

БУ ВО Ханты-Мансийского округа – Югры  
«Сургутский государственный университет»  
Политехнический институт  
Кафедра информатики и вычислительной техники

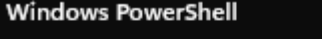
Отчет  
Лабораторная работа №3  
Выборка данных

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Сургут  
2023 г

<https://postgrespro.ru/docs/postgrespro/10/demodb-bookings-installation.html>

Далее, открываем терминал. Переходим в каталог, куда мы скачали PostgreSQL.
























```
PS D:\Tools\PSQL\bin> psql --version
psql (PostgreSQL) 16.1
PS D:\Tools\PSQL\bin> |
```



```
Windows PowerShell
PS D:\Tools\PSQL\bin> psql --version
psql (PostgreSQL) 16.1
PS D:\Tools\PSQL\bin> psql -f C:\Users\Fanatsio\Downloads\demo-small-20170815.sql -h localhost -p 5432 -U postgres -d demo
Пароль пользователя postgres: |
```

```
-----  
33121  
(1 ёёЁюър)  
  
COPY 1339  
COPY 1045726  
COPY 366733  
ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
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ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
ALTER TABLE  
ALTER DATABASE  
ALTER DATABASE  
ALTER DATABASE  
PS D:\Tools\PSQL\bin>
```

- ✓  bookings
  - >  Aggregates
  - >  Collations
  - >  Domains
  - >  FTS Configurations
  - >  FTS Dictionaries
  - > **Aa** FTS Parsers
  - >  FTS Templates
  - >  Foreign Tables
  - >  Functions
  - >  Materialized Views
  - >  Operators
  - >  Procedures
  - > **1..3** Sequences
  - ✓  Tables (8)
    - >  aircrafts\_data
    - >  airports\_data
    - >  boarding\_passes
    - >  bookings
    - >  flights
    - >  seats
    - >  ticket\_flights
    - >  tickets

**Задание 1.** Получите список аэропортов с указанием их кода и города из таблицы `airports_data` БД `demo`.

demo/postgres@PostgreSQL 16

**Query** Query History

```
1 SELECT airport_code, airport_name, city FROM airports_data;
```

---

**Data Output** Messages Notifications

|   | airport_code<br>[PK] character | airport_name<br>jsonb  | city<br>jsonb   |
|---|--------------------------------|--|---|
| 1 | YKS                            | {"en": "Yakutsk Airport", "ru": "Якутск"}                        | {"en": "Yakutsk", "ru": "Якутск"}                         |
| 2 | MJZ                            | {"en": "Mirny Airport", "ru": "Мирный"}                          | {"en": "Mirny", "ru": "Мирный"}                           |
| 3 | KHV                            | {"en": "Khabarovsk-Novy Airport", "ru": "Хабаровск-Новый"}       | {"en": "Khabarovsk", "ru": "Хабаровск"}                   |
| 4 | PKC                            | {"en": "Yelizovo Airport", "ru": "Елизово"}                      | {"en": "Petropavlovsk", "ru": "Петропавловск-Камчатский"} |
| 5 | UUS                            | {"en": "Yuzhno-Sakhalinsk Airport", "ru": "Хомутово"}            | {"en": "Yuzhno-Sakhalinsk", "ru": "Южно-Сахалинск"}       |
| 6 | VVO                            | {"en": "Vladivostok International Airport", "ru": "Владивосток"} | {"en": "Vladivostok", "ru": "Владивосток"}                |
| 7 | LED                            | {"en": "Pulkovo Airport", "ru": "Пулково"}                       | {"en": "St. Petersburg", "ru": "Санкт-Петербург"}         |
| 8 | KGD                            | {"en": "Khrabrovo Airport", "ru": "Храброво"}                    | {"en": "Kaliningrad", "ru": "Калининград"}                |
| 9 | KEJ                            | {"en": "Kemerovo Airport", "ru": "Кемерово"}                     | {"en": "Kemerovo", "ru": "Кемерово"}                      |

Total rows: 104 of 104      Query complete 00:00:00.185

**Задание 2.** Получите список мест с указанием числа места (первые 2 символа), сектора (3 символ) места и класса (бизнес, эконом, комфорт), а также его идентификационного номера. Список должен быть упорядочен по номеру места.

The screenshot shows a PostgreSQL query editor interface. The top bar indicates the connection is to 'demo/postgres@PostgreSQL 16'. Below the toolbar, the query is written as follows:

