

Кафедра «Систем обработки информации и управления»

Лабораторная работа №8
по курсу Постреляционные базы данных

Тема: «Работа с графовой NoSQL БД на примере Neo4j»

ИСПОЛНИТЕЛЬ:

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" " _____ 2020 г.

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" " _____ 2020 г.

Задание 1. Создание БД (базовая часть)

**Создать в Neo4j базу данных по теме своего ДЗ.
Определить набор узлов, задать их свойства и метки.**

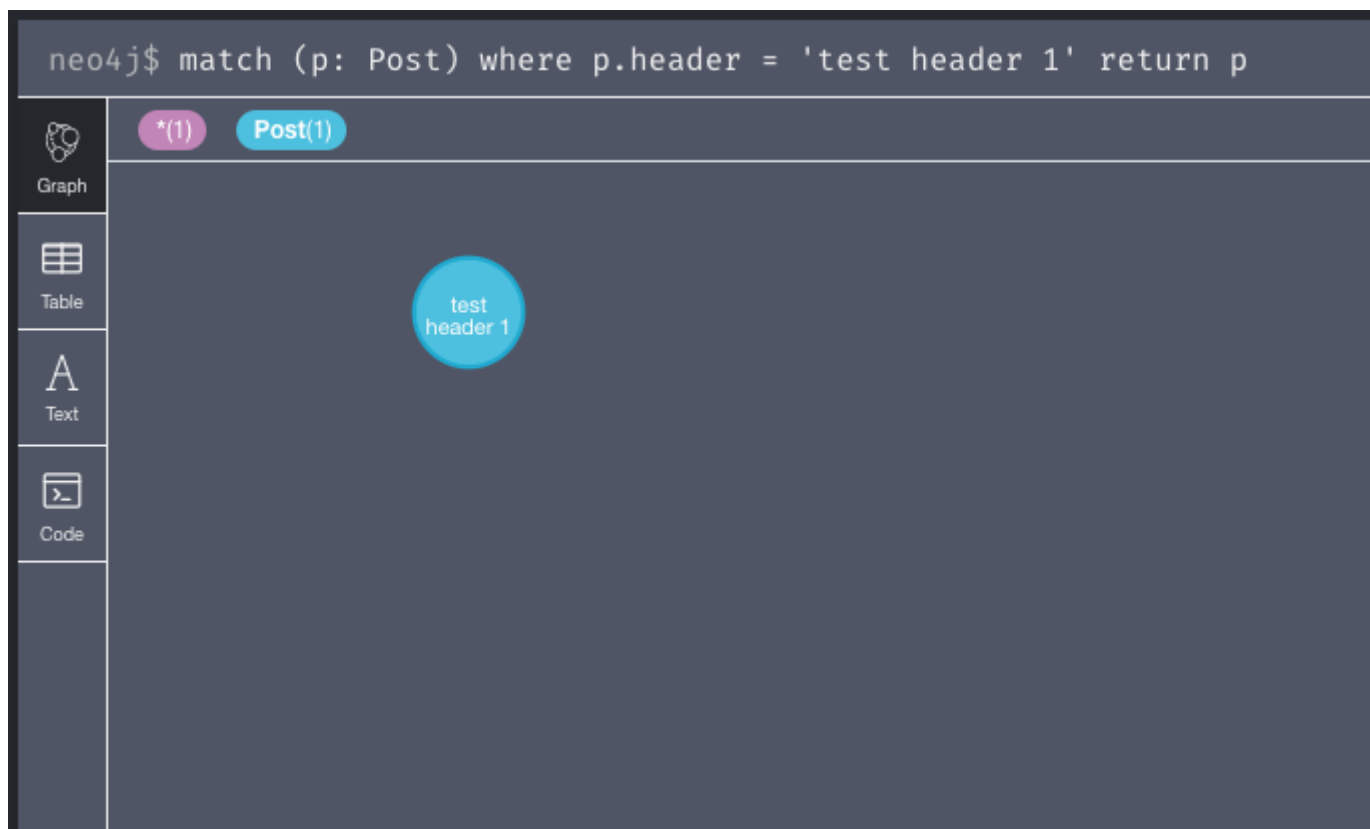
```
create (user1: User {name: 'smet_k', avatar: '/static/default.png'})
create (user2: User {name: 'smet_k_2', avatar: '/static/avatar_new.png'})
create (user4: User {name: 'smet_k_3', avatar: '/static/avatar_old.png'})

create (post1: Post {header: 'test header', short_topic: 'test short topic', main_topic: 'test main to
create (post2: Post {header: 'test header 1', short_topic: 'test short topic 1', main_topic: 'test mai
create (post3: Post {header: 'test header 2', short_topic: 'test short topic 2', main_topic: 'test mai
```

