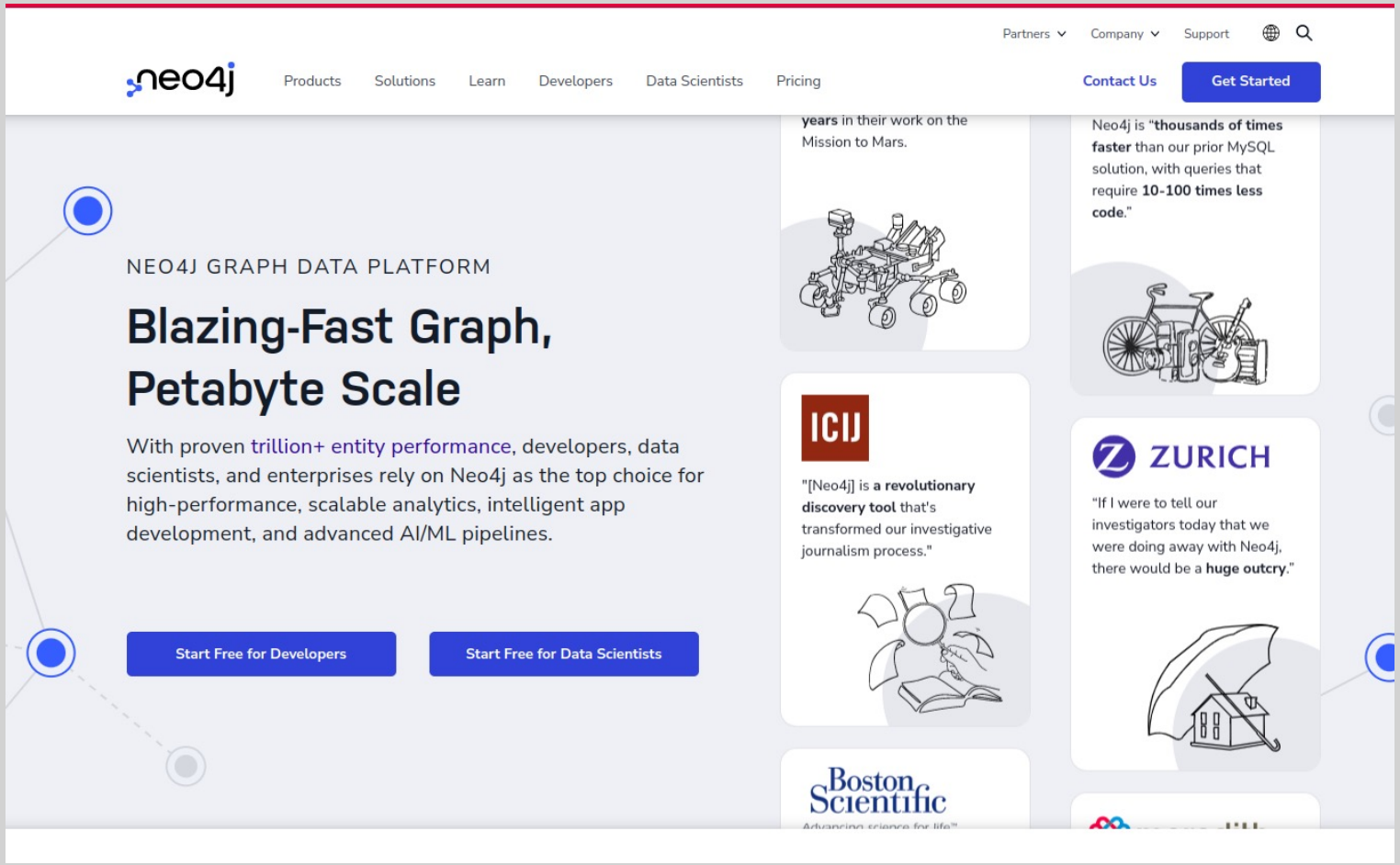
Neo4J

Databases 2023

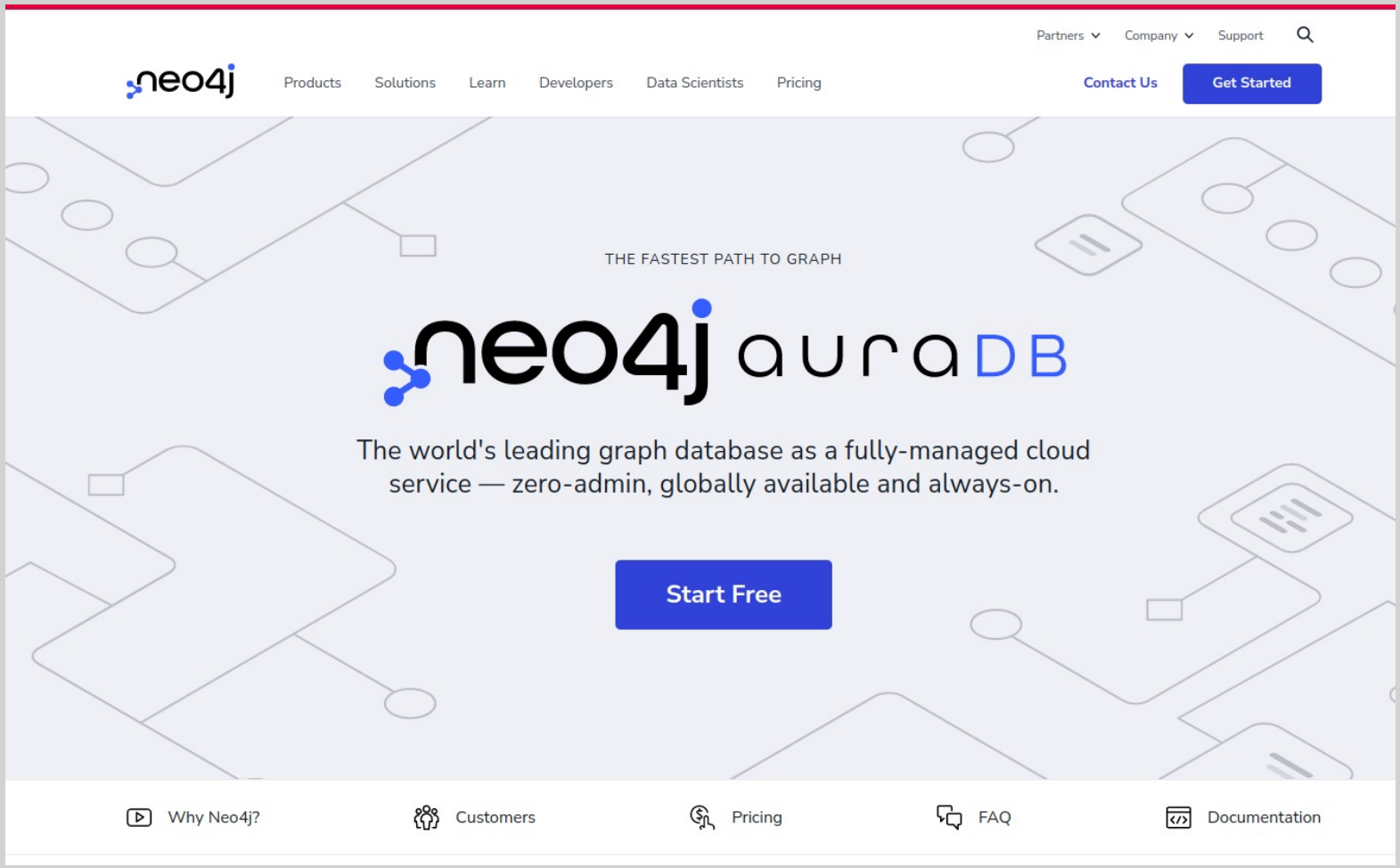
How to Start

- Go to **neo4j.com** and press get started



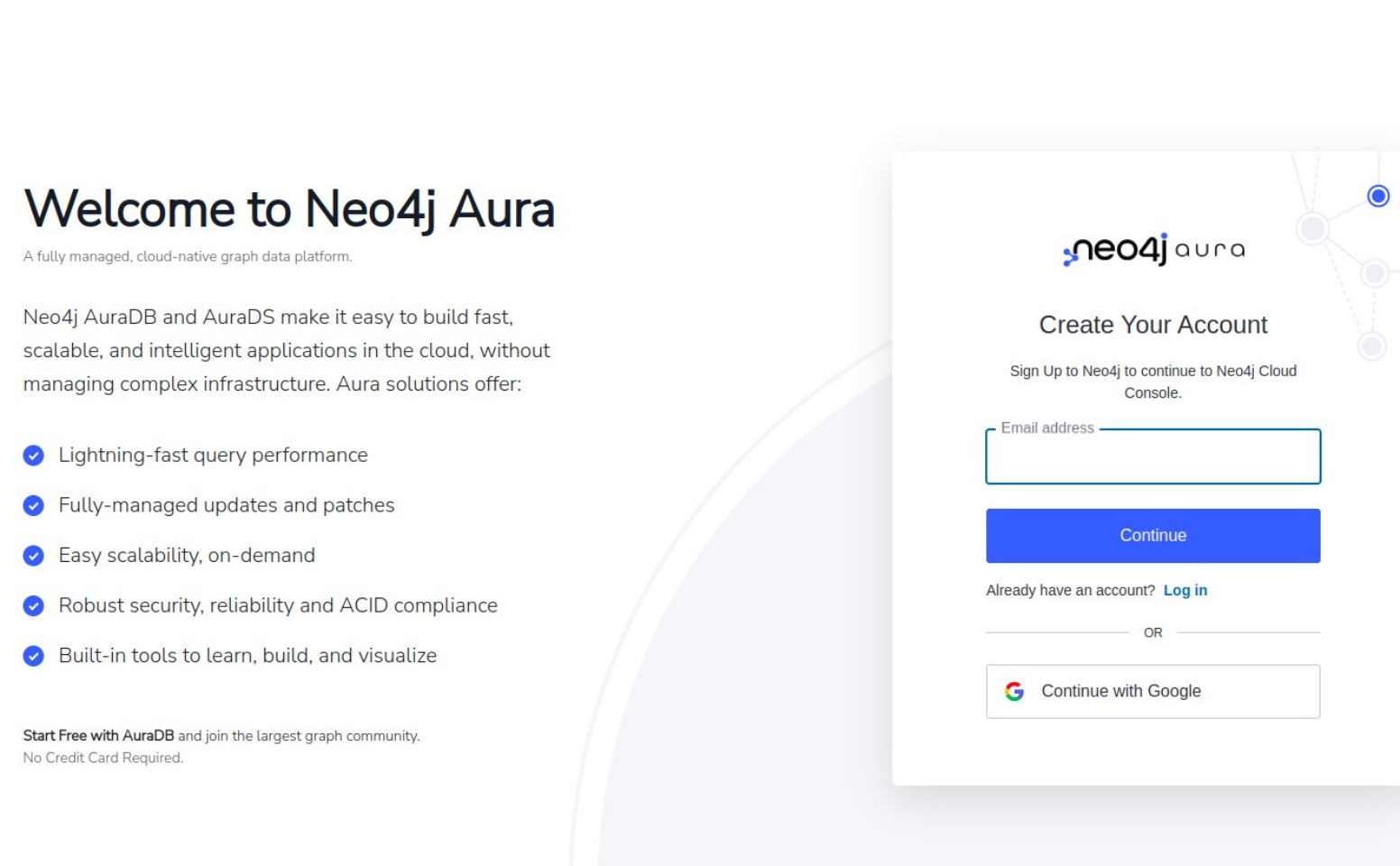
