Download from Kaggle

Python

Data Cleaning

Python Pandas

[1]:
```
!pip install kaggle
import kaggle
!kaggle datasets download ankitbansal06/retail-orders -f orders.csv
```

```
Requirement already satisfied: kaggle in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (1.6.17)
Requirement already satisfied: six>=1.10 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (1.16.0)
Requirement already satisfied: certifi>=2023.7.22 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (2024.8.30)
Requirement already satisfied: python-dateutil in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (2.9.0.post0)
Requirement already satisfied: requests in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (2.32.3)
Requirement already satisfied: tqdm in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (4.67.1)
Requirement already satisfied: python-slugify in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (8.0.4)
Requirement already satisfied: urllib3 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (2.2.3)
Requirement already satisfied: bleach in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from kaggle) (6.2.0)
Requirement already satisfied: webencodings in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from bleach->kaggle) (0.5.1)
Requirement already satisfied: text-unidecode>=1.3 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from python-slugify->kaggle) (1.3)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from requests->kaggle) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from requests->kaggle) (3.10)
Requirement already satisfied: colorama in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from tqdm->kaggle) (0.4.6)
Dataset URL: https://www.kaggle.com/datasets/ankitbansal06/retail-orders
License(s): CC0-1.0
orders.csv.zip: Skipping, found more recently modified local copy (use --force to force download)
```

[2]:
```
!pip install pandas
import pandas as pd
```

```
Requirement already satisfied: pandas in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (2.2.3)
Requirement already satisfied: numpy>=1.26.0 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from pandas) (2.1.3)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from pandas) (2024.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from pandas) (2024.2)
Requirement already satisfied: six>=1.5 in c:\users\noors\appdata\local\programs\python\python313\lib\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
```

[29]:
```
#uploading dataset in pandas
df = pd.read_csv(r"C:\Users\noors\OneDrive\Documents\sql+python\orders.csv.csv",na_values=['Not Available', 'unknown'])
```

[4]:
```
df.head(5)
```

[4]:

	Order Id	Order Date	Ship Mode	Segment	Country	City	State	Postal Code	Region	Category	Sub Category	Product Id	cost price	List Price	Quantity	Discount Percent
0	1	2023-03-01	Second Class	Consumer	United States	Henderson	Kentucky	42420	South	Furniture	Bookcases	FUR-BO-10001798	240	260	2	2
1	2	2023-08-15	Second Class	Consumer	United States	Henderson	Kentucky	42420	South	Furniture	Chairs	FUR-CH-10000454	600	730	3	3
2	3	2023-01-10	Second Class	Corporate	United States	Los Angeles	California	90036	West	Office Supplies	Labels	OFF-LA-10000240	10	10	2	5
3	4	2022-06-18	Standard Class	Consumer	United States	Fort Lauderdale	Florida	33311	South	Furniture	Tables	FUR-TA-10000577	780	960	5	2
4	5	2022-07-13	Standard Class	Consumer	United States	Fort Lauderdale	Florida	33311	South	Office Supplies	Storage	OFF-ST-10000760	20	20	2	5

[5]:
```
df["Ship Mode"].unique()
```

[5]:
```
array(['Second Class', 'Standard Class', nan, 'First Class', 'Same Day'],
      dtype=object)
```

[10]:
```
#df.rename(columns={'Order Id':'order_id', 'Order Date':'order_date'})
#df.column=df.columns.str.lower()
#df.columns=df.column.str.replace(" ","_")
df.head(5)
```

[10]:
```
#df.rename(columns={'Order Id':'order_id', 'Order Date':'order_date'})
#df.column=df.columns.str.lower()
#df.columns=df.column.str.replace(" ","_")
df.head(5)
```

[10]:

	order_id	order_date	ship_mode	segment	country	city	state	postal_code	region	category	sub_category	product_id	cost_price	list_price	quantit
0	1	2023-03-01	Second Class	Consumer	United States	Henderson	Kentucky	42420	South	Furniture	Bookcases	FUR-BO-10001798	240	260	
1	2	2023-08-15	Second Class	Consumer	United States	Henderson	Kentucky	42420	South	Furniture	Chairs	FUR-CH-10000454	600	730	
2	3	2023-01-10	Second Class	Corporate	United States	Los Angeles	California	90036	West	Office Supplies	Labels	OFF-LA-10000240	10	10	
3	4	2022-06-18	Standard Class	Consumer	United States	Fort Lauderdale	Florida	33311	South	Furniture	Tables	FUR-TA-10000577	780	960	
4	5	2022-07-13	Standard Class	Consumer	United States	Fort Lauderdale	Florida	33311	South	Office Supplies	Storage	OFF-ST-10000760	20	20	

[18]:
```
#convert order date from object data type to datetime
df.dtypes
df['order_date']=pd.to_datetime(df['order_date'],format=("%Y-%m-%d"))
df['order_date']
```

[18]:
```
0      2023-03-01
1      2023-08-15
2      2023-01-10
3      2022-06-18
4      2022-07-13
          ...
9989   2023-02-18
9990   2023-03-17
9991   2022-08-07
9992   2022-11-19
9993   2022-07-17
Name: order_date, Length: 9994, dtype: datetime64[ns]
```

[20]:
```
#drop cost price list price and discount percent columns
#df.drop(columns=['cost_price','list_price','discount_percent'],inplace=True)
df.head()
```

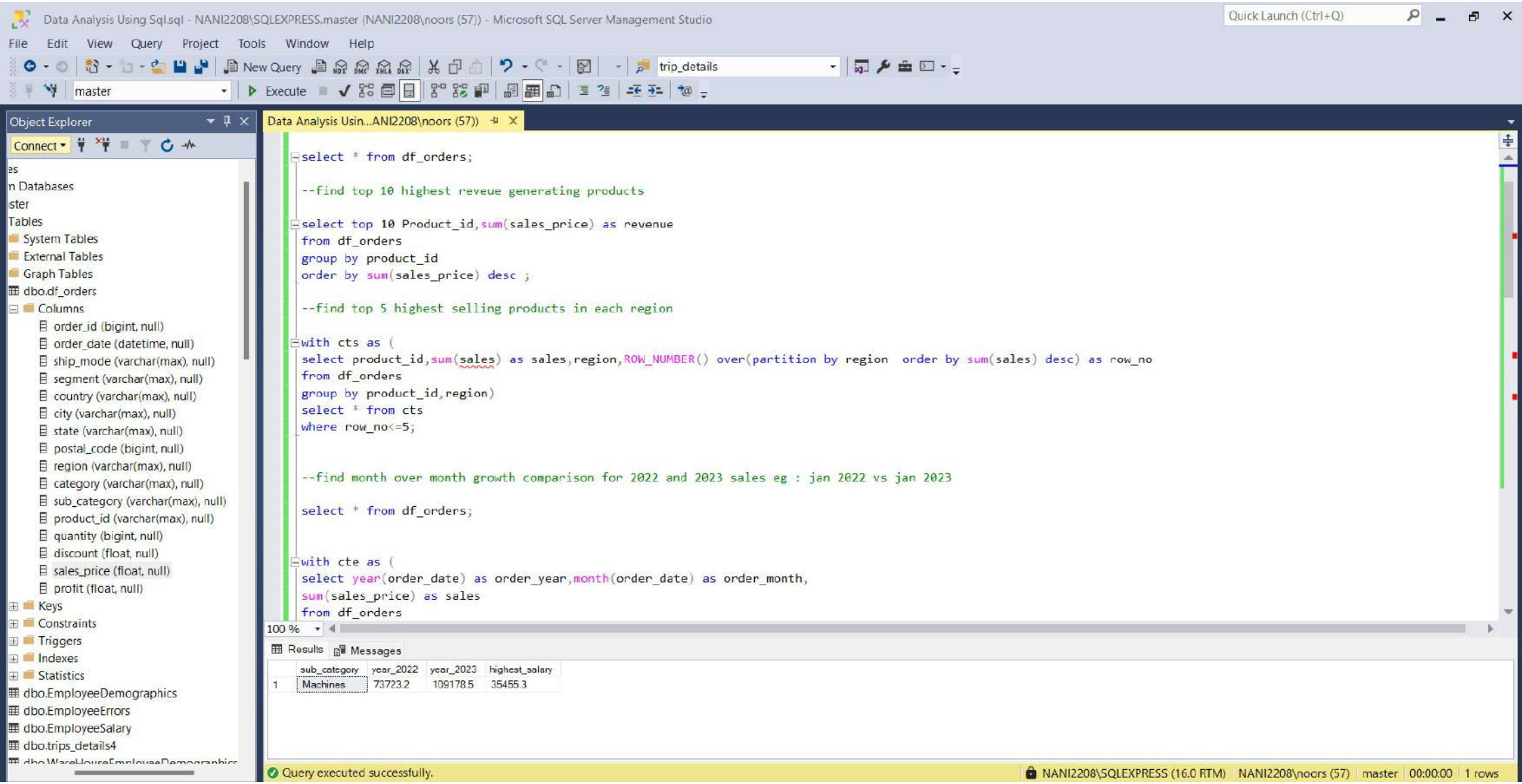
[20]:

	order_id	order_date	ship_mode	segment	country	city	state	postal_code	region	category	sub_category	product_id	quantity	discount	sales_pric
0	1	2023-03-01	Second Class	Consumer	United States	Henderson	Kentucky	42420	South	Furniture	Bookcases	FUR-BO-10001798	2	5.2	254.
1	2	2023-08-15	Second Class	Consumer	United States	Henderson	Kentucky	42420	South	Furniture	Chairs	FUR-CH-10000454	3	21.9	708.
2	3	2023-01-10	Second Class	Corporate	United States	Los Angeles	California	90036	West	Office Supplies	Labels	OFF-LA-10000240	2	0.5	9.
3	4	2022-06-18	Standard Class	Consumer	United States	Fort Lauderdale	Florida	33311	South	Furniture	Tables	FUR-TA-10000577	5	19.2	940.

[25]:
```
#load the data into sql server using replace option
#!pip install sqlalchemy
#!pip install pyodbc
#import sqlalchemy as sal
engine = sal.create_engine(r'mssql://NANI2208\SQLEXPRESS/master?driver=ODBC+DRIVER+17+FOR+SQL+SERVER')
conn=engine.connect()
```

[28]:
```
#load the data into sql server using append option
df.to_sql('df_orders', con=conn , index=False, if_exists = 'append')
```

[28]:
```
38
```


Data Analysis Using Sql.sql - NANI2208\SQLEXPRESS.master (NANI2208\noors (57)) - Microsoft SQL Server Management Studio
Quick Launch (Ctrl+Q)
File Edit View Query Project Tools Window Help
New Query
trip_details
master
Execute
Object Explorer
Connect
es
n Databases
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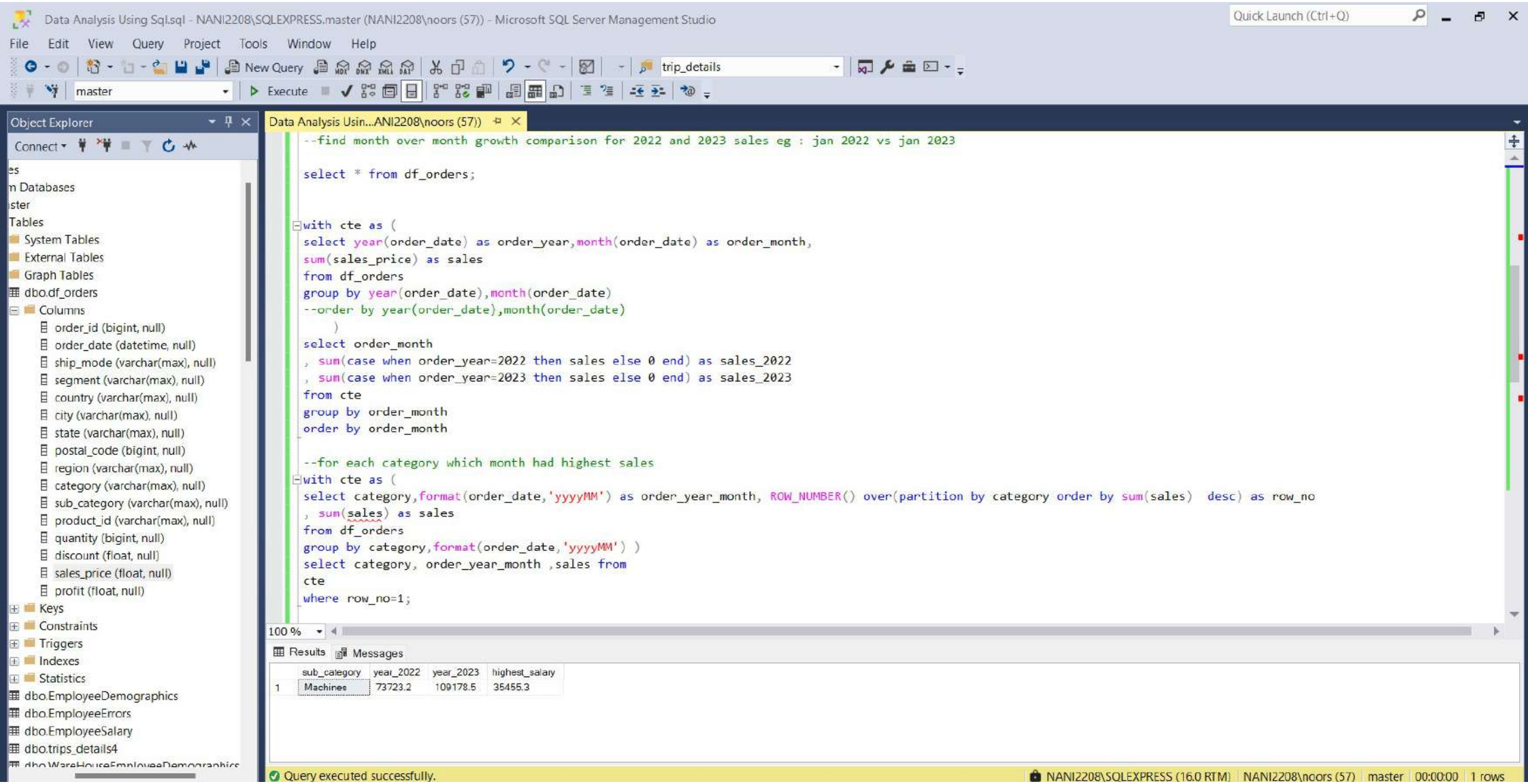
Tables
System Tables
External Tables
Graph Tables
dbo.df_orders
Columns
order_id (bigint, null)
order_date (datetime, null)
ship_mode (varchar(max), null)
segment (varchar(max), null)
country (varchar(max), null)
city (varchar(max), null)
state (varchar(max), null)
postal_code (bigint, null)
region (varchar(max), null)
category (varchar(max), null)
sub_category (varchar(max), null)
product_id (varchar(max), null)
quantity (bigint, null)
discount (float, null)
sales_price (float, null)
profit (float, null)
Keys
Constraints
Triggers
Indexes
Statistics
dbo.EmployeeDemographics
dbo.EmployeeErrors
dbo.EmployeeSalary
dbo.trips_details4
Data Analysis Usin...ANI2208\noors (57))
select * from df_orders;
--find top 10 highest reveue generating products
select top 10 Product_id,sum(sales_price) as revenue
from df_orders
group by product_id
order by sum(sales_price) desc ;
--find top 5 highest selling products in each region
with cts as (
select product_id,sum(sales) as sales,region,ROW_NUMBER() over(partition by region order by sum(sales) desc) as row_no
from df_orders
group by product_id,region)
select * from cts
where row_no<=5;
--find month over month growth comparison for 2022 and 2023 sales eg : jan 2022 vs jan 2023
select * from df_orders;
with cte as (
select year(order_date) as order_year,month(order_date) as order_month,
sum(sales_price) as sales
from df_orders
100 %
Results
Messages
sub_category year_2022 year_2023 highest_salary
1 Machines 73723.2 109178.5 35455.3
Query executed successfully.
NANI2208\SQLEXPRESS (16.0 RTM)
NANI2208\noors (57)
master
00:00:00
1 rows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state (varchar(max), null)
postal_code (bigint, null)
region (varchar(max), null)
category (varchar(max), null)
sub_category (varchar(max), null)
product_id (varchar(max), null)
quantity (bigint, null)
discount (float, null)
sales_price (float, null)
profit (float, null)
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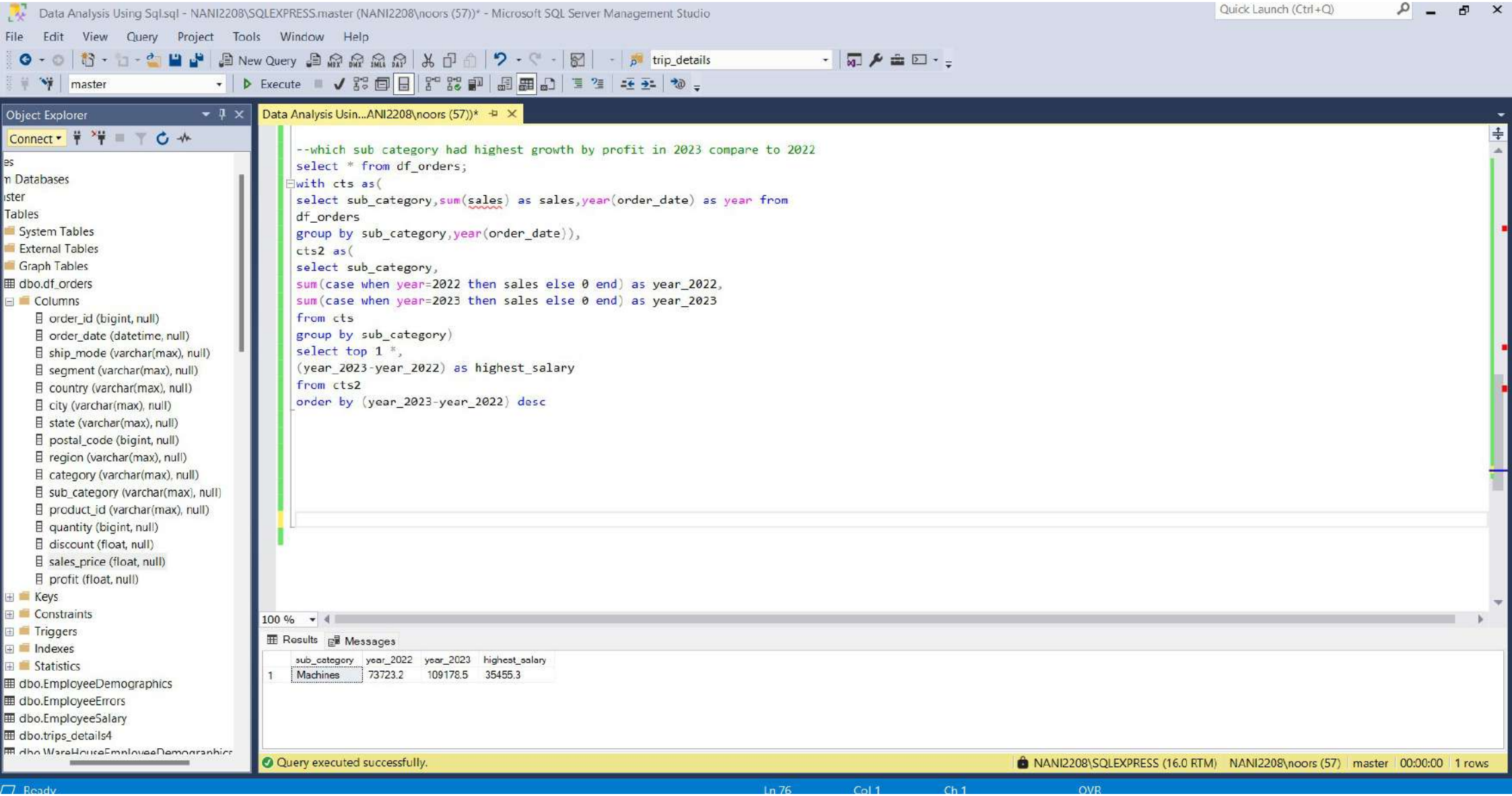
dbo.trips_details4
Data Analysis Usin...ANI2208\noors (57))
--find month over month growth comparison for 2022 and 2023 sales eg : jan 2022 vs jan 2023
select * from df_orders;
with cte as (
select year(order_date) as order_year,month(order_date) as order_month,
sum(sales_price) as sales
from df_orders
group by year(order_date),month(order_date)
--order by year(order_date),month(order_date)
)
select order_month
, sum(case when order_year=2022 then sales else 0 end) as sales_2022
, sum(case when order_year=2023 then sales else 0 end) as sales_2023
from cte
group by order_month
order by order_month
--for each category which month had highest sales
with cte as (
select category,format(order_date,'yyyyMM') as order_year_month, ROW_NUMBER() over(partition by category order by sum(sales) desc) as row_no
, sum(sales) as sales
from df_orders
group by category,format(order_date,'yyyyMM'))
select category, order_year_month ,sales from
cte
where row_no=1;
100 %
Results
Messages
sub_category year_2022 year_2023 highest_salary
1 Machines 73723.2 109178.5 35455.3
Query executed successfully.
NANI2208\SQLEXPRESS (16.0 RTM) NANI2208\noors (57) master 00:00:00 1 rows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order_date (datetime, null)
ship_mode (varchar(max), null)
segment (varchar(max), null)
country (varchar(max), null)
city (varchar(max), null)
state (varchar(max), null)
postal_code (bigint, null)
region (varchar(max), null)
category (varchar(max), null)
sub_category (varchar(max), null)
product_id (varchar(max), null)
quantity (bigint, null)
discount (float, null)
sales_price (float, null)
profit (float, null)
Keys
Constraints
Triggers
Indexes
Statistics
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dbo.EmployeeErrors
dbo.EmployeeSalary
dbo.trips_details4
Data Analysis Usin...ANI2208\noors (57))*
--which sub category had highest growth by profit in 2023 compare to 2022
select * from df_orders;
with cts as(
select sub_category,sum(sales) as sales,year(order_date) as year from
df_orders
group by sub_category,year(order_date)),
cts2 as(
select sub_category,
sum(case when year=2022 then sales else 0 end) as year_2022,
sum(case when year=2023 then sales else 0 end) as year_2023
from cts
group by sub_category)
select top 1 *,
(year_2023-year_2022) as highest_salary
from cts2
order by (year_2023-year_2022) desc
100 %
Results
Messages
sub_category year_2022 year_2023 highest_salary
1 Machines 73723.2 109178.5 35455.3
Query executed successfully.
NANI2208\SQLEXPRESS (16.0 RTM) NANI2208\noors (57) master 00:00:00 1 rows
Ready
Ln 76 Col 1 Ch 1 OVR