

The screenshot shows the DBeaver IDE interface with the following components:

- Database Explorer**: Shows the database structure under "postgres@localhost".
- SQL Editor**: The active tab is "1.sql". The code is a PostgreSQL procedure named "insert\_flight".

```
CREATE OR REPLACE PROCEDURE insert_flight(
    p_flight_id INT,
    p_flight_no VARCHAR,
    p_scheduled_departure DATE,
    p_scheduled_arrival DATE,
    p_departure_airport_id INT,
    p_arrival_airport_id INT,
    p_departing_gate VARCHAR,
    p_arriving_gate VARCHAR,
    p_airline_id INT,
    p_status VARCHAR,
    p_actual_departure DATE,
    p_actual_arrival DATE
)
LANGUAGE plpgsql
AS $$

BEGIN
    INSERT INTO flights(
        flight_id, flight_no, scheduled_departure, scheduled_arrival,
        departure_airport_id, arrival_airport_id, departing_gate,
        arriving_gate, airline_id, status, actual_departure, actual_arrival,
        created_at, update_at
    )
    VALUES(
        flight_id p_flight_id, flight_no p_flight_no, scheduled_departure p_scheduled_departure, scheduled_arrival p_sche
    );
    p_arriving_gate, p_airline_id, p_status, p_actual_departure,
    p_actual_arrival, CURRENT_DATE, CURRENT_DATE
);
END;
$$
```
- Services**: Shows the transaction history with "1.sql" being the most recent.
- Files**: Shows the file system structure on the desktop, with "1.sql" highlighted in the "lab 10" folder.
- Bottom Status Bar**: Displays "32:1 CRLF UTF-8 4 spaces" and other icons.

The screenshot shows a PostgreSQL database management interface with the following components:

- Database Explorer**: Shows the connection to `postgres@localhost` and the database `db`. It lists objects like `public`, `Database Objects`, `lab2_db`, `postgres`, and `Server Objects`.
- Editor**: A code editor window titled `1.sql` containing the following SQL code:

```
CREATE OR REPLACE PROCEDURE update_flight_status(
    p_flight_id INT,
    p_new_status VARCHAR
)
LANGUAGE plpgsql
AS $$
BEGIN
    UPDATE flights
    SET status = p_new_status,
        update_at = CURRENT_DATE
    WHERE flight_id = p_flight_id;
END;
$$;
```
- Services**: A transaction history window showing the execution of `1.sql` (45 ms), `def.sql`, and `3.sql` (161 ms).
- Files**: A file explorer window showing the directory structure of the user's desktop, including files like `Lab3`, `Desktop`, `lab 10`, and various links to applications.
- Bottom Status Bar**: Shows the current file path (`Desktop > lab 10 > 1.sql`), encoding (`CRLF`), character set (`UTF-8`), and other settings.

The screenshot shows the DBeaver IDE interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, Close, etc.), a search bar, and a version control dropdown.
- Database Explorer:** Shows the connection to `postgres@localhost` and the database `db`. It lists objects: `public`, `Database Objects`, `lab2_db`, `postgres`, and `Server Objects`.
- SQL Editor (1.sql):** Contains the following PL/pgSQL code:

```
CREATE OR REPLACE PROCEDURE flights_from_airport(
    p_airport_id INT
)
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT *
    FROM flights
    WHERE departure_airport_id = p_airport_id;
END;
$$;
```
- Services:** Shows a transaction history with the following entries:
  - `3.sql` completed in `161 ms`
  - `def.sql`
  - `1.sql` completed in `35 ms`
- Files:** Shows the local file system structure:
  - `Lab3` (C:\Users\amina\Desktop)
  - `Desktop` (C:\Users\amina\Desktop)
    - `def`
    - `KBTU`
    - `lab 10` (selected)
      - `1.sql` [postgres@localhost]
    - `projects`
    - `работа`
    - `DBeaver.lnk`
    - `desktop.ini`
    - `Discord.lnk`
    - `Notion.lnk`
    - `Spotify.lnk`
    - `Telegram.lnk`
    - `Visual Studio Code.lnk`
  - `lab 9` (C:\Users\amina\Desktop)
  - `Scratches and Consoles`
- Bottom Status Bar:** Displays the path `Desktop > lab 10 > 1.sql`, encoding `CRLF`, character set `UTF-8`, and spaces `4 spaces`.

