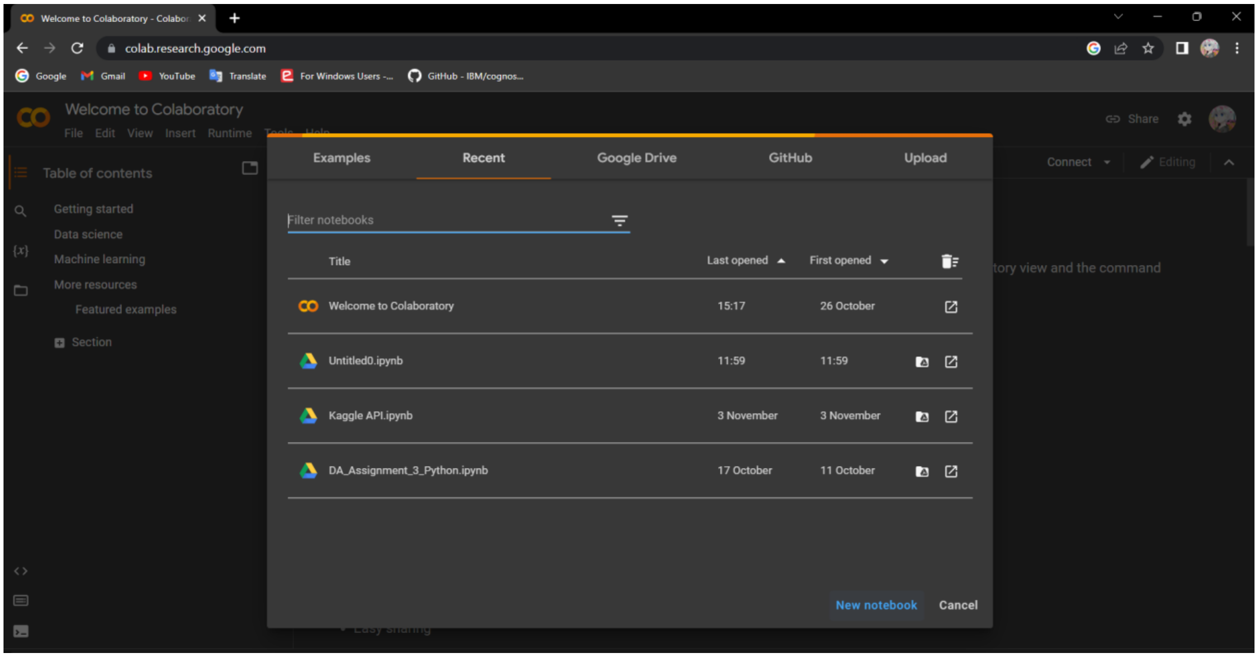
Date	03 November 2022
Team ID	PNT2022TMID30128
Project Name	Project - Global Sales Data Analytics

Sprint 3 - Dataset exploration

Dataset exploration: It is the process of finding what are the things that are present in the dataset.

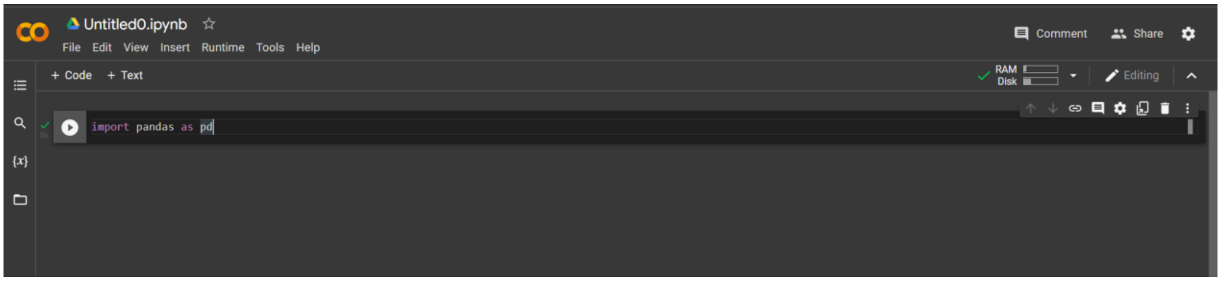
We have used Google collab to explore the dataset.

Step 1: Creating a new notebook

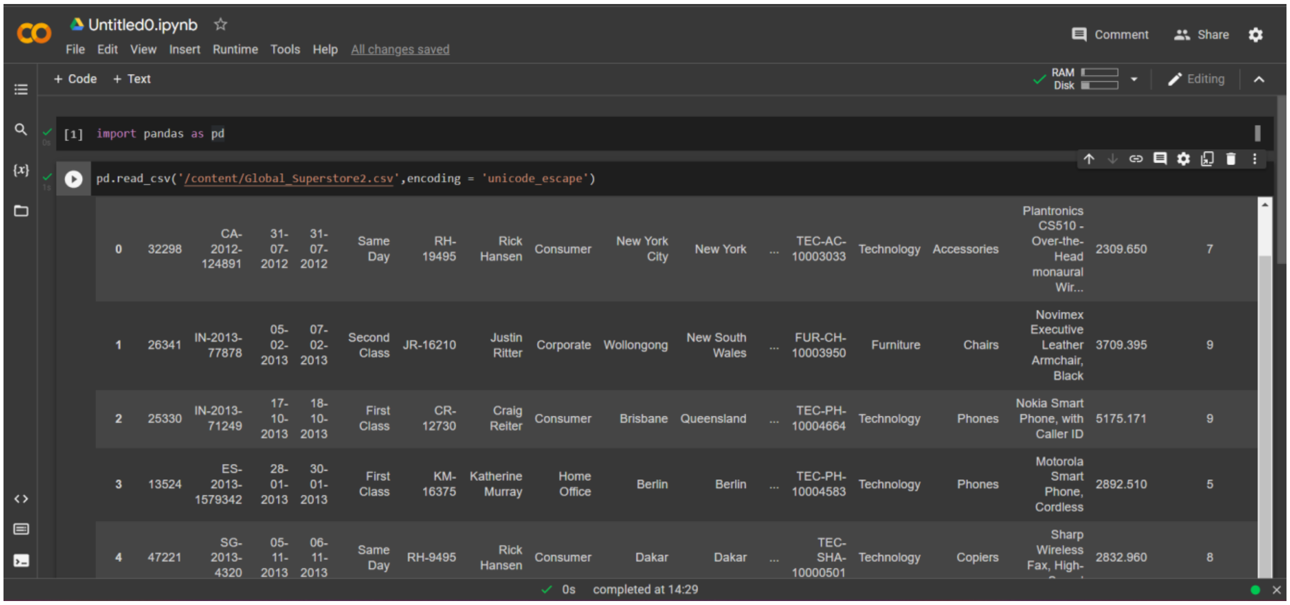


Title	Last opened	First opened
Welcome to Colaboratory	15:17	26 October
Untitled0.ipynb	11:59	11:59
Kaggle API.ipynb	3 November	3 November
DA_Assignment_3_Python.ipynb	17 October	11 October

Step 2: Loading the data into jupyter notebook by using a python library called Pandas (for Python Data Analysis Library).



```
import pandas as pd
```



```
[1] import pandas as pd
```

```
pd.read_csv('/content/Global_Superstore2.csv',encoding = 'unicode_escape')
```

0	32298	CA-2012-124891	31-07-2012	31-07-2012	Same Day	RH-19495	Rick Hansen	Consumer	New York City	New York	...	TEC-AC-10003033	Technology	Accessories	Plantronics CS510 - Over-the-Head monaural Wir...	2309.650	7
1	26341	IN-2013-77878	05-02-2013	07-02-2013	Second Class	JR-16210	Justin Ritter	Corporate	Wollongong	New South Wales	...	FUR-CH-10003950	Furniture	Chairs	Novimex Executive Leather Armchair, Black	3709.395	9
2	25330	IN-2013-71249	17-10-2013	18-10-2013	First Class	CR-12730	Craig Reiter	Consumer	Brisbane	Queensland	...	TEC-PH-10004664	Technology	Phones	Nokia Smart Phone, with Caller ID	5175.171	9
3	13524	ES-2013-1579342	28-01-2013	30-01-2013	First Class	KM-16375	Katherine Murray	Home Office	Berlin	Berlin	...	TEC-PH-10004583	Technology	Phones	Motorola Smart Phone, Cordless	2892.510	5
4	47221	SG-2013-4320	05-11-2013	06-11-2013	Same Day	RH-9495	Rick Hansen	Consumer	Dakar	Dakar	...	TEC-SHA-10000501	Technology	Copiers	Sharp Wireless Fax, High-	2832.960	8

