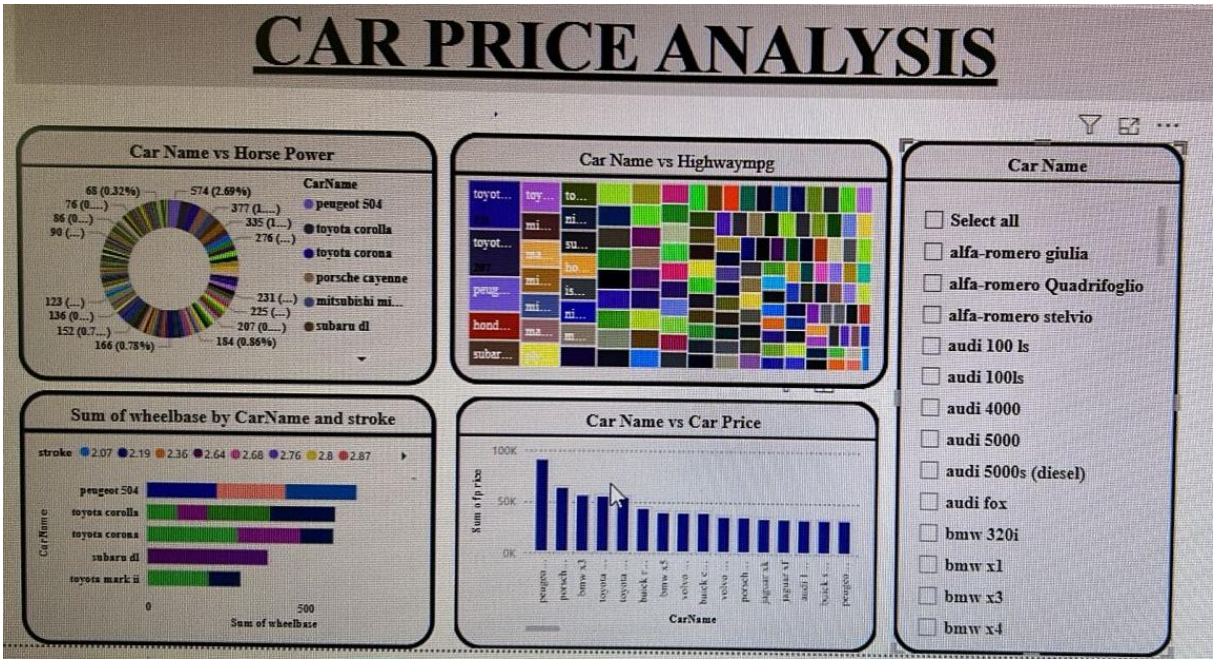
- Use slicers for users to filter
- Ensure visuals are interactive so users can drill down or click to get more details

Step 3: Design the layout and Aesthetics

- Choose a theme for consistent colors and font styles
- Arrange the visuals logically so users can easily understand the flow of information

- Provide clear titles and axis labels to make the dashboard user-friendly

By following these steps, you will have a comprehensive Power BI dashboard that provides valuable insights into car price trends, comparisons, and forecasts, empowering users to make data-driven decisions.



Program 4:

IPL Dataset: Design an interactive dashboard for IPL Matches Dataset

a. Create a calculated field to display match winner for each season in KPI.
b. Find out orange cap holder by selecting the appropriate filter & display in KPI.
c. Find out purple cap holder by selecting the appropriate filter & display in KPI.
d. Find out the count of tournament sixes by selecting the appropriate filter & display in KPI.
e. Find out the count of tournament fours by selecting the appropriate filter & display in KPI.
f. Create a horizontal bar chart to display matches won based on toss decision.
g. Create a donut chart to display the winning percentage based on toss decision.

Step 1: Import IPL Dataset into Power BI

- Open Power BI Desktop
- Click on Get Data and select the appropriate data source (Excel, CSV, Database, etc.)
- Load the dataset into Power BI
- Perform any additional transformations, if necessary

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- KPIs for Key Metrics
- Pie Chart
- Donut Chart
- Stacked Bar Chart
- Bar Chart

Data Selection for Visuals

Visual	Data Selection
KPIs	Total Matches played Total Runs Scored Total Wickets taken Total wins by team
Pie chart	Matches won by wickets or runs
Donut chart	Matches won by toss decision
Stacked bar chart	Matches won by venue
Bar chart	Total wins for a team

Add Filters and Interactivity

- Use slicers for users to filter by years/seasons
- Ensure visuals are interactive so users can drill down or click to get more details

Step 3: Design the layout and Aesthetics

- Choose a theme for consistent colors and font styles
- Arrange the visuals logically so users can easily understand the flow of information
- Provide clear titles and axis labels to make the dashboard user-friendly

By following these steps, you'll create a comprehensive and interactive IPL Dataset Dashboard in Power BI. You can analyze team performances, player statistics, match results, and many more aspects of the IPL tournaments. This dashboard will provide valuable insights into trends, key players, and team dynamics.