"n"
{"name":"smet_k","avatar":"/static/default.png"}
{"name":"smet_k_2","avatar":"/static/avatar_new.png"}
{"name":"smet_k_3","avatar":"/static/avatar_old.png"}
{"header":"test header","short_topic":"test short topic","main_topic": "test main topic"}
{"header":"test header 1","main_topic":"test main topic 1","short_topi c":"test short topic 1"}
{"header":"test header 2","main_topic":"test main topic 2","short_topi c":"test short topic 2"}

**Продемонстрировать (вывести на экран) содержимое БД
(узлы и их свойства), используя команды
Match/Where/Return.**

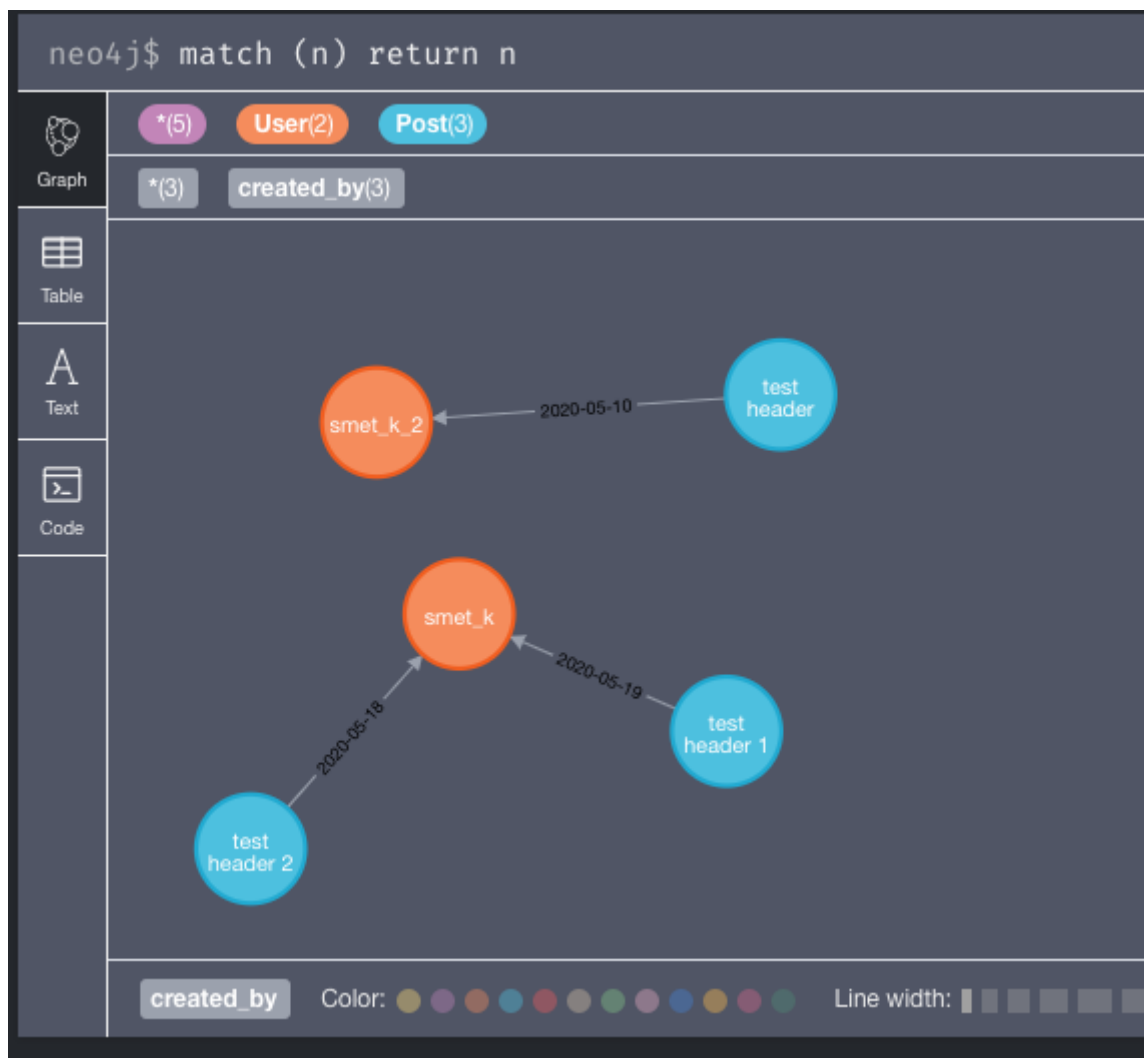
```
match (p: Post) where p.header = 'test header 1' return p
```