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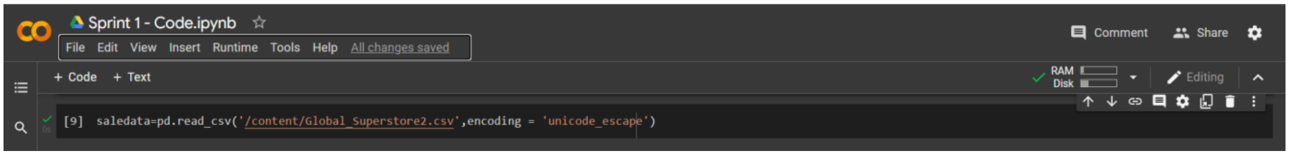
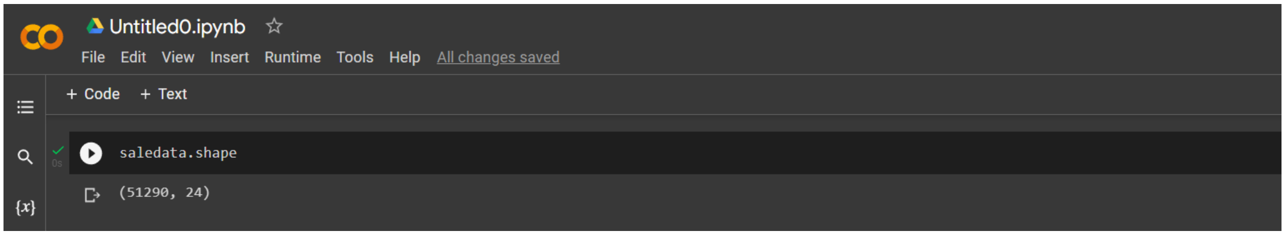
Step 3: Exploring the data by understanding the following things:



```
[9] saledata=pd.read_csv('/content/Global_Superstore2.csv',encoding = 'unicode_escape')
```

1. Finding out the total number of rows and columns in the dataset

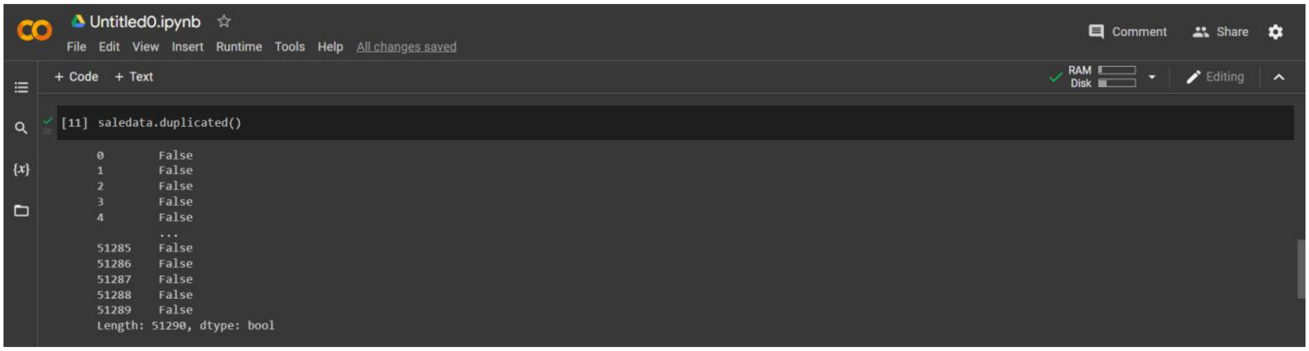


```
saledata.shape
```

```
(51290, 24)
```

Rows = 51290 **Columns =** 24

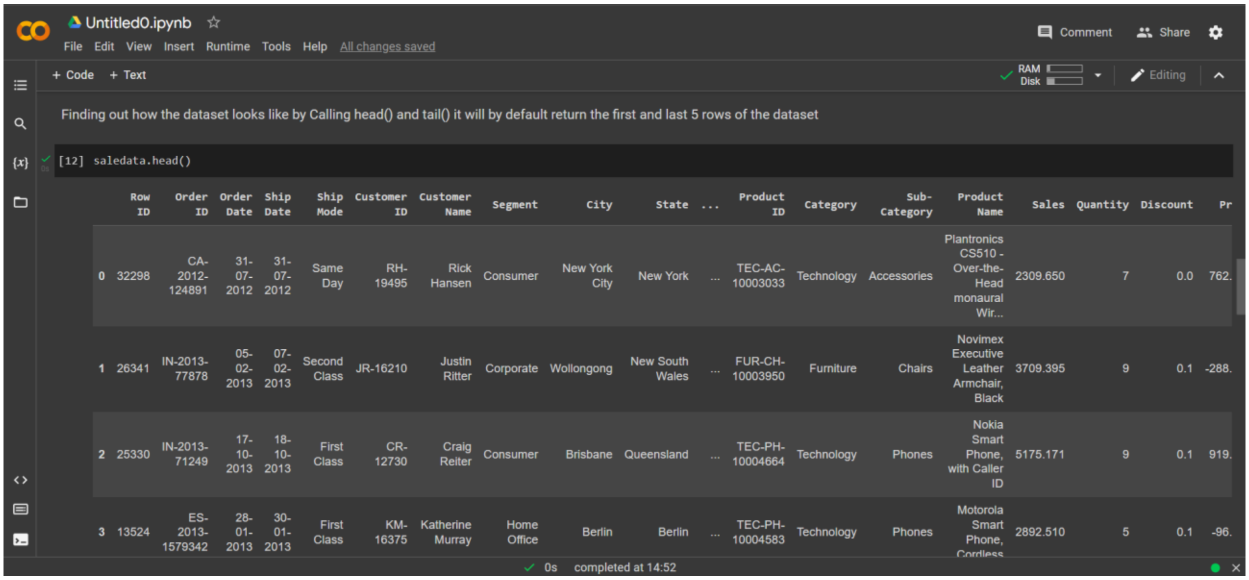
2. Finding if there is any duplicate value



```
[11] saledata.duplicated()
```

```
0        False
1        False
2        False
3        False
4        False
         ...  
51285    False
51286    False
51287    False
51288    False
51289    False
Length: 51290, dtype: bool
```

3. How the dataset looks like (Finding out how the variables are organized)



Finding out how the dataset looks like by Calling head() and tail() it will by default return the first and last 5 rows of the dataset

```
[12] saledata.head()
```

	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	City	State	...	Product ID	Category	Sub-Category	Product Name	Sales	Quantity	Discount	Pr
0	32298	CA-2012-124891	31-07-2012	31-07-2012	Same Day	RH-19495	Rick Hansen	Consumer	New York City	New York	...	TEC-AC-10003033	Technology	Accessories	Plantronics CS510 - Over-the-Head monaural Wir...	2309.650	7	0.0	762.
1	26341	IN-2013-77878	05-02-2013	07-02-2013	Second Class	JR-16210	Justin Ritter	Corporate	Wollongong	New South Wales	...	FUR-CH-10003950	Furniture	Chairs	Novimex Executive Leather Armchair, Black	3709.395	9	0.1	-288.
2	25330	IN-2013-71249	17-10-2013	18-10-2013	First Class	CR-12730	Craig Reiter	Consumer	Brisbane	Queensland	...	TEC-PH-10004664	Technology	Phones	Nokia Smart Phone, with Caller ID	5175.171	9	0.1	919.
3	13524	ES-2013-1579342	28-01-2013	30-01-2013	First Class	KM-16375	Katherine Murray	Home Office	Berlin	Berlin	...	TEC-PH-10004583	Technology	Phones	Motorola Smart Phone, Cordless	2892.510	5	0.1	-96.

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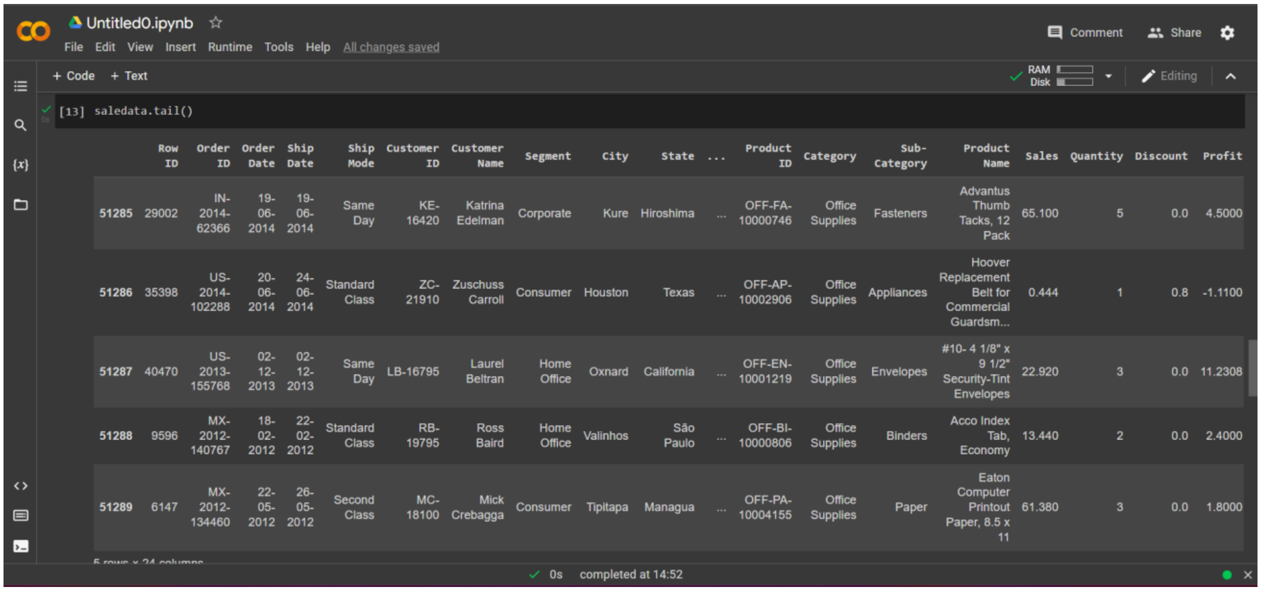
First five rows of the dataset



```
[13] saledata.tail()
```

