Power BI Assignment- By Ninad S. Mandavkar

Day-1

1. What are the various versions of Power BI?

Answer:

Power BI currently comes in three versions:

Microsoft Power BI Free/Desktop – This version is for users who want to get business insights from their data with visualizations.

Power BI Desktop is basically the version of Power BI that you install on to your local system / computer to access the basic features of Power BI and act as a companion to the main, cloud based application. It is the ideal version to start with no matter your skill level Power BI Free enables you to connect to 70+ data sources, analyse data, publish to the web, export to excel and much more.

Microsoft Power BI Pro – This is the full version of Power BI. It allows users unlimited reporting, sharing, and viewing of reports.

Power BI Pro is the full version of Power BI, which means it comes complete with the ability to use Power BI for both building dashboards, reports and unlimited viewing, sharing and consumption of your created reports (and reports shared by others) which is not possible with Power BI Desktop.

The biggest difference of Power BI Pro vs. Free is the fact that with Pro you have the option and the ability to share the data, reports, and dashboards with a large number of other users that also have a Power BI Pro license while also being able to create an app based workspace.

Microsoft Power BI Premium – This version provides a license for all users in an organization.

The Power BI Premium licence is not a per-user licence like a Free or Pro Licence. Instead, Power BI Premium licence provides a dedicated unit of capacity for all users in the organisation. This dedicated capacity (aka Premium Workspace) can be used to host large datasets up to 50GB while offering a total storage of 100TB in the cloud.

<u>Day-2</u>

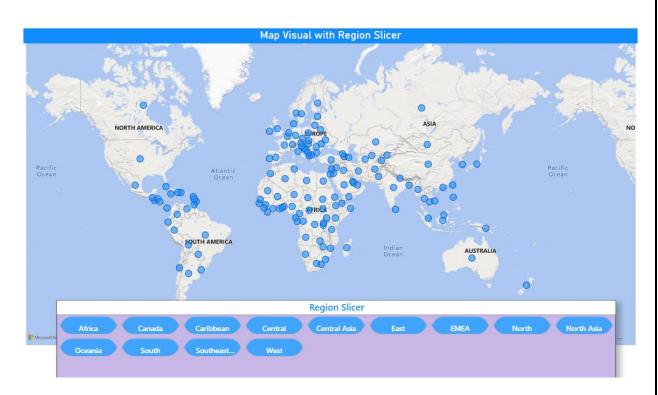
2. Drag the Country from the region_data then in the report view and mention the name of the visual in the text box and add the labels in the visual.



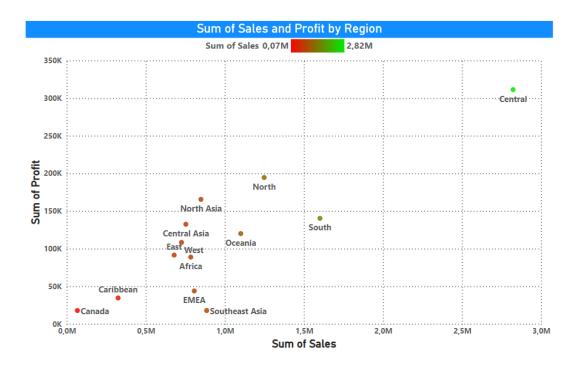
Country Map

<u>Day-3</u>

3. Create a basic map visual on the report page using the Global superstore and Use the region column in the slicer visual to get interacted with the map visual.



4. Create a basic scatter plot using sales and Profit information and represent it (refer to region column), which helps identify the highest green color and lowest sales red color.



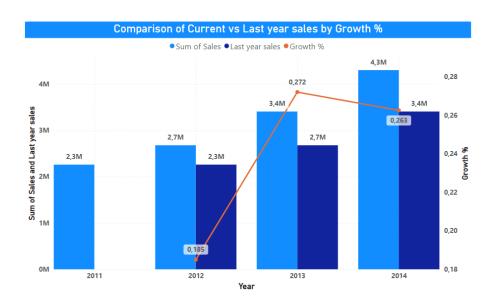
Day-5

- 5. Create a line and clustered chart and compare this year vs last year's sales along with growth %?
 - First create a clustered Column and line visual with Year on X-axis and Sum of Sales on Y-axis.
 - Create a new measure Last year sales on Superstore as follows:

```
1 Last year sales = CALCULATE(SUM(Superstore[Sales]),SAMEPERIODLASTYEAR(Superstore[Order Date].[Date]))
```

Create another measure Growth % as follows:

 Now drag Growth % in secondary line Y axis and Last year sales in Column Y axis to get the following results:

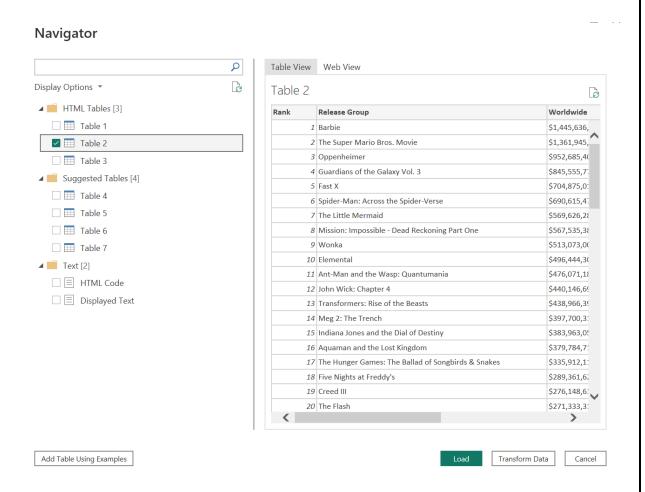


<u>Day-6</u>

- 6. Import data from 2023 Worldwide Box Office Box Office Mojo and add the past 3 years of data in the Power Query editor, create a master table of the past 3 years of data, and load only master data in the power bi query editor or power bi desktop?
 - First visit and copy the following url to get data for 2023 Worldwide Box Office Box Office Mojo.

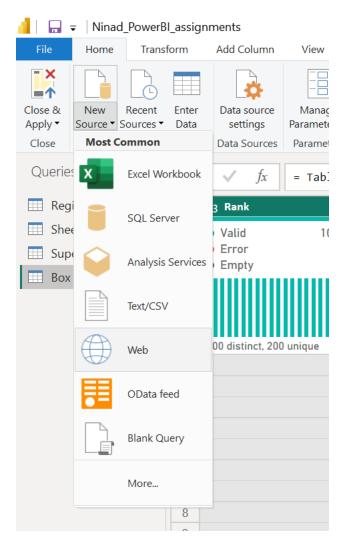
2023 Worldwide Box Office - Box Office Mojo

- Then open Power BI, select Get data>Web>"paste the 2023 url" and click on Ok.
- Now select Table 2 data (since it has more attributes) and click on Transform data.

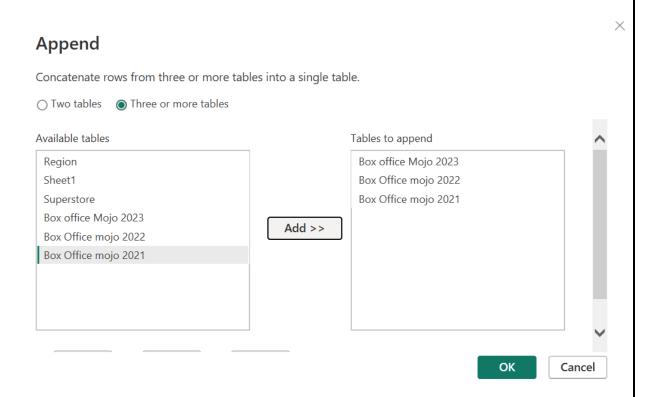


 It will redirect to Power Query editor. Firstly, rename the table to "Box Office mojo 2023". In the Power Query editor itself we can import 2022 data as well. This can be done by clicking on New Source>Web>"Paste the 2022 url" and click on Ok. The 2022 url is linked below:

2022 Worldwide Box Office - Box Office Mojo



- Select Table 2 data again and click on Ok to load it. Once loaded rename the table to "Box Office mojo 2022".
- Repeat the same steps for the data of "Box Office mojo 2021".
- To create a Master table, append all the 3 tables together. Also one thing to note here is the tables can be easily appended since we have common headers.
- To Append, click on Append Queries>Append Queries as New>Three
 or more tables and then add the subsequent tables in the right order
 and then click on Ok.

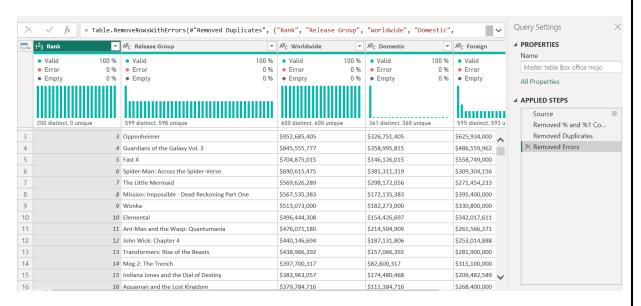


- Rename the table as "Master table Box office mojo".
- Once done uncheck enable load for Box office mojo table 2023, Box office mojo table 2022 and Box office mojo table 2021 and then click on Close and Apply. This will only load the tables where Enable load is selected.



7. Delete unwanted columns, replace, or remove the error value in the master table and format the data and represent the column quality.

 Now format the data in the Transform tab and do the essential transformations. Once done close and apply the changes.



Day-7

- Add all 3 tables from the model data and create a table to show the detailed information for each day wise the sum of order quantity, shipped quantity, and delivered quantity. Kindly use a card visual to show the difference between the total order quantity and the shipped quantity,
 - the 2nd difference between total order quantity and delivered quantity, using quick measure.
- 9. If there is a difficulty with tables having many-to-many relationships. Create an intermediate table (also known as a bridge table) to handle many-to-many relationship issues.

