

Lab 8B

Դժբ 8B



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LAB SESSION: 303

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I Lab 8A - Aggregates, GROUP BY and HAVING

I Question 1

Count how many rows exist in the airports table.

```
1 SELECT COUNT(*) FROM airports;
```

The screenshot shows the pgAdmin 4 web interface. The top bar displays the connection 'flightdb/root@pgadmin4.tufa16.home.lab'. The left sidebar shows the 'Query' tab selected. The main query editor contains the SQL statement: `SELECT COUNT(*) FROM airports;`. Below the editor, the 'Data Output' tab is active, showing a single row of results. The first column is labeled 'count' with a data type of 'bigint' and a value of '8107'. The status bar at the bottom right indicates 'Showing rows: 1 to 1'.

	count
1	8107

I Question 2

Calculate the average elevation in the airports table.

```
1 SELECT AVG(elevation) FROM airports;
```



pgAdmin

Welcome x flightdb/root@pga... x flightdb/root@pgadmin4.tufa16.home.lab* x

flightdb/root@pgadmin4.tufa16.home.lab

Query Query History Scratch Pad

```
1 SELECT AVG(elevation) FROM airports;
```

Data Output Messages Notifications

Showing rows: 1 to 1 Page No:

	avg	
	numeric	
1	933.4493647465153571	

I Question 3

Calculate the maximum and minimum elevations in the airports table.

```
1 SELECT MIN(elevation), MAX(elevation) FROM airports;
```





The screenshot shows the pgAdmin interface. The top menu bar includes File, Object, Tools, and Help. The browser tab is labeled 'flightdb/root@pgadmin4.tufa16.home.lab'. The query editor contains the following SQL query:

```
1 SELECT MIN(elevation), MAX(elevation) FROM airports;
2
```

The 'Data Output' tab is active, showing the results of the query. The results are displayed in a table with two columns: 'min integer' and 'max integer'. The first row shows the values -1266 and 14472.

	min integer	max integer
1	-1266	14472

I Question 4

Calculate the average elevation, grouped by country id, in the airports table.

```
1 SELECT
2     country_id,
3     AVG(elevation) AS avg_elevation
4 FROM airports GROUP BY country_id;
```



The screenshot shows the pgAdmin 4 web interface. The query editor contains the following SQL code:

```
1 SELECT
2   country_id,
3   AVG(elevation) AS avg_elevation
4 FROM airports GROUP BY country_id;
```

The results pane displays a table with two columns: `country_id` (bigint) and `avg_elevation` (numeric). The table contains 10 rows of data, sorted by `avg_elevation` in descending order.

country_id	avg_elevation
87	48.0000000000000000
116	26.2857142857142857
184	335.9803921568627451
51	4.3333333333333333
70	762.0000000000000000
190	66.4482758620689655
169	3750.8095238095238095
176	385.3125000000000000
92	906.1818181818181818
180	1061.0000000000000000

A status bar at the bottom indicates: "Successfully run. Total query runtime: 88 ms. 240 rows affected."

I Question 5

Calculate the average elevation, grouped by country id, in the airports table ordered by the average elevation in descending order for any country that has an average elevation of at least 300.

```
1 SELECT
2   country_id,
3   COUNT(*) AS airport_count,
4   AVG(elevation) AS avg_elevation
5 FROM airports
6 WHERE elevation >= 300
7 GROUP BY country_id
8 ORDER BY country_id DESC;
```



The screenshot shows the pgAdmin 4 web interface in a Brave browser. The query editor contains the following SQL code:

```
1 SELECT
2   country_id,
3   COUNT(*) AS airport_count,
4   AVG(elevation) AS avg_elevation
5 FROM airports
6 WHERE elevation >= 300
7 GROUP BY country_id
8 ORDER BY country_id DESC;
```

The Data Output pane shows the results of the query:

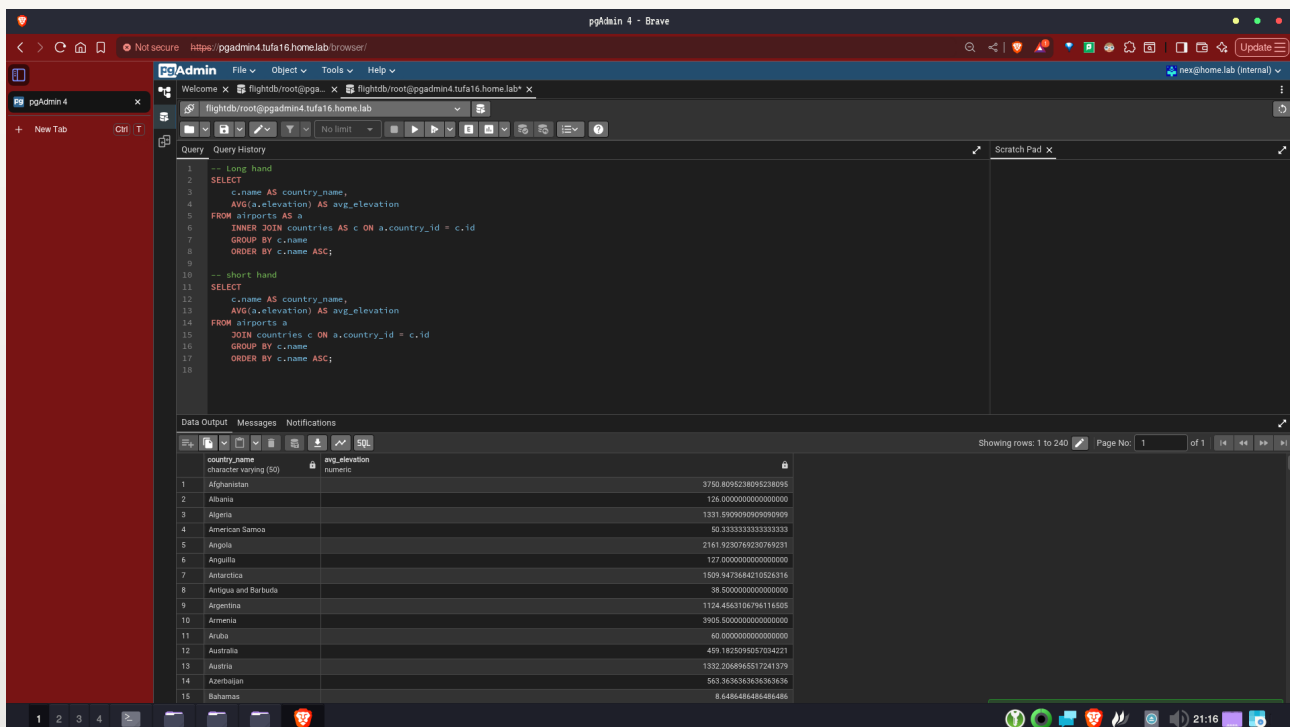
	country_id bigint	airport_count bigint	avg_elevation numeric
1	240	1	1481.0000000000000000
2	239	7	906.4285714285714286
3	237	27	4980.6666666666666667
4	236	3	5044.3333333333333333
5	235	11	924.3636363636363636
6	233	24	2322.4166666666666667
7	232	1	607.0000000000000000
8	231	53	2134.1698113207547170
9	230	3	7322.0000000000000000
10	229	1	550.0000000000000000

II Lab 8B - Aggregates, GROUP BY and HAVING

II Question 6

Calculate the number of airports in each country (i.e., grouped by country id), arrange the output in descending order of number of airports.

```
1  -- Long hand
2  SELECT
3      c.name AS country_name,
4      AVG(a.elevation) AS avg_elevation
5  FROM airports AS a
6       INNER JOIN countries AS c ON a.country_id = c.id
7       GROUP BY c.name
8       ORDER BY c.name ASC;
9
10 -- short hand
11 SELECT
12     c.name AS country_name,
13     AVG(a.elevation) AS avg_elevation
14 FROM airports a
15     JOIN countries c ON a.country_id = c.id
16     GROUP BY c.name
17     ORDER BY c.name ASC;
```



The screenshot shows the pgAdmin 4 web interface in a Brave browser. The query editor contains two SQL queries. The first query, labeled 'Long hand', is a complex join between airports and countries. The second query, labeled 'short hand', is a simpler join. The results pane shows the output of the second query, displaying a table with columns 'country_name' and 'avg_elevation'.