	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	City	State	...	Product ID	Category	Sub-Category	Product Name	Sales	Quantity	Discount	Profit
51285	29002	IN-2014-62366	19-06-2014	19-06-2014	Same Day	KE-16420	Katrina Edelman	Corporate	Kure	Hiroshima	...	OFF-FA-10000746	Office Supplies	Fasteners	Advantus Thumb Tacks, 12 Pack	65.100	5	0.0	4.5000
51286	35398	US-2014-102288	20-06-2014	24-06-2014	Standard Class	ZC-21910	Zuschuss Carroll	Consumer	Houston	Texas	...	OFF-AP-10002906	Office Supplies	Appliances	Hoover Replacement Belt for Commercial Guardsm...	0.444	1	0.8	-1.1100
51287	40470	US-2013-155768	02-12-2013	02-12-2013	Same Day	LB-16795	Laurel Beltran	Home Office	Oxnard	California	...	OFF-EN-10001219	Office Supplies	Envelopes	#10- 4 1/8" x 9 1/2" Security-Tint Envelopes	22.920	3	0.0	11.2308
51288	9596	MX-2012-140767	18-02-2012	22-02-2012	Standard Class	RB-19795	Ross Baird	Home Office	Valinhos	São Paulo	...	OFF-BI-10000806	Office Supplies	Binders	Acco Index Tab, Economy	13.440	2	0.0	2.4000
51289	6147	MX-2012-134460	22-05-2012	26-05-2012	Second Class	MC-18100	Mick Crebagga	Consumer	Tipitapa	Managua	...	OFF-PA-10004155	Office Supplies	Paper	Eaton Computer Printout Paper, 8.5 x 11	61.380	3	0.0	1.8000

5 rows × 24 columns

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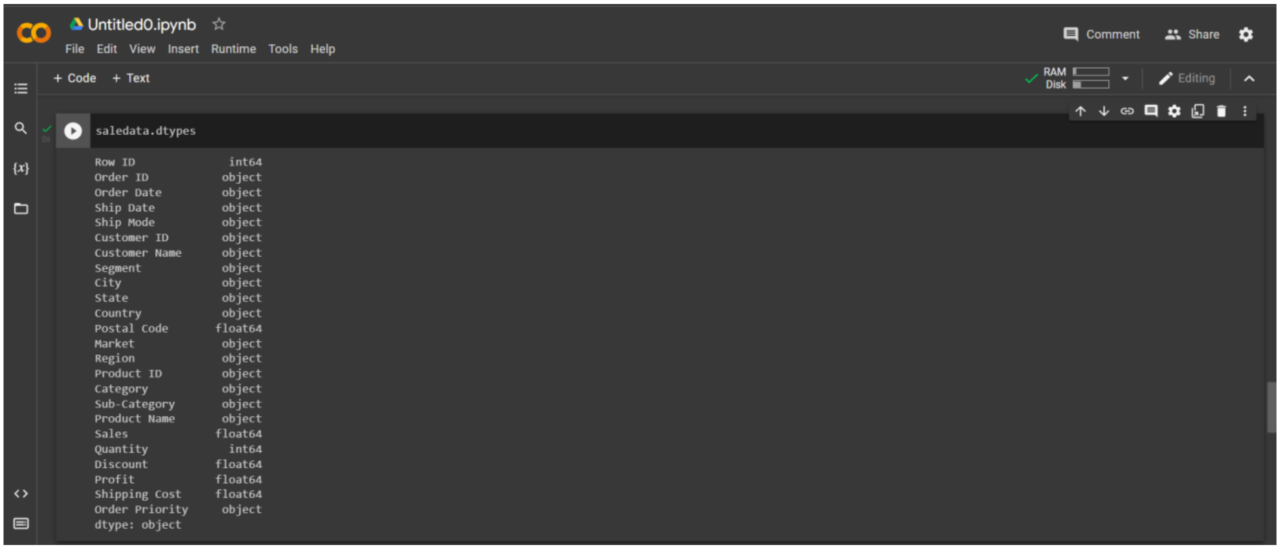
Last five rows of the dataset

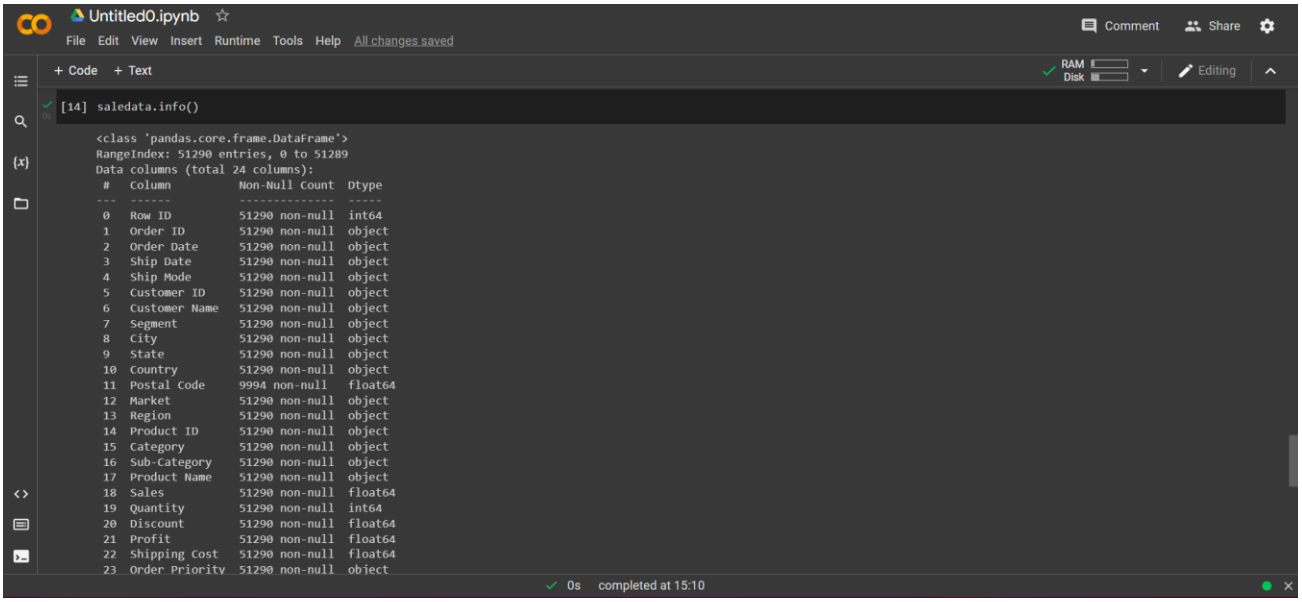
4. What kind of data types are present in the dataset



```
saledata.dtypes
```

```
Row ID              int64
Order ID           object
Order Date         object
Ship Date          object
Ship Mode          object
Customer ID        object
Customer Name      object
Segment            object
City               object
State              object
Country            object
Postal Code       float64
Market             object
Region             object
Product ID         object
Category           object
Sub-Category       object
Product Name       object
Sales             float64
Quantity            int64
Discount          float64
Profit            float64
Shipping Cost     float64
Order Priority     object
dtype: object
```

