

## Exercício - Grafo contendo filmes, atores e diretores

### Carregando extensão para Cypher

```
In [69]: %load_ext cypher
```

The cypher extension is already loaded. To reload it, use:  
%reload\_ext cypher

### Limpando o banco de dados

```
In [70]: %cypher MATCH (n)-[r]-() DELETE r  
%cypher MATCH (n) DELETE n
```

253 relationship deleted.  
171 nodes deleted.

Out[70]:

### Importando grafo contendo filmes, atores e diretores (execute apenas uma vez)

A célula abaixo contém todas as consultas necessárias para a construção do grafo que será utilizado neste exercício. (após a linha %%cypher )

Você pode copiar e colar as consultas no [Neo4j Sandbox \(https://sandbox.neo4j.com/login\)](https://sandbox.neo4j.com/login) para reconstruir o grafo. A partir daí, você poderá fazer as suas consultas de maneira mais visual na interface do próprio Neo4j. Lembre-se de colar a consulta no notebook que será entregue

In [71]: %%**cypher**

```
CREATE (TheMatrix:Movie {title:'The Matrix', released:1999,
tagline:'Welcome to the Real World'})
CREATE (Keanu:Person {name:'Keanu Reeves', born:1964})
CREATE (Carrie:Person {name:'Carrie-Anne Moss', born:1967})
CREATE (Laurence:Person {name:'Laurence Fishburne', born:1961})
CREATE (Hugo:Person {name:'Hugo Weaving', born:1960})
CREATE (LillyW:Person {name:'Lilly Wachowski', born:1967})
CREATE (LanaW:Person {name:'Lana Wachowski', born:1965})
CREATE (JoelS:Person {name:'Joel Silver', born:1952})
CREATE
  (Keanu)-[:ACTED_IN {roles:['Neo']}]>(TheMatrix),
  (Carrie)-[:ACTED_IN {roles:['Trinity']}]>(TheMatrix),
  (Laurence)-[:ACTED_IN {roles:['Morpheus']}]>(TheMatrix),
  (Hugo)-[:ACTED_IN {roles:['Agent Smith']}]>(TheMatrix),
  (LillyW)-[:DIRECTED]>(TheMatrix),
  (LanaW)-[:DIRECTED]>(TheMatrix),
  (JoelS)-[:PRODUCED]>(TheMatrix)

CREATE (Emil:Person {name:"Emil Eifrem", born:1978})
CREATE (Emil)-[:ACTED_IN {roles:["Emil"]}]>(TheMatrix)

CREATE (TheMatrixReloaded:Movie {title:'The Matrix Reloaded',
released:2003, tagline:'Free your mind'})
CREATE
  (Keanu)-[:ACTED_IN {roles:['Neo']}]>(TheMatrixReloaded),
  (Carrie)-[:ACTED_IN {roles:['Trinity']}]>(TheMatrixReloaded),
  (Laurence)-[:ACTED_IN {roles:['Morpheus']}]>(TheMatrixReloaded),
  (Hugo)-[:ACTED_IN {roles:['Agent Smith']}]>(TheMatrixReloaded),
  (LillyW)-[:DIRECTED]>(TheMatrixReloaded),
  (LanaW)-[:DIRECTED]>(TheMatrixReloaded),
  (JoelS)-[:PRODUCED]>(TheMatrixReloaded)

CREATE (TheMatrixRevolutions:Movie {title:'The Matrix Revolutions',
released:2003, tagline:'Everything that has a beginning has an end'})
CREATE
  (Keanu)-[:ACTED_IN {roles:['Neo']}]>(TheMatrixRevolutions),
  (Carrie)-[:ACTED_IN {roles:['Trinity']}]>(TheMatrixRevolutions),
  (Laurence)-[:ACTED_IN {roles:['Morpheus']}]>(TheMatrixRevolutions),
  (Hugo)-[:ACTED_IN {roles:['Agent Smith']}]>(TheMatrixRevolutions),
  (LillyW)-[:DIRECTED]>(TheMatrixRevolutions),
  (LanaW)-[:DIRECTED]>(TheMatrixRevolutions),
  (JoelS)-[:PRODUCED]>(TheMatrixRevolutions)
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CREATE (TheDevilsAdvocate:Movie {title:"The Devil's Advocate", released:1997, tagline:'Evil has its winning ways'})
CREATE (Charlize:Person {name:'Charlize Theron', born:1975})
CREATE (Al:Person {name:'Al Pacino', born:1940})
CREATE (Taylor:Person {name:'Taylor Hackford', born:1944})
CREATE
  (Keanu)-[:ACTED_IN {roles:['Kevin Lomax']}]>(TheDevilsAdvocate),
  (Charlize)-[:ACTED_IN {roles:['Mary Ann Lomax']}]>(TheDevilsAdvocate),
  (Al)-[:ACTED_IN {roles:['John Milton']}]>(TheDevilsAdvocate),
  (Taylor)-[:DIRECTED]>(TheDevilsAdvocate)

CREATE (AFewGoodMen:Movie {title:"A Few Good Men", released:1992, tagline:"In the heart of the nation's capital, in a courthouse of the U.S. government, one man will stop at nothing to keep his honor, and one will stop at nothing to find the truth."})
CREATE (TomC:Person {name:'Tom Cruise', born:1962})
CREATE (JackN:Person {name:'Jack Nicholson', born:1937})
CREATE (DemiM:Person {name:'Demi Moore', born:1962})
CREATE (KevinB:Person {name:'Kevin Bacon', born:1958})
CREATE (KieferS:Person {name:'Kiefer Sutherland', born:1966})
CREATE (NoahW:Person {name:'Noah Wyle', born:1971})
CREATE (CubaG:Person {name:'Cuba Gooding Jr.', born:1968})
CREATE (KevinP:Person {name:'Kevin Pollak', born:1957})
CREATE (JTW:Person {name:'J.T. Walsh', born:1943})
CREATE (JamesM:Person {name:'James Marshall', born:1967})
CREATE (ChristopherG:Person {name:'Christopher Guest', born:1948})
CREATE (RobR:Person {name:'Rob Reiner', born:1947})
CREATE (AaronS:Person {name:'Aaron Sorkin', born:1961})
CREATE
  (TomC)-[:ACTED_IN {roles:['Lt. Daniel Kaffee']}]>(AFewGoodMen),
  (JackN)-[:ACTED_IN {roles:['Col. Nathan R. Jessup']}]>(AFewGoodMen),
  (DemiM)-[:ACTED_IN {roles:['Lt. Cdr. JoAnne Galloway']}]>(AFewGoodMen),
  (KevinB)-[:ACTED_IN {roles:['Capt. Jack Ross']}]>(AFewGoodMen),
  (KieferS)-[:ACTED_IN {roles:['Lt. Jonathan Kendrick']}]>(AFewGoodMen),
  (NoahW)-[:ACTED_IN {roles:['Cpl. Jeffrey Barnes']}]>(AFewGoodMen),
  (CubaG)-[:ACTED_IN {roles:['Cpl. Carl Hammaker']}]>(AFewGoodMen),
  (KevinP)-[:ACTED_IN {roles:['Lt. Sam Weinberg']}]>(AFewGoodMen),
  (JTW)-[:ACTED_IN {roles:['Lt. Col. Matthew Andrew Markinson']}]>(AFewGoodMen),

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    (JamesM)-[:ACTED_IN {roles:['Pfc. Louden Downey']}]>(AFewGoodMen),
    (ChristopherG)-[:ACTED_IN {roles:['Dr. Stone']}]>(AFewGoodMen),
    (AaronS)-[:ACTED_IN {roles:['Man in Bar']}]>(AFewGoodMen),
    (RobR)-[:DIRECTED]>(AFewGoodMen),
    (AaronS)-[:WROTE]>(AFewGoodMen)

CREATE (TopGun:Movie {title:"Top Gun", released:1986, tagline:'I feel the need, the need for speed.'})
CREATE (KellyM:Person {name:'Kelly McGillis', born:1957})
CREATE (ValK:Person {name:'Val Kilmer', born:1959})
CREATE (AnthonyE:Person {name:'Anthony Edwards', born:1962})
CREATE (TomS:Person {name:'Tom Skerritt', born:1933})
CREATE (MegR:Person {name:'Meg Ryan', born:1961})
CREATE (TonyS:Person {name:'Tony Scott', born:1944})
CREATE (JimC:Person {name:'Jim Cash', born:1941})
CREATE
    (TomC)-[:ACTED_IN {roles:['Maverick']}]>(TopGun),
    (KellyM)-[:ACTED_IN {roles:['Charlie']}]>(TopGun),
    (ValK)-[:ACTED_IN {roles:['Iceman']}]>(TopGun),
    (AnthonyE)-[:ACTED_IN {roles:['Goose']}]>(TopGun),
    (TomS)-[:ACTED_IN {roles:['Viper']}]>(TopGun),
    (MegR)-[:ACTED_IN {roles:['Carole']}]>(TopGun),
    (TonyS)-[:DIRECTED]>(TopGun),
    (JimC)-[:WROTE]>(TopGun)

CREATE (JerryMaguire:Movie {title:'Jerry Maguire', released:2000, tagline:'The rest of his life begins now.'})
CREATE (ReneeZ:Person {name:'Renee Zellweger', born:1969})
CREATE (KellyP:Person {name:'Kelly Preston', born:1962})
CREATE (JerryO:Person {name:"Jerry O'Connell", born:1974})
CREATE (JayM:Person {name:'Jay Mohr', born:1970})
CREATE (BonnieH:Person {name:'Bonnie Hunt', born:1961})
CREATE (ReginaK:Person {name:'Regina King', born:1971})
CREATE (JonathanL:Person {name:'Jonathan Lipnicki', born:1996})
CREATE (CameronC:Person {name:'Cameron Crowe', born:1957})
CREATE
    (TomC)-[:ACTED_IN {roles:['Jerry Maguire']}]>(JerryMaguire),
    (CubaG)-[:ACTED_IN {roles:['Rod Tidwell']}]>(JerryMaguire),
    (ReneeZ)-[:ACTED_IN {roles:['Dorothy Boyd']}]>(JerryMaguire),
    (KellyP)-[:ACTED_IN {roles:['Avery Bishop']}]>(JerryMaguire),
    (JerryO)-[:ACTED_IN {roles:['Frank Cushman']}]>(JerryMaguire),
    (JayM)-[:ACTED_IN {roles:['Bob Sugar']}]>(JerryMaguire),
    (BonnieH)-[:ACTED_IN {roles:['Laurel Boyd']}]>(JerryMaguire),
    (ReginaK)-[:ACTED_IN {roles:['Marcee Tidwell']}]>(JerryM

