

Q1: What is the shortest path between 'DR. STRANGE/STEPHEN' and 'DR. DOOM/VICTOR VON'?

QUERY:

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

TEXT:

"p"	"length(p)"
[{"name": "DR. STRANGE/STEPHEN", "degree": 777}, {"w": 8}, {"name": "DR. DOOM/VICTOR VON", "degree": 441}]	1

ANSWER:

Length of 1

Dr Strange > Dr Doom

Q2: List the 5 shortest paths between 'DR. STRANGE/STEPHEN' and 'DR. DOOM/VICTOR VON'.

QUERY:

```
MATCH p=(strange:Hero {name: 'DR. STRANGE/STEPHEN'})-[:APPEARED*0..2]-(doom:Hero {name: 'DR. DOOM/VICTOR VON'})
RETURN p, length(p)
ORDER BY length(p)
LIMIT 5
```

TEXT:

"p"	"length(p) "
[{"name": "DR. STRANGE/STEPHEN", "degree": 777}, {"w": 8}, {"name": "DR. DOOM/VICTOR VON", "degree": 441}]	1
[{"name": "DR. STRANGE/STEPHEN", "degree": 777}, {"w": 12}, {"name": "DR. DOOM/VICTOR VON", "degree": 441}]	1
[{"name": "DR. STRANGE/STEPHEN", "degree": 777}, {"w": 3}, {"name": "CAPTAIN BRITAIN/BRIA", "degree": 327}, {"name": "CAPTAIN BRITAIN/BRIA", "degree": 327}, {"w": 2}, {"name": "DR. DOOM/VICTOR VON", "degree": 441}]	2
[{"name": "DR. STRANGE/STEPHEN", "degree": 777}, {"w": 3}, {"name": "CAPTAIN BRITAIN/BRIA", "degree": 327}, {"name": "CAPTAIN BRITAIN/BRIA", "degree": 327}, {"w": 1}, {"name": "DR. DOOM/VICTOR VON", "degree": 441}]	2
[{"name": "DR. STRANGE/STEPHEN", "degree": 777}, {"w": 1}, {"name": "REDWING", "degree": 175}, {"name": "REDWING", "degree": 175}, {"w": 1}, {"name": "DR. DOOM/VICTOR VON", "degree": 441}]	2

ANSWER:

Five shortest distances are 1, 1, 2, 2, and 2.

Dr Strange > Dr Doom (1)

Dr Strange > Dr Doom (1)

Dr Strange > Captain Britain > Dr Doom (2)

Dr Strange > Captain Britain > Dr Doom (2)

Dr Strange > Redwing > Dr Doom (2)

Q3: List 5 Friends of Friends of 'COLOSSUS II/PETER RA' with the most connections.

QUERY:

```
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
```

TEXT:

