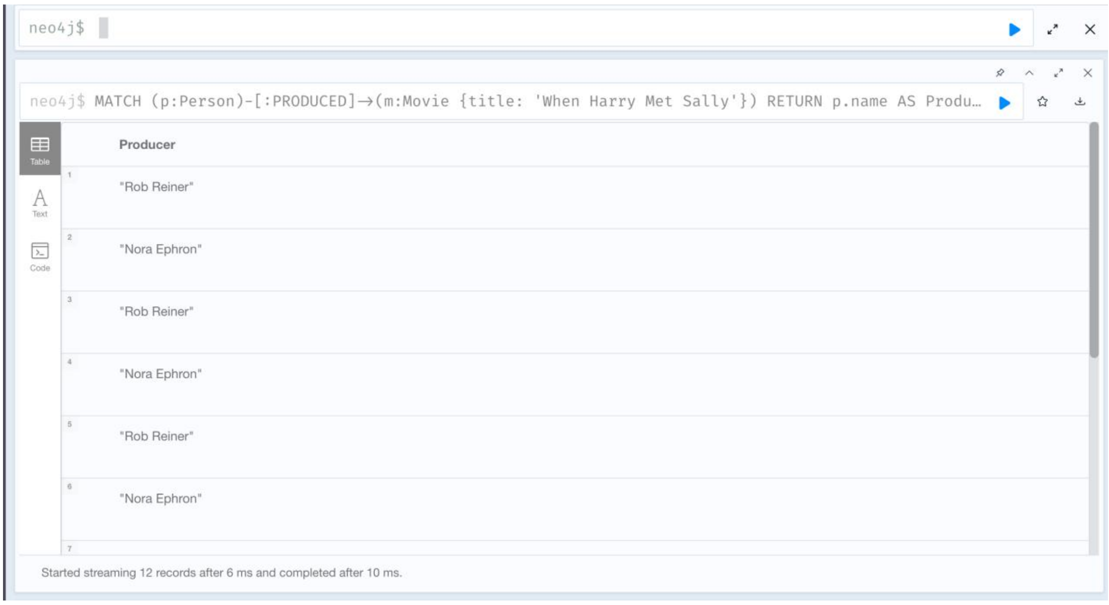
Assignment 7 Neo4J (Graph Database)

Below are my assignment：

Screenshots when verifying the command line in neo4j ensure that each command has no errors and can return the correct and required results.。

Q1. Find all producers that produced the movie When Harry Met Sally.

Assumptions: Exact title match, case-sensitive.



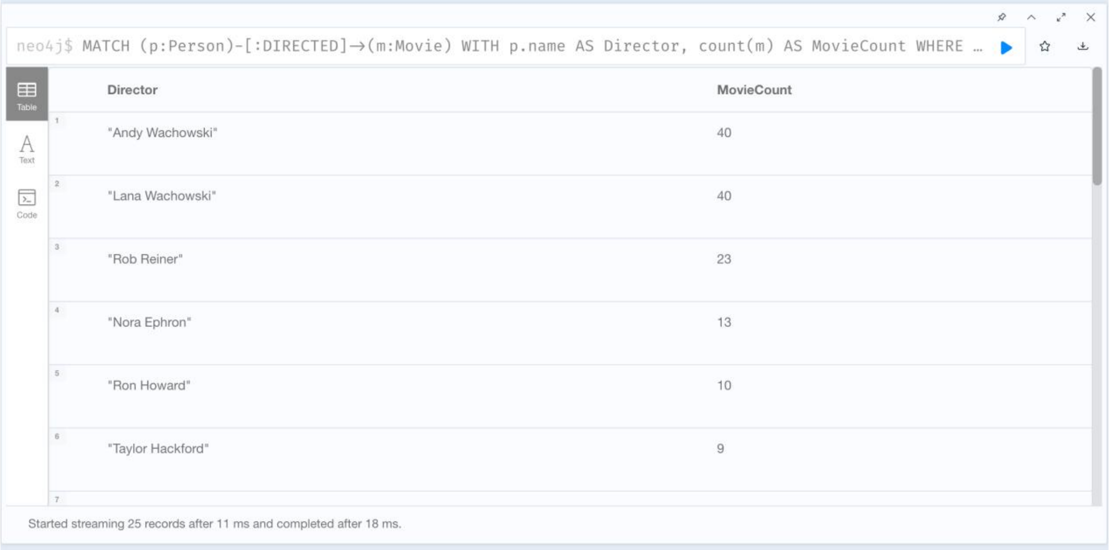
```
neo4j$ MATCH (p:Person)-[:PRODUCED]→(m:Movie {title: 'When Harry Met Sally'}) RETURN p.name AS Produ…
```

	Producer
1	"Rob Reiner"
2	"Nora Ephron"
3	"Rob Reiner"
4	"Nora Ephron"
5	"Rob Reiner"
6	"Nora Ephron"
7	

Started streaming 12 records after 6 ms and completed after 10 ms.