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    aguire),
    (JonathanL)-[:ACTED_IN {roles:['Ray Boyd']}]>(JerryMaguire),
    (CameronC)-[:DIRECTED]>(JerryMaguire),
    (CameronC)-[:PRODUCED]>(JerryMaguire),
    (CameronC)-[:WROTE]>(JerryMaguire)

CREATE (StandByMe:Movie {title:"Stand By Me", released:1986, tagline:"For some, it's the last real taste of innocence, and the first real taste of life. But for everyone, it's the time that memories are made of."})
CREATE (RiverP:Person {name:'River Phoenix', born:1970})
CREATE (CoreyF:Person {name:'Corey Feldman', born:1971})
CREATE (WilW:Person {name:'Wil Wheaton', born:1972})
CREATE (JohnC:Person {name:'John Cusack', born:1966})
CREATE (MarshallB:Person {name:'Marshall Bell', born:1942})
CREATE
    (WilW)-[:ACTED_IN {roles:['Gordie Lachance']}]>(StandByMe),
    (RiverP)-[:ACTED_IN {roles:['Chris Chambers']}]>(StandByMe),
    (JerryO)-[:ACTED_IN {roles:['Vern Tessio']}]>(StandByMe),
    (CoreyF)-[:ACTED_IN {roles:['Teddy Duchamp']}]>(StandByMe),
    (JohnC)-[:ACTED_IN {roles:['Denny Lachance']}]>(StandByMe),
    (KieferS)-[:ACTED_IN {roles:['Ace Merrill']}]>(StandByMe),
    (MarshallB)-[:ACTED_IN {roles:['Mr. Lachance']}]>(StandByMe),
    (RobR)-[:DIRECTED]>(StandByMe)

CREATE (AsGoodAsItGets:Movie {title:'As Good as It Gets', released:1997, tagline:'A comedy from the heart that goes for the throat.'})
CREATE (HelenH:Person {name:'Helen Hunt', born:1963})
CREATE (GregK:Person {name:'Greg Kinnear', born:1963})
CREATE (JamesB:Person {name:'James L. Brooks', born:1940})
CREATE
    (JackN)-[:ACTED_IN {roles:['Melvin Udall']}]>(AsGoodAsItGets),
    (HelenH)-[:ACTED_IN {roles:['Carol Connelly']}]>(AsGoodAsItGets),
    (GregK)-[:ACTED_IN {roles:['Simon Bishop']}]>(AsGoodAsItGets),
    (CubaG)-[:ACTED_IN {roles:['Frank Sachs']}]>(AsGoodAsItGets),
    (JamesB)-[:DIRECTED]>(AsGoodAsItGets)

CREATE (WhatDreamsMayCome:Movie {title:'What Dreams May Come', released:1998, tagline:'After life there is more. The end is just the beginning.'})
CREATE (AnnabellaS:Person {name:'Annabella Sciorra', born:1960})

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CREATE (MaxS:Person {name:'Max von Sydow', born:1929})
CREATE (WernerH:Person {name:'Werner Herzog', born:1942})
CREATE (Robin:Person {name:'Robin Williams', born:1951})
CREATE (VincentW:Person {name:'Vincent Ward', born:1956})
CREATE
  (Robin)-[:ACTED_IN {roles:['Chris Nielsen']}]>(WhatDreamsMayCome),
  (CubaG)-[:ACTED_IN {roles:['Albert Lewis']}]>(WhatDreamsMayCome),
  (AnnabellaS)-[:ACTED_IN {roles:['Annie Collins-Nielsen']}]>(WhatDreamsMayCome),
  (MaxS)-[:ACTED_IN {roles:['The Tracker']}]>(WhatDreamsMayCome),
  (WernerH)-[:ACTED_IN {roles:['The Face']}]>(WhatDreamsMayCome),
  (VincentW)-[:DIRECTED]>(WhatDreamsMayCome)

CREATE (SnowFallingtonCedars:Movie {title:'Snow Falling on Cedars', released:1999, tagline:'First loves last. Forever.'})
CREATE (EthanH:Person {name:'Ethan Hawke', born:1970})
CREATE (RickY:Person {name:'Rick Yune', born:1971})
CREATE (JamesC:Person {name:'James Cromwell', born:1940})
CREATE (ScottH:Person {name:'Scott Hicks', born:1953})
CREATE
  (EthanH)-[:ACTED_IN {roles:['Ishmael Chambers']}]>(SnowFallingtonCedars),
  (RickY)-[:ACTED_IN {roles:['Kazuo Miyamoto']}]>(SnowFallingtonCedars),
  (MaxS)-[:ACTED_IN {roles:['Nels Gudmundsson']}]>(SnowFallingtonCedars),
  (JamesC)-[:ACTED_IN {roles:['Judge Fielding']}]>(SnowFallingtonCedars),
  (ScottH)-[:DIRECTED]>(SnowFallingtonCedars)

CREATE (YouveGotMail:Movie {title:"You've Got Mail", released:1998, tagline:'At odds in life... in love on-line.'})
CREATE (ParkerP:Person {name:'Parker Posey', born:1968})
CREATE (DaveC:Person {name:'Dave Chappelle', born:1973})
CREATE (SteveZ:Person {name:'Steve Zahn', born:1967})
CREATE (TomH:Person {name:'Tom Hanks', born:1956})
CREATE (NoraE:Person {name:'Nora Ephron', born:1941})
CREATE
  (TomH)-[:ACTED_IN {roles:['Joe Fox']}]>(YouveGotMail),
  (MegR)-[:ACTED_IN {roles:['Kathleen Kelly']}]>(YouveGotMail),
  (GregK)-[:ACTED_IN {roles:['Frank Navasky']}]>(YouveGotMail),
  (ParkerP)-[:ACTED_IN {roles:['Patricia Eden']}]>(YouveGotMail),
  (DaveC)-[:ACTED_IN {roles:['Kevin Jackson']}]>(YouveGotMail),
  (SteveZ)-[:ACTED_IN {roles:['George Pappas']}]>(YouveGotMail),
  (NoraE)-[:DIRECTED]>(YouveGotMail)

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CREATE (SleeplessInSeattle:Movie {title:'Sleepless in Seattle', released:1993, tagline:'What if someone you never met, someone you never saw, someone you never knew was the only someone for you?'})
CREATE (RitaW:Person {name:'Rita Wilson', born:1956})
CREATE (BillPull:Person {name:'Bill Pullman', born:1953})
CREATE (VictorG:Person {name:'Victor Garber', born:1949})
CREATE (RosieO:Person {name:"Rosie O'Donnell", born:1962})
CREATE
  (TomH)-[:ACTED_IN {roles:['Sam Baldwin']}]>(SleeplessInSeattle),
  (MegR)-[:ACTED_IN {roles:['Annie Reed']}]>(SleeplessInSeattle),
  (RitaW)-[:ACTED_IN {roles:['Suzy']}]>(SleeplessInSeattle),
  (BillPull)-[:ACTED_IN {roles:['Walter']}]>(SleeplessInSeattle),
  (VictorG)-[:ACTED_IN {roles:['Greg']}]>(SleeplessInSeattle),
  (RosieO)-[:ACTED_IN {roles:['Becky']}]>(SleeplessInSeattle),
  (NoraE)-[:DIRECTED]>(SleeplessInSeattle)

CREATE (JoeVersustheVolcano:Movie {title:'Joe Versus the Volcano', released:1990, tagline:'A story of love, lava and burning desire.'})
CREATE (JohnS:Person {name:'John Patrick Stanley', born:1950})
CREATE (Nathan:Person {name:'Nathan Lane', born:1956})
CREATE
  (TomH)-[:ACTED_IN {roles:['Joe Banks']}]>(JoeVersustheVolcano),
  (MegR)-[:ACTED_IN {roles:['DeDe', 'Angelica Graynamore', 'Patricia Graynamore']}]>(JoeVersustheVolcano),
  (Nathan)-[:ACTED_IN {roles:['Baw']}]>(JoeVersustheVolcano),
  (JohnS)-[:DIRECTED]>(JoeVersustheVolcano)

CREATE (WhenHarryMetSally:Movie {title:'When Harry Met Sally', released:1998, tagline:'Can two friends sleep together and still love each other in the morning?'})
CREATE (BillyC:Person {name:'Billy Crystal', born:1948})
CREATE (CarrieF:Person {name:'Carrie Fisher', born:1956})
CREATE (BrunoK:Person {name:'Bruno Kirby', born:1949})
CREATE
  (BillyC)-[:ACTED_IN {roles:['Harry Burns']}]>(WhenHarryMetSally),
  (MegR)-[:ACTED_IN {roles:['Sally Albright']}]>(WhenHarryMetSally),
  (CarrieF)-[:ACTED_IN {roles:['Marie']}]>(WhenHarryMetSally),
  (BrunoK)-[:ACTED_IN {roles:['Jess']}]>(WhenHarryMetSally),
  (RobR)-[:DIRECTED]>(WhenHarryMetSally),

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(RobR)-[:PRODUCED]->(WhenHarryMetSally),
(NoraE)-[:PRODUCED]->(WhenHarryMetSally),
(NoraE)-[:WROTE]->(WhenHarryMetSally)

CREATE (ThatThingYouDo:Movie {title:'That Thing You Do', re
released:1996, tagline:'In every life there comes a time when
that thing you dream becomes that thing you do'})
CREATE (LivT:Person {name:'Liv Tyler', born:1977})
CREATE
  (TomH)-[:ACTED_IN {roles:['Mr. White']}]>(ThatThingYouD
o),
  (LivT)-[:ACTED_IN {roles:['Faye Dolan']}]>(ThatThingYouD
o),
  (Charlize)-[:ACTED_IN {roles:['Tina']}]>(ThatThingYouD
o),
  (TomH)-[:DIRECTED]->(ThatThingYouDo)

CREATE (TheReplacements:Movie {title:'The Replacements', re
released:2000, tagline:'Pain heals, Chicks dig scars... Glory
lasts forever'})
CREATE (Brooke:Person {name:'Brooke Langton', born:1970})
CREATE (Gene:Person {name:'Gene Hackman', born:1930})
CREATE (Orlando:Person {name:'Orlando Jones', born:1968})
CREATE (Howard:Person {name:'Howard Deutch', born:1950})
CREATE
  (Keanu)-[:ACTED_IN {roles:['Shane Falco']}]>(TheReplacem
ents),
  (Brooke)-[:ACTED_IN {roles:['Annabelle Farrell']}]>(TheR
