JEGYZŐKÖNYV

Modern adatbázis rendszerek MSc

2022. tavasz féléves feladat

Neo4j

Készítette: **Bolyki Balázs**
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A feladat leírása:
Neo4j feladatok megoldása.

https://neo4j.com/download-center/#enterprise

1. feladat:
A: Hozzunk létre User és Tweet nodeokat!

User property-k:
- username
- country

Tweet property-k:
- short
- created
- text

B: Vigyünk fel hozzá adatokat!

C: Üssünk be egy tweetet és egy :authored kapcsolatot duplikálva (mintha elrontottuk volna). Töröljük az egyik tweetet és a hozzá tartozó kapcsolatot! (id alapján)

D: Javítsuk Kittikeh hajzselés kommentjében a hajzselét úgy, hogy tartalmazzon ékezetet!

E: Hány felhasználó van az USA-ból?

F: Helyezzünk el like-okat is relationshipként!
- Pacemaker420 likeolja Hamburger minden tweetjét!
- Mindenki likeolja Kittikeh Annual exhibition-ös tweetjét!
- TRex likeolja TankYou tweetjét.

G: Adjuk vissza a felhasználók neveit és hogy ki mennyi tweetet írt!

H: Adjuk vissza azt a felhasználót, aki a legtöbbet likeolt!

I: Adjuk vissza a felhasználók neveit és azt, hogy ki hány likeot gyűjtött!

J: Kreáljunk egy olyan kapcsolatot, ami "körbelájkolást" okoz. (Két felhasználó egymás tweetjét lájkolja). Detektáljuk ezt a körbelájkolást, és rajzoljuk ki a tweetekkel együtt!

2. feladat:

A: Hozzunk létre városokat és utakat, amik közöttük vezetnek!

B: Hány olyan út vezet A városból F városba, ahol pontosan 4 várost kell érinteni?

C: Melyek azok a városok, ahova A-ból el lehet jutni?

A feladat elkészítésének lépései:
1. feladat:
create database twitter
A:

```
create constraint for (u:User) require u.username is unique;
create constraint for (u:User) require u.username is not null;
create constraint for (u:User) require u.country is not null;

create constraint for (t:Tweet) require t.short is not null;
create constraint for (t:Tweet) require t.created is not null;
create constraint for (t:Tweet) require t.text is not null;
```

B:

```
create (u:User {username:"TRex", country:"USA"});
create (u:User {username:"Klopacska", country:"Hungary"});
create (u:User {username:"Pacemaker420", country:"USA"});
create (u:User {username:"Hamburger", country:"USA"});
create (u:User {username:"Kittykeh", country:"Hungary"});
```

```
create (u:User {username:"TankYou", country:"Russia"});

create (t:Tweet {short:"My hajzsele isn't working",
created:datetime("2019-06-01T18:40:32.142+0100"), text:"This is hajzsele is terrible. I am very offended. Let's hate big company!"}); // Kittykeh
create (t:Tweet {short:"Klopacska jó",
created:datetime("2020-06-09T18:40:32.142+0100"), text:"Sok barátot szereztem a Klopacskában, de a Tigrises teától a vesém külföldre menekült!"}); // Klopacska
create (t:Tweet {short:"I'm extinct.",
created:datetime("2021-04-11T11:40:32.142+0100"), text:"LOL, I saw this big meteorite. It was far away and I'm dying to see it close up.!"}); //TRex
create (t:Tweet {short:"The pace of this movie...",
created:datetime("2017-10-22T19:40:30.142+0100"), text:"I was watching SpiderMan and the pacing just isn't right! My pacemaker and the movie set different paces and it's so confusing!"}); //Pacemaker420
create (t:Tweet {short:"Burger king is p*ssy!",
created:datetime("2021-12-01T18:40:32.142+0100"), text:"I was eating Burger king and they gave me a hamburger so small that they should call themselves Burger Queen. I'm gonna say this on TikTok if I fit in the picture..."}); // Hamburger
create (t:Tweet {short:"McDony is making you fat",
created:datetime("2022-03-01T18:40:32.142+0100"), text:"I just realised McDonalds is putting calories into my hamburgers!!! This illuminati atrocity conspiracy thing should be punished!"}); // Hamburger
create (t:Tweet {short:"It started as a bicycle",
created:datetime("2018-12-12T18:40:32.142+0100"), text:"Tavaris! Each and every time I try to make a bicycle it turns out to be a TANK. I cannot be at peace like this!"}); //Tank you
create (t:Tweet {short:"Happy new year",
created:datetime("2020-01-01T18:40:32.142+0100"), text:"Happy New Year for everybody! I vow to make an actual selfie this year. My upper arms shouldn't be a problem!"}); //TRex
create (t:Tweet {short:"Annal exhibition",
created:datetime("2021-02-01T18:40:32.142+0100"), text:"This year as
```