Ans:

 Firstly go to Table tools and select New Table. Now write a DAX expression for the new table as follows:



```
1 bridge table = CALENDARAUTO()
```

• Once done create a Table visual by selecting:

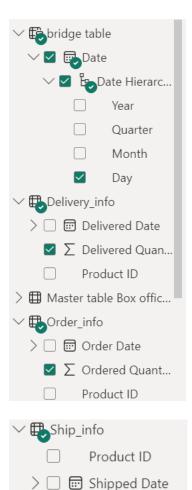
Table_name(column_name)

bridge table(day)

Order info(Σ Order quantity)

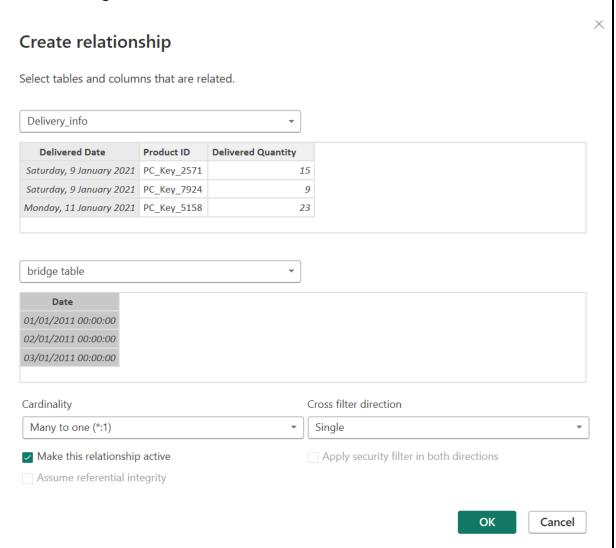
Delivery info(∑ Delivered quantity)

Ship $info(\sum Shipped quantity)$



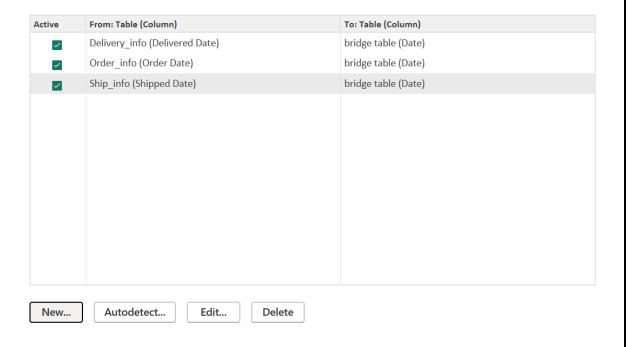
✓ Shipped Quant...

 Once the table visual is created, it is important that we first create relationships. Hence, go to "Model view", click on "Manage Relationships" and select table Delivery info and bridge table and generate a relationship by selecting Date as a common column and later selecting Ok.



 Repeat the same thing for Order info and Shipping Info tables. The final summary of relations will look like follows:

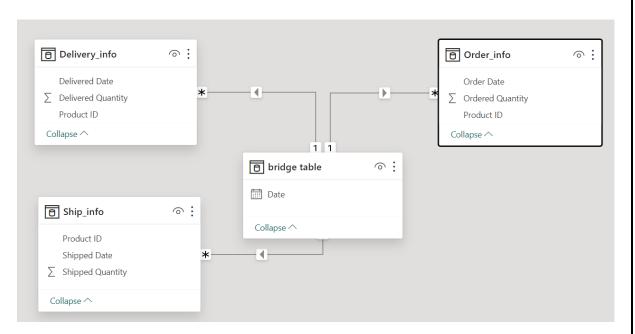
Manage relationships



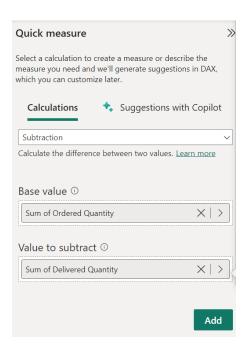
 \times

Close

 Once done click on Close. The generated cardinalities will be reflected in the Model view as follows:



 Go to Report view. Now create a Quick measure for the difference between sum of total ordered quantity and delivery quantity.



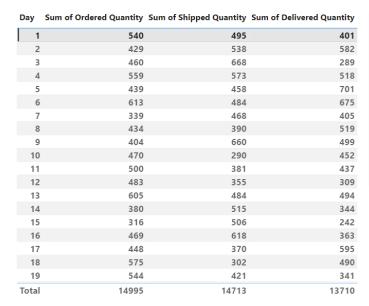
Quick measure will generate a DAX expression all by itself.

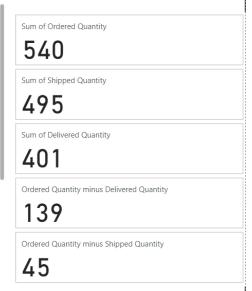
```
1 Ordered Quantity minus Delivered Quantity =
2 SUM('Order_info'[Ordered Quantity]) - SUM('Delivery_info'[Delivered Quantity])
```

 Commit this measure. Similarly create another quick measure for the difference between Order info's and Ship info's quantity. The generated DAX will be as follows:

```
1 Ordered Quantity minus Shipped Quantity =
2 SUM('Order_info'[Ordered Quantity]) - SUM('Ship_info'[Shipped Quantity])
```

 Now drag Sum of Ordered quantity, Sum of Shipped quantity, Sum of Delivered quantity and the two quick measures generated in the new card visual to generate an interactive card with Table visual.