eplacements),
  (Gene)-[:ACTED_IN {roles:['Jimmy McGinty']}]>(TheReplace
ments),
  (Orlando)-[:ACTED_IN {roles:['Clifford Franklin']}]>(The
Replacements),
  (Howard)-[:DIRECTED]->(TheReplacements)

CREATE (RescueDawn:Movie {title:'RescueDawn', released:200
6, tagline:"Based on the extraordinary true story of one ma
n's fight for freedom"})
CREATE (ChristianB:Person {name:'Christian Bale', born:197
4})
CREATE (ZachG:Person {name:'Zach Grenier', born:1954})
CREATE
  (MarshallB)-[:ACTED_IN {roles:['Admiral']}]>(RescueDaw
n),
  (ChristianB)-[:ACTED_IN {roles:['Dieter Dengler']}]>(Res
cueDawn),
  (ZachG)-[:ACTED_IN {roles:['Squad Leader']}]>(RescueDaw
n),
  (SteveZ)-[:ACTED_IN {roles:['Duane']}]>(RescueDawn),
  (WernerH)-[:DIRECTED]->(RescueDawn)

CREATE (TheBirdcage:Movie {title:'The Birdcage', released:1
996, tagline:'Come as you are'})
CREATE (MikeN:Person {name:'Mike Nichols', born:1931})
CREATE

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    (Robin)-[:ACTED_IN {roles:['Armand Goldman']}]>(TheBirdc
age),
    (Nathan)-[:ACTED_IN {roles:['Albert Goldman']}]>(TheBird
cage),
    (Gene)-[:ACTED_IN {roles:['Sen. Kevin Keeley']}]>(TheBir
dcage),
    (MikeN)-[:DIRECTED]>(TheBirdcage)

CREATE (Unforgiven:Movie {title:'Unforgiven', released:199
2, tagline:"It's a hell of a thing, killing a man"})
CREATE (RichardH:Person {name:'Richard Harris', born:1930})
CREATE (ClintE:Person {name:'Clint Eastwood', born:1930})
CREATE
    (RichardH)-[:ACTED_IN {roles:['English Bob']}]>(Unforgiv
en),
    (ClintE)-[:ACTED_IN {roles:['Bill Munny']}]>(Unforgive
n),
    (Gene)-[:ACTED_IN {roles:['Little Bill Daggett']}]>(Unfo
rgiven),
    (ClintE)-[:DIRECTED]>(Unforgiven)

CREATE (JohnnyMnemonic:Movie {title:'Johnny Mnemonic', rele
ased:1995, tagline:'The hottest data on earth. In the coole
st head in town'})
CREATE (Takeshi:Person {name:'Takeshi Kitano', born:1947})
CREATE (Dina:Person {name:'Dina Meyer', born:1968})
CREATE (IceT:Person {name:'Ice-T', born:1958})
CREATE (RobertL:Person {name:'Robert Longo', born:1953})
CREATE
    (Keanu)-[:ACTED_IN {roles:['Johnny Mnemonic']}]>(JohnnyM
nemonic),
    (Takeshi)-[:ACTED_IN {roles:['Takahashi']}]>(JohnnyMnemo
nic),
    (Dina)-[:ACTED_IN {roles:['Jane']}]>(JohnnyMnemonic),
    (IceT)-[:ACTED_IN {roles:['J-Bone']}]>(JohnnyMnemonic),
    (RobertL)-[:DIRECTED]>(JohnnyMnemonic)

CREATE (CloudAtlas:Movie {title:'Cloud Atlas', released:201
2, tagline:'Everything is connected'})
CREATE (HalleB:Person {name:'Halle Berry', born:1966})
CREATE (JimB:Person {name:'Jim Broadbent', born:1949})
CREATE (TomT:Person {name:'Tom Tykwer', born:1965})
CREATE (DavidMitchell:Person {name:'David Mitchell', born:1
969})
CREATE (StefanArndt:Person {name:'Stefan Arndt', born:196
1})
CREATE
    (TomH)-[:ACTED_IN {roles:['Zachry', 'Dr. Henry Goose', 'I
saac Sachs', 'Dermot Hoggins']}]>(CloudAtlas),
    (Hugo)-[:ACTED_IN {roles:['Bill Smoke', 'Haskell Moore',
'Tadeusz Kesselring', 'Nurse Noakes', 'Boardman Mephi', 'Ol
d Georgie']}]>(CloudAtlas),
    (HalleB)-[:ACTED_IN {roles:['Luisa Rey', 'Jocasta Ayr's',
'Ovid', 'Meronym']}]>(CloudAtlas),
    (JimB)-[:ACTED_IN {roles:['Vyvyan Ayr's', 'Captain Molyneu

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x', 'Timothy Cavendish']}]>(CloudAtlas),
(TomT)-[:DIRECTED]->(CloudAtlas),
(LillyW)-[:DIRECTED]->(CloudAtlas),
(LanaW)-[:DIRECTED]->(CloudAtlas),
(DavidMitchell)-[:WROTE]->(CloudAtlas),
(StefanArndt)-[:PRODUCED]->(CloudAtlas)

CREATE (TheDaVinciCode:Movie {title:'The Da Vinci Code', released:2006, tagline:'Break The Codes'})
CREATE (IanM:Person {name:'Ian McKellen', born:1939})
CREATE (AudreyT:Person {name:'Audrey Tautou', born:1976})
CREATE (PaulB:Person {name:'Paul Bettany', born:1971})
CREATE (RonH:Person {name:'Ron Howard', born:1954})
CREATE
  (TomH)-[:ACTED_IN {roles:['Dr. Robert Langdon']}]>(TheDaVinciCode),
  (IanM)-[:ACTED_IN {roles:['Sir Leight Teabing']}]>(TheDaVinciCode),
  (AudreyT)-[:ACTED_IN {roles:['Sophie Neveu']}]>(TheDaVinciCode),
  (PaulB)-[:ACTED_IN {roles:['Silas']}]>(TheDaVinciCode),
  (RonH)-[:DIRECTED]->(TheDaVinciCode)

CREATE (VforVendetta:Movie {title:'V for Vendetta', released:2006, tagline:'Freedom! Forever!'})
CREATE (NatalieP:Person {name:'Natalie Portman', born:1981})
CREATE (StephenR:Person {name:'Stephen Rea', born:1946})
CREATE (JohnH:Person {name:'John Hurt', born:1940})
CREATE (BenM:Person {name:'Ben Miles', born:1967})
CREATE
  (Hugo)-[:ACTED_IN {roles:['V']}]>(VforVendetta),
  (NatalieP)-[:ACTED_IN {roles:['Evey Hammond']}]>(VforVendetta),
  (StephenR)-[:ACTED_IN {roles:['Eric Finch']}]>(VforVendetta),
  (JohnH)-[:ACTED_IN {roles:['High Chancellor Adam Sutler']}]>(VforVendetta),
  (BenM)-[:ACTED_IN {roles:['Dascomb']}]>(VforVendetta),
  (JamesM)-[:DIRECTED]->(VforVendetta),
  (LillyW)-[:PRODUCED]->(VforVendetta),
  (LanaW)-[:PRODUCED]->(VforVendetta),
  (JoelS)-[:PRODUCED]->(VforVendetta),
  (LillyW)-[:WROTE]->(VforVendetta),
  (LanaW)-[:WROTE]->(VforVendetta)

CREATE (SpeedRacer:Movie {title:'Speed Racer', released:2008, tagline:'Speed has no limits'})
CREATE (EmileH:Person {name:'Emile Hirsch', born:1985})
CREATE (JohnG:Person {name:'John Goodman', born:1960})
CREATE (SusanS:Person {name:'Susan Sarandon', born:1946})
CREATE (MatthewF:Person {name:'Matthew Fox', born:1966})
CREATE (ChristinaR:Person {name:'Christina Ricci', born:1980})
CREATE (Rain:Person {name:'Rain', born:1982})

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CREATE
  (EmileH)-[:ACTED_IN {roles:['Speed Racer']}]>(SpeedRacer),
  (JohnG)-[:ACTED_IN {roles:['Pops']}]>(SpeedRacer),
  (SusanS)-[:ACTED_IN {roles:['Mom']}]>(SpeedRacer),
  (MatthewF)-[:ACTED_IN {roles:['Racer X']}]>(SpeedRacer),
  (ChristinaR)-[:ACTED_IN {roles:['Trixie']}]>(SpeedRacer),
  (Rain)-[:ACTED_IN {roles:['Taejo Togokahn']}]>(SpeedRacer),
  (BenM)-[:ACTED_IN {roles:['Cass Jones']}]>(SpeedRacer),
  (LillyW)-[:DIRECTED]>(SpeedRacer),
  (LanaW)-[:DIRECTED]>(SpeedRacer),
  (LillyW)-[:WROTE]>(SpeedRacer),
  (LanaW)-[:WROTE]>(SpeedRacer),
  (JoelS)-[:PRODUCED]>(SpeedRacer)

CREATE (NinjaAssassin:Movie {title:'Ninja Assassin', released:2009, tagline:'Prepare to enter a secret world of assassins'})
CREATE (NaomieH:Person {name:'Naomie Harris'})
CREATE
  (Rain)-[:ACTED_IN {roles:['Raizo']}]>(NinjaAssassin),
  (NaomieH)-[:ACTED_IN {roles:['Mika Coretti']}]>(NinjaAssassin),
  (RickY)-[:ACTED_IN {roles:['Takeshi']}]>(NinjaAssassin),
  (BenM)-[:ACTED_IN {roles:['Ryan Maslow']}]>(NinjaAssassin),
  (JamesM)-[:DIRECTED]>(NinjaAssassin),
  (LillyW)-[:PRODUCED]>(NinjaAssassin),
  (LanaW)-[:PRODUCED]>(NinjaAssassin),
  (JoelS)-[:PRODUCED]>(NinjaAssassin)

CREATE (TheGreenMile:Movie {title:'The Green Mile', released:1999, tagline:"Walk a mile you'll never forget."})
CREATE (MichaelD:Person {name:'Michael Clarke Duncan', born:1957})
CREATE (DavidM:Person {name:'David Morse', born:1953})
CREATE (SamR:Person {name:'Sam Rockwell', born:1968})
CREATE (GaryS:Person {name:'Gary Sinise', born:1955})
CREATE (PatriciaC:Person {name:'Patricia Clarkson', born:1959})
CREATE (FrankD:Person {name:'Frank Darabont', born:1959})
CREATE
  (TomH)-[:ACTED_IN {roles:['Paul Edgecomb']}]>(TheGreenMile),
  (MichaelD)-[:ACTED_IN {roles:['John Coffey']}]>(TheGreenMile),
  (DavidM)-[:ACTED_IN {roles:['Brutus "Brutal" Howell']}]>(TheGreenMile),
  (BonnieH)-[:ACTED_IN {roles:['Jan Edgecomb']}]>(TheGreenMile),
  (JamesC)-[:ACTED_IN {roles:['Warden Hal Moores']}]>(TheGreenMile),
  (SamR)-[:ACTED_IN {roles:['"Wild Bill" Wharton']}]>(TheG