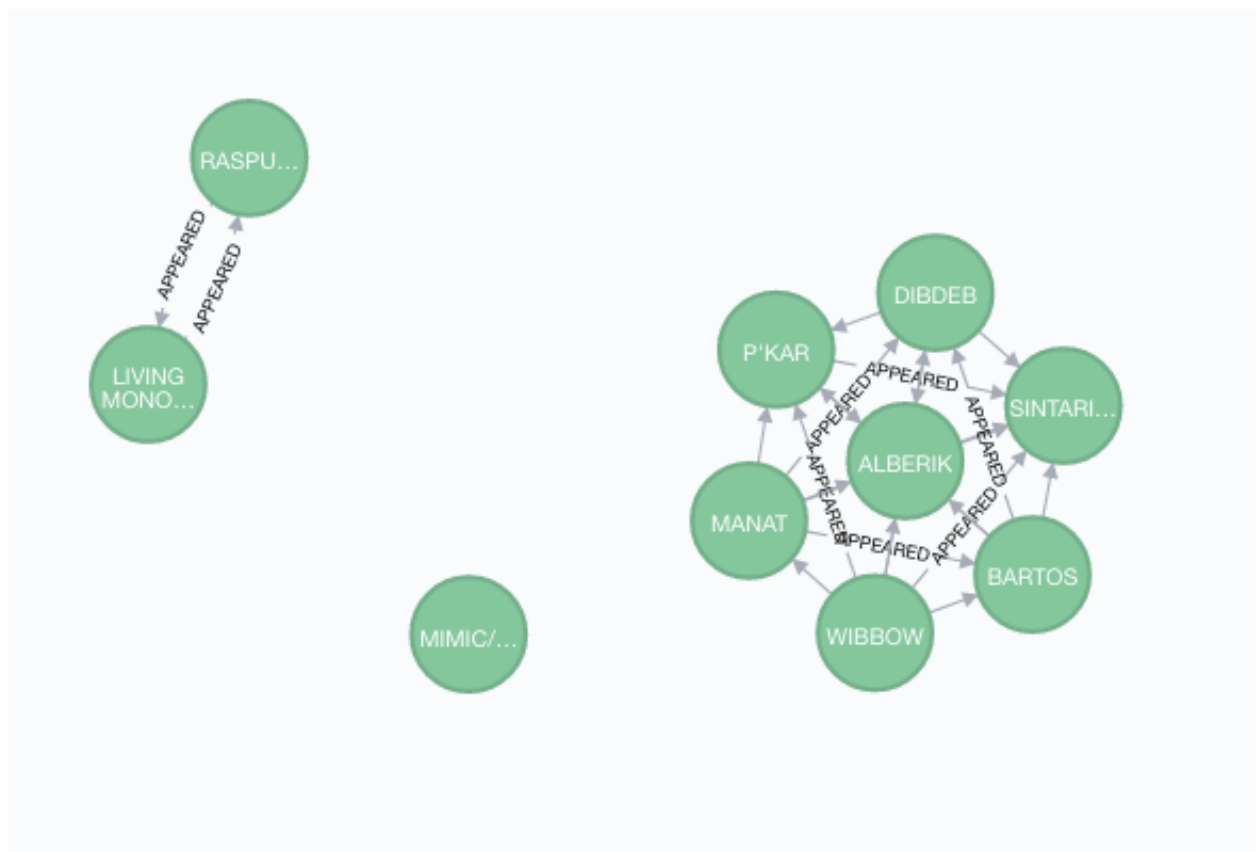
"friend_of_friend.name"	"COUNT(*)"
"WONG"	453
"MOONSTONE II/KARLA S"	370
"CARTER, PEGGY"	367
"POWER MAN/ERIK JOSTE"	350
"KINGPIN/WILSON FISK"	342

Q4: Visualize 10 Friends of friends for 'IRON MAN/TONY STARK'.

QUERY:

```
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 10
```

IMAGE:



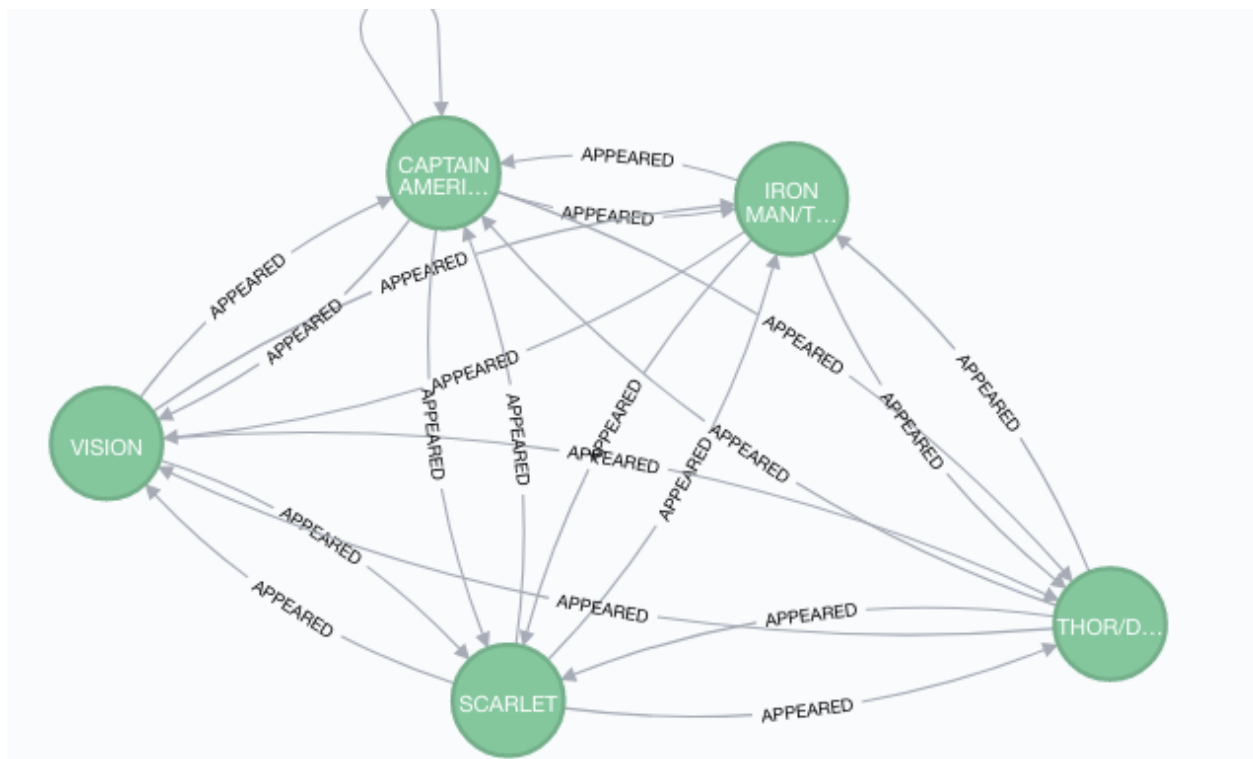
Q5: Visually discover how the Avengers grew over time from 5 to 10 members, who was added to the team, and verify connectivity.

RUN 1 (5 MEMBERS)

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other) <-  
[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})  
RETURN tony, donald, other  
ORDER BY e.w DESC, f.w DESC  
LIMIT 3
```

1. Iron Man
2. Thor
3. **Captain America**
4. **Scarlet Witch**
5. **Vision**

FULLY CONNECTED? YES

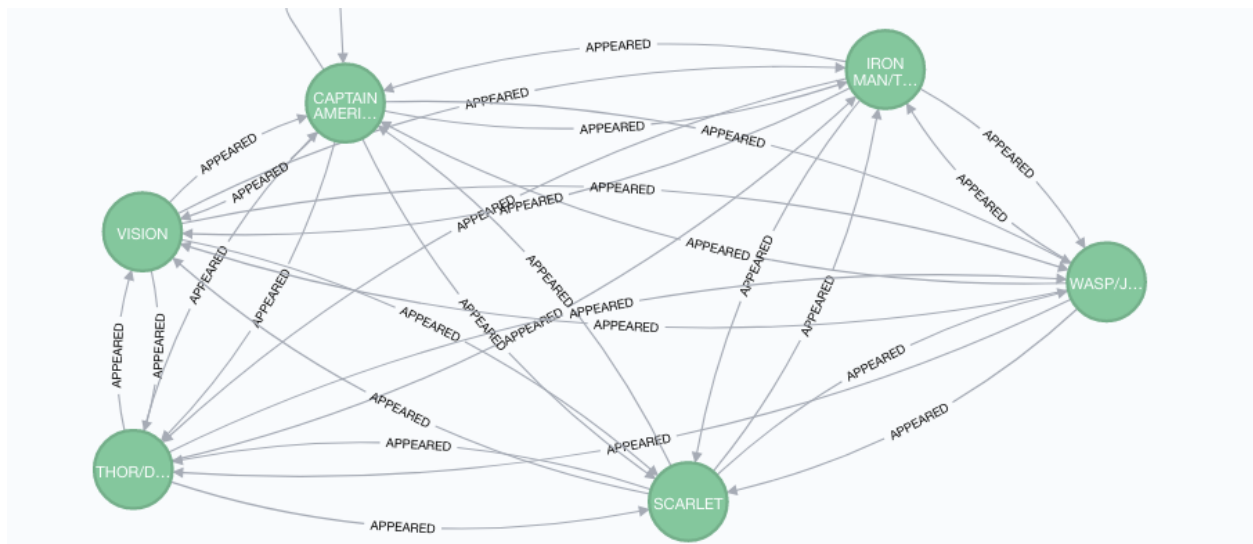


RUN 2 (6 MEMBERS)

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other) <-  
[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})  
RETURN tony, donald, other  
ORDER BY e.w DESC, f.w DESC  
LIMIT 4
```

