

TASK 1

The screenshot shows the pgAdmin 4 interface. In the Object Explorer, under the 'Airport' database, the 'flights' table is selected. A query window titled 'Airport/postgres@PostgreSQL' contains the following SQL code:

```
1 SELECT * FROM flights;
2 CREATE INDEX act_departure_time_index ON flights(act_departure_time);
```

The 'Messages' tab in the results pane shows the output of the 'CREATE INDEX' command:

CREATE INDEX
Query returned successfully in 76 msec.

At the bottom of the pgAdmin window, the system tray displays the weather as "6°C Mostly cloudy". The taskbar at the very bottom shows various application icons and the date/time as "20:45 10.11.2025".

TASK 2

The screenshot shows the pgAdmin 4 interface. The left sidebar is the Object Explorer, displaying a tree structure of servers, databases, and objects. The current database selected is 'Airport'. The main area contains a query editor window with the following SQL code:

```
4 SELECT column_name
5 FROM information_schema.columns
6 WHERE table_name = 'flights';
7
8 CREATE UNIQUE INDEX unique_schdep_flightno_index ON flights(flight_no, sch_departure_time);
```

Below the code, the 'Messages' tab shows the result of the execution:

CREATE INDEX

Query returned successfully in 55 msec.

At the bottom of the pgAdmin window, there is a system tray with icons for weather (6°C, Mostly cloudy), search, file operations, and network status. The status bar at the bottom right shows the date (10.11.2025), time (20:53), and file statistics (CRLF, Ln 7, Col 1).

TASK 3

The screenshot shows the pgAdmin 4 interface. The left pane is the Object Explorer, displaying the database structure under the 'Airport' database. The right pane is the Query Editor, showing a successful execution of a SQL command to create an index.

Object Explorer:

- Servers (2)
 - PostgreSQL
 - Databases (2)
 - Airport
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas
 - Subscriptions
 - postres
 - Login/Group Roles
 - Tablespaces
 - PostgreSQL 17

Query Editor:

```
9
10 CREATE INDEX flights_departure_arrival_index ON flights(departing_airport_id, arriving_airport_id);
```

CREATE INDEX

Query returned successfully in 54 msec.

Total rows: Query complete 00:00:00.054 CRLF Ln 10, Col 39

6°C Mostly cloudy

Поиск

20:56 10.11.2025

TASK 4-1

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

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

Airport/postgres@PostgreSQL* Airport/postgres@PostgreSQL* Lab3.sql Lab-4.sql Lab6.sql Airport/postgres@PostgreSQL*

Query History

```
11
12   SELECT * FROM flights
13 WHERE act_departure_time BETWEEN '2020-01-11' AND '2025-02-01';
```

Scratch Pad

Data Output Messages Notifications

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

flight_id	sch_departure_time	sch_arrival_time	departing_airport_id	arriving_airport_id	departing_gate	arriving_gate	airline_id
301	2024-10-01 08:00:00	2024-10-01 14:00:00	1	301	A1	B2	

Total rows: 1 Query complete 00:00:00.124 CRLF Ln 13, Col 27

6°C Mostly cloudy Помощь ENG 21:03 10.11.2025

The screenshot shows the pgAdmin 4 interface. In the Object Explorer, under the 'Airport' database, the 'flights' table is selected. A query is run in the main pane to select all columns from the 'flights' table where the 'act_departure_time' is between '2020-01-11' and '2025-02-01'. The result set contains one row for flight 301, which departed at 08:00 on 2024-10-01 and arrived at 14:00 on the same day, both at gate A1, with airline ID B2.

TASK 4-2

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

Servers (2)
PostgreSQL
Databases (2)
Airport

Casts
Catalogs
Event Triggers
Extensions
Foreign Data Wrappers
Languages
Publications
Schemas
Subscriptions
postres
Login/Group Roles
Tablespaces
PostgreSQL 17

Airport/postgres@... X Airport/postgres@... X Lab3.sql X Lab-4.sql X Lab6.sql X Airport/postgres@PostgreSQL* X

Query History

Query

```
14
15   SELECT * FROM flights
16 WHERE act_departure_time BETWEEN '2020-01-01' AND '2025-02-01';
```

Data Output Messages Notifications

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

flight_id	sch_departure_time	sch_arrival_time	departing_airport_id	arriving_airport_id	departing_gate	arriving_gate	airline_id
[PK] Integer	timestamp without time zone	timestamp without time zone	Integer	Integer	text	character varying (50)	Integer
1	301	2024-10-01 08:00:00	2024-10-01 14:00:00	1	301	A1	B2

Total rows: 1 Query complete 00:00:00.150 CRLF Ln 16, Col 18

6°C Mostly cloudy

Пойск

21:07 10.11.2025

TASK 5

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

Servers (2) PostgreSQL Databases (2) Airport

Casts Catalogs Event Triggers Extensions Foreign Data Wrappers Languages Publications Schemas Subscriptions postres Login/Group Roles Tablespaces PostgreSQL 17

Airport/postgres@... X Airport/postgres@... X Lab3.sql X Lab-4.sql X Lab6.sql X Airport/postgres@PostgreSQL* X

Query History

EXPLAIN ANALYZE
SELECT * FROM flights
WHERE departing_airport_id = 1 AND arriving_airport_id = 3;

Data Output Messages Notifications

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

QUERY PLAN
text

1 Index Scan using flights_departure_arrival_index on flights (cost=0.15..8.17 rows=1 width=86) (actual time=0.105..0.105 rows=0 loops=...
2 Index Cond: ((departing_airport_id = 1) AND (arriving_airport_id = 3))
3 Planning Time: 0.261 ms
4 Execution Time: 0.146 ms

Total rows: 4 Query complete 00:00:00.082 CRLF Ln 21, Col 60

6°C Mostly cloudy Пойск 21:11 ENG 10.11.2025

TASK 6-1

The screenshot shows the pgAdmin 4 interface. The left sidebar is titled "Object Explorer" and lists "Servers (2)", "PostgreSQL" (selected), and "Databases (2)" (with "Airport" selected). The main area has tabs for "Query", "Query History", "Data Output", "Messages", and "Notifications". The "Query" tab contains the following SQL code:

```
22
23   SELECT * FROM Passengers;
24 CREATE UNIQUE INDEX passenger_passport_number_index ON passengers(passport_number);
```

The "Messages" tab displays an error message:

ERROR: relation "passenger_passport_number_index" already exists
SQL state: 42P07

At the bottom, the status bar shows "Total rows: 300", "Query complete 00:00:00.091", "CRLF Ln 24, Col 28", and system icons for weather, search, file, and network.

TASK 6-2

The screenshot shows the pgAdmin 4 interface. The left pane is the Object Explorer, displaying a tree structure of servers, databases, and objects. The current connection is to the 'Airport' database. The right pane contains a query editor window with the following SQL code:

```
23 SELECT * FROM Passengers;
24 CREATE UNIQUE INDEX passenger_passport_number_index ON passengers(passport_number);
25
26 INSERT INTO passengers(passenger_id, first_name, last_name, date_of_birth, gender,
27 country_of_citizenship, country_of_residence, passport_number, created_at, updated_at)
28 VALUES(303, 'Sagynysh', 'Mahash', '1999-09-09', 'Female', 'Kazakhstan', 'Kazakhstan', 'P80839944',
29 NOW(), NOW());
```

The 'Messages' tab in the query editor shows the message: "Query returned successfully in 68 msec." The status bar at the bottom indicates "Total rows: 1 Query complete 00:00:00.068". The system tray at the bottom left shows the weather as "6°C Mostly cloudy".

TASK 7-1

The screenshot shows the pgAdmin 4 interface. In the Object Explorer, under the 'Airport' database, the 'Indexes' node is selected. In the central Query Editor window, the following SQL command is run:

```
CREATE INDEX passengers_name_birth_country_index ON passengers(first_name, last_name, date_of_birth, country_of_citizenship);
```

The 'Messages' tab in the Query Editor shows the response:

```
CREATE INDEX  
Query returned successfully in 54 msec.
```

The bottom status bar indicates:

- Total rows: 0
- Query complete 00:00:00.054
- CRLF | Ln 31, Col 28
- AW01 +0.92%
- Search bar: Поиск
- System tray icons: battery (AW01 +0.92%), signal strength, network, volume, clock (21:23), date (10.11.2025), and others.

TASK 7-2

pgAdmin 4

File Object Tools Edit View Window Help Закрыть

Object Explorer

Servers (2) PostgreSQL Databases (2)

Airport Casts Catalogs Event Triggers Extensions Foreign Data Wrappers Languages Publications Schemas Subscriptions postgres Login/Group Roles Tablespaces PostgreSQL 17

Airport/postgres@PostgreSQL

No limit

Query History

```
country_of_citizenship);  
EXPLAIN ANALYZE  
SELECT * FROM Passengers  
WHERE country_of_citizenship = 'Philippines'  
AND EXTRACT(YEAR FROM date_of_birth) = 1984;
```

Data Output Messages Notifications

Showing rows: 1 to 5 Page No: 1 of 1

QUERY PLAN text

1	Seq Scan on passengers (cost=0.00..10.27 rows=1 width=187) (actual time=0.103..0.104 rows=0 loops=1)
2	Filter: (((country_of_citizenship)::text = 'Philippines'::text) AND (EXTRACT(year FROM date_of_birth) = '1984'::numer...
3	Rows Removed by Filter: 301
4	Planning Time: 0.212 ms
5	Execution Time: 0.126 ms

Total rows: 5 Query complete 00:00:00.097 ✓ Successfully run. Total query runtime: 97 msec. 5 rows affected. CRLF Ln 37, Col 44

6°C Mostly cloudy

Положение

21:28 10.11.2025

ENG

TASK 8-1

pgAdmin 4

File Object Tools Edit View Window Help

Object Explorer

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

Airport/postgres@PostgreSQL* | Lab3.sql | Lab-4.sql | Lab6.sql | Airport/postgres@PostgreSQL*

Query History

Query

```
39
40 SELECT *
41 FROM pg_indexes
42 WHERE tablename = 'passengers';
43
```

Data Output Messages Notifications

SQL

schemaname	tablename	indexname	tablespace	indexdef
1 public	passengers	passengers_pkey	[null]	CREATE UNIQUE INDEX passengers_pkey ON public.passengers USING btree (passenger_id)
2 public	passengers	unique_passenger_email	[null]	CREATE UNIQUE INDEX unique_passenger_email ON public.passengers USING btree (email)
3 public	passengers	passenger_passport_number_index	[null]	CREATE UNIQUE INDEX passenger_passport_number_index ON public.passengers USING btree (passenger_passport_number)
4 public	passengers	passengers_name_birth_country_index	[null]	CREATE INDEX passengers_name_birth_country_index ON public.passengers USING btree (first_name, last_name, birth_date, country)

Total rows: 4 | Query complete 00:00:00.113 | CRLF | Ln 41, Col 16

6°C Mostly cloudy | Пойск | 21:33 | ENG | 10.11.2025

TASK 8-2

The screenshot shows the pgAdmin 4 interface. On the left is the Object Explorer pane, which lists servers, databases, and various PostgreSQL objects like casts, catalogs, event triggers, extensions, foreign data wrappers, languages, publications, schemas, subscriptions, and roles. The current database selected is 'Airport'. In the center is the main workspace. The top tab bar shows multiple tabs, with the active one being 'Airport/postgres@PostgreSQL'. Below the tabs is a toolbar with various icons. The main area has two tabs: 'Query' (selected) and 'Query History'. The 'Query' tab contains the following SQL code:

```
FROM pg_indexes  
WHERE tablename = 'passengers';  
  
DROP INDEX IF EXISTS passenger_passport_number_index;  
DROP INDEX IF EXISTS passengers_name_birth_country_index;
```

Below the code is a button labeled 'Execute query' with the keyboard shortcut 'Alt+F5'. To the right of the code is a 'Scratch Pad' tab. At the bottom of the workspace, there are tabs for 'Data Output', 'Messages', and 'Notifications'. The 'Messages' tab is currently active, displaying the message 'DROP INDEX'. Below the workspace, a status bar shows 'Query returned successfully in 56 msec.' A green notification bubble in the bottom right corner also says 'Query returned successfully in 56 msec.' The bottom of the screen shows the Windows taskbar with icons for weather, search, file explorer, and other system tools, along with the date and time.