Introduction to Bloom

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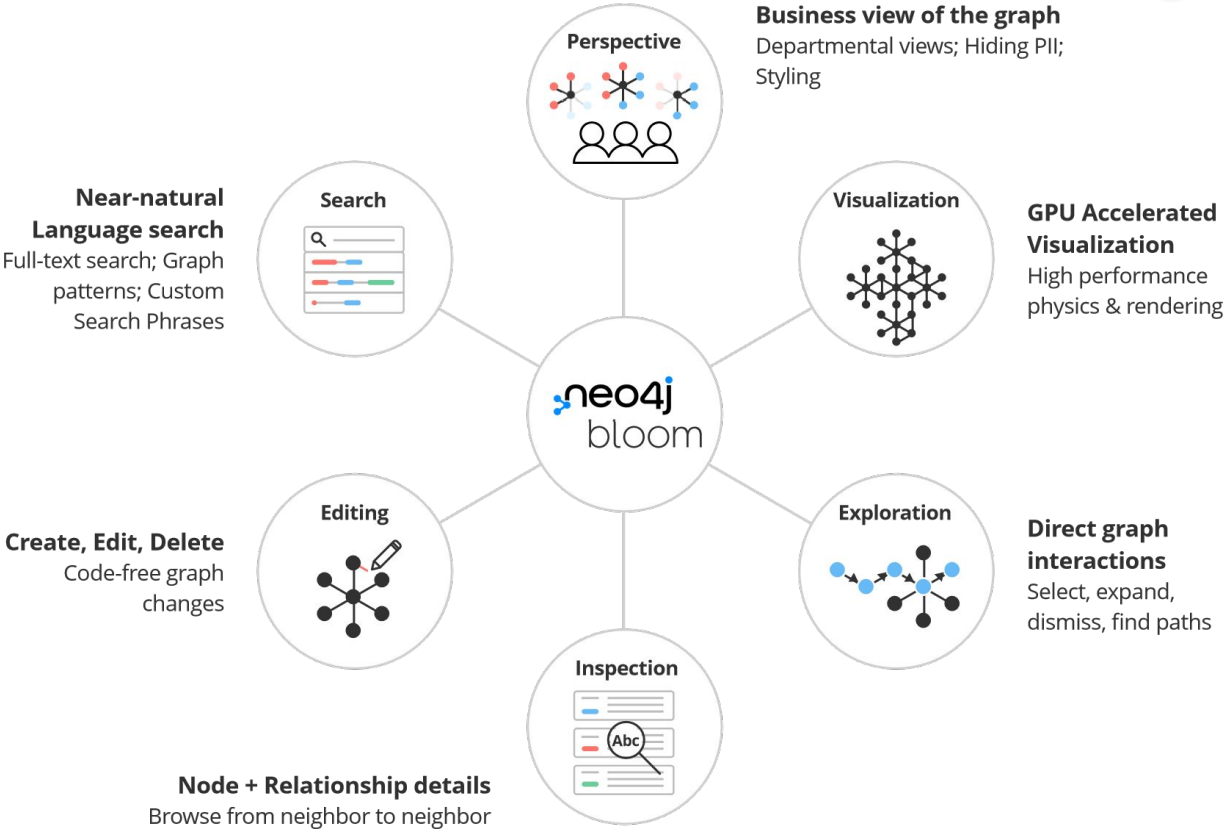
Overview of the training

- Very hands on - you will be diving into Bloom to do everything from setting it up, to exploring the data, to doing edits and changes!
- We will be importing a data set, so we will be using Cypher, but don’t panic! We’ll give you the queries

Overview of Bloom



Where is Bloom available?

- Neo4j Aura
- Neo4j Sandbox
- Neo4j Desktop
- As a plugin for Neo4j Server

(A Brief) Introduction to Neo4j Aura and Browser

There are two other components we'll be visiting as part of the session:

- We recommend using Neo4j Sandbox for this session
  - You may also use Neo4j Aura Free
- Neo4j Browser:
  - We'll use this to load our data

