

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ
Τμήμα Πληροφορικής



Εργασία Μαθήματος **Βάσεις Δεδομένων**

Αριθμός εργασίας – Τίτλος εργασίας	<i>db1-project-spring2022</i>
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Ημερομηνία παράδοσης	10/7/2022



Εκφώνηση εργασίας

Βάσεις Δεδομένων 4^ο εξάμηνο- db1-project-spring2022



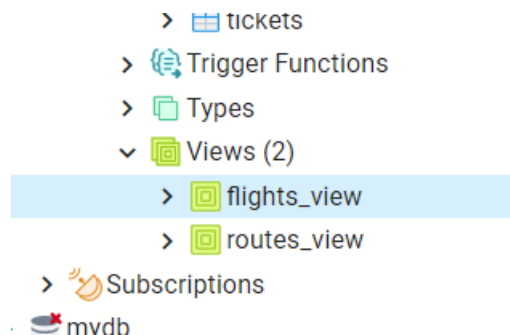
ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ

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2	Περιγραφή του προγράμματος	4
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Καταφέραμε να επιτύχουμε όλοι οι πίνακες να ακολουθούν την μορφή κανονικοποίησης BCNF (BOYCE-CODE NORMAL FORM) ακολουθώντας τις σημειώσεις και τις διαφάνειες του μαθήματος.

1C. VIEWS



Παράδειγμα εκτέλεσης:

Flights_view

Query Editor

```
1 SELECT * FROM flights_view
```

Data Output

flight_number	departure_airport	scheduled_duration	scheduled_departure_time	scheduled_arrival_time	actual_arrival_time	actual_departure_time	airport
PG84	Deva Brahm	9	2022-10-15 06:33:25	2022-10-15 15:33:25 UTC	2020-02-13 09:53:17	2020-04-10 01:32:01	ADC



Routes_View

The screenshot shows the pgAdmin 4 interface. On the left, the 'Browser' pane displays the database structure, with 'public' > 'Views (2)' > 'routes_view' selected. The main pane shows the 'Query Editor' with the following SQL query:

```
1 SELECT * FROM routes_view
```

Below the query editor, the 'Data Output' tab displays the results of the query in a table format. The table has 9 columns: flight_number, departure_airport, scheduled_duration, airport_code1, airport_city1, arrival_airport, airport_code2, and airport_city2. The results show a single row for flight PG74.

flight_number	departure_airport	scheduled_duration	airport_code1	airport_city1	arrival_airport	airport_code2	airport_city2
PG74	Poppy Ormiston	3	YXX	Quezalguaque	Deva Brahm	ADD	Koundara

Για το routes_view χρησιμοποιήσαμε συγκεκριμένη βδομάδα για την δημιουργία του view!



ΥΛΟΠΟΙΗΣΗ ΤΩΝ ΕΡΩΤΗΣΕΩΝ(QUERIES) ΣΤΗΝ ΒΑΣΗ ΔΕΔΟΜΕΝΩΝ

2a.

The screenshot shows the pgAdmin 4 interface. On the left, the 'Schemas (1)' tree is expanded, showing the 'public' schema. The 'tickets' table is selected. The main window displays a SQL query in the 'Query Editor' tab:

```
1 SELECT t.passenger_name, B.book_date
2 FROM tickets as t
3 INNER JOIN flights as f
4 ON t.flight_id=f.id
5 INNER JOIN book as B
6 ON B.book_ref=t.book_ref
7 INNER JOIN ticket_sections as t2
8 ON t2.ticket_number=t.ticket_no
9 WHERE f.flight_number='PG34'
10 AND f.actual_departure_time < CAST((CURRENT_TIMESTAMP-INTERVAL '1 DAY') AS text)
11 AND t2.seat_no='21D'
```

Below the query editor, the 'Data Output' tab shows the results of the query:

	passenger_name	book_date
1	Malachi Crew	2022-03-15 19:50:44+02



2b.

The screenshot shows the pgAdmin 4 interface. On the left, the 'Schemas (1)' tree is expanded, showing the 'public' schema. The 'tickets' table is selected. The main pane displays a SQL query in the 'Query Editor' tab:

```
1 SELECT
2 (SELECT a.capacity
3 FROM aircrafts_data as a
4 INNER JOIN flights as f
5 ON f.aircraft_code=a.aircraft_code
6 WHERE f.flight_number='PG34')-
7 (SELECT COUNT (passenger_name)
8 FROM tickets
9 WHERE flight_id IN (SELECT id FROM flights WHERE flight_number='PG34')) as available_seats
```

Below the query editor, the 'Data Output' tab shows the result of the query:

available_seats
139

2c.



pgAdmin 4

File Object Tools Help

Browser

- Event Triggers
- Extensions
- Foreign Data Wrappers
- Languages
- Publications
- Schemas (1)
 - public
 - Collations
 - Domains
 - FTS Configurations
 - FTS Dictionaries
 - FTS Parsers
 - FTS Templates
 - Foreign Tables
 - Functions
 - Materialized Views
 - Procedures
 - Sequences
 - Tables (7)
 - aircrafts_data
 - airport
 - boarding_pass
 - book
 - flights
 - ticket_sections
 - tickets
 - Trigger Functions
 - Types
 - Views (2)
 - flights_view
 - routes_view
 - Subscriptions
 - mydb