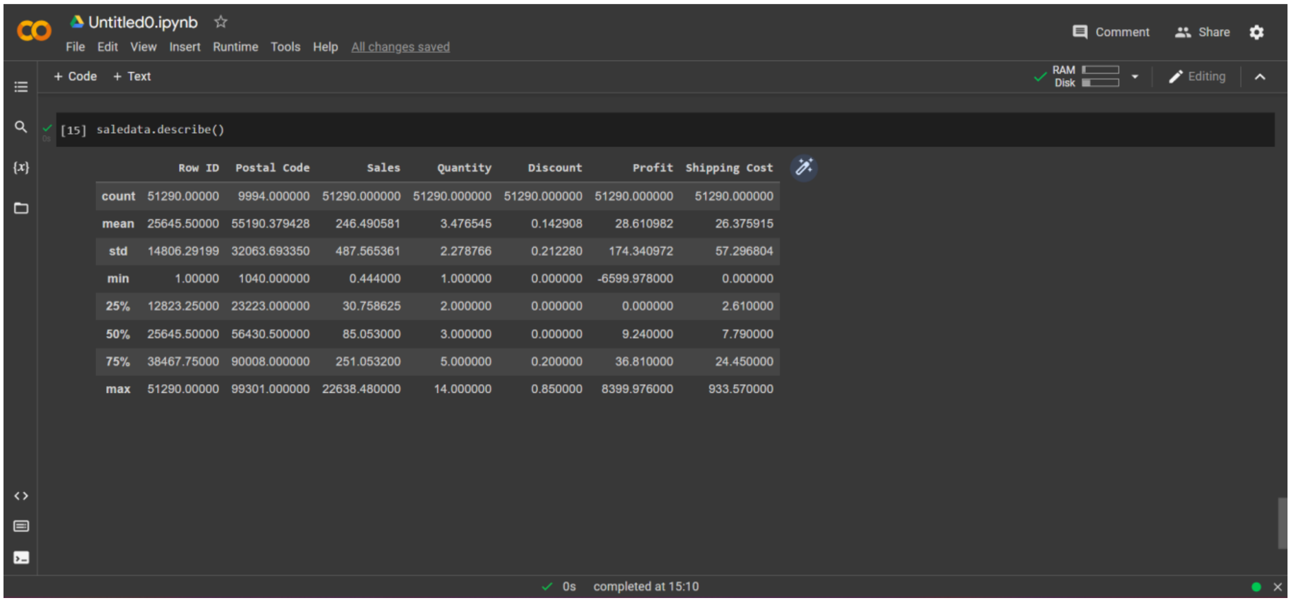
5. Finding out the overview information about the dataset



```
[14] saledata.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51290 entries, 0 to 51289
Data columns (total 24 columns):
 #   Column          Non-Null Count  Dtype
---  ------          --------------  -----
 0   Row ID          51290 non-null  int64
 1   Order ID        51290 non-null  object
 2   Order Date      51290 non-null  object
 3   Ship Date       51290 non-null  object
 4   Ship Mode       51290 non-null  object
 5   Customer ID     51290 non-null  object
 6   Customer Name   51290 non-null  object
 7   Segment         51290 non-null  object
 8   City            51290 non-null  object
 9   State           51290 non-null  object
 10  Country         51290 non-null  object
 11  Postal Code     9994 non-null   float64
 12  Market          51290 non-null  object
 13  Region          51290 non-null  object
 14  Product ID      51290 non-null  object
 15  Category        51290 non-null  object
 16  Sub-Category    51290 non-null  object
 17  Product Name    51290 non-null  object
 18  Sales           51290 non-null  float64
 19  Quantity        51290 non-null  int64
 20  Discount        51290 non-null  float64
 21  Profit          51290 non-null  float64
 22  Shipping Cost   51290 non-null  float64
 23  Order Priority  51290 non-null  object
```

6. Finding out minimum, maximum and mean value of all numerical variables in the dataset.



```
[15] saledata.describe()
```

	Row ID	Postal Code	Sales	Quantity	Discount	Profit	Shipping Cost
count	51290.00000	9994.000000	51290.000000	51290.000000	51290.000000	51290.000000	51290.000000
mean	25645.50000	55190.379428	246.490581	3.476545	0.142908	28.610982	26.375915
std	14806.29199	32063.693350	487.565361	2.278766	0.212280	174.340972	57.296804
min	1.00000	1040.000000	0.444000	1.000000	0.000000	-6599.978000	0.000000
25%	12823.25000	23223.000000	30.758625	2.000000	0.000000	0.000000	2.610000
50%	25645.50000	56430.500000	85.053000	3.000000	0.000000	9.240000	7.790000
75%	38467.75000	90008.000000	251.053200	5.000000	0.200000	36.810000	24.450000
max	51290.00000	99301.000000	22638.480000	14.000000	0.850000	8399.976000	933.570000

Each column in the dataset represents different information about the sale

- **Row ID -** It is used to uniquely identify a row in a table.
- **Order ID -** This ID is generated when the order is placed.
- **Order Date -** It shoe the date on when the order is Placed.
- **Ship Date -** The Shipment date of the product.
- **Ship Mode -** In which mode the shipment process is carried out.
- **Customer ID -** ID is generated when the customer Places the first order.
- **Customer Name -** It shows the name of the customer.
- **Segment -** It shows the segment of the customer.
- **City -** The city in which the customer lives.
- **State -** The state in which the customer resides.
- **Country -** It gives the country of the customer.
- **Market -** Market where the order is placed.
- **Region -** It gives the region of the market.
- **Product ID -** This is a unique ID generated for each Product.
- **Category -** It shows which category of the product.
- **Sub-Category -** Sub-Category to which the product Belongs.
- **Product Name -** The name of the product is mentioned.

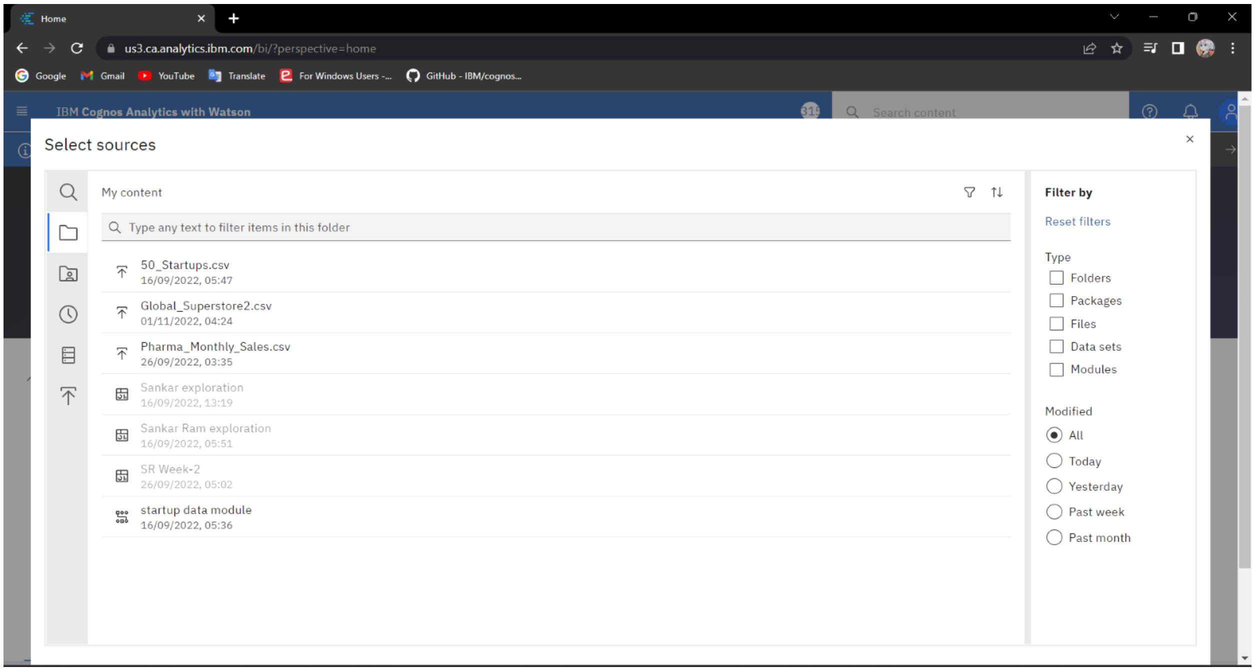
- **Sales -** It shows the sales details of the product.
- **Quantity -** It shows the number of products ordered.
- **Discount -** How much discount is provided.
- **Profit -** The profit earned by the retailer.
- **Shipping cost -** The cost of shipping.
- **Order Priority** - It shows the priority level of the order.

Preparing the dataset: It's the process of cleaning and transforming raw data prior to processing and analysis.

Once we load the data into IBM Cognos, we need to prepare the following:

- Prepare Calculations of Year, Month, Day fields and the related Navigation path.

Select the dataset from the prepare data section.