Tableau

Program 1:

TFL (Transport For London) Bus Safety:

1. Create a bar chart on boroughs field to visualize the trend in the count.
2. Create a line chart for date of incidence for each month in a 1 quarter, comment on possibilities and suitability of different charts for this timeline.
3. In above question, apply formatting to display the first letter of the month on X-axis.
4. Create tree maps of all the data fields except date & year and comment on significance of tree map.
5. Create an interactive dashboard for the above data.

Step 1: Import TFL Bus Safety Dataset into Tableau

- Open Tableau Desktop.
- Click on File > Open or Data > Connect to Data.
- Select the file format you are using (e.g., Excel, CSV, Google Sheets).
- Browse and select the TFL bus safety dataset.
- Click Open to load the dataset into Tableau.

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

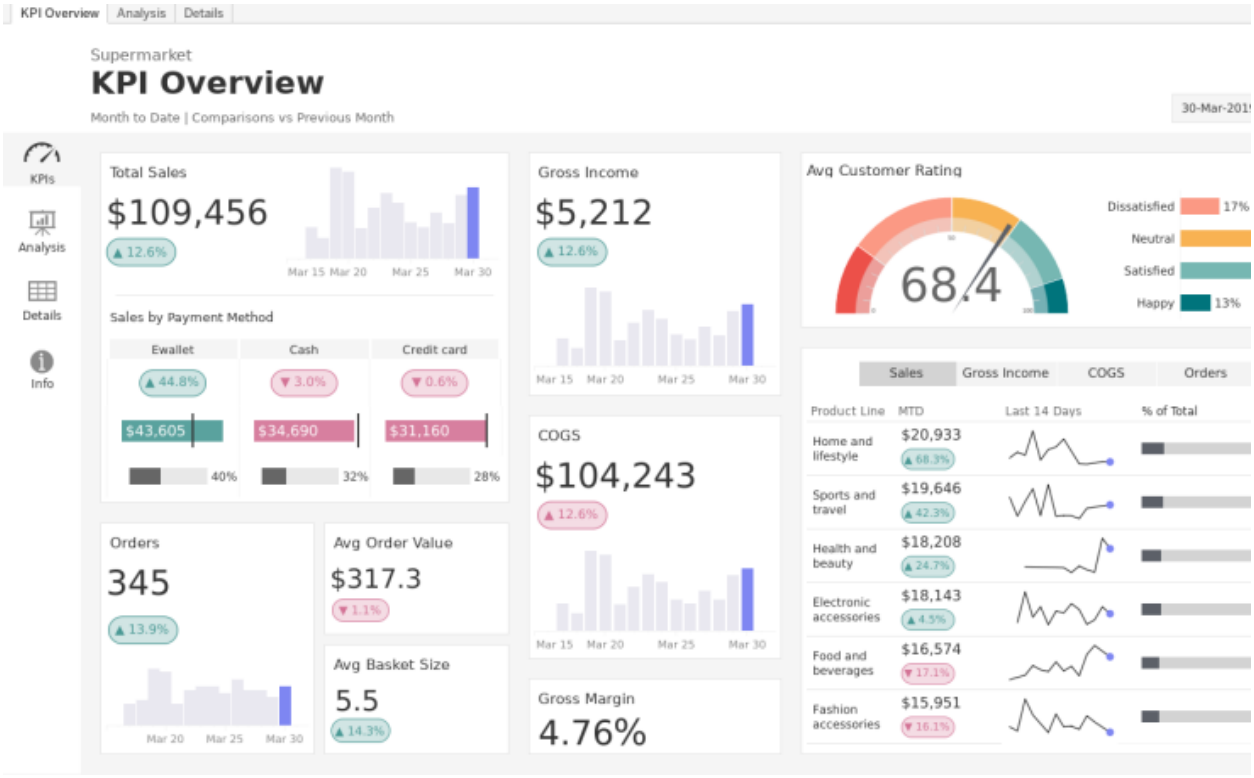
- Incident Trends Over Time (Line Chart)
    - Drag Date of Incident to the Columns shelf.
    - Drag Incident ID (or a count of incidents) to the Rows shelf.
    - Change the Date of Incident field to a Month/Year (to show monthly or yearly trends).
    - Select the chart type as Line Chart.
- Incident Severity by Bus Route (Bar Chart)
    - Drag Bus Route Number to the Columns shelf.
    - Drag Incident ID to the Rows shelf.
    - Add Severity to the Color shelf to differentiate severity levels (e.g., color-code for minor, moderate, and severe incidents).
    - Sort the chart by the number of incidents or severity.
- Heatmap of Incidents by Location (Map)
    - Drag Latitude and Longitude (if your dataset includes them) to the Rows and Columns shelves.
    - Convert the field to Latitude and Longitude to make a map.
    - Drag Incident ID to the Size or Color shelf to indicate the concentration of incidents.
    - You can adjust the Map Style (Standard, Satellite, Streets) for better clarity.
- Bus Route Safety Ranking (Bar Chart or Tree Map)