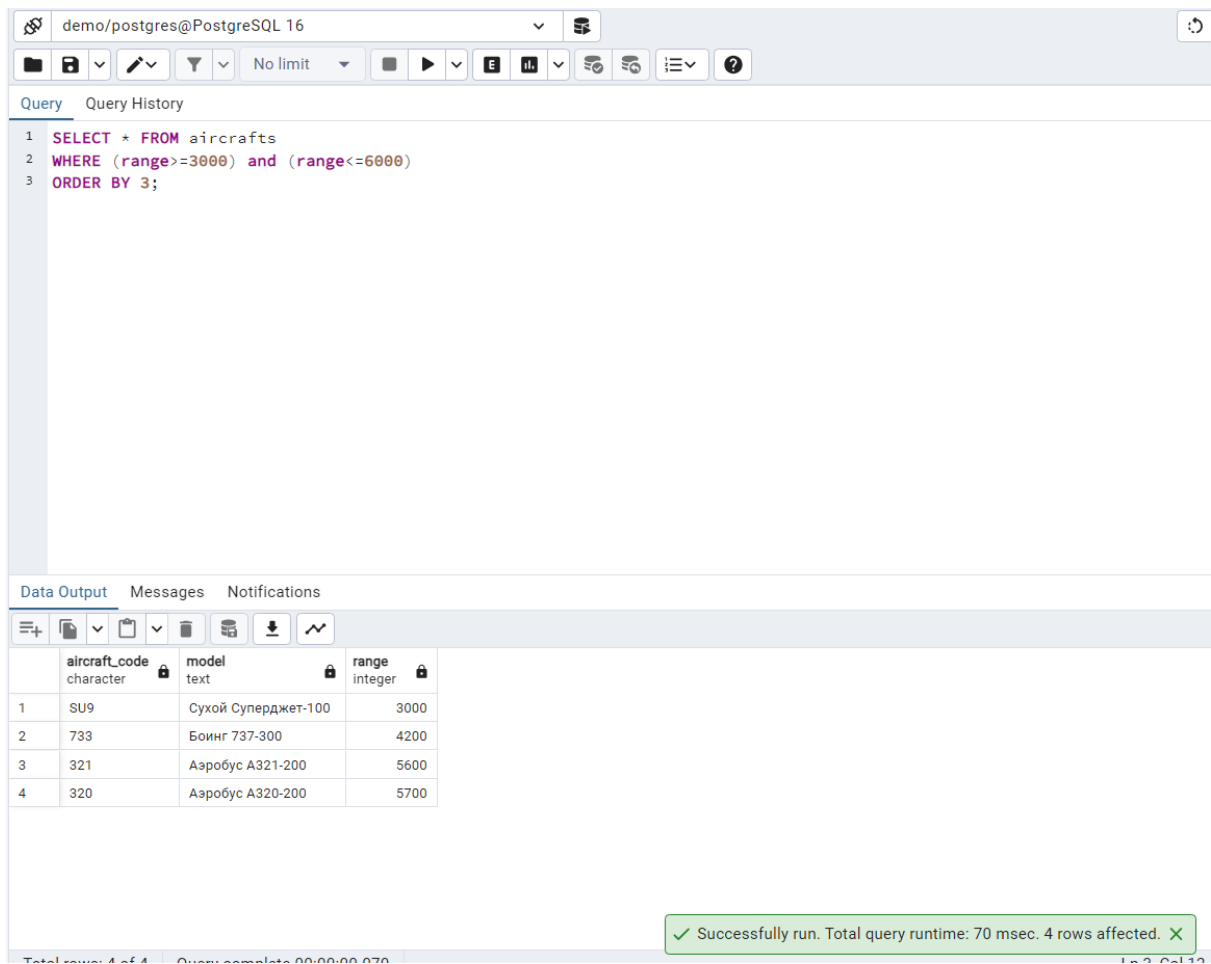
```
1 SELECT (SUBSTRING (seat_no,1,2) || ' ' || SUBSTRING (seat_no,3,1) || ' ' || fare_conditions )
2 AS seats_class, aircraft_code FROM seats
3 ORDER BY seat_no;
```

The 'Data Output' tab is active, displaying the results of the query in a table. The table has two columns: 'seats\_class' (text) and 'aircraft\_code' (character). The results are ordered by seat number from 1 to 9.

|   | seats_class<br>text | aircraft_code<br>character |
|---|---------------------|----------------------------|
| 1 | 10 A Economy        | 321                        |
| 2 | 10 A Economy        | 319                        |
| 3 | 10 A Economy        | 320                        |
| 4 | 10 A Economy        | SU9                        |
| 5 | 10 B Economy        | 321                        |
| 6 | 10 B Economy        | 320                        |
| 7 | 10 B Economy        | 319                        |
| 8 | 10 B Economy        | 733                        |
| 9 | 10 C Economy        | SU9                        |

At the bottom of the interface, a status bar shows 'Total rows: 1000 of 1339' and 'Query complete 00:00:00.085'. A green notification box on the right states: '✓ Successfully run. Total query runtime: 85 msec. 1339 rows affected. ✕'. The bottom right corner of the status bar shows '1 of 3. Col 11'.

**Задание 3.** Получите список самолётов, дальность полёта которых находится в диапазоне от 3000 км до 6000 км, отсортировав его по дальности




The screenshot shows a PostgreSQL client interface with the following components:

- Top Bar:** Connection name 'demo/postgres@PostgreSQL 16' and a refresh button.
- Toolbar:** Icons for file operations, filters, and execution.
- Query Editor:** Contains the SQL query:




```
1 SELECT * FROM aircrafts
2 WHERE (range>=3000) and (range<=6000)
3 ORDER BY 3;
```
- Data Output Tab:** Displays the results of the query in a table.

|   | aircraft_code<br>character | model<br>text       | range<br>integer |
|---|----------------------------|---------------------|------------------|
| 1 | SU9                        | Сухой Суперджет-100 | 3000             |
| 2 | 733                        | Боинг 737-300       | 4200             |
| 3 | 321                        | Аэробус А321-200    | 5600             |
| 4 | 320                        | Аэробус А320-200    | 5700             |
- Status Bar:** Shows 'Total rows: 4 of 4' and 'Query complete 00:00:00.070'.
- Message Box:** A green box at the bottom right states: '✓ Successfully run. Total query runtime: 70 msec. 4 rows affected. ✕'

demo/postgres@PostgreSQL 16



No limit



Query Query History

```
1 SELECT * FROM aircrafts
2 WHERE range BETWEEN 3000 and 6000
3 ORDER BY 3;
```

Data Output Messages Notifications

|   | aircraft_code<br>character | model<br>text       | range<br>integer |
|---|----------------------------|---------------------|------------------|
| 1 | SU9                        | Сухой Суперджет-100 | 3000             |
| 2 | 733                        | Боинг 737-300       | 4200             |
| 3 | 321                        | Аэробус А321-200    | 5600             |
| 4 | 320                        | Аэробус А320-200    | 5700             |

✓ Successfully run. Total query runtime: 47 msec. 4 rows affected. ✕

**Задание 4.** Выведите все кодировки самолётов, их модели и дальность полёта, кроме самолётов модели Аэробус и Боинг.

demo/postgres@PostgreSQL 16

No limit

Query Query History

```
1 SELECT * FROM aircrafts
2 WHERE model NOT LIKE 'Аэробус%'
3 AND model NOT LIKE 'Боинг%';
```

Data Output Messages Notifications

|   | aircraft_code<br>character | model<br>text       | range<br>integer |
|---|----------------------------|---------------------|------------------|
| 1 | SU9                        | Сухой Суперджет-100 | 3000             |
| 2 | CN1                        | Сессна 208 Караван  | 1200             |
| 3 | CR2                        | Бомбардье CRJ-200   | 2700             |

