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| МИНОБРНАУКИ РОССИИ |
| Федеральное государственное бюджетное образовательное учреждение высшего образования **«МИРЭА − Российский технологический университет»**  **РТУ МИРЭА** |

**Институт информационных технологий (ИИТ)**

**Кафедра практической и прикладной информатики (ППИ)**

**ОТЧЕТ ПО ПРАКТИЧЕСКОЙ РАБОТЕ**

по дисциплине «Разработка баз данных»

**Практическое занятие № 3**

|  |  |  |  |
| --- | --- | --- | --- |
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Москва 2024 г.

**Цель занятия:** научиться формировать модель БД, переносить БД на другой сервер, изучить команды модификации данных, хранимые процедуры, функции и триггеры.

**Постановка задачи:**

1. Сформировать свою БД;
2. Осуществить перенос БД на другой сервер;
3. Протестировать команды модификации данных (DML);
4. Осуществить выборку данных по своей теме с помощью различных операторов;
5. Применить к своей БД хранимые процедуры, функции и триггеры.

**Результат работы:**

# **Задание 1 – Сформировать свою БД**

Выполнено в первой практической работе.

# **Задание 2 – Сделать резервную копию БД**

Создадим резервную копию БД.

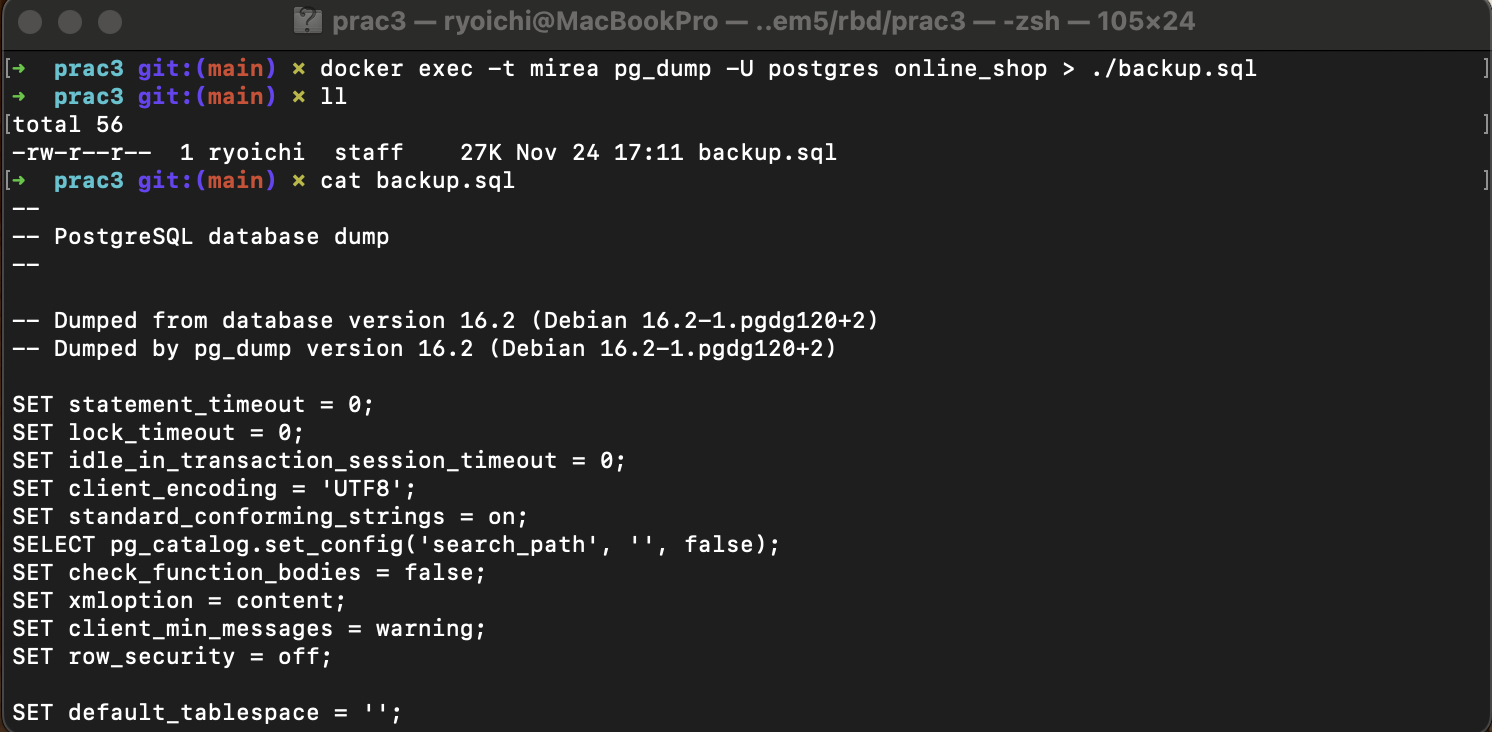


Рисунок 1 – Создание резервной копии бд

В результате будет сгенерирован следующий SQL-код:

--

-- PostgreSQL database dump

--

-- Dumped from database version 16.2 (Debian 16.2-1.pgdg120+2)

-- Dumped by pg\_dump version 16.2 (Debian 16.2-1.pgdg120+2)

SET statement\_timeout = 0;

SET lock\_timeout = 0;

SET idle\_in\_transaction\_session\_timeout = 0;

SET client\_encoding = 'UTF8';

SET standard\_conforming\_strings = on;

SELECT pg\_catalog.set\_config('search\_path', '', false);

SET check\_function\_bodies = false;

SET xmloption = content;

SET client\_min\_messages = warning;

SET row\_security = off;

SET default\_tablespace = '';

SET default\_table\_access\_method = heap;

--

-- Name: cart\_items; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.cart\_items (

cart\_item\_id integer NOT NULL,

cart\_id integer,

product\_id integer,

quantity integer NOT NULL

);

ALTER TABLE public.cart\_items OWNER TO postgres;

--

-- Name: cart\_items\_cart\_item\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.cart\_items\_cart\_item\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.cart\_items\_cart\_item\_id\_seq OWNER TO postgres;

--

-- Name: cart\_items\_cart\_item\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.cart\_items\_cart\_item\_id\_seq OWNED BY public.cart\_items.cart\_item\_id;

--

-- Name: carts; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.carts (

cart\_id integer NOT NULL,

user\_id integer,

created\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP

);

ALTER TABLE public.carts OWNER TO postgres;

--

-- Name: carts\_cart\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.carts\_cart\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.carts\_cart\_id\_seq OWNER TO postgres;

--

-- Name: carts\_cart\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.carts\_cart\_id\_seq OWNED BY public.carts.cart\_id;

--

-- Name: categories; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.categories (

category\_id integer NOT NULL,

category\_name character varying(100) NOT NULL,

description text

);

ALTER TABLE public.categories OWNER TO postgres;

--

-- Name: categories\_category\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.categories\_category\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.categories\_category\_id\_seq OWNER TO postgres;

--

-- Name: categories\_category\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.categories\_category\_id\_seq OWNED BY public.categories.category\_id;

--

-- Name: companies; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.companies (

company\_id integer NOT NULL,

company\_name character varying(255) NOT NULL,

company\_description text,

created\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP

);

ALTER TABLE public.companies OWNER TO postgres;

--

-- Name: companies\_company\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.companies\_company\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.companies\_company\_id\_seq OWNER TO postgres;

--

-- Name: companies\_company\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.companies\_company\_id\_seq OWNED BY public.companies.company\_id;

--

-- Name: order\_items; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.order\_items (

order\_item\_id integer NOT NULL,

order\_id integer,

product\_id integer,

quantity integer NOT NULL,

price numeric(10,2) NOT NULL

);

ALTER TABLE public.order\_items OWNER TO postgres;

--

-- Name: order\_items\_order\_item\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.order\_items\_order\_item\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.order\_items\_order\_item\_id\_seq OWNER TO postgres;

