



سہیل عمران



Not Only  
**NoSQL**  
Relational

# Graph Database



neo4j



Computer  
SCIENCE

aura



<https://neo4j.com/>

The screenshot shows a web browser window for the Neo4j Graph Database & Analytics website at <https://neo4j.com/>. The URL is highlighted with a green box. The main content area displays the Neo4j aura logo and a "Create account" form. The "Create account" form includes fields for "Email address (Business preferred)\*" and a "Continue" button. Below the form, there's a link to "Log in" and two other sign-in options: "Continue with Google" and "Continue with Organization SSO". A sidebar on the left lists benefits: "Fully-managed updates and patches", "Robust security, reliability and ACID compliance", "Built-in tools to learn, build, and visualize", and "No credit card required". The Neo4j logo is visible in the top left corner of the main content area.

Neo4j Graph Database & Analytics

<https://neo4j.com/>

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neo4j

neo4j aura

Build fast, scalable, and intelligent applications in the cloud.

- Fully-managed updates and patches
- Robust security, reliability and ACID compliance
- Built-in tools to learn, build, and visualize
- No credit card required

Create account

Register a new account to continue

Email address (Business preferred)\*

Continue

Already have an account? [Log in](#)

OR

Continue with Google

Continue with Organization SSO

Trouble logging in? Please check our [Article on login issues](#)



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I agree



NoSQL

# free



## AuraDB Free

\$0



Start with a free offer to learn and explore with graph data

Auto-deleted after 30 days of inactivity

- ✓ No credit card required to start
- ✓ Access to all graph tools

Select

## AuraDB Professional

\$65 /GB/month

Minimum 1GB instance

Build high-performance applications on a production-ready cloud database

- ✓ Up to 64GB memory per database instance
- ✓ Scalable on demand
- ✓ Daily backups, 30-day retention
- ✓ Available on Azure, AWS, and Google Cloud
- ✓ Advanced instance-level metrics

Select

## AuraDB Business Critical

\$146 /GB/month

Minimum 2GB instance

Scale mission-critical apps with a highly available database, granular enterprise controls, and 24x7 support

[Have credits? Contact us ↗](#)

- ✓ Up to 512GB memory per database instance
- ✓ Highly available 3-zone cluster with 99.95% uptime SLA
- ✓ Daily backups with 30-day retention and hourly point-in-time restore
- ✓ Role-based access control with granular security
- ✓ Pay-as-you-go and prepaid consumption billing
- ✓ 24x7 support ↗

Select



# credentials



Credentials for Instance01

Username: neo4j

Generated password

[REDACTED]

**⚠ Note that the password will not be available after this point.**

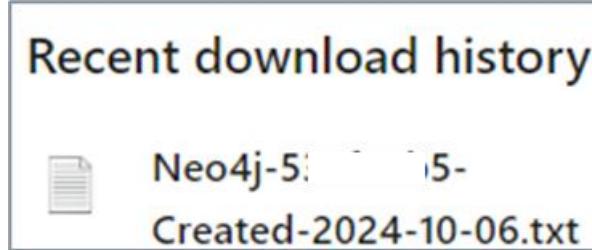
**Close** **Download and continue**

neo4j AURA New Organization / New tenant ▾

Instances **New Instance**

Instance01

Creating Instance...  
(This may take a few minutes)



NoSQL

# instance



<https://console.neo4j.io/>

The screenshot shows the neo4j aura Instances page. At the top, there are tabs for 'Instances' and 'New Instance'. Below the tabs, 'Instance01' is listed as 'Free' with the ID '53ef62b5'. It is marked as 'Running'. Below the instance details, it shows 'Neo4j version 5', 'Nodes 0 / 200000 (0%)', 'Relationships 0 / 400000 (0%)', 'Region Singapore (asia-southeast1)', and a 'Connection URI' of 'neo4j+s://53ef62b5.databases.neo4j.io'. To the right of the instance card is a trash can icon and a three-dot menu icon. A context menu is open over the three-dot icon, listing options: 'Rename', 'Reset to blank', 'Upgrade to Professional', 'Clone To New >', and 'Clone To Existing >'.



# connect



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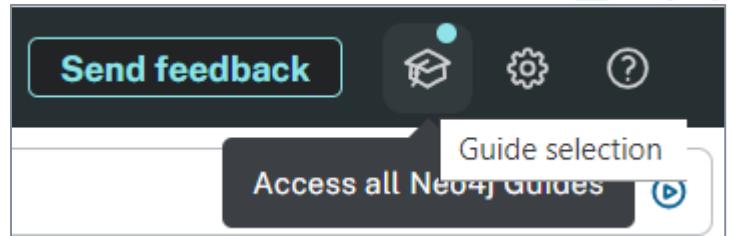
The screenshot shows the Neo4j desktop application. In the foreground, a modal dialog box titled "Connect to instance" is open. It contains fields for "Protocol" (set to "neo4j+s://") and "Connection URL" (set to "\*\*\*\*\*.databases.neo4j.io:7687"). Below these fields are "Connect" and "Cancel" buttons. The background of the application shows a graph visualization with nodes and connections. At the top of the application window, there are tabs for "Explore", "Query" (which is currently selected), and "Import". On the left side, there is a sidebar with icons for "File", "Edit", "Database", "Graph", and "Help".

neo4j+s://\*\*\*\*\*.databases.neo4j.io:7687



NoSQL

# guide



neo4j      Explore      Query      Import      • Instance01 / neo4j      Send feedback

Database information

Nodes (0)

Relationships (0)

Property keys

**data** **id** **name** **nodes** **relationships** **style**

**visualisation**

neo4j \$



# database



## Neo4j Guides

X

Curated sets of guides to adapt to your needs and learning style.