usual I make my annal exhibition. Everyone should come in! This exhibition is held every year annaly! As for those jerks who don't know 'annal' means yearly! I know how to write! Boors..."}); //Kittykeh
create (t:Tweet {short:"Pink house",
created:datetime("2020-06-13T18:40:32.142+0100"), text:"I think the color white is so plain and sterile! Accordingly the White House should be repainted as pink! Please sign the petition!"}); //Kittykeh

match (t:Tweet), (u:User {username:"Kittykeh"}) where t.short="My hajzsele isn't working" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"Klopacska"}) where t.short="Klopacska jó" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"TRex"}) where t.short="I'm extinct." create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"Pacemaker420"}) where t.short="The pace of this movie..." create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"Hamburger"}) where t.short="Burger king is p*ssy!" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"Hamburger"}) where t.short="McDony is making you fat" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"TankYou"}) where t.short="It started as a bicycle" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"TRex"}) where t.short="Happy new year" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"Kittykeh"}) where t.short="Annal exhibition" create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"TRex"}) where t.short="I'm extinct." create (u)-[:authored]->(t);
match (t:Tweet), (u:User {username:"Kittykeh"}) where t.short="Pink house" create (u)-[:authored]->(t);

C:
match (t:Tweet) where id(t)=01234 detach delete t

D:

match (t:Tweet {short:"My hajzsele isn't working"}) set t.short="Hajzselé"

E:
match (u:User {country:"USA"}) return count(u)

F:
match (u1:User {username:"Pacemaker420"}), (u2:User {username:"Hamburger"})-[:authored]-(t:Tweet) create (u1)-[:likes]->(t);
match (t:Tweet {short:"Annal exhibition"}), (u:User) create (u)-[:likes]->(t)match (t:Tweet {short:"Annal exhibition"}), (u:User) where u.username!="Kittykeh" create (u)-[:likes]->(t);
match (trex:User {username:"TRex"}), (tank:User {username:"TankYou"})-[:authored]-(t:Tweet) create (trex)-[:likes]->(t);

G:
match (u:User)-[:authored]->(t:Tweet) with u.username as username, count(t) as authored return username, authored;

H:
match (u:User)-[:likes]->(t:Tweet) with u.username as username, count(t) as liked return username order by liked desc limit 1

I:
match (liker:User)-[:likes]->(t:Tweet)<-[:authored]-(author:User) with author.username as username, count(liker) as likers return username, likers

J:
match (u:User {username:"TankYou"}), (t:Tweet {short:"Happy new year"}) create (u)-[:likes]->(t); //Körbelájkolás kreálása
match (u1:User)-[:authored]->(t1:Tweet)<-[:likes]-(u2:User)-[:authored]->(t2:Tweet)<-[:likes]-(u1:User) return u1, u2, t1, t2 //Körbelájkolás detektálása