Total rows: 3 of 3    Query complete 00:00:00.056

✓ Successfully run. Total query runtime: 56 msec. 3 rows affected. ✕

Ln 3. Col 2



**Задание 5.** Получите список самолётов компаний модели Аэробус или Боинг

demo/postgres@PostgreSQL 16

No limit

Query

Query History

```
1 SELECT * FROM aircrafts WHERE model ~ '^A|Бои';
```

Data Output

Messages

Notifications

|   | aircraft_code<br>character | model<br>text    | range<br>integer |
|---|----------------------------|------------------|------------------|
| 1 | 773                        | Боинг 777-300    | 11100            |
| 2 | 763                        | Боинг 767-300    | 7900             |
| 3 | 320                        | Аэробус А320-200 | 5700             |
| 4 | 321                        | Аэробус А321-200 | 5600             |
| 5 | 319                        | Аэробус А319-100 | 6700             |
| 6 | 733                        | Боинг 737-300    | 4200             |

Total rows: 6 of 6

Query complete 00:00:00.063

Ln 1 Col 5

✓ Successfully run. Total query runtime: 63 msec. 6 rows affected.

✕

**Задание 6.** Получите список рейсов, у которых не указан ближайший ВЫЛЕТ.

QueryQuery History

1 SELECT \* FROM flights WHERE actual\_departure ISNULL;

Data OutputMessagesNotifications

|     | flight_id<br>[PK] integer | flight_no<br>character | scheduled_departure<br>timestamp with time zone | scheduled_arrival<br>timestamp with time zone | departure_airport<br>character | arrival_lairport<br>character | status<br>character varying (20) | aircraft_code<br>character |
|-----|---------------------------|------------------------|---|---|--------------------------------|-------------------------------|----------------------------------|----------------------------|
| 1   | 1185                      | PG0134                 | 2017-09-10 11:50:00+05                          | 2017-09-10 16:55:00+05                        | DME                            | BTK                           | Scheduled                        | 319                        |
| 2   | 3979                      | PG0052                 | 2017-08-25 16:50:00+05                          | 2017-08-25 19:35:00+05                        | VKO                            | HMA                           | Scheduled                        | CR2                        |
| 3   | 4739                      | PG0561                 | 2017-09-05 14:30:00+05                          | 2017-09-05 16:15:00+05                        | VKO                            | AER                           | Scheduled                        | 763                        |
| 4   | 5502                      | PG0529                 | 2017-09-12 11:50:00+05                          | 2017-09-12 13:20:00+05                        | SVO                            | UFA                           | Scheduled                        | 763                        |
| 5   | 6938                      | PG0461                 | 2017-09-04 14:25:00+05                          | 2017-09-04 15:20:00+05                        | SVO                            | ULV                           | Scheduled                        | SU9                        |
| 6   | 7784                      | PG0667                 | 2017-09-10 17:00:00+05                          | 2017-09-10 19:30:00+05                        | SVO                            | KRO                           | Scheduled                        | CR2                        |
| 7   | 9478                      | PG0360                 | 2017-08-28 11:00:00+05                          | 2017-08-28 13:35:00+05                        | LED                            | REN                           | Scheduled                        | CR2                        |
| 8   | 11085                     | PG0569                 | 2017-08-24 17:05:00+05                          | 2017-08-24 18:10:00+05                        | SVX                            | SCW                           | Scheduled                        | 733                        |
| ... | ...                       | ...                    | ...   | ...   | ...                            | ...                           | ...                              | ...                        |

✓ Successfully run. Total query runtime: 157 msec. 16348 rows affected. ✕

Total rows: 1000 of 16348Query complete 00:00:00.157Ln 1, Col 53

## Самостоятельная работа

### 1. Запрос на полную выборку данных.

| Query       |                    | Query History                             |                                 |                                  |                                  |   |
|-------------|--------------------|---|---------------------------------|----------------------------------|----------------------------------|---|
| 1           |                    | <b>SELECT</b> * <b>FROM</b> legal_person; |                                 |                                  |                                  |   |
| Data Output |                    | Messages                                  |                                 |                                  |                                  |   |
|             |                    |   |                                 |                                  |                                  |   |
|             | id<br>[PK] integer | inn<br>character varying (255)            | name<br>character varying (255) | phone<br>character varying (255) | email<br>character varying (255) | delivery_address<br>character varying (255) |
| 1           | 4                  | inn0                                      | legal_customer_name0            | phone_number0                    | email0                           | delivery_address0                           |
| 2           | 5                  | inn1                                      | legal_customer_name1            | phone_number1                    | email1                           | delivery_address1                           |
| 3           | 6                  | inn2                                      | legal_customer_name2            | phone_number2                    | email2                           | delivery_address2                           |
| 4           | 7                  | inn3                                      | legal_customer_name3            | phone_number3                    | email3                           | delivery_address3                           |
| 5           | 8                  | inn4                                      | legal_customer_name4            | phone_number4                    | email4                           | delivery_address4                           |
| 6           | 9                  | inn5                                      | legal_customer_name5            | phone_number5                    | email5                           | delivery_address5                           |
| 7           | 10                 | inn6                                      | legal_customer_name6            | phone_number6                    | email6                           | delivery_address6                           |
| 8           | 11                 | inn7                                      | legal_customer_name7            | phone_number7                    | email7                           | delivery_address7                           |
| 9           | 12                 | inn8                                      | legal_customer_name8            | phone_number8                    | email8                           | delivery_address8                           |
| 10          | 13                 | inn9                                      | legal_customer_name9            | phone_number9                    | email9                           | delivery_address9                           |
| 11          | 14                 | inn10                                     | legal_customer_name10           | phone_number10                   | email10                          | delivery_address10                          |

