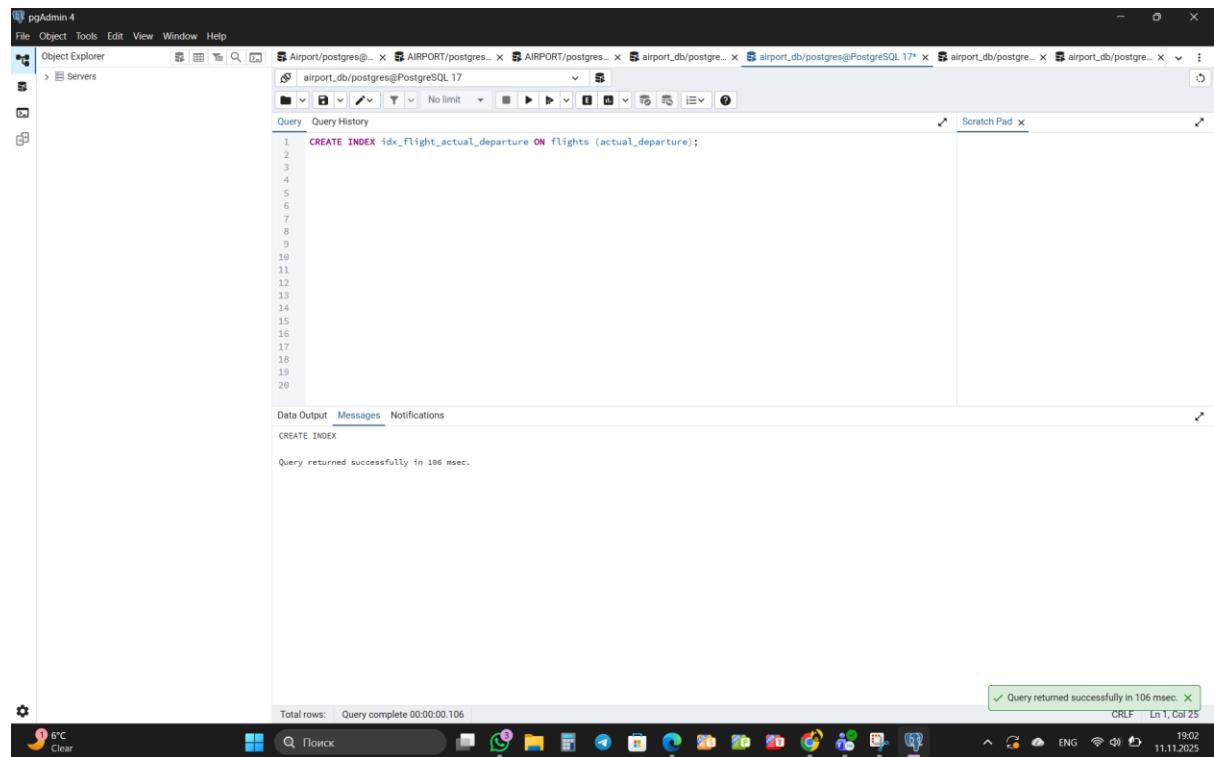


LAB 7. Nurlan Olzhas

1)



The screenshot shows the pgAdmin 4 interface with a query editor window. The query being run is:

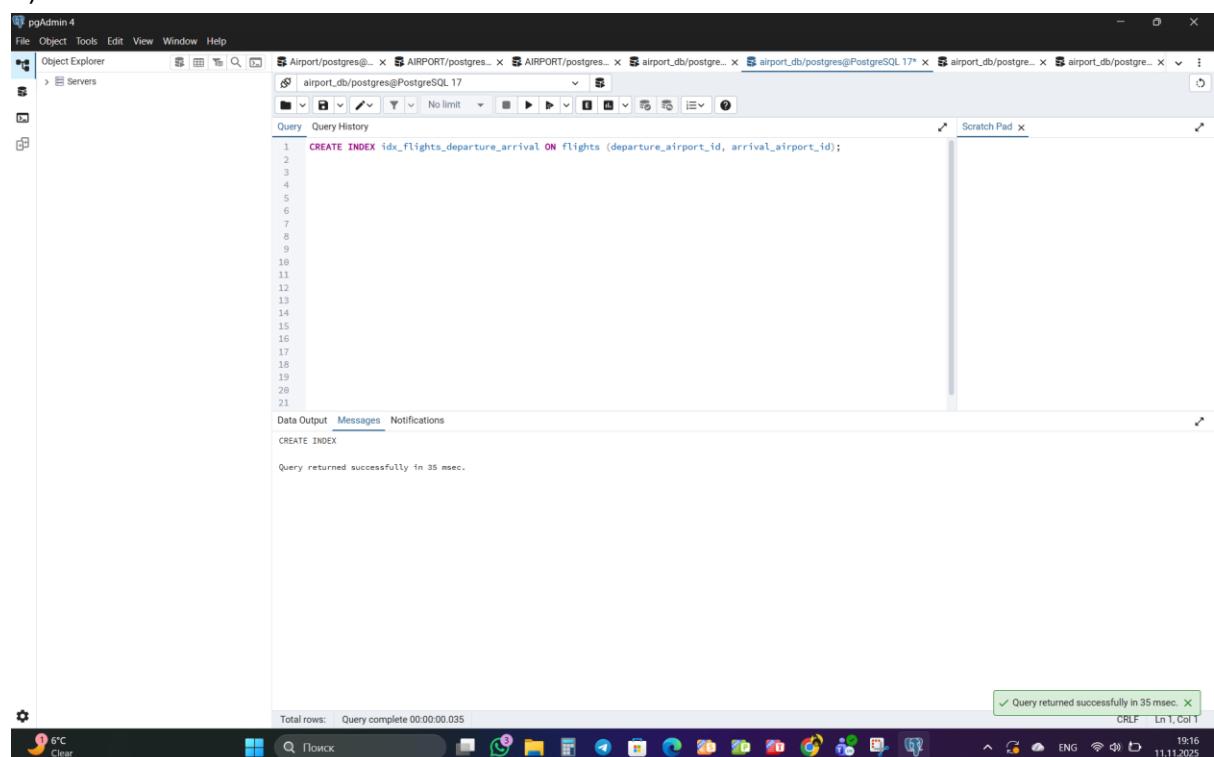
```
1 CREATE INDEX idx_flight_actual_departure ON flights (actual_departure);  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20
```

The 'Messages' tab shows the output of the command:

```
CREATE INDEX  
  
Query returned successfully in 106 msec.
```

The status bar at the bottom right indicates "Query returned successfully in 106 msec." and "CRLF Ln 1, Col 25". The system tray shows the date and time as 11.11.2025.

2)



The screenshot shows the pgAdmin 4 interface with a query editor window. The query being run is:

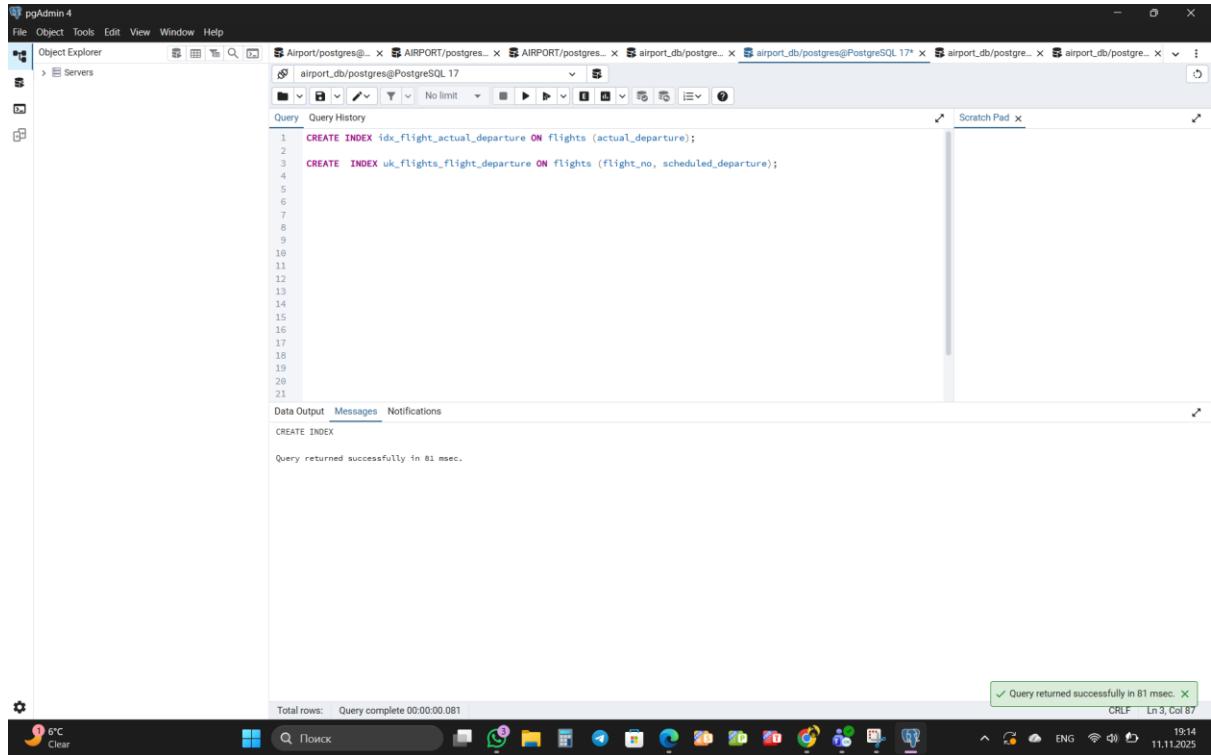
```
1 CREATE INDEX idx_flights_departure_arrival ON flights (departure_airport_id, arrival_airport_id);  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21
```

