

Internshala Trainings

Data Science

PowerBI Assignment 2

**Prepared By,
Utkarsh Anand**

Task 1: Profit Margin Calculation & Classification

Part 1: Create a custom column – ProfitMargin

The screenshot shows the Power BI Desktop interface with the Power Query Editor open. A 'Custom Column' dialog box is displayed, asking for a new column name ('Profit Margin') and a formula ('= ([ProductPrice]-[ProductCost])/[ProductPrice]'). The formula is highlighted with a green checkmark. The background shows the 'Products - products' table with various product details. The Query Settings pane on the right lists steps taken during the process.

Steps taken to calculate ProfitMargin column:

1. In Power BI Desktop, click Transform data → opens Power Query Editor.
2. Select the Products table.
3. On the Add Column tab → click Custom Column.
4. In the formula box, type:
$$([ProductPrice] - [ProductCost]) / [ProductPrice]$$
5. Name the column ProfitMargin.
6. Click OK → verify the new column shows decimal values between 0 and 1.

Part 2: Add a conditional column for Margin classification

The screenshot shows the Microsoft Power Query Editor interface. A dialog box is open titled "Add Conditional Column". Inside the dialog, there is a table with three rows defining the conditional logic:

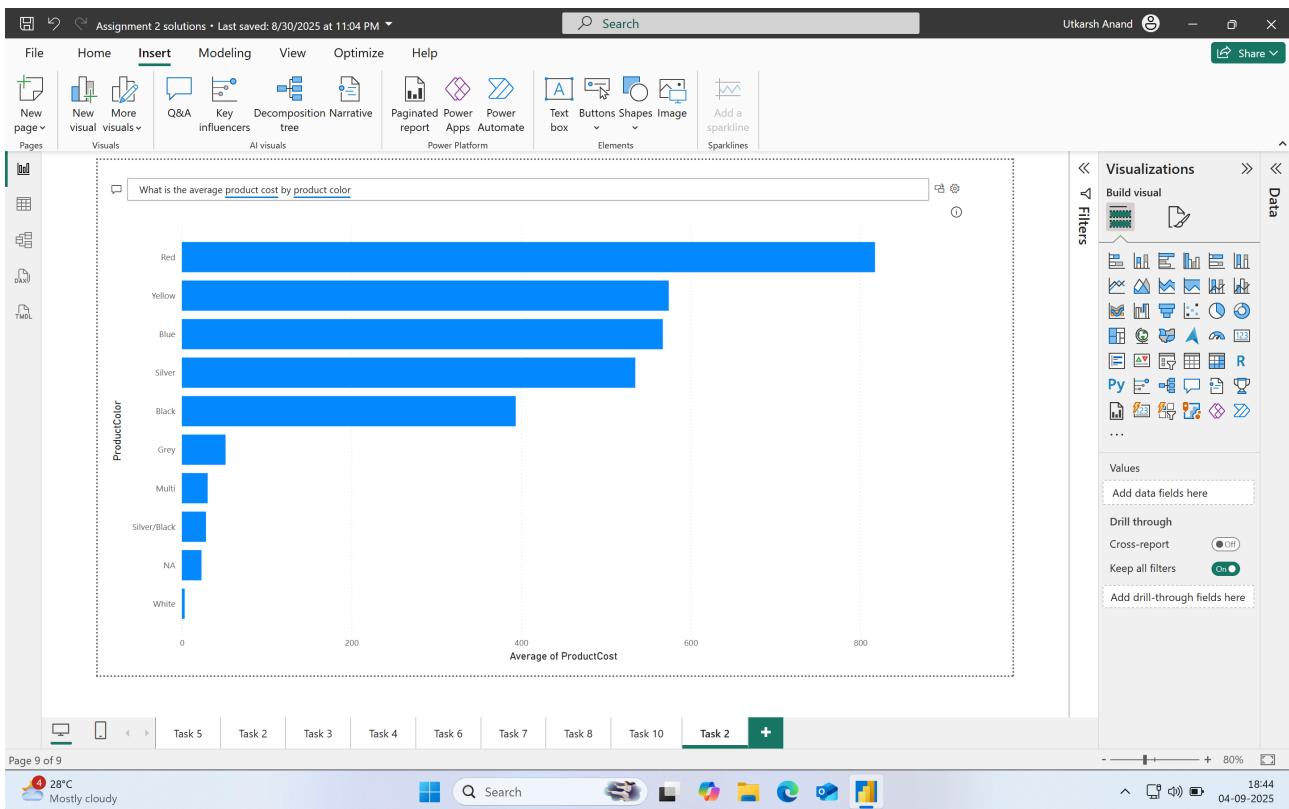
Column Name	Operator	Value	Output
If	is less than	0.2	Low Margin
Else If	is less than	0.5	Medium Margin
Else		High Margin	