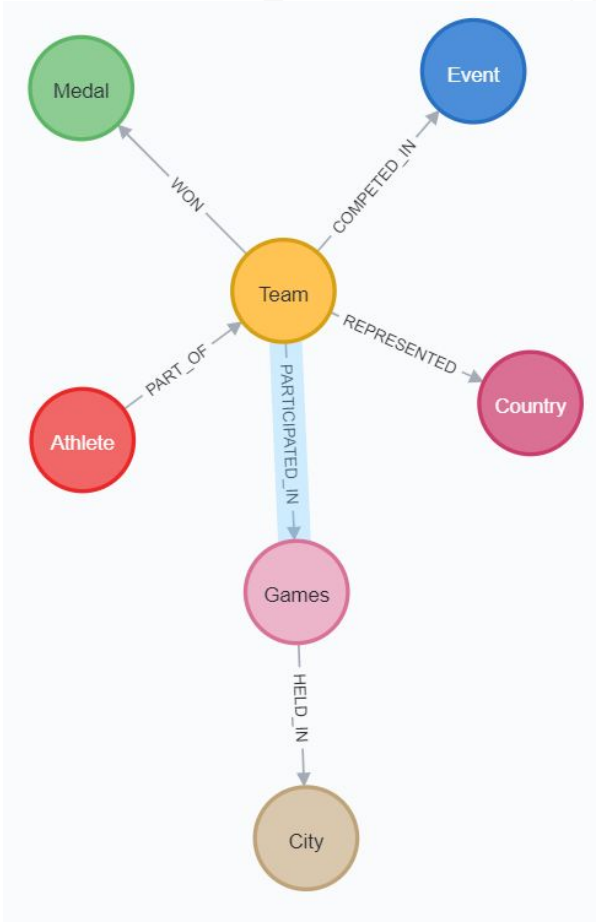
Getting up and running on Neo4j Aura Free

Introduction to the data set

Kaggle Olympics Data Set

- Summer and Winter Olympics from 1896 to 2016
- Source: www.kaggle.com/heesoo37/120-years-of-olympic-history-athletes-and-results
- We're only using the Winter Games

All queries, data, etc.:
dev.neo4j.com/bloom-training-repo



Setting up the database

Use Neo4j Sandbox:

- Go to dev.neo4j.com/try
- Sign in & click “Blank sandbox”

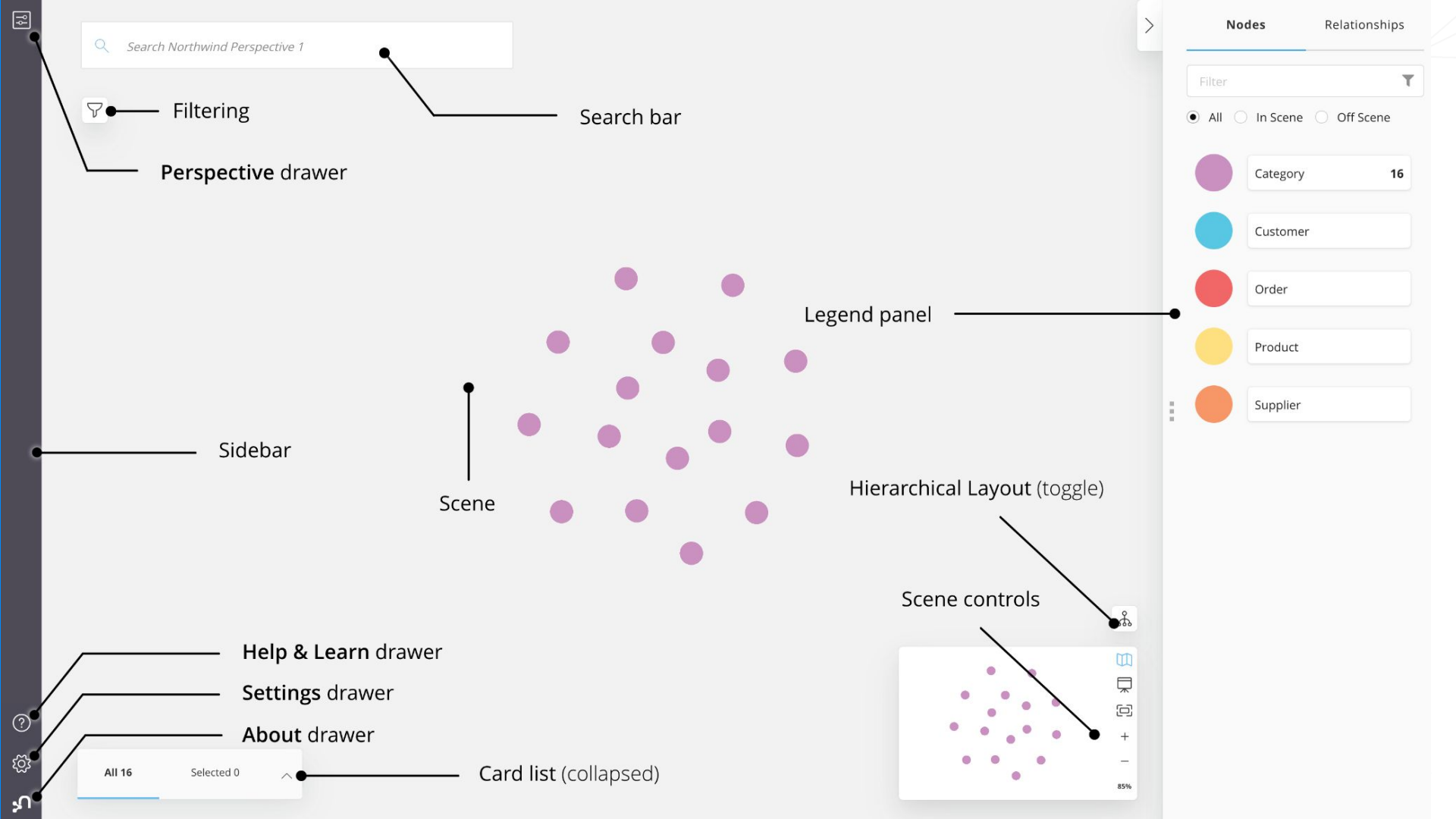
For Neo4j Aura Free:

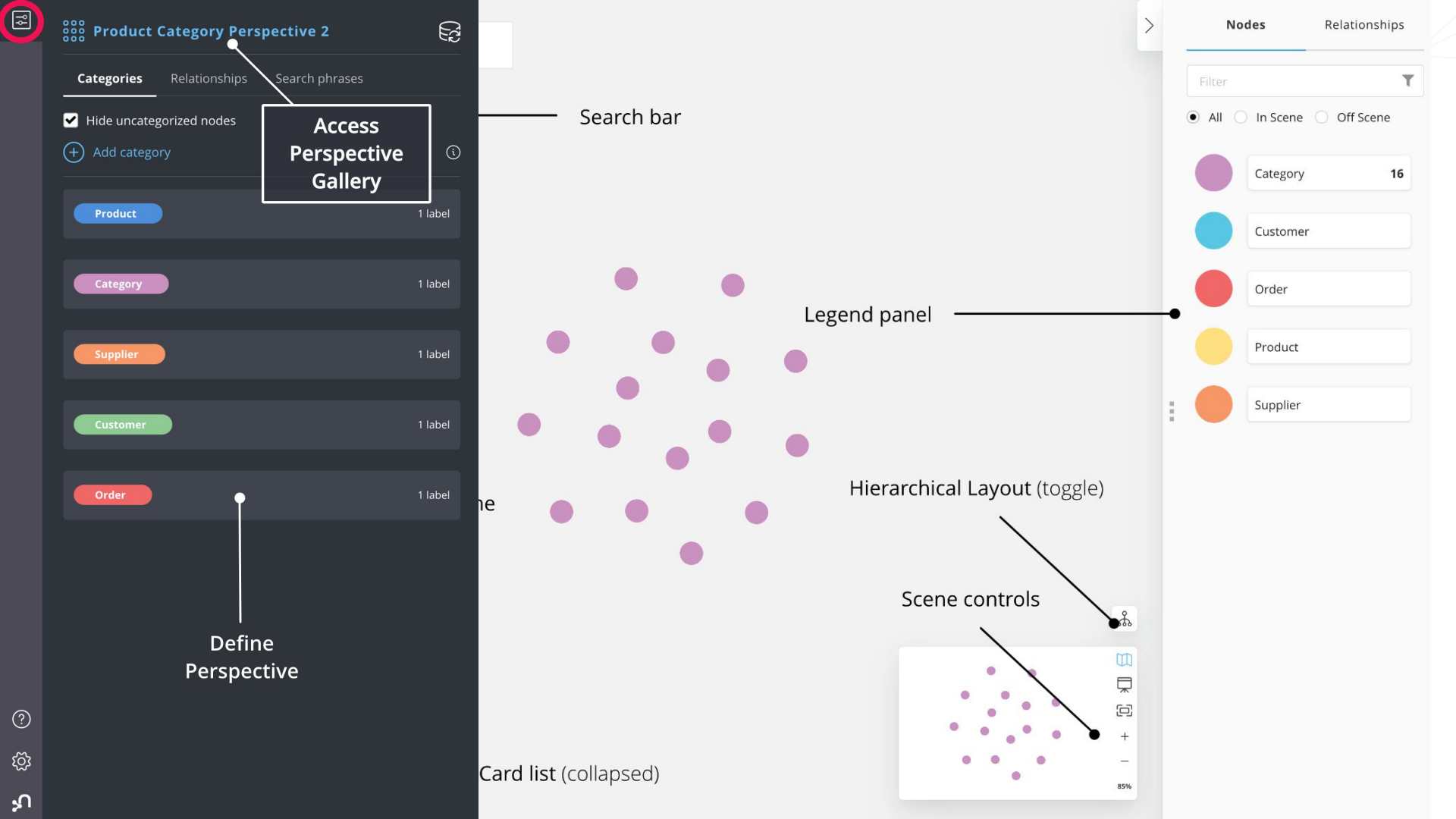
- Go to dev.neo4j.com/aura-login
- Sign in & click “Create a database”
- Give your database a name
- Selected “Shared” database size
- Click “Create Database”
- Make a copy of the generated password - keep it safe!

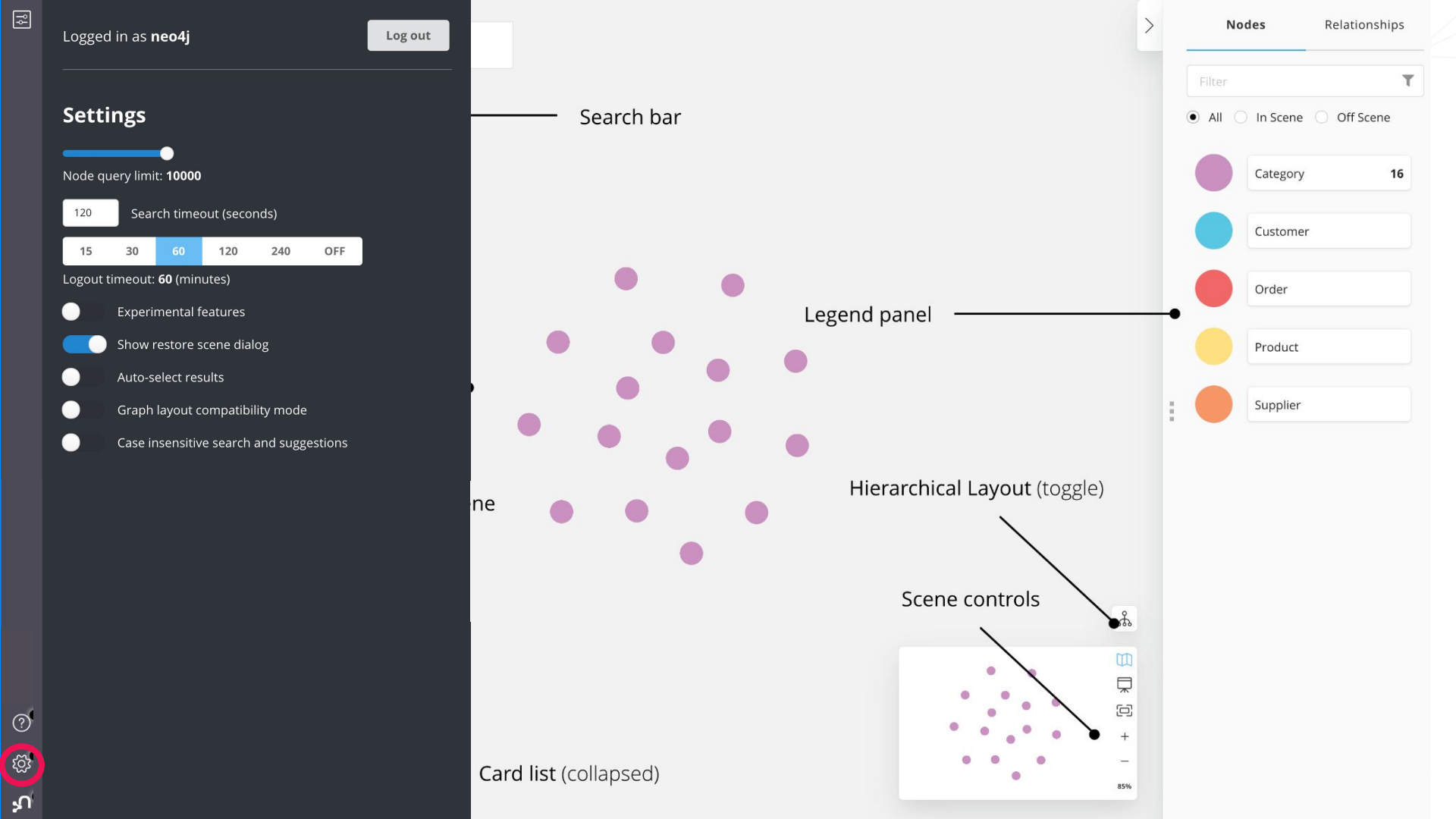
Loading the data

- Copy all the queries from: http://dev.neo4j.com/bloom-training-1
- Click on open/Neo4j Browser to start the Browser
  - Username: neo4j
- Paste the query into the query window and press the play button to start
- Don’t panic! We’ll do it together :)

Setting up the Perspective


Search Northwind Perspective 1
Filtering
Search bar
Perspective drawer
Nodes
Relationships
Filter
All
In Scene
Off Scene
Category 16
Customer
Order
Product
Supplier
Legend panel
Sidebar
Scene
Hierarchical Layout (toggle)
Scene controls
Help & Learn drawer
Settings drawer
About drawer
All 16
Selected 0
Card list (collapsed)
85%


Product Category Perspective 2
Categories
Relationships
Search phrases
Hide uncategorized nodes
Add category
Access Perspective Gallery
Product
1 label
Category
1 label
Supplier
1 label
Customer
1 label
Order
1 label
Define Perspective
Search bar
Legend panel
Hierarchical Layout (toggle)
Scene controls
Card list (collapsed)
Nodes
Relationships
Filter
All
In Scene
Off Scene
Category
16
Customer
Order
Product
Supplier
85%


Logged in as neo4j
Log out
Settings
Node query limit: 10000
120
Search timeout (seconds)
15
30
60
120
240
OFF
Logout timeout: 60 (minutes)
Experimental features
Show restore scene dialog
Auto-select results
Graph layout compatibility mode
Case insensitive search and suggestions
Search bar
Legend panel
Hierarchical Layout (toggle)
Scene controls
Card list (collapsed)
Nodes
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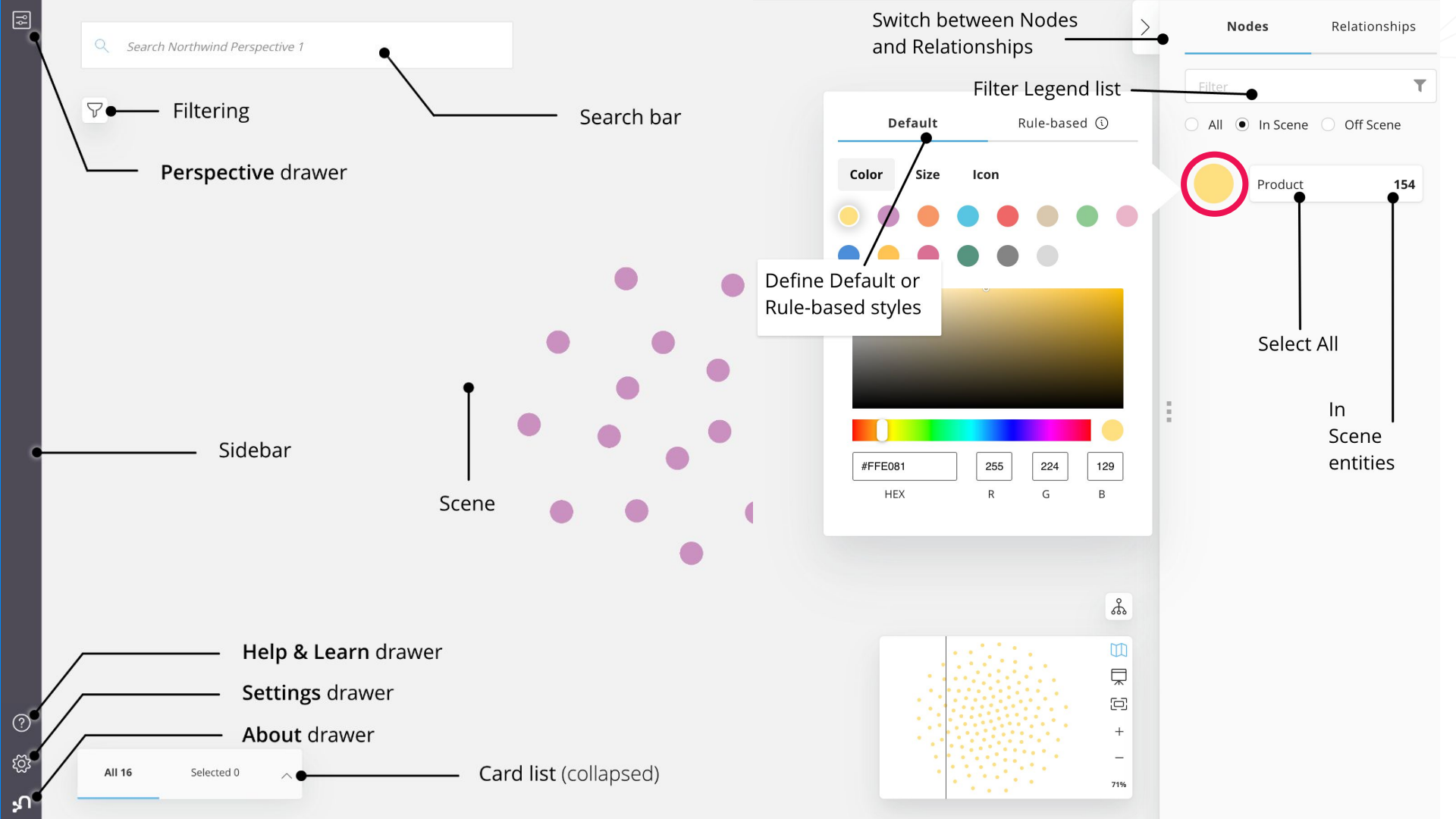

