

## Lab 10

The screenshot shows the pgAdmin 4 interface. On the left, the Object Explorer displays the database structure, with the 'public' schema selected. The main query editor window is titled 'suppliers/postgres@PostgreSQL 17' and contains the following SQL code:

```
2
3
4 CREATE OR REPLACE PROCEDURE insert_flight(
5     p_flight_no VARCHAR,
6     p_scheduled_departure DATE,
7     p_scheduled_arrival DATE,
8     p_departure_airport_id INT,
9     p_arrival_airport_id INT,
10    p_departing_gate VARCHAR,
11    p_arriving_gate VARCHAR,
12    p_airline_id INT,
13    p_status VARCHAR,
14    p_actual_departure DATE,
15    p_actual_arrival DATE,
16    p_created_at DATE,
17    p_update_at DATE
18 )
19 LANGUAGE plpgsql
20 AS $$
21 BEGIN
22     INSERT INTO flights(
23         flight_no, scheduled_departure, scheduled_arrival,
24         departure_airport_id, arrival_airport_id,
25         departing_gate, arriving_gate, airline_id,
26         status, actual_departure, actual_arrival,
27         created_at, update_at
28     )
29     VALUES(
30         p_flight_no, p_scheduled_departure, p_scheduled_arrival,
31         p_departure_airport_id, p_arrival_airport_id,
32         p_departing_gate, p_arriving_gate, p_airline_id,
33         p_status, p_actual_departure, p_actual_arrival,
34         p_created_at, p_update_at
35     );
36 END;
37 $$;
```

The status bar at the bottom indicates 'Total rows: Query complete 00:00:00.064'. A green notification box at the bottom right states 'Query returned successfully in 64 msec.'.

The screenshot shows the pgAdmin 4 interface. The main query editor window is titled 'suppliers/postgres@PostgreSQL 17' and contains the following SQL code:

```
37 $$;
38
39
40 SELECT * FROM flights;
41
42
43 CREATE OR REPLACE PROCEDURE task2(
44     p_flight_id INT, p_status VARCHAR
45 )
46 LANGUAGE plpgsql
47 AS $$
48 BEGIN
49     UPDATE flights SET status = p_status WHERE flight_id = p_flight_id;
50 END;
51 $$;
52
53
54 SELECT * FROM flights;
55
56
```

The status bar at the bottom indicates 'Total rows: Query complete 00:00:00.065'. A green notification box at the bottom right states 'Query returned successfully in 65 msec.'.

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

- Servers
  - PostgreSQL 17
    - Databases (2)
      - postgres
        - suppliers
          - Cast
          - Catalogs
          - Event Triggers
          - Extensions
          - Foreign Data Wrappers
          - Languages
          - Publications
          - Schemas (1)
            - public
              - Aggregates
              - Collations
              - Domains
              - FTS Configurations
              - FTS Dictionaries
              - FTS Parsers
              - FTS Templates
              - Foreign Tables
              - Functions
              - Materialized Views
              - Operators
              - Procedures
              - Sequences
              - Tables (10)
                - airline
                - airport
                - baggage
                - baggage\_check
                - boarding\_pass
                - booking
                - booking\_flight

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query History

```

50 END;
51 $$;
52
53
54 CREATE OR REPLACE PROCEDURE task33(
55     p_departure_airport_id INT
56 )
57 LANGUAGE plpgsql
58 AS $$
59 BEGIN
60     SELECT
61         flight_id,
62         flight_no,
63         scheduled_departure,
64         scheduled_arrival,
65         arrival_airport_id,
66         status
67     FROM flights
68     WHERE departure_airport_id = p_departure_airport_id;
69 END;
70 $$;
71
72
73 CREATE OR REPLACE FUNCTION task4(
74     p_arrival_airport_id INT
75 )
76 RETURNS INTERVAL
77 LANGUAGE plpgsql

```

Data Output Messages Notifications

CREATE PROCEDURE

Query returned successfully in 34 msec.

