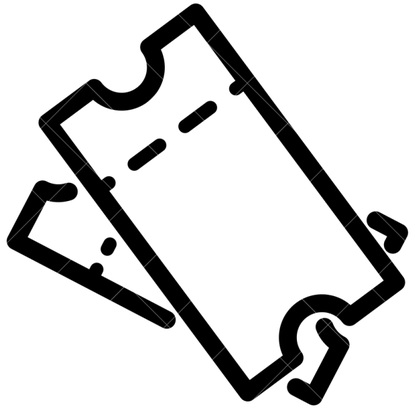
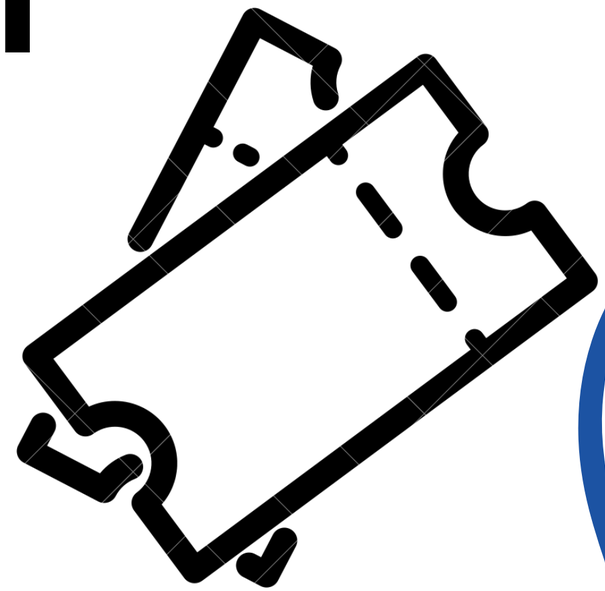


The e-bliet graph database



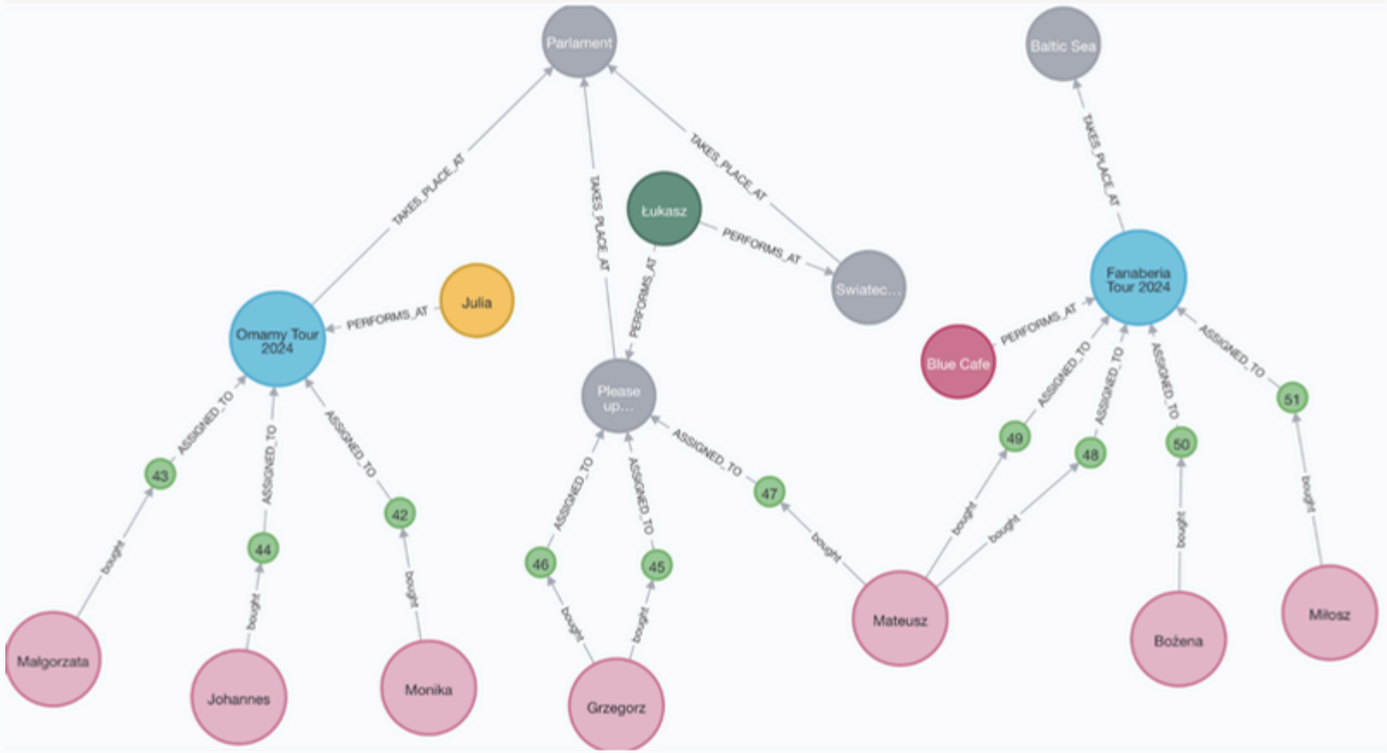
Business domain

The platform where people can buy tickets for all kinds of events like concerts, stand-up shows, recitals, and comedy performances.

Scenario

- There are two venues availiable: Parlament (club), and Baltic Sea (cultural center). Each venue can held events that can vary, including concerts, stand-up comedy, or other types of performances. Each event typically has a headlining artist, with the option to include a support artist.
- Parlament has held Stand-up of Lotek, and 3 tickets were sold to 3 people Julia Wieniawa headlined the concert, where 3 tickets were sold to 2 people. Another event is planned at Parlament by Lotek at the end of this year.
- Blue Cafe held the concert "Fanaberia Tour", and 4 tickets were sold to 3 people.
- To purchase tickets, users need to provide basic personal details such as Name, Surname, Contact (Email/Phone number). Users can buy multiple tickets for a single event, because the tickets are not named. The system records the online payment method and the exact date and time of each ticket purchase.

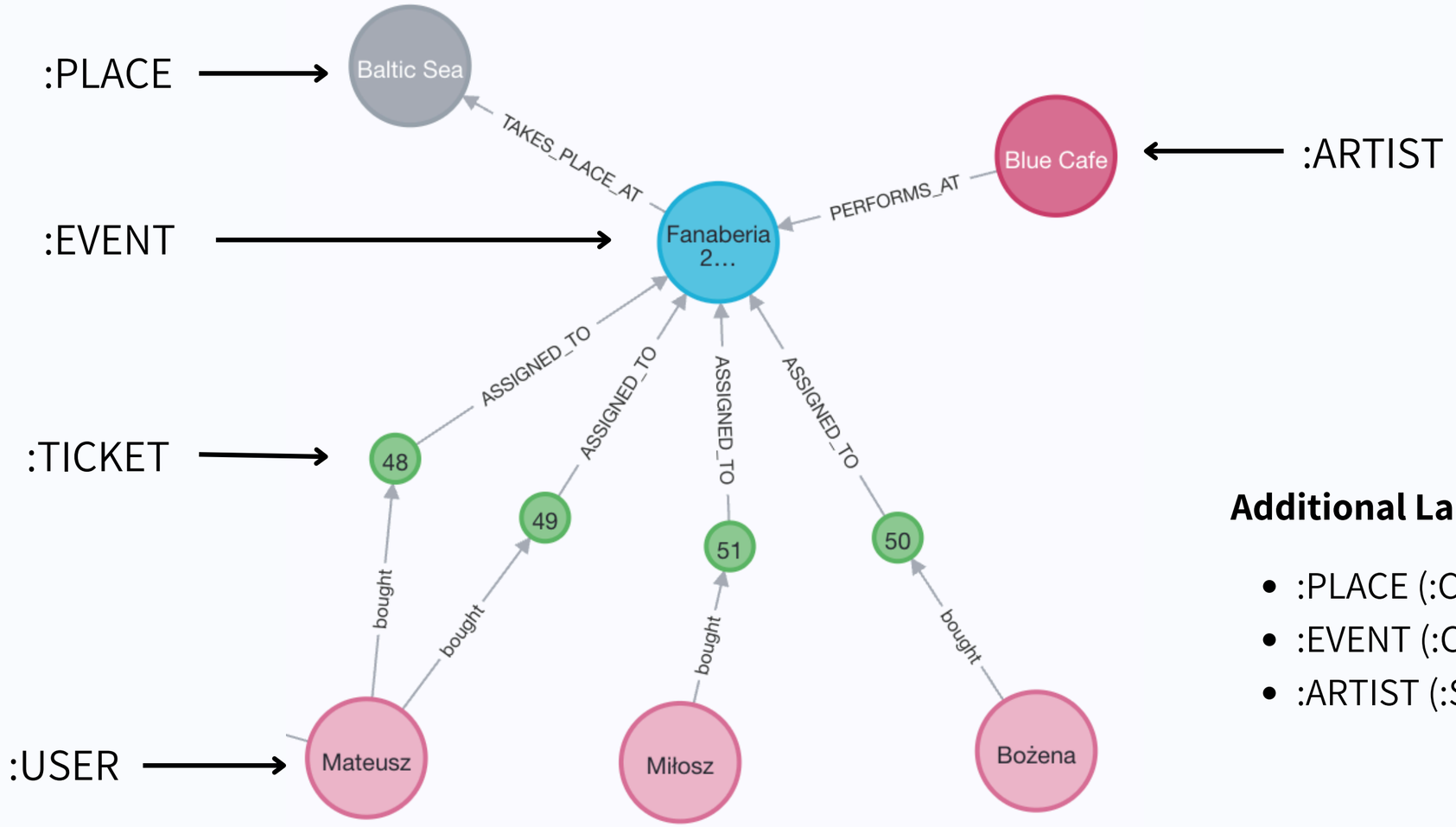
Graph database



The graph database consists of **26** nodes and **28** relationships

There are 13 different Node labels, and 4 different types of relationships

Graph nodes



Additional Labels:

- :PLACE (:CLUB / :CULTURAL_CENTER)
- :EVENT (:CONCERT / :STAND_UP / :CABARET)
- :ARTIST (:SINGER / :COMEDIAN / :BAND)

Graph nodes - attributes

:EVENT

date	"2024-08-25"
duration	105
start_time	"16:30:00Z"
title	Fanaberia Tour 2024

:ARTIST

Nationality	Polish
genre	Pop
name	Julia
surname	Wieniawa

:PLACE

address	Świętego Ducha 2
city	Gdańsk
contact	manager_parlament@gmail.com
name	Parlament