### 2. Запрос на выборку данных без повторений.

| Query       |                                | Query History                             |                                    |
|-------------|--------------------------------|---|------------------------------------|
| 1           |                                | <b>SELECT DISTINCT</b> inn, name, address |                                    |
| 2           |                                | <b>FROM</b> provider;                     |                                    |
| Data Output |                                | Messages                                  |                                    |
|             |                                |   |                                    |
|             | inn<br>character varying (255) | name<br>character varying (255)           | address<br>character varying (255) |
| 1           | provider_inn836                | provider_name836                          | provider_address836                |
| 2           | provider_inn218                | provider_name218                          | provider_address218                |
| 3           | provider_inn849                | provider_name849                          | provider_address849                |
| 4           | provider_inn456                | provider_name456                          | provider_address456                |
| 5           | provider_inn38                 | provider_name38                           | provider_address38                 |
| 6           | provider_inn738                | provider_name738                          | provider_address738                |
| 7           | provider_inn125                | provider_name125                          | provider_address125                |

### 3. Запрос на выборку первых 10 записей.

Query

Query History

1

SELECT inn, name, address

2

FROM provider

3

LIMIT 10;

Data Output

Messages

Notifications

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### 4. Запрос на выборку последних 15 записей.

Query

Query History

1

SELECT \*

2

FROM provider

3

ORDER BY id DESC

4

LIMIT 15;

Data Output

Messages

Notifications

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|    | id<br>[PK] integer | inn<br>character varying (255) | name<br>character varying (255) | address<br>character varying (255) |
|----|--------------------|--------------------------------|---------------------------------|------------------------------------|
| 1  | 1003               | provider_inn999                | provider_name999                | provider_address999                |
| 2  | 1002               | provider_inn998                | provider_name998                | provider_address998                |
| 3  | 1001               | provider_inn997                | provider_name997                | provider_address997                |
| 4  | 1000               | provider_inn996                | provider_name996                | provider_address996                |
| 5  | 999                | provider_inn995                | provider_name995                | provider_address995                |
| 6  | 998                | provider_inn994                | provider_name994                | provider_address994                |
| 7  | 997                | provider_inn993                | provider_name993                | provider_address993                |
| 8  | 996                | provider_inn992                | provider_name992                | provider_address992                |
| 9  | 995                | provider_inn991                | provider_name991                | provider_address991                |
| 10 | 994                | provider_inn990                | provider_name990                | provider_address990                |
| 11 | 993                | provider_inn989                | provider_name989                | provider_address989                |
| 12 | 992                | provider_inn988                | provider_name988                | provider_address988                |
| 13 | 991                | provider_inn987                | provider_name987                | provider_address987                |
| 14 | 990                | provider_inn986                | provider_name986                | provider_address986                |
| 15 | 989                | provider_inn985                | provider_name985                | provider_address985                |

## 5. Запросы на выполнение функций Average, Max, Min.

Query

Query History

1

SELECT AVG(price) AS average\_price

2

FROM product;

Data Output

Messages

Notifications

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|   |                       |   |
|---|-----------------------|---|
|   | average_price         | 🔒 |
|   | numeric               |   |
| 1 | 5244.7500000000000000 |   |

| Query |  | Query History |
|-------|--|---------------|
| 1     | <b>SELECT</b> MAX(quantity) <b>AS</b> max_quantity |               |
| 2     | <b>FROM</b> product;                               |               |

| Data Output |                         | Messages | Notifications |
|-------------|-------------------------|----------|---------------|
|             | max_quantity<br>integer |          |               |
| 1           | 999                     |          |               |

| Query |  | Query History |
|-------|--|---------------|
| 1     | <b>SELECT</b> MIN(weight) <b>AS</b> min_weight |               |
| 2     | <b>FROM</b> product;                           |               |

| Data Output |                       | Messages | Notifications |
|-------------|-----------------------|----------|---------------|
|             | min_weight<br>numeric |          |               |
| 1           | 0.00                  |          |               |

6. Сконструируйте запросы с использованием оператора Where:

- запрос на возвращение определенного кортежа по первичному ключу;

| Query |                            | Query History |
|-------|----------------------------|---------------|
| 1     | <b>SELECT</b> *            |               |
| 2     | <b>FROM</b> natural_person |               |
| 3     | <b>WHERE</b> id = 1;       |               |

| Data Output |                    | Messages                            | Notifications                               |
|-------------|--------------------|-------------------------------------|---|
|             | id<br>[PK] integer | passport<br>character varying (255) | forename<br>character varying (255)         |
|             |                    | phone<br>character varying (255)    | email<br>character varying (255)            |
|             |                    |                                     | delivery_address<br>character varying (255) |

- запросы на возвращение значения по условиям больше, меньше и между;

Query

Query History

1

SELECT \*

2

FROM product

3

WHERE quantity > 100;

Data Output

Messages

Notifications

|    | <div><div>id</div><div>[PK] integer</div></div> | <div><div>place</div><div>integer</div></div> | <div><div>provider_id</div><div>integer</div></div> | <div><div>provider_name</div><div>character varying (255)</div></div> | <div><div>name</div><div>character varying (255)</div></div> | <div><div>receipt_date</div><div>date</div></div> | <div><div>article</div><div>character varying (255)</div></div> | <div><div>qu</div><div>int</div></div> |
|----|---|---|---|---|--|---|---|--|
| 1  | 105   | 101   | [null]  | [null]  | product_name101  | 2023-12-17  | article101  |  |
| 2  | 106   | 102   | [null]  | [null]  | product_name102  | 2023-12-17  | article102  |  |
| 3  | 107   | 103   | [null]  | [null]  | product_name103  | 2023-12-17  | article103  |  |
| 4  | 108   | 104   | [null]  | [null]  | product_name104  | 2023-12-17  | article104  |  |
| 5  | 109   | 105   | [null]  | [null]  | product_name105  | 2023-12-17  | article105  |  |
| 6  | 110   | 106   | [null]  | [null]  | product_name106  | 2023-12-17  | article106  |  |
| 7  | 111   | 107   | [null]  | [null]  | product_name107  | 2023-12-17  | article107  |  |
| 8  | 112   | 108   | [null]  | [null]  | product_name108  | 2023-12-17  | article108  |  |
| 9  | 113   | 109   | [null]  | [null]  | product_name109  | 2023-12-17  | article109  |  |
| 10 | 114   | 110   | [null]  | [null]  | product_name110  | 2023-12-17  | article110  |  |

