



Object Explorer



Lab7.sql x

Servers (2)

PostgreSQL 17

Databases (2)

airport

Casts

Catalogs

Event Triggers

Extensions

Foreign Data Wrappers

Languages

Publications

Schemas

Subscriptions

postgres

Casts

Catalogs

Event Triggers

Extensions

Foreign Data Wrappers

Languages

Publications

Schemas

Subscriptions

Login/Group Roles

Tablespaces

PostgreSQL 18

airport/postgres@PostgreSQL 17



No limit



Query

Query History

5419

5420 -- 1

CREATE INDEX act_dep_index ON flights(actual_departure);

5421

5422

Data Output

Messages

Notifications

CREATE INDEX

Query returned successfully in 58 msec.

Scratch Pad x



Total rows:

Query complete 00:00:00.058

✓ Query returned successfully in 58 msec. ✗

CRLF

Ln 5422, Col 1

Object Explorer Lab7.sql x

Servers (2) airport/postgres@PostgreSQL 17

Databases (2)

- airport
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas
 - Subscriptions
- postgres
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas
 - Subscriptions

Query History

5423 -- 2
5424 **DELETE FROM flights**
5425 **WHERE flight_id NOT IN (**
5426 **SELECT MIN(flight_id)**
5427 **FROM flights**
5428 **GROUP BY flight_no, scheduled_departure**
5429);
5430 **CREATE UNIQUE INDEX sched_dep_index ON flights(flight_no, scheduled_departure);**

Scratch Pad x

Data Output Messages Notifications

CREATE INDEX

Query returned successfully in 37 msec.

Total rows: Query complete 00:00:00.037

✓ Query returned successfully in 37 msec. x

CRLF Ln 5424, Col 1



Object Explorer



Lab7.sql x

Servers (2)

PostgreSQL 17

Databases (2)

airport

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Event Triggers

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Languages

Publications

Schemas

Subscriptions

postgres

Casts

Catalogs

Event Triggers

Extensions

Foreign Data Wrappers

Languages

Publications

Schemas

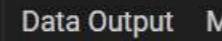
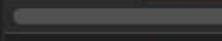
Subscriptions

Login/Group Roles

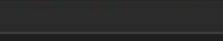
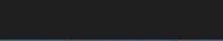
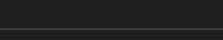
Tablespaces

PostgreSQL 18

airport/postgres@PostgreSQL 17



No limit



Query

Query History

5432

-- 3

5433 CREATE INDEX airports_index ON flights(departure_airport_id, arrival_airport_id);

Data Output

Messages

Notifications

CREATE INDEX

Query returned successfully in 38 msec.

Scratch Pad x

✓ Query returned successfully in 38 msec. x

Total rows: Query complete 00:00:00.038

CRLF Ln 5434, Col 1

Object Explorer Lab7.sql x

airport/postgres@PostgreSQL 17

No limit

Query History

```
5416 ----- Lab 7
5417 --4 (without indexes)
5418 SELECT * FROM flights WHERE arrival_airport_id = departure_airport_id;
```

Data Output Messages Notifications

Showing rows: 1 to 60 Page No: 1 of 1

	flight_id [PK] integer	flight_no character varying (50)	scheduled_departure date	scheduled_arrival date	departure_airport_id integer	arrival_airport_id integer	departing_gate character varying (50)	arriving_gate character varying (50)	airline_id integer
1	11	TH-57	2023-03-28	2023-10-28	5	5	1280	3288	46
2	17	ES-AN	2023-09-10	2024-01-07	13	13	297	59	6
3	22	GB-ENG	2023-11-03	2023-10-11	2	2	400	85	44
4	32	KP-10	2024-03-12	2023-06-06	2	2	4547	2999	25
5	39	PG-MPL	2023-11-23	2023-06-05	12	12	2950	505	42
6	68	SE-BD	2023-09-26	2023-07-18	13	13	65	1831	9
7	71	US-AK	2024-01-07	2023-04-03	2	2	17	4095	34
8	95	CN-23	2023-03-21	2023-08-10	10	10	[null]	37	46
9	132	IN-MP	2024-01-10	2023-03-18	3	3	1711	25	20
10	137	CA-BC	2023-12-27	2023-12-11	9	9	92	443	9
11	163	US-CA	2023-07-12	2023-10-20	5	5	62	23	12
12	175	PA-8	2023-03-19	2023-08-21	19	19	150	38	1
13	203	IT-62	2023-12-05	2023-07-06	14	14	1278	552	47
14	208	NZ-CAN	2023-10-04	2023-11-26	10	10	1575	104	32
15	248	CH-NE	2023-08-22	2023-09-20	20	20	1427	11	14
16	251	MX-BCN	2024-03-07	2023-09-22	7	7	489	20	5
17	255	US-TX	2023-05-07	2023-05-03	4	4	2871	2312	29
18	270	US-UT	2023-04-08	2024-02-26	4	4	5868	674	28
19	293	FR-V	2024-03-16	2023-12-21	19	19	923	5640	14
20	300	AU-NT	2024-01-29	2023-10-01	17	17	646	1400	6

Successfully run. Total query runtime: 54 msec. 60 rows affected.

Total rows: 60 Query complete 00:00:00.054 CRLF Ln 5419, Col 1

Object Explorer Lab7.sql X

airport/postgres@PostgreSQL 17

No limit

Query History

5435 -- 4

5436 SELECT * FROM flights WHERE arrival_airport_id = departure_airport_id;

Data Output Messages Notifications

Showing rows: 1 to 59 | Page No: 1 of 1 | SQL

	flight_id [PK] integer	flight_no character varying (50)	scheduled_departure date	scheduled_arrival date	departure_airport_id integer	arrival_airport_id integer	departing_gate character varying (50)	arriving_gate character varying (50)	airline_id integer
1	11	TH-57	2023-03-28	2023-10-28	5	5	1280	3288	46
2	17	ES-AN	2023-09-10	2024-01-07	13	13	297	59	6
3	22	GB-ENG	2023-11-03	2023-10-11	2	2	400	85	44
4	32	KP-10	2024-03-12	2023-06-06	2	2	4547	2999	25
5	39	PG-MPL	2023-11-23	2023-06-05	12	12	2950	505	42
6	68	SE-BD	2023-09-26	2023-07-18	13	13	65	1831	9
7	71	US-AK	2024-01-07	2023-04-03	2	2	17	4095	34
8	95	CN-23	2023-03-21	2023-08-10	10	10	[null]	37	46
9	132	IN-MP	2024-01-10	2023-03-18	3	3	1711	25	20
10	137	CA-BC	2023-12-27	2023-12-11	9	9	92	443	9
11	163	US-CA	2023-07-12	2023-10-20	5	5	62	23	12
12	175	PA-8	2023-03-19	2023-08-21	19	19	150	38	1
13	203	IT-62	2023-12-05	2023-07-06	14	14	1278	552	47
14	208	NZ-CAN	2023-10-04	2023-11-26	10	10	1575	104	32
15	248	CH-NE	2023-08-22	2023-09-20	20	20	1427	11	14
16	251	MX-BCN	2024-03-07	2023-09-22	7	7	489	20	5
17	255	US-TX	2023-05-07	2023-05-03	4	4	2871	2312	29
18	270	US-UT	2023-04-08	2024-02-26	4	4	5868	674	28
19	293	FR-V	2024-03-16	2023-12-21	19	19	923	5640	14
20	300	AU-NT	2024-01-29	2023-10-01	17	17	646	4400	6
21	349	US-OR	2023-12-18	2023-06-02	18				

Successfully run. Total query runtime: 53 msec. 59 rows affected.

Total rows: 59 Query complete 00:00:00.053

CRLF Ln 5437, Col 1

Object Explorer Lab7.sql x

airport/postgres@PostgreSQL 17

No limit

Query History

Scratch Pad x

5438 -- 5

5439 EXPLAIN ANALYZE

5440 SELECT * FROM flights WHERE departure_airport_id = 11 AND arrival_airport_id = 33;

Data Output Messages Notifications

Showing rows: 1 to 6 Page No: 1 of 1

SQL

	QUERY PLAN
1	Index Scan using airports_index on flights (cost=0.28..8.29 rows=1 width=61) (actual time=0.070..0.070 rows=0.00 loops=1)
2	Index Cond: ((departure_airport_id = 11) AND (arrival_airport_id = 33))
3	Index Searches: 1
4	Buffers: shared read=2
5	Planning Time: 0.125 ms
6	Execution Time: 0.093 ms

QUERY PLAN

text

1 Index Scan using airports_index on flights (cost=0.28..8.29 rows=1 width=61) (actual time=0.070..0.070 rows=0.00 loops=1)

2 Index Cond: ((departure_airport_id = 11) AND (arrival_airport_id = 33))

3 Index Searches: 1

4 Buffers: shared read=2

5 Planning Time: 0.125 ms

6 Execution Time: 0.093 ms

Successfully run. Total query runtime: 58 msec. 6 rows affected.

Total rows: 6 Query complete 00:00:00.058 CRLF Ln 5439, Col 1

Object Explorer Lab7.sql* X

Servers(2) airport/postgres@PostgreSQL 17

Databases(2)

airport Query Query History

5442 -- 6
5443 CREATE UNIQUE INDEX passport_index ON passengers(passport_number);
5444 insert into passengers (passenger_id, first_name, last_name, date_of_birth, gender, country_of_citizenship,
5445 country_of_residence, passport_number, created_at, update_at) values (201, 'Poligraf', 'Sharikov',
5446 '1925-01-01', 'Male', 'Russia', 'Russia', '122133332-7', '2025-11-16', '2025-11-16');
5447 insert into passengers (passenger_id, first_name, last_name, date_of_birth, gender, country_of_citizenship,
5448 country_of_residence, passport_number, created_at, update_at) values (202, 'Jackobs', 'Monarch',
5449 '2009-10-01', 'Male', 'United Kingdom', 'United Kingdom', '81847113-2', '2025-11-16', '2025-11-16');
5450 -- In the output (loosely speaking), two new records are created and new indexes are given to them

Scratch Pad X

postgres Data Output Messages Notifications

5442 INSERT 0 1

Query returned successfully in 48 msec.

Total rows: 2 Query complete 00:00:00.048 ✓ Query returned successfully in 48 msec. X

CRLF Ln 5443, Col 1



Lab7.sql* X

airport/postgres@PostgreSQL 17



No limit



Servers (2)

PostgreSQL 17

Databases (2)

airport

- > Casts
 - > Catalogs
 - > Event Triggers
 - > Extensions
 - > Foreign Data Wrappers
 - > Languages
 - > Publications
 - > Schemas
 - > Subscriptions
- ▼ postgres
 - > Casts
 - > Catalogs
 - > Event Triggers
 - > Extensions
 - > Foreign Data Wrappers
 - > Languages
 - > Publications
 - > Schemas
 - > Subscriptions
- > Login/Group Roles
 - > Tablespaces
- ▶ PostgreSQL 18

Query Query History

```
-- 7  
5452 CREATE INDEX complex_index ON passengers(first_name, last_name, date_of_birth, country_of_citizenship);  
5453 EXPLAIN ANALYZE  
5454 SELECT * FROM passengers WHERE country_of_citizenship = 'Philippines' AND EXTRACT(YEAR FROM date_of_birth) = 1984;  
5455 --No index is used since its two first elements are skipped
```

Data Output Messages Notifications



Showing rows: 1 to 8



Page No: 1



QUERY PLAN

text

1	Seq Scan on passengers (cost=0.00..6.54 rows=1 width=64) (actual time=0.014..0.029 rows=1.00 loops=1)
2	Filter: (((country_of_citizenship)::text = 'Philippines'::text) AND (EXTRACT(year FROM date_of_birth) = '1984'::num...))
3	Rows Removed by Filter: 201
4	Buffers: shared hit=3
5	Planning:
6	Buffers: shared hit=46 read=1 dirtied=4
7	Planning Time: 1.037 ms
8	Execution Time: 0.040 ms

Successfully run. Total query runtime: 41 msec. 8 rows affected. ✅



Total rows: 8

Query complete 00:00:00.041

CRLF Ln 5453, Col 1

Object Lab7.sql* x

Servers (2) airport/postgres@PostgreSQL 17 No limit ?

Databases (2) airport Query History

Query 5457
5458 -- 8
5459 `SELECT * FROM pg_indexes WHERE tablename = 'passengers';`
5460 `DROP INDEX passport_index;`
5461 `DROP INDEX complex_index;`

Data Output Messages Notifications SQL Showing rows: 1 to 3 Page No: 1 of 1

	schemaname name	tablename name	indexname name	tablespace name	indexdef text
1	public	passenger	passenger_pk...	[null]	CREATE UNIQUE INDEX passenger_pkey ON public.passenger USING btree (passenger_id)
2	public	passenger	passport_index	[null]	CREATE UNIQUE INDEX passport_index ON public.passenger USING btree (passport_number)
3	public	passenger	complex_index	[null]	CREATE INDEX complex_index ON public.passenger USING btree (first_name, last_name, date_of_birth, country_of_citizen...)

Successfully run. Total query runtime: 55 msec. 3 rows affected.

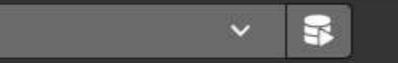
Total rows: 3 Query complete 00:00:00.055 CRLF Ln 5460, Col 1



Lab7.sql* X

airport/postgres@PostgreSQL 17

No limit



Query Query History

Scratch Pad X

```
5457  
5458 -- 8  
5459 SELECT * FROM pg_indexes WHERE tablename = 'passengers';  
5460 DROP INDEX passport_index;  
5461 DROP INDEX complex_index;
```

Data Output Messages Notifications

DROP INDEX

Query returned successfully in 56 msec.

- ▼ Servers (2)
 - ▼ PostgreSQL 17
 - ▼ Databases (2)
 - ▼ airport
 - > Casts
 - > Catalogs
 - > Event Triggers
 - > Extensions
 - > Foreign Data Wrappers
 - > Languages
 - > Publications
 - > Schemas
 - > Subscriptions
 - ▼ postgres
 - > Casts
 - > Catalogs
 - > Event Triggers
 - > Extensions
 - > Foreign Data Wrappers
 - > Languages
 - > Publications
 - > Schemas
 - > Subscriptions
 - > Login/Group Roles
 - > Tablespaces
 - PostgreSQL 18

✓ Query returned successfully in 56 msec. X

Total rows:

Query complete 00:00:00.056

CRLF Ln 5460, Col 1