

Laboratory work 6

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1. Write a SQL query using Joins:

- combine each row of dealer table with each row of client table
- find all dealers along with client name, city, grade, sell number, date, and amount
- find the dealer and client who belongs to same city
- find sell id, amount, client name, city those sells where sell amount exists between 100 and 500
- find dealers who works either for one or more client or not yet join under any of the clients
- find the dealers and the clients he service, return client name, city, dealer name, commission.
- find client name, client city, dealer, commission those dealers who received a commission from the sell more than 12%
- make a report with client name, city, sell id, sell date, sell amount, dealer name and commission to find that either any of the existing clients haven't made a purchase(sell) or made one or more purchase(sell) by their dealer or by own.
- find dealers who either work for one or more clients. The client may have made, either one or more purchases, or purchase amount above 2000 and must have a grade, or he may not have made any purchase to the associated dealer. Print client name, client grade, dealer name, sell id, sell amount

a)

```
SELECT * FROM dealer d INNER JOIN client c on d.id = c.dealer_id;
```

| | d.id | d.name | location | charge | c.id | c.name | city | priority | dealer_id |
|---|------|---------|------------|--------|------|--------|------------|----------|-----------|
| 1 | 101 | Ерлан | Алматы | 0.15 | 802 | Айша | Алматы | 100 | 101 |
| 2 | 101 | Ерлан | Алматы | 0.15 | 807 | Даулет | Алматы | 200 | 101 |
| 3 | 102 | Жасмин | Караганда | 0.13 | 805 | Али | Кокшетау | 200 | 102 |
| 4 | 102 | Жасмин | Караганда | 0.13 | 808 | Ильяс | Нур-Султан | 300 | 102 |
| 5 | 106 | Канат | Караганда | 0.14 | 804 | Алия | Караганда | 300 | 106 |
| 6 | 103 | Жулдыз | Актобе | 0.12 | 809 | Саша | Шымкент | 100 | 103 |
| 7 | 107 | Евгений | Атырау | 0.13 | 803 | Маша | Семей | 200 | 107 |
| 8 | 105 | Азамат | Нур-Султан | 0.11 | 801 | Максат | Нур-Султан | <null> | 105 |

b)

```
SELECT d.id, d.name, c.name, c.city, c.priority, s.id, s.date, s.amount
FROM dealer d INNER JOIN client c ON d.id = c.dealer_id INNER JOIN sell s ON c.id =
s.client_id;
```

| d.id | d.name | c.name | city | priority | s.id | date | amount |
|------|---------|--------|------------|----------|------|----------------------------|---------|
| 102 | Жасмин | Али | Кокшетау | 200 | 201 | 2012-10-05 00:00:00.000000 | 150.5 |
| 105 | Азамат | Максат | Нур-Султан | <null> | 209 | 2012-09-10 00:00:00.000000 | 270.65 |
| 101 | Ерлан | Айша | Алматы | 100 | 202 | 2012-10-05 00:00:00.000000 | 65.26 |
| 103 | Жулдыз | Саша | Шымкент | 100 | 204 | 2012-08-17 00:00:00.000000 | 110.5 |
| 102 | Жасмин | Али | Кокшетау | 200 | 207 | 2012-09-10 00:00:00.000000 | 948.5 |
| 101 | Ерлан | Даулет | Алматы | 200 | 205 | 2012-07-27 00:00:00.000000 | 2400.6 |
| 101 | Ерлан | Айша | Алматы | 100 | 208 | 2012-09-10 00:00:00.000000 | 5760 |
| 106 | Канат | Алия | Караганда | 300 | 210 | 2012-10-10 00:00:00.000000 | 1983.43 |
| 103 | Жулдыз | Саша | Шымкент | 100 | 203 | 2012-10-10 00:00:00.000000 | 2480.4 |
| 102 | Жасмин | Ильяс | Нур-Султан | 300 | 212 | 2012-06-27 00:00:00.000000 | 250.45 |
| 107 | Евгений | Маша | Семей | 200 | 211 | 2012-08-17 00:00:00.000000 | 75.29 |
| 101 | Ерлан | Айша | Алматы | 100 | 213 | 2012-04-25 00:00:00.000000 | 3045.6 |