1. Iron Man
2. Thor
3. Captain America
4. Scarlet Witch
5. Vision
6. Wasp

FULLY CONNECTED? YES



RUN 3 (7 MEMBERS)

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

1. Iron Man
2. Thor
3. Captain America
4. Scarlet Witch
5. Vision
6. Wasp
7. **Ant Man**

FULLY CONNECTED? YES

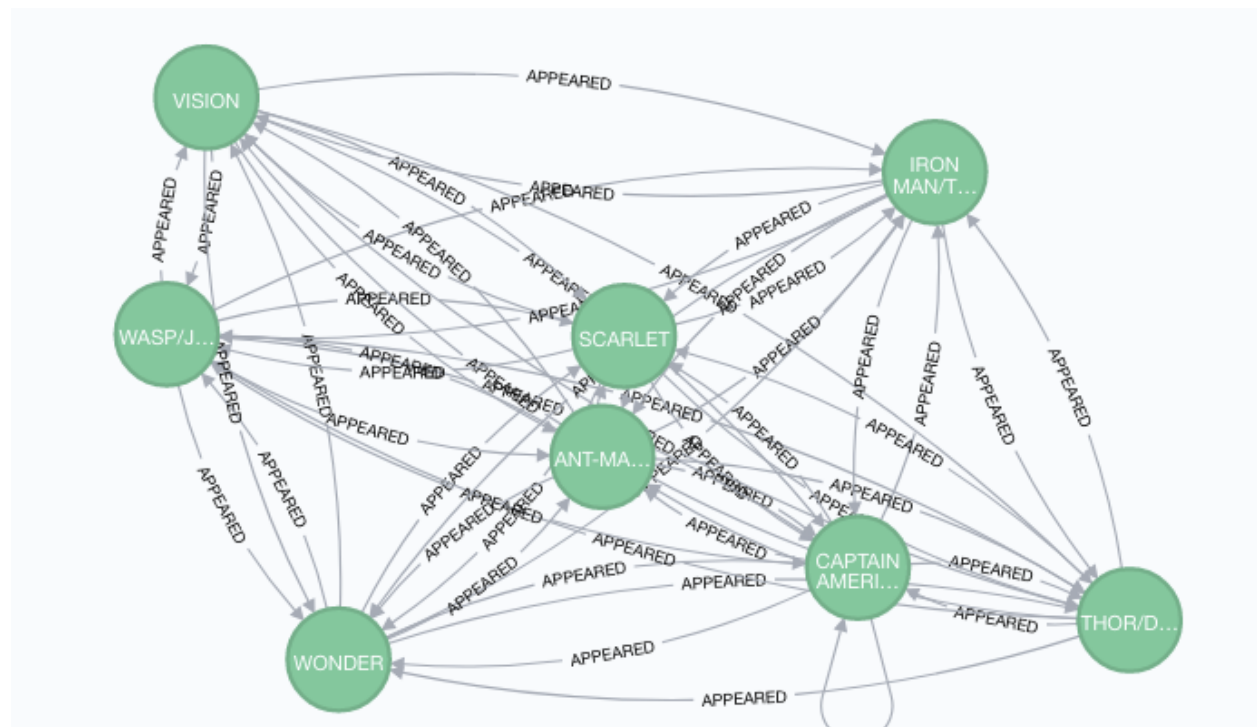


RUN 4 (8 MEMBERS)

