Practical 6

Aim: Connecting and extracting with various data resources in tableau and Perform calculations and creating parameters in Tableau.

Explanation:

Part 1: Connecting and Extracting Data in Tableau
Concept:
Before analyzing or visualizing data in Tableau, you must connect Tableau to a data source such as Excel, CSV, Google Sheets, or a database like MySQL.

Example Dataset: "Students_Marks.csv"

Student_Name	Subject	Marks
Riya	Math	80
Aarav	Science	90
Meera	English	75
Karan	Math	85
Neha	Science	95

Steps to Connect Data in Tableau
1. Open Tableau Desktop or Tableau Public.
2. On the start page, under "Connect," select "Microsoft Excel."
3. Browse and select the file **Students_Marks.csv** (or Excel file).
4. Tableau will open the "Data Source" page showing the sheet and data preview.
5. Drag the sheet (for example, "Sheet1") to the top area (canvas) to connect it.
6. Click "Sheet 1" (at the bottom) to move to the worksheet view where you can start analyzing data.

Part 2: Performing Calculations in Tableau
Concept:
Calculated fields help you create new columns or metrics that are not originally in your dataset.

Example 1: Create a Grade Based on Marks
1. Go to "Analysis" in the top menu and click "Create Calculated Field."
2. Name it: **Grade**.
3. Enter this formula:
4. IF [Marks] >= 90 THEN "A"
5. ELSEIF [Marks] >= 80 THEN "B"
6. ELSE "C"
7. END
8. Click OK.
9. Drag the "Grade" field to the "Rows" or "Color" shelf to visualize it.

This calculation categorizes students based on marks.

Example 2: Add 5 Bonus Marks

1. Create another calculated field and name it **Bonus Marks**.
2. Enter the formula:
3. [Marks] + 5
4. Click OK and drag it into the view.

Now you can compare original marks vs. bonus marks.

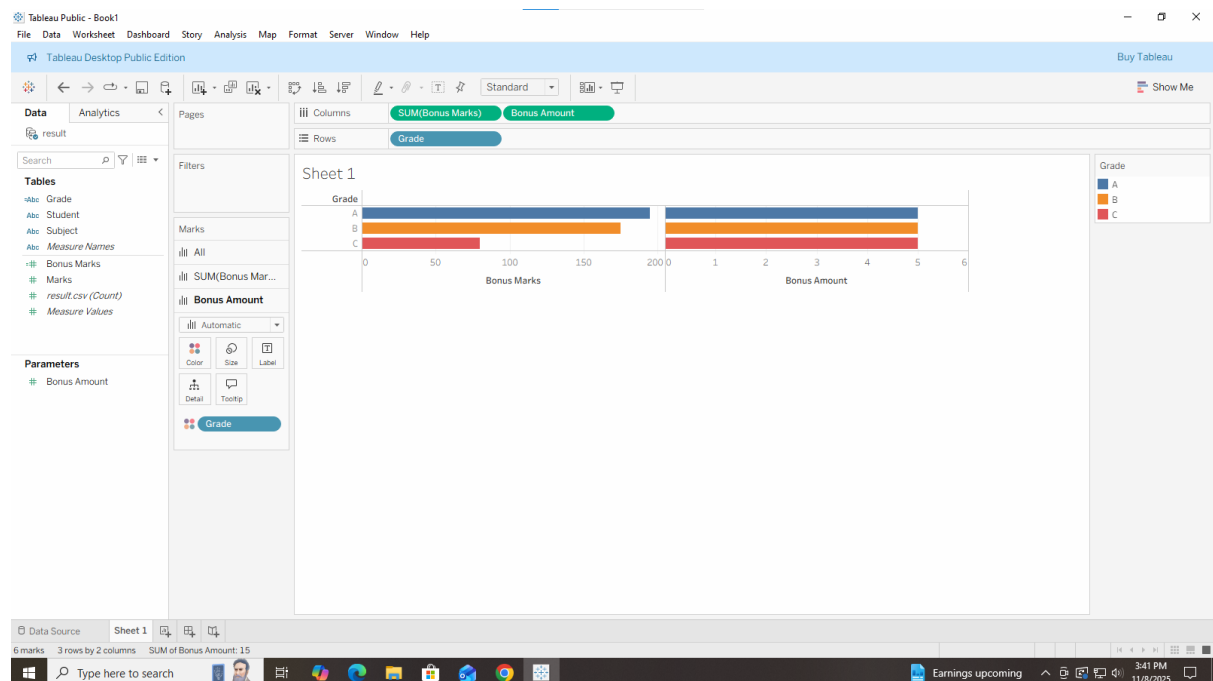**Part 3: Creating Parameters in Tableau**
Concept:
Parameters are dynamic values that allow users to control calculations, filters, or data interactively.

Example: Create a Parameter for Bonus Marks
1. In the Data Pane, right-click and select "Create Parameter."
2. Name it **Bonus Amount**.
3. Set:
   - Data type: Integer
   - Current value: 5
   - Allowable values: Range (from 0 to 20)
4. Right-click the parameter and select "Show Parameter Control."
5. Create a new calculated field named **Marks with Bonus**:
6. [Marks] + [Bonus Amount]
7. Drag **Marks with Bonus** into the view to see how marks change when the parameter is adjusted.

Now, when you move the slider of "Bonus Amount," the total marks will update automatically.

Practical 7

Aim: Designing Tableau Dashboards for different displays and devices

Part: Designing Tableau Dashboards for Different Displays and Devices

1. Concept

A **dashboard** in Tableau combines multiple worksheets, charts, and filters into one interactive view.

Tableau also allows you to **design dashboards for different devices** such as desktop, tablet, and phone so that your visualizations look good on all screens.

2. Example Dataset: "Students_Performance.csv"

Student	Subject	Marks	City
Riya	Math	85	Delhi
Aarav	Science	92	Mumbai
Meera	English	76	Delhi
Karan	Math	88	Pune
Neha	Science	95	Mumbai

You can use this dataset to make charts like:
- Average Marks by Subject
- Average Marks by City

3. Steps to Create a Basic Dashboard

1. Open Tableau and connect your dataset (Students_Performance.csv).
2. Create a few worksheets:
   - Worksheet 1: Bar Chart of Average Marks by Subject
   - Worksheet 2: Pie Chart of Average Marks by City
3. At the bottom, click the **New Dashboard** icon.
4. From the left panel, drag both worksheets onto the dashboard area.
5. Adjust the layout by resizing and arranging the charts neatly.
6. Add titles using the "Text" option in the dashboard panel.

Now you have your first basic dashboard.

4. Designing for Different Devices

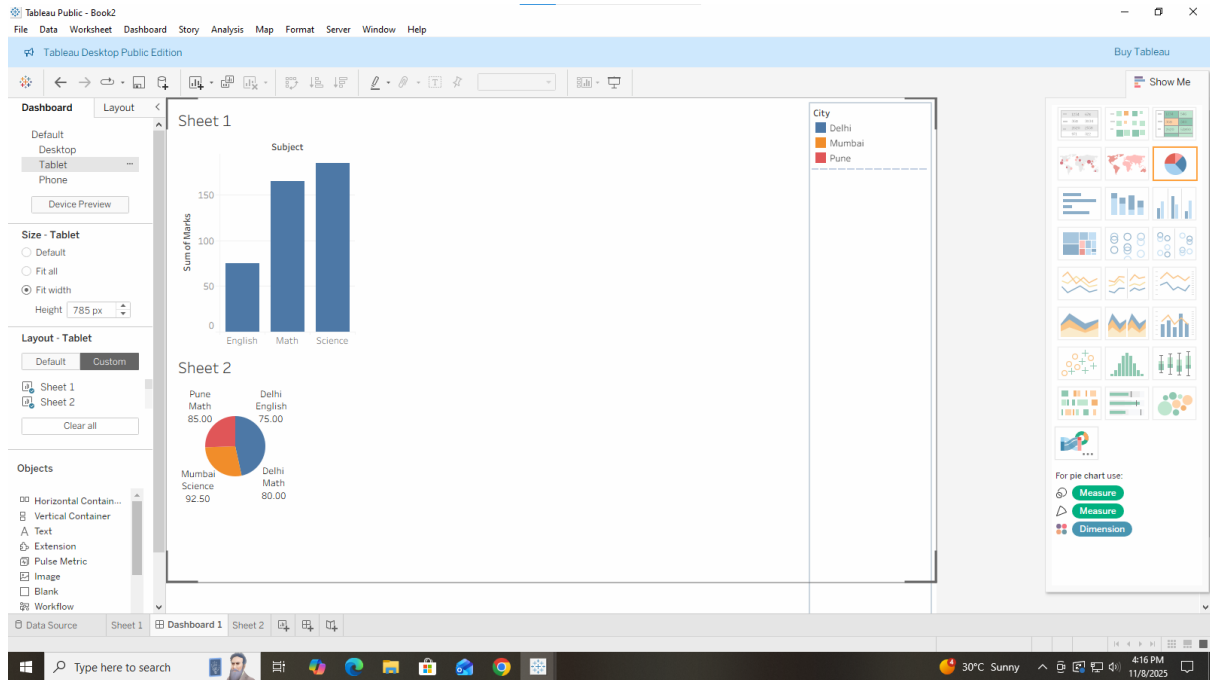Tableau allows you to create layouts for desktop, tablet, and phone separately.

Steps:

1. On the top of the dashboard window, click the **Device Preview** icon (a phone and monitor symbol).
2. Choose a device type: **Desktop**, **Tablet**, or **Phone**.
3. Tableau will show how your dashboard looks on that device.
4. Click **Add Device Layout** to create a specific design for that device.
5. You can rearrange or resize charts for each device layout so it fits better.
6. Save your dashboard after checking all device previews.

5. Example of Device Layouts

- **Desktop layout:** Show all charts side-by-side.
- **Tablet layout:** Stack charts one above the other for better visibility.

- **Phone layout:** Use only key charts, make them larger, and remove less important elements.

Aim: Creating Geospatial feature maps in Tableau using Geospatial Data.

Part: Creating Geospatial Feature Maps in Tableau Using Geospatial Data
1. Concept
A **geospatial feature map** in Tableau is a map that displays data related to locations — such as countries, states, cities, or coordinates (latitude and longitude).
It helps you visually analyze how data changes across different geographical areas.

2. Example Dataset: "Sales_By_City.csv"

City	State	Sales
Mumbai	Maharashtra	120000
Delhi	Delhi	95000
Bengaluru	Karnataka	80000
Chennai	Tamil Nadu	75000
Kolkata	West Bengal	70000

This dataset shows sales values across different cities in India.

3. Steps to Create a Geospatial Map in Tableau
1. Open Tableau Desktop or Tableau Public.
2. Connect to the dataset "Sales_By_City.csv".
3. Go to **Sheet 1**.
4. In the **Data Pane**, drag **City** to the **Rows** shelf.
5. Drag **Sales** to the **Size** or **Color** shelf on the Marks card.
6. Tableau automatically identifies **City** as a geographic field and generates a map view.
7. If Tableau does not recognize it automatically, do the following:
   o Right-click the **City** field → Select **Geographic Role → City**.
   o Then drag it again to the view.
Now Tableau will plot each city on a map.

4. Customizing the Map
1. On the **Marks card**, change the type from **Automatic** to **Map** or **Circle**.
2. Adjust the color to show sales variation clearly (for example, darker color for higher sales).
3. Drag **Sales** to **Label** to display sales numbers on each point.
4. Click **Map → Map Layers** and turn on **Map Style → Streets** or **Normal** for a clean background.

5. Adding State Borders (Optional)
1. From the **Data Pane**, drag **State** to **Detail** on the Marks card.
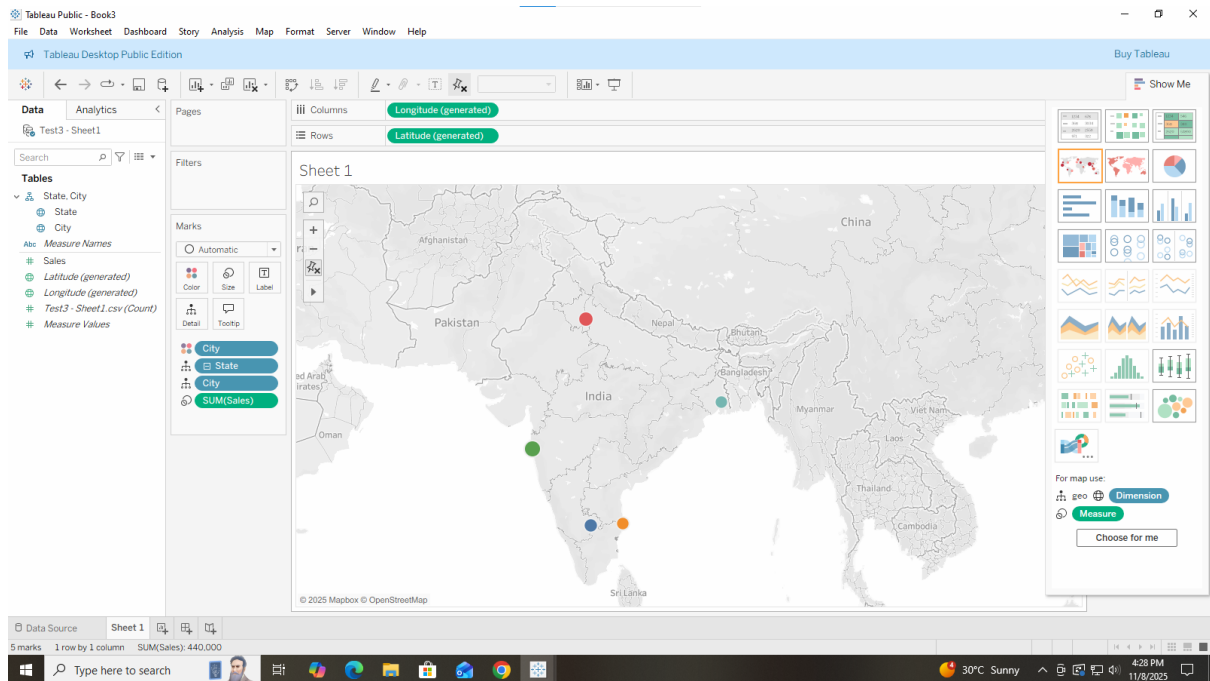2. This will allow Tableau to group cities under each state boundary.

6. Example Output Interpretation
On the map, you will see:
- Bigger or darker circles for cities with higher sales.
- Smaller or lighter circles for cities with lower sales.
  For example:

- Mumbai (highest sales) appears with a large, dark circle.
- Kolkata (lowest sales) appears with a small, lighter circle.

Practical 9
Aim: Create Dashboard and Storytelling using tableau.

Part: Creating Dashboards and Storytelling Using Tableau
1. Concept
A **Dashboard** in Tableau is a collection of charts, maps, and tables shown together on one screen.
A **Story** in Tableau is a sequence of dashboards or sheets arranged to explain insights step by step — like telling a data story.
Dashboards help **analyze and compare**, while stories help **communicate findings** clearly.

2. Example Dataset: "Students_Results.csv"

Student	Subject	Marks	City
Riya	Math	80	Delhi
Aarav	Science	90	Mumbai
Meera	English	75	Delhi
Karan	Math	85	Pune
Neha	Science	95	Mumbai

This data can be used to create visualizations such as:
- Average Marks by Subject
- Average Marks by City
- Top Performing Students

3. Creating Worksheets
1. Open Tableau and connect to the "Students_Results.csv" dataset.
2. Create a few worksheets:
    o **Worksheet 1:** Bar Chart showing Average Marks by Subject.
    o **Worksheet 2:** Pie Chart showing Average Marks by City.
    o **Worksheet 3:** Table showing Student Name and Marks.
3. Rename the worksheets for easy understanding (Subject Performance, City Performance, Student Marks).

4. Creating a Dashboard
1. Click the **New Dashboard** icon at the bottom of Tableau.
2. From the left panel, drag your worksheets onto the dashboard area.
3. Arrange them neatly (for example, bar chart on the left, pie chart on the right, table at the bottom).
4. Add a **Title** at the top: "Student Performance Dashboard".
5. Use the **Objects** panel to add:
    o **Text:** for headings or descriptions.
    o **Image:** for logos or icons.
    o **Filters:** to allow users to select specific subjects or cities.
6. Adjust the size of the dashboard by selecting **Size → Fixed Size (Desktop)** or **Automatic**.
Now your dashboard is ready for analysis.

5. Making the Dashboard Interactive
1. Click on a chart (for example, the pie chart).
2. Click **Use as Filter** (a funnel icon at the top right of the chart).

3. Now, when you click a city on the pie chart, the other charts will update automatically.

This makes your dashboard dynamic and interactive.

6. Creating a Story in Tableau

A story combines multiple dashboards or worksheets in a sequence to explain your insights clearly.

Steps:

1. Click the **New Story** icon at the bottom of Tableau.
2. A blank story page appears with "Story 1" at the top.
3. Drag your dashboard (for example, "Student Performance Dashboard") onto the story area.
4. Add a **Caption** at the top such as "Overall Student Performance Summary."
5. Click **Add a New Story Point** to add the next slide.
6. Add another worksheet or dashboard and give it a caption such as "Performance by City."
7. Repeat for all your visualizations in order.
8. Use descriptive titles or captions to explain what the viewer should notice on each page.

Now you have a step-by-step storytelling sequence showing data insights.