How to Start

- Then press Start free



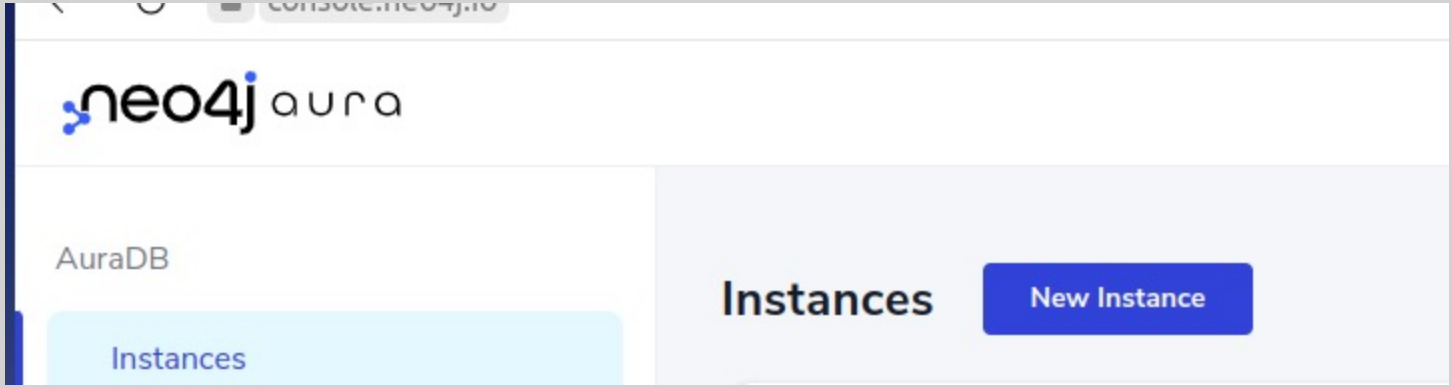
How to Start

- Then press Register



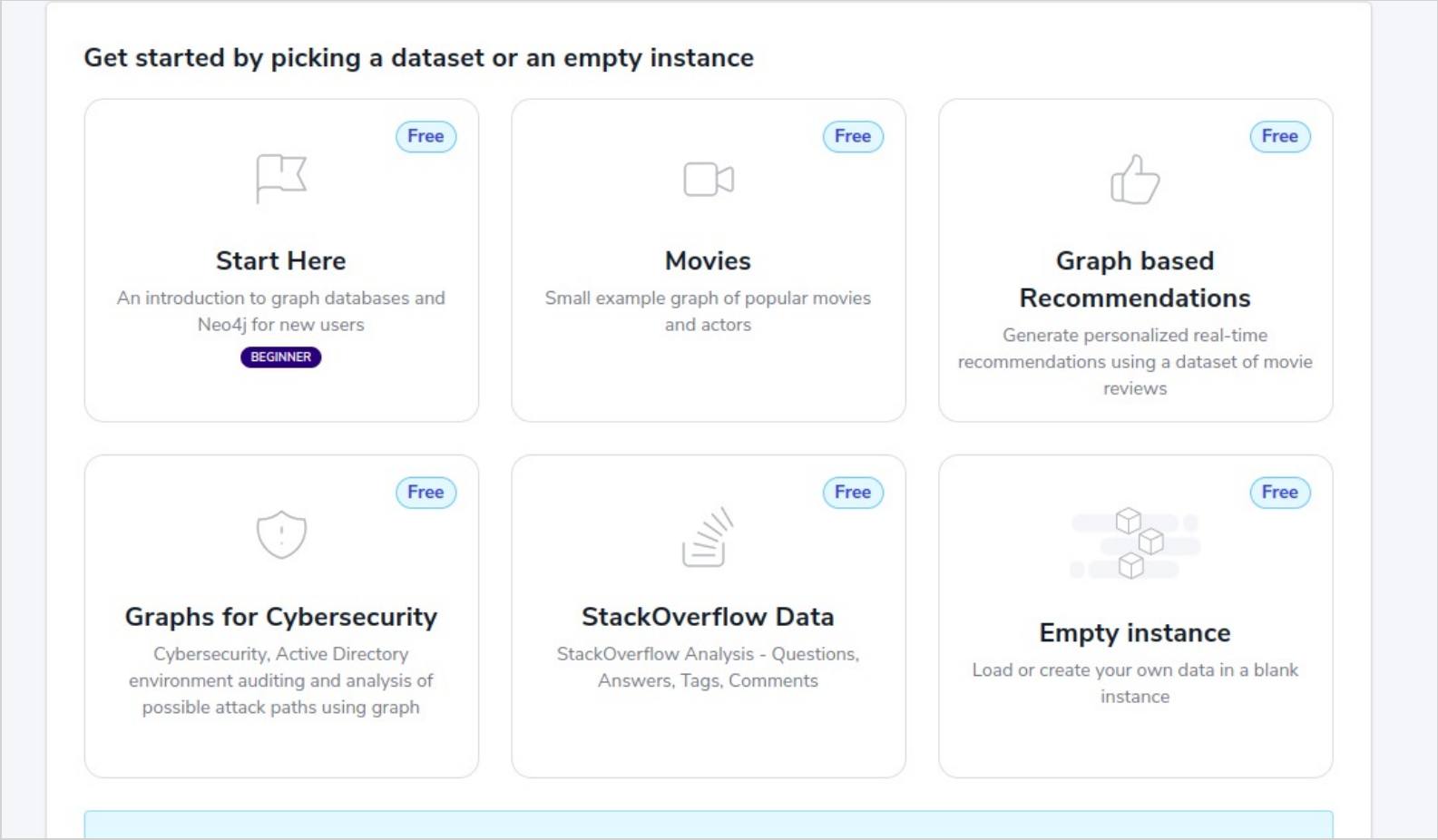