Beginner

Developer

Data Exploration

More Datasets

Get started with Neo4j.

~7 min



**Recommended**

**Learn the basics**

You'll learn:

- graph concepts;
- graph property model;
- the basics of import;
- the basics of data visualization;
- the basics of graph query.

~15 min

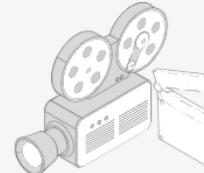


**Query fundamentals**

You'll learn to:

- write basic queries;
- view graph and tabular results;
- perform queries to answer questions;
- perform advanced queries.

~10 min



**Movie graph**

You'll learn to:

- create nodes and relationships;
- find nodes and patterns;
- understand and use the shortest path algorithm;
- write a basic recommendation query.

[Continue with blank database](#)



# data



Movie graph

Step 1/8

## Movies graph

This guide uses pop-cultural connections to show you how to use Cypher to create and query a graph database. You will explore connections between actors, directors, and movies, and also solve the famous Bacon-path.

Note that this guide assumes that you have an empty database as you will modify it all the way. You will learn how to delete the data you create towards the end of the guide as well.

### What you will learn

This guide takes around 10 minutes and by the end of it you will be able to:

- Create nodes and relationships that connect them.
- Find individual nodes by using condition matches.
- Find patterns in the graph.
- Understand and use the shortest path algorithm.
- Write a basic recommendation query.

Movie graph

## Step 2/8 Create the data

The Cypher `CREATE` clause is used to create data in your graph. If you are not familiar with Cypher syntax, you can try the *Query fundamentals* guide or see the [Cypher Manual ↗](#).

Movie graph

You are going to create a dataset with `Person` and `Movie` nodes and different types of relationships to connect them.

```
graph LR; Person((Person)) -- ACTED_IN --> Movie((Movie)); Person -- DIRECTED --> Movie; Person -- PRODUCED --> Movie; Person -- WROTE --> Movie; Person --> Person; Person --> Person;
```

```
1 CREATE CONSTRAINT movie_ → [Run]
2 CREATE CONSTRAINT person_name → [Run]
3
4 MERGE (TheMatrix:Movie {title:'The Matrix'}) → [Run]
5
6 MERGE (KeanuReeves:Person {name:'Keanu Reeves'}) → [Run]
```

Previous

Next

Database information

Nodes (15)

Movie Person

Relationships (26)

ACTED\_IN DIRECTED PRODUCED

Property keys

born data id name nodes relationships released roles style tagline title visualisation

neo4j

- CREATE CONSTRAINT person\_name IF NOT EXISTS FOR (p:Person)
- MERGE (TheMatrix:Movie {title:'The Matrix'}) ON CREATE SET ...
- MERGE (TheMatrixReloaded:Movie {title:'The Matrix Reloaded'}) ON CREATE SET ...
- MERGE (TheMatrixRevolutions:Movie {title:'The Matrix Revolutions'}) ON CREATE SET ...

Database information

Nodes (171)

Movie Person

Relationships (253)

ACTED\_IN DIRECTED FOLLOWS

PRODUCED REVIEWED WROTE

Property keys

born data id name nodes rating relationships released roles style summary tagline title visualisation

Dr.SOHAIL IMRAN

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neo4j NoSQL

# constraints



## Movie graph

Step 3/8

### Indexes and constraints

To aid query performance, you can add indexes to your data. The dataset you create in this guide is very small, but it is good practice to use indexes as they can greatly improve query performance when the datasets are larger.

Run the following to see the existing indexes in the database:

```
$ SHOW INDEXES
```



As you can see, there are already some indexes present and this is a result of the two first lines in the `MERGE` clause in the previous step:

```
1 CREATE CONSTRAINT movie_titl
2 CREATE CONSTRAINT person_name
```



Previous

Next

```
● neo4j $ CREATE CONSTRAINT movie_title IF NOT EXISTS FOR (m:Movie) RI ✓ ^ ↵ ×
✓ CREATE CONSTRAINT movie_title IF NOT EXISTS FOR (m:Movie) RI ✓ ^ ↵ ×
✓ CREATE CONSTRAINT person_name IF NOT EXISTS FOR (p:Person) I ✓ ^ ↵ ×
● neo4j $ SHOW INDEXES
Table RAW
id name state populationPercent type
1 0 "index_343aff4e" "ONLINE" 100.0 "L
2 1 "index_f7700477" "ONLINE" 100.0 "L
3 2 "movie_title" "ONLINE" 100.0 "R
```