Query Editor

```
1 SELECT id FROM flights
2 WHERE shedule_departure_time like '2022%'
3 ORDER BY (CAST(actual_departure_time AS timestamp) - CAST(shedule_departure_time AS timestamp))
4 desc LIMIT 5;
```

Data Output

id	[PK] Integer
1	24628
2	58776
3	16813

2d.

pgAdmin 4

File Object Tools Help

Browser

- Event Triggers
- Extensions
- Foreign Data Wrappers
- Languages
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- Schemas (1)
 - public
 - Collations
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 - FTS Configurations
 - FTS Dictionaries
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 - aircrafts_data
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 - book
 - flights
 - ticket_sections
 - tickets
 - Trigger Functions
 - Types
 - Views (2)
 - flights_view
 - routes_view
 - Subscriptions
 - mydb

Query Editor

```
1 SELECT t.passenger_name,sum(f.distance) FROM tickets as t
2 INNER JOIN flights as f
3 ON f.id=t.flight_id
4 WHERE actual_departure_time like '2022%'
5 GROUP BY (t.passenger_name)
6 ORDER BY (sum (f.distance)) desc LIMIT 5;
```

Data Output

passenger_name	sum
character varying (50)	bigint
1 Kordula Koschke	8131

2e.



The screenshot shows the pgAdmin 4 web interface. On the left, the 'Browser' pane displays a tree view of the database structure, with 'public' expanded to show 'Tables (7)'. The 'tickets' table is selected. The main pane shows the 'Query Editor' with a SQL query:

```
1 SELECT f.arrival_airport,a.airport_city,COUNT(a.airport_city)
2 FROM flights as f
3 INNER JOIN airport as a
4 ON a.airport_name=f.arrival_airport
5 GROUP BY f.arrival_airport,a.airport_city
6 ORDER BY COUNT(a.airport_city) desc LIMIT 5;
```

Below the query editor, the 'Data Output' tab shows the results of the query in a table:

	arrival_airport character varying (50)	airport_city character varying (50)	count bigint
1	Conrade Chipp	Till	3
2	Hyacinthia McElwee	Camaquã	2
3	Paquito Bills	Jinqiao	1
4	Poppy Ormiston	Quezalguaque	1
5	Timi Fitzgerald	Jinshan	1

4. Σύνδεση ΒΔ με Application Programming Interface (API)

The screenshot shows the Eclipse IDE interface. The 'Console' view at the bottom displays the output of a Java application:

```
<terminated> Main [Java Application] C:\Users\tassol\p2\pool\plugins\org.eclipse.justi.openjdk hotspot\jre\full\win32\x86_64\18.0.1.v20220515-1614\jre\bin\javaw.exe (10 Ιουλ 2022, 4:59:58 μμ - 5:00:54 μμ) [pid: 7768]
Enter number from 1 to 5
1
Malachi Crew
2022-03-15 19:50:44+02
```



eclipse-workspace - Erg4/src/Main.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

SQL Results Execution Plan Bookmarks Console × Project Explorer Debug

<terminated> Main [Java Application] C:\Users\tasso\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (10 Ιουλ 2022, 5:01:45 μ.μ. – 5:01:49 μ.μ.) [pid: 4968]

Enter number from 1 to 5

2

139

eclipse-workspace - Erg4/src/Main.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

SQL Results Execution Plan Bookmarks Console × Project Explorer Debug

<terminated> Main [Java Application] C:\Users\tasso\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (10 Ιουλ 2022, 5:02:01 μ.μ. – 5:02:07 μ.μ.) [pid: 2932]

Enter number from 1 to 5

3

24628

58776

16813



```
eclipse-workspace - Erg4/src/Main.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
SQL Results Execution Plan Bookmarks Console × Project Explorer Debug
<terminated> Main [Java Application] C:\Users\tasso\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (10 Ιουλ 2022, 5:02:14 μ.μ. – 5:02:18 μ.μ.) [pid: 18556]
Enter number from 1 to 5
4
Kordula Koschke
8131
```

```
eclipse-workspace - Erg4/src/Main.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
SQL Results Execution Plan Bookmarks Console × Project Explorer Debug
<terminated> Main [Java Application] C:\Users\tasso\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (10 Ιουλ 2022, 5:02:24 μ.μ. – 5:02:27 μ.μ.) [pid: 17276]
Enter number from 1 to 5
5
Conrade Chipp
Till
3
Hyacinthia McElwee
Camaqu?
2
Paquito Bills
Jinqiao
1
Poppy Ormiston
Quezalguaque
1
Timi Fitzgerald
Jinshan
1
```



ΕΠΙΣΗΜΑΝΣΗ:

Λόγω έλλειψης χρόνου και μεγάλου φόρτου εργασίας δεν μπορέσαμε να υλοποιήσουμε το ερώτημα 3 της εργασίας καθώς και χρησιμοποιήσαμε λίγα δεδομένα μέσω του `mockaroo` με σκοπό να δώσουμε βάση στην λειτουργικότητα και την άρτια εφαρμογή των ερωτημάτων. Επιπλέον γνωρίζουμε ότι κάποια στοιχεία δεν είναι τόσο αληθοφανή όσο θα έπρεπε. Π.χ. η καθυστέρηση μιας πτήσης σε κάποιο από τα δεδομένα μας είναι έως και 2 χρόνια...

3 Βιβλιογραφικές Πηγές

1. Σημειώσεις GUNET2 (Βάσεις δεδομένων)