In [ ]:
```
from IPython.display import Image
```

Final Project

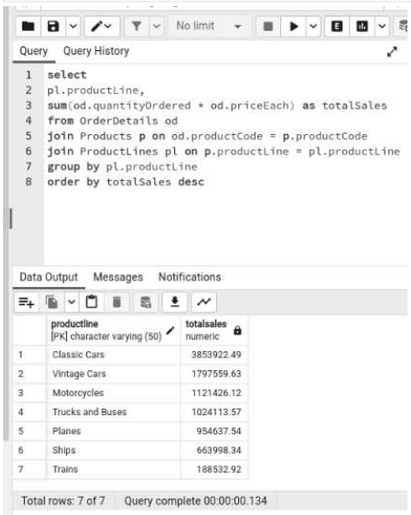
Compose THREE distinct business/analytical problems conceptually similar to the problems presented in the Comprehensive SQL Lab. State each problem as an analysis challenge which students must complete using SQL code against the Classic Models database.

Problem 1: Sales Performance Analysis

Determine the total sales amount for each product line. This analysis will help understand which product lines are generating the most revenue.

In [ ]:
```
Image(filename="images/final_problem_1.png")
```

Out[ ]:



Query | Query History

```
select
pl.productLine,
sum(od.quantityOrdered * od.priceEach) as totalSales
from OrderDetails od
join Products p on od.productCode = p.productCode
join ProductLines pl on p.productLine = pl.productLine
group by pl.productLine
order by totalSales desc
```

Data Output | Messages | Notifications

	productline [PK] character varying (50)	totalsales numeric
1	Classic Cars	3853922.49
2	Vintage Cars	1797559.63
3	Motorcycles	1121426.12
4	Trucks and Buses	1024113.57
5	Planes	954637.54
6	Ships	663998.34
7	Trains	188532.92

Total rows: 7 of 7 | Query complete 00:00:00.134

Problem 2: Customer Purchase Frequency

Identify the top 5 customers who have made the most purchases. This will help in recognizing the most active customers.

In [ ]:
```
Image(filename="images/final_problem_2.png")
```

Out[ ]:

Query | Query History

```
select
c.customerNumber,
c.customerName,
count(o.orderNumber) as purchaseCount
from Customers c
join Orders o on c.customerNumber = o.customerNumber
group by c.customerNumber, c.customerName
order by purchaseCount desc
limit 5
```

Data Output | Messages | Notifications

	customernumber [PK] integer	customername character varying (50)	purchasecount bigint
1	141	Euro+ Shopping Channel	26
2	124	Mini Gifts Distributors Ltd.	17
3	323	Down Under Souveniers, I...	5
4	114	Australian Collectors, Co.	5
5	353	Reims Collectables	5

Problem 3: Employee Sales Performance

Calculate the total sales amount handled by each employee. This will help in evaluating the performance of sales representatives.

In [ ]:
```
Image(filename="images/final_problem_3.png")
```

Out[ ]:

```
select
e.employeeNumber,
e.lastName,
e.firstName,
sum(od.quantityOrdered * od.priceEach) as totalSales
from Employees e
join Customers c on e.employeeNumber = c.salesRepEmployeeNumber
join Orders o on c.customerNumber = o.customerNumber
join OrderDetails od on o.orderNumber = od.orderNumber
group by 1, 2, 3
order by 4 desc
```

Data Output | Messages | Notifications

	employeenumber [PK] integer	lastname character varying (50)	firstname character varying (50)	totalsales numeric
1	1370	Hernandez	Gerard	1258577.81
2	1165	Jennings	Leslie	1081530.54
3	1401	Castillo	Pamela	868220.55
4	1501	Bott	Larry	732096.79
5	1504	Jones	Barry	704853.91
6	1323	Vanauf	George	669377.05
7	1612	Marsh	Peter	584593.76
8	1337	Bondur	Loui	569485.75
9	1611	Fixter	Andy	562582.59

Total rows: 15 of 15 | Query complete 00:00:00.152 | Ln 7, Col 15