Query

Query History

1

SELECT \*

2

FROM product

3

WHERE price < 50;

Data Output

Messages

Notifications

|   | id<br>[PK] integer | place<br>integer | provider_id<br>integer | provider_name<br>character varying (255) | name<br>character varying (255) | receipt_date<br>date | article<br>character varying (255) |
|---|--------------------|------------------|------------------------|--|---------------------------------|----------------------|------------------------------------|
| 1 | 4                  | 0                | [null]                 | [null]                                   | product_name0                   | 2023-12-17           | article0                           |
| 2 | 5                  | 1                | [null]                 | [null]                                   | product_name1                   | 2023-12-17           | article1                           |
| 3 | 6                  | 2                | [null]                 | [null]                                   | product_name2                   | 2023-12-17           | article2                           |

Query

Query History

1

SELECT \*

2

FROM product

3

WHERE weight BETWEEN 5 AND 10;

Data Output

Messages

Notifications

|   | id<br>[PK] integer | place<br>integer | provider_id<br>integer | provider_name<br>character varying (255) | name<br>character varying (255) | receipt_date<br>date | article<br>character v |
|---|--------------------|------------------|------------------------|--|---------------------------------|----------------------|------------------------|
| 1 | 54                 | 50               | [null]                 | [null]                                   | product_name50                  | 2023-12-17           | article50              |
| 2 | 55                 | 51               | [null]                 | [null]                                   | product_name51                  | 2023-12-17           | article51              |
| 3 | 56                 | 52               | [null]                 | [null]                                   | product_name52                  | 2023-12-17           | article52              |
| 4 | 57                 | 53               | [null]                 | [null]                                   | product_name53                  | 2023-12-17           | article53              |
| 5 | 58                 | 54               | [null]                 | [null]                                   | product_name54                  | 2023-12-17           | article54              |
| 6 | 59                 | 55               | [null]                 | [null]                                   | product_name55                  | 2023-12-17           | article55              |

- запросы на возвращении всех кортежей по условию с использованием оператора LIKE и ESCAPE;

Query

Query History

1

SELECT \*

2

FROM natural\_person

3

WHERE forename LIKE '%a%';

Data Output

Messages

Notifications

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|   | id<br>[PK] integer | passport<br>character varying (255) | forename<br>character varying (255) | phone<br>character varying (255) | email<br>character varying (255) | delivery_address<br>character varying (255) |
|---|--------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------------------------|---|
| 1 | 4                  | passport_details0                   | natural_customer_name0              | phone_number0                    | email0                           | delivery_address0                           |
| 2 | 5                  | passport_details1                   | natural_customer_name1              | phone_number1                    | email1                           | delivery_address1                           |
| 3 | 6                  | passport_details2                   | natural_customer_name2              | phone_number2                    | email2                           | delivery_address2                           |
| 4 | 7                  | passport_details3                   | natural_customer_name3              | phone_number3                    | email3                           | delivery_address3                           |
| 5 | 8                  | passport_details4                   | natural_customer_name4              | phone_number4                    | email4                           | delivery_address4                           |
| 6 | 9                  | passport_details5                   | natural_customer_name5              | phone_number5                    | email5                           | delivery_address5                           |
| 7 | 10                 | passport_details6                   | natural_customer_name6              | phone_number6                    | email6                           | delivery_address6                           |

Query

Query History

1

SELECT \*

2

FROM natural\_person

3

WHERE forename LIKE '%^\_%' ESCAPE '^';

Data Output

Messages

Notifications

|   | id<br>[PK] integer | passport<br>character varying (255) | forename<br>character varying (255) | phone<br>character varying (255) | email<br>character varying (255) | delivery_address<br>character varying (255) |
|---|--------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------------------------|---|
| 1 | 4                  | passport_details0                   | natural_customer_name0              | phone_number0                    | email0                           | delivery_address0                           |
| 2 | 5                  | passport_details1                   | natural_customer_name1              | phone_number1                    | email1                           | delivery_address1                           |
| 3 | 6                  | passport_details2                   | natural_customer_name2              | phone_number2                    | email2                           | delivery_address2                           |
| 4 | 7                  | passport_details3                   | natural_customer_name3              | phone_number3                    | email3                           | delivery_address3                           |
| 5 | 8                  | passport_details4                   | natural_customer_name4              | phone_number4                    | email4                           | delivery_address4                           |

- запрос на возвращение кортежей со сложным условием на основе логических операторов И, ИЛИ, НЕ;



Query

Query History

1

SELECT \*

2

FROM product

3

WHERE (weight > 1.70 OR receipt\_date > '2023-09-01') AND quantity > 15;

Data Output

Messages

Notifications

|    | id<br>[PK] integer | place<br>integer | provider_id<br>integer | provider_name<br>character varying (255) | name<br>character varying (255) | receipt_date<br>date | article<br>character varying (255) | quantity<br>integer | price<br>numeric (10,2) | weight<br>numeric (5,2) |
|----|--------------------|------------------|------------------------|--|---------------------------------|----------------------|------------------------------------|---------------------|-------------------------|-------------------------|
| 1  | 20                 | 16               | [null]                 | [null]                                   | product_name16                  | 2023-12-17           | article16                          | 16                  | 168.00                  | 1.60                    |
| 2  | 21                 | 17               | [null]                 | [null]                                   | product_name17                  | 2023-12-17           | article17                          | 17                  | 178.50                  | 1.70                    |
| 3  | 22                 | 18               | [null]                 | [null]                                   | product_name18                  | 2023-12-17           | article18                          | 18                  | 189.00                  | 1.80                    |
| 4  | 23                 | 19               | [null]                 | [null]                                   | product_name19                  | 2023-12-17           | article19                          | 19                  | 199.50                  | 1.90                    |
| 5  | 24                 | 20               | [null]                 | [null]                                   | product_name20                  | 2023-12-17           | article20                          | 20                  | 210.00                  | 2.00                    |
| 6  | 25                 | 21               | [null]                 | [null]                                   | product_name21                  | 2023-12-17           | article21                          | 21                  | 220.50                  | 2.10                    |
| 7  | 26                 | 22               | [null]                 | [null]                                   | product_name22                  | 2023-12-17           | article22                          | 22                  | 231.00                  | 2.20                    |
| 8  | 27                 | 23               | [null]                 | [null]                                   | product_name23                  | 2023-12-17           | article23                          | 23                  | 241.50                  | 2.30                    |
| 9  | 28                 | 24               | [null]                 | [null]                                   | product_name24                  | 2023-12-17           | article24                          | 24                  | 252.00                  | 2.40                    |
| 10 | 29                 | 25               | [null]                 | [null]                                   | product_name25                  | 2023-12-17           | article25                          | 25                  | 262.50                  | 2.50                    |
| 11 | 30                 | 26               | [null]                 | [null]                                   | product_name26                  | 2023-12-17           | article26                          | 26                  | 273.00                  | 2.60                    |
| 12 | 31                 | 27               | [null]                 | [null]                                   | product_name27                  | 2023-12-17           | article27                          | 27                  | 283.50                  | 2.70                    |
| 13 | 32                 | 28               | [null]                 | [null]                                   | product_name28                  | 2023-12-17           | article28                          | 28                  | 294.00                  | 2.80                    |