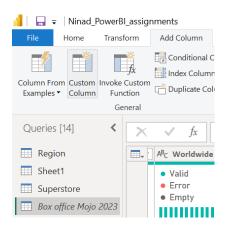




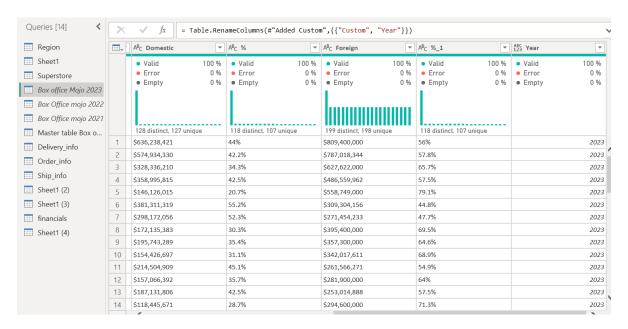
10. Refer to question no. 6! After importing all the 3 years of the data, kindly add the custom column of specific year data for e.g. (if you have imported the data for the year 2023, please create a new column called year and add 2023 for each row).

Ans:

• Go to Transform data ribbon which will direct one to Power query editor. Select the table "Box Office Mojo 2023" and go to Add column ribbon and select Custom Column.



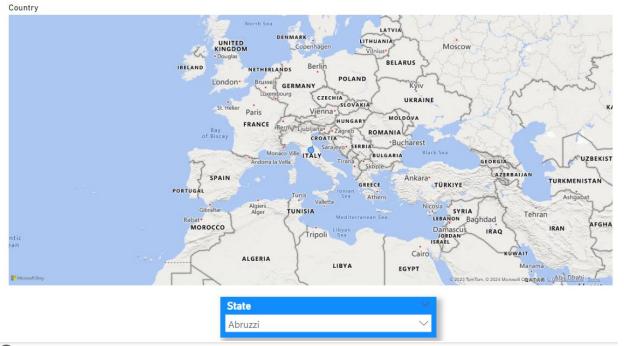
 To add a column use date.year of #datetime function, here datetime function returns the date while date.year returns the year from the date. The output will be an added year column 2023 in Box Office Mojo 2023 dataset.



Day-9

Refer to Global superstore data.

11. Create a map visual and use the drill down to show detailed information for each country by state. (For detailed information you can use the region slicer).



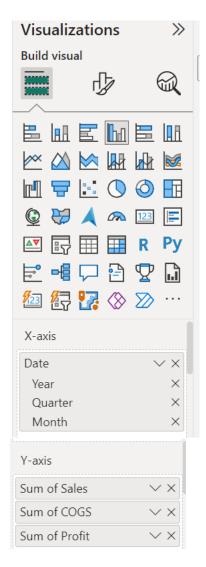
Country	State	Product Name	Sum of Sales	Sum of Profit
Italy	Abruzzi	Accos Staples, 12 Pack	51,90	10,80
Italy	Abruzzi	Apple Office Telephone, Full Size	199,71	13,26
Italy	Abruzzi	BIC Highlighters, Easy-Erase	57,60	13,23
Italy	Abruzzi	Binney & Smith Pencil Sharpener, Water Color	107,76	49,56
Italy	Abruzzi	Binney & Smith Sketch Pad, Blue	138,96	36,09
Italy	Abruzzi	Boston Canvas, Fluorescent	274,50	49,35
Italy	Abruzzi	Breville Refrigerator, Silver	1.560,24	421,20
Italy	Abruzzi	Enermax Note Cards, Multicolor	293,76	61,56
Italy	Abruzzi	Fiskars Box Cutter, High Speed	35,52	12,42
Italy	Abruzzi	Ibico Index Tab, Durable	37,08	16,20
Italy	Abruzzi	Ikea Library with Doors, Mobile	2.927,28	146,16
Italy	Abruzzi	Jiffy Peel and Seal, Security-Tint	44,82	4,92
Italy	Abruzzi	Rogers File Cart, Industrial	84,96	-32,58
Italy	Abruzzi	Rubbermaid Clock, Durable	94,38	33,96
Italy	Abruzzi	Sauder 3-Shelf Cabinet, Pine	504,09	115,92
Italy	Abruzzi	Stanley Pens, Fluorescent	56,55	4,95
Italy	Abruzzi	Tenex Light Bulb, Durable	63,84	7,56
Italy	Abruzzi	Tenex Stacking Tray, Erganomic	190,80	13,20
Total			6.723,75	977,76

Refer to Financials sample data.

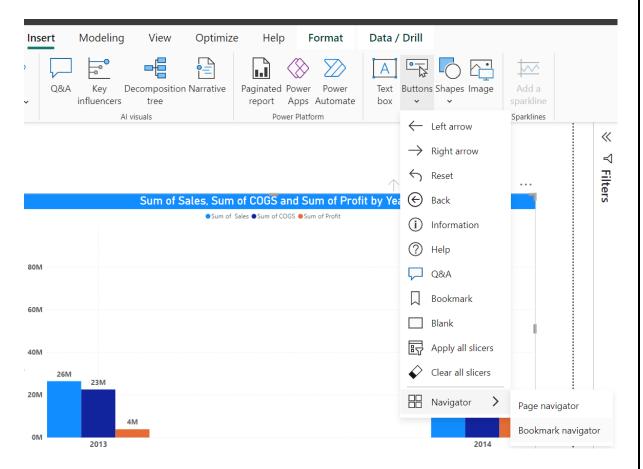
12. Create a clustered column chart referring to the order date and sales, then apply bookmarks based on date year, quarter, and month.