How to Start

- Then New instance



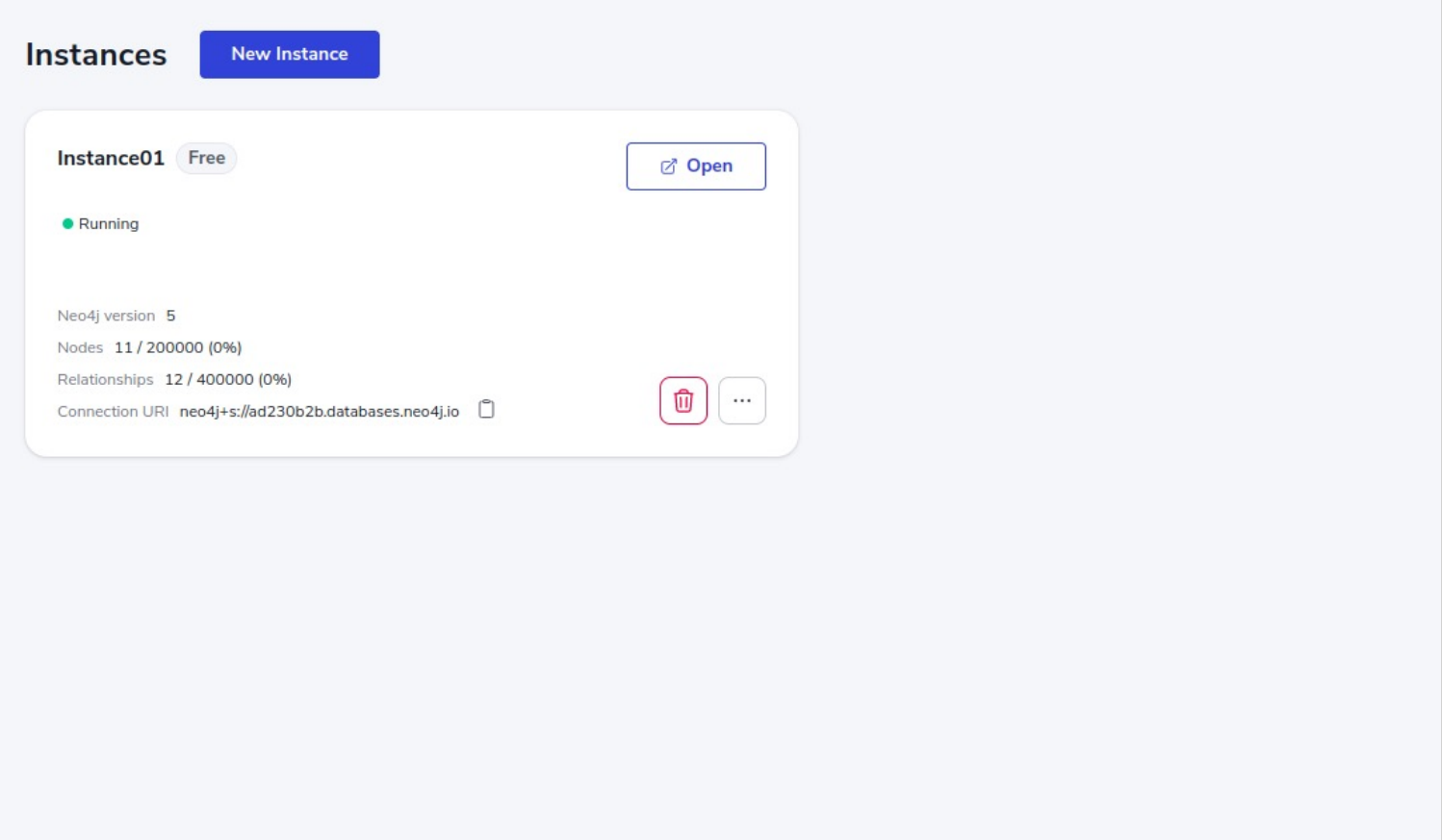
How to Start

- Select “Start here” instance and store login and password



How to start

- After the instance is loaded, enter to the instance (press open)



How to Add Data

- Create node

```
CREATE(p:Fighter{name:'Khabib Nurmagomedov', weight:'155'}), (pp:Fighter{name:'Rafael Dos Anjos', weight:'155'})
```

- Create relation to existing nodes

```
MATCH (a:Fighter), (b:Fighter)
WHERE a.name = 'Khabib Nurmagomedov' AND b.name = 'Rafael Dos Anjos'
CREATE (a)-[r:beats]→(b)
```

- Create node and relations

```
CREATE(p:Fighter{name:'Khabib Nurmagomedov', weight:'155'}), (pp:Fighter{name:'Rafael Dos Anjos', weight:'155'}), (p)-[:beats]->(pp)
```

- Example to drop nodes

Drop all: MATCH (n) DETACH DELETE n

Drop all relations: MATCH () - [r:beats] -> () DELETE r

Drop all nodes: MATCH (n:Fighter) DELETE n

Select Example

1. Consider the following query: Return all weight fighters grouped by weight who at least have one win.

Select Example

1. Consider the following query: Return all weight fighters grouped by weight who at least have one win.

a. list of all fighters who at least have one win > list of winners

```
MATCH (f:Fighter)-[:beats]→()
RETURN f.weight, f.name
```

Table RAW

f.weight	f.name
"170"	"Neil Magny"
"205"	"Jon Jones"
"205"	"Jon Jones"
"185"	"Michael Bisping"
"185"	"Michael Bisping"
"185"	"Michael Bisping"

Select Example

1. Consider the following query: Return all weight fighters grouped by weight who at least have one win.

b. list of winners grouped by weight

```
MATCH (f:Fighter)-[:beats]→()
RETURN f.weight, collect(f.name)
```

Table RAW

f.weight	collect(f.name)
"170"	["Neil Magny"]
"205"	["Jon Jones", "Jon Jones", "Brandon Vera"]
"185"	["Michael Bisping", "Michael Bisping", "Michael Bisping", "Matt Hamill", "Kelvin Gastelum"]
"155"	["Khabib Nurmagomedov", "Rafael Dos Anjos"]
"230"	["Frank Mir"]

Select Example

1. Consider the following query: Return all weight fighters grouped by weight who at least have one win.

c. list of winners grouped by weight without duplicates

```
1 MATCH (f:Fighter)-[:beats]→()
2 RETURN f.weight, collect(DISTINCT f.name)
```

Table RAW

f.weight	collect(DISTINCT f.name)
"170"	["Neil Magny"]
"205"	["Jon Jones", "Brandon Vera"]
"185"	["Michael Bisping", "Matt Hamill", "Kelvin Gastelum"]
"155"	["Khabib Nurmagomedov", "Rafael Dos Anjos"]
"230"	["Frank Mir"]

Exercise 1

- MMA Math.. If fighter A beats fighter C and C beats B that means A can beat B.
  - Using Neo4J-empty project, build a representation of the relationship between the following fighters (fighter is a Node{name,weight}, beat is a relationship).
    - Khabib Nurmagomedov(155) > Rafael Dos Anjos (155)
    - Rafael Dos Anjos > Neil Magny(170)
    - Jon Jones(205) > Daniel Cormier(205)
    - Michael Bisping (185)> Matt Hamill (185)
    - Jon Jones > Brandon Vera (205)
    - Brandon Vera > Frank Mir (230)
    - Frank Mir > Brock Lesnar(230)
    - Neil Magny > Kelvin Gastelum(185)
    - Kelvin Gastelum > Michael Bisping
    - Michael Bisping > Matt Hamill
    - Michael Bisping > Kelvin Gastelum
    - Matt Hamill > Jon Jones
- **Submit a single file with the query or queries which create the database and a figure with a graph.**

Exercise 2

- Write a *Cypher* queries to:
  1) Return all **middle/welter/light** weight fighters (155, 170, 185) who at least have one win and grouped by weight.
  2) Return fighters who had **1-1 record** with each other. Use **Count** from the aggregation functions. Pair repetitions is accepted. Expected two column response. Hint: *"MATCH (f:Fighter)-[b:beats]->(f2:Fighter) - [b2:beats] -> (f3:Fighter) …"* this part of the query might be useful.
  3) Return all fighters who has the greatest number of fights.
  4) Return **undefeated fighters (0 losses) and defeated fighters (0 wins)**. Expected two rows response.
- **Submit Queries and Screenshots with responses of Queries**.

Useful Links

- NEO4J Tutorial - https://neo4j.com/developer/get-started/
- Aggregation funcs - https://neo4j.com/docs/cypher-manual/current/functions/aggregating/
- Clauses - https://neo4j.com/docs/cypher-manual/current/clauses/
- Why we should use the neo4j - https://www.youtube.com/watch?v=_D19h5s73Co
- NEO4J - https://neo4j.com/
- https://habr.com/ru/post/219441/