



You're working for a company that sells motorcycle parts, and they've asked for some help in analyzing their sales data!

They operate three warehouses in the area, selling both retail and wholesale. They offer a variety of parts and accept credit cards, cash, and bank transfer as payment methods. However, each payment type incurs a different fee.

The board of directors wants to gain a better understanding of wholesale revenue by product line, and how this varies month-to-month and across warehouses. You have been tasked with calculating net revenue for each product line and grouping results by month and warehouse. The results should be filtered so that only "Wholesale" orders are included.

They have provided you with access to their database, which contains the following table called `sales`:

Sales

Column	Data type	Description
order_number	VARCHAR	Unique order number.
date	DATE	Date of the order, from June to August 2021.
warehouse	VARCHAR	The warehouse that the order was made from— North , Central , or West .
client_type	VARCHAR	Whether the order was Retail or Wholesale .
product_line	VARCHAR	Type of product ordered.
quantity	INT	Number of products ordered.
unit_price	FLOAT	Price per product (dollars).
total	FLOAT	Total price of the order (dollars).
payment	VARCHAR	Payment method— Credit card , Transfer , or Cash .
payment_fee	FLOAT	Percentage of total charged as a result of the payment method.

Your query output should be presented in the following format:

product_line	month	warehouse	net_revenue
product_one	---	---	---
product_one	---	---	---

product_line	month	warehouse	net_revenue
product_one	---	---	---
product_one	---	---	---
product_one	---	---	---
product_one	---	---	---
product_two	---	---	---
...

In [4]: --- Step 1: Explore the data

```
SELECT *
FROM sales
```

Out[4]:

	order_number	date	warehouse	client_type	product_line	quantity	unit_price
0	N1	2021-06-01 00:00:00+00:00	North	Retail	Braking system	9	150
1	N2	2021-06-01 00:00:00+00:00	North	Retail	Suspension & traction	8	320
2	N3	2021-06-01 00:00:00+00:00	North	Wholesale	Frame & body	16	35
3	N4	2021-06-01 00:00:00+00:00	North	Wholesale	Suspension & traction	40	35
4	N5	2021-06-01 00:00:00+00:00	North	Retail	Frame & body	6	45
...
995	W176	2021-08-27 00:00:00+00:00	West	Retail	Electrical system	4	210
996	W177	2021-08-28 00:00:00+00:00	West	Wholesale	Miscellaneous	32	25
997	W178	2021-08-28 00:00:00+00:00	West	Retail	Electrical system	6	28
998	W179	2021-08-28 00:00:00+00:00	West	Wholesale	Braking system	32	100
999	W180	2021-08-28 00:00:00+00:00	West	Wholesale	Electrical system	12	32

1000 rows × 10 columns



In [17]:

```
SELECT *
FROM SALES
```

LIMIT 10

Out[17]:

	order_number	date	warehouse	client_type	product_line	quantity	unit_price
0	N1	2021-06-01 00:00:00+00:00	North	Retail	Braking system	9	19.21
1	N2	2021-06-01 00:00:00+00:00	North	Retail	Suspension & traction	8	32.91
2	N3	2021-06-01 00:00:00+00:00	North	Wholesale	Frame & body	16	37.81
3	N4	2021-06-01 00:00:00+00:00	North	Wholesale	Suspension & traction	40	37.31
4	N5	2021-06-01 00:00:00+00:00	North	Retail	Frame & body	6	45.41
5	N6	2021-06-02 00:00:00+00:00	North	Retail	Frame & body	1	40.41
6	N7	2021-06-02 00:00:00+00:00	North	Retail	Miscellaneous	6	20.21
7	N8	2021-06-03 00:00:00+00:00	North	Retail	Electrical system	9	20.51
8	N9	2021-06-03 00:00:00+00:00	North	Retail	Suspension & traction	5	36.11
9	N10	2021-06-03 00:00:00+00:00	North	Retail	Electrical system	5	28.31



In [5]: --- Step 2: Explore categories in product line
 SELECT DISTINCT product_line
 FROM sales

Out[5]:

	product_line
0	Braking system
1	Electrical system
2	Suspension & traction
3	Engine
4	Miscellaneous
5	Frame & body

In [6]: -- Step 3: Explore the dates from date column
 SELECT DISTINCT EXTRACT(MONTH FROM date) as month
 FROM sales

Out[6]: **month**

	month
0	7
1	8
2	6

In [7]: -- Step 4: Group data based on product_line, payment type and month with aggregation

```
SELECT product_line,
       payment,
       EXTRACT(MONTH FROM date) as month,
       SUM(total) AS total_sales,
       SUM(payment_fee) AS total_fee
FROM sales
GROUP BY product_line,payment,month
ORDER BY product_line,payment,month
```

Out[7]:

	product_line	payment	month	total_sales	total_fee
0	Braking system	Cash	6	686.42	0.00
1	Braking system	Cash	7	968.43	0.00
2	Braking system	Cash	8	586.67	0.00
3	Braking system	Credit card	6	4397.93	1.53
4	Braking system	Credit card	7	4888.24	1.59
5	Braking system	Credit card	8	3691.56	1.38
6	Braking system	Transfer	6	6385.57	0.16
7	Braking system	Transfer	7	9434.22	0.20
8	Braking system	Transfer	8	7311.11	0.19
9	Electrical system	Cash	6	871.34	0.00
10	Electrical system	Cash	7	696.79	0.00
11	Electrical system	Cash	8	1349.31	0.00
12	Electrical system	Credit card	6	6211.85	1.29
13	Electrical system	Credit card	7	6532.86	1.32
14	Electrical system	Credit card	8	6196.15	1.32
15	Electrical system	Transfer	6	4927.51	0.08
16	Electrical system	Transfer	7	7737.35	0.14
17	Electrical system	Transfer	8	9089.55	0.16
18	Engine	Cash	6	1084.96	0.00
19	Engine	Cash	7	598.25	0.00
20	Engine	Cash	8	916.51	0.00
21	Engine	Credit card	6	4067.59	0.42
22	Engine	Credit card	7	6912.52	0.57
23	Engine	Credit card	8	3129.50	0.27
24	Engine	Transfer	6	6548.89	0.04
25	Engine	Transfer	7	2834.19	0.02
26	Engine	Transfer	8	11852.97	0.07
27	Frame & body	Cash	6	2873.09	0.00
28	Frame & body	Cash	7	1261.77	0.00
29	Frame & body	Cash	8	688.41	0.00

	product_line	payment	month	total_sales	total_fee
30	Frame & body	Credit card	6	9204.27	1.29
31	Frame & body	Credit card	7	7917.21	1.11
32	Frame & body	Credit card	8	7602.09	0.87
33	Frame & body	Transfer	6	12801.34	0.14
34	Frame & body	Transfer	7	9289.83	0.09
35	Frame & body	Transfer	8	17386.72	0.15
36	Miscellaneous	Cash	6	629.63	0.00
37	Miscellaneous	Cash	7	1108.27	0.00
38	Miscellaneous	Cash	8	460.55	0.00
39	Miscellaneous	Credit card	6	3871.74	0.84
40	Miscellaneous	Credit card	7	3175.05	0.84
41	Miscellaneous	Credit card	8	2172.77	0.54
42	Miscellaneous	Transfer	6	4673.13	0.10
43	Miscellaneous	Transfer	7	6680.00	0.11
44	Miscellaneous	Transfer	8	4394.68	0.09
45	Suspension & traction	Cash	6	1075.17	0.00
46	Suspension & traction	Cash	7	1121.70	0.00
47	Suspension & traction	Cash	8	2221.83	0.00
48	Suspension & traction	Credit card	6	11246.16	1.56
49	Suspension & traction	Credit card	7	9280.71	1.38
50	Suspension & traction	Credit card	8	9773.37	1.65
51	Suspension & traction	Transfer	6	13763.44	0.18
52	Suspension & traction	Transfer	7	13110.52	0.20
53	Suspension & traction	Transfer	8	11421.31	0.13

```
In [8]: --- Step 5: Using CASE WHEN function to create a new column than take the date and
--- Then add aggregation of total sales subtract by total fee as net revenue and sa
--- Start coding here
SELECT product_line,
CASE
WHEN date BETWEEN '2021-06-01' AND '2021-6-30' THEN 'June'
WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
END AS month,
warehouse,
```

```
(SUM(total) - SUM(payment_fee)) AS net_revenue  
FROM sales  
WHERE client_type = 'Wholesale'  
GROUP BY month,product_line,warehouse  
ORDER BY product_line,month,warehouse
```