Q2. Find directors who have directed more than 2 movies. Return the name of the director and the count of movies they directed, ordered by movie count in descending order.

Assumptions: Each DIRECTED relationship represents one unique movie.

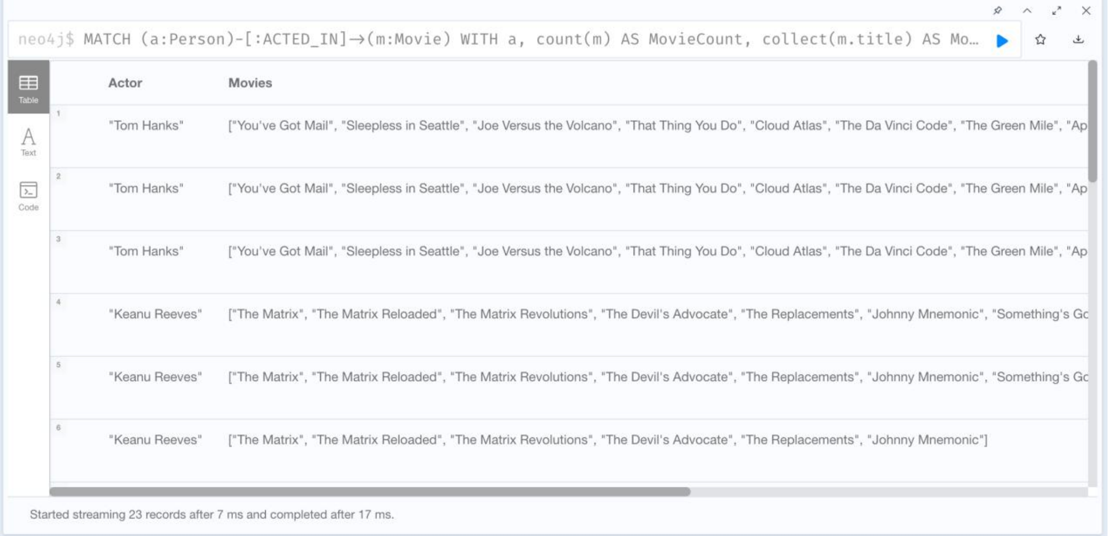


```
neo4j$ MATCH (p:Person)-[:DIRECTED]→(m:Movie) WITH p.name AS Director, count(m) AS MovieCount WHERE …
```

	Director	MovieCount
1	"Andy Wachowski"	40
2	"Lana Wachowski"	40
3	"Rob Reiner"	23
4	"Nora Ephron"	13
5	"Ron Howard"	10
6	"Taylor Hackford"	9
7		

Started streaming 25 records after 11 ms and completed after 18 ms.

Q3. Find the actors who acted in 5+ movies and the movies in which they acted.
Assumptions: Collecting all movie titles per actor.

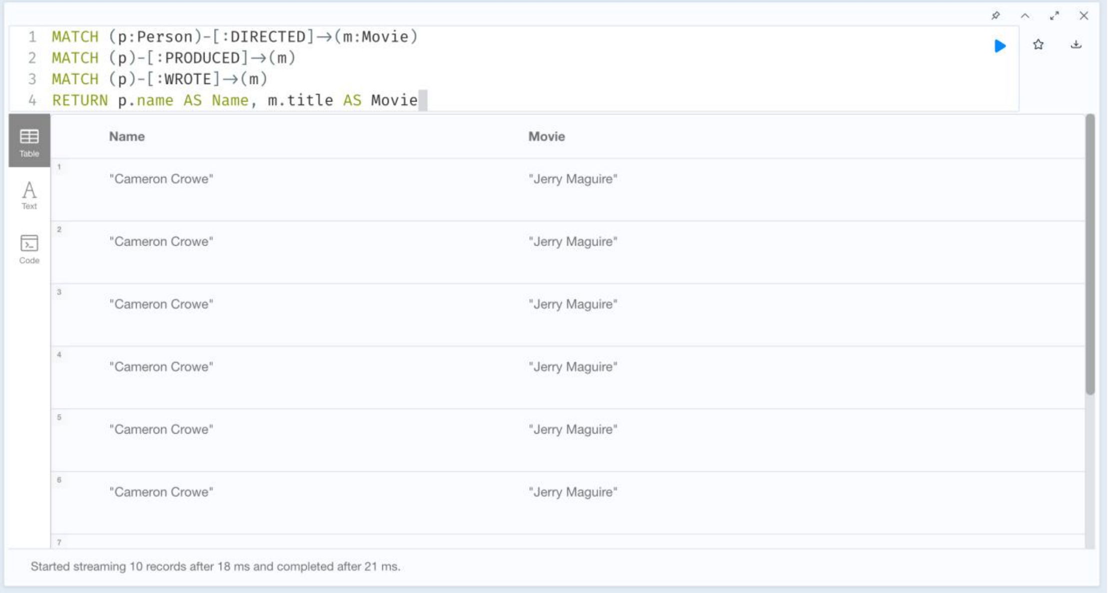


```
neo4j$ MATCH (a:Person)-[:ACTED_IN]→(m:Movie) WITH a, count(m) AS MovieCount, collect(m.title) AS Mo…
```

	Actor	Movies
1	"Tom Hanks"	["You've Got Mail", "Sleepless in Seattle", "Joe Versus the Volcano", "That Thing You Do", "Cloud Atlas", "The Da Vinci Code", "The Green Mile", "Ap
2	"Tom Hanks"	["You've Got Mail", "Sleepless in Seattle", "Joe Versus the Volcano", "That Thing You Do", "Cloud Atlas", "The Da Vinci Code", "The Green Mile", "Ap
3	"Tom Hanks"	["You've Got Mail", "Sleepless in Seattle", "Joe Versus the Volcano", "That Thing You Do", "Cloud Atlas", "The Da Vinci Code", "The Green Mile", "Ap
4	"Keanu Reeves"	["The Matrix", "The Matrix Reloaded", "The Matrix Revolutions", "The Devil's Advocate", "The Replacements", "Johnny Mnemonic", "Something's Gc
5	"Keanu Reeves"	["The Matrix", "The Matrix Reloaded", "The Matrix Revolutions", "The Devil's Advocate", "The Replacements", "Johnny Mnemonic", "Something's Gc
6	"Keanu Reeves"	["The Matrix", "The Matrix Reloaded", "The Matrix Revolutions", "The Devil's Advocate", "The Replacements", "Johnny Mnemonic"]

Started streaming 23 records after 7 ms and completed after 17 ms.

Q4. Find the people who were the producer, writer, AND director (the same person who held all 3 roles) at the same time on a film.
Assumptions: All roles must be linked to the same movie node.

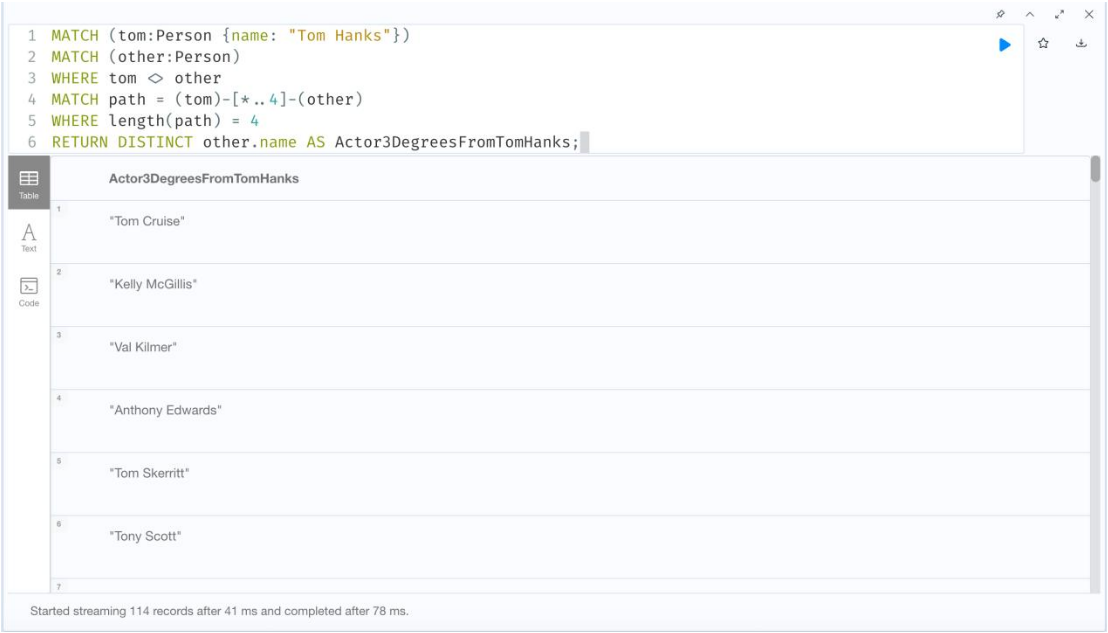


```
MATCH (p:Person)-[:DIRECTED]→(m:Movie)
MATCH (p)-[:PRODUCED]→(m)
MATCH (p)-[:WROTE]→(m)
RETURN p.name AS Name, m.title AS Movie
```

	Name	Movie
1	"Cameron Crowe"	"Jerry Maguire"
2	"Cameron Crowe"	"Jerry Maguire"
3	"Cameron Crowe"	"Jerry Maguire"
4	"Cameron Crowe"	"Jerry Maguire"
5	"Cameron Crowe"	"Jerry Maguire"
6	"Cameron Crowe"	"Jerry Maguire"
7		

Started streaming 10 records after 18 ms and completed after 21 ms.

Q5. Find all the actors that are exactly 3 degrees away from Tom Hanks.
Assumptions: Path with exactly 4 steps via ACTED_IN implies 3 degrees separation.



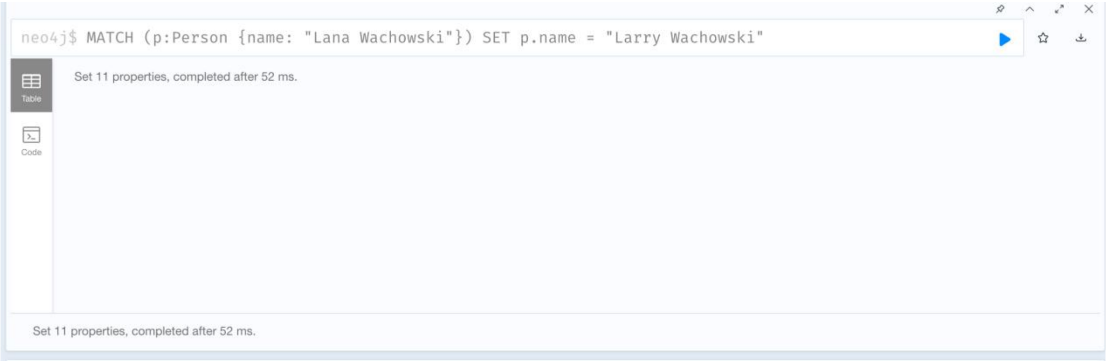
```
MATCH (tom:Person {name: "Tom Hanks"})
MATCH (other:Person)
WHERE tom <> other
MATCH path = (tom)-[*..4]-(other)
WHERE length(path) = 4
RETURN DISTINCT other.name AS Actor3DegreesFromTomHanks;
```

	Actor3DegreesFromTomHanks
1	"Tom Cruise"
2	"Kelly McGillis"
3	"Val Kilmer"
4	"Anthony Edwards"
5	"Tom Skerritt"
6	"Tony Scott"
7	

Started streaming 114 records after 41 ms and completed after 78 ms.

Q6. Update database to reflect new name ("Larry Wachowski") for director "Lana Wachowski".

Assumptions: Only one match expected.



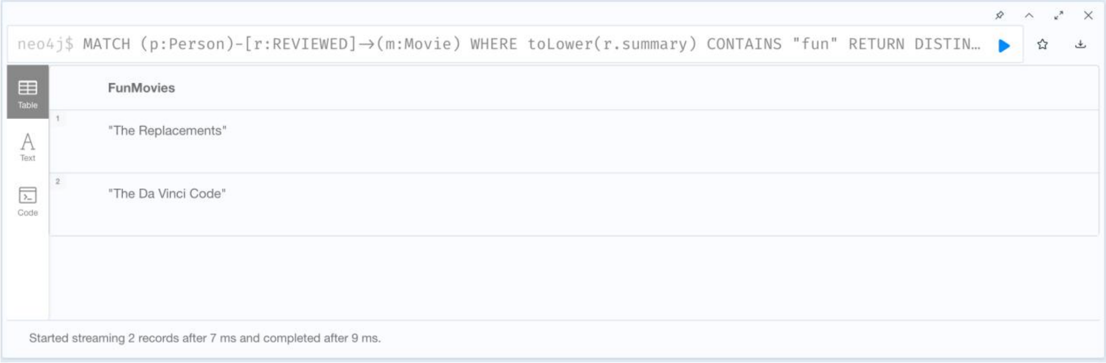
```
neo4j$ MATCH (p:Person {name: "Lana Wachowski"}) SET p.name = "Larry Wachowski"
```

Set 11 properties, completed after 52 ms.

Set 11 properties, completed after 52 ms.

Q7. Create a section of fun movies whose summary contains the keyword "fun".

Assumptions: Case-insensitive search on review summary.

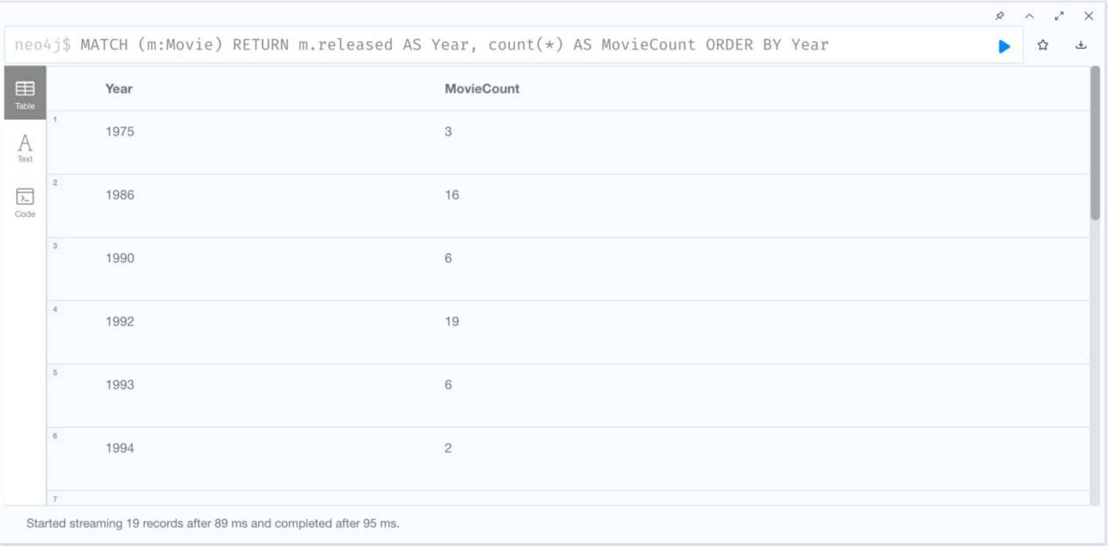


```
neo4j$ MATCH (p:Person)-[r:REVIEWED]->(m:Movie) WHERE toLower(r.summary) CONTAINS "fun" RETURN DISTIN…
```

	FunMovies
1	"The Replacements"
2	"The Da Vinci Code"

Started streaming 2 records after 7 ms and completed after 9 ms.

Q8. List all the release years and count all movies released in that year.
Assumptions: Each movie node has a 'released' property.

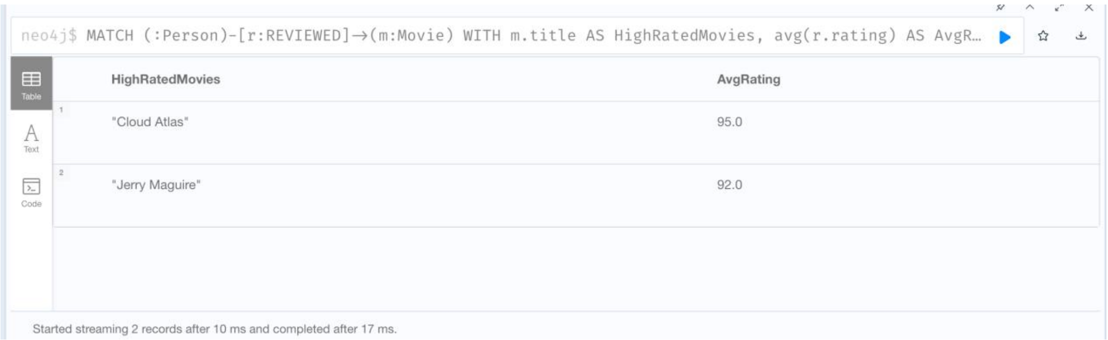


```
neo4j$ MATCH (m:Movie) RETURN m.released AS Year, count(*) AS MovieCount ORDER BY Year
```

	Year	MovieCount
1	1975	3
2	1986	16
3	1990	6
4	1992	19
5	1993	6
6	1994	2

Started streaming 19 records after 89 ms and completed after 95 ms.

Q9. List all the movies whose rating >= 90.
Assumptions: Movie ratings are stored on the REVIEWED relationship between a Person and a Movie. A movie is considered to have a rating ≥ 90 if at least one review has a rating property with a value ≥ 90, regardless of the average rating.

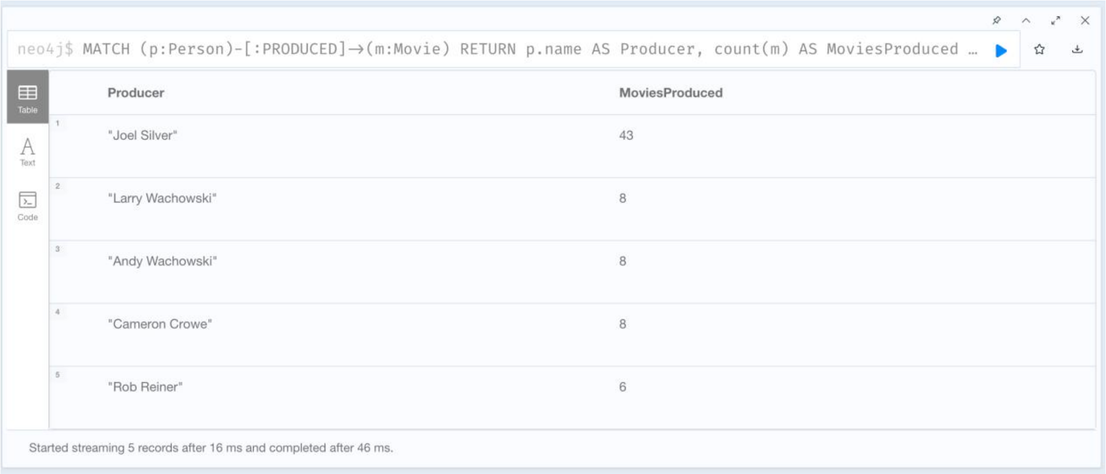


```
neo4j$ MATCH (:Person)-[r:REVIEWED]->(m:Movie) WITH m.title AS HighRatedMovies, avg(r.rating) AS AvgR…
```

	HighRatedMovies	AvgRating
1	"Cloud Atlas"	95.0
2	"Jerry Maguire"	92.0

Started streaming 2 records after 10 ms and completed after 17 ms.

Q10. List the top producers who are most likely to entertain new movies production hint: Producers with most movies produced.
Assumptions: Interpreted "top producers" as those with the highest number of PRODUCED relationships. Returned top 5 producers most likely to entertain new productions based on past activity.



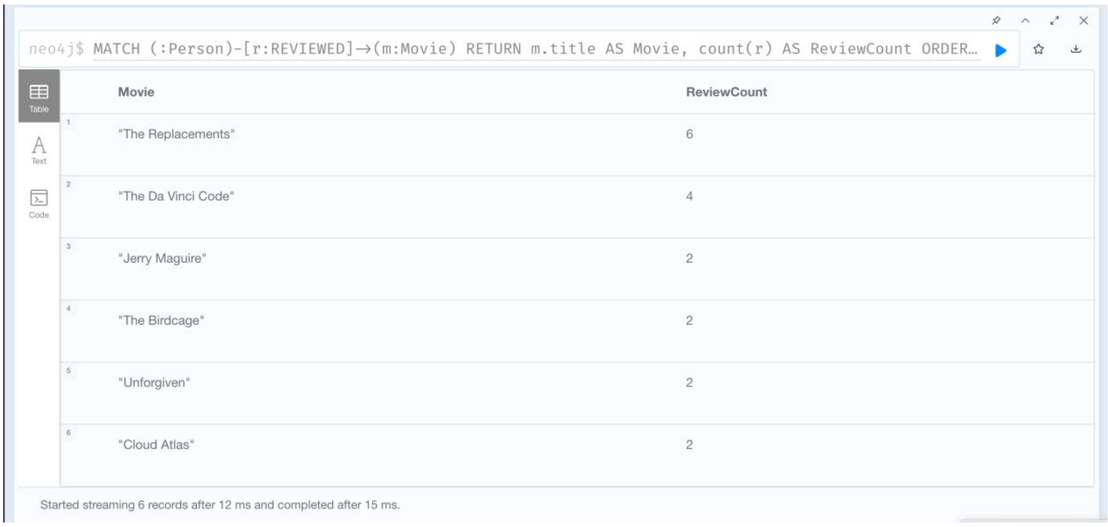
```
neo4j$ MATCH (p:Person)-[:PRODUCED]→(m:Movie) RETURN p.name AS Producer, count(m) AS MoviesProduced …
```

	Producer	MoviesProduced
1	"Joel Silver"	43
2	"Larry Wachowski"	8
3	"Andy Wachowski"	8
4	"Cameron Crowe"	8
5	"Rob Reiner"	6

Started streaming 5 records after 16 ms and completed after 46 ms.

Q11. List all the movies along with a number of reviews received. order the results by a number of reviews in descending order.

Assumptions: One REVIEWED relationship = one review.