The "New column name" is set to "Product Classification". The background shows a preview of the "Products - products" table with columns like ProductKey, ProductSubcategoryKey, ProductSKU, ProductName, ModelName, and ProductDescription.

Steps taken to classify products as High, Medium, or Low Margin:

1. Still in Power Query Editor, click Add Column → Conditional Column.
2. In the dialog:
 - If ProfitMargin > 0.5 → output = High Margin.
 - Else if ProfitMargin >= 0.2 and <= 0.5 → output = Medium Margin.
 - Else → output = Low Margin.
3. Name the column MarginCategory → click OK.
4. Confirm products are tagged correctly.
5. Click Home → Close & Apply.

Task 2: Q&A Feature – Average Product Cost by Product Color



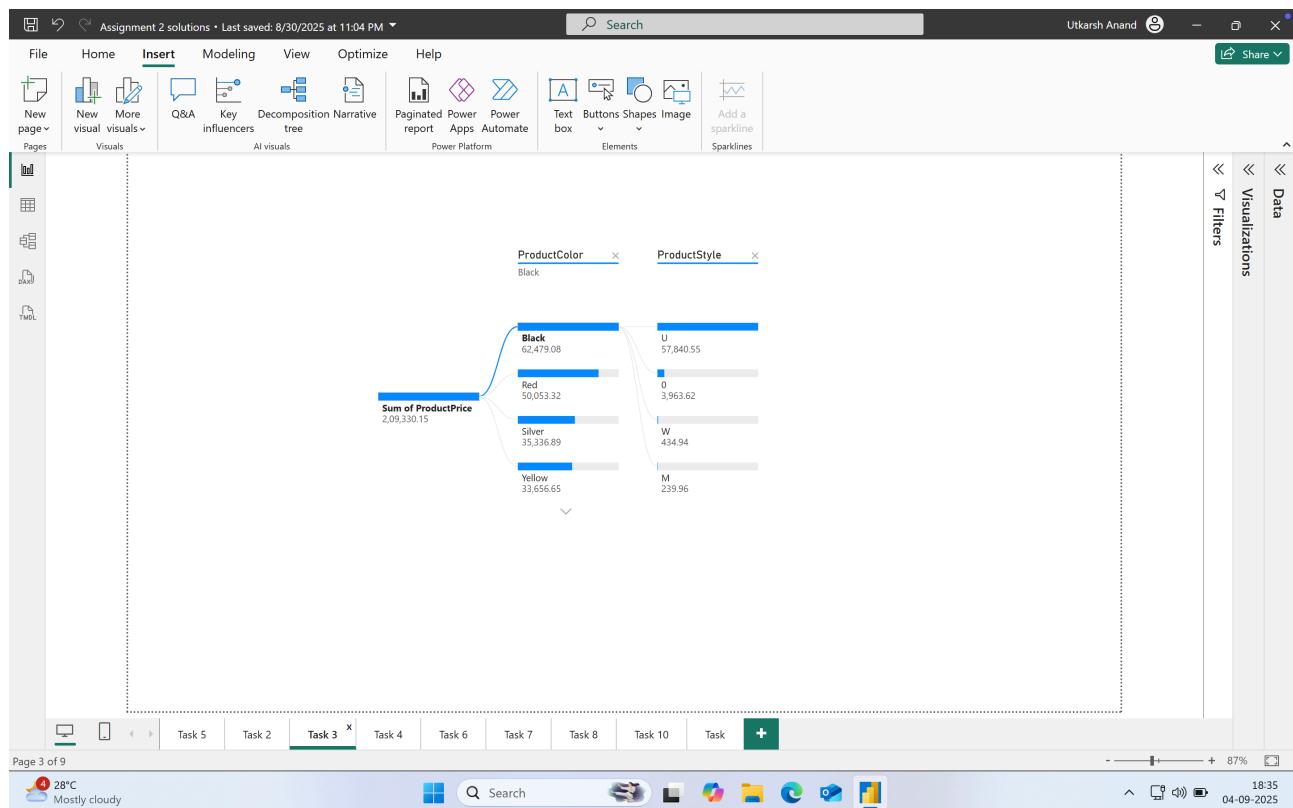
Steps taken to use Q&A and display results:

1. In Report View, go to the Visualizations pane → click the Q&A visual (question box icon).
2. In the Q&A text box, type:

average product cost by product color

3. Power BI automatically generates a bar chart.
4. If another visual appears, change it by clicking the chart icon above the Q&A box → select Clustered Bar Chart.
5. Format: add a Title ("Average Product Cost by Color"), enable Data Labels, and adjust colors.

Task 3: Decomposition Tree – ProductPrice by Color & Style



Steps taken to create and analyze decomposition tree:

1. In Visualizations, click the Decomposition Tree icon.
2. Drag ProductPrice → Analyze field.
3. Drag ProductColor → Explain By.
4. Drag ProductStyle → Explain By.
5. Expand nodes by clicking the + symbol to break down high prices by color, then by style.
6. Review the branches to identify key drivers of higher prices.

Task 4: Key Influencer Visual – High Product Prices

The screenshot shows the Microsoft Power BI Analysis view interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, and Help. The Insert tab is selected, showing options like New page, Visuals, Q&A, Key influencers, Decomposition tree, AI visuals, Paginated report, Power report, Apps, Automate, Power Platform, Text box, Buttons, Shapes, Image, Elements, and Add a sparkline. The main workspace displays a visualization titled "Key influencers Top segments". A dropdown menu "What influences ProductPrice to" is set to "Increase". The visualization pane shows a bar chart titled "Average of ProductPrice" with the following data:

ProductStyle	Average ProductPrice
U	809.6
W	650
O	100
M	100

An annotation above the chart states: "← ProductPrice is more likely to increase when ProductStyle is U than otherwise (on average)." The bottom right corner of the visualization pane shows the text "Average (excluding selected): 233.65". On the far right, there are sections for Data, Visualizations, and Filters. The bottom navigation bar includes Task 5, Task 2, Task 3, Task 4 (selected), Task 6, Task 7, Task 8, Task 10, Task, and a plus sign. The status bar at the bottom shows "Page 4 of 9", the date "04-09-2025", the time "18:35", and the weather "28°C Mostly cloudy".

Steps taken to determine factors influencing high prices:

1. In Visualizations, click Key Influencers.
2. Drag ProductPrice into Analyze.
3. Add ProductColor, ProductSize, ProductStyle into Explain By.
4. The visual highlights which features most influence high prices.
5. Observed the insights pane on the right (e.g., certain colors or styles strongly linked with higher prices).
6. Summarized findings in text.