Select sources

My content

Type any text to filter items in this folder

50_Startups.csv
16/09/2022, 05:47

Global_Superstore2.csv
01/11/2022, 04:24

Pharma_Monthly_Sales.csv
26/09/2022, 03:35

Sankar exploration
16/09/2022, 13:19

Sankar Ram exploration
16/09/2022, 05:51

SR Week-2
26/09/2022, 05:02

startup data module
16/09/2022, 05:36

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Modified
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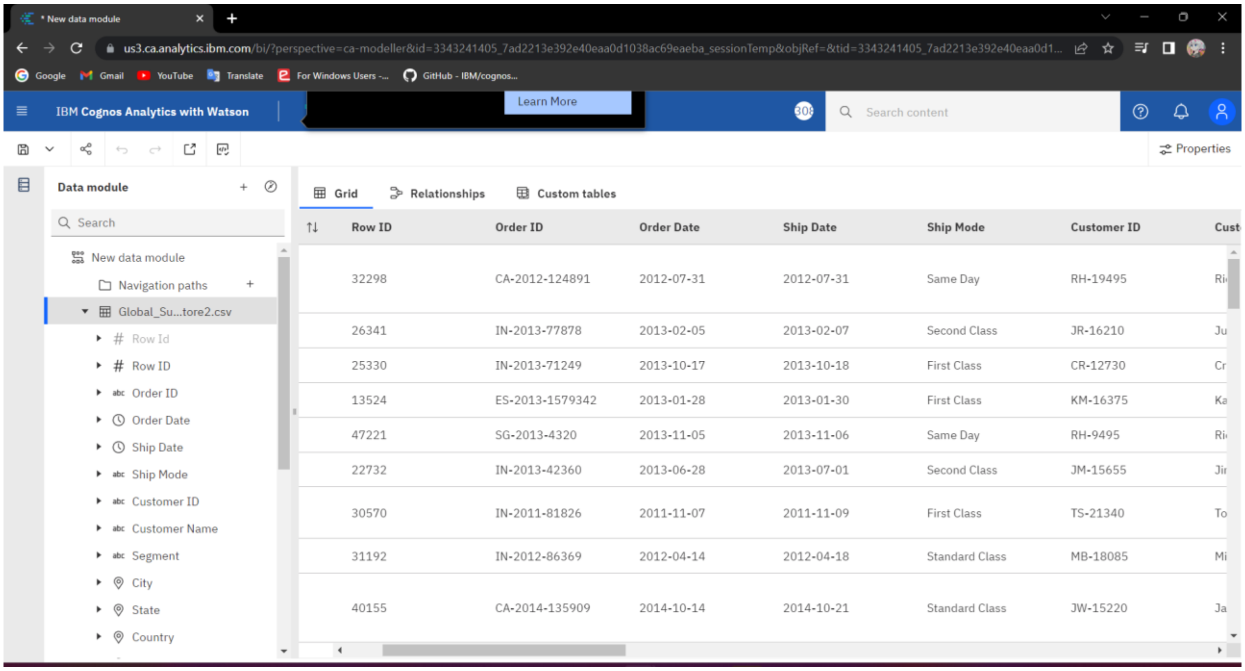
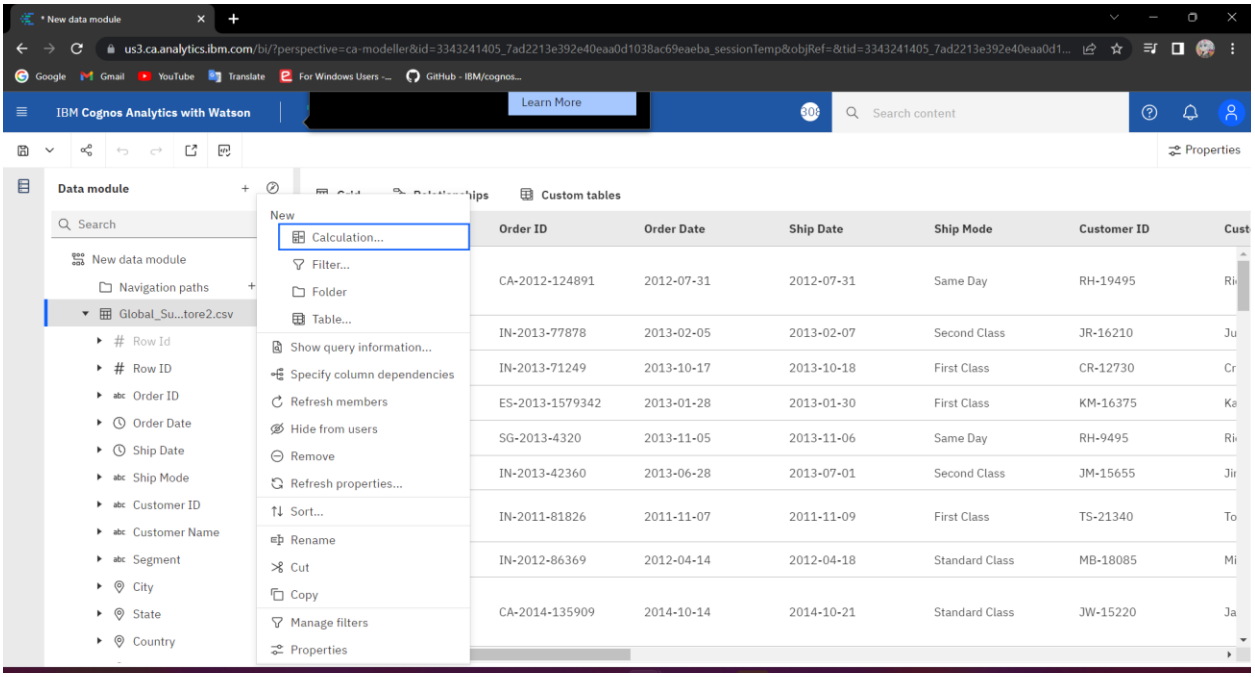
○ Today
○ Yesterday
○ Past week
○ Past month

Once the dataset is loaded make the necessary calculations and navigation path



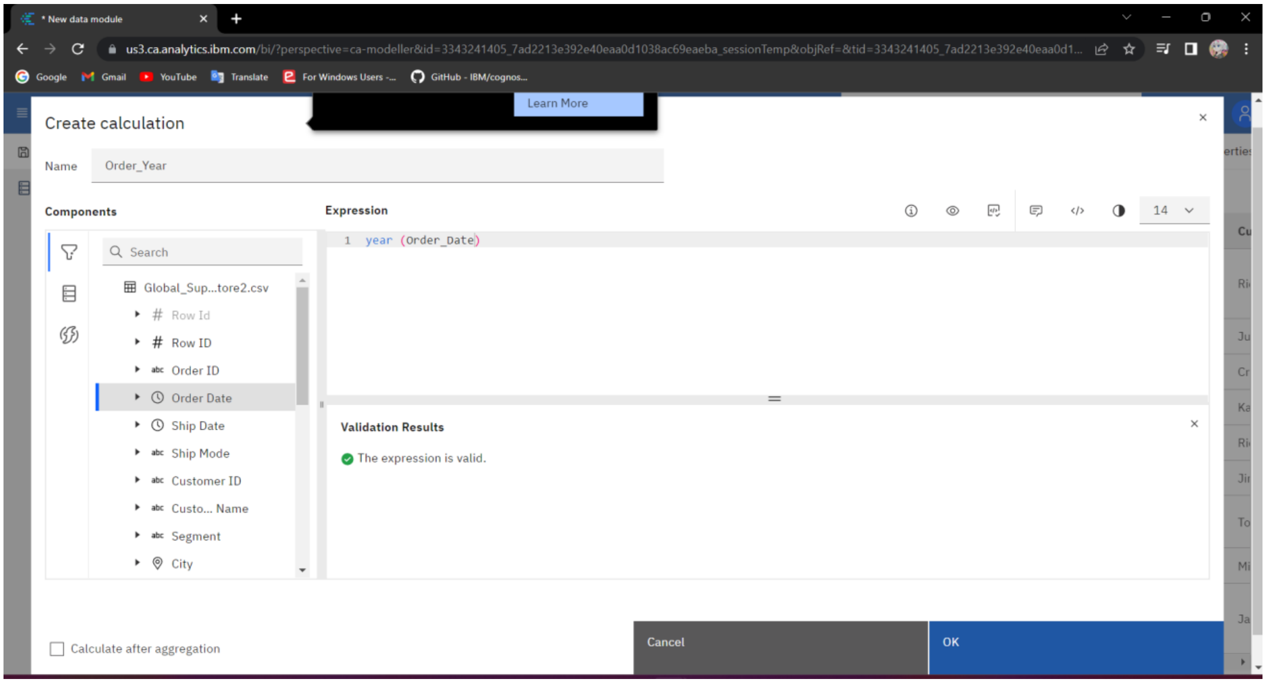
Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Cust
32298	CA-2012-124891	2012-07-31	2012-07-31	Same Day	RH-19495	Ri
26341	IN-2013-77878	2013-02-05	2013-02-07	Second Class	JR-16210	Ju
25330	IN-2013-71249	2013-10-17	2013-10-18	First Class	CR-12730	Cr
13524	ES-2013-1579342	2013-01-28	2013-01-30	First Class	KM-16375	Ka
47221	SG-2013-4320	2013-11-05	2013-11-06	Same Day	RH-9495	Ri
22732	IN-2013-42360	2013-06-28	2013-07-01	Second Class	JM-15655	Jir
30570	IN-2011-81826	2011-11-07	2011-11-09	First Class	TS-21340	To
31192	IN-2012-86369	2012-04-14	2012-04-18	Standard Class	MB-18085	Mi
40155	CA-2014-135909	2014-10-14	2014-10-21	Standard Class	JW-15220	Ja

Creating new calculation



Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Cust
CA-2012-124891	2012-07-31	2012-07-31	Same Day	RH-19495	Ri
IN-2013-77878	2013-02-05	2013-02-07	Second Class	JR-16210	Ju
IN-2013-71249	2013-10-17	2013-10-18	First Class	CR-12730	Cr
ES-2013-1579342	2013-01-28	2013-01-30	First Class	KM-16375	Ka
SG-2013-4320	2013-11-05	2013-11-06	Same Day	RH-9495	Ri
IN-2013-42360	2013-06-28	2013-07-01	Second Class	JM-15655	Jir
IN-2011-81826	2011-11-07	2011-11-09	First Class	TS-21340	To
IN-2012-86369	2012-04-14	2012-04-18	Standard Class	MB-18085	Mi
CA-2014-135909	2014-10-14	2014-10-21	Standard Class	JW-15220	Ja

