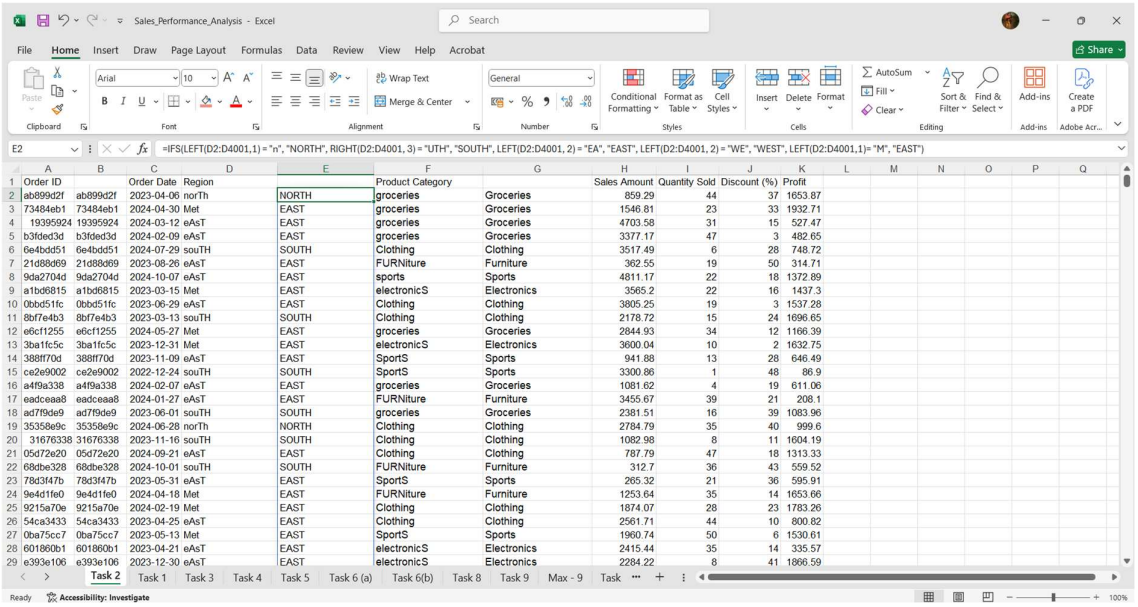
Analyzing and Visualizing Regional Sales Performance

EXCEL PROJECT

SWETHA – VS70189 (DATA ANALYTICS)