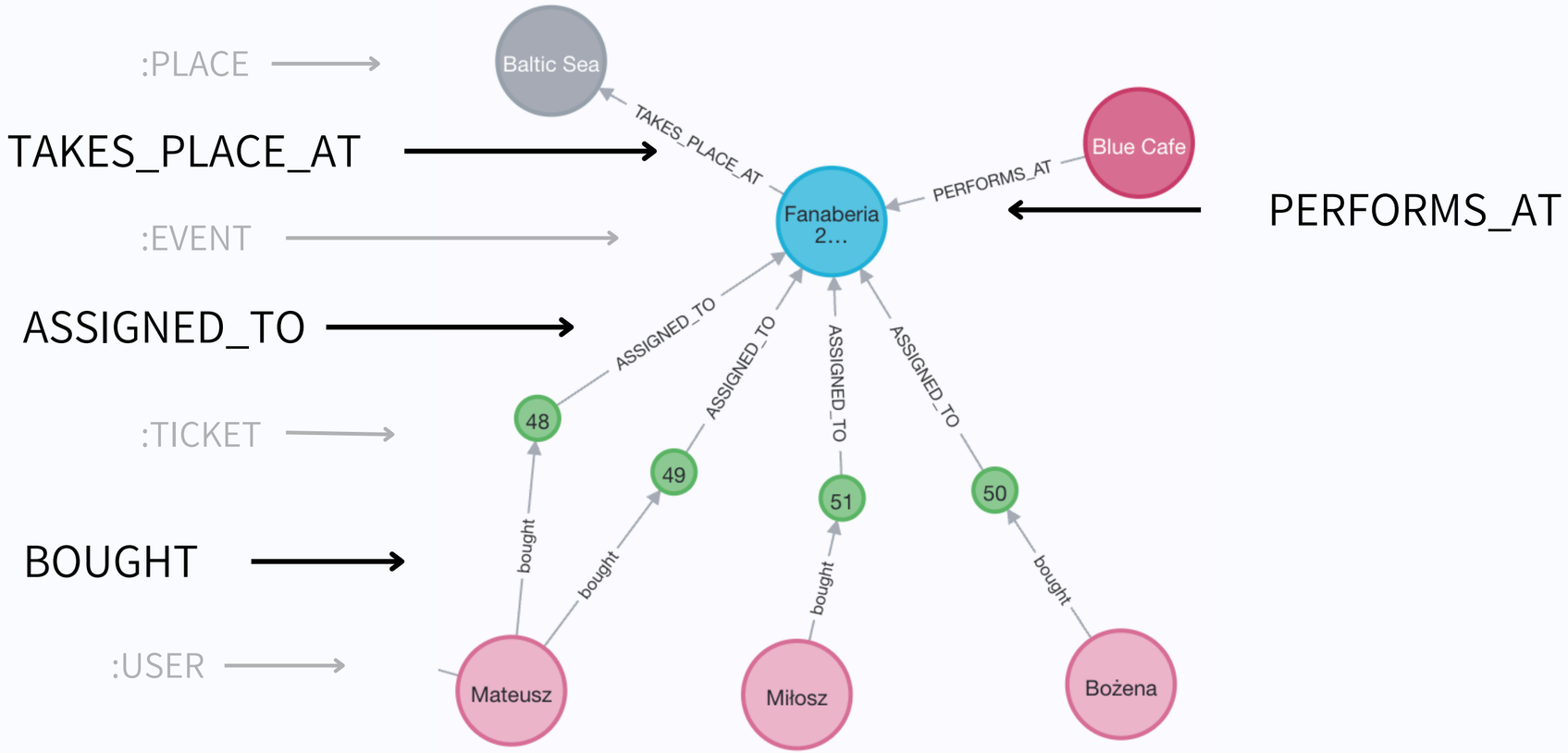
:USER

ID	10203042
Nationality	Polish
birth_date	"1977-04-21"
email	malpiec@gmail.com
join_date	"2022-10-02"
name	Małgorzata
phone	123456788
surname	Piec

:TICKET

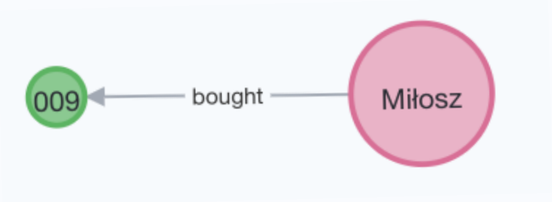
ID	007
price	99
row	B
seat	47

Graph relationships



Graph relationships- attributes

:bought



how	blik
when	"2024-06-19T16:17:18Z"

:ASSIGNED_TO

:TAKES_PLACE_AT

capacity	60
rental_price	300

:PERFORMS_AT

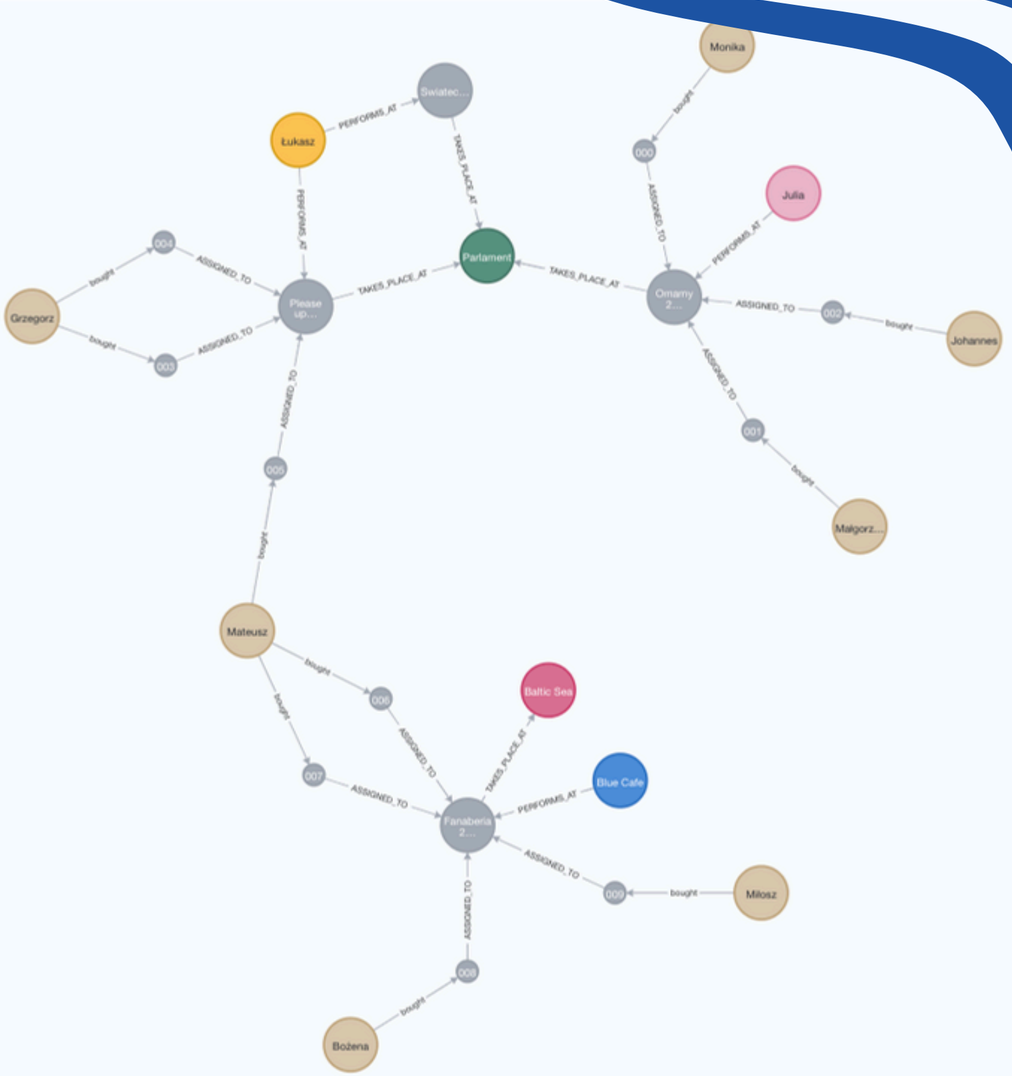
role	headliner

Graph database assumption

Only a part of a tickets sold and users is visible on a graph

Not all tickets have assigned row and seat numbers. Tickets for VIP sections or standing areas do not include seat or row assignments, reflecting different ticket types (e.g., VIP vs. general admission).

Prices and data are set randomly



Competency questions

1.How many tickets have been sold for each event type and how many number of shows were performed? (aggregation + distinct + labels())

```
1 MATCH (m:TICKET)⟶(n:EVENT)
2 return labels(n) as Event_type, count(distinct n) as Number_of_shows, count(m) as Ticket_sold
```

Table | Text | Code

	Event_type	Number_of_shows	Ticket_sold
1	["EVENT", "STAND_UP"]	1	3
2	["EVENT", "CONCERT"]	2	7

Competency questions

2. How long has each user had their account? (duration + concat using +)

```
1 match(n:USER)
2 return n.name+" "+n.surname as Full_name, duration.between(n.join_date, date()) as account_duration
3
```

	Full_name	account_duration
1	"Monika Kowalska"	"P24M20DT0S"
2	"Malgorzata Piec"	"P24M19DT0S"
3	"Johannes Bib"	"P24M18DT0S"
4	"Grzegorz Marzec"	"P24M17DT0S"
5	"Mateusz Kowalski"	"P24M16DT0S"
6	"Bożena Las"	"P24M15DT0S"
7		

Competency questions

3. The event recommendations for users : it shows the upcoming shows of the artists that user has seen before based on ticket purchases? (traversing through graph, date calculations)

```
//03 Query
MATCH (n:USER)⟶(t:TICKET)⟶(e:EVENT)⟵(m:ARTIST)⟶(e2:EVENT)
where e2.date > date()
RETURN  n.name, m.name as Artist,collect(distinct e2.title) as Recommendations
```

	n.name	Artist	Recommendations
1	"Grzegorz"	"Łukasz"	["Swiateczny Kabaret"]
2	"Mateusz"	"Łukasz"	["Swiateczny Kabaret"]

Competency questions

4. How many free tickets are left for events? (aggregations)

```
1 match (t:TICKET)⟶(e:EVENT)-[r:TAKES_PLACE_AT]→()
2 return e.title,  max(r.capacity) - count(t)  as free_spaces
3
```

Table | Text | Code

	e.title	free_spaces
1	"Omamy Tour 2024"	27
2	"Please stand up"	17
3	"Fanaberia Tour 2024"	41

Competency questions

5. How much money did artists made for each show? (aggregations)

```
1 match (n:USER)⟶(t:TICKET)⟶(e:EVENT)-[r:TAKES_PLACE_AT]→(:PLACE)
2 return e.title,  sum(t.price)-max(r.rental_price)  as sum_earned
```

Table | Text | Code

	e.title	sum_earned
1	"Omamy Tour 2024"	547
2	"Please stand up"	297
3	"Fanaberia Tour 2024"	276

Competency questions

6. Who bought a ticket with a seat no. 5 in a row ‘J’ for “Please Stand up”?

Competency questions

7. Which place has the most experience in holding an event
(the more events held the more experience)? (order by + limit + aggregations)

```
1 match (e:EVENT)-[TAKES_PLACE_AT]→(p:PLACE)
2 return  p.name as PLACE_NAME, count(e) as NUMBER_OF_EVENTS
3 order by  NUMBER_OF_EVENTS desc
4 limit 1
```

Table | Text | Code

	PLACE_NAME	NUMBER_OF_EVENTS
1	"Parlament"	3

Competency questions

8. Who have bought the more than one ticket?
(where statement + aggregations)

```
1 match (u:USER)-[:bought]→(t:TICKET)
2 with u.ID AS user_identificator, count(t) AS tickets_amount
3 where tickets_amount > 1
4 return user_identificator
```

Table

	user_identificator
1	10203044
2	10203045

Text

Code

THANK YOU