The screenshot shows a PostgreSQL development environment with several panes:

- Database Explorer**: Shows the connection to `postgres@localhost` and the database `db`. It lists objects: `public`, `Database Objects`, `lab2_db` (with 3 objects), `postgres` (with 1 object), and `Server Objects`.
- Code Editor (1.sql)**: Displays the SQL code for creating a function `avg_arrival_delay`. The code uses a cursor `v_avg` to calculate the average arrival delay for flights at a specific airport.
- Services**: Shows the transaction history with entries for `3.sql`, `def.sql`, and `1.sql`.
- Output**: Shows the execution results of the `1.sql` script, indicating it completed in 7 ms.
- Files**: Shows the file system structure on the local desktop, including `Lab3`, `Desktop`, `lab 10` (which contains `1.sql`), `projects`, `работа`, and various links to external files.

```
CREATE OR REPLACE FUNCTION avg_arrival_delay(p_airport_id INT)
RETURNS INTERVAL
LANGUAGE plpgsql
AS $$
DECLARE
    v_avg INTERVAL;
BEGIN
    SELECT AVG(actual_arrival - scheduled_arrival)
    INTO v_avg
    FROM flights
    WHERE arrival_airport_id = p_airport_id
        AND actual_arrival IS NOT NULL
        AND scheduled_arrival IS NOT NULL;

    RETURN v_avg;
END;
$$;
```

```
AND scheduled_arrival IS NOT NULL;

RETURN v_avg;
END;
$$

[2025-12-02 12:05:08] completed in 7 ms
```

Bottom status bar: 18:1 CRLF UTF-8 4 spaces

The screenshot shows a PostgreSQL database management interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, etc.), a search bar, and a settings gear icon.
- Database Explorer:** Shows the connection to `postgres@localhost` and the database `db`. It lists objects: `public`, `Database Objects`, `lab2_db` (with 3 objects), `postgres` (with 1 object), and `Server Objects`.
- Central Editor:** A code editor titled `1.sql` containing the following PL/pgSQL code:

```
CREATE OR REPLACE PROCEDURE list_passengers_by_flight(
    p_flight_no VARCHAR
)
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT p.*
    FROM flights f
    JOIN booking_flight bf 1<->1..n: ON f.flight_id = bf.flight_id
    JOIN booking b 1..n->1: ON b.booking_id = bf.booking_id
    JOIN passengers p ON p.passenger_id = b.passenger_id
    WHERE f.flight_no = p_flight_no;
END;
$$;
```
- File Explorer:** Shows the project structure under `Lab3`: `Desktop`, `lab 10` (selected), `projects`, `работа`, `DBeaver.lnk`, `desktop.ini`, `Discord.lnk`, `Notion.lnk`, `Spotify.lnk`, `Telegram.lnk`, `Visual Studio Code.lnk`, `lab 9`, and `Scratches and Consoles`.
- Services:** A transaction history showing the execution of `3.sql` (161 ms), `def.sql`, and `1.sql` (34 ms).
- Bottom Status Bar:** Displays the date and time (`[2025-12-02 12:05:40]` completed in 6 ms), and file encoding information (`15:1 CRLF UTF-8 4 spaces`).

The screenshot shows a PostgreSQL database management interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, Close, Print, Find, Copy, Paste, Undo, Redo), a search bar, and a settings gear icon.
- Database Explorer:** Shows the connection to `postgres@localhost` and the database `db`. It lists objects: `public`, `Database Objects`, `lab2_db` (with 3 items), `postgres` (with 1 item), and `Server Objects`.
- Code Editor (1.sql):** Displays the SQL code for creating a stored procedure `top_flyer()`. The code uses `plpgsql` language and joins `booking_flight`, `booking`, and `passengers` tables to find the top flyer by flight count. The editor shows syntax highlighting and line numbers from 1 to 14. A green box highlights the main query logic.
- File Explorer (Files):** Shows the project structure under `Lab3`. The `lab 10` folder is selected, containing files like `1.sql`, `projects`, `работа`, and various links to external files.
- Services:** Shows a transaction history with entries for `3.sql` (161 ms), `def.sql`, and `1.sql` (38 ms). The `1.sql` entry is highlighted.
- Bottom Status Bar:** Displays the date and time (`[2025-12-02 12:06:13]` completed in 4 ms), file encoding (`CRLF`), character set (`UTF-8`), and code style settings (`4 spaces`).

```
CREATE OR REPLACE PROCEDURE top_flyer()
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT p.passenger_id, p.first_name, p.last_name, COUNT(*) AS flights_taken
    FROM booking_flight bf
    JOIN booking b 1..n<->1: ON b.booking_id = bf.booking_id
    JOIN passengers p ON p.passenger_id = b.passenger_id
    GROUP BY p.passenger_id
    ORDER BY flights_taken DESC
    LIMIT 1;
END;
$$;
```

```
GROUP BY p.passenger_id
ORDER BY flights_taken DESC
LIMIT 1;
END;
$$
```