--

-- Name: order\_items\_order\_item\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.order\_items\_order\_item\_id\_seq OWNED BY public.order\_items.order\_item\_id;

--

-- Name: orders; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.orders (

order\_id integer NOT NULL,

user\_id integer,

total\_price numeric(10,2) NOT NULL,

status character varying(50) DEFAULT 'pending'::character varying,

created\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP

);

ALTER TABLE public.orders OWNER TO postgres;

--

-- Name: orders\_order\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.orders\_order\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.orders\_order\_id\_seq OWNER TO postgres;

--

-- Name: orders\_order\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.orders\_order\_id\_seq OWNED BY public.orders.order\_id;

--

-- Name: payments; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.payments (

payment\_id integer NOT NULL,

order\_id integer,

payment\_method character varying(50) NOT NULL,

payment\_date timestamp without time zone DEFAULT CURRENT\_TIMESTAMP,

amount numeric(10,2) NOT NULL

);

ALTER TABLE public.payments OWNER TO postgres;

--

-- Name: payments\_payment\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.payments\_payment\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.payments\_payment\_id\_seq OWNER TO postgres;

--

-- Name: payments\_payment\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.payments\_payment\_id\_seq OWNED BY public.payments.payment\_id;

--

-- Name: products; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.products (

product\_id integer NOT NULL,

category\_id integer,

product\_name character varying(255) NOT NULL,

description text,

price numeric(10,2) NOT NULL,

stock\_quantity integer NOT NULL,

created\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP,

company\_id integer

);

ALTER TABLE public.products OWNER TO postgres;

--

-- Name: products\_product\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.products\_product\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.products\_product\_id\_seq OWNER TO postgres;

--

-- Name: products\_product\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.products\_product\_id\_seq OWNED BY public.products.product\_id;

--

-- Name: replies; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.replies (

reply\_id integer NOT NULL,

review\_id integer,

company\_id integer,

reply\_text text NOT NULL,

replied\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP

);

ALTER TABLE public.replies OWNER TO postgres;

--

-- Name: replies\_reply\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.replies\_reply\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.replies\_reply\_id\_seq OWNER TO postgres;

--

-- Name: replies\_reply\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.replies\_reply\_id\_seq OWNED BY public.replies.reply\_id;

--

-- Name: reviews; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.reviews (

review\_id integer NOT NULL,

user\_id integer,

product\_id integer,

rating integer,

comment text,

created\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP,

CONSTRAINT reviews\_rating\_check CHECK (((rating >= 1) AND (rating <= 5)))

);

ALTER TABLE public.reviews OWNER TO postgres;

--

-- Name: reviews\_review\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.reviews\_review\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.reviews\_review\_id\_seq OWNER TO postgres;

--

-- Name: reviews\_review\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.reviews\_review\_id\_seq OWNED BY public.reviews.review\_id;

--

-- Name: users; Type: TABLE; Schema: public; Owner: postgres

--

CREATE TABLE public.users (

user\_id integer NOT NULL,

username character varying(100) NOT NULL,

email character varying(100) NOT NULL,

password\_hash character varying(255) NOT NULL,

first\_name character varying(50),

last\_name character varying(50),

phone\_number character varying(20),

address text,

created\_at timestamp without time zone DEFAULT CURRENT\_TIMESTAMP,

is\_banned boolean DEFAULT false

);

ALTER TABLE public.users OWNER TO postgres;

--

-- Name: users\_user\_id\_seq; Type: SEQUENCE; Schema: public; Owner: postgres

--

CREATE SEQUENCE public.users\_user\_id\_seq

AS integer

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

CACHE 1;

ALTER SEQUENCE public.users\_user\_id\_seq OWNER TO postgres;

--

-- Name: users\_user\_id\_seq; Type: SEQUENCE OWNED BY; Schema: public; Owner: postgres

--

ALTER SEQUENCE public.users\_user\_id\_seq OWNED BY public.users.user\_id;

--

-- Name: cart\_items cart\_item\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.cart\_items ALTER COLUMN cart\_item\_id SET DEFAULT nextval('public.cart\_items\_cart\_item\_id\_seq'::regclass);

--

-- Name: carts cart\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.carts ALTER COLUMN cart\_id SET DEFAULT nextval('public.carts\_cart\_id\_seq'::regclass);

--

-- Name: categories category\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.categories ALTER COLUMN category\_id SET DEFAULT nextval('public.categories\_category\_id\_seq'::regclass);

--

-- Name: companies company\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.companies ALTER COLUMN company\_id SET DEFAULT nextval('public.companies\_company\_id\_seq'::regclass);

--

-- Name: order\_items order\_item\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.order\_items ALTER COLUMN order\_item\_id SET DEFAULT nextval('public.order\_items\_order\_item\_id\_seq'::regclass);

--

-- Name: orders order\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.orders ALTER COLUMN order\_id SET DEFAULT nextval('public.orders\_order\_id\_seq'::regclass);

--

-- Name: payments payment\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.payments ALTER COLUMN payment\_id SET DEFAULT nextval('public.payments\_payment\_id\_seq'::regclass);

--

-- Name: products product\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.products ALTER COLUMN product\_id SET DEFAULT nextval('public.products\_product\_id\_seq'::regclass);

--

-- Name: replies reply\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.replies ALTER COLUMN reply\_id SET DEFAULT nextval('public.replies\_reply\_id\_seq'::regclass);

--

-- Name: reviews review\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.reviews ALTER COLUMN review\_id SET DEFAULT nextval('public.reviews\_review\_id\_seq'::regclass);

--

-- Name: users user\_id; Type: DEFAULT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.users ALTER COLUMN user\_id SET DEFAULT nextval('public.users\_user\_id\_seq'::regclass);

--

-- Data for Name: cart\_items; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.cart\_items (cart\_item\_id, cart\_id, product\_id, quantity) FROM stdin;

1 1 1 3

2 1 2 1

3 2 3 1

4 3 4 2

5 4 5 5

6 5 1 2

7 6 3 1

8 7 2 2

9 8 4 1

10 9 5 3

\.

--

-- Data for Name: carts; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.carts (cart\_id, user\_id, created\_at) FROM stdin;

1 1 2024-09-21 21:31:21.422699

2 2 2024-09-21 21:31:21.422699

3 3 2024-09-21 21:31:21.422699

4 4 2024-09-21 21:31:21.422699

5 5 2024-09-21 21:31:21.422699

6 6 2024-09-21 21:31:21.422699

7 7 2024-09-21 21:31:21.422699

8 8 2024-09-21 21:31:21.422699

9 9 2024-09-21 21:31:21.422699

10 10 2024-09-21 21:31:21.422699

\.

--

-- Data for Name: categories; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.categories (category\_id, category\_name, description) FROM stdin;

1 Одежда Одежда для мужчин и женщин

2 Мебель Домашняя мебель

3 Электроника Бытовая электроника

4 Книги Художественная и учебная литература

5 Продукты Продукты питания

\.

--

-- Data for Name: companies; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.companies (company\_id, company\_name, company\_description, created\_at) FROM stdin;

1 Товары для дома Компания, специализирующаяся на производстве товаров для дома. 2024-09-23 19:58:46.892897

2 Электроника Плюс Современная электроника и аксессуары. 2024-09-23 19:58:46.892897

3 Мир Книг Издательство и распространение книг всех жанров. 2024-09-23 19:58:46.892897

4 Одежда XXI века Производство одежды для всех возрастов. 2024-09-23 19:58:46.892897

\.

--

-- Data for Name: order\_items; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.order\_items (order\_item\_id, order\_id, product\_id, quantity, price) FROM stdin;

1 1 1 4 199.99

2 1 2 1 599.99

3 2 3 1 29999.99

4 3 4 2 499.99

5 4 5 5 49.99

6 5 1 2 199.99

\.