Ans:

• First create a clustered column chart by dragging Date column (Year, Quarter, Month) from financials in X axis and Sales, COGS and profit in Y-axis.



• Once done, click on Bookmark navigator from the Button section in Insert ribbon.



Create all the 3 buttons first.



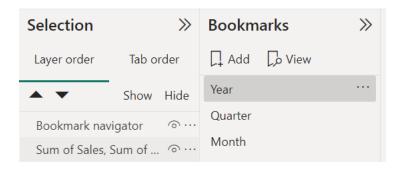
- Create a bookmark by the name Year. Make sure the visual is drilled up to Year wise Sales/Profit/COGs.
- Repeat the same for Quarter and Month button- To drill down to the next level in visual select the drill mode first,



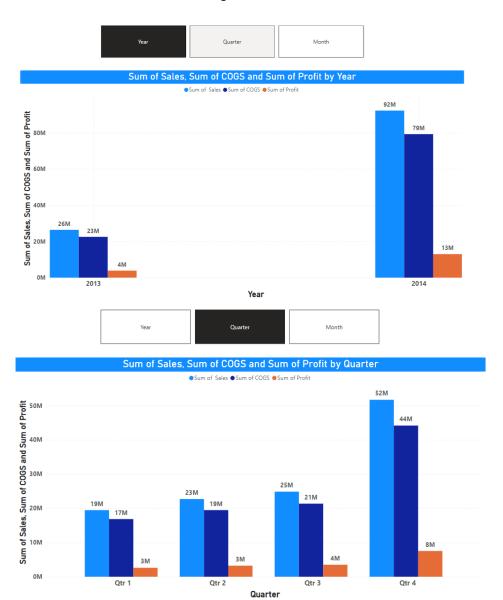
Once selected drill down to create the next level of visual using the icon besides it.

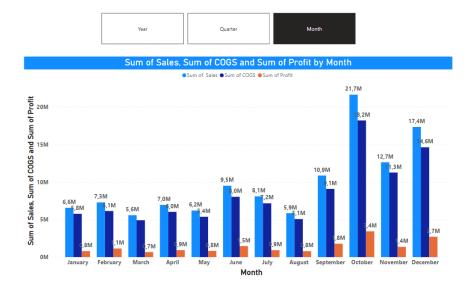


The created bookmarks will look as follows:



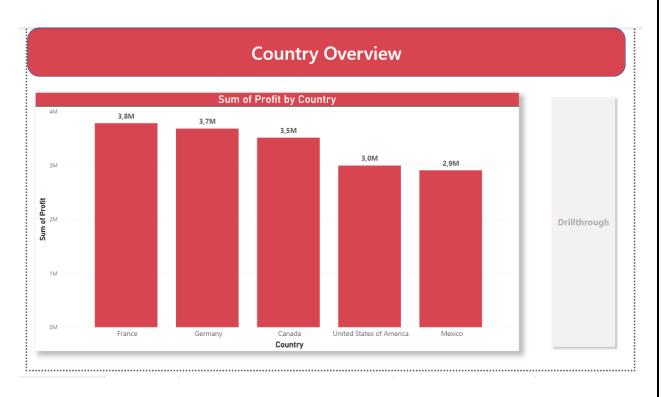
Now Ctrl + Click on the button to get interactive visuals as follows:

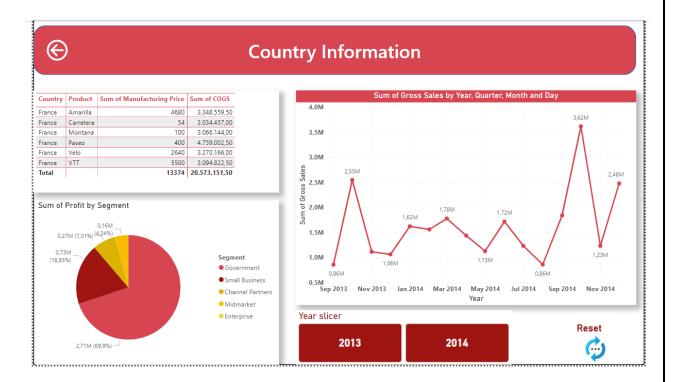




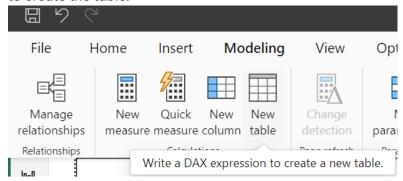
- 13. Create a country overview page and add another page that contains detailed information about the country with drill through options.
- 14. Add the reset image in which all the filters should get removed and the report page should be default in the country information page.

Ans 13 & 14:





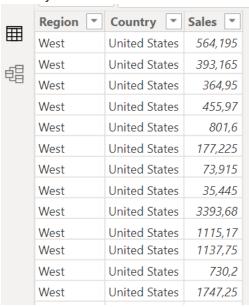
- 15. Create a new summarize table with selected columns (region, country, sum of sales) from the global superstore and filter the region based on the given conditions, Central Asia, North, South & East.
 - To create a summarized table, we need to create a new table using Summarize function to Group by Selected Columns (i.e. Region, Country, Sum of Sales).
 - New table can be created through Modelling ribbon>New Table. We make use of DAX to create the table.



 Write a DAX using Summarize function starting with the source table name (i.e. Superstore) followed by the Group by fields i.e Country, Region and Sales.



 Now if we go to the Table view, the generated table is still not summarized based on Country.



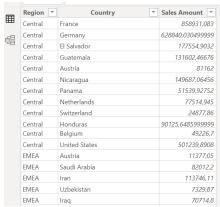
 In order to fix this issue, we need to create a New measure called Total Sales for Superstore.

```
1 Total Superstore Sales = SUM(Superstore[Sales])
```

 Once done, rewrite the DAX by using this measure in one of it's arguments as a custom column instead of using Sales as a Group by argument.

```
1 Summarized Table = SUMMARIZE (Superstore, Superstore [Region], Superstore [Country], "Sales Amount", [Total Superstore Sales])
```

 Now the Table view will have a Custom Column Sales Amount with Sales Grouped by Country as follows:



- However, we have to filter the region based on the given conditions where region is Central Asia, North, South & East.
- This can be done by rewriting the DAX using a filter function.



- In the Filter, the arguments would be the Superstore table followed by the Filter condition which is Region = Central Asia, North, South, East.
- To check the final visual select table visual and drag the Region, Country and Sales column to get the final table visual as follows:

Region	Country	Sum of Sales Amount
Central Asia	Afghanistan	21.673,32
Central Asia	Bangladesh	78.256,47
Central Asia	India	589.650,11
Central Asia	Nepal	3.522,24
Central Asia	Pakistan	58.872,61
Central Asia	Sri Lanka	851,82
East	United States	678.781,24
North	Denmark	8.638,05
North	Finland	20.704,35
North	Ireland	16.639,51
North	Mexico	622.590,62
North	Norway	20.525,37
North	Sweden	30.491,40
North	United Kingdom	528.576,30
South	Argentina	57.511,78
South	Bolivia	11.588,97
South	Brazil	361.106,42
South	Chile	35.447,07
South	Colombia	81.502,53
South	Ecuador	13.342,98
Total		4.280.680,45

16. Create a week column based on the order date from the global superstore data. e.g. required output "Week-5"

Ans:

- To add a week column first we need to make a Calendar table including all the dates from Superstore dataset. Doing so we will get all the dates arranged in an ascending orders, which would make us easy to assign the weeks.
- Go to Modelling ribbon, create a new table using DAX with Calendar() as the function fetching records from superstore dataset as follows:

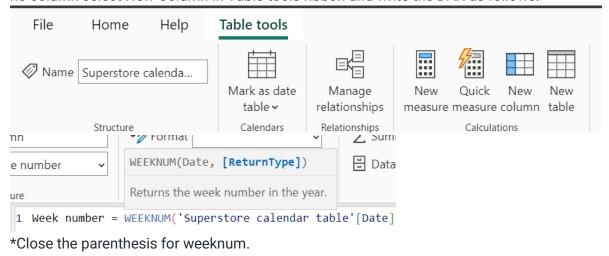


Here Calendar as a function has 2 arguments. Startdate & Enddate. We can use firsdate() and Lastdate() functions to fetch the first and last dates from the superstore dataset.

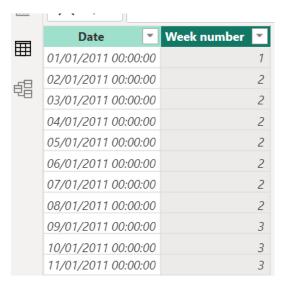
In the Table view a new table will be created as follows:



 Now to add the week number we use the function WEEKNUM(). So to add the Week no column select New Column in Table tools ribbon and write the DAX as follows:



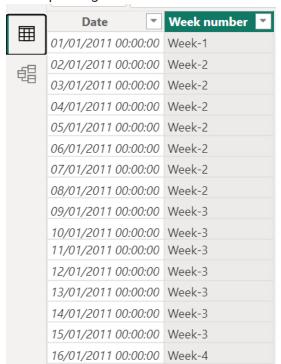
However, the output we get will be numbers as follows:



To get o/p in the form of Week-1 we have to concatenate the numbers with "Week-".
 So rewrite the DAX as follows:



• The o/pe we get now in Table view is:



Creating a Table visual we get the final output as:

Year	Quarter	Month	Day	Week number
	2011 Qtr 1	January	1	Week-1
	2011 Qtr 1	January	2	Week-2
	2011 Qtr 1	January	3	Week-2
	2011 Qtr 1	January	4	Week-2
	2011 Qtr 1	January	5	Week-2
	2011 Qtr 1	January	6	Week-2
	2011 Qtr 1	January	7	Week-2
	2011 Qtr 1	January	8	Week-2
	2011 Qtr 1	January	9	Week-3
	2011 Qtr 1	January	10	Week-3
	2011 Qtr 1	January	11	Week-3
	2011 Qtr 1	January	12	Week-3
	2011 Qtr 1	January	13	Week-3
	2011 Qtr 1	January	14	Week-3
	2011 Qtr 1	January	15	Week-3
	2011 Qtr 1	January	16	Week-4
	2011 Qtr 1	January	17	Week-4
	2011 Qtr 1	January	18	Week-4
	2011 Qtr 1	January	19	Week-4
	2011 Qtr 1	January	20	Week-4
	2011 Qtr 1	January	21	Week-4
	2011 Qtr 1	January	22	Week-4
	2011 Qtr 1	January	23	Week-5
	2011 Qtr 1	January	24	Week-5
	2011 Qtr 1	January	25	Week-5
	2011 Ote 1	lanuani	26	Wook E

Day-13

- 17. Create a table visual to show the current month's sales vs last month's sales.
 - To create a Table visual of the current month's sales vs last month's sales we have to create only the measure for last months' sales, since the month wise Sum of Sales itself will be the current month's sales.
 - DAX measure for the last month's sales will be given as:

```
1 Last month sales = CALCULATE(SUM(Superstore[Sales]),DATEADD(Superstore[Order Date].[Date],-1,MONTH)
```

- Here, we are using DateAdd function in the filter moves the date forward or backward by year/month/day/quarter. Here -1 is the interval for which the date will be shifted backwards (- indicates backwards) by 1 month (since -1 here is succeeded by month in the argument above). This will thus give us Last Month's sales.
- Now simply create a table visual by dragging Month, Sum of Sales (rename it as Current Month Sales) and lastly use the measure we created Last Month Sales.
 The Table visual will look like follows:

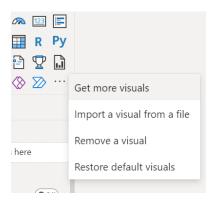
Current Vs Last Month's Sales						
Month	Sum of Sales	Last month sales				
January	775.766,91	955.577,71				
February	722.853,17	775.766,91				
March	951.333,08	722.853,17				
April	851.617,32	951.333,08				
May	976.415,68	851.617,32				
June	1.152.367,79	976.415,68				
July	838.743,56	1.152.367,79				
August	1.247.500,81	838.743,56				
September	1.244.139,73	1.247.500,81				
October	1.120.777,47	1.244.139,73				
November	1.377.651,29	1.120.777,47				
December	1.383.335,11	1.377.651,29				
Total	12.642.501,91	12.214.744,51				

18. Insert the scroller custom visual and add it to the report page referring to the country and profit column.

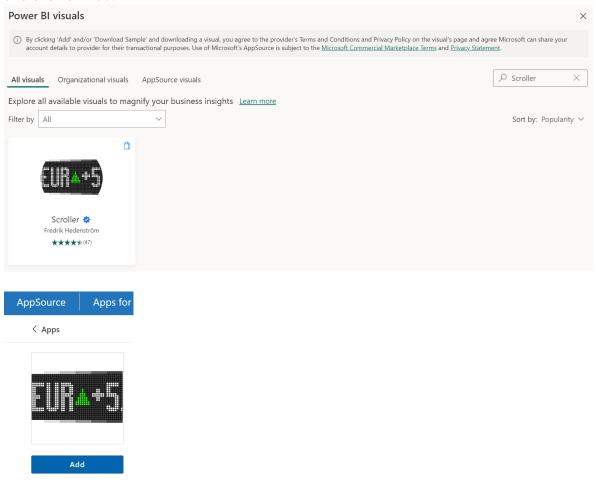
Ans:

- To create a scroller visual one needs to first add this custom visual in Power BI desktop.
- To add a Custom visual, select the 3 dotted symbol from Visualizations pane and select Get more visuals. (one needs a company mail address/temp mail address to get access to Custom visuals).

To generate a Temp address for Power BI service one can use the following web link Temp Mail - Disposable Temporary Email (temp-mail.org)



• Under Power BI visuals window search for scroller. Select the scroller application and click on Add.



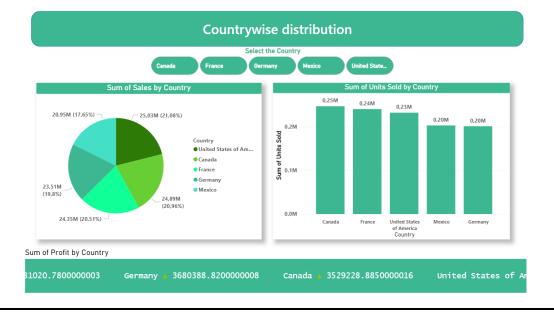
 Once done the scroller visual will be pinned to the Visualizations pane. Now select the Scroller visual, drag Country in Category field and Profit in Measure deviation field.



• This will get you the required Scroller visual as follows:

France A 3781020.7800000003 Germany A 3680388.8200000008 Canada A 3529228.8850000016 United

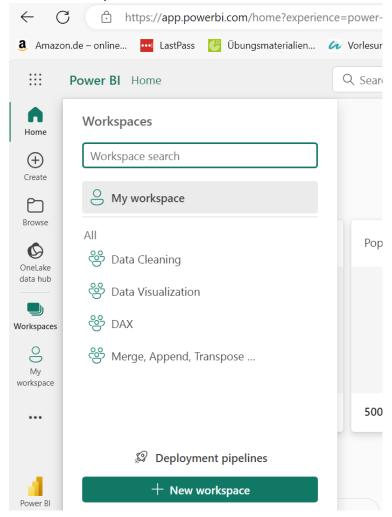
• To make it visually appealing, one can create an interactive report by adding some visuals along with the scroller.



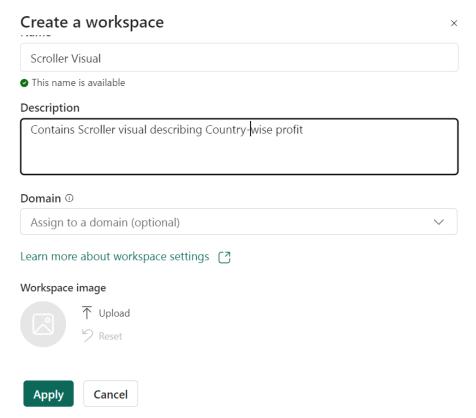
19. Create a shared workspace and add the organization members to the workspace then publish the report.

Ans:

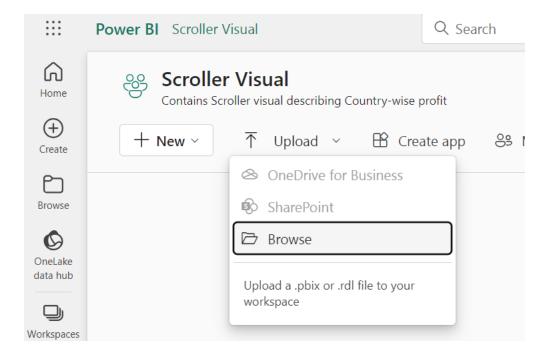
- To create a workspace, one must first have Power BI service account. To create a
 Power BI service account on need either a company mail address/ temp mail address.
 To generate a Temp mail address one can use the following link:
 Temp Mail Disposable Temporary Email (temp-mail.org)
- Once done visit https://app.powerbi.com/. Enter your login credentials.
- Now to create a workspace, select Workspaces in Power BI service portal and click on New Workspace.

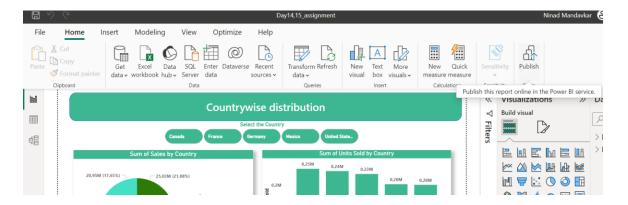


 A new window "Create a workspace" will pop up where one can put necessary details about the file one needs to publish. Once done click on apply.

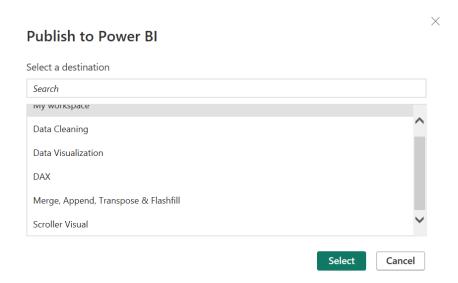


Once done a workspace will be created which will look like follows. To publish one's
work one can either upload it from Power BI service and browse the necessary file or
one can publish it from the Power BI desktop application.

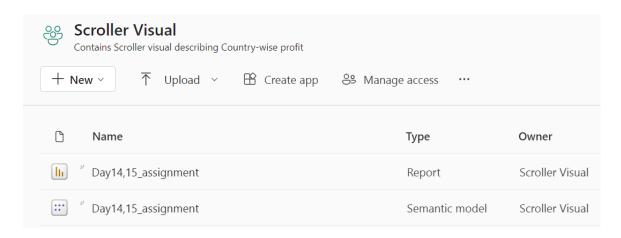




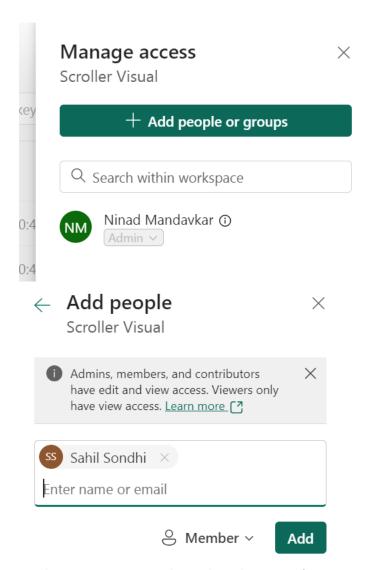
• Once clicked on Publish icon, select the workspace where you want to publish the report. In my case, I have selected the workspace I created recently "Scroller visual".



• The report will be then published in the workspace along with the semantic model for the same.



• To add organization members to use the shared workspace one has to click on "Manage Access" followed by Add people or Groups. One has to put the mail id of the member one needs to add and click on Add.



• Furthermore, one can also select the type of access one wants to provide as follows:

