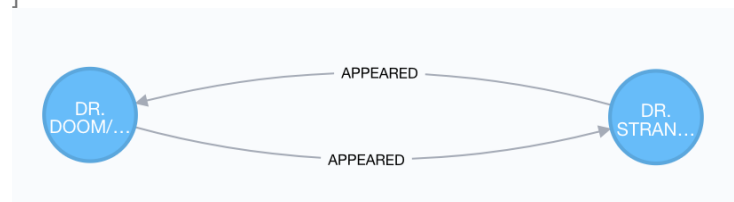1. What is the shortest path between 'DR. STRANGE/STEPHEN' and 'DR. DOOM/VICTOR VON'?

Answer: 1

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

```
[
{
  "name": "DR. STRANGE/STEPHEN",
  "degree": 777
}
,
{
  "w": 8
}
,
{
  "name": "DR. DOOM/VICTOR VON",
  "degree": 441
}
]
```

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

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

```json
[
  {
    "name": "DR. STRANGE/STEPHEN",
    "degree": 777
  }
  ,
  {
    "w": 8
  }
  ,
  {
    "name": "DR. DOOM/VICTOR VON",
    "degree": 441
  }
]
[
  {
    "name": "DR. STRANGE/STEPHEN",
    "degree": 777
  }
  ,
  {
    "w": 12
  }
  ,
  {
    "name": "DR. DOOM/VICTOR VON",
    "degree": 441
  }
]
[
  {
    "name": "DR. STRANGE/STEPHEN",
    "degree": 777
  }
  ,
  {
    "w": 3
  }
  ,
  {
    "name": "CAPTAIN BRITAIN/BRIA",
    "degree": 327
  }
  ,
  {
```

```json
    "name": "CAPTAIN BRITAIN/BRIA",
    "degree": 327
  }
,
  {
    "w": 2
  }
,
  {
    "name": "DR. DOOM/VICTOR VON",
    "degree": 441
  }
]
[
  {
    "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
  }
]
[
  {
    "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
  }
]
```
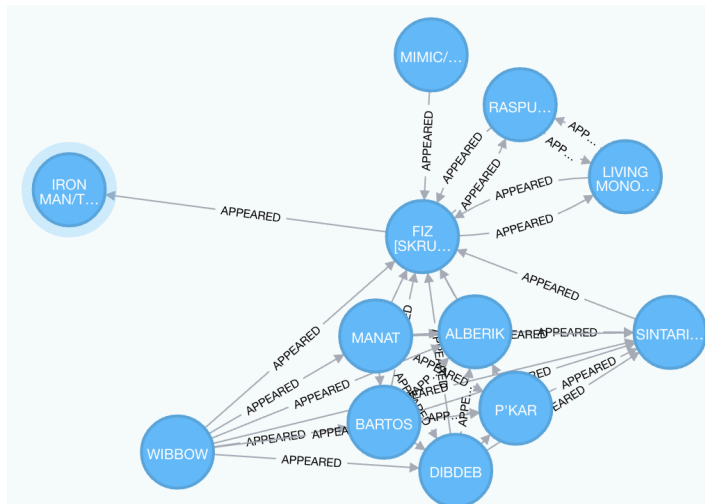
3. List 5 Friends of Friends of 'COLOSSUS II/PETER RA' with the most connections.

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

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

MATCH ff = ((tony:Hero { name: 'IRON MAN/TONY STARK' })-[:APPEARED*2..2]-
(friend_of_friend))
WHERE NOT (tony)-[:APPEARED]-(friend_of_friend)
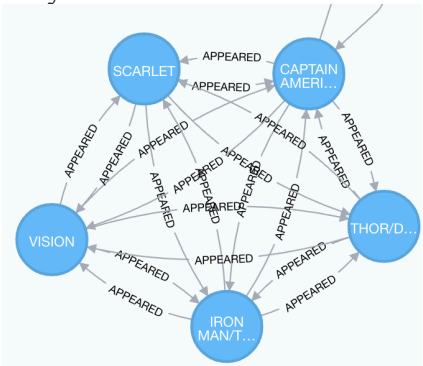AND friend_of_friend.name <> 'IRON MAN/TONY STARK'
RETURN ff
LIMIT 10

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

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

tony.name	donald.name	other.name
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"CAPTAIN AMERICA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"SCARLET WITCH/WANDA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"VISION"

fully connected

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

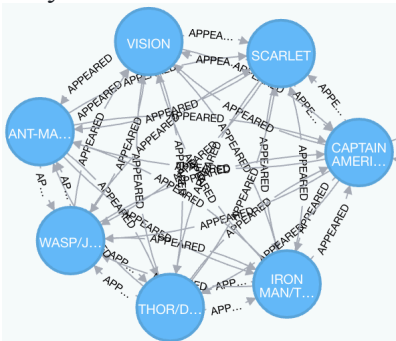| tony.name	donald.name	other.name
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"CAPTAIN AMERICA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"SCARLET WITCH/WANDA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"VISION"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WASP/JANET VAN DYNE"

fully connected

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

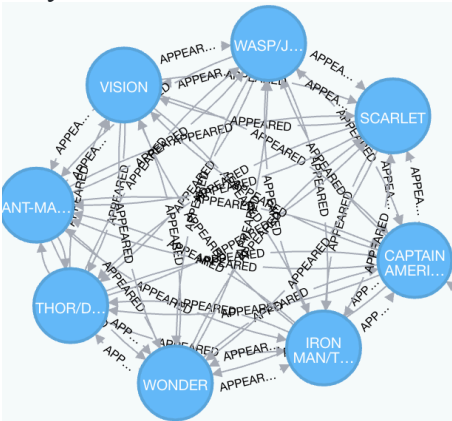| tony.name	donald.name	other.name
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"CAPTAIN AMERICA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"SCARLET WITCH/WANDA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"VISION"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WASP/JANET VAN DYNE"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"ANT-MAN/DR. HENRY J."

fully connected

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

tony.name	donald.name	other.name
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"CAPTAIN AMERICA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"SCARLET WITCH/WANDA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"VISION"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WASP/JANET VAN DYNE"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"ANT-MAN/DR. HENRY J."
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WONDER MAN/SIMON WIL"

fully connected

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

tony.name	donald.name	other.name
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"CAPTAIN AMERICA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"SCARLET WITCH/WANDA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"VISION"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WASP/JANET VAN DYNE"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"ANT-MAN/DR. HENRY J."
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WONDER MAN/SIMON WIL"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"HAWK"

fully connected

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

tony.name	donald.name	other.name
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"CAPTAIN AMERICA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"SCARLET WITCH/WANDA"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"VISION"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WASP/JANET VAN DYNE"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"ANT-MAN/DR. HENRY J."
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"WONDER MAN/SIMON WIL"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"HAWK"
"IRON MAN/TONY STARK"	"THOR/DR. DONALD BLAK"	"IRON MAN IV/JAMES R."

fully connected