Домашнее задание №3

Примечание перед началом работы

Изначально таблица **transaction** содержит строки с customer id = 5034, которого, при этом, нет в таблице **customer**. В связи с этим, данные строки были удалены из таблицы **transaction** для корректной работы.

Скриншоты из DBeaver, подтверждающие выполнение заданий, с необходимыми комментариями

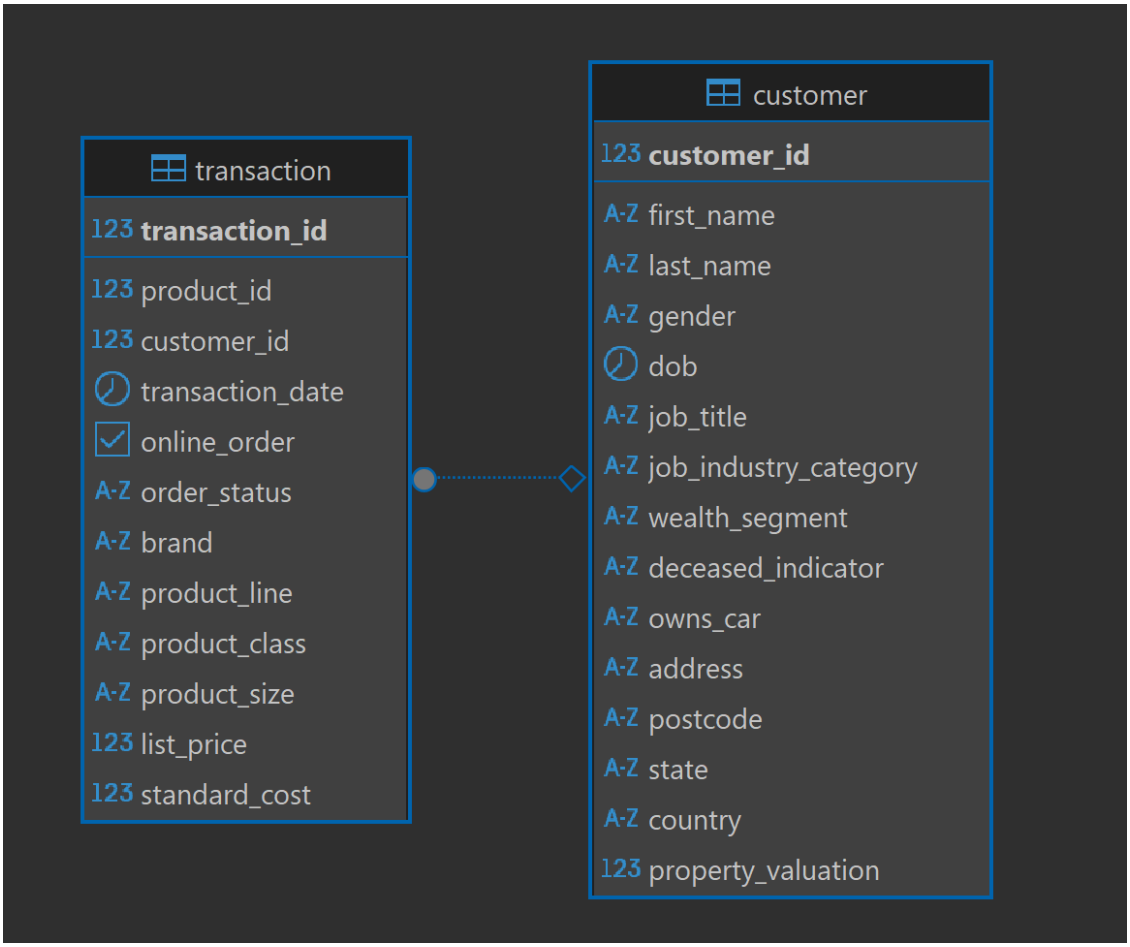
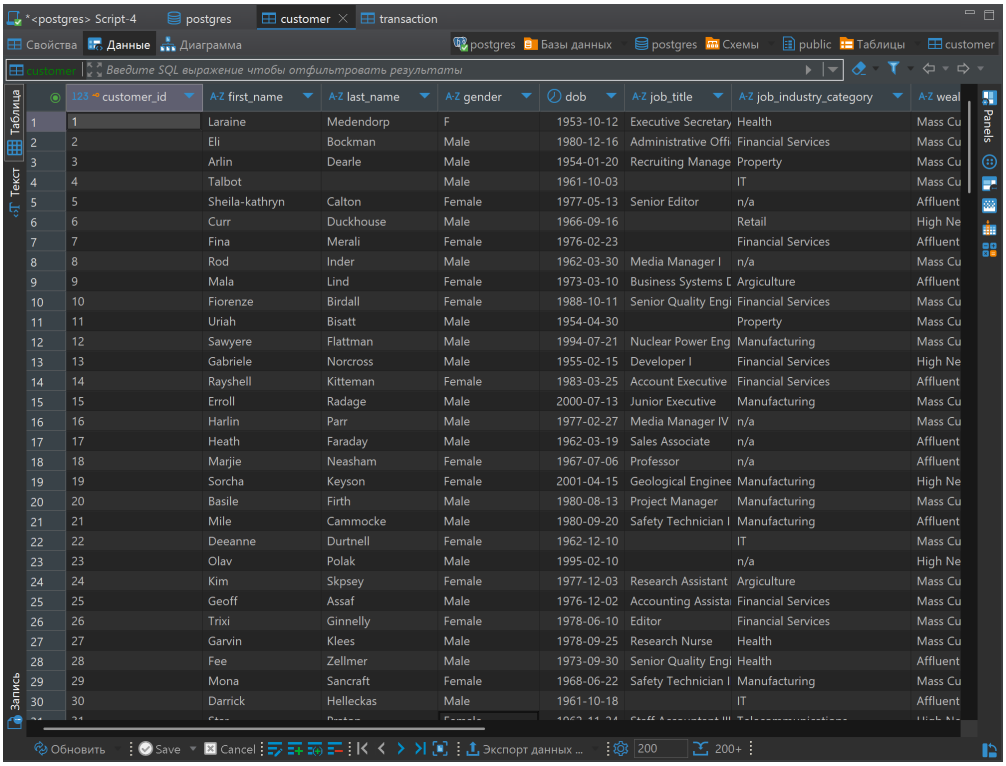
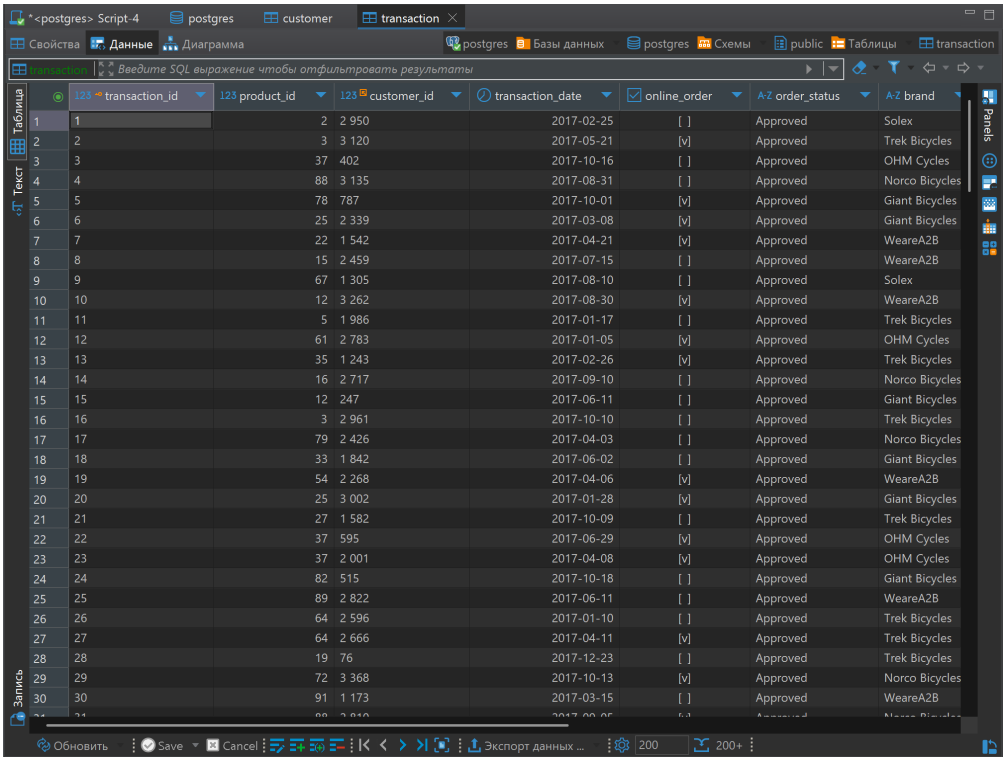


Рис. 1: Список таблиц в базе данных



	customer_id	first_name	last_name	gender	dob	job_title	job_industry_category	wealth
1	1	Laraine	Medendorp	F	1953-10-12	Executive Secretary	Health	Mass Cu
2	2	Eli	Bockman	Male	1980-12-16	Administrative Offi	Financial Services	Mass Cu
3	3	Arlin	Dearle	Male	1954-01-20	Recruiting Manage	Property	Mass Cu
4	4	Talbot		Male	1961-10-03		IT	Mass Cu
5	5	Sheila-kathryn	Calton	Female	1977-05-13	Senior Editor	n/a	Affluent
6	6	Curr	Duckhouse	Male	1966-09-16		Retail	High Ne
7	7	Fina	Merali	Female	1976-02-23		Financial Services	Affluent
8	8	Rod	Inder	Male	1962-03-30	Media Manager I	n/a	Mass Cu
9	9	Mala	Lind	Female	1973-03-10	Business Systems D	Argiculture	Affluent
10	10	Fiorenze	Birdall	Female	1988-10-11	Senior Quality Engi	Financial Services	Mass Cu
11	11	Uriah	Bisatt	Male	1954-04-30		Property	Mass Cu
12	12	Sawyere	Flattman	Male	1994-07-21	Nuclear Power Eng	Manufacturing	Mass Cu
13	13	Gabriele	Norcross	Male	1955-02-15	Developer I	Financial Services	High Ne
14	14	Rayshell	Kitteman	Female	1983-03-25	Account Executive	Financial Services	Affluent
15	15	Erroll	Radage	Male	2000-07-13	Junior Executive	Manufacturing	Mass Cu
16	16	Harlin	Parr	Male	1977-02-27	Media Manager IV	n/a	Mass Cu
17	17	Heath	Faraday	Male	1962-03-19	Sales Associate	n/a	Affluent
18	18	Marjie	Neasham	Female	1967-07-06	Professor	n/a	Affluent
19	19	Sorcha	Keyson	Female	2001-04-15	Geological Enginee	Manufacturing	High Ne
20	20	Basile	Firth	Male	1980-08-13	Project Manager	Manufacturing	Mass Cu
21	21	Mile	Cammocke	Male	1980-09-20	Safety Technician I	Manufacturing	Affluent
22	22	Deeanne	Durtnell	Female	1962-12-10		IT	Mass Cu
23	23	Olav	Polak	Male	1995-02-10		n/a	High Ne
24	24	Kim	Skpsey	Female	1977-12-03	Research Assistant	Argiculture	Mass Cu
25	25	Geoff	Assaf	Male	1976-12-02	Accounting Assista	Financial Services	Mass Cu
26	26	Trixi	Ginnelly	Female	1978-06-10	Editor	Financial Services	Mass Cu
27	27	Garvin	Klees	Male	1978-09-25	Research Nurse	Health	Mass Cu
28	28	Fee	Zellmer	Male	1973-09-30	Senior Quality Engi	Health	Affluent
29	29	Mona	Sancraft	Female	1968-06-22	Safety Technician I	Manufacturing	Mass Cu
30	30	Darrick	Helleckas	Male	1961-10-18		IT	Affluent

Рис. 2: Таблица customer



	transaction_id	product_id	customer_id	transaction_date	online_order	order_status	brand
1	1	2	2 950	2017-02-25	[ ]	Approved	Solex
2	2	3	3 120	2017-05-21	[v]	Approved	Trek Bicycles
3	3	37	402	2017-10-16	[ ]	Approved	OHM Cycles
4	4	88	3 135	2017-08-31	[ ]	Approved	Norco Bicycles
5	5	78	787	2017-10-01	[v]	Approved	Giant Bicycles
6	6	25	2 339	2017-03-08	[v]	Approved	Giant Bicycles
7	7	22	1 542	2017-04-21	[v]	Approved	WeareA2B
8	8	15	2 459	2017-07-15	[ ]	Approved	WeareA2B
9	9	67	1 305	2017-08-10	[ ]	Approved	Solex
10	10	12	3 262	2017-08-30	[v]	Approved	WeareA2B
11	11	5	1 986	2017-01-17	[ ]	Approved	Trek Bicycles
12	12	61	2 783	2017-01-05	[v]	Approved	OHM Cycles
13	13	35	1 243	2017-02-26	[v]	Approved	Trek Bicycles
14	14	16	2 717	2017-09-10	[ ]	Approved	Norco Bicycles
15	15	12	247	2017-06-11	[ ]	Approved	Giant Bicycles
16	16	3	2 961	2017-10-10	[ ]	Approved	Trek Bicycles
17	17	79	2 426	2017-04-03	[ ]	Approved	Norco Bicycles
18	18	33	1 842	2017-06-02	[ ]	Approved	Giant Bicycles
19	19	54	2 268	2017-04-06	[v]	Approved	WeareA2B
20	20	25	3 002	2017-01-28	[v]	Approved	Giant Bicycles
21	21	27	1 582	2017-10-09	[ ]	Approved	Trek Bicycles
22	22	37	595	2017-06-29	[v]	Approved	OHM Cycles
23	23	37	2 001	2017-04-08	[v]	Approved	OHM Cycles
24	24	82	515	2017-10-18	[ ]	Approved	Giant Bicycles
25	25	89	2 822	2017-06-11	[ ]	Approved	WeareA2B
26	26	64	2 596	2017-01-10	[ ]	Approved	Trek Bicycles
27	27	64	2 666	2017-04-11	[v]	Approved	Trek Bicycles
28	28	19	76	2017-12-23	[ ]	Approved	Trek Bicycles
29	29	72	3 368	2017-10-13	[v]	Approved	Norco Bicycles
30	30	91	1 173	2017-03-15	[ ]	Approved	WeareA2B

Рис. 3: Таблица transactions

```sql
SELECT job_industry_category, COUNT(*) AS client_count
FROM customer
GROUP BY job_industry_category
ORDER BY client_count DESC;
```

customer 1

SELECT job_industry_category, COUNT(*) / Введите SQL выражение чтобы отфильтровать ре

	job_industry_category	client_count
1	Manufacturing	799
2	Financial Services	774
3	n/a	656
4	Health	602
5	Retail	358
6	Property	267
7	IT	223
8	Entertainment	136
9	Argiculture	113
10	Telecommunications	72

Рис. 4: Результат выполнения запроса 1

```sql
SELECT
    TO_CHAR(transaction_date, 'YYYY-MM') AS transaction_month,
    c.job_industry_category,
    SUM(t.list_price) AS total_transactions
FROM transaction t
JOIN customer c ON t.customer_id = c.customer_id
GROUP BY transaction_month, c.job_industry_category
ORDER BY transaction_month, c.job_industry_category;
```

customer 1

SELECT TO_CHAR(transaction_date, 'YYYY- Введите SQL выражение чтобы отфильтровать результаты

Таблица | Текст | Запись

	transaction_month	job_industry_category	total_transactions
1	2017-01	Argiculture	43 513,82
2	2017-01	Entertainment	64 089,92
3	2017-01	Financial Services	366 383,7100000002
4	2017-01	Health	286 860,3800000003
5	2017-01	IT	107 783,37
6	2017-01	Manufacturing	365 232,4500000005
7	2017-01	n/a	316 819,7499999999
8	2017-01	Property	100 686,97
9	2017-01	Retail	182 375,7499999999
10	2017-01	Telecommunications	31 210,2
11	2017-02	Argiculture	60 016,81
12	2017-02	Entertainment	63 965,98
13	2017-02	Financial Services	375 961,8600000001

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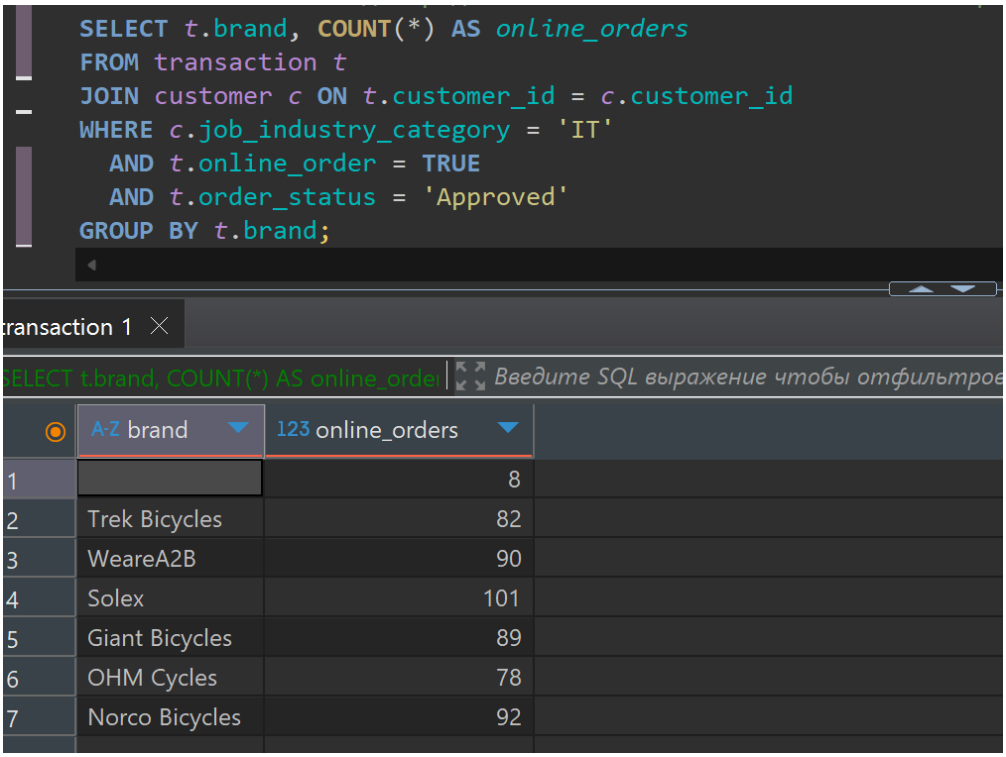
Рис. 5: Результат выполнения запроса 2



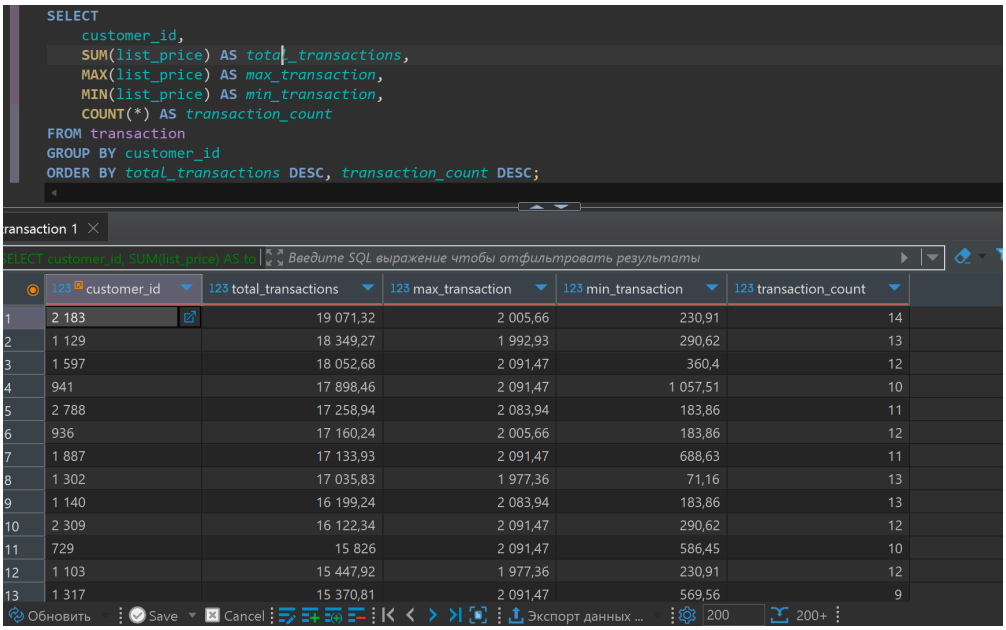
```sql
SELECT t.brand, COUNT(*) AS online_orders
FROM transaction t
JOIN customer c ON t.customer_id = c.customer_id
WHERE c.job_industry_category = 'IT'
  AND t.online_order = TRUE
  AND t.order_status = 'Approved'
GROUP BY t.brand;
```

transaction 1

Введите SQL выражение чтобы отфильтров

	A-Z brand	123 online_orders
1		8
2	Trek Bicycles	82
3	WeareA2B	90
4	Solex	101
5	Giant Bicycles	89
6	OHM Cycles	78
7	Norco Bicycles	92

Рис. 6: Результат выполнения запроса 3



```sql
SELECT
    customer_id,
    SUM(list_price) AS total_transactions,
    MAX(list_price) AS max_transaction,
    MIN(list_price) AS min_transaction,
    COUNT(*) AS transaction_count
FROM transaction
GROUP BY customer_id
ORDER BY total_transactions DESC, transaction_count DESC;
```

transaction 1

Введите SQL выражение чтобы отфильтровать результаты

	123 customer_id	123 total_transactions	123 max_transaction	123 min_transaction	123 transaction_count
1	2 183	19 071,32	2 005,66	230,91	14
2	1 129	18 349,27	1 992,93	290,62	13
3	1 597	18 052,68	2 091,47	360,4	12
4	941	17 898,46	2 091,47	1 057,51	10
5	2 788	17 258,94	2 083,94	183,86	11
6	936	17 160,24	2 005,66	183,86	12
7	1 887	17 133,93	2 091,47	688,63	11
8	1 302	17 035,83	1 977,36	71,16	13
9	1 140	16 199,24	2 083,94	183,86	13
10	2 309	16 122,34	2 091,47	290,62	12
11	729	15 826	2 091,47	586,45	10
12	1 103	15 447,92	1 977,36	230,91	12
13	1 317	15 370,81	2 091,47	569,56	9

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Рис. 7: Результат выполнения запроса 4.1

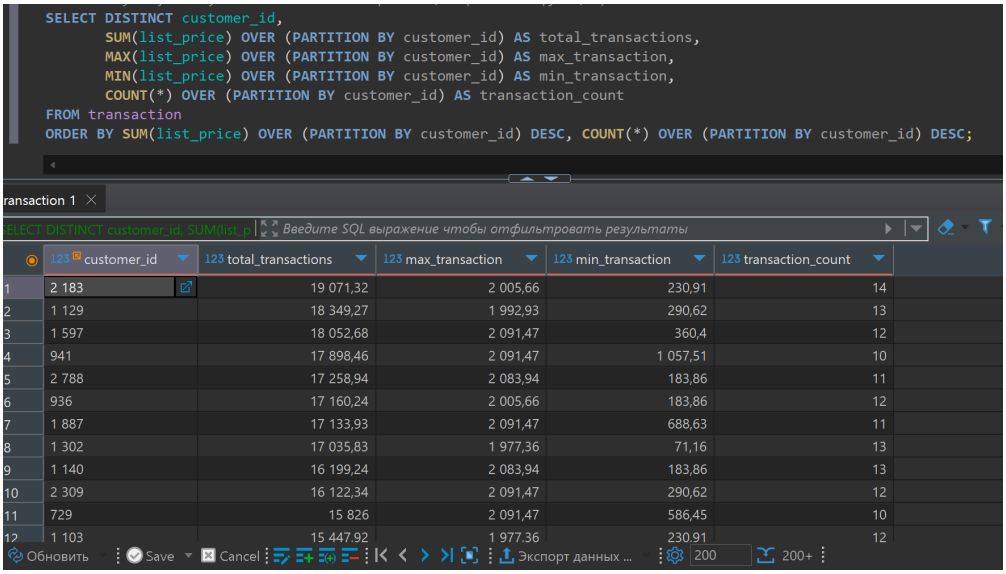

Рис. 8: Результат выполнения запроса 4.2

Оба запроса дают идентичные результаты с учетом использования DISTINCT в оконных функциях. Можно использовать любой из методов (GROUP BY или оконные функции) без потери точности.

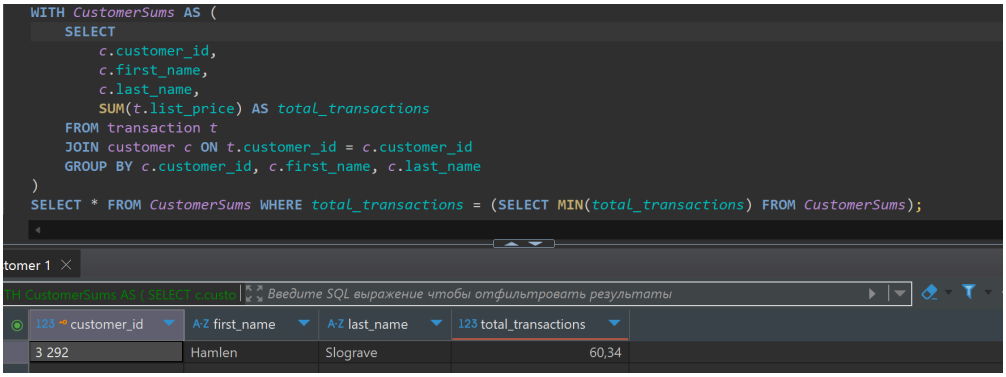

Рис. 9: Результат выполнения запроса 5.1

```sql
WITH CustomerSums AS (
    SELECT
        c.customer_id,
        c.first_name,
        c.last_name,
        SUM(t.list_price) AS total_transactions
    FROM transaction t
    JOIN customer c ON t.customer_id = c.customer_id
    GROUP BY c.customer_id, c.first_name, c.last_name
)
SELECT * FROM CustomerSums WHERE total_transactions = (SELECT MAX(total_transactions) FROM CustomerSums);
```

customer 1

Введите SQL выражение чтобы отфильтровать результаты

	customer_id	first_name	last_name	total_transactions
1	2 183	Jillie	Fyndon	19 071,32

Рис. 10: Результат выполнения запроса 5.2

```sql
SELECT * FROM (
    SELECT *, ROW_NUMBER() OVER (PARTITION BY customer_id ORDER BY transaction_date) AS rn
    FROM transaction
) t WHERE rn = 1;
```

transaction 1

Введите SQL выражение чтобы отфильтровать результаты

	tion_id	product_id	customer_id	transaction_date	online_order	order_status	brand	produc
1		72	1	2017-01-05	[ ]	Approved	Norco Bicycles	Standard
2		1	2	2017-05-04	[v]	Approved	Giant Bicycles	Standard
3		33	3	2017-02-23	[ ]	Approved	Giant Bicycles	Standard
4		95	4	2017-04-03	[ ]	Approved	Giant Bicycles	Standard
5		23	5	2017-03-03	[v]	Approved	Norco Bicycles	Mountain
6		77	6	2017-01-28	[ ]	Approved	WeareA2B	Standard
7		72	7	2017-02-18	[v]	Approved	Norco Bicycles	Standard
8		89	8	2017-01-04	[v]	Approved	WeareA2B	Touring
9		69	9	2017-02-04	[ ]	Approved	Giant Bicycles	Road
10		21	10	2017-06-20	[v]	Approved	Solex	Standard
11		28	11	2017-04-02	[ ]	Approved	Norco Bicycles	Standard

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Рис. 11: Результат выполнения запроса 6

```sql
WITH TransactionGaps AS (
    SELECT
        c.customer_id,
        c.first_name,
        c.last_name,
        c.job_title,
        transaction_date - LAG(transaction_date) OVER (PARTITION BY c.customer_id ORDER BY transaction_date) AS txn_interva
    FROM transaction t
    JOIN customer c ON t.customer_id = c.customer_id
)
SELECT customer_id, first_name, last_name, job_title, txn_interval
FROM TransactionGaps
WHERE txn_interval = (SELECT MAX(txn_interval) FROM TransactionGaps);
```

customer 1

Введите SQL выражение чтобы отфильтровать результаты

	customer_id	first_name	last_name	job_title	txn_interval
1	1 584	Susanetta		Legal Assistant	357

Рис. 12: Результат выполнения запроса 7