2. feladat:

create database cities

A:

```
create (c:City {name:"A"});
create (c:City {name:"B"});
create (c:City {name:"C"});
create (c:City {name:"D"});
create (c:City {name:"E"});
create (c:City {name:"F"});
create (c:City {name:"G"});
create (c:City {name:"H"});
create (c:City {name:"I"});
create (c:City {name:"J"});
create (c:City {name:"K"});
create (c:City {name:"L"});
create (c:City {name:"M"});
create (c:City {name:"N"});
create (c:City {name:"O"});

match (c1:City {name:"A"}), (c2:City {name:"B"}) create (c1)-[:leadsTo
{distance: 12}]->(c2);
match (c1:City {name:"B"}), (c2:City {name:"C"}) create (c1)-[:leadsTo
{distance: 22}]->(c2);
match (c1:City {name:"C"}), (c2:City {name:"D"}) create (c1)-[:leadsTo
{distance: 1}]->(c2);
match (c1:City {name:"D"}), (c2:City {name:"A"}) create (c1)-[:leadsTo
{distance: 11}]->(c2);
match (c1:City {name:"C"}), (c2:City {name:"E"}) create (c1)-[:leadsTo
{distance: 34}]->(c2);
match (c1:City {name:"E"}), (c2:City {name:"F"}) create (c1)-[:leadsTo
{distance: 55}]->(c2);
match (c1:City {name:"F"}), (c2:City {name:"G"}) create (c1)-[:leadsTo
{distance: 14}]->(c2);
match (c1:City {name:"G"}), (c2:City {name:"H"}) create (c1)-[:leadsTo
{distance: 32}]->(c2);
```

```
match (c1:City {name:"H"}), (c2:City {name:"I"}) create (c1)-[:leadsTo {distance: 37}]->(c2);
match (c1:City {name:"I"}), (c2:City {name:"E"}) create (c1)-[:leadsTo {distance: 48}]->(c2);
match (c1:City {name:"K"}), (c2:City {name:"L"}) create (c1)-[:leadsTo {distance: 99}]->(c2);
match (c1:City {name:"L"}), (c2:City {name:"M"}) create (c1)-[:leadsTo {distance: 123}]->(c2);
match (c1:City {name:"M"}), (c2:City {name:"N"}) create (c1)-[:leadsTo {distance: 3}]->(c2);
match (c1:City {name:"N"}), (c2:City {name:"O"}) create (c1)-[:leadsTo {distance: 12}]->(c2);
match (c1:City {name:"O"}), (c2:City {name:"K"}) create (c1)-[:leadsTo {distance: 34}]->(c2);
match (c1:City {name:"K"}), (c2:City {name:"M"}) create (c1)-[:leadsTo {distance: 54}]->(c2);
match (c1:City {name:"A"}), (c2:City {name:"H"}) create (c1)-[:leadsTo {distance: 54}]->(c2);
```

B:

```
match (A:City {name:"A"})-[*4]-(c:City {name:"F"}) with count(A) as rodes return rodes
```

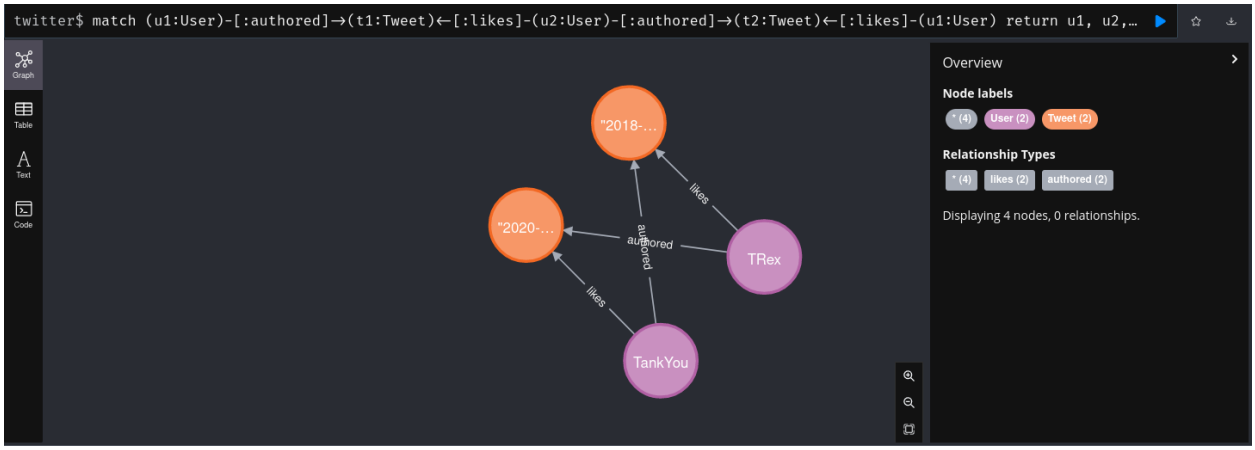
C:

```
match (A:City {name:"A"})-[*..]-(c:City) return c
```