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other) <-  
[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})  
RETURN tony, donald, other  
ORDER BY e.w DESC, f.w DESC  
LIMIT 6
```

1. Iron Man
2. Thor
3. Captain America
4. Scarlet Witch
5. Vision
6. Wasp
7. Ant Man
8. **Wonder Woman**

FULLY CONNECTED? YES

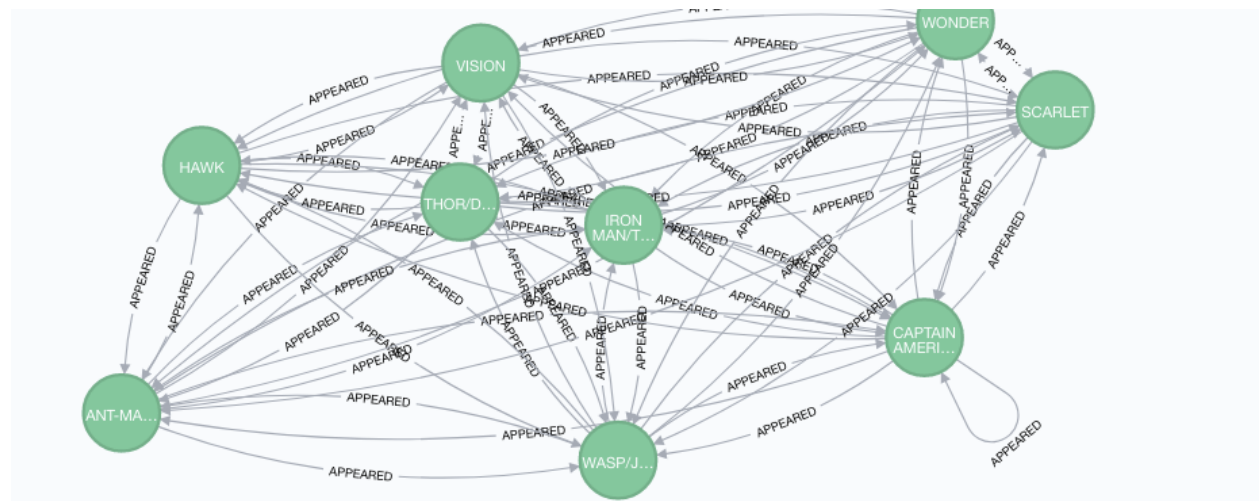


RUN 5 (9 MEMBERS)

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other) <-  
[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})  
RETURN tony, donald, other  
ORDER BY e.w DESC, f.w DESC  
LIMIT 7
```

1. Iron Man
2. Thor
3. Captain America
4. Scarlet Witch
5. Vision
6. Wasp
7. Ant Man
8. Wonder Woman
9. Hawk

FULLY CONNECTED? YES



RUN 6 (10 MEMBERS)

```
MATCH (tony:Hero {name:'IRON MAN/TONY STARK'}) -[e:APPEARED]-> (other) <-  
[f:APPEARED]- (donald:Hero {name:'THOR/DR. DONALD BLAK'})  
RETURN tony, donald, other  
ORDER BY e.w DESC, f.w DESC  
LIMIT 8
```

1. Iron Man
2. Thor
3. Captain America
4. Scarlet Witch
5. Vision
6. Wasp
7. Ant Man
8. Wonder Woman
9. Hawk
10. **IRON MAN IV**

FULLY CONNECTED? YES