Total rows: Query complete 00:00:00.034

✓ Query returned successfully in 34 msec. ✕

CRLF Ln 54, Col 1

10:47 02.12.2025

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

- Catalogs
- Event Triggers
- Extensions
- Foreign Data Wrappers
- Languages
- Publications
- Schemas (1)
  - public
    - Aggregates
    - Collations
    - Domains
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    - FTS Parsers
    - FTS Templates
    - Foreign Tables
    - Functions
    - Materialized Views
    - Operators
    - Procedures
    - Sequences
    - Tables (10)
      - airline
      - airport
      - baggage
      - baggage\_check
      - boarding\_pass
      - booking
      - booking\_flight
      - flights
      - passengers
        - Columns
        - Constraints (4)
          - age

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query History

```

74 status VARCHAR
75 FROM flights WHERE departure_airport_id =p_departure_airport_id;
76 END;
77 $$;
78
79
80 CREATE OR REPLACE FUNCTION task4(
81     p_arrival_airport_id INT
82 )
83 RETURNS INTERVAL
84 LANGUAGE plpgsql
85 AS $$
86 DECLARE
87     avg_time INTERVAL;
88 BEGIN
89     SELECT AVG(actual_arrival - scheduled_arrival)
90     INTO avg_time
91     FROM flights
92     WHERE arrival_airport_id = p_arrival_airport_id;
93
94     RETURN avg_time;
95 END;
96 $$;
97
98
99
100 SELECT * FROM flights;
101

```

Data Output Messages Notifications

CREATE FUNCTION

Query returned successfully in 67 msec.

Total rows: Query complete 00:00:00.067

✓ Query returned successfully in 67 msec. ✕

CRLF Ln 80, Col 1

08:50 02.12.2025

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

- Catalogs
- Event Triggers
- Extensions
- Foreign Data Wrappers
- Languages
- Publications
- Schemas (1)
  - public
    - Aggregates
    - Collations
    - Domains
    - FTS Configurations
    - FTS Dictionaries
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    - Materialized Views
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    - Procedures
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    - Tables (10)
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      - airport
      - baggage
      - baggage\_check
      - boarding\_pass
      - booking
      - booking\_flight
      - flights
      - passengers
      - Columns
      - Constraints (4)
      - age

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query History

```

94     RETURN avg_time;
95 END;
96 $$;
97
98
99 CREATE OR REPLACE FUNCTION task5(
100 p_flight_id INT
101 )
102 RETURNS TABLE (
103     passenger_id INT,
104     first_name VARCHAR,
105     last_name VARCHAR,
106     country_of_citizenship VARCHAR
107 )
108
109 LANGUAGE plpgsql
110 AS $$
111 BEGIN
112     RETURN QUERY
113     SELECT p.passenger_id,
114            p.first_name,
115            p.last_name,
116            p.country_of_citizenship FROM booking_flight bf
117 JOIN booking b ON bf.booking_id = b.booking_id
118 JOIN passengers p ON p.passenger_id = b.passenger_id
119 WHERE bf.flight_id = p_flight_id;
120 END;
121 $$;
122
123 SELECT * FROM booking_flight
124

```

Data Output Messages Notifications

CREATE FUNCTION

Query returned successfully in 55 msec.

Total rows: Query complete 00:00:00.055

CRLF Ln 99, Col 1

08:59 02.12.2025

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

- Servers
  - PostgreSQL 17
    - Databases (2)
      - postgres
        - suppliers
          - Casts
          - Catalogs
          - Event Triggers
          - Extensions
          - Foreign Data Wrappers
          - Languages
          - Publications
          - Schemas (1)
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              - Aggregates
              - Collations
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              - FTS Configurations
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              - Materialized Views
              - Operators
              - Procedures
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              - Tables (10)
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                - airport
                - baggage
                - baggage\_check
                - boarding\_pass
                - booking
                - booking\_flight

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query History

```

123
124
125
126 CREATE OR REPLACE FUNCTION task6()
127 RETURNS TABLE(
128     passenger_id INT,
129     first_name VARCHAR,
130     last_name VARCHAR,
131     country_of_citizenship VARCHAR,
132     flights_taken INT
133 )
134
135 LANGUAGE plpgsql
136 AS $$
137 BEGIN
138     RETURN QUERY
139     SELECT
140         p.passenger_id,
141         p.first_name,
142         p.last_name,
143         p.country_of_citizenship,
144         COUNT(b.booking_id) AS flights_taken
145     FROM passengers p JOIN booking b ON b.passenger_id = p.passenger_id
146     GROUP BY p.passenger_id
147     ORDER BY flights_taken DESC
148     LIMIT 1;
149 END;
150 $$;
151
152 SELECT * FROM booking_flight

```

Data Output Messages Notifications

CREATE FUNCTION

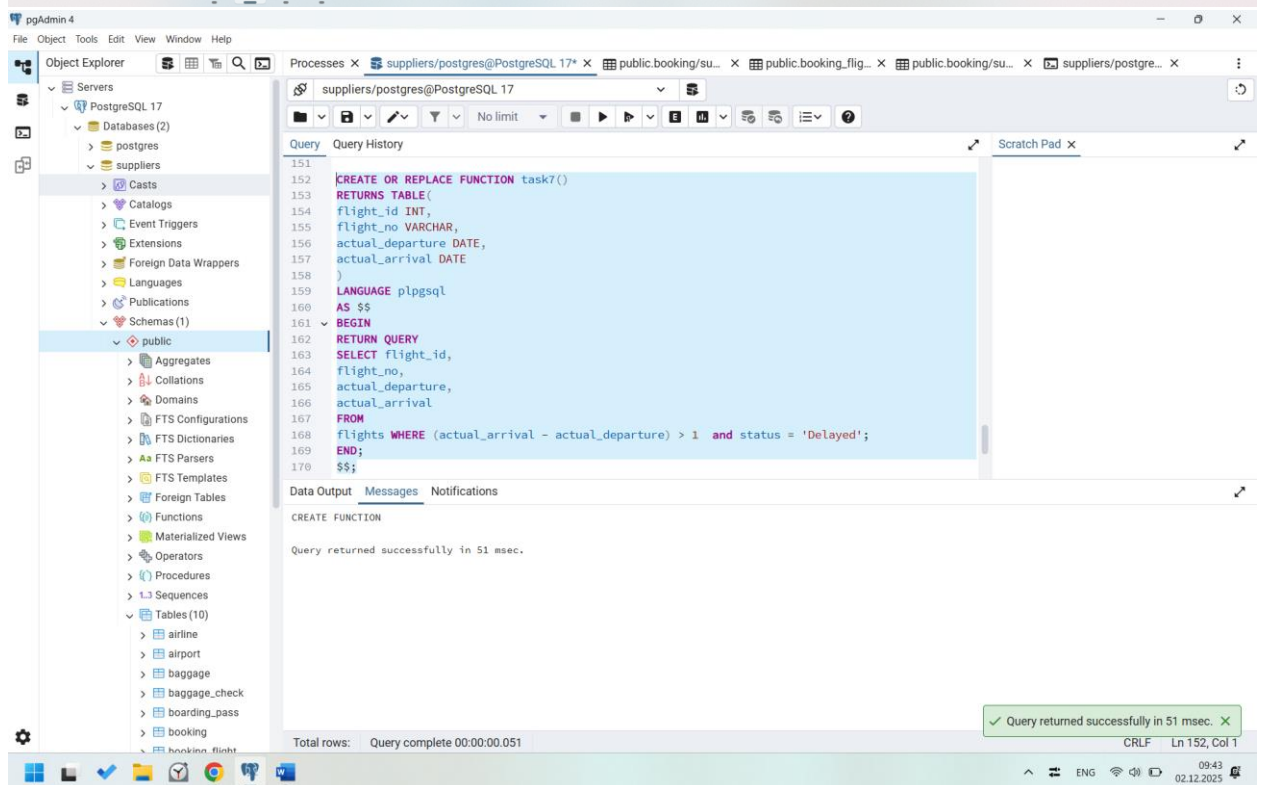
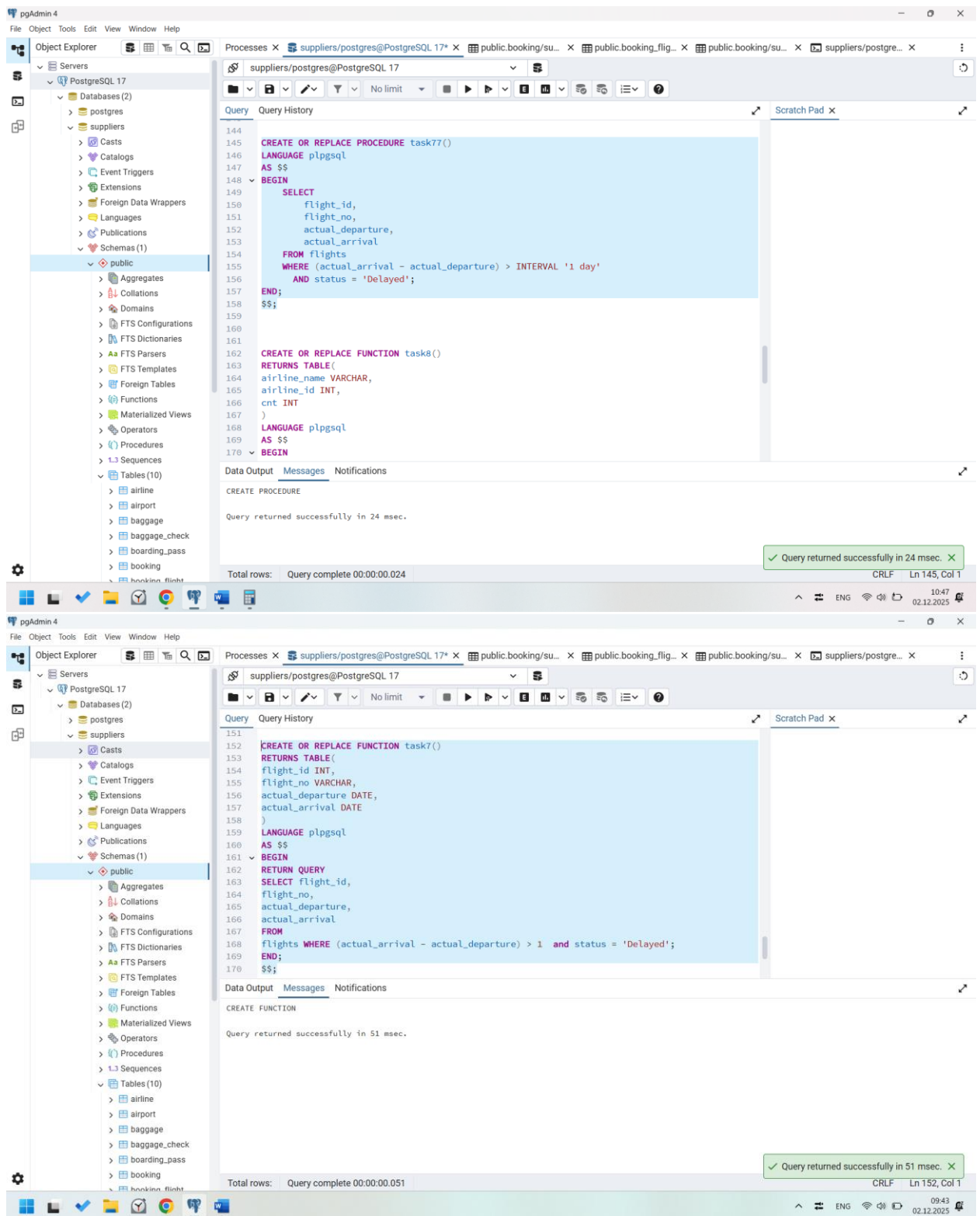
Query returned successfully in 55 msec.

Total rows: Query complete 00:00:00.055

Query returned successfully in 55 msec.

CRLF Ln 126, Col 1

09:31 02.12.2025



pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

- Servers
  - PostgreSQL 17
    - Databases (2)
      - postgres
        - suppliers
          - Aggregates
          - Collations
          - Domains
          - FTS Configurations
          - FTS Dictionaries
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          - FTS Templates
          - Foreign Tables
          - Functions
          - Materialized Views
          - Operators
          - Procedures
          - Sequences
          - Tables (10)
            - airline
            - airport
            - baggage
            - baggage\_check
            - boarding\_pass
            - booking
            - booking\_flight

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query

```
172  
173  
174 CREATE OR REPLACE FUNCTION task8()  
175 RETURNS TABLE(  
176     airline_name VARCHAR,  
177     airline_id INT,  
178     cnt INT  
179 )  
180 LANGUAGE plpgsql  
181 AS $$  
182 BEGIN  
183 RETURN QUERY  
184 SELECT a.airline_name, a.airline_id, COUNT(f.airline_id) AS cnt  
185 FROM airline a JOIN flights f ON a.airline_id = f.airline_id  
186 GROUP BY a.airline_name, a.airline_id;  
187 END;  
188 $$;  
189  
190 SELECT * FROM airline;  
191
```

Query History

Scratch Pad

Data Output Messages Notifications

CREATE FUNCTION

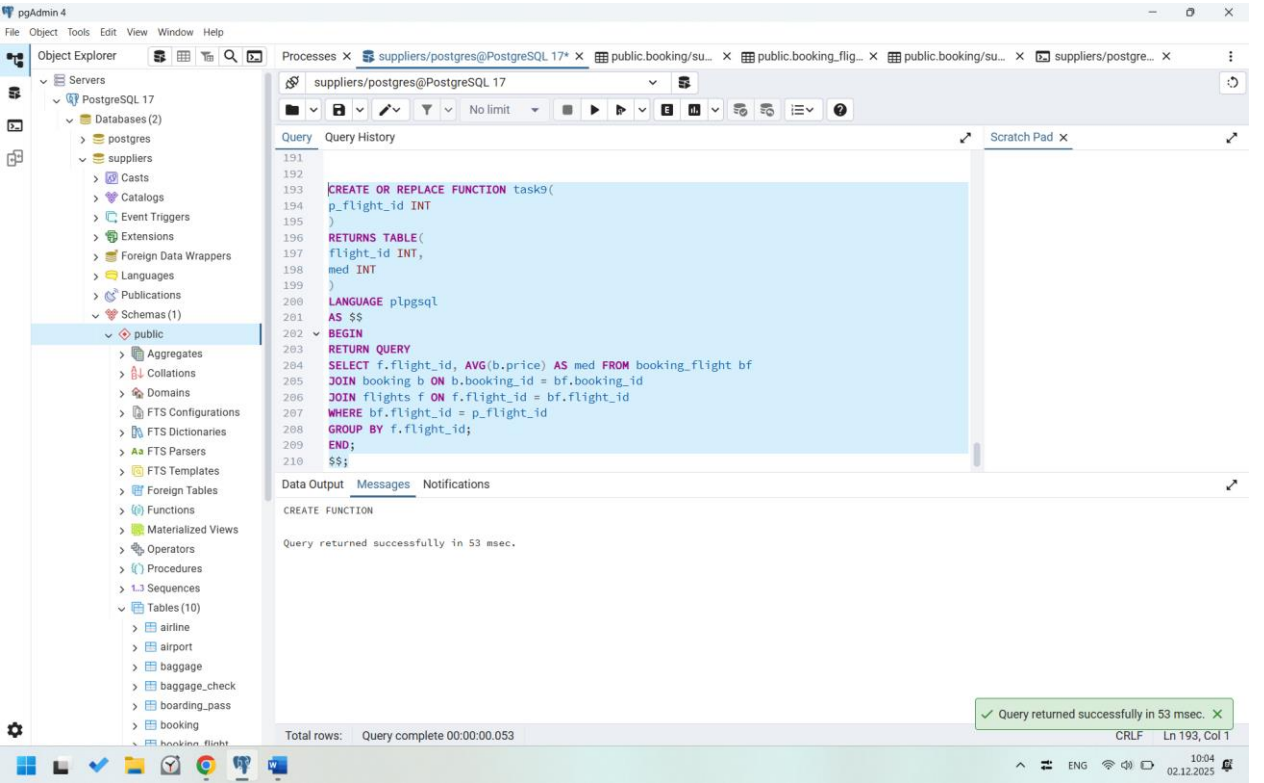
Query returned successfully in 56 msec.

Total rows: Query complete 00:00:00.056

✓ Query returned successfully in 56 msec. ✕

CRLF Ln 174, Col 1

09:54  
02.12.2025





pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

- Servers
  - PostgreSQL 17
    - Databases (2)
      - postgres
        - suppliers
          - Aggregates
          - Collations
          - Domains
          - FTS Configurations
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          - FTS Parsers
          - FTS Templates
          - Foreign Tables
          - Functions
          - Materialized Views
          - Operators
          - Procedures
          - Sequences
          - Tables (10)
            - airline
            - airport
            - baggage
            - baggage\_check
            - boarding\_pass
            - booking
            - booking\_flight

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query History

```
191 JOIN booking b ON b.booking_id = bf.booking_id
192 JOIN flights f ON f.flight_id = bf.flight_id
193 WHERE bf.flight_id = p_flight_id
194 GROUP BY f.flight_id;
195
196 END;
197 $$;
198
199
200 CREATE OR REPLACE PROCEDURE task101()
201 LANGUAGE plpgsql
202 AS $$
203 BEGIN
204     SELECT
205         f.flight_id,
206         f.departure_airport_id,
207         f.arrival_airport_id,
208         b.price AS ticket_price
209     FROM booking_flight bf
210     JOIN booking b ON bf.booking_id = b.booking_id
211     JOIN flights f ON f.flight_id = bf.flight_id
212     ORDER BY b.price DESC
213     LIMIT 1;
214 END;
215 $$;
216
217
```

Data Output Messages Notifications

CREATE PROCEDURE

Query returned successfully in 27 msec.

Total rows: Query complete 00:00:00.027

✓ Query returned successfully in 27 msec. ✕

CRLF Ln 200, Col 1

10:49 02.12.2025

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File Object Tools Edit View Window Help

Object Explorer

- Servers
  - PostgreSQL 17
    - Databases (2)
      - postgres
        - suppliers
          - Aggregates
          - Collations
          - Domains
          - FTS Configurations
          - FTS Dictionaries
          - FTS Parsers
          - FTS Templates
          - Foreign Tables
          - Functions
          - Materialized Views
          - Operators
          - Procedures
          - Sequences
          - Tables (10)
            - airline
            - airport
            - baggage
            - baggage\_check
            - boarding\_pass
            - booking
            - booking\_flight

Processes

- suppliers/postgres@PostgreSQL 17\*
- public.booking/su...
- public.booking\_flg...
- public.booking/su...
- suppliers/postgre...

Query History

```
211
212
213 CREATE OR REPLACE FUNCTION task10()
214 RETURNS TABLE(
215     flight_id INT,
216     departure_airport_id INT,
217     arrival_airport_id INT
218 )
219 LANGUAGE plpgsql
220 AS $$
221 BEGIN
222     RETURN QUERY
223     SELECT f.flight_id, f.departure_airport_id, f.arrival_airport_id FROM booking_flight bf
224     JOIN booking b ON bf.booking_id = b.booking_id
225     JOIN flights f ON f.flight_id = bf.flight_id
226     ORDER BY b.price DESC
227     LIMIT 1;
228 END;
229 $$;
230
```

Data Output Messages Notifications

CREATE FUNCTION

Query returned successfully in 30 msec.

Total rows: Query complete 00:00:00.030

✓ Query returned successfully in 30 msec. ✕

CRLF Ln 213, Col 1

10:41 02.12.2025