The 'Messages' tab shows the output of the command:

```
CREATE INDEX  
  
Query returned successfully in 35 msec.
```

The status bar at the bottom right indicates "Query returned successfully in 35 msec." and "CRLF Ln 1, Col 1". The system tray shows the date and time as 11.11.2025.

3



4

The screenshot shows the pgAdmin 4 interface with multiple tabs open. The active tab is the SQL tab, which contains the following query:

```
1 EXPLAIN ANALYZE
2 SELECT *
3 FROM passengers
4 WHERE country_of_citizenship = 'Philippines'
5 AND date_of_birth BETWEEN '1984-01-01' AND '1984-12-31';
```

Below the query, the Explain Plan is displayed:

```
1 Seq Scan on passengers (cost=0.00..12.02 rows=1 width=64) (actual time=0.052..0.136 rows=2 loops=1)
2   Filter: ((date_of_birth >= '1984-01-01'::date) AND (date_of_birth <= '1984-12-31'::date) AND ((country_of_citizenship)::text = 'Philippines'::text))
3 Rows Removed by Filter: 399
4 Planning Time: 2.888 ms
5 Execution Time: 0.152 ms
```

The status bar at the bottom right indicates "Successfully run. Total query runtime: 82 msec. 5 rows affected." and "CRLF Ln 4, Col 29".



The screenshot shows the pgAdmin 4 interface with multiple tabs open. The active tab is the SQL tab, which contains the following query:

```
1 CREATE INDEX idx_passengers_citizenship_dob ON passengers(country_of_citizenship, date_of_birth);
```

The status bar at the bottom right indicates "Query returned successfully in 72 msec."



5)

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer > Servers

Query History

```

1 EXPLAIN ANALYZE
2 SELECT *
3 FROM passengers
4 WHERE country_of_citizenship = 'Philippines'
5 AND date_of_birth BETWEEN '1984-01-01' AND '1984-12-31';
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

```

Data Output Messages Notifications

QUERY PLAN

```

1 Index Scan using idx_passengers_citizenship Dob on passengers (cost=0.27..8.29 rows=1 width=64) (actual time=0.055..0.057 loops=1)
2 Index Cond: ((country_of_citizenship)=text AND (date_of_birth >= '1984-01-01')::date) AND (date_of_birth <= '1984-12-31')::date
3 Planning Time: 0.596 ms
4 Execution Time: 0.083 ms

```

Total rows: 4 Query complete 00:00:00.048

Successfully run. Total query runtime: 48 msec. 4 rows affected.

USD/INR -0.25% 19:19 CRLF Ln 4, Col 29

Помощь 11.11.2025

5)

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer > Servers

Query History

```

1 EXPLAIN ANALYZE
2 SELECT *
3 FROM flights
4 WHERE departure_airport_id = 1 AND arrival_airport_id = 2;
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

```

Data Output Messages Notifications

QUERY PLAN

```

1 Bitmap Heap Scan on flights (cost=4.30..9.97 rows=2 width=61) (actual time=0.062..0.064 rows=2 loops=1)
2 Recheck Cond: ((departure_airport_id = 1) AND (arrival_airport_id = 2))
3 Heap Blocks: exact=2
4 -> Bitmap index Scan on idx_flights_departure_arrival (cost=0.00..4.29 rows=2 width=0) (actual time=0.044..0.044 rows=2 loops=1)
5 Index Cond: ((departure_airport_id = 1) AND (arrival_airport_id = 2))
6 Planning Time: 5.709 ms
7 Execution Time: 0.087 ms

```

Total rows: 7 Query complete 00:00:00.052

Successfully run. Total query runtime: 52 msec. 7 rows affected.