c)

```
SELECT * FROM dealer d INNER JOIN client c on d.location = c.city;
```

| | d.id | d.name | location | charge | c.id | c.name | city | priority | dealer_id |
|---|------|--------|------------|--------|------|--------|------------|----------|-----------|
| 1 | 101 | Ерлан | Алматы | 0.15 | 807 | Даулет | Алматы | 200 | 101 |
| 2 | 101 | Ерлан | Алматы | 0.15 | 802 | Айша | Алматы | 100 | 101 |
| 3 | 102 | Жасмин | Караганда | 0.13 | 804 | Алия | Караганда | 300 | 106 |
| 4 | 105 | Азамат | Нур-Султан | 0.11 | 801 | Максат | Нур-Султан | <null> | 105 |
| 5 | 105 | Азамат | Нур-Султан | 0.11 | 808 | Ильяс | Нур-Султан | 300 | 102 |
| 6 | 106 | Канат | Караганда | 0.14 | 804 | Алия | Караганда | 300 | 106 |

```
SELECT * FROM dealer d INNER JOIN client c on d.location = c.city AND d.id = c.dealer_id;
```

| | d.id | d.name | location | charge | c.id | c.name | city | priority | dealer_id |
|---|------|--------|------------|--------|------|--------|------------|----------|-----------|
| 1 | 101 | Ерлан | Алматы | 0.15 | 802 | Айша | Алматы | 100 | 101 |
| 2 | 101 | Ерлан | Алматы | 0.15 | 807 | Даулет | Алматы | 200 | 101 |
| 3 | 106 | Канат | Караганда | 0.14 | 804 | Алия | Караганда | 300 | 106 |
| 4 | 105 | Азамат | Нур-Султан | 0.11 | 801 | Максат | Нур-Султан | <null> | 105 |

d)

```
SELECT s.id, s.amount, c.name, c.city
FROM sell s INNER JOIN client c on s.client_id = c.id AND s.amount BETWEEN 100 AND 500;
```

| | id | amount | name | city |
|---|-----|--------|--------|------------|
| 1 | 201 | 150.5 | Али | Кокшетау |
| 2 | 212 | 250.45 | Ильяс | Нур-Султан |
| 3 | 204 | 110.5 | Саша | Шымкент |
| 4 | 209 | 270.65 | Максат | Нур-Султан |

e)

```
SELECT * FROM dealer d LEFT OUTER JOIN client c on d.id = c.dealer_id;
```

| | d.id | d.name | location | charge | c.id | c.name | city | priority | dealer_id |
|---|------|---------|------------|--------|------|--------|------------|----------|-----------|
| 1 | 101 | Ерлан | Алматы | 0.15 | 802 | Айша | Алматы | 100 | 101 |
| 2 | 101 | Ерлан | Алматы | 0.15 | 807 | Даулет | Алматы | 200 | 101 |
| 3 | 102 | Жасмин | Караганда | 0.13 | 805 | Али | Кокшетау | 200 | 102 |
| 4 | 102 | Жасмин | Караганда | 0.13 | 808 | Ильяс | Нур-Султан | 300 | 102 |
| 5 | 106 | Канат | Караганда | 0.14 | 804 | Алия | Караганда | 300 | 106 |
| 6 | 103 | Жулдыз | Актобе | 0.12 | 809 | Саша | Шымкент | 100 | 103 |
| 7 | 107 | Евгений | Атырау | 0.13 | 803 | Маша | Семей | 200 | 107 |
| 8 | 105 | Азамат | Нур-Султан | 0.11 | 801 | Максат | Нур-Султан | <null> | 105 |

```
SELECT DISTINCT d.name FROM dealer d LEFT OUTER JOIN client c on d.id = c.dealer_id;
```

| | name |
|---|---------|
| 1 | Азамат |
| 2 | Ерлан |
| 3 | Евгений |
| 4 | Жулдыз |
| 5 | Жасмин |
| 6 | Канат |

f)

```
SELECT c.name, c.city, d.name, d.charge
FROM dealer d INNER JOIN client c on d.id = c.dealer_id;
```

| | c.name | city | d.name | charge |
|---|--------|------------|---------|--------|
| 1 | Айша | Алматы | Ерлан | 0.15 |
| 2 | Даулет | Алматы | Ерлан | 0.15 |
| 3 | Али | Кокшетау | Жасмин | 0.13 |
| 4 | Ильяс | Нур-Султан | Жасмин | 0.13 |
| 5 | Алия | Караганда | Канат | 0.14 |
| 6 | Саша | Шымкент | Жулдыз | 0.12 |
| 7 | Маша | Семей | Евгений | 0.13 |
| 8 | Максат | Нур-Султан | Азамат | 0.11 |

g)

```
SELECT c.name, c.city, d.name, d.charge
FROM client c INNER JOIN dealer d on c.dealer_id = d.id AND d.charge > 0.12;
```