```

```

reenMile),
  (GaryS)-[:ACTED_IN {roles:['Burt Hammersmith']}]>(TheGreenMile),
  (PatriciaC)-[:ACTED_IN {roles:['Melinda Moores']}]>(TheGreenMile),
  (FrankD)-[:DIRECTED]>(TheGreenMile)

CREATE (FrostNixon:Movie {title:'Frost/Nixon', released:2008, tagline:'400 million people were waiting for the truth.'})
CREATE (FrankL:Person {name:'Frank Langella', born:1938})
CREATE (MichaelS:Person {name:'Michael Sheen', born:1969})
CREATE (OliverP:Person {name:'Oliver Platt', born:1960})
CREATE
  (FrankL)-[:ACTED_IN {roles:['Richard Nixon']}]>(FrostNixon),
  (MichaelS)-[:ACTED_IN {roles:['David Frost']}]>(FrostNixon),
  (KevinB)-[:ACTED_IN {roles:['Jack Brennan']}]>(FrostNixon),
  (OliverP)-[:ACTED_IN {roles:['Bob Zelnick']}]>(FrostNixon),
  (SamR)-[:ACTED_IN {roles:['James Reston, Jr.']}]>(FrostNixon),
  (RonH)-[:DIRECTED]>(FrostNixon)

CREATE (Hoffa:Movie {title:'Hoffa', released:1992, tagline:'He didn't want law. He wanted justice.'})
CREATE (DannyD:Person {name:'Danny DeVito', born:1944})
CREATE (JohnR:Person {name:'John C. Reilly', born:1965})
CREATE
  (JackN)-[:ACTED_IN {roles:['Hoffa']}]>(Hoffa),
  (DannyD)-[:ACTED_IN {roles:['Robert "Bobby" Ciaro']}]>(Hoffa),
  (JTW)-[:ACTED_IN {roles:['Frank Fitzsimmons']}]>(Hoffa),
  (JohnR)-[:ACTED_IN {roles:['Peter "Pete" Connelly']}]>(Hoffa),
  (DannyD)-[:DIRECTED]>(Hoffa)

CREATE (Apollo13:Movie {title:'Apollo 13', released:1995, tagline:'Houston, we have a problem.'})
CREATE (EdH:Person {name:'Ed Harris', born:1950})
CREATE (BillPax:Person {name:'Bill Paxton', born:1955})
CREATE
  (TomH)-[:ACTED_IN {roles:['Jim Lovell']}]>(Apollo13),
  (KevinB)-[:ACTED_IN {roles:['Jack Swigert']}]>(Apollo13),
  (EdH)-[:ACTED_IN {roles:['Gene Kranz']}]>(Apollo13),
  (BillPax)-[:ACTED_IN {roles:['Fred Haise']}]>(Apollo13),
  (GaryS)-[:ACTED_IN {roles:['Ken Mattingly']}]>(Apollo13),
  (RonH)-[:DIRECTED]>(Apollo13)

CREATE (Twister:Movie {title:'Twister', released:1996, tagline:'Don't Breathe. Don't Look Back.'})