Search Northwind Perspective 1
Filtering
Search bar
Perspective drawer
Switch between Nodes and Relationships
Nodes
Relationships
Filter Legend list
Filter
All
In Scene
Off Scene
Default
Rule-based
Color
Size
Icon
Define Default or Rule-based styles
Product
154
Select All
In Scene entities
Sidebar
Scene
#FFE081
255
224
129
HEX
R
G
B
Help & Learn drawer
Settings drawer
About drawer
All 16
Selected 0
Card list (collapsed)
71%

Getting started in Bloom

When Bloom loads for the first time:

- Bloom will show all existing perspectives, and also offer to automatically generate one
- Bloom's analysis looks for disjointed sets within the label set (e.g. Person, American, Employee, Customer, etc.) and try and group together
- Indexes on properties will enable searching on those directly

Your turn - create a perspective for the data set

- Start the Bloom App
- You will be prompted to auto-generate
- Explore the auto-generated perspective:
  - What categories have been loaded?
  - What category properties have been selected to display?
- Try creating your own perspective:
  - Click on ‘Choose a Perspective’ --> ’Create a Perspective’
  - Add the categories
  - Select properties to display
- Switch back to the auto-generated perspective

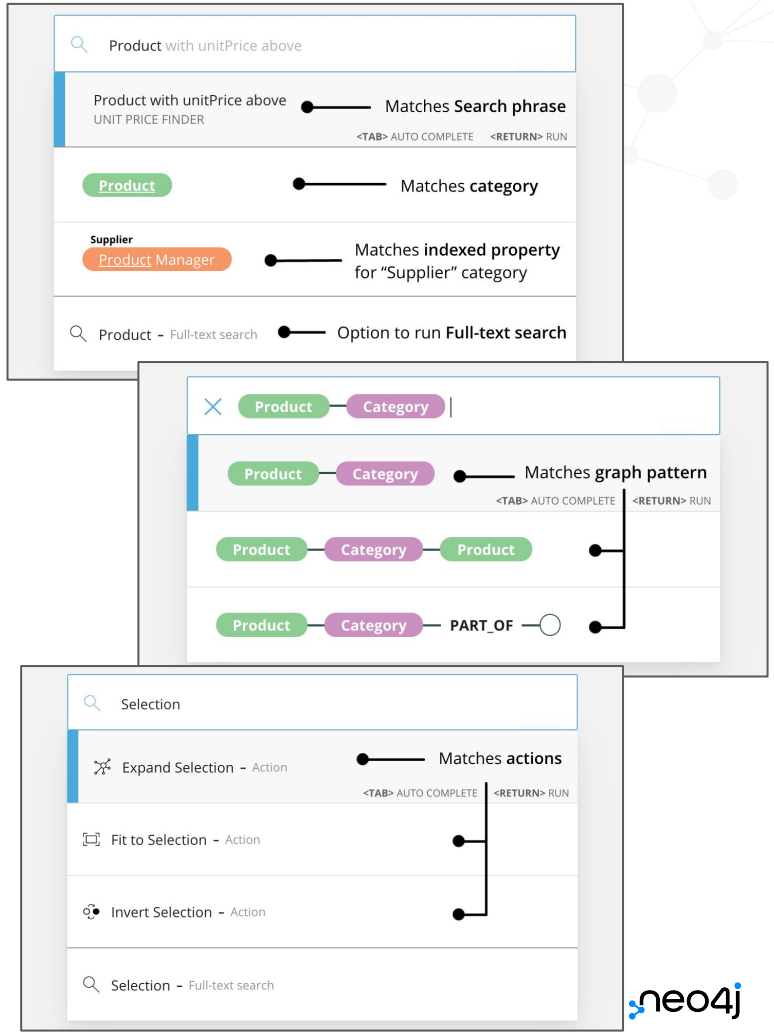
Simple searches in Bloom

You can explore your data by specifying:

- A property name
- A category
- A relationship type

You can further examine a node by:

- Double-clicking to bring up Card List
- Explore properties, relationships and neighbors



Your turn - tell me more about...

Look up **Maxime Dufour-Lapointe**:

- Explore the information about **Maxime Dufour-Lapointe** using the Card List
- Try right-clicking the node and expand
  - What more do we learn about **Maxime Dufour-Lapointe**?
  - Expanding the Team node (cross-check the colour with the Category list on the right), what more do we learn?

Configuring Bloom

As well as assigning categories and properties, we can further configure the perspective:

- We can exclude nodes and relationships completely
- We can add search phrases for commonly-executed queries (more on that later)
- Once we're finished configuring the perspective, we can export, import and share it

Bloom patterns and exploring the data

Building patterns

As well as specifying a name/item/thing, we can express patterns consisting of categories and relationships

E.g: Maxime Dufour-Lapointe part of Team competed in Event
or Maxime Dufour-Lapointe part of Team Event
or Maxime Dufour-Lapointe Team Event
or Maxime Dufour-Lapointe part of competed in

You don't have to put all the relationships and Events, Bloom will fill the gaps for you!

Color Key: Category Property Relationship

Your turn - mind the gap

How would you find the answer to:

- What Olympic games was **Yelena Dubok** a part of?

How many different patterns can you come up with that provide the answer?

Building upon patterns

We can start to build some interesting patterns when we understand the model. We can:

- Search paths between two points
- Find hierarchies and dependencies
- Find more than one occurrence of something

Search paths between two points

Reveal different properties across a specific set of relationships and nodes from a set start and end point

E.g. Elizabeth Lee "Beth" Heiden part of Team participated in Games
participated in Team part of Eric Arthur Heiden

Color Key: Category Property Relationship

Finding more than one occurrence

Finding the occurrence of two or more Categories/Properties
Can be a single hop:

E.g. Games **City** Games

Can be across several hops:

E.g. Games **Team** Athlete **Team** Games

Color Key: Category Property Relationship

Accessing properties

We can also apply more fine-grained control in our Bloom phrases via the properties that don’t have indexes

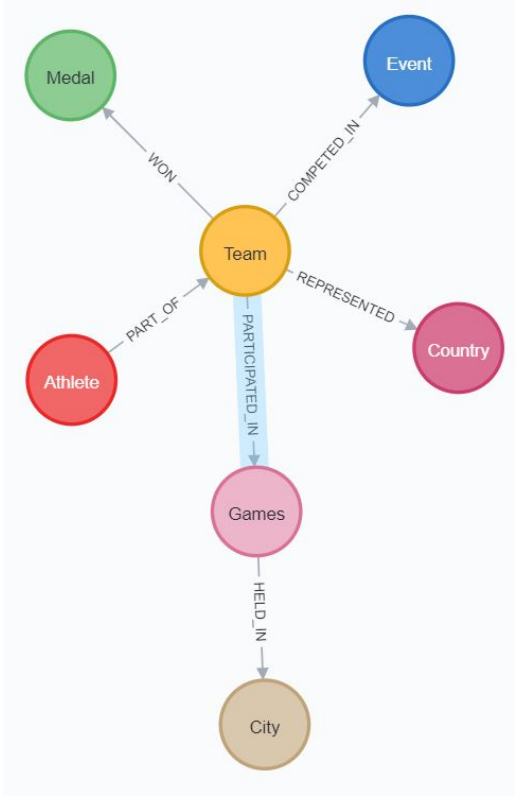
E.g. Games year 1972

Be aware this is case sensitive!

Color Key: Category Property Relationship

Your turn - time to answer some questions!

- How many gold medals has **Claudia Pechstein** won?
- How many teams has **Lamine Guye** been in?
- Can you find some athletes that have represented more than one country?
- What different ways are **Olivier Jenot** and
- **Patrice Servelle** linked? (hint: think about the paths that may link them)



Interacting with the Workspace

We will from time to time want to hide/show parts of our results

We can select and deselect nodes to show:

- Shortest path
- Expand nodes
- Dismiss nodes
- Select an area
- Select a category

Your turn - just the athletes, please

We want to show just the athletes that have won more than one Gold Medal.

How would you display only the result nodes we're interested in?

Have you noticed something else? Don't worry if you haven't, we'll discuss it shortly.

A note on limits

Only 150-ish athletes are brought back that have won more than one gold medal/more teams than athletes...