| | c.name | city | d.name | charge |
|---|--------|------------|---------|--------|
| 1 | Айша | Алматы | Ерлан | 0.15 |
| 2 | Даулет | Алматы | Ерлан | 0.15 |
| 3 | Али | Кокшетау | Жасмин | 0.13 |
| 4 | Ильяс | Нур-Султан | Жасмин | 0.13 |
| 5 | Алия | Караганда | Канат | 0.14 |
| 6 | Маша | Семей | Евгений | 0.13 |

h)

```
SELECT c.name, c.city, s.id, s.date, s.amount, d.name, d.charge
FROM client c FULL OUTER JOIN dealer d on c.dealer_id = d.id FULL OUTER JOIN sell s on
s.dealer_id = d.id AND s.client_id = c.id;
```

| | c.name | city | id | date | amount | d.name | charge |
|----|--------|------------|-----|----------------------------|---------|---------|--------|
| 1 | Али | Кокшетау | 201 | 2012-10-05 00:00:00.000000 | 150.5 | Жасмин | 0.13 |
| 2 | Максат | Нур-Султан | 209 | 2012-09-10 00:00:00.000000 | 270.65 | Азамат | 0.11 |
| 3 | Айша | Алматы | 202 | 2012-10-05 00:00:00.000000 | 65.26 | Ерлан | 0.15 |
| 4 | Саша | Шымкент | 204 | 2012-08-17 00:00:00.000000 | 110.5 | Жулдыз | 0.12 |
| 5 | Али | Кокшетау | 207 | 2012-09-10 00:00:00.000000 | 948.5 | Жасмин | 0.13 |
| 6 | Даулет | Алматы | 205 | 2012-07-27 00:00:00.000000 | 2400.6 | Ерлан | 0.15 |
| 7 | Айша | Алматы | 208 | 2012-09-10 00:00:00.000000 | 5760 | Ерлан | 0.15 |
| 8 | Алия | Караганда | 210 | 2012-10-10 00:00:00.000000 | 1983.43 | Канат | 0.14 |
| 9 | Саша | Шымкент | 203 | 2012-10-10 00:00:00.000000 | 2480.4 | Жулдыз | 0.12 |
| 10 | Ильяс | Нур-Султан | 212 | 2012-06-27 00:00:00.000000 | 250.45 | Жасмин | 0.13 |
| 11 | Маша | Семей | 211 | 2012-08-17 00:00:00.000000 | 75.29 | Евгений | 0.13 |
| 12 | Айша | Алматы | 213 | 2012-04-25 00:00:00.000000 | 3045.6 | Ерлан | 0.15 |

i)

```
SELECT c.name, c.priority, d.name, s.id, s.amount
FROM dealer d LEFT OUTER JOIN client c on d.id = c.dealer_id LEFT OUTER JOIN sell s on c.id =
s.client_id AND d.id = s.dealer_id
WHERE s.amount >= 2000;
```

| | c.name | priority | d.name | id | amount |
|---|--------|----------|--------|-----|--------|
| 1 | Даулет | 200 | Ерлан | 205 | 2400.6 |
| 2 | Айша | 100 | Ерлан | 208 | 5760 |
| 3 | Саша | 100 | Жулдыз | 203 | 2480.4 |
| 4 | Айша | 100 | Ерлан | 213 | 3045.6 |

2. Create following views:

- count the number of unique clients, compute average and total purchase amount of client orders by each date.
- find top 5 dates with the greatest total sell amount
- count the number of sales, compute average and total amount of all sales of each dealer
- compute how much all dealers earned from charge(total sell amount * charge) in each location
- compute number of sales, average and total amount of all sales dealers made in each location
- compute number of sales, average and total amount of expenses in each city clients made.
- find cities where total expenses more than total amount of sales in locations

a)

```
CREATE VIEW v1 as
SELECT count(DISTINCT s.client_id), s.date, avg(s.amount), sum(s.amount)
FROM sell s
GROUP BY s.date;
```

| | count | date | avg | sum |
|---|-------|----------------------------|--------------------|--------------------|
| 1 | 1 | 2012-04-25 00:00:00.000000 | 3045.6 | 3045.6 |
| 2 | 1 | 2012-06-27 00:00:00.000000 | 250.45 | 250.45 |
| 3 | 1 | 2012-07-27 00:00:00.000000 | 2400.6 | 2400.6 |
| 4 | 2 | 2012-08-17 00:00:00.000000 | 92.89500000000001 | 185.79000000000002 |
| 5 | 3 | 2012-09-10 00:00:00.000000 | 2326.3833333333333 | 6979.15 |
| 6 | 2 | 2012-10-05 00:00:00.000000 | 107.88 | 215.76 |
| 7 | 2 | 2012-10-10 00:00:00.000000 | 2231.915 | 4463.83 |

