

W205, Information Storage and Retrieval

Week #: 13

Lab #: 11

Lab Name: Working with Graphs

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Date: 11/30/2015

Q1: What is the shortest path between DR. STRANGE and DR. DOOM?

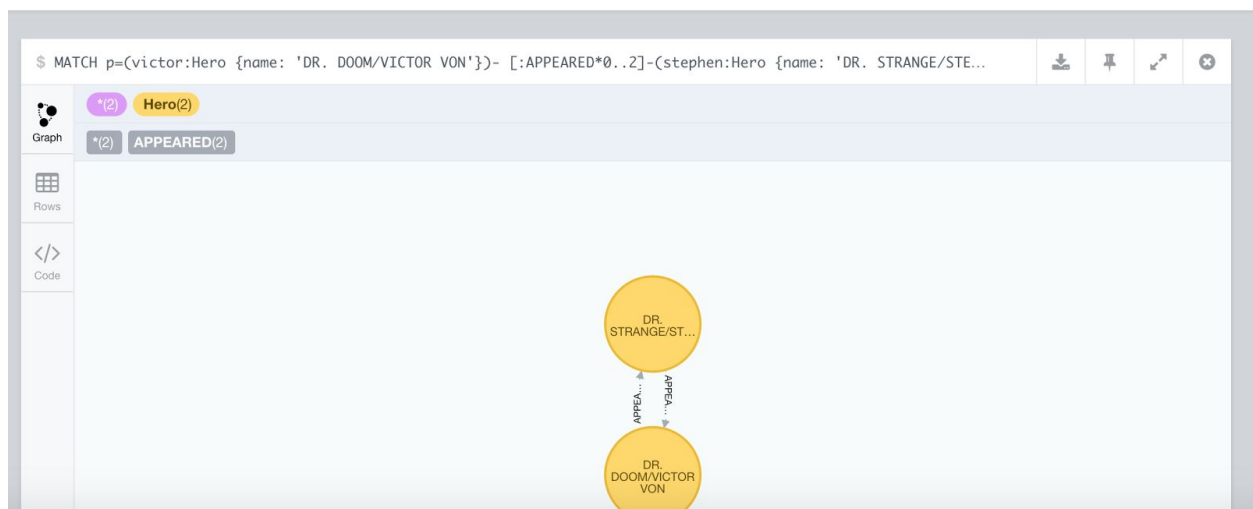
```
MATCH p=(victor:Hero {name: 'DR. DOOM/VICTOR VON'})-[:APPEARED*0..2]-(stephen:Hero {name: 'DR. STRANGE/STEPHEN'})
```

```
RETURN p, length(p)
```

```
ORDER BY length(p)
```

```
LIMIT 1
```

```
1 MATCH p=(victor:Hero {name: 'DR. DOOM/VICTOR VON'})-[:APPEARED*0..2]-(stephen:Hero {name: 'DR. STRANGE/STEPHEN'})
2 RETURN p, length(p)
3 ORDER BY length(p)
4 LIMIT 1
```



Q2: List the 5 shortest paths between DR. STRANGE and DR. DOOM?

```
MATCH p=(victor:Hero {name: 'DR. DOOM/VICTOR VON'})-[:APPEARED*0..2]-(stephen:Hero {name: 'DR. STRANGE/STEPHEN'})
```

```
RETURN p, length(p)
```

```
ORDER BY length(p)
```

```
LIMIT 5
```

| p | length(p) |
|--|-----------|
| [{"degree":441,"name":"DR. DOOM/VICTOR VON"}, {"w":12}, {"degree":777,"name":"DR. STRANGE/STEPHEN"}] | 1 |
| [{"degree":441,"name":"DR. DOOM/VICTOR VON"}, {"w":8}, {"degree":777,"name":"DR. STRANGE/STEPHEN"}] | 1 |
| [{"degree":441,"name":"DR. DOOM/VICTOR VON"}, {"w":2}, {"degree":224,"name":"BALDER [ASGARDIAN]"}, {"w":3}, {"degree":777,"name":"DR. STRANGE/STEPHEN"}] | 2 |
| [{"degree":441,"name":"DR. DOOM/VICTOR VON"}, {"w":10}, {"degree":466,"name":"SILVER SURFER/NORRIN"}, {"w":42}, {"degree":777,"name":"DR. STRANGE/STEPHEN"}] | 2 |
| [{"degree":441,"name":"DR. DOOM/VICTOR VON"}, {"w":10}, {"degree":466,"name":"SILVER SURFER/NORRIN"}, {"w":28}, {"degree":777,"name":"DR. STRANGE/STEPHEN"}] | 2 |