- Bloom uses internal limits to improve performance
- This may result in only a sample of data being returned
- You can adjust the limits in the settings
  - Increasing the limit to 1200 brings back 580-ish athletes

Search phrases

Search phrases are a way of adding tailored, complex querying to Bloom, via a user-friendly and intuitive phrase.

They can be extremely helpful:

- We can use search phrases for commonly-used patterns
- They can form the basis for production-ready common queries
- Provide helper functions

Your turn - creating search phrases

Wouldn’t it be nice to find Athletes without knowing their middle names? Let’s add a search phrase for that!

- Add search phrases to find names
  - Cypher code from: dev.neo4j.com/bloom-training-2
- Test out your search phrases!

Editing data in bloom

Editing the data

We also have some basic editing options available to us in Bloom. We can:

- Edit properties
- Duplicate nodes
- Create new nodes
- Create relationships between nodes
- Change labels

Your turn - where are those cities?

- Add a relationship between City and Country for Cities that have held the Olympics more than once
- Feel free to search the City locations if you don’t know them off hand :)

Note on editing

This is only possible whilst you have write access to Neo4j. If you do not, you will not be able to take advantage of these features

Other editing constraints:

- You can only create existing relationship types
- You cannot delete relationships or nodes
- You can only add existing properties
- You can only add properties to existing categories/labels

Customizing and applying rule-based styling

Your visualization, your way!

As well as tailoring what properties, nodes and relationships we do or do not show, we can also:

- Add icons for nodes
- Change the default colors and sizes for nodes and relationships
- Add rule-based, dynamic styling for color and size based on:
  - Existence conditions
  - A specific range for properties
  - Uniqueness of property values

Your turn - who's the most connected athlete?

We are going to use the Page Rank scores we have on Athlete to Athlete, based on shared Teams.

First of all, why not add some appropriate icons for all the nodes in use?

Using the dynamic sizing option, use the smallest and largest node sizes possible. The following range values may be useful:

- Min value: 0.15
- Max value: 4.85

So how do I continue my graph journey?

More training this week - all starting at 1pm UTC

Thursday: Build APIs with Neo4j GraphQL Library

Friday: Create a Knowledge Graph: A Simple ML Approach

Missed the previous sessions? Catch up now!
https://dev.neo4j.com/training-catchup

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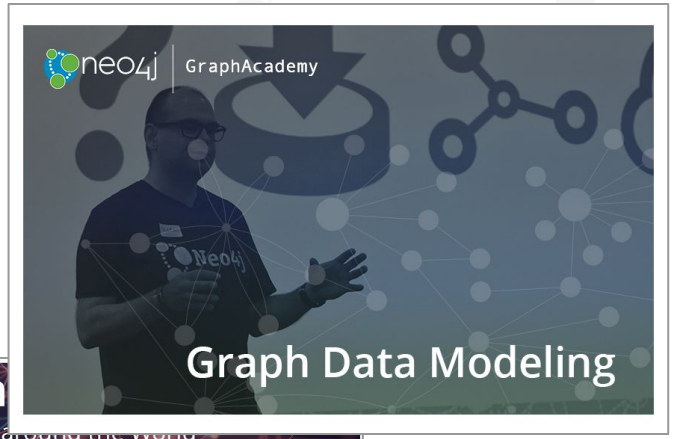

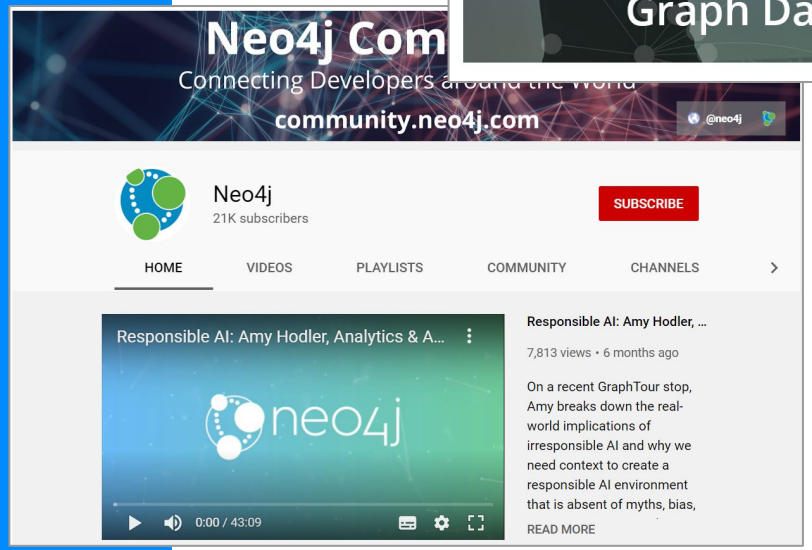

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