TASK 2: DATA CLEANING WITH TEXT FUNCTIONS

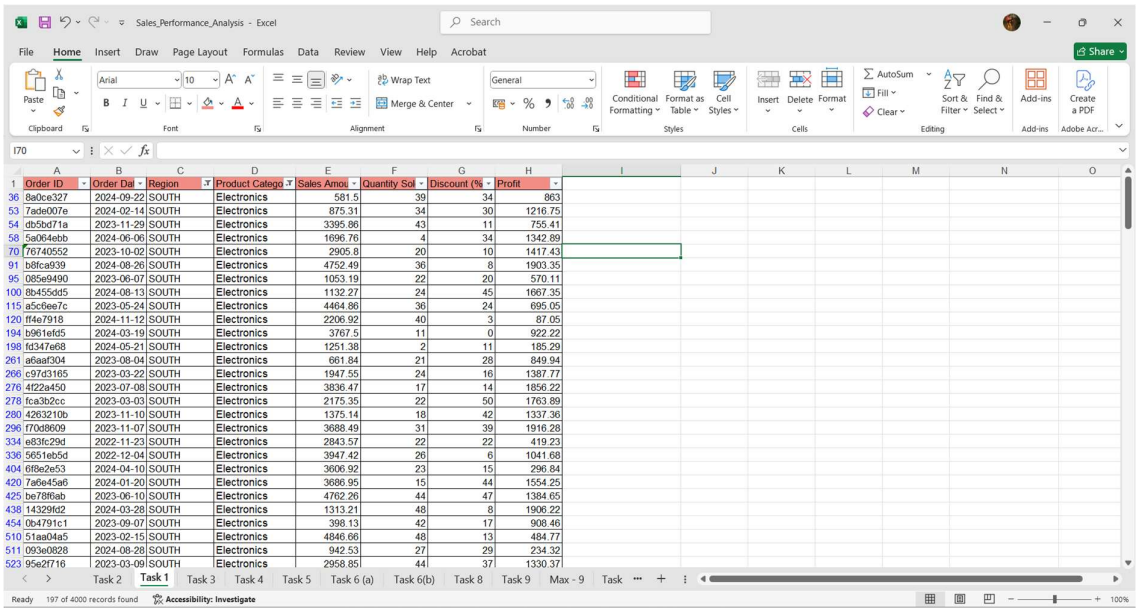


Order ID		Order Date	Region		Product Category		Sales Amount	Quantity Sold	Discount (%)	Profit
ab899d2f	ab899d2f	2023-04-06	norTh	NORTH	groceries	Groceries	859.29	44	37	1653.87
73484eb1	73484eb1	2024-04-30	Met	EAST	groceries	Groceries	1546.81	23	33	1932.71
19395924	19395924	2024-03-12	eAsT	EAST	groceries	Groceries	4703.58	31	15	527.47
b3fded3d	b3fded3d	2024-02-09	eAsT	EAST	groceries	Groceries	3377.17	47	3	482.65
6e4bdd51	6e4bdd51	2024-07-29	souTH	SOUTH	Clothing	Clothing	3517.49	6	28	748.72
21d88d69	21d88d69	2023-08-26	eAsT	EAST	FURNiture	Furniture	362.55	19	50	314.71
9da2704d	9da2704d	2024-10-07	eAsT	EAST	sports	Sports	4811.17	22	18	1372.89
a1bd6815	a1bd6815	2023-03-15	Met	EAST	electronicS	Electronics	3565.2	22	16	1437.3
0bbd51fc	0bbd51fc	2023-06-29	eAsT	EAST	Clothing	Clothing	3805.25	19	3	1537.28
8bf7e4b3	8bf7e4b3	2023-03-13	souTH	SOUTH	Clothing	Clothing	2178.72	15	24	1696.65
e6cf1255	e6cf1255	2024-05-27	Met	EAST	groceries	Groceries	2844.93	34	12	1166.39
3ba1fc5c	3ba1fc5c	2023-12-31	Met	EAST	electronicS	Electronics	3600.04	10	2	1632.75
388ff70d	388ff70d	2023-11-09	eAsT	EAST	SportS	Sports	941.88	13	28	646.49
ce2e9002	ce2e9002	2022-12-24	souTH	SOUTH	SportS	Sports	3300.86	1	48	86.9
a4f9a338	a4f9a338	2024-02-07	eAsT	EAST	groceries	Groceries	1081.62	4	19	611.06
eadceaa8	eadceaa8	2024-01-27	eAsT	EAST	FURNiture	Furniture	3455.67	39	21	208.1
ad7f9de9	ad7f9de9	2023-06-01	souTH	SOUTH	groceries	Groceries	2381.51	16	39	1083.96
35358e9c	35358e9c	2024-06-28	norTh	NORTH	Clothing	Clothing	2784.79	35	40	999.6
31676338	31676338	2023-11-16	souTH	SOUTH	Clothing	Clothing	1082.98	8	11	1604.19
05d72e20	05d72e20	2024-09-21	eAsT	EAST	Clothing	Clothing	787.79	47	18	1313.33
68dbe328	68dbe328	2024-10-01	souTH	SOUTH	FURNiture	Furniture	312.7	36	43	559.52
78d3f47b	78d3f47b	2023-05-31	eAsT	EAST	SportS	Sports	265.32	21	36	595.91
9e4d1fe0	9e4d1fe0	2024-04-18	Met	EAST	FURNiture	Furniture	1253.64	35	14	1653.66
9215a70e	9215a70e	2024-02-19	Met	EAST	Clothing	Clothing	1874.07	28	23	1783.26
54ca3433	54ca3433	2023-04-25	eAsT	EAST	Clothing	Clothing	2561.71	44	10	800.82
0ba75cc7	0ba75cc7	2023-05-13	Met	EAST	SportS	Sports	1960.74	50	6	1530.61
601860b1	601860b1	2023-04-21	eAsT	EAST	electronicS	Electronics	2415.44	35	14	335.57
e393e106	e393e106	2023-12-30	eAsT	EAST	electronicS	Electronics	2284.22	8	41	1866.59

Steps:

1. CTRL+H – replaced all the symbols used in Region and Product Category column, like $ to S, @ to a, removed # and extra spaces.
2. Inserted a helper column beside region and product category column, and used IFS() to standardize the data in it.
3. Order column- =TRIM(A2:A4001)
4. Region column- =IFS(LEFT(D2:D4001,1) = "n", "NORTH", RIGHT(D2:D4001, 3) = "UTH", "SOUTH", LEFT(D2:D4001, 2) = "EA", "EAST", LEFT(D2:D4001, 2) = "WE", "WEST", LEFT(D2:D4001,1)= "M", "EAST")
5. Product category- =IFS(LEFT(F2:F4001,1)="c","Clothing",LEFT(F2:F4001,1)="g","Groceries",LEFT(F2:F4001,1)="e","Electronics",LEFT(F2:F4001,1)="S","Sports",LEFT(F2:F4001,1)="f","Furniture")
6. Lastly, special pasted from helper column to main column.