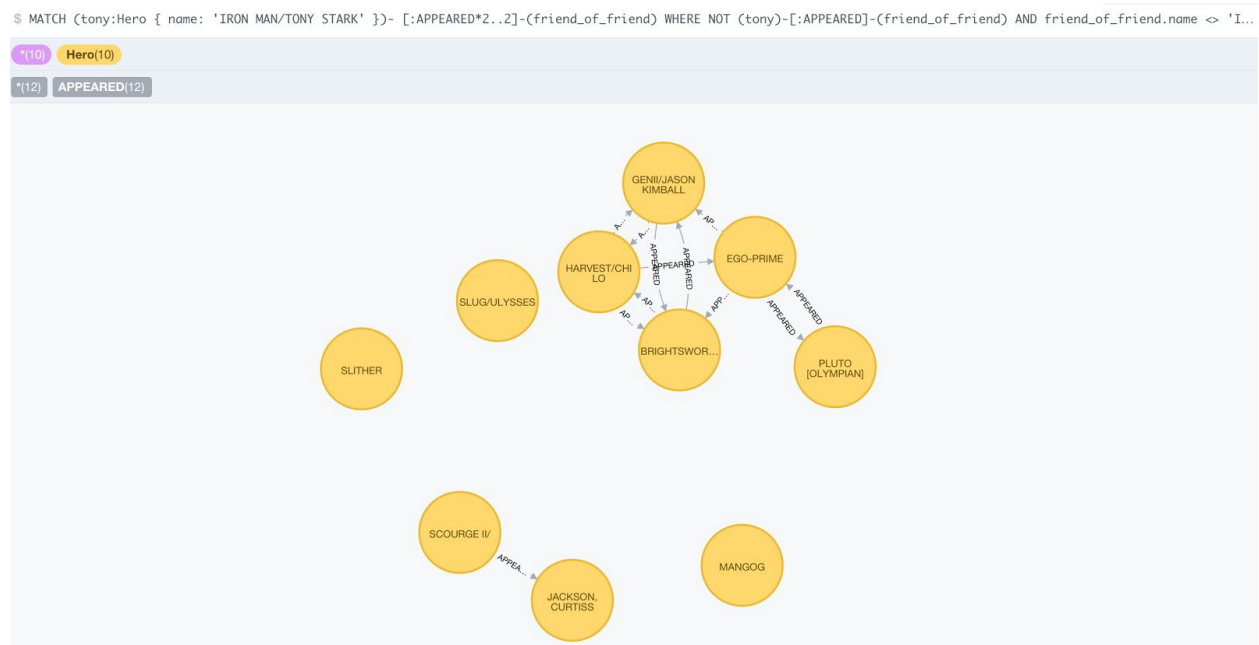
Q3: List 5 Friends of Friends with the most connections to COLOSSUS II.

```
MATCH (peter:Hero { name: 'COLOSSUS II/PETER RA' })-
[:APPEARED*2..2]-(friend_of_friend)
WHERE NOT (peter)-[:APPEARED]-(friend_of_friend) AND friend_of_friend.name <>
'COLOSSUS II/PETER RA' RETURN friend_of_friend.name, COUNT(*)
ORDER BY COUNT(*) DESC , friend_of_friend.name
LIMIT 5
```

| friend_of_friend.name | COUNT(*) |
|-----------------------|----------|
| WONG | 453 |
| MOONSTONE II/KARLA S | 370 |
| CARTER, PEGGY | 367 |
| POWER MAN/ERIK JOSTE | 350 |
| KINGPIN/WILSON FISK | 342 |

Q4: Visualize 10 Friends of friends for IRON MAN

```
MATCH (tony:Hero { name: 'IRON MAN/TONY STARK' })-[:APPEARED*2..2]-(friend_of_friend)
WHERE NOT (tony)-[:APPEARED]-(friend_of_friend) AND friend_of_friend.name <> 'IRON MAN/TONY STARK' RETURN friend_of_friend
LIMIT 12
```



Q5: Discover how the Avengers grew over time from 5 to 10. Find team members starting with 5 and incrementing to 10. Who was added to the team? Is the resulting graph ever not fully connected?

Based on the below queries, the following members were added to the original list as the team grew from 5 to 10. Also, the resulting graph appears to be fully connected.

{"degree":729,"name":"WONDER MAN/SIMON WIL"}

{"degree":880,"name":"HAWK"}

{"degree":338,"name":"IRON MAN IV/JAMES R."}

{"degree":707,"name":"JARVIS, EDWIN"}

{"degree":957,"name":"MR. FANTASTIC/REED R"}

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other)
<-[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})
  RETURN other
  ORDER BY e.w DESC, f.w DESC
  LIMIT 5
```

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other)
<-[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})
  RETURN other
  ORDER BY e.w DESC, f.w DESC
  LIMIT 10
```