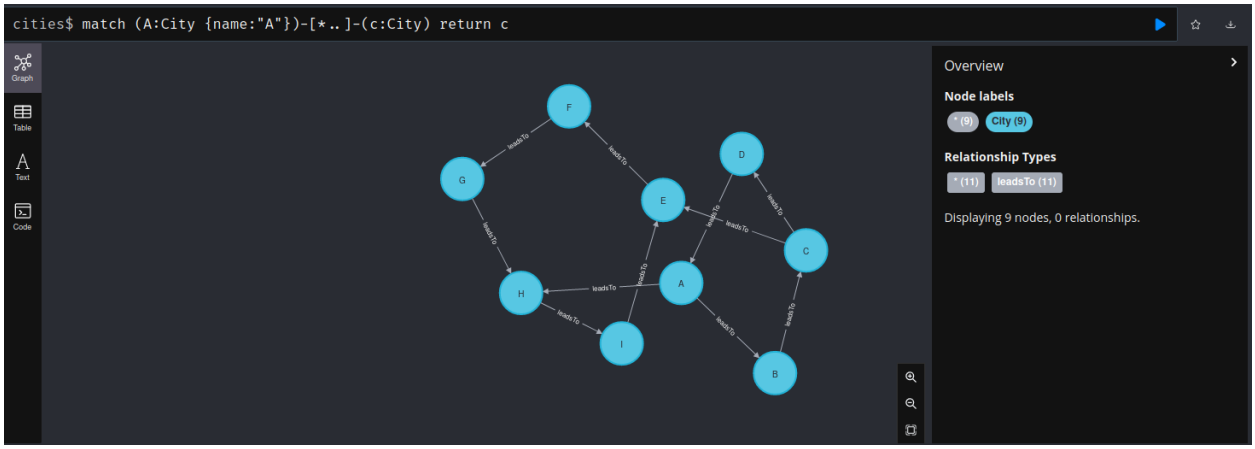
A futtatás eredménye:

Az eredmények részletezése feladatonként változik. A Neo4j Browser verziója többféle ábrázolásmódra is alkalmas: táblázatos, szöveges, nóduszokkal rajzolt. Alább található néhány feladat ábrázolása. Minden feladathoz csatolni az eredményt fölöslegesen nagy terjedelmű lenne.

1.J


twitter$ match (u1:User)-[:authored]→(t1:Tweet)←[:likes]-(u2:User)-[:authored]→(t2:Tweet)←[:likes]-(u1:User) return u1, u2,…
Graph
Table
Text
Code
"2018-…
"2020-…
likes
authored
likes
TRex
TankYou
Overview
Node labels
* (4)
User (2)
Tweet (2)
Relationship Types
* (4)
likes (2)
authored (2)
Displaying 4 nodes, 0 relationships.

2.C


cities$ match (A:City {name:"A"})-[*..]-(c:City) return c
Graph
Table
Text
Code
F
G
E
D
C
A
H
I
B
leadsTo
Overview
Node labels
* (9)
City (9)
Relationship Types
* (11)
leadsTo (11)
Displaying 9 nodes, 0 relationships.