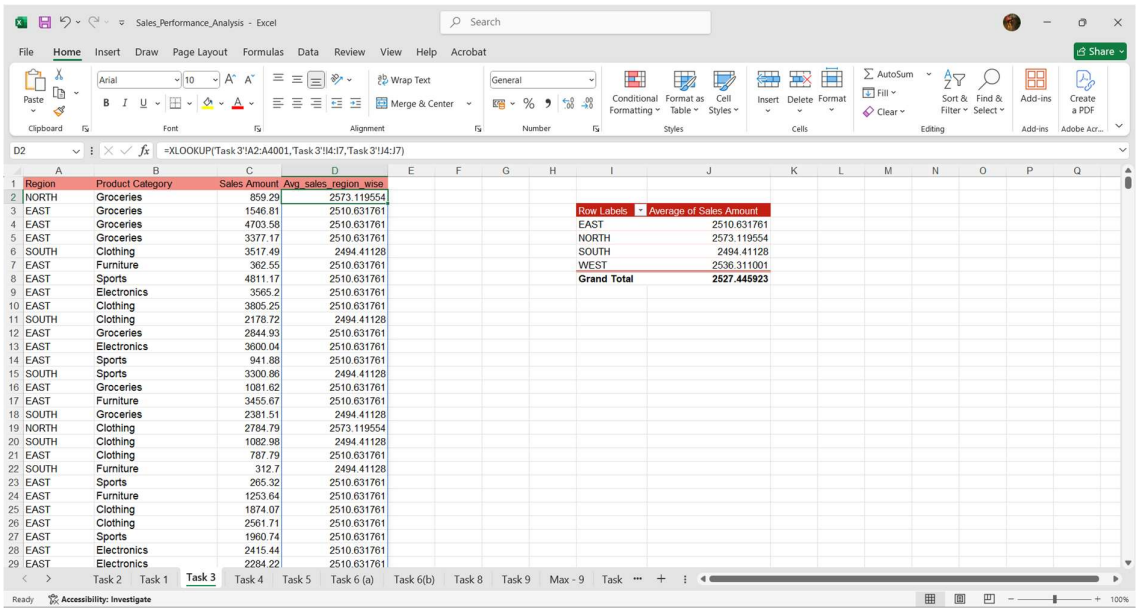
TASK 1: SEARCHING AND FILTERING DATA



Steps:

1. For filtering the short cut key is CTRL+SHIFT+L.
2. Then in region column selected south and in product category column selected electricity.
3. Shown the orders details, quantity, sales amount, profit and discount of electronics category in south region.
4. Using the shortcut CTRL+SHIFT+L to filter data and then selecting "South" for the Region and "Electricity" for the Product Category enabled a focused display of order details, quantity, sales amount, profit, and discount specifically for the electronics category in the South region, allowing precise analysis of performance within this targeted segment.

Task 3: Merging Data

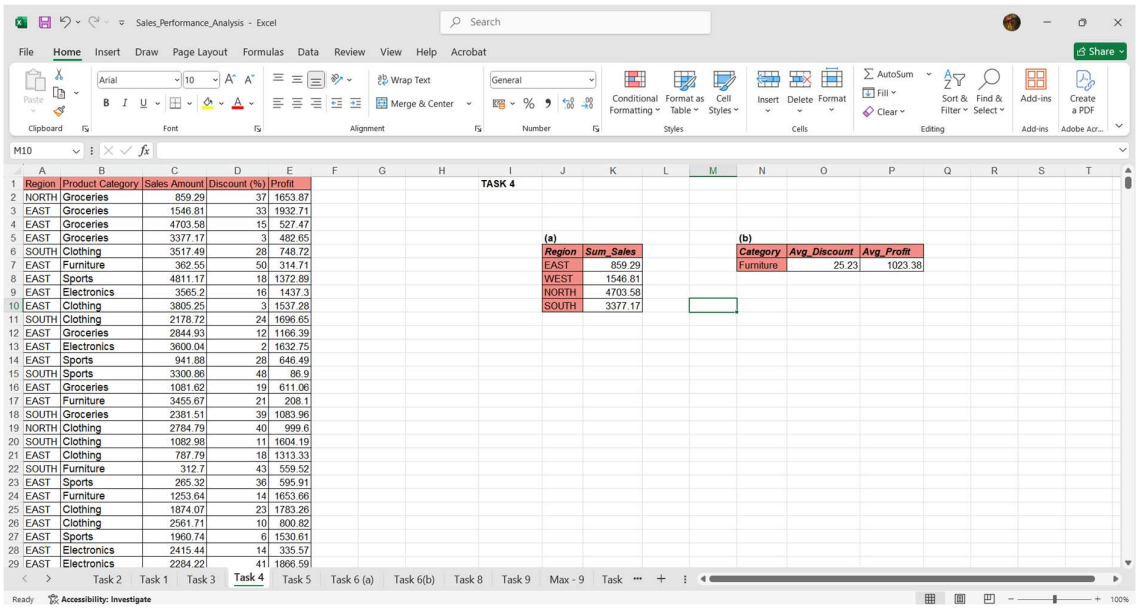


Region	Product Category	Sales Amount	Avg_sales_region_wise
NORTH	Groceries	859.29	2573.119554
EAST	Groceries	1546.81	2510.631761
EAST	Groceries	4703.58	2510.631761
EAST	Groceries	3377.17	2510.631761
SOUTH	Clothing	3517.49	2494.41128
EAST	Furniture	362.55	2510.631761
EAST	Sports	4811.17	2510.631761
EAST	Electronics	3565.2	2510.631761
EAST	Clothing	3805.25	2510.631761
SOUTH	Clothing	2178.72	2494.41128
EAST	Groceries	2844.93	2510.631761
EAST	Electronics	3600.04	2510.631761
EAST	Sports	941.88	2510.631761
SOUTH	Sports	3300.86	2494.41128
EAST	Groceries	1081.62	2510.631761
EAST	Furniture	3455.67	2510.631761
SOUTH	Groceries	2381.51	2494.41128
NORTH	Clothing	2784.79	2573.119554
SOUTH	Clothing	1082.98	2494.41128
EAST	Clothing	787.79	2510.631761
SOUTH	Furniture	312.7	2494.41128
EAST	Sports	265.32	2510.631761
EAST	Furniture	1253.64	2510.631761
EAST	Clothing	1874.07	2510.631761
EAST	Clothing	2561.71	2510.631761
EAST	Sports	1960.74	2510.631761
EAST	Electronics	2415.44	2510.631761
EAST	Electronics	2284.22	2510.631761