Out[8]:

	product_line	month	warehouse	net_revenue
0	Braking system	August	Central	3039.41
1	Braking system	August	North	1770.84
2	Braking system	August	West	2500.67
3	Braking system	July	Central	3778.65
4	Braking system	July	North	2594.44
5	Braking system	July	West	3060.93
6	Braking system	June	Central	3684.89
7	Braking system	June	North	1487.77
8	Braking system	June	West	1212.75
9	Electrical system	August	Central	3126.43
10	Electrical system	August	North	4721.12
11	Electrical system	August	West	1241.84
12	Electrical system	July	Central	5577.62
13	Electrical system	July	North	1710.13
14	Electrical system	July	West	449.46
15	Electrical system	June	Central	2904.93
16	Electrical system	June	North	2022.50
17	Engine	August	Central	9528.71
18	Engine	August	North	2324.19
19	Engine	July	Central	1827.03
20	Engine	July	North	1007.14
21	Engine	June	Central	6548.85
22	Frame & body	August	Central	8657.99
23	Frame & body	August	North	7898.89
24	Frame & body	August	West	829.69
25	Frame & body	July	Central	3135.13
26	Frame & body	July	North	6154.61
27	Frame & body	June	Central	5111.34
28	Frame & body	June	North	4910.12
29	Frame & body	June	West	2779.74

	product_line	month	warehouse	net_revenue
30	Miscellaneous	August	Central	1739.76
31	Miscellaneous	August	North	1841.40
32	Miscellaneous	August	West	813.43
33	Miscellaneous	July	Central	3118.44
34	Miscellaneous	July	North	2404.65
35	Miscellaneous	July	West	1156.80
36	Miscellaneous	June	Central	1878.07
37	Miscellaneous	June	North	513.99
38	Miscellaneous	June	West	2280.97
39	Suspension & traction	August	Central	5416.70
40	Suspension & traction	August	North	4923.69
41	Suspension & traction	August	West	1080.79
42	Suspension & traction	July	Central	6456.72
43	Suspension & traction	July	North	3714.28
44	Suspension & traction	July	West	2939.32
45	Suspension & traction	June	Central	3325.00
46	Suspension & traction	June	North	8065.74
47	Suspension & traction	June	West	2372.52

In [9]:

```
SELECT TO_CHAR(TO_DATE(month::text,'MM'), 'Month') AS month_name
FROM (SELECT product_line,
            EXTRACT(MONTH FROM date) AS month,
            warehouse
      FROM sales) AS filtered_table
```

Out[9]:

In [10]:

```
--- STEP 1 : Create a CASE WHEN function to create a month table based on date
SELECT
    CASE
        WHEN date BETWEEN '2021-06-01' AND '2021-6-30' THEN 'June'
        WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
        WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
    END AS month
FROM sales
```

Out[10]:

	month
0	June
1	June
2	June
3	June
4	June
...	...
995	August
996	August
997	August
998	August
999	August

1000 rows × 1 columns

In [11]:

```
--- STEP 2 : SELECT product_line, month and warehouse
SELECT product_line,
       CASE
         WHEN date BETWEEN '2021-06-01' AND '2021-6-30' THEN 'June'
         WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
         WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
       END AS month,
       warehouse,
       SUM(total) AS total_sales
FROM sales
GROUP BY month,product_line,warehouse
ORDER BY month
```

Out[11]:

	product_line	month	warehouse	total_sales
0	Braking system	August	Central	4688.20
1	Suspension & traction	August	West	3338.09
2	Electrical system	August	Central	6011.28
3	Braking system	August	North	3168.10
4	Miscellaneous	August	West	1251.98
5	Frame & body	August	West	1796.51
6	Braking system	August	West	3733.04
7	Suspension & traction	August	Central	10944.09
8	Miscellaneous	August	North	2620.05
9	Engine	August	North	3372.67
10	Electrical system	August	West	2778.96
11	Frame & body	August	Central	12258.37
12	Electrical system	August	North	7844.77
13	Frame & body	August	North	11622.34
14	Suspension & traction	August	North	9134.33
15	Engine	August	Central	12526.31
16	Miscellaneous	August	Central	3155.97
17	Engine	July	Central	5480.82
18	Frame & body	July	North	8092.89
19	Braking system	July	West	4248.46
20	Frame & body	July	Central	7659.39
21	Miscellaneous	July	West	1752.13
22	Electrical system	July	West	2094.71
23	Miscellaneous	July	North	3947.94
24	Engine	July	West	2158.53
25	Electrical system	July	Central	9607.69
26	Suspension & traction	July	West	3184.91
27	Suspension & traction	July	Central	13416.18
28	Engine	July	North	2705.61
29	Suspension & traction	July	North	6911.84