Задание 2. Отношения между узлами (базовая часть)

Создать отношения между несколькими узлами (с параметрами).

```
match (p:Post),(u:User) where p.header='test header 1' and u.name = 'smet_k' create (p)-[:created_by {
match (p:Post),(u:User) where p.header='test header 2' and u.name = 'smet_k' create (p)-[:created_by {
match (p:Post),(u:User) where p.header='test header' and u.name = 'smet_k_2' create (p)-[:created_by {
```



Продемонстрировать содержимое БД (фильтрация по узлам, отношениям, меткам и связям).

По узлам

```
match (p:Post)-->(u:User) where p.header = 'test header 1' return p,u;
```

```
neo4j$ match (p:Post)→(u:User) where p.header = 'test header 1' return p,u
```

Graph

*(2) Post(1) User(1)

*(1) created_by(1)

```

graph LR
    p((test header 1)) -- "2020-05-19" --> u((smet_k))
  
```

Table

Text

Code

По отношениям

```
match (p:Post)-[d:created_by]→(u:User) where d.date <= '2020-05-18' return p,u
```

```
neo4j$ match (p:Post)-[d:created_by]→(u:User) where d.date ≤ '2020-05-18' return p,u
```

Graph

*(4) Post(2) User(2)

*(2) created_by(2)

```

graph LR
    p1((test header 2)) -- "2020-05-18" --> u1((smet_k))
    u2((smet_k_2)) -- "2020-05-10" --> p2((test header))
  
```

Table

Text

Code

без статей

```
match (u:User) where not (:Post)-[:created_by]→(u) return u
```

```
neo4j$ match (u:User) where not (:Post)-[:created_by]→(u) return u
```

The screenshot shows the Neo4j Cypher query interface. The query is `match (u:User) where not (:Post)-[:created_by]→(u) return u`. The results pane shows a single result: `*{1}` and `User(1)`. The graph view displays a single orange node labeled `smet_k_3`.

По меткам и связям

```
match (p:Post)-[d:created_by]→(u:User) where d.date <= '2020-05-18' and u.name = 'smet_k' return p,u
```

```
neo4j$ match (p:Post)-[d:created_by]→(u:User) where d.date <= '2020-05-18' and u.name = 'smet_k' return p,u
```

The screenshot shows the Neo4j Cypher query interface. The query is `match (p:Post)-[d:created_by]→(u:User) where d.date <= '2020-05-18' and u.name = 'smet_k' return p,u`. The results pane shows two results: `*{2}`, `Post(1)`, and `User(1)`. The graph view displays a relationship between two nodes: an orange node labeled `smet_k` and a blue node labeled `test header 2`, connected by a relationship labeled `2020-05-18`.