Steps:

1. CTRL+SHIFT Side arrow and Down arrow, in insert tab selected pivot table.
2. In PivotTable Field dropped region column in rows area and average sales amount in Values area.
3. Created a new column named- Avg_sales_region_wise.
4. Used Xlookup formula to merge each region wise average sales amount to the new column with respect to the region column.
5. Avg_sales_region_wise - =XLOOKUP('Task 3'!A2:A4001,'Task 3'!I4:I7,'Task 3'!J4:J7)
    - Lookup value – all rows in region column except first row.
    - Lookup array – all rows in pivot table region column.
    - Return array – all row values in pivot table average sales amount.
6. Using the XLOOKUP formula to merge average sales figures from the pivot table into the main dataset based on regions allows for efficient, dynamic data integration, supporting enhanced regional sales analysis directly within the dataset.

Task 4: Excel Formulas



TASK 4

(a)

Region	Sum_Sales
EAST	859.29
WEST	1546.81
NORTH	4703.58
SOUTH	3377.17

(b)

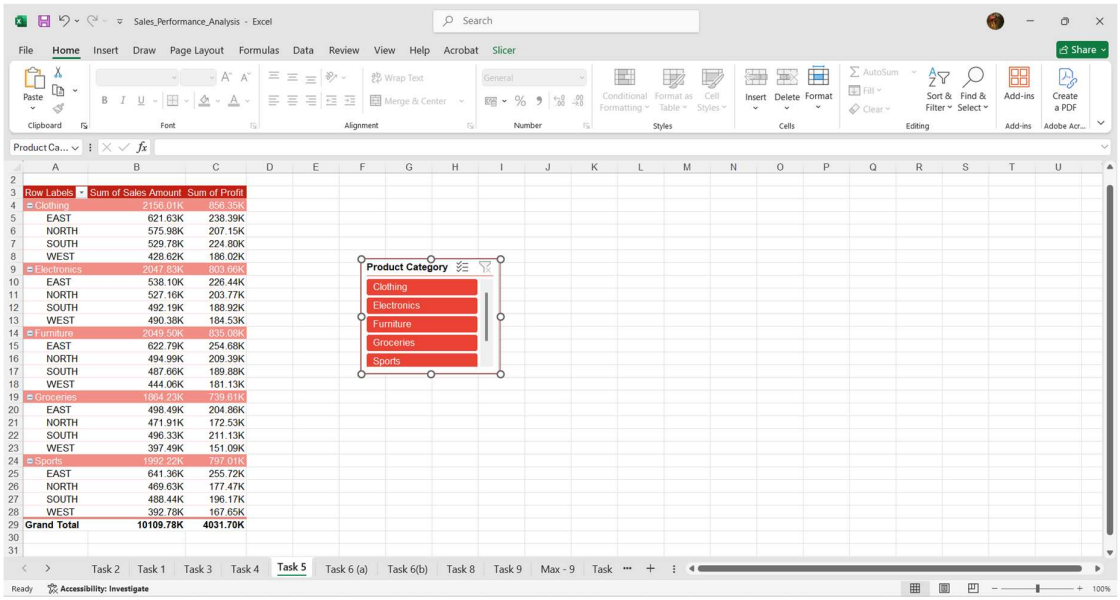
Category	Avg_Discount	Avg_Profit
Furniture	25.23	1023.38

Region	Product Category	Sales Amount	Discount (%)	Profit
NORTH	Groceries	859.29	37	1653.87
EAST	Groceries	1546.81	33	1932.71
EAST	Groceries	4703.58	15	527.47
EAST	Groceries	3377.17	3	482.65
SOUTH	Clothing	3517.49	28	748.72
EAST	Furniture	362.55	50	314.71
EAST	Sports	4811.17	18	1372.89
EAST	Electronics	3565.2	16	1437.3
EAST	Clothing	3805.25	3	1537.28
SOUTH	Clothing	2178.72	24	1696.65
EAST	Groceries	2844.93	12	1166.39
EAST	Electronics	3600.04	2	1632.75
EAST	Sports	941.88	28	646.49
SOUTH	Sports	3300.86	48	86.9
EAST	Groceries	1081.62	19	611.06
EAST	Furniture	3455.67	21	208.1
SOUTH	Groceries	2381.51	39	1083.96
NORTH	Clothing	2784.79	40	999.6
SOUTH	Clothing	1082.98	11	1604.19
EAST	Clothing	787.79	18	1313.33
SOUTH	Furniture	312.7	43	559.52
EAST	Sports	265.32	36	595.91
EAST	Furniture	1253.64	14	1653.66
EAST	Clothing	1874.07	23	1783.26
EAST	Clothing	2561.71	10	800.82
EAST	Sports	1960.74	6	1530.61
EAST	Electronics	2415.44	14	335.57
EAST	Electronics	2284.22	41	1866.59

Steps:

1. Created a small table named region column and sum_sales column, used SUMIF formula to calculate region wise total sales.
2. Used absolute symbol ($)- and dragged down to other rows.
3. Sum_sales - =SUMIF($J$7:$J$10,$J7,$C$2:$C$4001)
   - Range – Region column rows in small table.
   - Criteria – First row in region column of small table.
   - Sum range – The sales amount in main table.
4. Created another small table for average of discount and average of profit of Furniture product category, used AVERAGEIF formula to calculate.
5. Avg_Discount - =AVERAGEIF(B2:B4001,N7,D2:D4001)
   - Range – Product category column all rows.
   - Criteria- “Furniture” which is in the small table cell.
   - Avg range – The discount column range in the main table.
6. Avg_Profit - =AVERAGEIF(B2:B4001,N7,E2:E4001)
   - Range – Product category column all rows.
   - Criteria- “Furniture” which is in the small table cell.
   - Avg range – The profit column range in the main table.
7. The use of SUMIF and AVERAGEIF formulas helped efficiently calculate region-wise total sales and the average discount and profit specifically for the Furniture product category, enabling targeted analysis of sales performance and profitability metrics by region and product type.

Task 5: Pivot Tables

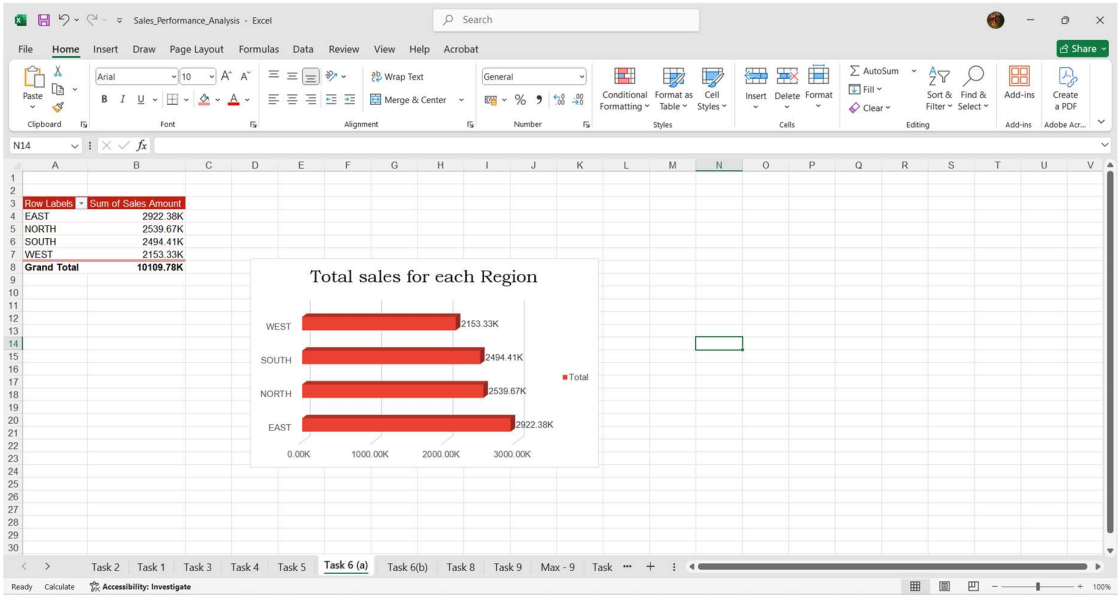


Row Labels	Sum of Sales Amount	Sum of Profit
Clothing	2156.01K	856.35K
EAST	621.63K	238.39K
NORTH	575.98K	207.15K
SOUTH	529.78K	224.80K
WEST	428.62K	186.02K
Electronics	2047.83K	803.66K
EAST	538.10K	226.44K
NORTH	527.16K	203.77K
SOUTH	492.19K	188.92K
WEST	490.38K	184.53K
Furniture	2049.30K	835.09K
EAST	622.79K	254.68K
NORTH	494.99K	209.39K
SOUTH	487.66K	189.88K
WEST	444.06K	181.13K
Groceries	1864.23K	739.61K
EAST	498.49K	204.86K
NORTH	471.91K	172.53K
SOUTH	496.33K	211.13K
WEST	397.49K	151.09K
Sports	1992.22K	797.01K
EAST	641.36K	255.72K
NORTH	469.63K	177.47K
SOUTH	488.44K	196.17K
WEST	392.78K	167.65K
Grand Total	10109.78K	4031.70K

Steps:

1. Selected the data table with CTRL+SHIFT+Right Arrow and Down Arrow.
2. Insert a Pivot Table from the Insert tab.
3. In the PivotTable Fields pane, dragged "Product Category" and "Region" into the Rows area.
4. Dragged "Sales" and "Profit" into the Values area, which will summarize their totals.
5. Added slicers by going to the PivotTable Analyze tab, selecting Insert Slicer, and choosing "Product Category" and "Region."
6. Arranged and formatted the pivot table and slicers for better readability and visual appeal.
7. This setup enables dynamic analysis of sales and profit data by region and product category.

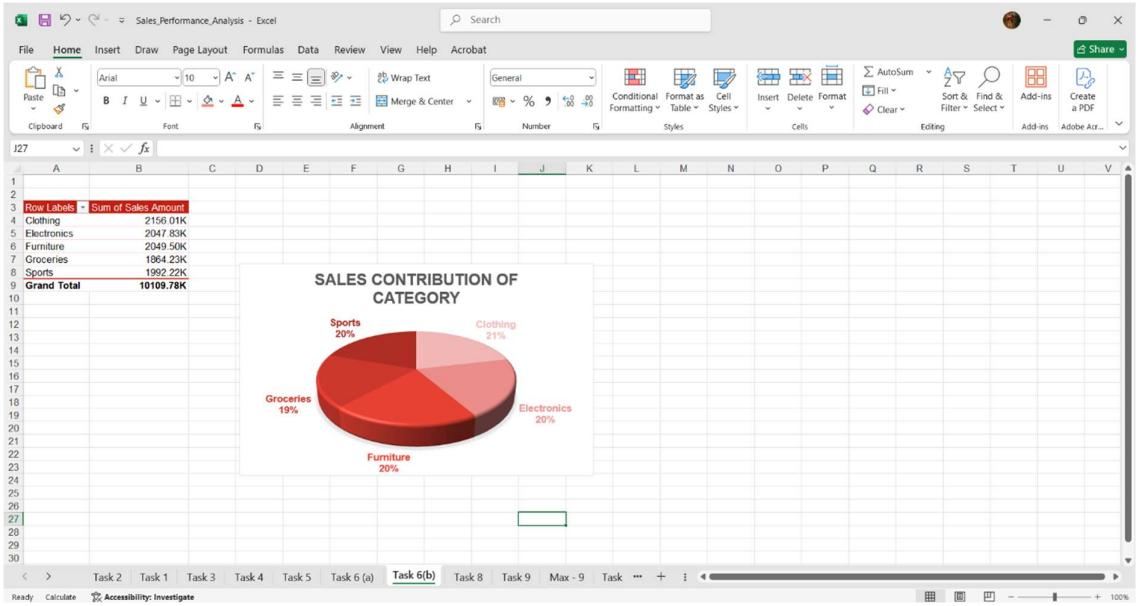
Task 6: Charts



Row Labels	Sum of Sales Amount
EAST	2922.38K
NORTH	2539.67K
SOUTH	2494.41K
WEST	2153.33K
Grand Total	**10109.78K**

Steps:

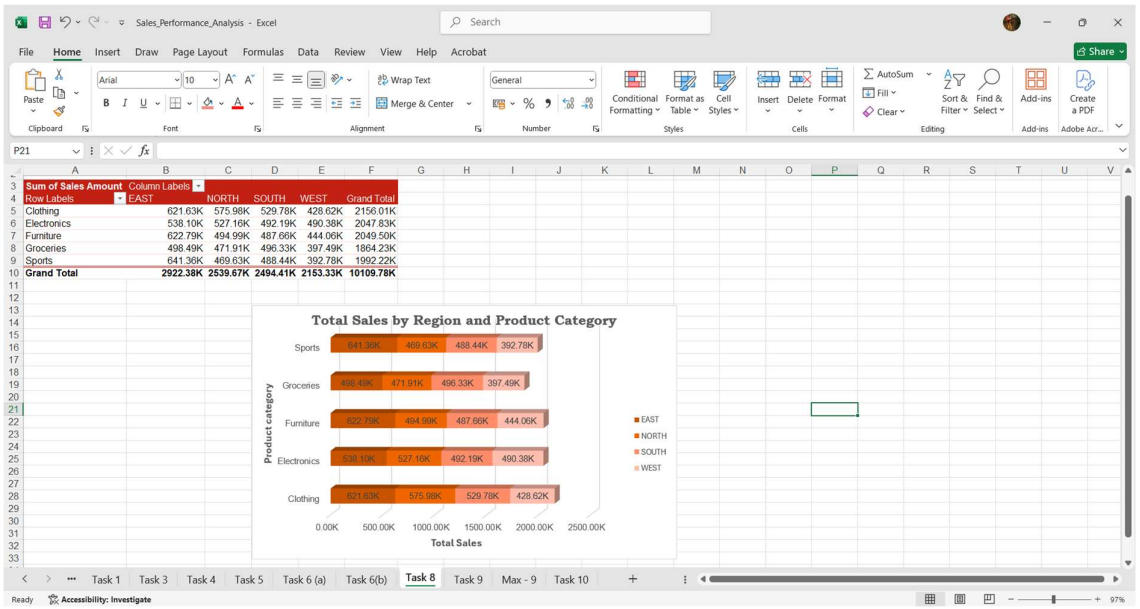
1. Selected the main data table by pressing CTRL+SHIFT+Right Arrow and Down Arrow.
2. In the Insert tab and select Pivot Table, then create it in a new sheet.
3. In the PivotTable Fields pane, dragged the "Region" field to the Rows area.
4. Dragged the "Sales" field to the Values area, which will default to Sum of Sales.
5. Clicked anywhere inside the Pivot Table, then go to the PivotTable Analyze tab and select Pivot Chart.
6. Chose a Bar Chart and insert it.
7. Customized the chart by adding a title, changing colours, and adjusting the design for clarity.
8. This bar chart provides a clear visual comparison of total sales across different regions, making it easy to see which regions generate the highest revenue.



Steps:

1. Selected data table and press CTRL+SHIFT+Right Arrow and Down Arrow to highlight it.
2. In the Insert tab, chose Pivot Table to create a pivot table in a new sheet.
3. In the PivotTable Fields pane, dragged "Product Category" to the Rows area and "Sales" to the Values area (which defaults to Sum of Sales).
4. Clicked anywhere inside the pivot table and in the PivotTable Analyze tab, then selected Pivot Chart.
5. Chose the Pie Chart option and inserted it.
6. Customized the chart by adding a title, adjusting colours, and changing the design as desired.
7. The pie chart visually illustrates the percentage share of total sales for each product category, enabling quick identification of the largest contributors to overall sales.

Task 8: Stacked Bar Chart

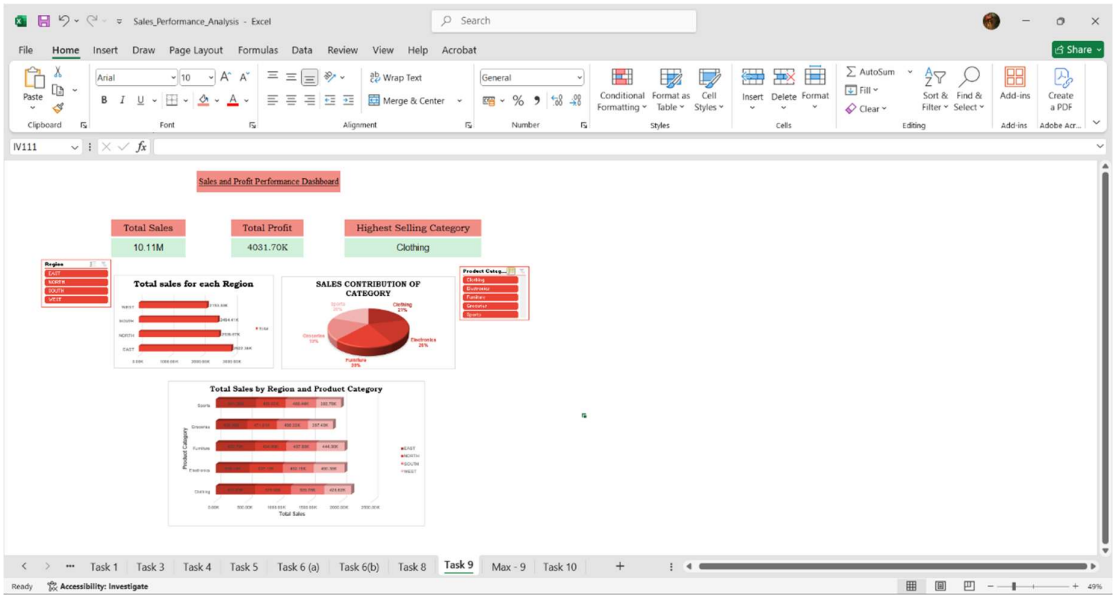


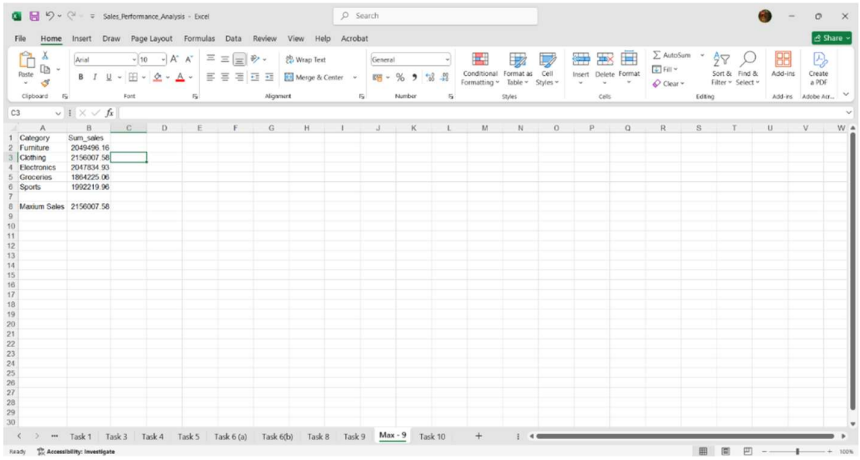
Sum of Sales Amount	Column Labels				
Row Labels	EAST	NORTH	SOUTH	WEST	Grand Total
Clothing	621.63K	575.98K	529.78K	428.62K	2156.01K
Electronics	538.10K	527.16K	492.19K	490.38K	2047.83K
Furniture	622.79K	494.99K	487.66K	444.06K	2049.50K
Groceries	498.49K	471.91K	496.33K	397.49K	1864.23K
Sports	641.36K	469.63K	488.44K	392.78K	1992.22K
Grand Total	**2922.38K**	**2539.67K**	**2494.41K**	**2153.33K**	**10109.78K**

Steps:

1. Selected data table and in the Insert tab, chose Pivot Table.
2. In PivotTable Fields, dragged Product Category to the Rows area, Region to the Columns area, and Sales to the Values area.
3. Clicked anywhere inside the Pivot Table, in the Insert tab, selected "Stacked Bar Chart" from the Bar Chart options.
4. Formatted the chart as needed, such as editing the title, colours, or other design elements to improve clarity.
5. The stacked bar chart provides a clear comparison of total sales across product categories for each region, helping to identify which combinations drive the most revenue.

Task 9: Basic Dashboard





Steps:

1. CTRL+A – Selecting whole empty workspace, then reduced the cell size both row and column.
2. In View tab, turned off the Grid lines and Header.
3. Then selected some of the cells and merged it. Like these 7 merged cells created.
4. Setting Up KPIs
   - Calculated Total Sales by using the SUM formula on the sales data to aggregate overall sales figures.
   - Calculated Total Profit similarly using the SUM formula on the profit column to get aggregate profit.
5. Identified the Highest Selling Product Category by:
   - Summing sales across each distinct product category using SUMIF or Pivot Table.
   - Finding the maximum value among category totals with the MAX formula.
   - Using the INDEX and MATCH functions to return the product category corresponding to the highest sales value, and displaying it in the dashboard.

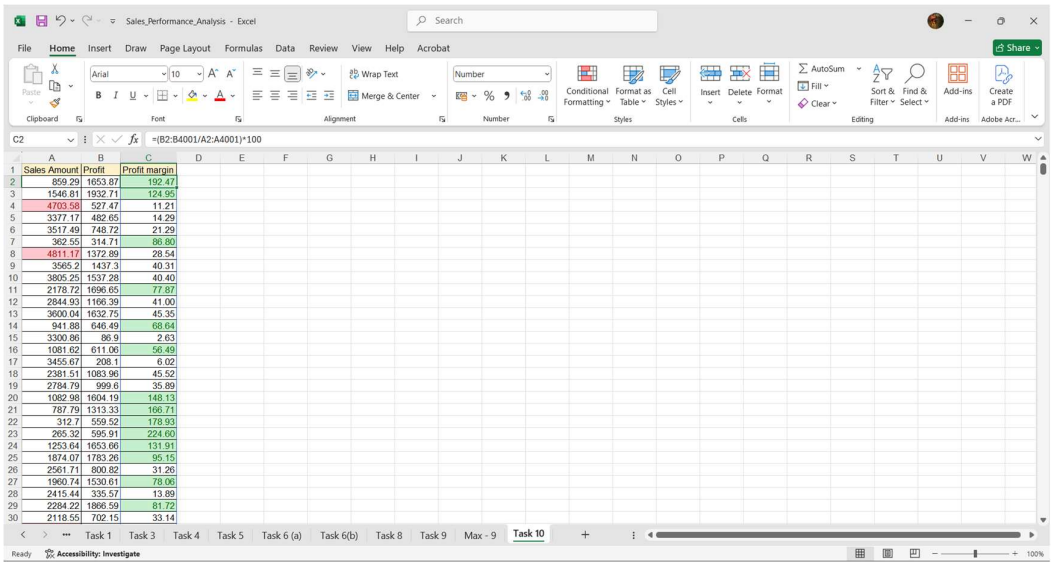
6. Integrating Visualizations

- Added three charts to the dashboard for deeper analysis and better data representation:
    - **Region-wise Sales:** Bar chart showing total sales for each region.
    - **Category-wise Sales Contribution:** Pie chart illustrating the proportion of sales generated by each product category.
    - **Region & Category-wise Sales:** Stacked bar chart comparing sales across regions and categories.

7. Enhancing Interactivity

- Created multiple slicers for Region and Product Category, allowing users to filter and view specific data segments dynamically.
- Connected these slicers to all the relevant charts using the Report Connections feature, ensuring that interactive filtering updates all visualizations simultaneously for unified analysis.

Task 10: Highlight High Performers (Conditional Formatting)



Sales Amount	Profit	Profit margin
859.29	1653.87	192.47
1546.81	1932.71	124.95
4703.58	527.47	11.21
3377.17	482.65	14.29
3517.49	748.72	21.29
362.55	314.71	86.80
4811.17	1372.89	28.54
3565.2	1437.3	40.31
3805.25	1537.28	40.40
2178.72	1696.65	77.87
2844.93	1166.39	41.00
3600.04	1632.75	45.35
941.88	646.49	68.64
3300.86	86.9	2.63
1081.62	611.06	56.49
3455.67	208.1	6.02
2381.51	1083.96	45.52
2784.79	999.6	35.89
1082.98	1604.19	148.13
787.79	1313.33	166.71
312.7	559.52	178.93
265.32	595.91	224.60
1253.64	1653.66	131.91
1874.07	1783.26	95.15
2561.71	800.82	31.26
1960.74	1530.61	78.06
2415.44	335.57	13.89
2284.22	1866.59	81.72
2118.55	702.15	33.14

Steps:

1. Added a new column called "Profit margin" next to the Sales and Profit columns.
2. In the first cell of the Profit margin column, entered the formula: (Profit / Sales Amount) * 100 and dragged it down to all rows.
3. Selected the Profit margin column, go to Home > Conditional Formatting > Highlight Cells Rules > Greater Than, enter 50, and choose green fill to highlight.
4. Selected the Sales Amount column, go to Conditional Formatting > Highlight Cells Rules > Greater Than, enter 4000, and choose red fill to highlight.
5. The conditional formatting quickly shows highly profitable sales (profit margin > 50%) in green and high sales amounts (above 4000) in red for easy visual analysis.