country_name	avg_elevation
Alghanistan	3750.8095238095238095
Albana	126.0000000000000000
Algeria	1331.5800000000000000
American Samoa	50.3333333333333333
Angola	2161.920769230769231
Anguilla	127.0000000000000000
Antarctica	1529.9473684210526316
Antigua and Barbuda	38.5000000000000000
Argentina	1124.456310679611605
Armenia	3905.5000000000000000
Aruba	60.0000000000000000
Australia	499.1825095057034221
Austria	1332.2068965517241379
Azerbaijan	563.3636363636363636
Bahamas	8.6486486486486486

II Question 7

Calculate the number of airports in each city of country id 160 and arrange the output in descending order.

```
1  SELECT
2      city,
3      COUNT(*) AS airport_count
4  FROM airports
5      WHERE country_id = 160
6      GROUP BY city
7      ORDER BY airport_count DESC;
```




The screenshot shows the pgAdmin 4 web interface in a Brave browser. The query editor contains the following SQL code:

```
1 SELECT
2   city,
3   COUNT(*) AS airport_count
4 FROM airports
5 WHERE country_id = 160
6 GROUP BY city
7 ORDER BY airport_count DESC;
```

The Data Output pane shows the results of the query:

city	airport_count
New York	13
Seattle	9
Chicago	9
San Diego	8
Philadelphia	6
Houston	6
Atlanta	5
Denver	5
Sacramento	5

A green status bar at the bottom indicates: "Successfully run. Total query runtime: 77 msec. 1343 rows affected."

II Question 8

Edit Query #7 to show only those cities where the number of airports is more than 5. Hint: When using all SQL predicates in one statement, follow the sequence:

```
1 SELECT
2   city,
3   COUNT(*) AS airport_count
4 FROM airports
5 WHERE country_id = 160 AND airport_count > 5
6 GROUP BY city
7 ORDER BY airport_count DESC;
```

The screenshot shows the pgAdmin 4 web interface in a Brave browser. The query editor contains the following SQL code:

```
1 SELECT
2   city,
3   COUNT(*) AS airport_count
4 FROM airports
5 WHERE country_id = 160
6 GROUP BY city
7 HAVING COUNT(*) > 5
8 ORDER BY airport_count DESC;
9
```

The Data Output pane shows the results of the query:

	city	airport_count
1	New York	13
2	Chicago	9
3	Seattle	9
4	San Diego	8
5	Philadelph...	6
6	Houston	6

The status bar at the bottom indicates: "Successfully run. Total query runtime: 74 msec. 6 rows affected."

II Question 9

Provide the query to determine how many aircrafts "Boeing" has that start with "74".

```
1 SELECT COUNT(*) AS count_74s
2 FROM aircrafts
3 WHERE name = 'Boeing' AND code LIKE '74%';
```



The screenshot shows the pgAdmin 4 web interface in a Brave browser. The query editor contains the following SQL code:

```
1 SELECT COUNT(*) AS count_74s
2 FROM aircrafts
3 WHERE name = 'Boeing' AND code LIKE '74%';
4
```

The Data Output pane shows the results of the query:

count_74s
20

The interface also shows a Query History pane, a Scratch Pad, and a bottom status bar with system icons and the time 22:02.

II Question 10

Provide the query to determine how many different wake sizes “Boeing” and “Airbus” have.

```
1 SELECT
2     name,
3     COUNT(DISTINCT wake_size) AS wake_sizes
4 FROM aircrafts
5 WHERE name IN ('Boeing', 'Airbus')
6 GROUP BY name;
```





pgAdmin 4 - Brave

Not secure https://pgadmin4.tufa16.home.lab/browser/

pgAdmin File Object Tools Help

Welcome x flightdb/root@pga... x flightdb/root@pgadmin4.tufa16.home.lab* x

flightdb/root@pgadmin4.tufa16.home.lab

Query Query History Scratch Pad

```
1 SELECT
2   name,
3   COUNT(DISTINCT wake_size) AS wake_sizes
4 FROM aircrafts
5 WHERE name IN ('Boeing', 'Airbus')
6 GROUP BY name;
```

Data Output Messages Explain Notifications

Showing rows: 1 to 2 Page No: 1 of 1

	name character varying (50)	wake_sizes bigint
1	Airbus	2
2	Boeing	2

Successfully run. Total query runtime: 58 msec. 2 rows affected