[2025-12-02 12:06:13] completed in 4 ms

14:1 CRLF UTF-8 4 spaces

The screenshot shows a PostgreSQL database management interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, Close, Print, Find, Copy, Paste, Undo, Redo), a search bar, and a settings gear icon.
- Database Explorer:** Shows the connection to `postgres@localhost` and the current database `db`. It lists objects: `public`, `Database Objects`, `lab2_db`, `postgres`, and `Server Objects`.
- Code Editor:** The active tab is `1.sql`. The code defines a procedure `delayed_over_24h` that selects flights where the actual departure is more than 24 hours after the scheduled departure. The code is as follows:

```
CREATE OR REPLACE PROCEDURE delayed_over_24h()
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT *
    FROM flights
    WHERE actual_departure - scheduled_departure > INTERVAL '24 hours';
END;
$$;
```

- File Explorer:** Shows the project structure under `Lab3` and `Desktop`. The folder `lab 10` is selected, containing the file `1.sql[postgres@localhost]`. Other files include `projects`, `работа`, `DBeaver.lnk`, `desktop.ini`, `Discord.lnk`, `Notion.lnk`, `Spotify.lnk`, `Telegram.lnk`, `Visual Studio Code.lnk`, `lab 9`, and `Scratches and Consoles`.
- Services:** Shows the transaction history with the following entries:

  - `3.sql` completed in `161 ms`
  - `def.sql`
  - `1.sql` completed in `38 ms`

- Execution Results:** Displays the output of the `1.sql` query, which is identical to the procedure definition:

```
SELECT *
FROM flights
WHERE actual_departure - scheduled_departure > INTERVAL '24 hours';
END;
$$
```

[2025-12-02 12:06:49] completed in 5 ms

- Bottom Status Bar:** Shows the file path `Desktop > lab 10 > 1.sql`, encoding `CRLF`, character set `UTF-8`, and width `4 spaces`.

The screenshot shows a PostgreSQL database management interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, Close, Print, Find, Copy, Paste, Undo, Redo), a search bar, and a settings gear icon.
- Database Explorer:** Shows the connection to `postgres@localhost` (3 of 4). Under the `db` schema, there are objects: `public`, `Database Objects`, `lab2_db` (3), `postgres` (1 of 3), and `Server Objects`.
- Code Editor:** The active tab is `1.sql`. The code is a PostgreSQL procedure definition:

```
CREATE OR REPLACE PROCEDURE avg_price_for_flight(
    p_flight_id INT
)
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT AVG(b.price)
    FROM booking b
    JOIN booking_flight bf 1<->1..n: ON bf.booking_id = b.booking_id
    WHERE bf.flight_id = p_flight_id;
END;
$$;
```
- File Explorer:** Shows the file structure at `C:\Users\amina\Desktop\lab 10`. The file `1.sql` is highlighted.
- Services:** Shows transaction history and execution times for files `3.sql`, `def.sql`, and `1.sql`.
- Bottom Status Bar:** Displays the path `Desktop > lab 10 > 1.sql`, file statistics (13:1 CRLF, UTF-8, 4 spaces), and a save icon.