```

```

CREATE (PhilipH:Person {name:'Philip Seymour Hoffman', born:1967})
CREATE (JanB:Person {name:'Jan de Bont', born:1943})
CREATE
  (BillPax)-[:ACTED_IN {roles:['Bill Harding']}]>(Twister),
  (HelenH)-[:ACTED_IN {roles:['Dr. Jo Harding']}]>(Twister),
  (ZachG)-[:ACTED_IN {roles:['Eddie']}]>(Twister),
  (PhilipH)-[:ACTED_IN {roles:['Dustin "Dusty" Davis']}]>(Twister),
  (JanB)-[:DIRECTED]>(Twister)

CREATE (CastAway:Movie {title:'Cast Away', released:2000, tagline:'At the edge of the world, his journey begins.'})
CREATE (RobertZ:Person {name:'Robert Zemeckis', born:1951})
CREATE
  (TomH)-[:ACTED_IN {roles:['Chuck Noland']}]>(CastAway),
  (HelenH)-[:ACTED_IN {roles:['Kelly Frears']}]>(CastAway),
  (RobertZ)-[:DIRECTED]>(CastAway)

CREATE (OneFlewOvertheCuckoosNest:Movie {title:'One Flew Over the Cuckoo's Nest', released:1975, tagline:'If he's crazy, what does that make you?'})
CREATE (MilosF:Person {name:'Milos Forman', born:1932})
CREATE
  (JackN)-[:ACTED_IN {roles:['Randle McMurphy']}]>(OneFlewOvertheCuckoosNest),
  (DannyD)-[:ACTED_IN {roles:['Martini']}]>(OneFlewOvertheCuckoosNest),
  (MilosF)-[:DIRECTED]>(OneFlewOvertheCuckoosNest)

CREATE (SomethingsGottaGive:Movie {title:'Something's Gotta Give', released:2003})
CREATE (DianeK:Person {name:'Diane Keaton', born:1946})
CREATE (NancyM:Person {name:'Nancy Meyers', born:1949})
CREATE
  (JackN)-[:ACTED_IN {roles:['Harry Sanborn']}]>(SomethingsGottaGive),
  (DianeK)-[:ACTED_IN {roles:['Erica Barry']}]>(SomethingsGottaGive),
  (Keanu)-[:ACTED_IN {roles:['Julian Mercer']}]>(SomethingsGottaGive),
  (NancyM)-[:DIRECTED]>(SomethingsGottaGive),
  (NancyM)-[:PRODUCED]>(SomethingsGottaGive),
  (NancyM)-[:WROTE]>(SomethingsGottaGive)

CREATE (BicentennialMan:Movie {title:'Bicentennial Man', released:1999, tagline:'One robot's 200 year journey to become an ordinary man.'})
CREATE (ChrisC:Person {name:'Chris Columbus', born:1958})
CREATE
  (Robin)-[:ACTED_IN {roles:['Andrew Marin']}]>(BicentennialMan),