	product_line	month	warehouse	total_sales
30	Miscellaneous	July	Central	5263.25
31	Frame & body	July	West	2716.53
32	Braking system	July	Central	6842.37
33	Electrical system	July	North	3264.60
34	Braking system	July	North	4200.06
35	Miscellaneous	June	West	3322.16
36	Braking system	June	North	3219.97
37	Suspension & traction	June	West	3705.03
38	Engine	June	West	1286.98
39	Electrical system	June	North	4137.90
40	Engine	June	Central	9256.01
41	Braking system	June	West	1987.99
42	Suspension & traction	June	Central	8310.94
43	Electrical system	June	Central	6375.59
44	Suspension & traction	June	North	14068.80
45	Frame & body	June	West	6073.27
46	Engine	June	North	1158.45
47	Miscellaneous	June	North	2050.68
48	Braking system	June	Central	6261.96
49	Frame & body	June	Central	10122.80
50	Frame & body	June	North	8682.63
51	Miscellaneous	June	Central	3801.66
52	Electrical system	June	West	1497.21

In [12]: --- STEP 3 : Include net_revenue where SUM of total - SUM of payment_fee and WHERE
 SELECT product_line,
 CASE
 WHEN date BETWEEN '2021-06-01' AND '2021-6-30' THEN 'June'
 WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
 WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
 END AS month,
 warehouse,
 (SUM(total) - SUM(payment_fee)) AS net_revenue
 FROM sales
 WHERE client_type = 'Wholesale'
 GROUP BY month,product_line,warehouse

Out[12]:

	product_line	month	warehouse	net_revenue
0	Suspension & traction	August	West	1080.79
1	Electrical system	August	North	4721.12
2	Frame & body	July	North	6154.61
3	Braking system	August	Central	3039.41
4	Braking system	July	West	3060.93
5	Miscellaneous	August	Central	1739.76
6	Frame & body	July	Central	3135.13
7	Frame & body	June	Central	5111.34
8	Miscellaneous	July	West	1156.80
9	Electrical system	August	West	1241.84
10	Braking system	June	Central	3684.89
11	Electrical system	July	West	449.46
12	Frame & body	August	North	7898.89
13	Engine	August	Central	9528.71
14	Miscellaneous	July	North	2404.65
15	Engine	June	Central	6548.85
16	Electrical system	August	Central	3126.43
17	Electrical system	June	North	2022.50
18	Miscellaneous	August	West	813.43
19	Suspension & traction	June	West	2372.52
20	Electrical system	July	Central	5577.62
21	Suspension & traction	July	West	2939.32
22	Frame & body	June	West	2779.74
23	Engine	August	North	2324.19
24	Miscellaneous	August	North	1841.40
25	Suspension & traction	July	Central	6456.72
26	Miscellaneous	June	North	513.99
27	Engine	July	North	1007.14
28	Suspension & traction	July	North	3714.28
29	Miscellaneous	July	Central	3118.44

	product_line	month	warehouse	net_revenue
30	Miscellaneous	June	Central	1878.07
31	Miscellaneous	June	West	2280.97
32	Braking system	June	North	1487.77
33	Frame & body	August	West	829.69
34	Braking system	August	North	1770.84
35	Engine	July	Central	1827.03
36	Braking system	June	West	1212.75
37	Suspension & traction	June	Central	3325.00
38	Braking system	July	Central	3778.65
39	Suspension & traction	June	North	8065.74
40	Suspension & traction	August	North	4923.69
41	Frame & body	August	Central	8657.99
42	Braking system	August	West	2500.67
43	Electrical system	July	North	1710.13
44	Suspension & traction	August	Central	5416.70
45	Braking system	July	North	2594.44
46	Frame & body	June	North	4910.12
47	Electrical system	June	Central	2904.93