Creating “Order_Year” calculation



Create calculation

Name: Order_Year

Expression

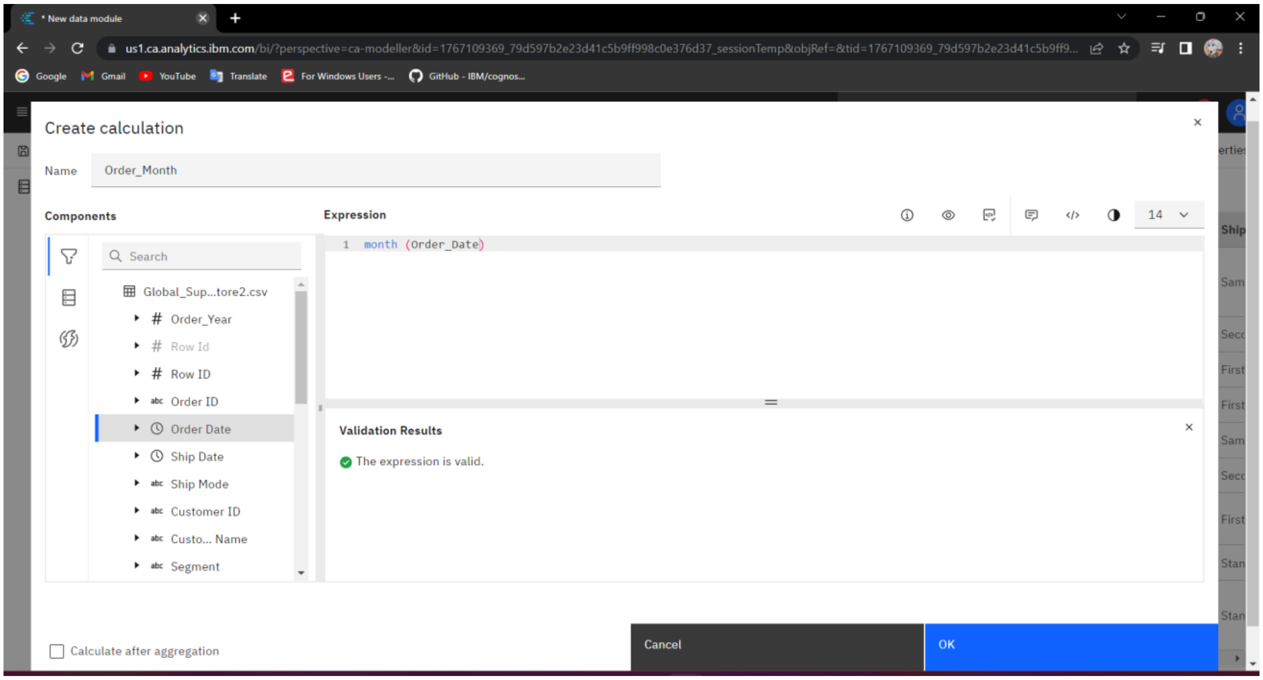
```
year (Order_Date)
```

Validation Results

The expression is valid.

□ Calculate after aggregation

Creating “Order_Month” calculation



Create calculation

Name: Order_Month

Expression

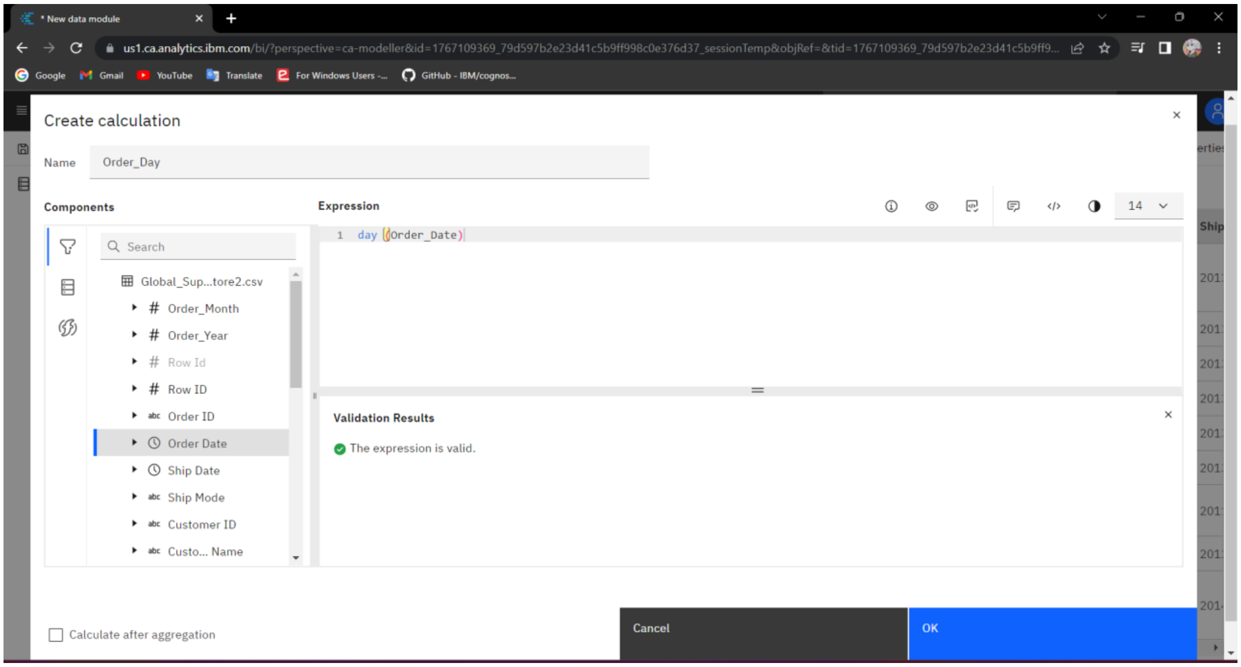
```
month (Order_Date)
```

Validation Results

The expression is valid.

□ Calculate after aggregation

Creating “Order_Day” calculation



Create calculation

Name: Order_Day

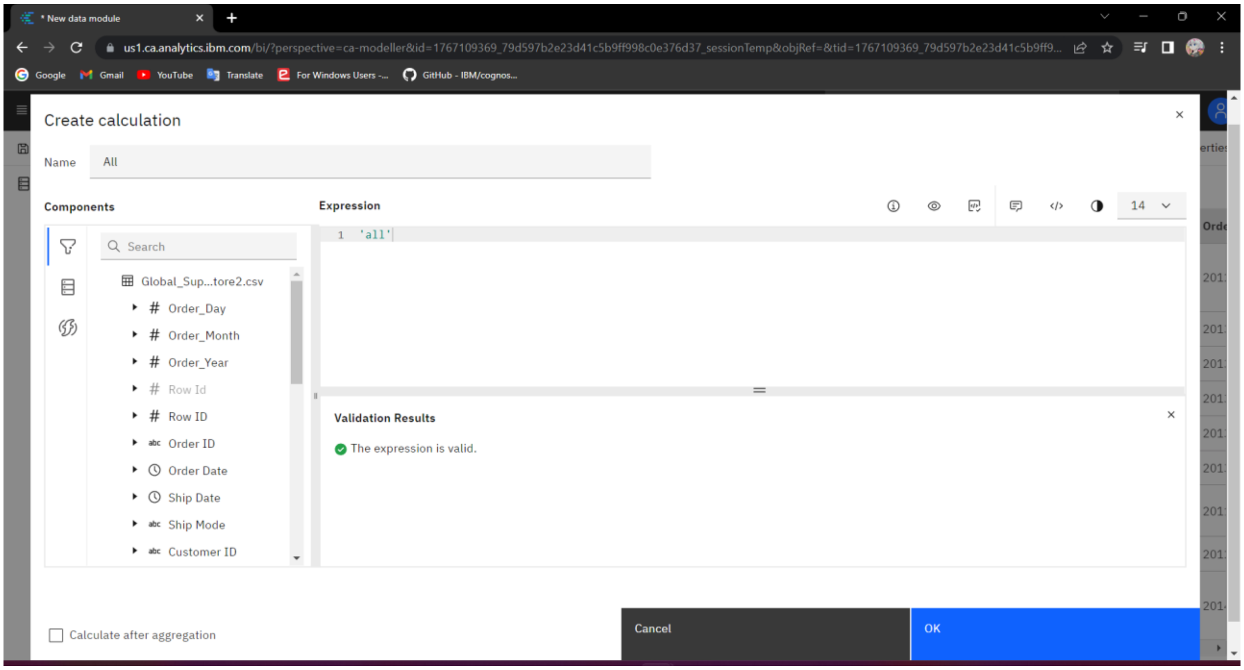
Expression

```
day (Order_Date)
```

Validation Results

The expression is valid.

Creating “All” calculation for navigation path



Create calculation

Name: All

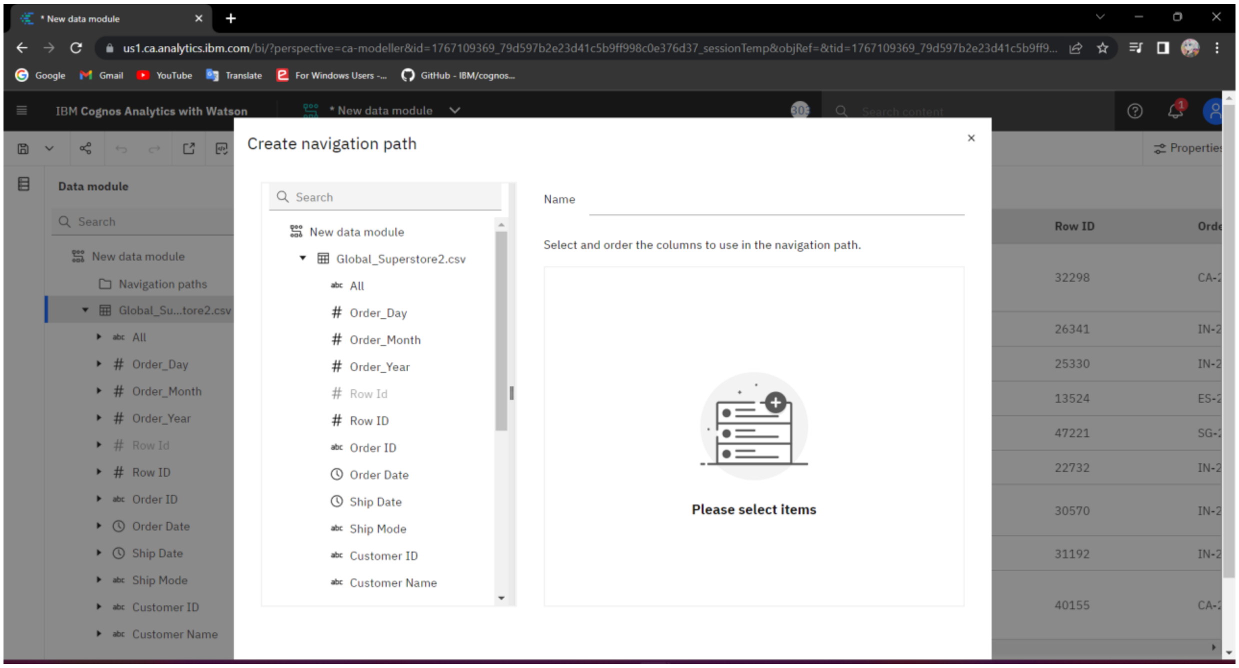
Expression

```
'all'
```

Validation Results

The expression is valid.

Creating “Order_Date” navigation path



Create navigation path

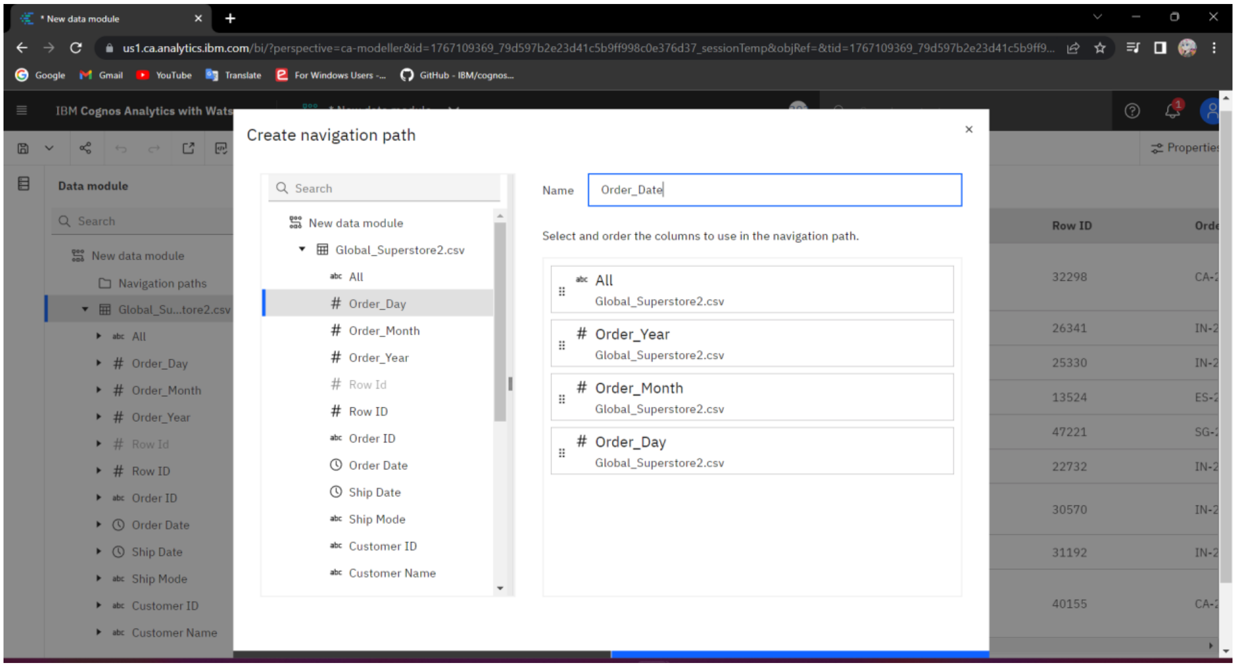
Search

New data module
- Global_Superstore2.csv
  - All
  - Order_Day
  - Order_Month
  - Order_Year
  - Row Id
  - Row ID
  - Order ID
  - Order Date
  - Ship Date
  - Ship Mode
  - Customer ID
  - Customer Name

Name

Select and order the columns to use in the navigation path.

Please select items



Create navigation path

Search

New data module
- Global_Superstore2.csv
  - All
  - Order_Day
  - Order_Month
  - Order_Year
  - Row Id
  - Row ID
  - Order ID
  - Order Date
  - Ship Date
  - Ship Mode
  - Customer ID
  - Customer Name

Name: Order_Date

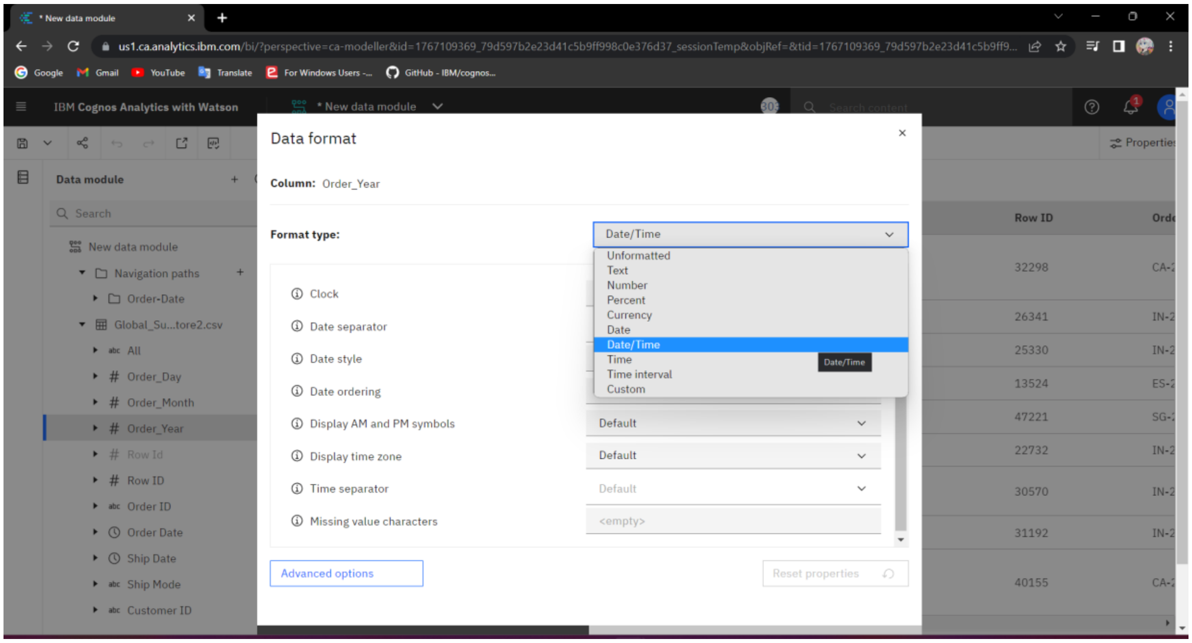
Select and order the columns to use in the navigation path.

- All — Global_Superstore2.csv
- Order_Year — Global_Superstore2.csv
- Order_Month — Global_Superstore2.csv
- Order_Day — Global_Superstore2.csv

The order year, month and day are in numerical value, so we have to change it to date values.

The following steps are used to change from numerical value to date values

Step 1: Click on **Order_Year** and --> Format data and change the format type to "Date/Time" then click ok.



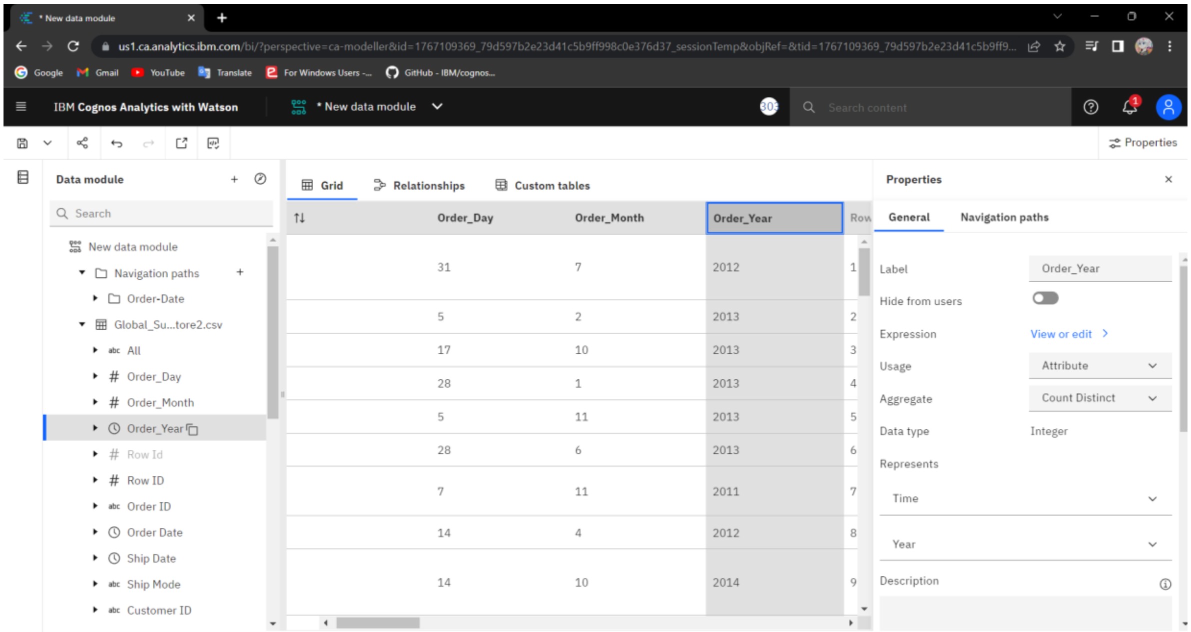
Data format

Column: Order_Year

Format type: Date/Time

Clock	
Date separator	
Date style	
Date ordering	
Display AM and PM symbols	Default
Display time zone	Default
Time separator	Default
Missing value characters	<empty>

Step 2: Go to **Order_Year** properties and change the Usage to 'Attribute', Aggregate to 'Count distinct', Represents to 'Time' and change the display option to 'Show members'.



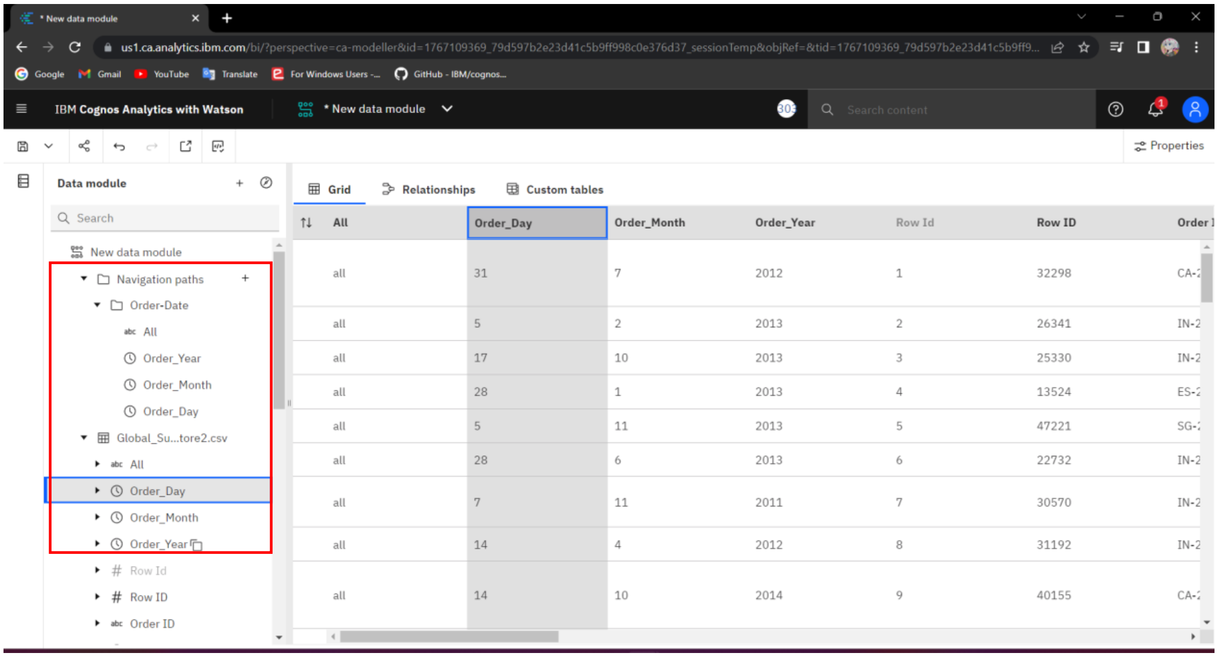
Order_Day	Order_Month	Order_Year
31	7	2012
5	2	2013
17	10	2013
28	1	2013
5	11	2013
28	6	2013
7	11	2011
14	4	2012
14	10	2014

Properties

General

Label	Order_Year
Hide from users	
Expression	View or edit
Usage	Attribute
Aggregate	Count Distinct
Data type	Integer
Represents	Time Year
Description	

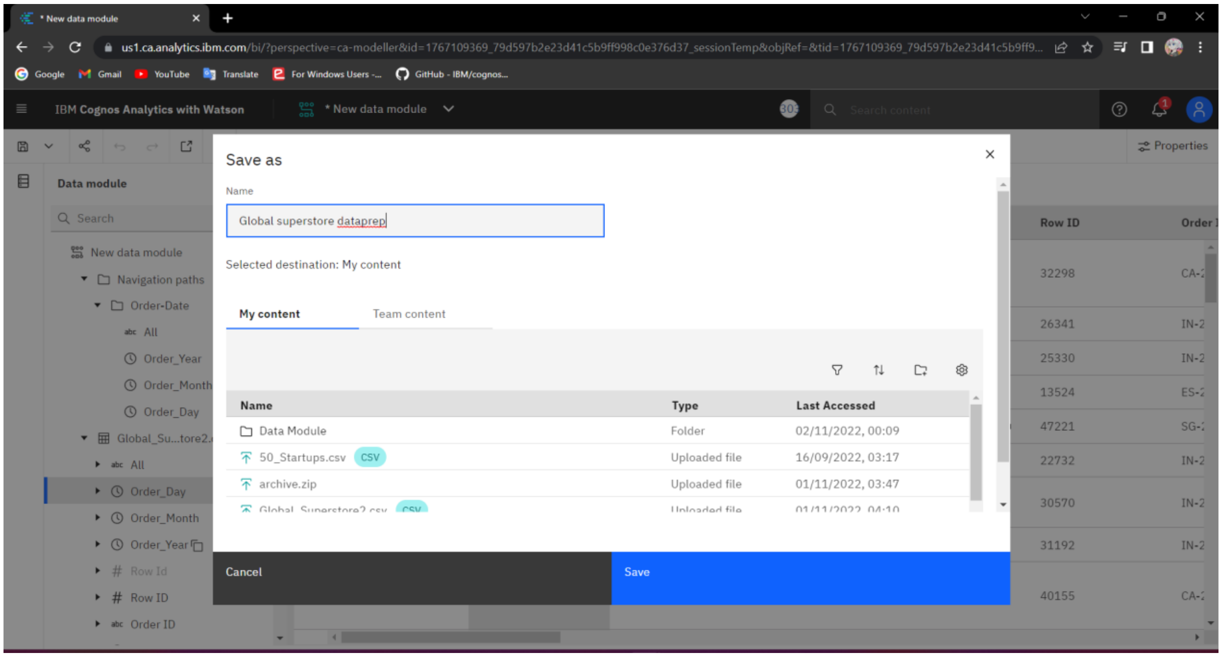
Repeat steps 1 and 2 for **Order_Month** and **Order_Day** To change it to date values.



All	Order_Day	Order_Month	Order_Year	Row Id	Row ID	Order I
all	31	7	2012	1	32298	CA-2
all	5	2	2013	2	26341	IN-2
all	17	10	2013	3	25330	IN-2
all	28	1	2013	4	13524	ES-2
all	5	11	2013	5	47221	SG-2
all	28	6	2013	6	22732	IN-2
all	7	11	2011	7	30570	IN-2
all	14	4	2012	8	31192	IN-2
all	14	10	2014	9	40155	CA-2

Now all the numerical values are changed into date value

Then save the dataset



Name

Global superstore dataprep

Selected destination: My content

Name	Type	Last Accessed
Data Module	Folder	02/11/2022, 00:09
50_Startups.csv CSV	Uploaded file	16/09/2022, 03:17
archive.zip	Uploaded file	01/11/2022, 03:47
Global_Superstore2.csv CSV	Uploaded file	01/11/2022, 04:10

Row ID	Order I
32298	CA-2
26341	IN-2
25330	IN-2
13524	ES-2
47221	SG-2
22732	IN-2
30570	IN-2
31192	IN-2
40155	CA-2