The main code editor area contains the following SQL script:

```
CREATE OR REPLACE PROCEDURE avg_price_for_flight(
    p_flight_id INT
)
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT AVG(b.price)
    FROM booking b
    JOIN booking_flight bf 1<->1..n: ON bf.booking_id = b.booking_id
    WHERE bf.flight_id = p_flight_id;
END;
$$;
```

The Services panel shows the execution of the `1.sql` file:

```
FROM booking b
JOIN booking_flight bf ON bf.booking_id = b.booking_id
WHERE bf.flight_id = p_flight_id;
END;
$$
```

[2025-12-02 12:07:23] completed in 6 ms

The screenshot shows a PostgreSQL database management interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, Close, Print, Find, Copy, Paste, Undo, Redo), a search bar, and a settings gear icon.
- Database Explorer:** Shows the connection to `postgres@localhost` and the current database `db`. It lists objects: `public`, `Database Objects`, `lab2_db`, `postgres`, and `Server Objects`.
- Code Editor:** The active tab is `1.sql`. The code defines a function `count_flights_by_airline` that counts flights for a given airline ID. The code is as follows:

```
CREATE OR REPLACE FUNCTION count_flights_by_airline(p_airline_id INT)
RETURNS INT
LANGUAGE plpgsql
AS $$$
DECLARE
    v_count INT;
BEGIN
    SELECT COUNT(*)
    INTO v_count
    FROM flights
    WHERE airline_id = p_airline_id;

    RETURN v_count;
END;
$$;
```

- File Explorer:** Shows the project structure under `Lab3` and `Desktop`. The file `1.sql` is selected in the `lab 10` folder.
- Services:** Shows the transaction history with the following entries:

- `3.sql` completed in 161 ms
- `def.sql`
- `1.sql` completed in 36 ms

- Bottom Status Bar:** Displays the file path (`Desktop > lab 10 > 1.sql`), encoding (`CRLF`), character set (`UTF-8`), and other settings.

The screenshot shows a PostgreSQL database management interface with the following components:

- Top Bar:** Includes icons for file operations (New, Open, Save, Close, Print, Find, Copy, Paste, Undo, Redo), a search bar, and a settings gear icon.
- Database Explorer:** Shows the connection to `postgres@localhost` and the current database `db`. It lists objects: `public`, `Database Objects`, `lab2_db` (with 3 items), `postgres` (with 1 item), and `Server Objects`.
- Code Editor:** The active tab is `1.sql`. The code is a PostgreSQL stored procedure named `highest_ticket_flight()` that selects the flight with the highest price from the `booking` table, joining it with `booking_flight`, `flights`, and `airport` tables to get departure and arrival airport names. It orders by price in descending order and limits the result to 1. The code ends with a dollar sign (\$) symbol.
- Files:** A sidebar showing the project structure. The `lab 10` folder is selected, containing `1.sql` (PostgreSQL), `projects`, `работа`, `DBeaver.lnk`, `desktop.ini`, `Discord.lnk`, `Notion.lnk`, `Spotify.lnk`, `Telegram.lnk`, and `Visual Studio Code.lnk`. Other folders like `Lab3`, `Desktop`, `lab 9`, and `Scratches and Consoles` are also listed.
- Services:** A panel showing the transaction history. The most recent transaction is `1.sql` completed in 33 ms. Previous transactions include `3.sql` (161 ms) and `def.sql`.
- Bottom Status Bar:** Displays the file path (`Desktop > lab 10 > 1.sql`), encoding (CRLF), character set (UTF-8), and other settings (4 spaces, save icon).

```
CREATE OR REPLACE PROCEDURE highest_ticket_flight()
LANGUAGE plpgsql
AS $$
BEGIN
    SELECT f.flight_no,
           dep.airport_name AS departure_airport,
           arr.airport_name AS arrival_airport,
           b.price AS max_price
    FROM booking b
    JOIN booking_flight bf 1<->1..n: ON b.booking_id = bf.booking_id
    JOIN flights f 1..n<->1: ON f.flight_id = bf.flight_id
    JOIN airport dep 1..n<->1: ON dep.airport_id = f.departure_airport_id
    JOIN airport arr 1..n<->1: ON arr.airport_id = f.arrival_airport_id
    ORDER BY b.price DESC
    LIMIT 1;
END;
$$;
```

```
JOIN airport arr ON arr.airport_id = f.arrival_airport_id
ORDER BY b.price DESC
LIMIT 1;
END;
$$
```

[2025-12-02 12:08:58] completed in 5 ms

18:1 CRLF UTF-8 4 spaces