```

```

(OliverP)-[:ACTED_IN {roles:['Rupert Burns']}]>(BicentennialMan),
(ChrisC)-[:DIRECTED]>(BicentennialMan)

CREATE (CharlieWilsonsWar:Movie {title:"Charlie Wilson's War", released:2007, tagline:"A stiff drink. A little masochism. A lot of nerve. Who said they couldn't bring down the Soviet empire."})
CREATE (JuliaR:Person {name:'Julia Roberts', born:1967})
CREATE
  (TomH)-[:ACTED_IN {roles:['Rep. Charlie Wilson']}]>(CharlieWilsonsWar),
  (JuliaR)-[:ACTED_IN {roles:['Joanne Herring']}]>(CharlieWilsonsWar),
  (PhilipH)-[:ACTED_IN {roles:['Gust Avrakotos']}]>(CharlieWilsonsWar),
  (MikeN)-[:DIRECTED]>(CharlieWilsonsWar)

CREATE (ThePolarExpress:Movie {title:'The Polar Express', released:2004, tagline:'This Holiday Season... Believe'})
CREATE
  (TomH)-[:ACTED_IN {roles:['Hero Boy', 'Father', 'Conductor', 'Hobo', 'Scrooge', 'Santa Claus']}]>(ThePolarExpress),
  (RobertZ)-[:DIRECTED]>(ThePolarExpress)

CREATE (ALeagueofTheirOwn:Movie {title:'A League of Their Own', released:1992, tagline:'Once in a lifetime you get a chance to do something different.'})
CREATE (Madonna:Person {name:'Madonna', born:1954})
CREATE (GeenaD:Person {name:'Geena Davis', born:1956})
CREATE (LoriP:Person {name:'Lori Petty', born:1963})
CREATE (PennyM:Person {name:'Penny Marshall', born:1943})
CREATE
  (TomH)-[:ACTED_IN {roles:['Jimmy Dugan']}]>(ALeagueofTheirOwn),
  (GeenaD)-[:ACTED_IN {roles:['Dottie Hinson']}]>(ALeagueofTheirOwn),
  (LoriP)-[:ACTED_IN {roles:['Kit Keller']}]>(ALeagueofTheirOwn),
  (RosieO)-[:ACTED_IN {roles:['Doris Murphy']}]>(ALeagueofTheirOwn),
  (Madonna)-[:ACTED_IN {roles:['"All the Way" Mae Mordabito']}]>(ALeagueofTheirOwn),
  (BillPax)-[:ACTED_IN {roles:['Bob Hinson']}]>(ALeagueofTheirOwn),
  (PennyM)-[:DIRECTED]>(ALeagueofTheirOwn)

CREATE (PaulBlythe:Person {name:'Paul Blythe'})
CREATE (AngelaScope:Person {name:'Angela Scope'})
CREATE (JessicaThompson:Person {name:'Jessica Thompson'})
CREATE (JamesThompson:Person {name:'James Thompson'})

CREATE
  (JamesThompson)-[:FOLLOWS]>(JessicaThompson),
  (AngelaScope)-[:FOLLOWS]>(JessicaThompson),