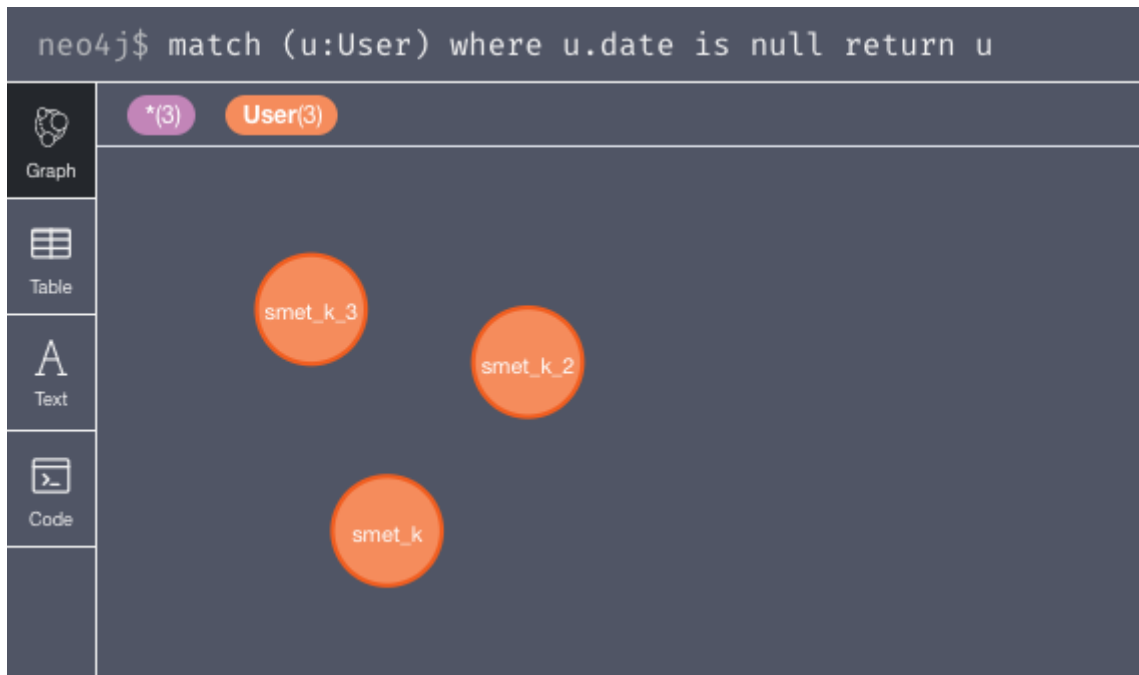
Задание 3. Запросы к БД на языке Cypher (базовая часть)