    - Create a bar or tree map showing Bus Route Number on the Rows and Count of Incident ID or Severity on the Columns.
    - Sort by the count of incidents in descending order to highlight routes with the highest number of incidents.
- Incident Distribution by Severity (Pie Chart)
    - Drag Severity to the Rows shelf.
    - Drag Incident ID to the Columns shelf.
    - Change the chart type to Pie to show the proportion of each severity level.
- Casualties by Incident Type (Bar Chart)
    - Drag Incident Type to the Columns shelf.
    - Drag Casualties (or create a calculated field if casualties are spread across multiple columns) to the Rows shelf.
    - Display the total number of casualties per incident type.

Step 3: Assemble the Dashboard

- Go to the Dashboard View:
    - Click on Dashboard > New Dashboard.
- Drag and Drop Visualizations:
    - Drag your individual sheets (visualizations) from the Sheets pane onto the dashboard workspace.
    - Organize them logically, ensuring your dashboard is easy to read and understand. You might want to position high-level views like trends at the top and more granular data (e.g., location heatmaps) toward the bottom.
- Add Filters and Slicers:
    - Add filters to allow users to focus on specific bus routes, severity levels, or incident types. Drag filters (e.g., Bus Route Number, Severity) to the dashboard for interactive filtering.
- Enhance Interactivity:
    - Use Actions (under Dashboard > Actions) to create interactive features. For example, you can add a filter action that allows users to click on a bar in the bar chart and filter the map based on the selected bus route or severity.
- Format the Dashboard:
    - Customize the dashboard's appearance (e.g., adding titles, adjusting fonts, and applying color schemes) to match the context of TFL and ensure clarity.

By following these steps, you can create a comprehensive TFL Bus Safety Dashboard in Tableau that will allow you to monitor and analyze bus-related safety incidents across London. This dashboard can provide actionable insights for improving bus safety, responding to trends, and identifying high-risk areas or routes.


KPI Overview
Analysis
Details
Supermarket
KPI Overview
Month to Date | Comparisons vs Previous Month
30-Mar-201
KPIs
Analysis
Details
Info
Total Sales
$109,456
▲ 12.6%
Mar 15 Mar 20 Mar 25 Mar 30
Sales by Payment Method
Ewallet
Cash
Credit card
▲ 44.8%
▼ 3.0%
▼ 0.6%
$43,605
$34,690
$31,160
40%
32%
28%
Gross Income
$5,212
▲ 12.6%
Mar 15 Mar 20 Mar 25 Mar 30
COGS
$104,243
▲ 12.6%
Mar 15 Mar 20 Mar 25 Mar 30
Avg Customer Rating
68.4
Dissatisfied 17%
Neutral
Satisfied
Happy 13%
Sales
Gross Income
COGS
Orders
Product Line
MTD
Last 14 Days
% of Total
Home and lifestyle
$20,933
▲ 68.3%
Sports and travel
$19,646
▲ 42.3%
Health and beauty
$18,208
▲ 24.7%
Electronic accessories
$18,143
▲ 4.5%
Food and beverages
$16,574
▼ 17.1%
Fashion accessories
$15,951
▼ 16.1%
Orders
345
▲ 13.9%
Mar 20 Mar 25 Mar 30
Avg Order Value
$317.3
▼ 1.1%
Avg Basket Size
5.5
▲ 14.3%
Gross Margin
4.76%

Program 2:

GDP dataset:

1. Visualize the countries data given in the dataset with country name using symbol maps.
2. Create a bar graph to compare GDP of Belgium between 2006 – 2022.
3. Using pie chart, visualize the GDP of India, Nepal, Romania, South Asia, Singapore by the year 2010.
4. Visualize the countries Bhutan & Costa Rica competing in terms of GDP.
5. Create a scatter plot or circle views of GDP of Mexico, Algeria, Fiji, Estonia from 2004 to 2006.
6. Build an interactive dashboard.