Task 5: Column from Example & Table with Conditional Formatting

The screenshot shows the Microsoft Power BI Report View interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, and Help. The Insert tab is selected. Below the ribbon, there are several visual options: New page, New visual, More visual, Q&A influencers, Decomposition tree, AI visuals, Paginated Power report, Power Automate, Text box, Buttons, Shapes, Image, Elements, and Sparklines. The main content area displays a table titled "ProductColor Sum of ProductCost". The table has two columns: "ProductColor" and "Sum of ProductCost". The data rows are color-coded: White (light blue), Grey (light grey), Silver/Black (light grey), Multi (light grey), NA (light grey), Blue (pink), Silver (pink), Yellow (pink), Red (pink), and Black (pink). The total row at the bottom is also pink. The right side of the screen shows Data, Visualizations, and Filters panes. The bottom status bar shows "Page 1 of 9", the date "04-09-2025", and the time "18:35".

ProductColor	Sum of ProductCost
White	13.52
Grey	51.56
Silver/Black	198.97
Multi	243.97
NA	1,159.28
Blue	14,745.09
Silver	19,246.68
Yellow	20,666.38
Red	30,238.47
Black	34,638.76
Total	1,21,202.68

Part 1: Extract first letter of ProductColor

Steps taken to create first-letter column:

1. In Power Query Editor, select ProductColor column.
2. On the Add Column tab → Column from Examples → choose From Selection.
3. Type the first letter of a few values manually (e.g., “R” for “Red”).
4. Power BI auto-detects the pattern.
5. Column created → rename it ColorInitial.

Part 2: Create table with conditional formatting

Steps taken:

1. In Report View, click Table visual.
2. Add ProductColor and Total ProductCost as fields.

3. In Visualizations → Format → Conditional Formatting → Background color, apply a color scale:
- Highest costs → Dark Pink.
 - Medium costs → Light Pink.
 - Lowest costs → White.

Task 6: Bookmarks for Different Views

The screenshot shows a Microsoft Power BI Report View window. At the top, the ribbon has tabs: File, Home, Insert, Modeling, View, Optimize, and Help. The Insert tab is selected. Below the ribbon are several toolbars: Pages, Visuals, Q&A influencers, Decomposition tree, Paginated report, Power report, Apps, Automate, Power Platform, Text, Buttons, Shapes, Image, Elements, and Sparklines. On the left, there's a navigation pane with options like New page, New visual, More visual, AI visuals, and Power Platform. The main area displays three bookmarked views:

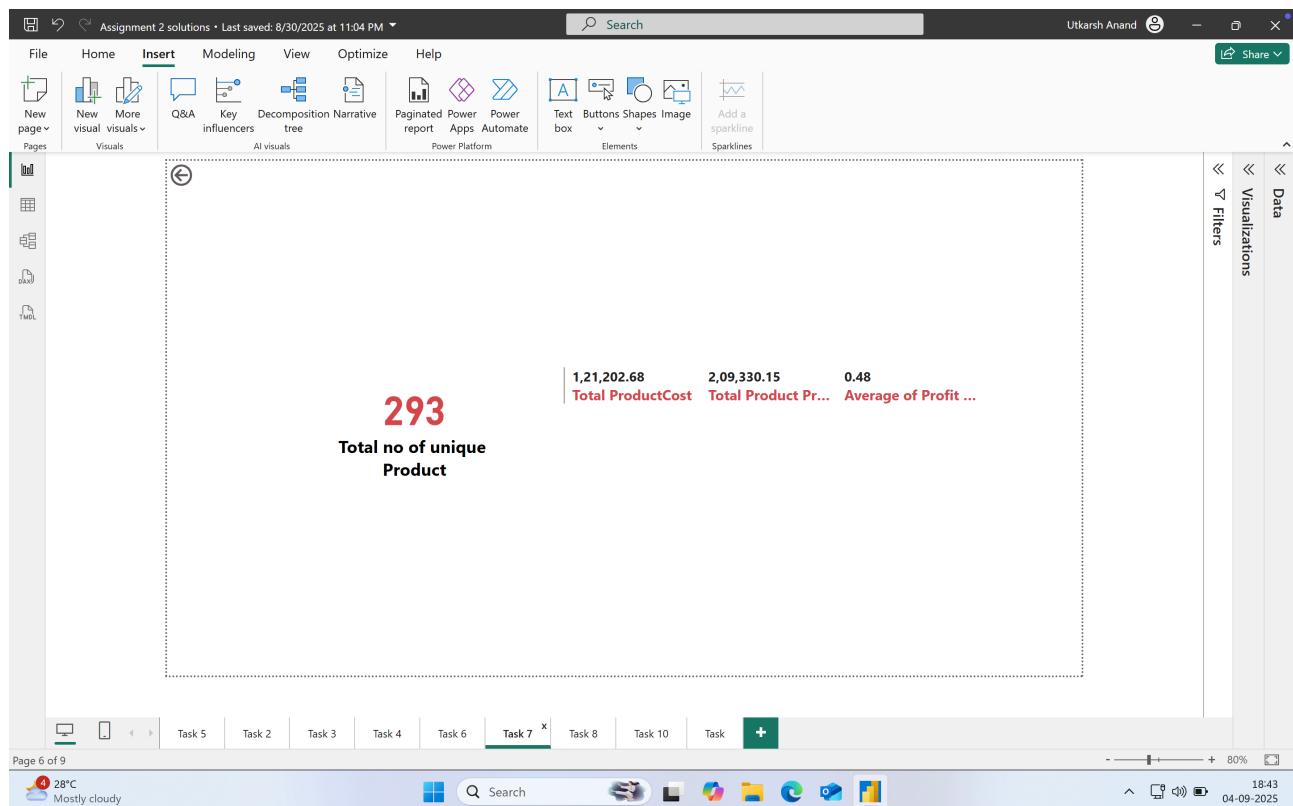
- ProductStyle View** (Yellow): Filtered by ProductStyle = Blue. The visualization shows a count of products, with one item labeled "Classic Vest Product".
- ProductColor View** (Purple): Filtered by ProductColor = Blue. The visualization shows a list of products under the heading "ProductName".
- ProductSize View** (Blue): Filtered by ProductSize = L, M, S. The visualization shows a list of products under the heading "ProductName".

On the right side of the window, there are sections for Data, Visualizations, and Filters. The status bar at the bottom shows "Page 5 of 9", the date "04-09-2025", and the time "18:42".

Steps taken to create bookmarks by Style, Color, and Size:

1. In Report View, apply a filter (e.g., ProductStyle = Formal).
2. On View tab → Bookmarks Pane → Add → rename to Style View.
3. Apply another filter (e.g., ProductColor = Red) → Add → rename Color View.
4. Apply filter by ProductSize → Add → rename Size View.
5. Bookmarks saved, accessible through Bookmarks Pane.

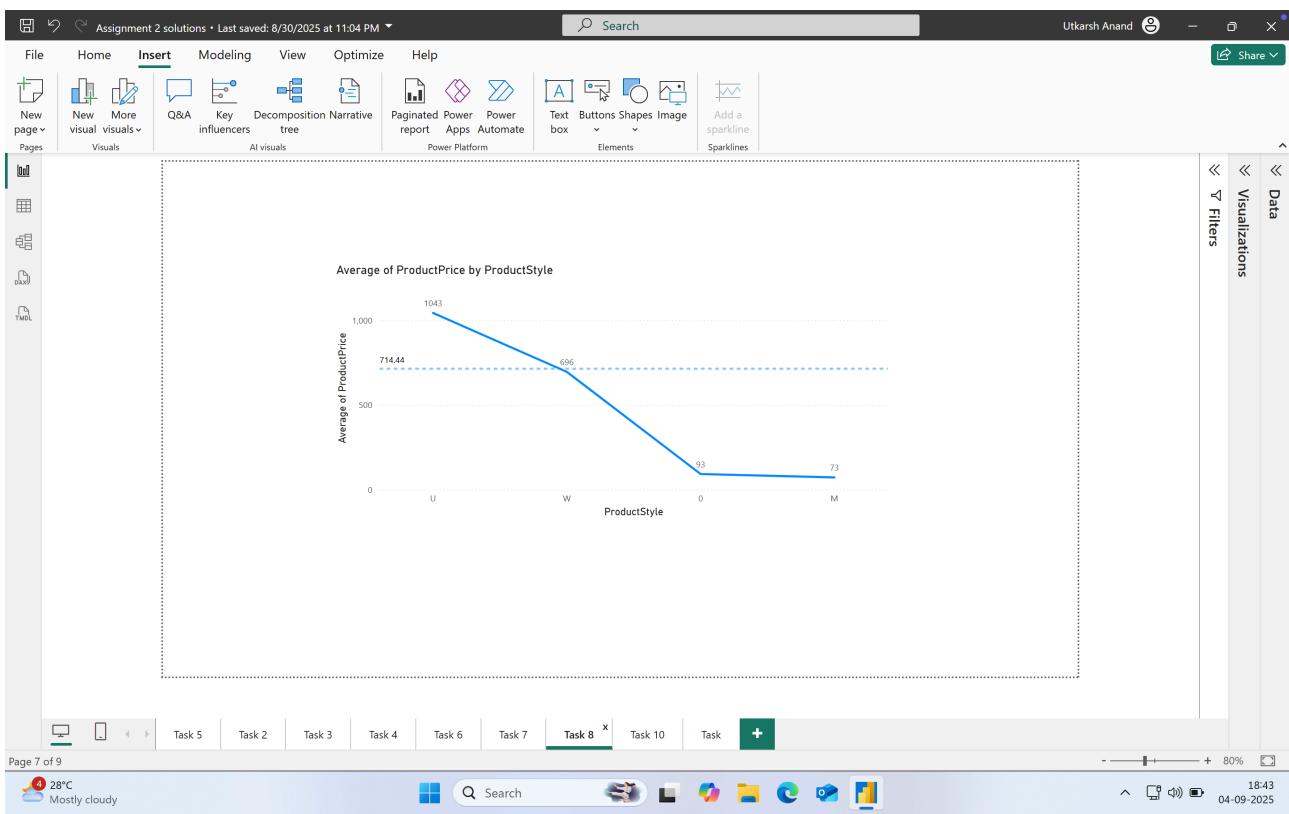
Task 7: Cards – Single and Multi-row



Steps taken:

1. Single-row card:
 - Click Card visual.
 - Drag ProductID (set to Count Distinct) → shows total unique products.
2. Multi-row card:
 - Click Multi-row Card visual.
 - Drag fields: Total Product Cost, Total Product Price, Average Profit Margin.
 - Adjust formatting for readability.

Task 8: Reference Line in Line Chart



Steps taken to add reference line:

1. Create Line Chart visual.
2. X-axis: ProductStyle; Y-axis: ProductPrice (Sum or Average).
3. With the chart selected, open Analytics Pane (magnifying glass icon).
4. Add Average Line → choose Average of ProductPrice.
5. Format line color (red/blue) and label as “Average Price”.