Query

Query History

1

SELECT \*

2

FROM waybill

3

WHERE NOT product\_quantity = 0;

4

Data Output

Messages

Notifications

|   | id<br>[PK] integer | article_product<br>character varying (255) | product_quantity<br>integer |
|---|--------------------|--|-----------------------------|
| 1 | 3                  | article1                                   | 1                           |
| 2 | 4                  | article2                                   | 2                           |
| 3 | 5                  | article3                                   | 3                           |
| 4 | 6                  | article4                                   | 4                           |

- запрос с использованием оператора NOT NULL в условии отбора.

Query

Query History

1

SELECT \*

2

FROM natural\_person

3

WHERE phone IS NOT NULL;

Data Output

Messages

Notifications

|    | id<br>[PK] integer | passport<br>character varying (255) | forename<br>character varying (255) | phone<br>character varying (255) | email<br>character varying (255) | delivery_address<br>character varying (255) |
|----|--------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------------------------|---|
| 1  | 4                  | passport_details0                   | natural_customer_name0              | phone_number0                    | email0                           | delivery_address0                           |
| 2  | 5                  | passport_details1                   | natural_customer_name1              | phone_number1                    | email1                           | delivery_address1                           |
| 3  | 6                  | passport_details2                   | natural_customer_name2              | phone_number2                    | email2                           | delivery_address2                           |
| 4  | 7                  | passport_details3                   | natural_customer_name3              | phone_number3                    | email3                           | delivery_address3                           |
| 5  | 8                  | passport_details4                   | natural_customer_name4              | phone_number4                    | email4                           | delivery_address4                           |
| 6  | 9                  | passport_details5                   | natural_customer_name5              | phone_number5                    | email5                           | delivery_address5                           |
| 7  | 10                 | passport_details6                   | natural_customer_name6              | phone_number6                    | email6                           | delivery_address6                           |
| 8  | 11                 | passport_details7                   | natural_customer_name7              | phone_number7                    | email7                           | delivery_address7                           |
| 9  | 12                 | passport_details8                   | natural_customer_name8              | phone_number8                    | email8                           | delivery_address8                           |
| 10 | 13                 | passport_details9                   | natural_customer_name9              | phone_number9                    | email9                           | delivery_address9                           |

## 7. Запрос с простыми условиями, условиями, содержащими IN или BETWEEN.

Query

Query History

1

SELECT \*

2

FROM product

3

WHERE price IN (189.00, 493.50, 997.50);

Data Output

Messages

Notifications

|   | id<br>[PK] integer | place<br>integer | provider_id<br>integer | provider_name<br>character varying (255) | name<br>character varying (255) | receipt_date<br>date | article<br>character varying (255) | quantity<br>integer | price<br>numeric (10,2) | weight<br>numeric (5,2) |
|---|--------------------|------------------|------------------------|--|---------------------------------|----------------------|------------------------------------|---------------------|-------------------------|-------------------------|
| 1 | 22                 | 18               | [null]                 | [null]                                   | product_name18                  | 2023-12-17           | article18                          | 18                  | 189.00                  | 1.80                    |
| 2 | 51                 | 47               | [null]                 | [null]                                   | product_name47                  | 2023-12-17           | article47                          | 47                  | 493.50                  | 4.70                    |
| 3 | 99                 | 95               | [null]                 | [null]                                   | product_name95                  | 2023-12-17           | article95                          | 95                  | 997.50                  | 9.50                    |

Query

Query History

1

SELECT \*

2

FROM product

3

WHERE price BETWEEN 150.00 AND 1008.00

Data Output

Messages

Notifications

|    | id<br>[PK] integer | place<br>integer | provider_id<br>integer | provider_name<br>character varying (255) | name<br>character varying (255) | receipt_date<br>date | article<br>character varying (255) | quantity<br>integer | price<br>numeric (10,2) | weight<br>numeric (5,2) |
|----|--------------------|------------------|------------------------|--|---------------------------------|----------------------|------------------------------------|---------------------|-------------------------|-------------------------|
| 1  | 19                 | 15               | [null]                 | [null]                                   | product_name15                  | 2023-12-17           | article15                          | 15                  | 157.50                  | 1.50                    |
| 2  | 20                 | 16               | [null]                 | [null]                                   | product_name16                  | 2023-12-17           | article16                          | 16                  | 168.00                  | 1.60                    |
| 3  | 21                 | 17               | [null]                 | [null]                                   | product_name17                  | 2023-12-17           | article17                          | 17                  | 178.50                  | 1.70                    |
| 4  | 22                 | 18               | [null]                 | [null]                                   | product_name18                  | 2023-12-17           | article18                          | 18                  | 189.00                  | 1.80                    |
| 5  | 23                 | 19               | [null]                 | [null]                                   | product_name19                  | 2023-12-17           | article19                          | 19                  | 199.50                  | 1.90                    |
| 6  | 24                 | 20               | [null]                 | [null]                                   | product_name20                  | 2023-12-17           | article20                          | 20                  | 210.00                  | 2.00                    |
| 7  | 25                 | 21               | [null]                 | [null]                                   | product_name21                  | 2023-12-17           | article21                          | 21                  | 220.50                  | 2.10                    |
| 8  | 26                 | 22               | [null]                 | [null]                                   | product_name22                  | 2023-12-17           | article22                          | 22                  | 231.00                  | 2.20                    |
| 9  | 27                 | 23               | [null]                 | [null]                                   | product_name23                  | 2023-12-17           | article23                          | 23                  | 241.50                  | 2.30                    |
| 10 | 28                 | 24               | [null]                 | [null]                                   | product_name24                  | 2023-12-17           | article24                          | 24                  | 252.00                  | 2.40                    |
| 11 | 29                 | 25               | [null]                 | [null]                                   | product_name25                  | 2023-12-17           | article25                          | 25                  | 262.50                  | 2.50                    |
| 12 | 30                 | 26               | [null]                 | [null]                                   | product_name26                  | 2023-12-17           | article26                          | 26                  | 273.00                  | 2.60                    |
| 13 | 31                 | 27               | [null]                 | [null]                                   | product_name27                  | 2023-12-17           | article27                          | 27                  | 283.50                  | 2.70                    |
| 14 | 32                 | 28               | [null]                 | [null]                                   | product_name28                  | 2023-12-17           | article28                          | 28                  | 294.00                  | 2.80                    |

## 8. Запросы с сортировкой по нескольким полям, направлениям.

Query

Query History

1

SELECT \*

2

FROM product

3

ORDER BY name ASC, price DESC;

Data Output

Messages

Notifications

|    | <div><div>id</div><div>[PK] integer</div></div> | <div><div>place</div><div>integer</div></div> | <div><div>provider_id</div><div>integer</div></div> | <div><div>provider_name</div><div>character varying (255)</div></div> | <div><div>name</div><div>character varying (255)</div></div> | <div><div>receipt_date</div><div>date</div></div> | <div><div>article</div><div>character varying (255)</div></div> | <div><div>quantity</div><div>integer</div></div> | <div><div>price</div><div>numeric (10,2)</div></div> | <div><div>weight</div><div>numeric (5,2)</div></div> |       |
|----|---|---|---|---|--|---|---|--|--|--|-------|
| 1  |   | 4   | 0   | [null]  | [null]   | product_name0                                     | 2023-12-17  | article0   | 0  | 0.00   | 0.00  |
| 2  |   | 5   | 1   | [null]  | [null]   | product_name1                                     | 2023-12-17  | article1   | 1  | 10.50  | 0.10  |
| 3  |   | 14  | 10  | [null]  | [null]   | product_name10                                    | 2023-12-17  | article10  | 10   | 105.00   | 1.00  |
| 4  |   | 104   | 100   | [null]  | [null]   | product_name100                                   | 2023-12-17  | article100                                       | 100  | 1050.00  | 10.00 |
| 5  |   | 105   | 101   | [null]  | [null]   | product_name101                                   | 2023-12-17  | article101                                       | 101  | 1060.50  | 10.10 |
| 6  |   | 106   | 102   | [null]  | [null]   | product_name102                                   | 2023-12-17  | article102                                       | 102  | 1071.00  | 10.20 |
| 7  |   | 107   | 103   | [null]  | [null]   | product_name103                                   | 2023-12-17  | article103                                       | 103  | 1081.50  | 10.30 |
| 8  |   | 108   | 104   | [null]  | [null]   | product_name104                                   | 2023-12-17  | article104                                       | 104  | 1092.00  | 10.40 |
| 9  |   | 109   | 105   | [null]  | [null]   | product_name105                                   | 2023-12-17  | article105                                       | 105  | 1102.50  | 10.50 |
| 10 |   | 110   | 106   | [null]  | [null]   | product_name106                                   | 2023-12-17  | article106                                       | 106  | 1113.00  | 10.60 |

9. Запросы с использованием групповых операций (группировка статистические функции, отбор по групповым функциям).

Query

Query History

1

SELECT place, SUM(price) AS total\_price

2

FROM product










3

GROUP BY place;

Data Output

Messages

Notifications



|   | place<br>integer | total_price<br>numeric |
|---|------------------|------------------------|
| 1 | 652              | 6846.00                |
| 2 | 273              | 2866.50                |
| 3 | 51               | 535.50                 |
| 4 | 951              | 9985.50                |
| 5 | 839              | 8809.50                |

Query

Query History

1

SELECT place, SUM(price) AS total\_cost

2

FROM product

3

GROUP BY place

4

HAVING SUM (price) > 6000;

Data Output

Messages

Notifications

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|    | place<br>integer | total_cost<br>numeric |
|----|------------------|-----------------------|
| 1  | 652              | 6846.00               |
| 2  | 951              | 9985.50               |
| 3  | 839              | 8809.50               |
| 4  | 758              | 7959.00               |
| 5  | 874              | 9177.00               |
| 6  | 946              | 9933.00               |
| 7  | 576              | 6048.00               |
| 8  | 929              | 9754.50               |
| 9  | 663              | 6961.50               |
| 10 | 770              | 8085.00               |
| 11 | 764              | 8022.00               |

10. Запросы с операцией над множествами (обязательно используя сортировку).

| Query |                                    | Query History |
|-------|------------------------------------|---------------|
| 1     | <b>SELECT</b> email                |               |
| 2     | <b>FROM</b> natural_person         |               |
| 3     | <b>UNION</b>                       |               |
| 4     | <b>SELECT</b> email                |               |
| 5     | <b>FROM</b> legal_person           |               |
| 6     | <b>ORDER BY</b> email <b>ASC</b> ; |               |

| Data Output  |   | Messages | Notifications |
|--|---|----------|---------------|
| <div> <div>☰+</div> <div>📄</div> <div>▼</div> <div>📋</div> <div>▼</div> <div>🗑️</div> <div>🗑️</div> <div>📄</div> <div>⬇️</div> <div>📈</div> </div> |   |          |               |
|  | <b>email</b><br>character varying (255) 🔒 |          |               |
| 1  | email0                                    |          |               |
| 2  | email1                                    |          |               |
| 3  | email10                                   |          |               |
| 4  | email100                                  |          |               |
| 5  | email101                                  |          |               |
| 6  | email102                                  |          |               |
| 7  | email103                                  |          |               |

Query

Query History

1

SELECT email

2

FROM natural\_person

3

UNION ALL

4

SELECT email

5

FROM legal\_person

6

ORDER BY email ASC;

Data Output

Messages

Notifications

≡+

▼

▼

|    | email<br>character varying (255) |
|----|----------------------------------|
| 1  | email0                           |
| 2  | email0                           |
| 3  | email1                           |
| 4  | email1                           |
| 5  | email10                          |
| 6  | email10                          |
| 7  | email100                         |
| 8  | email100                         |
| 9  | email101                         |
| 10 | email101                         |

11. Запросы на обновление.

| Query                                   | Query History                       |               |
|---|-------------------------------------|---------------|
| 1                                       | UPDATE natural_person               |               |
| 2                                       | SET email = 'new_email@example.com' |               |
| 3                                       | WHERE id = 1;                       |               |
| Data Output                             | Messages                            | Notifications |
| UPDATE 0                                |                                     |               |
| Query returned successfully in 42 msec. |                                     |               |

| Query                                   | Query History               |               |
|---|-----------------------------|---------------|
| 1                                       | UPDATE provider             |               |
| 2                                       | SET address = 'New Address' |               |
| 3                                       | WHERE id = 1;               |               |
| Data Output                             | Messages                    | Notifications |
| UPDATE 0                                |                             |               |
| Query returned successfully in 29 msec. |                             |               |

## 12. Запросы на удаление.

| Query   | Query History |
|---|---------------|
| <pre> 1 DELETE FROM natural_person 2 WHERE id = 1; </pre> |               |

| Data Output                             | Messages | Notifications |
|---|----------|---------------|
| DELETE 0                                |          |               |
| Query returned successfully in 39 msec. |          |               |

| Query  | Query History |
|--|---------------|
| <pre> 1 DELETE FROM provider 2 WHERE id IN ( 3     SELECT provider_id 4     FROM product 5     WHERE price &lt; 50 6 ); </pre> |               |

| Data Output                             | Messages | Notifications |
|---|----------|---------------|
| DELETE 0                                |          |               |
| Query returned successfully in 37 msec. |          |               |

### 13. Запросы на вставку.

| Query   | Query History |
|---|---------------|
| <pre> 1 INSERT INTO legal_person (inn, name, phone, email, delivery_address, representative_forename) 2 VALUES ('789456123', '000 SNG', '79095273752', 'email@email.com', 'surgut', 'Ivanov'); 3 4 INSERT INTO natural_person (passport, forename, phone, email, delivery_address) 5 VALUES ('4894165', 'Komarov', '79084893526', 'email@email.com', 'minsk'); </pre> |               |

| Data Output                             | Messages | Notifications |
|---|----------|---------------|
| INSERT 0 1                              |          |               |
| Query returned successfully in 39 msec. |          |               |



14.Используя таблицу с персональными данными из своей БД или demo БД в PostgreSQL отобразите список сотрудников/персон (указав их Фамилию И. в одной колонке), которые в следующем месяце будут отмечать юбилей, с указанием возраста, даты рождения, даты юбилея. Заголовки должны соответствовать шаблону вывода данных.

По причине отсутствия информации о дате рождения клиентов, создадим таблицу “Client”

```
1  -- Создание таблицы
2  CREATE TABLE Client (
3      client_id SERIAL PRIMARY KEY,
4      second_name VARCHAR(255) NOT NULL,
5      name VARCHAR(255) NOT NULL,
6      date_of_birth DATE NOT NULL
7  );
```

Далее заполним её разнообразными данными

| Query | Query History  |
|-------|--|
| 1     | -- Заполнение данными  |
| 2     | INSERT INTO Client (second_name, name, date_of_birth) VALUES |
| 3     | ('Иванов', 'Иван', '1955-12-19'),                            |
| 4     | ('Петров', 'Петр', '1956-12-23'),                            |
| 5     | ('Сидоров', 'Николай', '1957-12-09'),                        |
| 6     | ('Кузнецов', 'Сергей', '1958-12-02'),                        |
| 7     | ('Смирнов', 'Алексей', '1962-12-02'),                        |
| 8     | ('Васильев', 'Василий', '1964-12-28'),                       |
| 9     | ('Павлов', 'Павел', '1965-12-17'),                           |
| 10    | ('Семенов', 'Семен', '1966-12-14'),                          |
| 11    | ('Голубев', 'Глеб', '1967-12-11'),                           |
| 12    | ('Виноградов', 'Виктор', '1968-12-24'),                      |
| 13    | ('Богданов', 'Борис', '1970-12-05'),                         |
| 14    | ('Воробьев', 'Валерий', '1971-12-21'),                       |
| 15    | ('Федоров', 'Федор', '1972-12-18'),                          |
| 16    | ('Михайлов', 'Михаил', '1973-12-07'),                        |

Затем отобразим список сотрудников/персон (указав их Фамилию И. в одной колонке), которые в следующем месяце будут отмечать юбилей, с указанием возраста, даты рождения, даты юбилея

```
1 SELECT
2     CONCAT("second_name", ' ', LEFT("name", 1), '.') AS "ФИО",
3     DATE_PART('year', AGE(NOW(), "date_of_birth")) AS "Возраст",
4     "date_of_birth" AS "Дата рождения",
5     "date_of_birth" + INTERVAL '1 year' * DATE_PART('year', AGE(NOW(), "date_of_birth")) AS "Дата юбилея"
6 FROM Client
7 WHERE
8     DATE_PART('month', "date_of_birth") = DATE_PART('month', NOW() + INTERVAL '1 MONTH')
9     AND DATE_PART('year', AGE(NOW(), "date_of_birth"))::integer % 5 = 4;
```