Выполнить запросы к базе данных на языке Cypher

с условием NOT NULL

```
match (u:User) where u.date is null return u
```

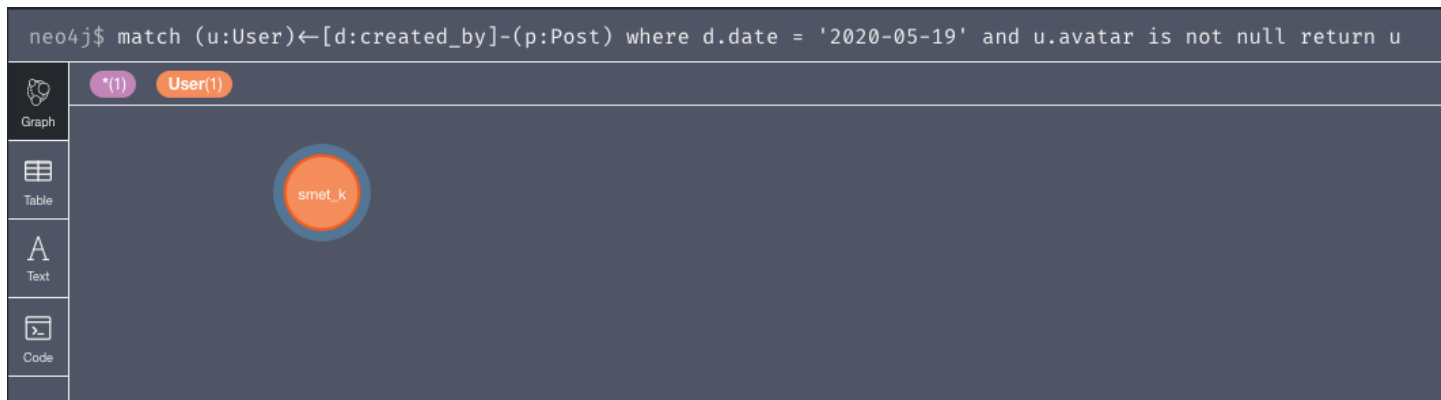
```
neo4j$ match (u:User) where u.date is null return u
```



оператор AND

```
match (u:User)←[d:created_by]-(p:Post) where d.date = '2020-05-19' and u.avatar is not null return u
```

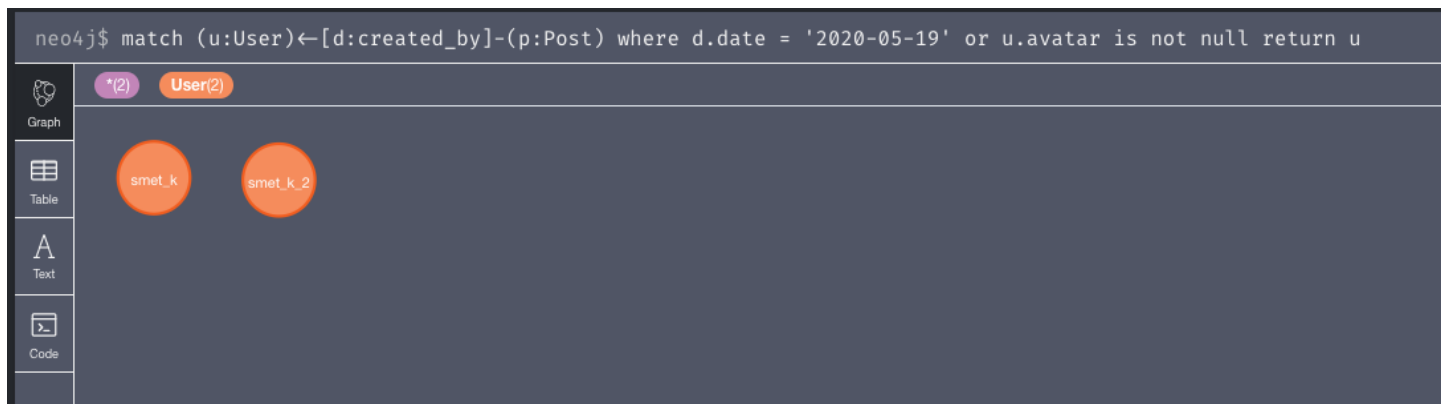
```
neo4j$ match (u:User)←[d:created_by]-(p:Post) where d.date = '2020-05-19' and u.avatar is not null return u
```



оператор OR

```
match (u:User)←[d:created_by]-(p:Post) where d.date = '2020-05-19' or u.avatar is not null return u
```

```
neo4j$ match (u:User)←[d:created_by]-(p:Post) where d.date = '2020-05-19' or u.avatar is not null return u
```