--

-- Data for Name: orders; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.orders (order\_id, user\_id, total\_price, status, created\_at) FROM stdin;

1 1 799.98 completed 2024-09-21 21:31:21.446827

2 2 29999.99 pending 2024-09-21 21:31:21.446827

3 3 999.98 shipped 2024-09-21 21:31:21.446827

4 4 249.95 pending 2024-09-21 21:31:21.446827

5 5 399.98 completed 2024-09-21 21:31:21.446827

\.

--

-- Data for Name: payments; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.payments (payment\_id, order\_id, payment\_method, payment\_date, amount) FROM stdin;

1 1 credit\_card 2024-09-21 21:31:21.489546 799.98

2 2 paypal 2024-09-21 21:31:21.489546 29999.99

3 3 credit\_card 2024-09-21 21:31:21.489546 999.98

\.

--

-- Data for Name: products; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.products (product\_id, category\_id, product\_name, description, price, stock\_quantity, created\_at, company\_id) FROM stdin;

1 1 Носки Мягкие и теплые носки 199.99 100 2024-09-21 21:31:21.406312 \N

2 2 Табуретка Деревянная табуретка для кухни 599.99 50 2024-09-21 21:31:21.406312 \N

3 3 Смартфон Современный смартфон с большим экраном 29999.99 30 2024-09-21 21:31:21.406312 \N

4 4 Книга: Война и мир Роман Льва Толстого 499.99 20 2024-09-21 21:31:21.406312 \N

5 5 Хлеб Свежий хлеб из пекарни 49.99 200 2024-09-21 21:31:21.406312 \N

11 1 Носки Мягкие и теплые носки 199.99 100 2024-09-23 19:58:46.905767 4

12 2 Табуретка Деревянная табуретка для кухни 599.99 50 2024-09-23 19:58:46.905767 1

13 3 Смартфон Современный смартфон с большим экраном 29999.99 30 2024-09-23 19:58:46.905767 2

14 4 Книга: Война и мир Роман Льва Толстого 499.99 20 2024-09-23 19:58:46.905767 3

15 5 Хлеб Свежий хлеб из пекарни 49.99 200 2024-09-23 19:58:46.905767 1

\.

--

-- Data for Name: replies; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.replies (reply\_id, review\_id, company\_id, reply\_text, replied\_at) FROM stdin;

1 1 4 Спасибо за отзыв, рады, что вам понравилось! 2024-09-23 19:58:46.926439

2 2 2 Мы стараемся улучшить качество наших товаров. 2024-09-23 19:58:46.926439

3 3 3 Спасибо, что выбрали наше издательство! 2024-09-23 19:58:46.926439

\.

--

-- Data for Name: reviews; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.reviews (review\_id, user\_id, product\_id, rating, comment, created\_at) FROM stdin;

1 1 1 5 Очень хорошие носки, рекомендую! 2024-09-21 21:31:21.477976

2 2 3 4 Смартфон отличный, но дороговат 2024-09-21 21:31:21.477976

3 3 4 5 Любимая книга, качество издания на высоте! 2024-09-21 21:31:21.477976

4 1 1 5 Очень хорошие носки, рекомендую! 2024-09-23 19:58:46.915682

5 2 3 4 Смартфон отличный, но дороговат 2024-09-23 19:58:46.915682

6 3 4 5 Любимая книга, качество издания на высоте! 2024-09-23 19:58:46.915682

\.

--

-- Data for Name: users; Type: TABLE DATA; Schema: public; Owner: postgres

--

COPY public.users (user\_id, username, email, password\_hash, first\_name, last\_name, phone\_number, address, created\_at, is\_banned) FROM stdin;

2 petr\_petrov petr@example.com hash2 Петр Петров +79161234568 Санкт-Петербург, ул. Мира, 20 2024-09-21 21:31:21.377767 f

3 sergey\_sergeev sergey@example.com hash3 Сергей Сергеев +79161234569 Новосибирск, ул. Лесная, 5 2024-09-21 21:31:21.377767 f

4 maria\_smirnova maria@example.com hash4 Мария Смирнова +79161234570 Екатеринбург, ул. Центральная, 15 2024-09-21 21:31:21.377767 f

5 anna\_kuznetsova anna@example.com hash5 Анна Кузнецова +79161234571 Казань, ул. Гоголя, 8 2024-09-21 21:31:21.377767 f

6 oleg\_ivanov oleg@example.com hash6 Олег Иванов +79161234572 Нижний Новгород, ул. Чехова, 12 2024-09-21 21:31:21.377767 f

7 elena\_petrova elena@example.com hash7 Елена Петрова +79161234573 Челябинск, ул. Комсомольская, 6 2024-09-21 21:31:21.377767 f

8 dmitry\_sidorov dmitry@example.com hash8 Дмитрий Сидоров +79161234574 Ростов-на-Дону, ул. Пушкина, 18 2024-09-21 21:31:21.377767 f

9 viktor\_fedorov viktor@example.com hash9 Виктор Федоров +79161234575 Самара, ул. Куйбышева, 2 2024-09-21 21:31:21.377767 f

10 olga\_morozova olga@example.com hash10 Ольга Морозова +79161234576 Волгоград, ул. Карла Маркса, 4 2024-09-21 21:31:21.377767 f

1 ivan\_ivanov ivan@example.com hash1 Иван Иванов +79161234567 Москва, ул. Ленина, 10 2024-09-21 21:31:21.377767 t

\.

--

-- Name: cart\_items\_cart\_item\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.cart\_items\_cart\_item\_id\_seq', 10, true);

--

-- Name: carts\_cart\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.carts\_cart\_id\_seq', 10, true);

--

-- Name: categories\_category\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.categories\_category\_id\_seq', 5, true);

--

-- Name: companies\_company\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.companies\_company\_id\_seq', 4, true);

--

-- Name: order\_items\_order\_item\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.order\_items\_order\_item\_id\_seq', 6, true);

--

-- Name: orders\_order\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.orders\_order\_id\_seq', 5, true);

--

-- Name: payments\_payment\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.payments\_payment\_id\_seq', 3, true);

--

-- Name: products\_product\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.products\_product\_id\_seq', 15, true);

--

-- Name: replies\_reply\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.replies\_reply\_id\_seq', 3, true);

--

-- Name: reviews\_review\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.reviews\_review\_id\_seq', 6, true);

--

-- Name: users\_user\_id\_seq; Type: SEQUENCE SET; Schema: public; Owner: postgres

--

SELECT pg\_catalog.setval('public.users\_user\_id\_seq', 10, true);

--

-- Name: cart\_items cart\_items\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.cart\_items

ADD CONSTRAINT cart\_items\_pkey PRIMARY KEY (cart\_item\_id);

--

-- Name: carts carts\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.carts

ADD CONSTRAINT carts\_pkey PRIMARY KEY (cart\_id);

--

-- Name: categories categories\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.categories

ADD CONSTRAINT categories\_pkey PRIMARY KEY (category\_id);

--

-- Name: companies companies\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.companies

ADD CONSTRAINT companies\_pkey PRIMARY KEY (company\_id);

--

-- Name: order\_items order\_items\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.order\_items

ADD CONSTRAINT order\_items\_pkey PRIMARY KEY (order\_item\_id);

--

-- Name: orders orders\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.orders

ADD CONSTRAINT orders\_pkey PRIMARY KEY (order\_id);

--

-- Name: payments payments\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.payments

ADD CONSTRAINT payments\_pkey PRIMARY KEY (payment\_id);

--

-- Name: products products\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.products

ADD CONSTRAINT products\_pkey PRIMARY KEY (product\_id);

--

-- Name: replies replies\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.replies

ADD CONSTRAINT replies\_pkey PRIMARY KEY (reply\_id);

--

-- Name: reviews reviews\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.reviews

ADD CONSTRAINT reviews\_pkey PRIMARY KEY (review\_id);

--

-- Name: users users\_email\_key; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.users

ADD CONSTRAINT users\_email\_key UNIQUE (email);

--

-- Name: users users\_pkey; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.users

ADD CONSTRAINT users\_pkey PRIMARY KEY (user\_id);

--

-- Name: users users\_username\_key; Type: CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.users

ADD CONSTRAINT users\_username\_key UNIQUE (username);

--

-- Name: cart\_items cart\_items\_cart\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.cart\_items

ADD CONSTRAINT cart\_items\_cart\_id\_fkey FOREIGN KEY (cart\_id) REFERENCES public.carts(cart\_id) ON DELETE CASCADE;

--

-- Name: cart\_items cart\_items\_product\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.cart\_items

ADD CONSTRAINT cart\_items\_product\_id\_fkey FOREIGN KEY (product\_id) REFERENCES public.products(product\_id) ON DELETE CASCADE;

--

-- Name: carts carts\_user\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.carts

ADD CONSTRAINT carts\_user\_id\_fkey FOREIGN KEY (user\_id) REFERENCES public.users(user\_id) ON DELETE CASCADE;

--

-- Name: order\_items order\_items\_order\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.order\_items

ADD CONSTRAINT order\_items\_order\_id\_fkey FOREIGN KEY (order\_id) REFERENCES public.orders(order\_id) ON DELETE CASCADE;

--

-- Name: order\_items order\_items\_product\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.order\_items

ADD CONSTRAINT order\_items\_product\_id\_fkey FOREIGN KEY (product\_id) REFERENCES public.products(product\_id) ON DELETE CASCADE;

--

-- Name: orders orders\_user\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.orders

ADD CONSTRAINT orders\_user\_id\_fkey FOREIGN KEY (user\_id) REFERENCES public.users(user\_id) ON DELETE CASCADE;

--

-- Name: payments payments\_order\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.payments

ADD CONSTRAINT payments\_order\_id\_fkey FOREIGN KEY (order\_id) REFERENCES public.orders(order\_id) ON DELETE CASCADE;

--

-- Name: products products\_category\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.products

ADD CONSTRAINT products\_category\_id\_fkey FOREIGN KEY (category\_id) REFERENCES public.categories(category\_id) ON DELETE SET NULL;

--

-- Name: products products\_company\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.products

ADD CONSTRAINT products\_company\_id\_fkey FOREIGN KEY (company\_id) REFERENCES public.companies(company\_id) ON DELETE SET NULL;

--

-- Name: replies replies\_company\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.replies

ADD CONSTRAINT replies\_company\_id\_fkey FOREIGN KEY (company\_id) REFERENCES public.companies(company\_id) ON DELETE CASCADE;

--

-- Name: replies replies\_review\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.replies

ADD CONSTRAINT replies\_review\_id\_fkey FOREIGN KEY (review\_id) REFERENCES public.reviews(review\_id) ON DELETE CASCADE;

--

-- Name: reviews reviews\_product\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.reviews

ADD CONSTRAINT reviews\_product\_id\_fkey FOREIGN KEY (product\_id) REFERENCES public.products(product\_id) ON DELETE CASCADE;

--

-- Name: reviews reviews\_user\_id\_fkey; Type: FK CONSTRAINT; Schema: public; Owner: postgres

--

ALTER TABLE ONLY public.reviews

ADD CONSTRAINT reviews\_user\_id\_fkey FOREIGN KEY (user\_id) REFERENCES public.users(user\_id) ON DELETE CASCADE;

--

-- PostgreSQL database dump complete

--

# **Задание 3 – Команды модификации данных (DML)**

Операции по добавлению данных в БД (INSERT INTO) были осуществлены в первой практической работе.