Step 1: Import GDP Dataset into Tableau

- Open Tableau Desktop.
- Click on File > Open or Data > Connect to Data.
- Select the file format you are using (e.g., Excel, CSV, Google Sheets).
- Browse and select the GDP dataset.
- Click Open to load the dataset into Tableau.

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

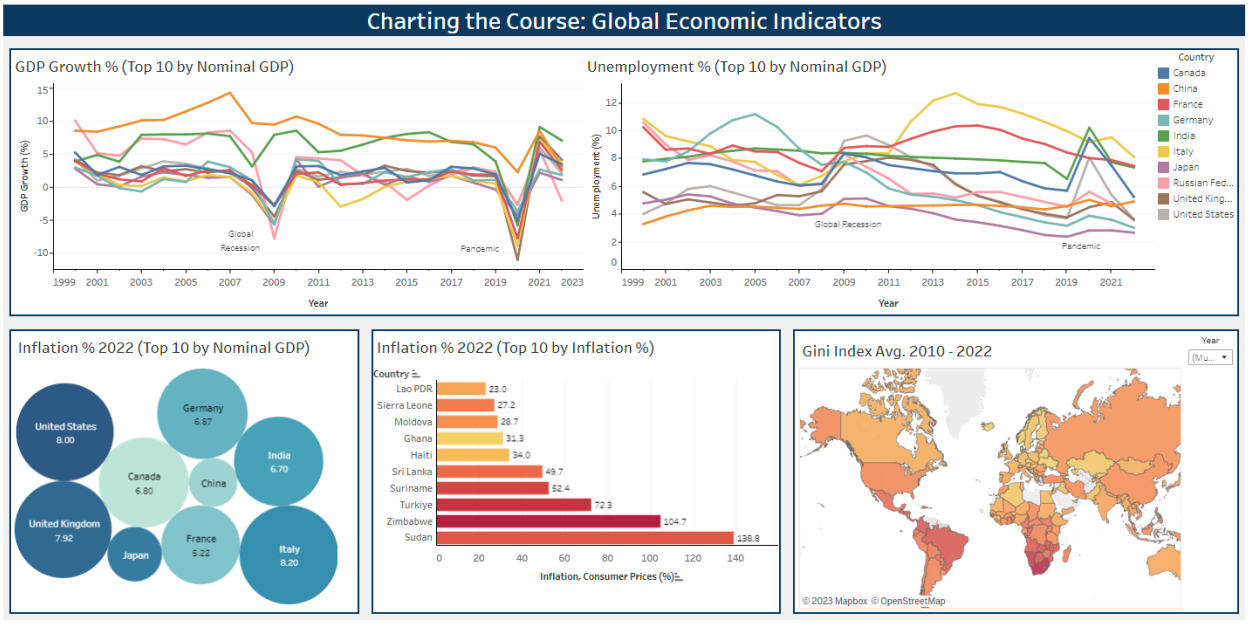
- Global GDP Trend (Line Chart)
  - Drag Year to the Columns shelf.
  - Drag GDP (Nominal) to the Rows shelf.
  - Change the chart type to Line Chart.
  - Optionally, use Country as a filter to look at individual countries or regions.
- GDP by Country/Region (Bar Chart or Tree Map)
  - Drag Country to the Rows shelf.
  - Drag GDP (Nominal) to the Columns shelf.
  - Sort by GDP to highlight the countries with the highest and lowest GDP.
  - Change the chart type to a Bar Chart or Tree Map for better visual impact.
- GDP per Capita by Country (Map)
  - Drag Country to the Rows shelf.
  - Drag GDP per Capita to the Color shelf.
  - Tableau will automatically recognize country names and generate a map view.
  - You can adjust the map style (Standard, Satellite, Streets) for clarity.
- GDP Growth Rate (Bar or Line Chart)
  - Drag Year to the Columns shelf.
  - Drag GDP Growth Rate to the Rows shelf.

    - Set the chart type to Line or Bar Chart.
    - Optionally, add Country to the Color shelf to differentiate countries.
- GDP Comparison (Stacked Bar Chart)
    - Drag Year to the Columns shelf.
    - Drag GDP (Nominal) to the Rows shelf.
    - Drag Country to the Color shelf to differentiate regions/countries.
    - Set the chart type to Stacked Bar Chart for an aggregated comparison.
- GDP Distribution by Country (Pie Chart or Bar Chart)
    - Drag Country to the Rows shelf.
    - Drag GDP (Nominal) to the Columns shelf.
    - Set the chart type to Pie Chart (or Bar Chart for a better comparison).
    - Adjust the size to reflect GDP proportions.
- Inflation Rate Comparison (Bar or Line Chart)
    - Drag Country to the Rows shelf.
    - Drag Inflation Rate to the Columns shelf.
    - Set the chart type to Bar Chart.
    - This will allow you to analyze inflation trends across different economies.

Step 3: Assemble the Dashboard

- Go to the Dashboard View:
    - Click on Dashboard > New Dashboard.
- Drag and Drop Visualizations:
    - Drag your individual worksheets (e.g., GDP Trend, GDP by Country, etc.) into the dashboard workspace.
    - Arrange them logically so that users can easily understand the flow of information.
    - Typically, the main chart (e.g., global GDP trend) would be at the top, while country-specific data or comparisons would be below or beside it.
- Add Filters and Slicers
    - Add filters to allow users to focus on specific countries, years, or regions. For example, add a Country filter to select countries of interest.
    - You can drag filters into the dashboard and make them interactive.
- Enhance Interactivity:
    - Create Actions for interactivity. For example, clicking on a country in one chart could filter or highlight data in other charts.
    - Use Dashboard Actions to link different sheets, allowing users to click on data points to drill down or filter results dynamically.
- Formatting:
    - Adjust the colors, fonts, and labels to make the dashboard clear and easy to read.
    - Add titles, descriptions, and legends to help users interpret the data.

By following these steps, you can create a comprehensive GDP Dashboard in Tableau that helps visualize and analyze the GDP of countries and regions. This dashboard will provide valuable insights into the economic performance of various nations, GDP growth trends, and country-specific comparisons.



Program 3:

Customer Analysis dataset:

1. Create a map (fill the map) to spot the special trends to show the state which has the highest revenue.
2. Create a line chart to show the revenue based on the month of the year.
3. Create a bin of size 10 for the age measure to create a new 3 dimension to show the revenue.
4. Create a donut chart view to show the percentage of revenue per region by creating zero access in the calculated field.
5. Create a bar chart to compare female & male revenue based on product category.
6. Create a calculated field to show the average revenue per state & display profitable & non-profitable state.
7. Build a dashboard.

Step 1: Import Customer Analysis Dataset into Tableau

- Open Tableau Desktop.
- Click on File > Open or Data > Connect to Data.
- Select the file format you are using (e.g., Excel, CSV, Google Sheets).
- Browse and select the Customer Analysis dataset.
- Click Open to load the dataset into Tableau.

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- Customer Segmentation (Bar Chart or Tree Map)
  - Drag Customer ID to the Rows shelf and Revenue to the Columns shelf.
  - Apply segmentation using Region or Customer Age Group.
  - Set the chart type to Bar Chart or Tree Map to show which segments contribute the most revenue.
- Total Revenue Over Time (Line Chart)
  - Drag Signup Date or Order Date to the Columns shelf.
  - Drag Revenue to the Rows shelf.
  - Set the chart type to Line Chart to visualize how revenue has changed over time.
- Customer Distribution by Region (Map or Bar Chart)
  - Drag Region/Location to the Rows shelf.
  - Drag Customer ID (count of customers) to the Columns shelf.
  - You can create a Map if the data contains latitude and longitude or use a Bar Chart to show the customer count by region.
- Customer Age Distribution (Histogram or Bar Chart)
  - Drag Age to the Columns shelf.

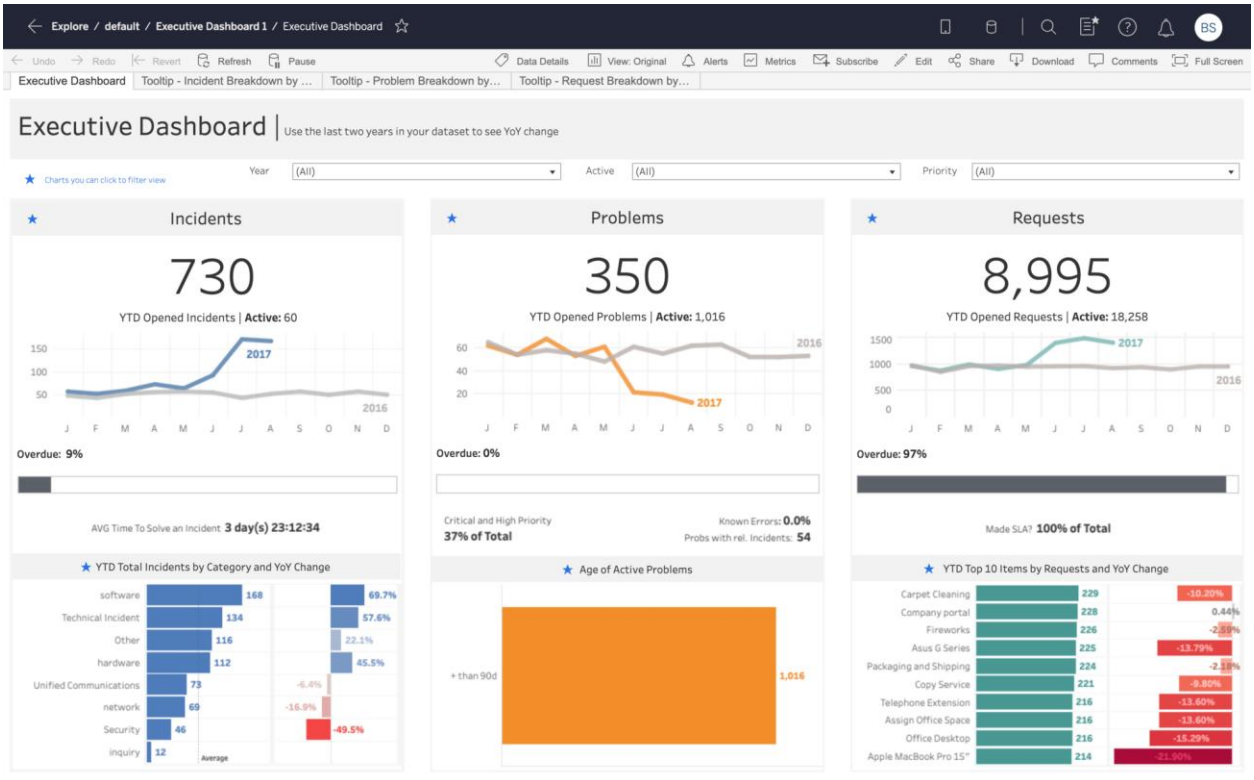
    - Drag Customer ID to the Rows shelf.
    - Set the chart type to Histogram or Bar Chart to show the distribution of customer ages.
- Customer Lifetime Value (CLV) by Customer (Bar Chart or Tree Map)
    - Drag Customer ID to the Rows shelf.
    - Drag Customer Lifetime Value (CLV) to the Columns shelf.
    - Sort the data to highlight the top customers in terms of CLV.
- Customer Satisfaction (Pie Chart or Bar Chart)
    - Drag Customer Satisfaction Score to the Columns shelf.
    - Drag Customer ID to the Rows shelf.
    - Set the chart type to Pie Chart to visualize satisfaction distribution.
- Purchase Frequency by Customer (Bar or Scatter Plot)
    - Drag Customer ID to the Rows shelf.
    - Drag Purchase Frequency to the Columns shelf.
    - You can create a Scatter Plot to identify patterns or a Bar Chart for frequency distribution.

Step 3: Assemble the Dashboard

- Go to the Dashboard View:
    - Click on Dashboard > New Dashboard.
- Drag and Drop Visualizations:
    - Drag your individual sheets (e.g., Customer Segmentation, Revenue Over Time, Customer Distribution) onto the dashboard canvas.
    - Arrange the visualizations logically:
        - Place high-level metrics like Total Revenue or Customer Lifetime Value at the top.
        - Include more detailed insights (e.g., Age Distribution or Satisfaction Scores) in the middle.
        - Use Maps or Tree Maps for geographic and categorical insights.
- Add Filters and Slicers:
    - Add filters like Region, Age Group, Product Categories, or Customer Segments to allow users to drill down into specific segments of the data.
    - Drag filters like Age Group, Region, or Purchase Frequency to the dashboard for interactivity.
- Enhance Interactivity:
    - Use Actions (under Dashboard > Actions) to create interactivity.
    - For example, clicking on a region in the map or bar chart could filter the other visualizations to show data specific to that region.
- Format the Dashboard:
    - Adjust the colors, fonts, and labels to make the dashboard visually appealing.

- Add titles for each visualization and a main title for the entire dashboard (e.g., "Customer Analysis Dashboard").
- Ensure the dashboard is easy to navigate with clear labels and visual hierarchy.

By following these steps, you will have created a Customer Analysis Dashboard in Tableau, which can help your organization gain valuable insights into customer behavior, purchasing trends, and customer segmentation. This dashboard will allow decision-makers to identify high-value customers, track purchasing patterns, and optimize marketing strategies.



Program 4:

Amazon Prime Dataset:

1. Create a Donut chart to show the percentage of movie and tv shows
2. Create an area chart to shows by release year and type.
3. Create a horizontal bar chart to show Top 10 genre.
4. Create a map to display total shows by country.
5. Create a text sheet to show the description of any movie/movies.
6. Build an interactive Dashboard.

Step 1: Import Amazon Prime Dataset into Tableau

- Open Tableau Desktop.
- Click on File > Open or Data > Connect to Data.
- Select the file format you are using (e.g., Excel, CSV, Google Sheets).
- Browse and select the Amazon Prime dataset.
- Click Open to load the dataset into Tableau.

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- Total Views by Category (Bar Chart)
    - Drag Category/Genre to the Rows shelf.
    - Drag Number of Views to the Columns shelf and set it to Sum.
    - Set the chart type to Bar Chart to display the total views by category.
- Average User Rating by Video (Bar Chart)
    - Drag Title to the Rows shelf.
    - Drag User Ratings to the Columns shelf and set it to Average.
    - Sort the ratings and set the chart type to Bar Chart.
- Views by Region (Map or Bar Chart)
    - Drag Region to the Rows shelf.
    - Drag Number of Views to the Columns shelf and set it to Sum.
    - You can use a Map if you have longitude and latitude data or a Bar Chart to show the total views by region.
- Total Views Over Time (Line Chart)
    - Drag Watch Date to the Columns shelf.
    - Drag Number of Views to the Rows shelf and set it to Sum.
    - Set the chart type to Line Chart to track views over time.
- Views by Device Type (Pie Chart or Bar Chart)
    - Drag Device Type to the Rows shelf.
    - Drag Number of Views to the Columns shelf and set it to Sum.
    - Set the chart type to Pie Chart or Bar Chart to display the proportion of views per device.

- Views per Subscription Type (Bar Chart)
    - Drag Subscription Type to the Rows shelf.
    - Drag Number of Views to the Columns shelf and set it to Sum.
    - Set the chart type to Bar Chart.
- Video Duration vs. Views (Scatter Plot)
    - Drag Duration to the Columns shelf.
    - Drag Number of Views to the Rows shelf.
    - Set the chart type to Scatter Plot to visualize how video length correlates with views.
- User Engagement by Age Group (Bar Chart or Pie Chart)
    - Drag Age Group to the Rows shelf.
    - Drag Number of Views to the Columns shelf and set it to Sum.
    - Set the chart type to Bar Chart or Pie Chart to show user engagement across different age groups.

Step 3: Assemble the Dashboard

- Go to the Dashboard View:
    - Click on Dashboard > New Dashboard.
- Drag and Drop Visualizations:
    - Drag your individual sheets (e.g., Total Views by Category, Views over Time, Views by Device) onto the dashboard canvas.
    - Arrange the visualizations in a clean, logical order.
- Add Filters and Slicers:
    - Add filters like Category/Genre, Region, Device Type, Subscription Type, and Age Group to allow users to drill down into specific segments of the data.
    - You can drag filters into the dashboard for interactivity, allowing users to filter the visualizations by these dimensions.
- Enhance Interactivity:
    - Use Dashboard Actions to create interactivity. For example, clicking on a video title in one chart could filter the other visualizations to show data specific to that video.
    - You can create highlight actions or filter actions to make the dashboard more engaging.
- Format the Dashboard:
    - Adjust colors, fonts, and labels to ensure clarity and readability.
    - Add titles and legends where necessary to make the dashboard easy to interpret.
    - Ensure that the dashboard is visually appealing and user-friendly.

By following these steps, you will create an insightful Amazon Prime Video Dashboard in Tableau, which will help analyze user engagement, content popularity, and trends on the

platform. This dashboard is useful for business stakeholders to make data-driven decisions about content strategy, marketing, and user retention.

Program 5:

HR Dataset:

1. Create KPI to show employee count, attrition count, attrition rate, attrition count, active employees, and average age.
2. Create a Lollipop Chart to show the attrition rate based on gender category.
3. Create a pie chart to show the attrition percentage based on Department Category
4. Create a bar chart to display the number of employees by Age group,
5. Create a highlight table to show the Job Satisfaction Rating for each job role based on employee count.
6. Create a horizontal bar chart to show the attrition count for each Education field
7. Create multiple donut chart to show the Attrition Rate by Gender for different Age group.
8. Build a dashboard.

Step 1: Import HR Dataset into Tableau

- Open Tableau Desktop.
- Click on File > Open or Data > Connect to Data.
- Select the file format you are using (e.g., Excel, CSV, Google Sheets).
- Browse and select the HR dataset.
- Click Open to load the dataset into Tableau.

Step 2: Build Visualizations

Visual Selection: Choose appropriate visuals for the analysis

- Total Employees by Department (Bar Chart)
    - Drag Department to the Rows shelf.
    - Drag Employee ID to the Columns shelf and set it to Count.
    - Set the chart type to Bar Chart to display the number of employees per department.
- Gender Distribution (Pie Chart)
    - Drag Gender to the Rows shelf.
    - Drag Employee ID to the Columns shelf and set it to Count.
    - Set the chart type to Pie Chart to show the proportion of male, female, and other gender categories.
- Employee Age Distribution (Histogram or Bar Chart)
    - Drag Age to the Columns shelf.
    - Drag Employee ID to the Rows shelf and set it to Count.
    - Set the chart type to Histogram or Bar Chart to show how employees are distributed across age ranges.
- Employee Turnover Rate (Line Chart or Bar Chart)

    - Drag Hire Date to the Columns shelf.
    - Drag Employee Status to the Rows shelf (filter out active employees).
    - Set the chart type to Line Chart to show trends in turnover over time.
    - Optionally, you can calculate Turnover Rate by creating a calculated field.
- Salary Distribution by Department (Box Plot or Bar Chart)
    - Drag Department to the Rows shelf.
    - Drag Salary to the Columns shelf.
    - Set the chart type to Box Plot to show the salary range and median salary per department.
- Absenteeism by Employee (Scatter Plot)
    - Drag Employee ID to the Rows shelf.
    - Drag Absenteeism to the Columns shelf.
    - Optionally, you can drag Tenure or Performance Score to the Color or Shape shelf to analyze absenteeism across different factors.
    - Set the chart type to Scatter Plot.
- Employee Performance Distribution (Bar Chart or Box Plot)
    - Drag Performance Score to the Columns shelf.
    - Drag Employee ID to the Rows shelf and set it to Count.
    - Set the chart type to Bar Chart or Box Plot to show the distribution of performance scores.

Step 3: Assemble the Dashboard

- Go to the Dashboard View:
    - Click on Dashboard > New Dashboard.
- Drag and Drop Visualizations:
    - Drag your individual sheets (e.g., Employee Turnover, Salary Distribution, Gender Distribution, etc.) onto the dashboard canvas.
    - Organize them in a way that makes sense for analysis, keeping the dashboard clean and easy to interpret.
- Add Filters and Slicers:
    - Add filters such as Department, Gender, Employee Status, or Performance Score to allow users to focus on specific segments of the data.
    - You can drag filters into the dashboard for interactivity and control.
- Enhance Interactivity:
    - Use Dashboard Actions to create interactivity. For example, clicking on a department could filter other visualizations to show data specific to that department.
    - You can create highlight actions or filter actions to make the dashboard more engaging and interactive.
- Format the Dashboard:
    - Adjust colors, fonts, and labels to ensure clarity and readability.

- Add titles, legends, and descriptive text to make it easier for users to understand the insights presented in the dashboard.

By following these steps, you will have created a HR Dashboard in Tableau that offers insights into employee demographics, performance, turnover, salary, and other HR metrics. This dashboard is crucial for HR teams to monitor the health of the organization and make data-driven decisions related to talent management, employee retention, and overall workforce performance.