5°C Clear 19:28 CRLF Ln 3, Col 59

Помощь 11.11.2025

6)

The screenshot shows the pgAdmin 4 interface. In the top menu bar, the path 'airport_db/postgres@PostgreSQL_17' is selected. The main window displays a query history with the following SQL command:

```
1 CREATE INDEX idx_unique_passport
2 ON passengers (passport_number);
```

Below the query history, there are tabs for 'Data Output', 'Messages', and 'Notifications'. The 'Messages' tab is active, showing the message: 'CREATE INDEX'. Below this, it says 'Query returned successfully in 41 msec.' A status bar at the bottom indicates 'Total rows: 0' and 'Query complete 00:00:00.041'. A green notification bar at the top right says 'Query returned successfully in 41 msec.' with a checkmark icon.

7)

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer > Servers

Query History

```
1 CREATE INDEX idx_passenger_details
2 ON passengers (first_name, last_name, date_of_birth, country_of_citizenship);
```

Data Output Messages Notifications

CREATE INDEX

Query returned successfully in 33 msec.

Total rows: 4 Query complete 00:00:00.033

USD/INR -0.25% Помощь 19:38 ENG 11.11.2025

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer > Servers

Query History

```
1 SET enable_seqscan = OFF;
2
3 EXPLAIN ANALYZE
4 SELECT ... FROM passengers
5 WHERE country_of_citizenship = 'PH'
6 AND date_of_birth BETWEEN '1984-01-01' AND '1984-12-31'
```

Data Output Messages Notifications

QUERY PLAN

```
1 Index Scan using idx_passengers_citizenship_idx on passengers (cost=0.27..8.29 rows=1 width=64) (actual time=0.019..0.019 rows=1)
2 Index Cond: ((country_of_citizenship)=text AND (date_of_birth >= '1984-01-01') AND (date_of_birth <= '1984-12-31'))
3 Planning Time: 0.014 ms
4 Execution Time: 0.036 ms
```

Showing rows: 1 to 4 Page No: 1 of 1 << >> >>

Total rows: 4 Query complete 00:00:00.082

Помощь 21:34 ENG 11.11.2025

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer > Servers

Query History

```
1 Successfull run. Total query runtime: 82 msec. 4 rows affected.
```

8)

The screenshot shows the pgAdmin 4 interface with multiple tabs open. The current tab is 'Query' with the history entry:

```
1 SELECT indexname, indexdef
2   from pg_indexes
3  where tablename = 'passengers'
```

Below the query results, the 'Data Output' tab displays a table of indexes:

indexname	indexdef
idx_passengers_names_dob_country	CREATE INDEX idx_passengers_names_dob_country ON public.passenger (first_name, last_name, date_of_birth, country_of_citizenship)
idx_passenger_citizenship_dob	CREATE INDEX idx_passenger_citizenship_dob ON public.passenger (country_of_citizenship, date_of_birth)
idx_unique_passport	CREATE INDEX idx_unique_passport ON public.passenger (passport_number)
idx_unique_passports	CREATE INDEX idx_unique_passports ON public.passenger (passport_number)
idx_passenger_details	CREATE INDEX idx_passenger_details ON public.passenger (first_name, last_name, date_of_birth, country_of_citizenship)

At the bottom of the window, a message bar indicates: "Successfully run. Total query runtime: 417 msec. 5 rows affected." and "CRLF Ln 1, Col 17".

The screenshot shows the pgAdmin 4 interface with multiple tabs open. The current tab is 'Query' with the history entry:

```
1 DROP INDEX IF EXISTS idx_actual_departure;
2 DROP INDEX IF EXISTS idx_unique_flight_no_sched_dep;
3 DROP INDEX IF EXISTS idx_dep_arr_airports;
4 DROP INDEX IF EXISTS idx_unique_passport;
5 DROP INDEX IF EXISTS idx_passenger_details;
```

Below the query results, the 'Data Output' tab displays the message: "Query returned successfully in 68 msec."

At the bottom of the window, a message bar indicates: "Query returned successfully in 68 msec." and "CRLF Ln 5, Col 44".