# **Задание 4 – Операторы**

1. Проекция

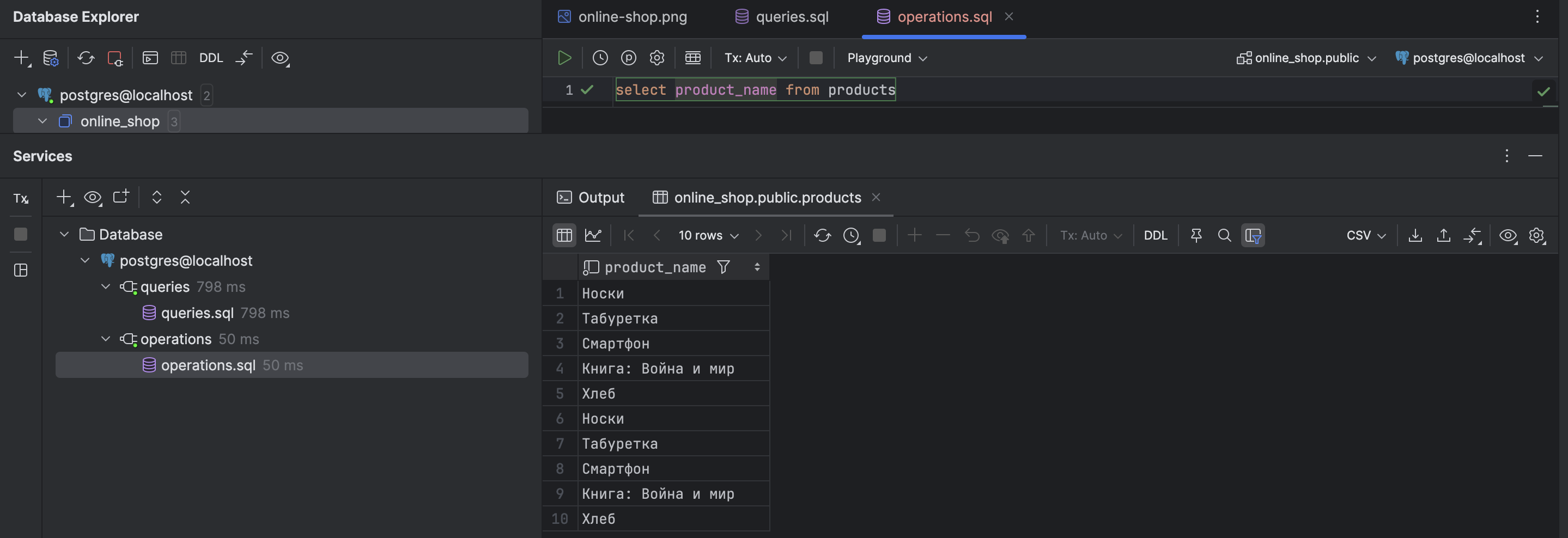


Рисунок 2 – Проекция

1. Операция селекции

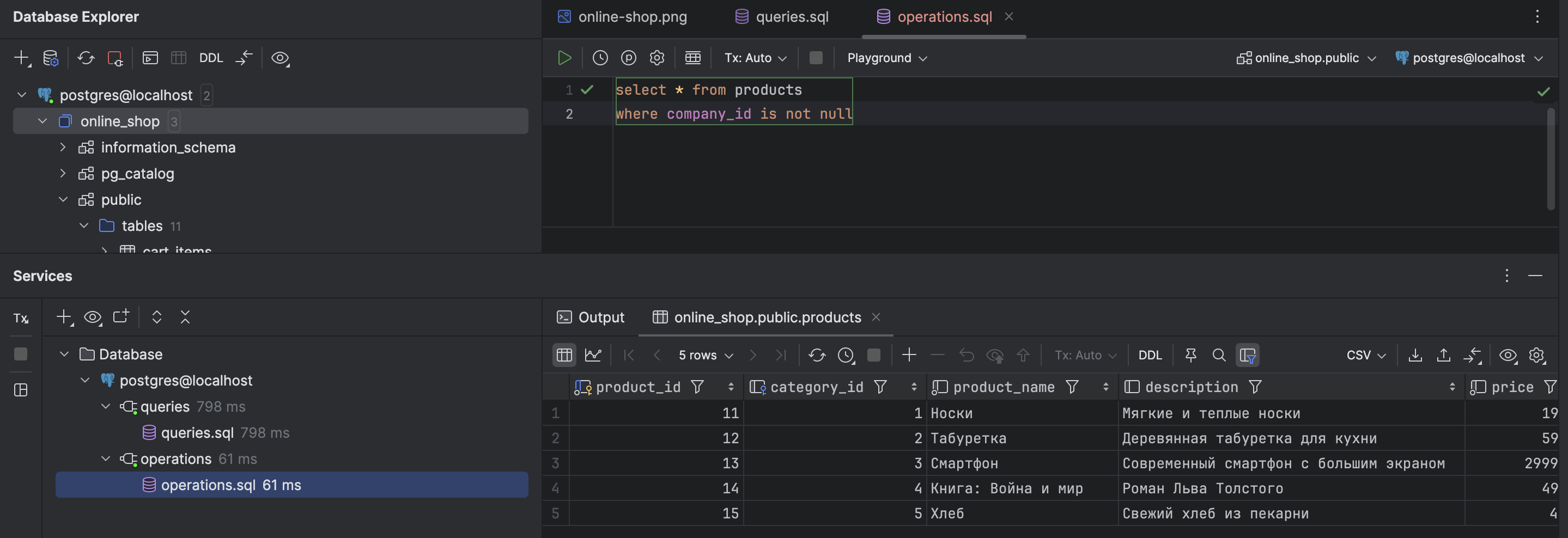


Рисунок 3 – Селекция

1. Соединение

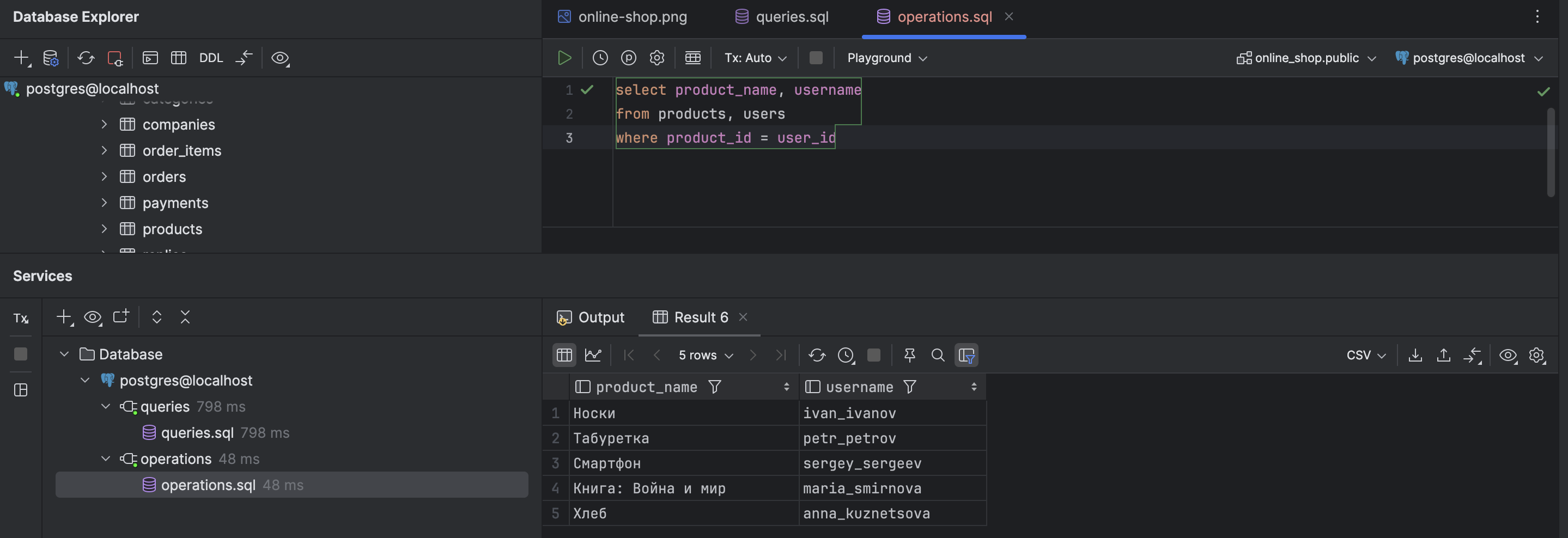


Рисунок 4 – Соединение

1. Объединение

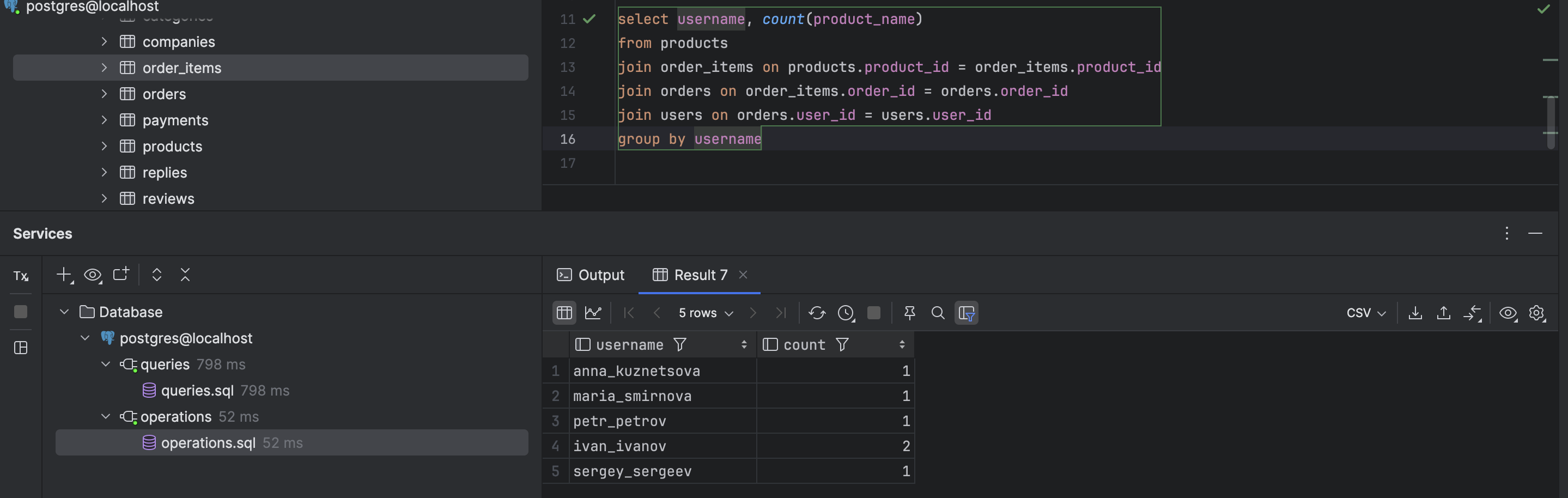


Рисунок 5 – Объединение

1. Пересечение

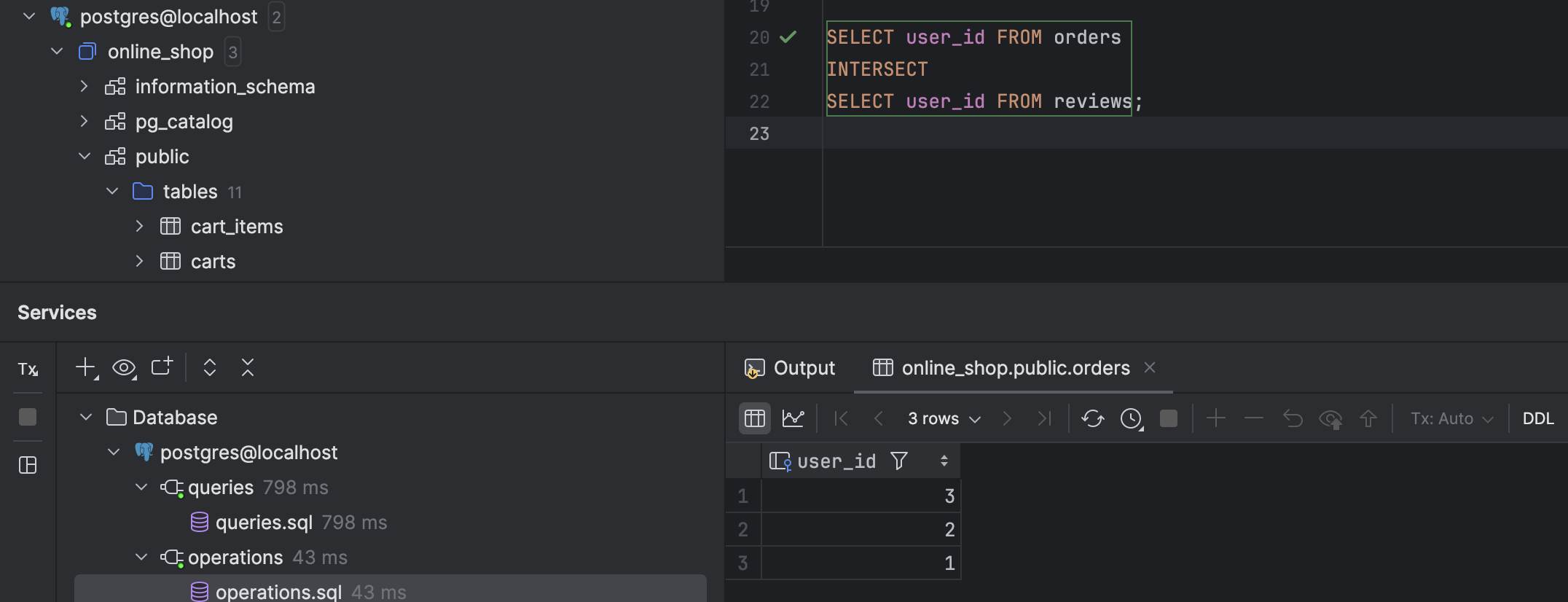


Рисунок 6 – Пересечение

1. Разность

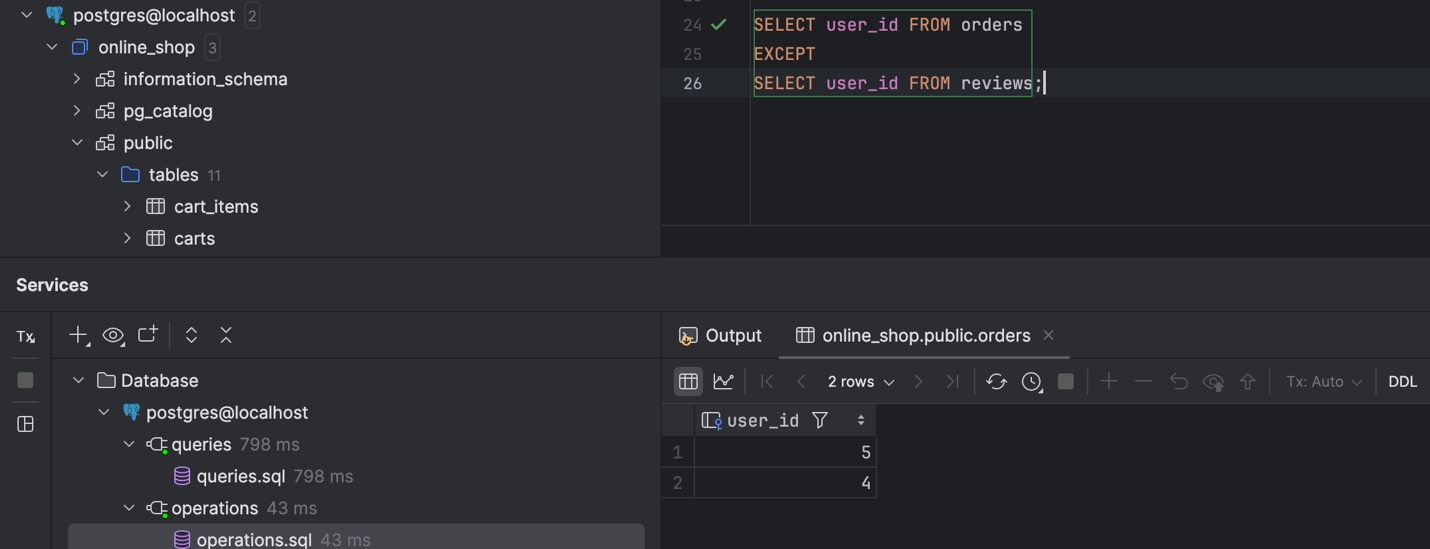


Рисунок 7 – Разность

1. Группировка

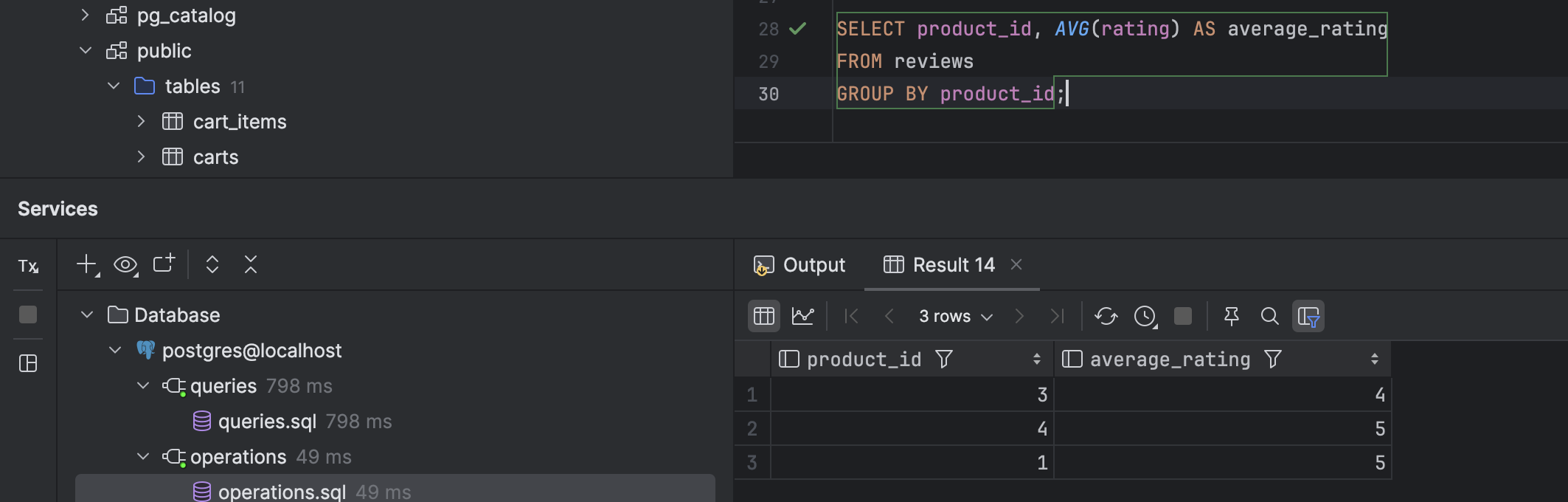


Рисунок 7 – Группировка

1. Сортировка

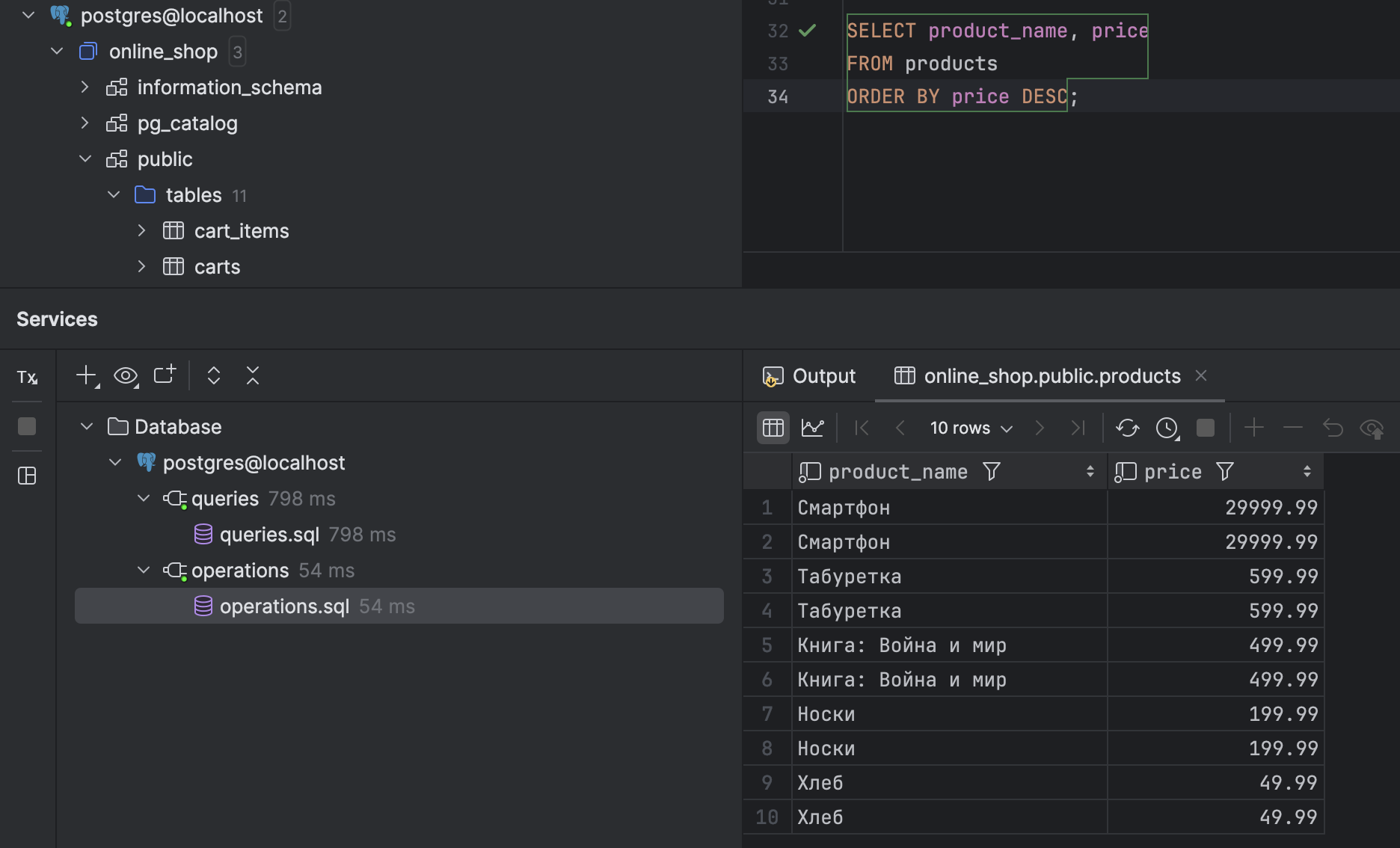


Рисунок 8 – Сортировка

1. Деление

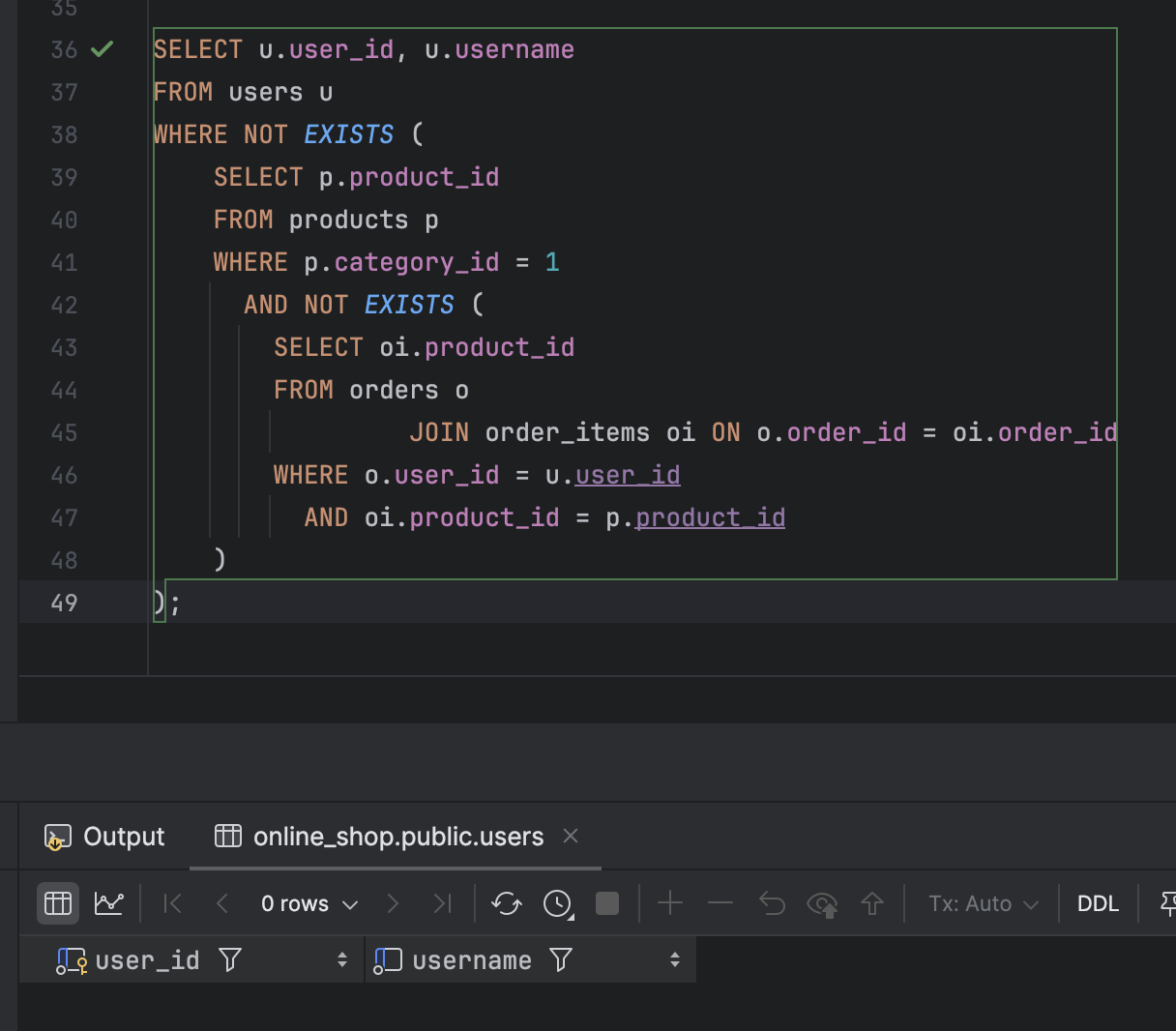


Рисунок 9 – Деление

1. Представление

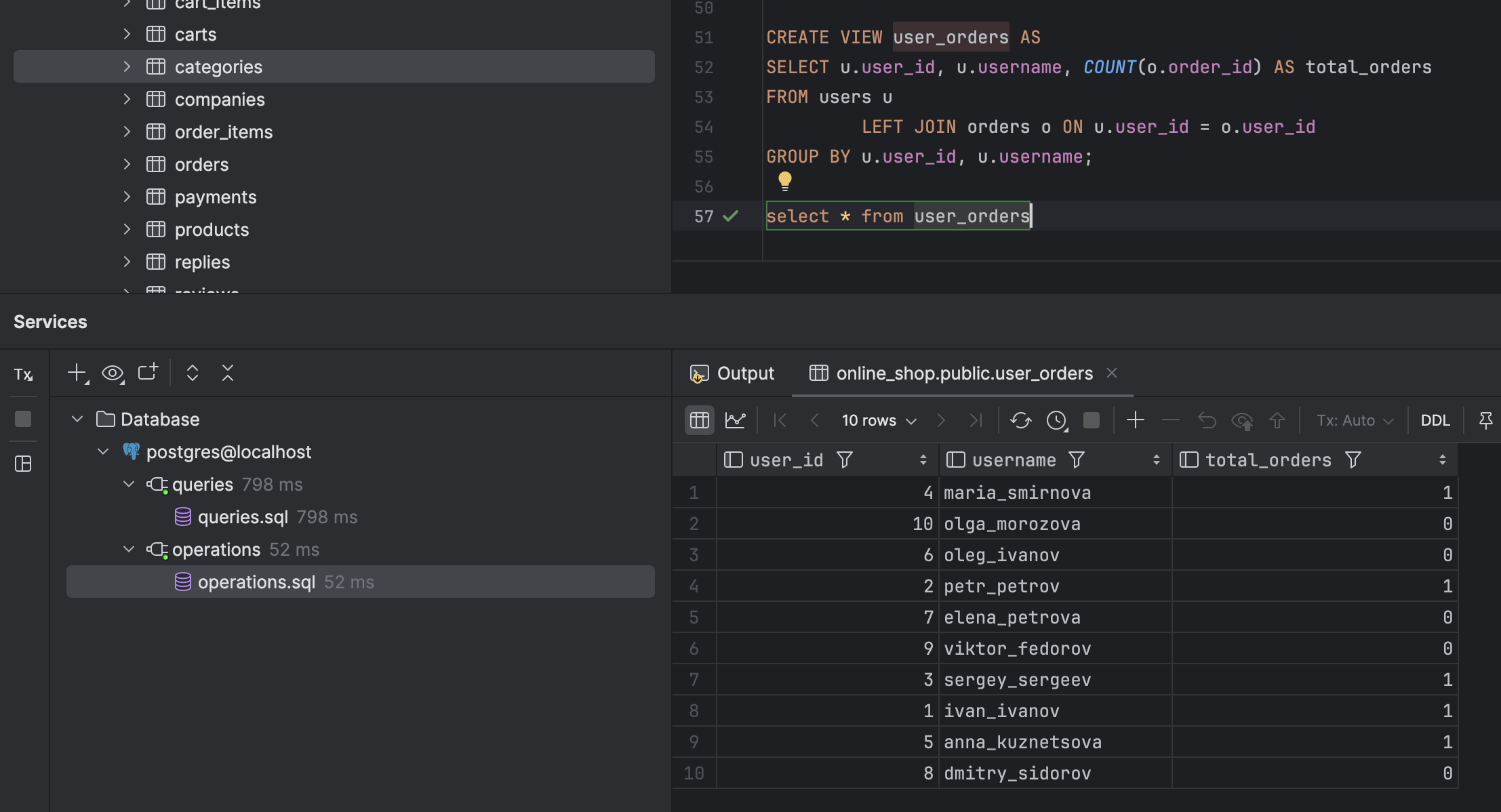


Рисунок 10 – Представление

# **Задание 5 – Функции и триггеры**

Postgresql не позволяет создавать процедуры. Здесь используются только функции. Еще одна особенность состоит в том, что функцию можно написать на разных языках. Наиболее распространены sql и plpgsql. Основное отличие языков состоит в том, что в sql доступны только операторы sql, а plpgsql имеет также операторы управления.

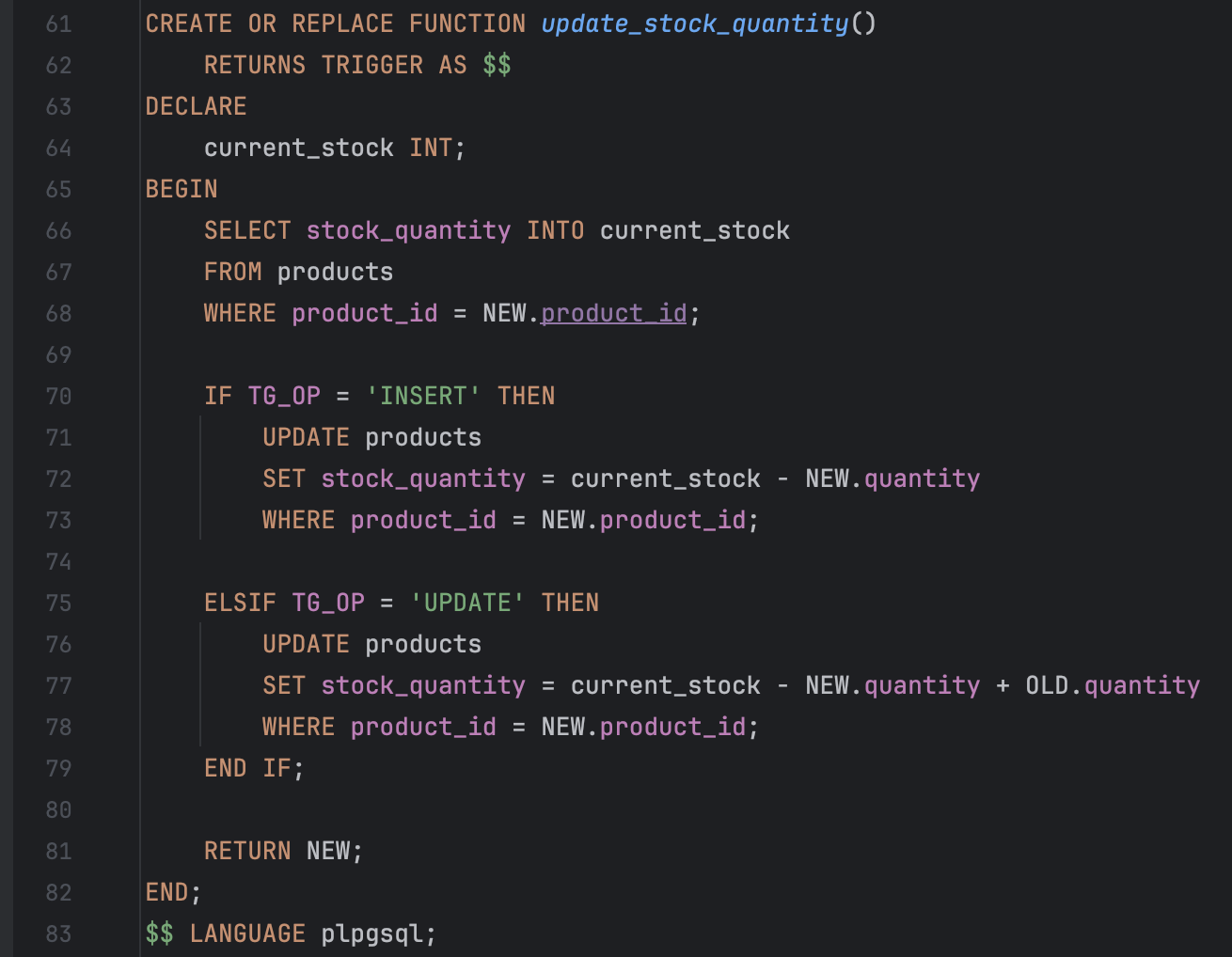


Рисунок 11 - Функция

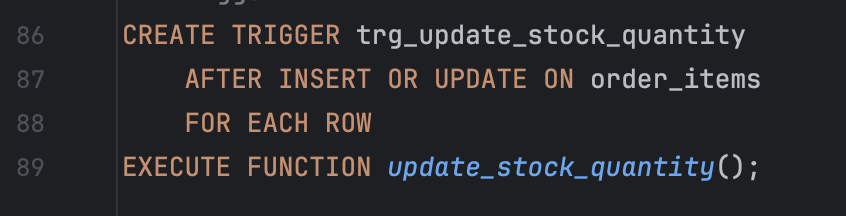


Рисунок 12 – Триггер