In [13]:

```
--- STEP 4:Save query as revenue_by_product line
SELECT *
FROM (
SELECT product_line,
CASE
WHEN date BETWEEN '2021-06-01' AND '2021-6-30' THEN 'June'
WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
END AS month,
warehouse,
(SUM(total) - SUM(payment_fee)) AS net_revenue
FROM sales
WHERE client_type = 'Wholesale' AND date BETWEEN '2021-06-01' AND '2021-08-31'
GROUP BY month,product_line,warehouse
) AS revenue_by_product_line
```

Out[13]:

	product_line	month	warehouse	net_revenue
0	Suspension & traction	August	West	1080.79
1	Electrical system	August	North	4721.12
2	Frame & body	July	North	6154.61
3	Braking system	August	Central	3039.41
4	Braking system	July	West	3060.93
5	Miscellaneous	August	Central	1739.76
6	Frame & body	July	Central	3135.13
7	Frame & body	June	Central	5111.34
8	Miscellaneous	July	West	1156.80
9	Electrical system	August	West	1241.84
10	Braking system	June	Central	3684.89
11	Electrical system	July	West	449.46
12	Frame & body	August	North	7898.89
13	Engine	August	Central	9528.71
14	Miscellaneous	July	North	2404.65
15	Engine	June	Central	6548.85
16	Electrical system	August	Central	3126.43
17	Electrical system	June	North	2022.50
18	Miscellaneous	August	West	813.43
19	Suspension & traction	June	West	2372.52
20	Electrical system	July	Central	5577.62
21	Suspension & traction	July	West	2939.32
22	Frame & body	June	West	2779.74
23	Engine	August	North	2324.19
24	Miscellaneous	August	North	1841.40
25	Suspension & traction	July	Central	6456.72
26	Miscellaneous	June	North	513.99
27	Engine	July	North	1007.14
28	Suspension & traction	July	North	3714.28
29	Miscellaneous	July	Central	3118.44

	product_line	month	warehouse	net_revenue
30	Miscellaneous	June	Central	1878.07
31	Miscellaneous	June	West	2280.97
32	Braking system	June	North	1487.77
33	Frame & body	August	West	829.69
34	Braking system	August	North	1770.84
35	Engine	July	Central	1827.03
36	Braking system	June	West	1212.75
37	Suspension & traction	June	Central	3325.00
38	Braking system	July	Central	3778.65
39	Suspension & traction	June	North	8065.74
40	Suspension & traction	August	North	4923.69
41	Frame & body	August	Central	8657.99
42	Braking system	August	West	2500.67
43	Electrical system	July	North	1710.13
44	Suspension & traction	August	Central	5416.70
45	Braking system	July	North	2594.44
46	Frame & body	June	North	4910.12
47	Electrical system	June	Central	2904.93

In [14]:

```
--- STEP 4:Save query as revenue_by_product line
SELECT *
FROM (
SELECT product_line,
CASE
WHEN date BETWEEN '2021-06-01' AND '2021-6-30' THEN 'June'
WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
END AS month,
warehouse,
(SUM(total) - SUM(payment_fee)) AS net_revenue
FROM sales
WHERE client_type = 'Wholesale' AND date BETWEEN '2021-06-01' AND '2021-08-31'
GROUP BY month,product_line,warehouse
) AS revenue_by_product_line
```

Out[14]:

In [15]:

```
--- Testing Area
SELECT product_line,
CASE
```

```
WHEN date BETWEEN '2021-06-01' AND '2021-06-30' THEN 'June'
WHEN date BETWEEN '2021-07-01' AND '2021-07-31' THEN 'July'
WHEN date BETWEEN '2021-08-01' AND '2021-08-31' THEN 'August'
END AS month,
SUM(total) AS total_sales
FROM sales
GROUP BY month,product_line
ORDER BY month DESC
```

Out[15]:

	product_line	month	total_sales
0	Braking system	June	11469.92
1	Electrical system	June	12010.70
2	Frame & body	June	24878.70
3	Engine	June	11701.44
4	Miscellaneous	June	9174.50
5	Suspension & traction	June	26084.77
6	Electrical system	July	14967.00
7	Frame & body	July	18468.81
8	Braking system	July	15290.89
9	Suspension & traction	July	23512.93
10	Engine	July	10344.96
11	Miscellaneous	July	10963.32
12	Braking system	August	11589.34
13	Suspension & traction	August	23416.51
14	Engine	August	15898.98
15	Electrical system	August	16635.01
16	Miscellaneous	August	7028.00
17	Frame & body	August	25677.22