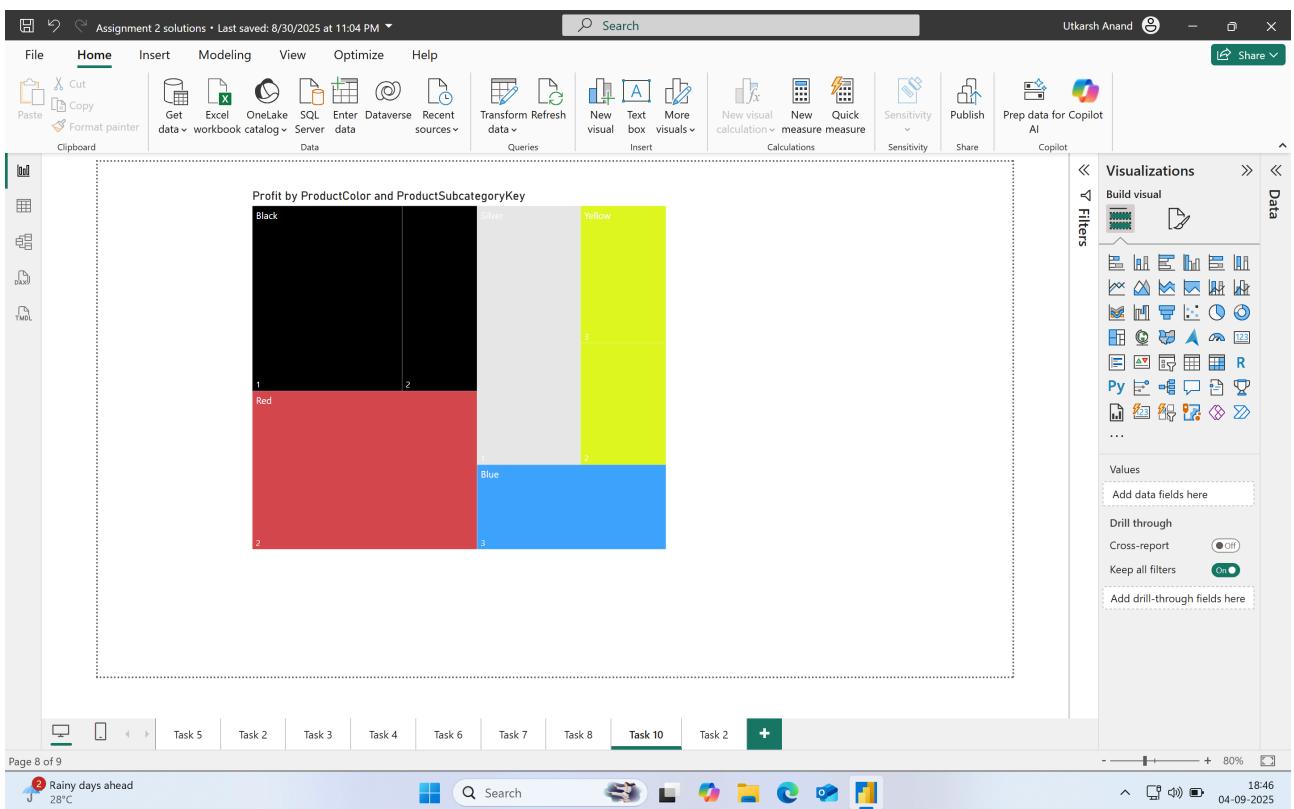
Task 9: Remove Duplicate Product Records

The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top includes File, Home, Transform, Add Column, View, Tools, and Help. The Home tab is selected, showing various data manipulation tools like Close & Apply, New Source, Refresh, Manage, Properties, Advanced Editor, and Remove Duplicates. A table titled "Products - products" is displayed with columns: ProductKey, ProductSubcategoryKey, ProductSKU, ProductName, ModelName, and ProductDescription. The table contains 293 rows, with the first few rows showing items like "Sport-100 Helmet, Red" and "Sport-100 Helmet, Black". On the right side, the "Query Settings" pane is open, showing the "APPLIED STEPS" section which includes "Removed Duplicates". The status bar at the bottom indicates "11 COLUMNS, 293 ROWS" and "Column profiling based on top 1000 rows". The taskbar at the bottom shows the Windows Start button, a search bar, and several pinned application icons.

Steps taken:

1. In Power Query Editor, select the Products table.
2. Select ProductID column (or multiple columns if needed).
3. On Home tab → Remove Rows → Remove Duplicates.
4. Preview to confirm duplicates removed → Close & Apply.

Task 10: Treemap of Price & Top 3 Subcategories



Steps taken:

1. In Report View, click Treemap visual.
2. Fields:
 - Group: ProductColor, SubCategory.
 - Values: ProductPrice (Sum).
3. Treemap displays price by color and subcategory.
4. To show top 3 by profit:
 - Create a New measure:

Profit = SUM(Products[ProductPrice]) - SUM(Products[ProductCost])

- Apply Top N filter on SubCategory using this Profit measure → Show Top 3.
- 5. Treemap now highlights the top 3 profitable subcategories.