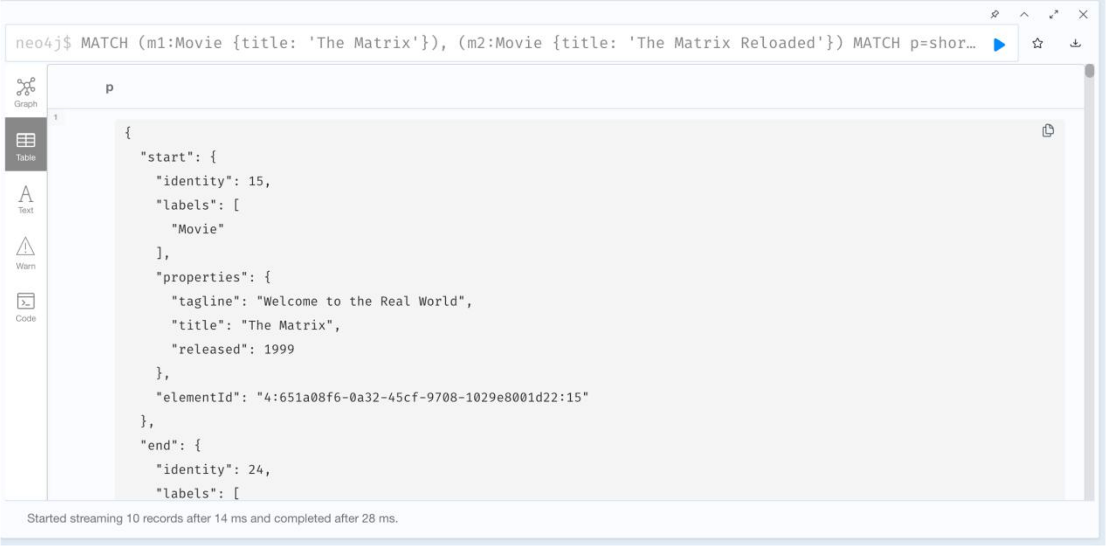
```
neo4j$ MATCH (:Person)-[r:REVIEWED]→(m:Movie) RETURN m.title AS Movie, count(r) AS ReviewCount ORDER…
```

	Movie	ReviewCount
1	"The Replacements"	6
2	"The Da Vinci Code"	4
3	"Jerry Maguire"	2
4	"The Birdcage"	2
5	"Unforgiven"	2
6	"Cloud Atlas"	2

Started streaming 6 records after 12 ms and completed after 15 ms.

Q12. Find the shortest path between movies "The Matrix" and "The Matrix Reloaded".

Assumptions: Find shortest undirected path between movie nodes.



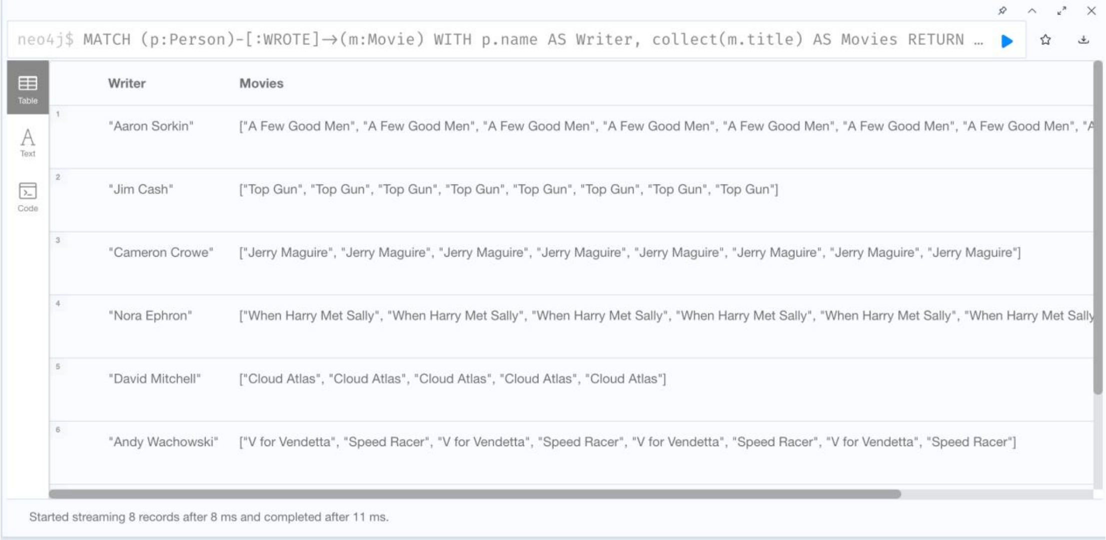
```
neo4j$ MATCH (m1:Movie {title: 'The Matrix'}), (m2:Movie {title: 'The Matrix Reloaded'}) MATCH p=shor…
```

p

```
{
  "start": {
    "identity": 15,
    "labels": [
      "Movie"
    ],
    "properties": {
      "tagline": "Welcome to the Real World",
      "title": "The Matrix",
      "released": 1999
    },
    "elementId": "4:651a08f6-0a32-45cf-9708-1029e8001d22:15"
  },
  "end": {
    "identity": 24,
    "labels": [
```

Started streaming 10 records after 14 ms and completed after 28 ms.

Q13. List all the writers and the list of movies they have written.
Assumptions: Group movies by writer.



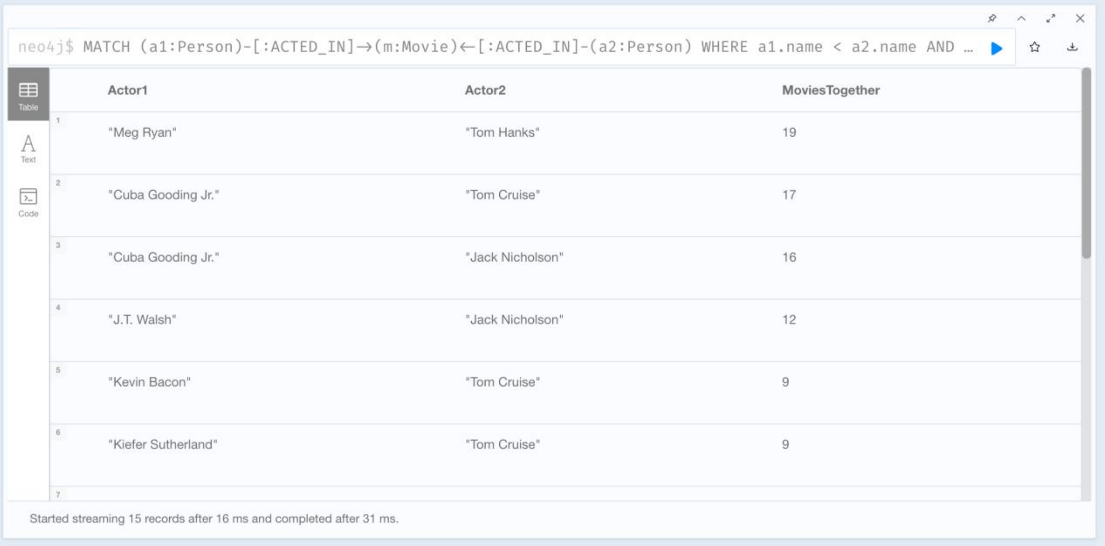
```
neo4j$ MATCH (p:Person)-[:WROTE]→(m:Movie) WITH p.name AS Writer, collect(m.title) AS Movies RETURN …
```

Writer	Movies
"Aaron Sorkin"	["A Few Good Men", "A Few Good Men", "A Few Good Men", "A Few Good Men", "A Few Good Men", "A Few Good Men", "A Few Good Men", "A
"Jim Cash"	["Top Gun", "Top Gun", "Top Gun", "Top Gun", "Top Gun", "Top Gun", "Top Gun", "Top Gun"]
"Cameron Crowe"	["Jerry Maguire", "Jerry Maguire", "Jerry Maguire", "Jerry Maguire", "Jerry Maguire", "Jerry Maguire", "Jerry Maguire", "Jerry Maguire"]
"Nora Ephron"	["When Harry Met Sally", "When Harry Met Sally", "When Harry Met Sally", "When Harry Met Sally", "When Harry Met Sally", "When Harry Met Sally
"David Mitchell"	["Cloud Atlas", "Cloud Atlas", "Cloud Atlas", "Cloud Atlas", "Cloud Atlas"]
"Andy Wachowski"	["V for Vendetta", "Speed Racer", "V for Vendetta", "Speed Racer", "V for Vendetta", "Speed Racer", "V for Vendetta", "Speed Racer"]

Started streaming 8 records after 8 ms and completed after 11 ms.

Q14. List top 15 actors who have co-acted with each other the most. Ignore The Matrix trilogy for this analysis.
Assumptions: Actor co-appearance is defined as two actors acting in the same movie.

Actor pairs are considered undirected and unique (i.e., [A, B] is the same as [B, A], so duplicates are avoided using a1.name < a2.name). The "Matrix trilogy" refers specifically to the following movies: "The Matrix", "The Matrix Reloaded", and "The Matrix Revolutions", and these are explicitly excluded using an IN clause filter.



```
neo4j$ MATCH (a1:Person)-[:ACTED_IN]→(m:Movie)←[:ACTED_IN]-(a2:Person) WHERE a1.name < a2.name AND …
```

	Actor1	Actor2	MoviesTogether
1	"Meg Ryan"	"Tom Hanks"	19
2	"Cuba Gooding Jr."	"Tom Cruise"	17
3	"Cuba Gooding Jr."	"Jack Nicholson"	16
4	"J.T. Walsh"	"Jack Nicholson"	12
5	"Kevin Bacon"	"Tom Cruise"	9
6	"Kiefer Sutherland"	"Tom Cruise"	9
7			

Started streaming 15 records after 16 ms and completed after 31 ms.