```

```

(PaulBlythe)-[:FOLLOWS]->(AngelaScope)

CREATE
  (JessicaThompson)-[:REVIEWED {summary:'An amazing journey
', rating:95}]->(CloudAtlas),
  (JessicaThompson)-[:REVIEWED {summary:'Silly, but fun', r
ating:65}]->(TheReplacements),
  (JamesThompson)-[:REVIEWED {summary:'The coolest football
movie ever', rating:100}]->(TheReplacements),
  (AngelaScope)-[:REVIEWED {summary:'Pretty funny at times
', rating:62}]->(TheReplacements),
  (JessicaThompson)-[:REVIEWED {summary:'Dark, but compelli
ng', rating:85}]->(Unforgiven),
  (JessicaThompson)-[:REVIEWED {summary:'Slapstick redeemed
by the Robie Williams and Gene Hackman's stellar perfo
rmance', rating:45}]->(TheBirdcage),
  (JessicaThompson)-[:REVIEWED {summary:'A solid romp', rat
ing:68}]->(TheDaVinciCode),
  (JamesThompson)-[:REVIEWED {summary:'Fun, but a little fa
r fetched', rating:65}]->(TheDaVinciCode),
  (JessicaThompson)-[:REVIEWED {summary:'You had me at Jerr
y', rating:92}]->(JerryMaguire)