с сортировкой

```
match (u:User)<-[d:created_by]-(p:Post) return p,d order by d.date desc
```

neo4j\$ match (u:User)<-[d:created_by]-(p:Post) return p,d order by d.date desc

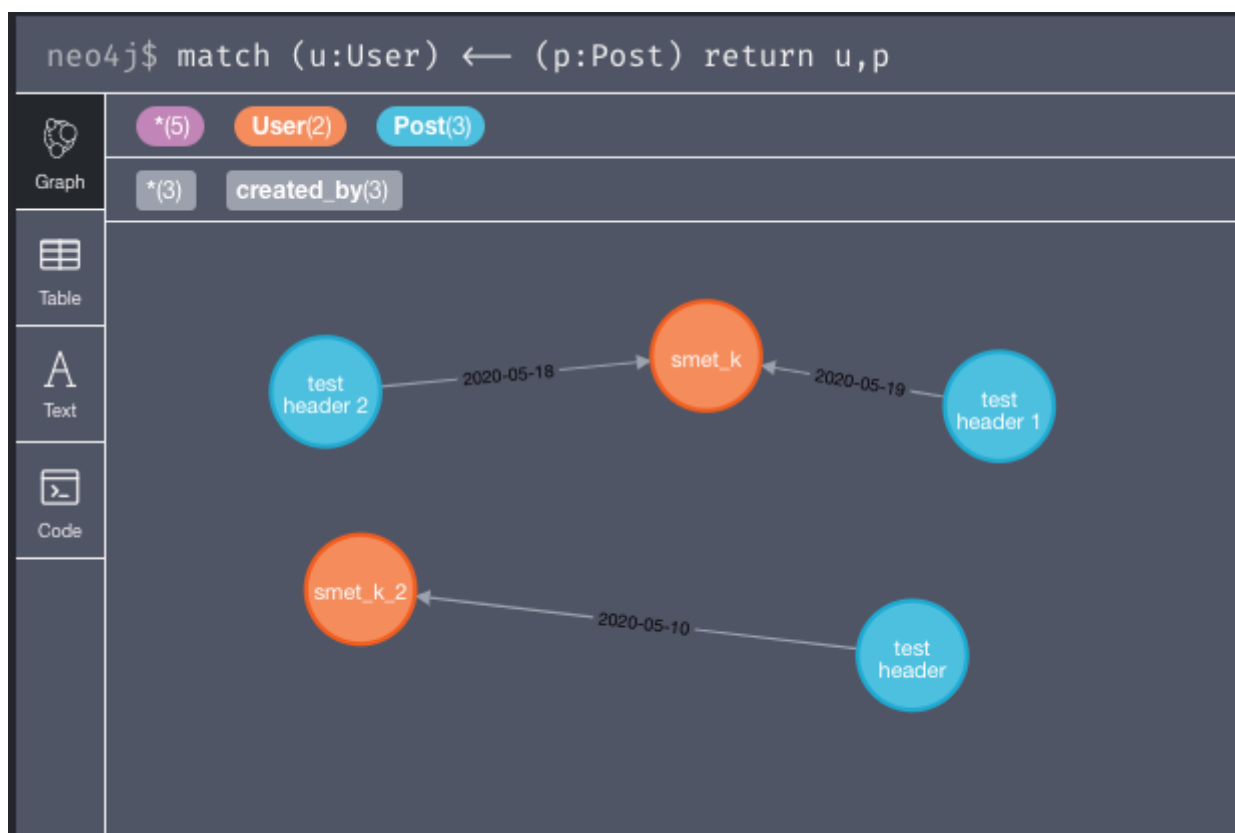
"p"	"d"
{"header":"test header 1","main_topic":"test main topic 1","short_topi c":"test short topic 1"}	{"date":"2020-05-19"}
{"header":"test header 2","main_topic":"test main topic 2","short_topi c":"test short topic 2"}	{"date":"2020-05-18"}
{"header":"test header","short_topic":"test short topic","main_topic": "test main topic"}	{"date":"2020-05-10"}

с условием на направление отношения

```
match (u:User) --> (p:Post) return u,p
```

нет результатов

```
match (u:User) <-- (p:Post) return u,p
```



с параметрами отношения

См сортировку