b)

```
CREATE VIEW v2 as
SELECT s.date, sum(s.amount)
FROM sell s
GROUP BY s.date
ORDER BY sum(s.amount) DESC LIMIT 5;
```

| | date | sum |
|---|----------------------------|---------|
| 1 | 2012-09-10 00:00:00.000000 | 6979.15 |
| 2 | 2012-10-10 00:00:00.000000 | 4463.83 |
| 3 | 2012-04-25 00:00:00.000000 | 3045.6 |
| 4 | 2012-07-27 00:00:00.000000 | 2400.6 |
| 5 | 2012-06-27 00:00:00.000000 | 250.45 |

c)

```
CREATE VIEW v3 as
SELECT d.id, d.name, count(s.amount), avg(s.amount), sum(s.amount)
FROM dealer d INNER JOIN sell s on d.id = s.dealer_id
GROUP BY d.id;
```

| | id | name | count | avg | sum |
|---|-----|---------|-------|--------------------|--------------------|
| 1 | 105 | Азамат | 1 | 270.65 | 270.65 |
| 2 | 107 | Евгений | 1 | 75.29 | 75.29 |
| 3 | 101 | Ерлан | 4 | 2817.8650000000002 | 11271.460000000001 |
| 4 | 102 | Жасмин | 3 | 449.81666666666666 | 1349.45 |
| 5 | 103 | Жулдыз | 2 | 1295.45 | 2590.9 |
| 6 | 106 | Канат | 1 | 1983.43 | 1983.43 |

d)

```
CREATE VIEW v4 as
SELECT d.id, d.name, sum(s.amount * d.charge)
FROM dealer d INNER JOIN sell s on d.id = s.dealer_id
GROUP BY d.id;
```

| | id | name | sum |
|---|-----|---------|--------------------|
| 1 | 105 | Азамат | 29.771499999999996 |
| 2 | 107 | Евгений | 9.7877000000000001 |
| 3 | 101 | Ерлан | 1690.7189999999998 |
| 4 | 102 | Жасмин | 175.4285 |
| 5 | 103 | Жұлдыз | 310.908 |
| 6 | 106 | Канат | 277.6802 |

e)

```
CREATE VIEW v5 as
SELECT d.location, count(s.amount), avg(s.amount), sum(s.amount)
FROM dealer d INNER JOIN sell s on d.id = s.dealer_id
GROUP BY d.location;
```

| | location | count | avg | sum |
|---|------------|-------|--------------------|--------------------|
| 1 | Актобе | 2 | 1295.45 | 2590.9 |
| 2 | Караганда | 4 | 833.22 | 3332.88 |
| 3 | Алматы | 4 | 2817.8650000000002 | 11271.460000000001 |
| 4 | Нұр-Сұлтан | 1 | 270.65 | 270.65 |
| 5 | Атырау | 1 | 75.29 | 75.29 |

f)

```
CREATE VIEW v6 as
SELECT c.city, count(s.amount), avg(s.amount*(d.charge+1)), sum(s.amount*(d.charge+1))
FROM client c INNER JOIN dealer d on d.id = c.dealer_id INNER JOIN sell s on c.id =
s.client_id AND d.id = s.dealer_id
GROUP BY c.city;
```

| | city | count | avg | sum |
|---|------------|-------|--------------------|--------------------|
| 1 | Караганда | 1 | 2261.1102000000005 | 2261.1102000000005 |
| 2 | Алматы | 4 | 3240.5447499999999 | 12962.178999999996 |
| 3 | Шымкент | 2 | 1450.9040000000002 | 2901.8080000000004 |
| 4 | Нұр-Сұлтан | 2 | 291.715 | 583.43 |
| 5 | Семей | 1 | 85.0777 | 85.0777 |
| 6 | Кокшетау | 2 | 620.935 | 1241.87 |

g)

```
CREATE VIEW v7 as
SELECT c.city, sum(s.amount*(d.charge+1)) total_expenses, sum(s.amount) total_amount
FROM client c INNER JOIN dealer d on d.id = c.dealer_id AND c.city = d.location INNER
JOIN sell s on c.id = s.client_id AND d.id = s.dealer_id
GROUP BY c.city;
SELECT * FROM v7
WHERE total_expenses > total_amount;
```

| | city | total_expenses | total_amount |
|---|------------|--------------------|--------------------|
| 1 | Алматы | 12962.178999999996 | 11271.460000000001 |
| 2 | Караганда | 2261.1102000000005 | 1983.43 |
| 3 | Нұр-Сұлтан | 300.4215 | 270.65 |