```

Out[71]:

**Schema**

A imagem abaixo representa o schema do banco de dados.

## [Questão Exemplo] Em que ano nasceu a pessoa com nome Tom Hanks?

```

In [72]: %%cypher

MATCH (node)
WHERE node.name='Tom Hanks'
RETURN node

```

1 rows affected.

```

Out[72]:
node
{'born': 1956, 'name': 'Tom Hanks'}

```

## [Questão Exemplo] Encontre o filme com nome Cloud Atlas

In [73]: %%cypher

```
MATCH (node:Movie)
WHERE node.title='Cloud Atlas'
RETURN node
```

1 rows affected.

Out[73]:

node

```
{'tagline': 'Everything is connected', 'title': 'Cloud Atlas', 'released': 2012}
```

## [Questão Exemplo] Liste apenas o nome de 10 filmes

In [74]: %%cypher

```
MATCH (node:Movie)
RETURN node.title LIMIT 10
```

10 rows affected.

Out[74]:

node.title

The Matrix Reloaded

The Matrix Revolutions

The Devil's Advocate

A Few Good Men

Top Gun

Jerry Maguire

Stand By Me

As Good as It Gets

What Dreams May Come

Snow Falling on Cedars

## [Questão Exemplo] Liste todos os filmes em que Tom Hanks atuou



In [76]: %%**cypher**

```
MATCH (node)-[:ACTED_IN]->(node2:Movie)
WHERE node.name='Tom Hanks'
RETURN node2.title as Titulo_dos_Filme
```

12 rows affected.

Out[76]: **Titulo\_dos\_Filme**

You've Got Mail
Sleepless in Seattle
Joe Versus the Volcano
That Thing You Do
Cloud Atlas
The Da Vinci Code
The Green Mile
Apollo 13
Cast Away
Charlie Wilson's War
The Polar Express
A League of Their Own

**[Questão 1] Liste o nome de até 10 filmes lançados entre 1990 e 1999**

In [77]: %%cypher

```
MATCH (node:Movie)
WHERE node.released >= 1990 AND node.released <= 1999
RETURN node.title AS Filmes limit 10
```

10 rows affected.

Out[77]:

**Filmes**

The Devil's Advocate  
A Few Good Men  
As Good as It Gets  
What Dreams May Come  
Snow Falling on Cedars  
You've Got Mail  
Sleepless in Seattle  
Joe Versus the Volcano  
When Harry Met Sally  
That Thing You Do

## [Questão 2] Qual(is) o(s) nome(s) do(s) diretor(es) do filme Cloud Atlas?

In [79]: %%cypher

```
MATCH (node)-[:DIRECTED]-> (node2:Movie)
WHERE node2.title = 'Cloud Atlas'
return node.name AS Diretores
```

3 rows affected.

Out[79]:

**Diretores**

Lilly Wachowski  
Tom Tykwer  
Lana Wachowski

## [Questão 3] Quais são os nomes dos outros atores que atuaram no filme Cloud Atlas?

In [80]: %%cypher

```
MATCH (node)-[:ACTED_IN]->(node2:Movie)
WHERE node2.title = 'Cloud Atlas'
return node.name As Outros_Atores
```

4 rows affected.

Out[80]: Outros\_Atores

Tom Hanks

Halle Berry

Jim Broadbent

Hugo Weaving

**[Questão 4] Existe algum filme em que o Tom Hanks tenha dirigido e atuado? Se sim, qual o nome e ano de lançamento?**

In [51]: %%cypher

```
MATCH (node)-[:ACTED_IN]->(node2:Movie)
MATCH (node)-[:DIRECTED]->(node2:Movie)
WHERE node.name='Tom Hanks'
RETURN node2.title as Titulo_do_Filme, node2.released as Ano
```

1 rows affected.

Out[51]: Titulo\_do\_Filme Ano

That Thing You Do 1996

**[Questão 5] Liste o nome de 10 diretores que dirigiram filmes em que o Tom Hanks atuou**

dica:

```
MATCH (a)-[:ACTED_IN]->(m)<-[:DIRECTED]-(d) RETURN a,m,d LIMIT 10
```

In [81]: %%cypher

```
MATCH (node)-[:ACTED_IN]->(node2:Movie) <-[:DIRECTED]-(d)
WHERE node.name='Tom Hanks'
RETURN distinct d.name as Diretores LIMIT 10
```

10 rows affected.

Out[81]:

Diretores
Nora Ephron
John Patrick Stanley
Tom Hanks
Lilly Wachowski
Tom Tykwer
Lana Wachowski
Ron Howard
Frank Darabont
Robert Zemeckis
Mike Nichols

**[Questão 6] Existe algum filme em que ambos Kevin Bacon e Tom Cruise tenham atuado? Se sim, qual o nome e ano de lançamento?**

In [84]: %%cypher

```
MATCH (node)-[:ACTED_IN]->(node2:Movie) <-[:ACTED_IN]-(node3)
WHERE node.name = 'Tom Cruise' and node3.name = 'Kevin Bacon'
RETURN distinct node2.title AS Filme, node2.released as Ano
```

1 rows affected.

Out[84]:

Filme	Ano
A Few Good Men	1992

**[Questão 7] Liste o nome de 10 pessoas que também atuaram em filmes com o Tom Hanks**

In [87]: %%cypher

```
MATCH (node)-[:ACTED_IN]->(node2:Movie) <-[:ACTED_IN]-(d)
WHERE node.name='Tom Hanks'
RETURN distinct d.name AS Pessoas_Que_Também_Atuaram LIMIT
10
```

10 rows affected.

Out[87]: **Pessoas\_Que\_Também\_Atuaram**

Meg Ryan  
Greg Kinnear  
Parker Posey  
Dave Chappelle  
Steve Zahn  
Rita Wilson  
Bill Pullman  
Rosie O'Donnell  
Victor Garber  
Nathan Lane

## [Questão extra] Quem mais produziu filmes do Tom Hanks e do Kevin Bacon?

In [ ]: %%cypher

## [Questão Extra] Quem tem mais seguidores?

In [ ]: %%cypher

## [Questão Extra] Liste o(s) nomeQ(s) da(s) pessoa(s) que produziram, escreveram e dirigiram o mesmo filme

In [ ]: %%cypher

## [Questão Extra] Qual a média de notas (reviewed) do filme The Replacements?

In [ ]:

## Conhecendo um pouco mais Cypher

<https://neo4j.com/docs/cypher-manual/3.5/> (<https://neo4j.com/docs/cypher-manual/3.5/>)

## Filmes e atores com 4 nós de separação de Kevin Bacon

```
MATCH (bacon:Person {name:"Kevin Bacon"})-[*1..4]-(hollywood)
RETURN DISTINCT hollywood
```

## O menor caminho entre Kevin Bacon e Meg Ryan

```
MATCH p=shortestPath(
  (bacon:Person {name:"Kevin Bacon"})-[*]-(meg:Person {name:"Meg
  Ryan"})
)
RETURN p
```

In [ ]: