POLL:

What best fits your situation?
A. New to graphs
B. Know some graphs, but new to Neo4j Aura
C. Familiar with graphs and Aura, but learning more

neo4j

NODES Training:
Hands-on with Neo4j Aura Free tier

Jennifer Reif,
Developer Relations Engineer at Neo4j
jennifer.reif@neo4j.com
@JMHReif
https://www.linkedin.com/in/jmhreif/

Agenda

- Overview: intro and details
  - Hands-on: Create Neo4j Aura free instance
- Intro to graphs and Neo4j
- Intro to Neo4j DBaaS (Aura)
  - Hands-on: explore Aura console and instance
- Import and interact with data
  - Hands-on: Import Venmo data from Github using Cypher
  - Hands-on: visualize with Bloom
- Connect to the database
  - Hands-on: connect from Neo4j Desktop
  - Hands-on: connect from graph app
- Access and connect an application
  - Hands-on: connect an application
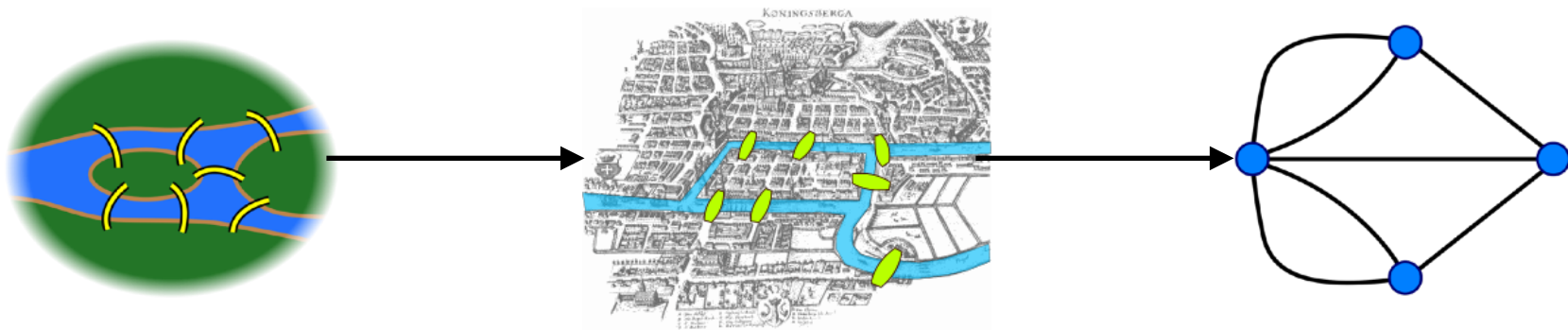- Final questions and wrap-up

Hands-on #1

What we'll do:

- Console/log in
  - dev.neo4j.com/aura-login
- Create Aura Free database
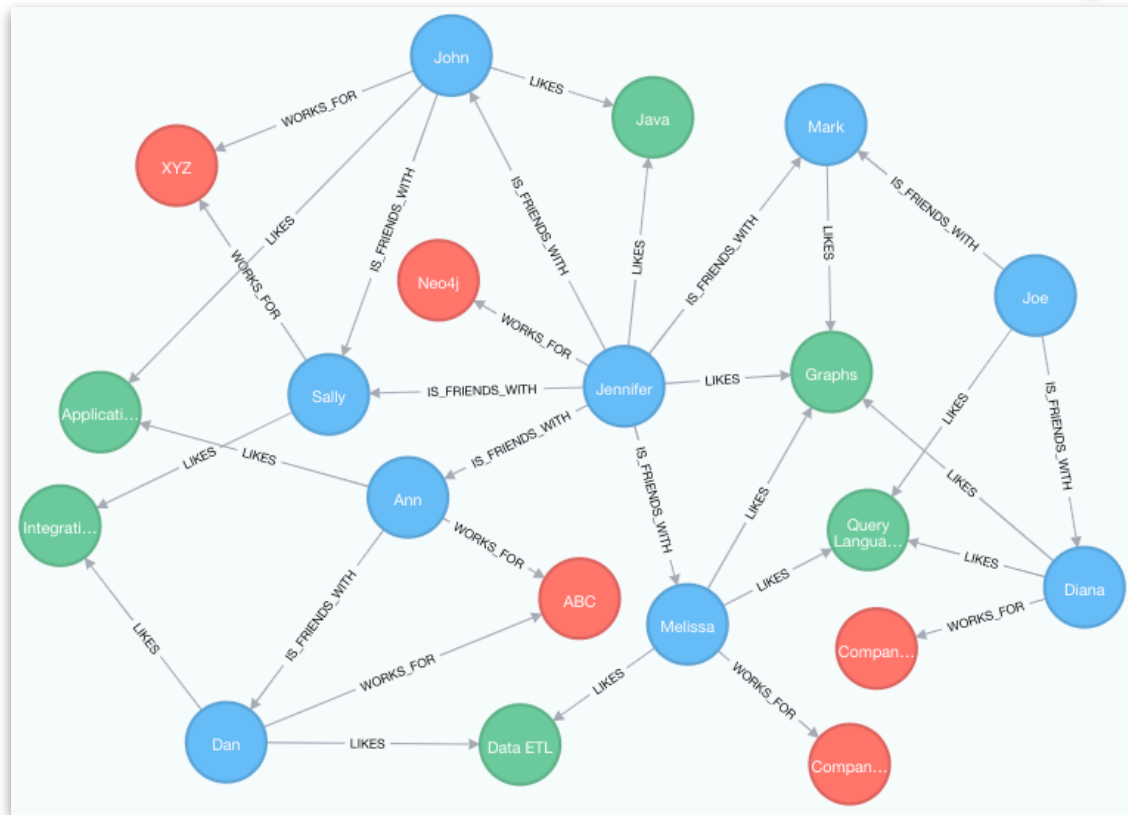
neo4j

Graphs and Neo4j

neo4j

What is a graph?

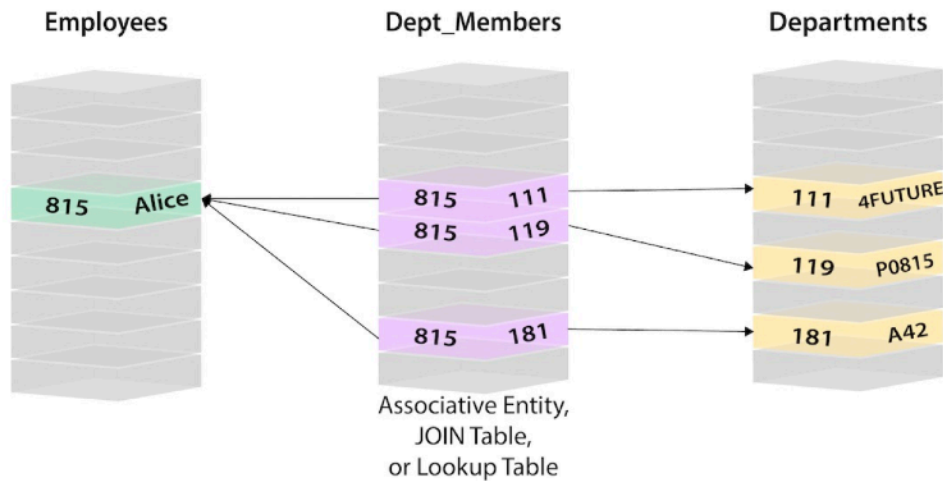- Set of discrete objects, each of which has some set of relationships with other objects

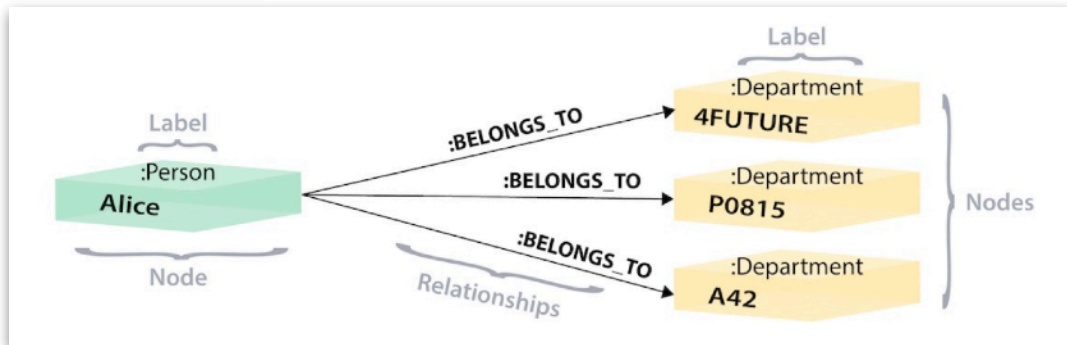

Seven Bridges of Konigsberg problem. Leonhard Euler, 1735
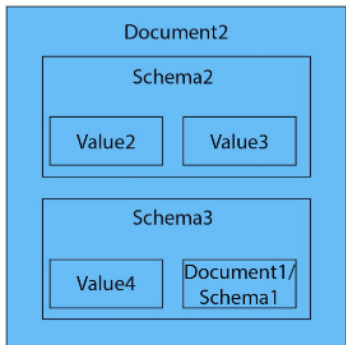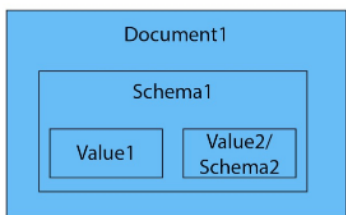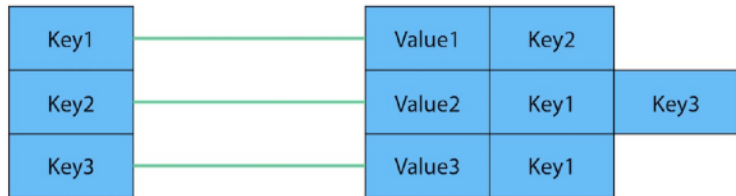
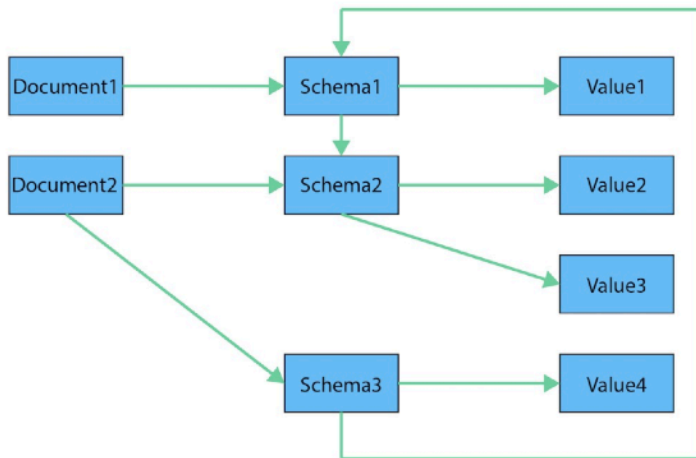# Show how data is connected

Relational

Graph

Other NoSQL

Graph

neo4j
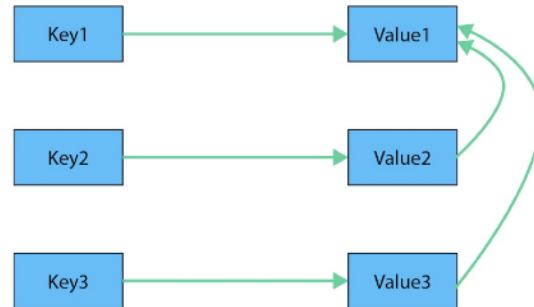
What does graph have to offer?

Graphs add context and meaning

Person — name: Michael

type: Graphs — Technology

:IS_FRIENDS_WITH
since: 2018

Company — name: Neo4j

:LIKES

:WORKS_FOR

Person — name: Jennifer
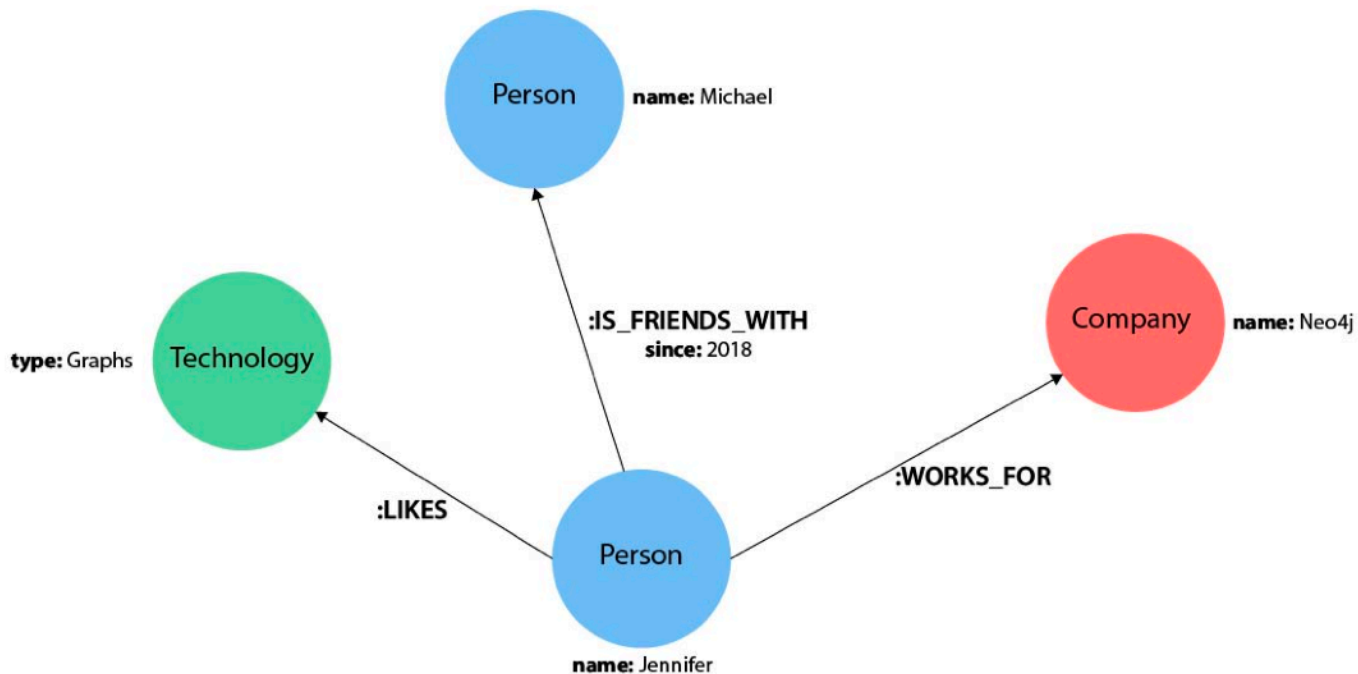
A few graph use cases….

Social network

Fraud detection
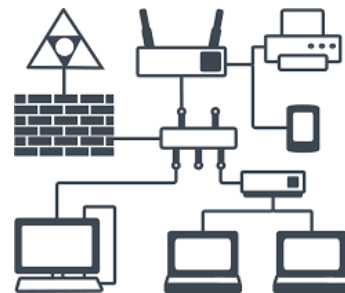
Network & IT operations

Identity & access management

Graph-based search

(Graphs)-[ARE]->(Everywhere)

The Internet
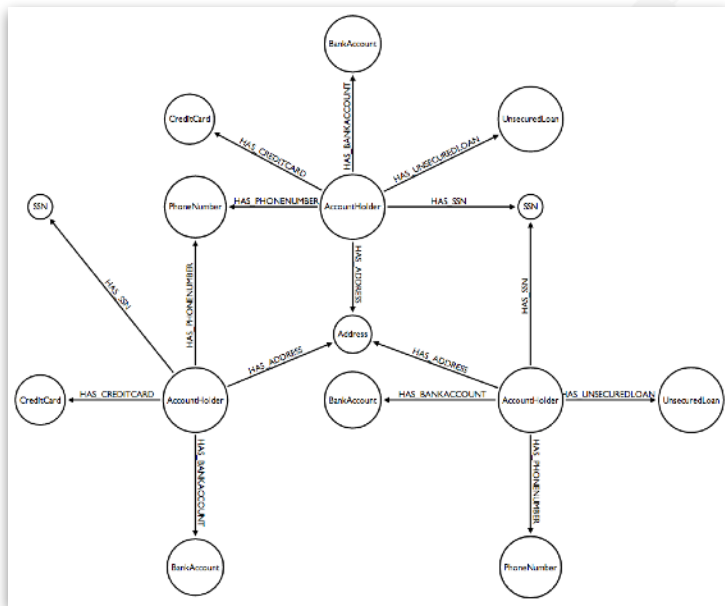
Bank Fraud

Literally…
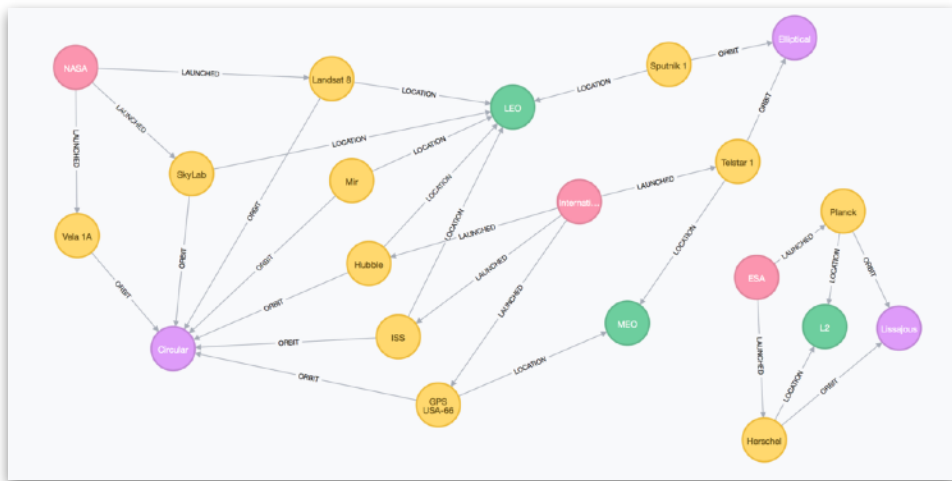
NASA space satellite
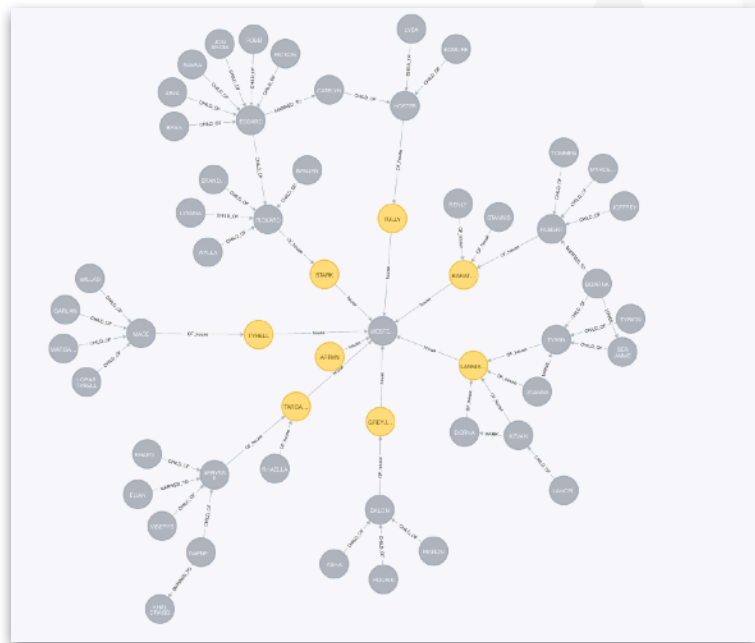
Game of Thrones family trees

Whiteboard friendliness
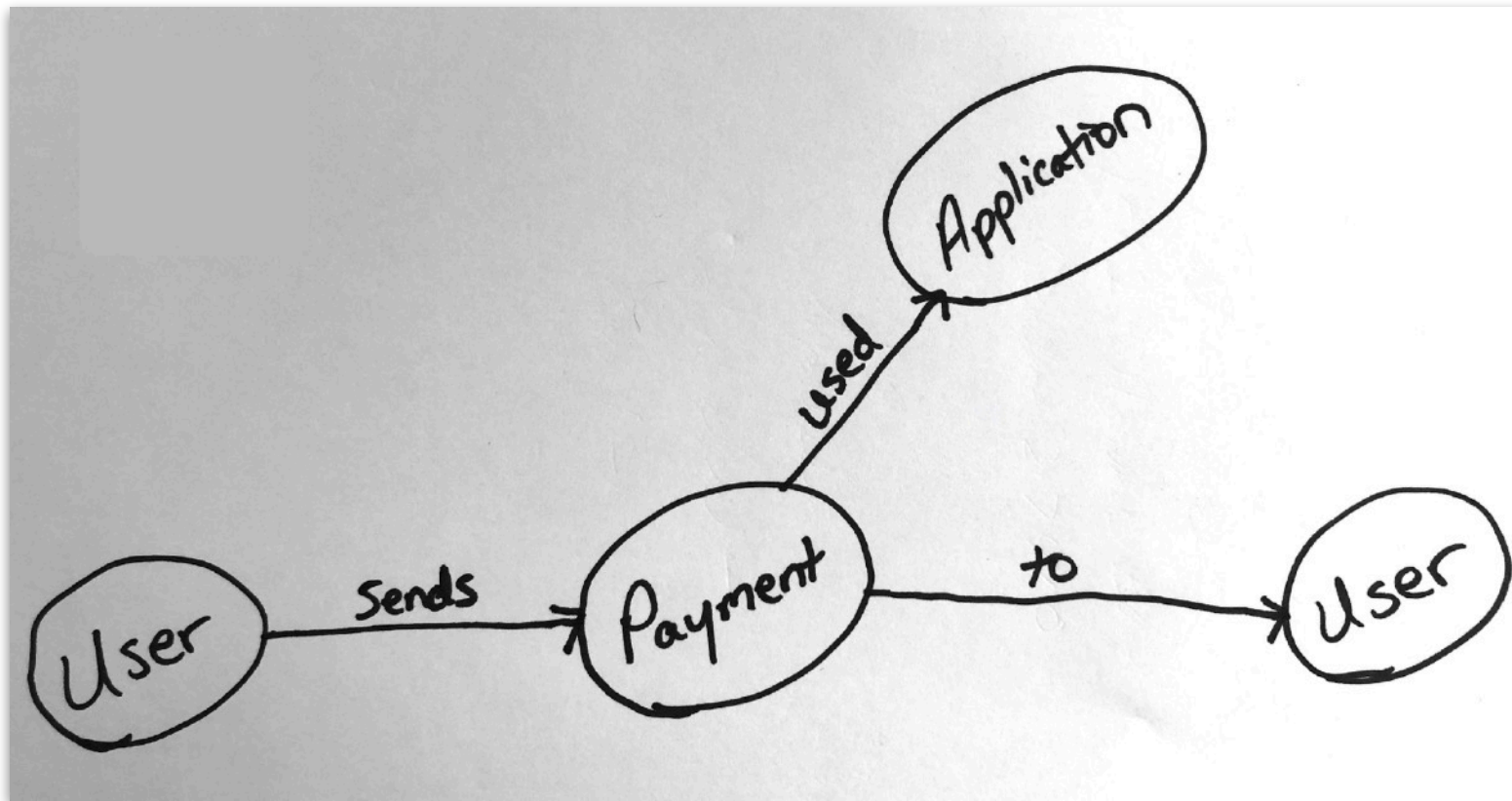
Graph model
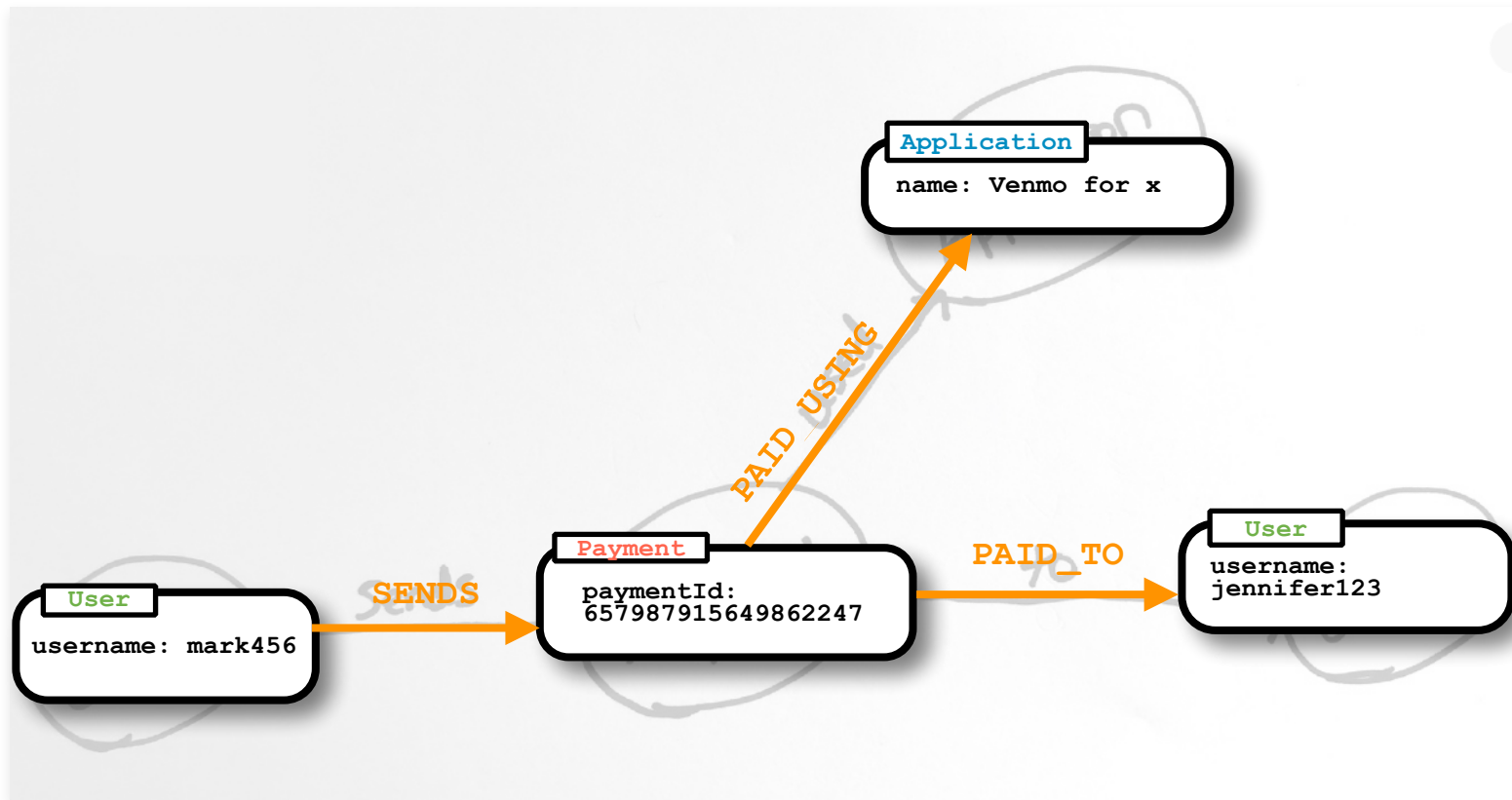
Graph data

Graph components

- Node (vertex)
  - Objects

Michael

Neo4j

Graphs

Jennifer
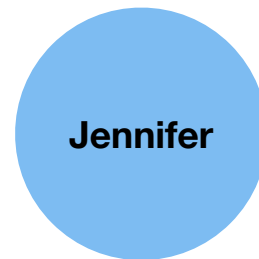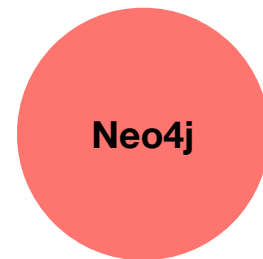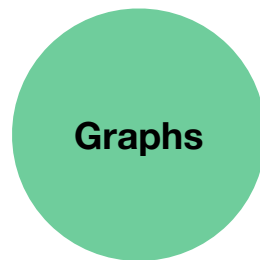
Graph components

- Node (vertex)
  - Objects
- Relationship (edge)
  - Connections

Graph components

- Node (vertex)
  - Objects
- Relationship (edge)
  - Connections
- Label
  - Node category (optional)

Person

:IS_FRIENDS_WITH

Technology Hobby

Company

:LIKES

:WORKS_FOR

Person Employee
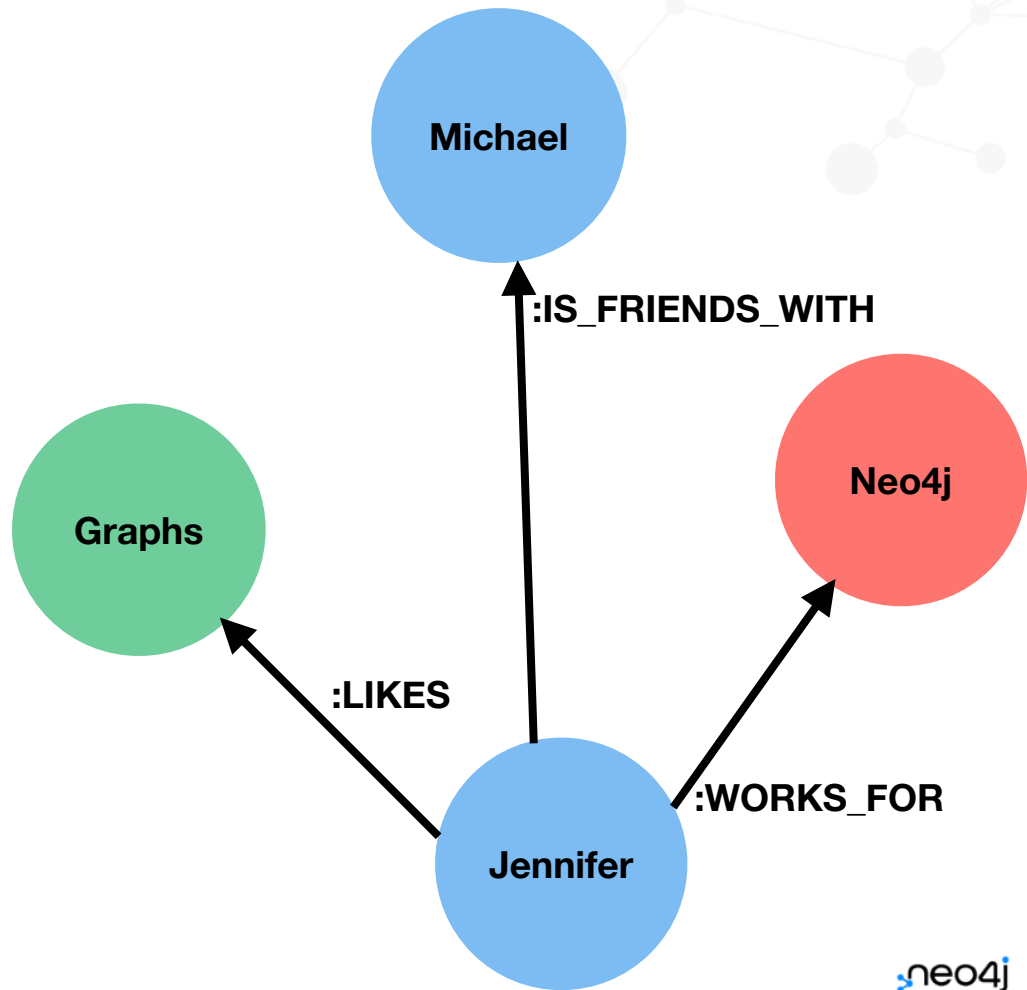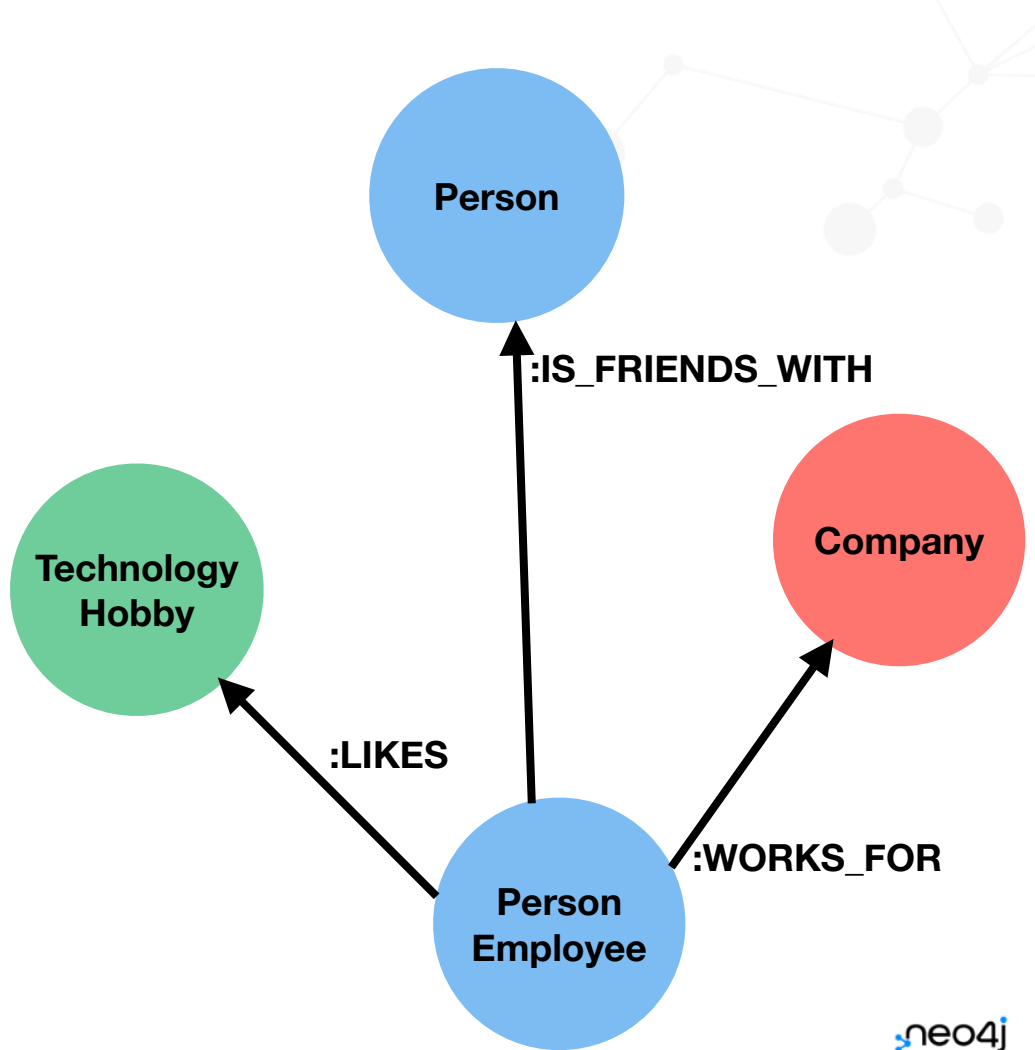
Graph components

- Node (vertex)
  - Objects
- Relationship (edge)
  - Connections
- Label
  - Node category (optional)
- **Properties**
  - Enrich node/relationship
  - No need for nulls

Person
name: Michael

:IS_FRIENDS_WITH
since: 2018

Company
name: Neo4j

Technology
type: Graphs

:LIKES

:WORKS_FOR

Person
name: Jennifer

neo4j
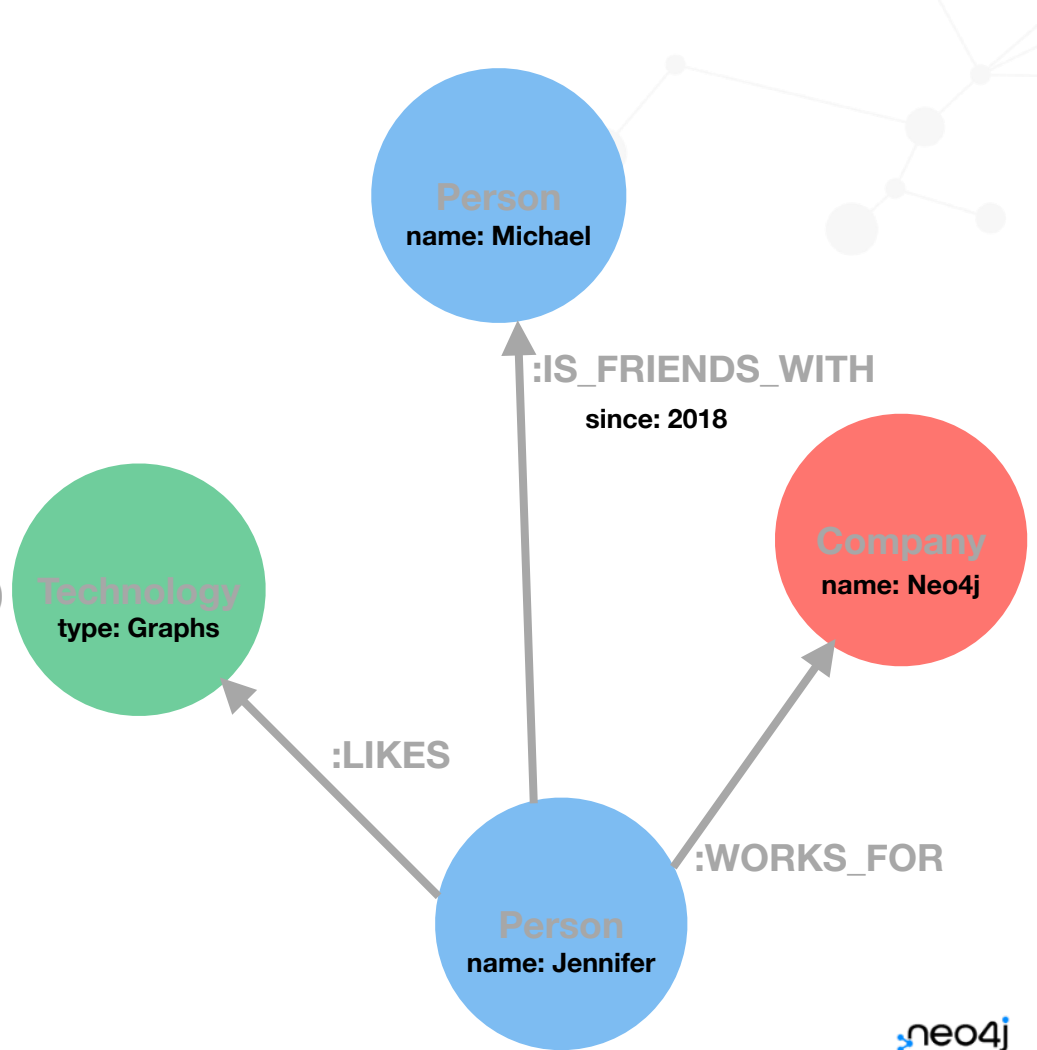
Cypher Query Language…

SQL for Graphs

neo4j

Functional and visual

- Based on ASCII-art
- Declarative query language
- Focuses on what to retrieve
  - Not how

LIKES

A ———————→ **B**
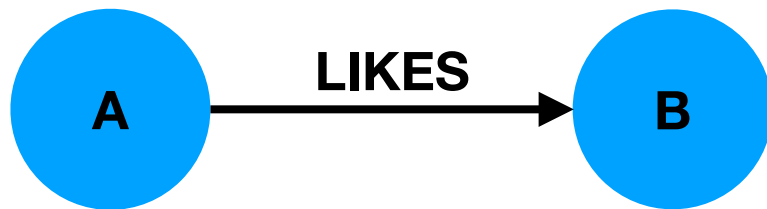
MATCH (A) - [: LIKES] - > (B)
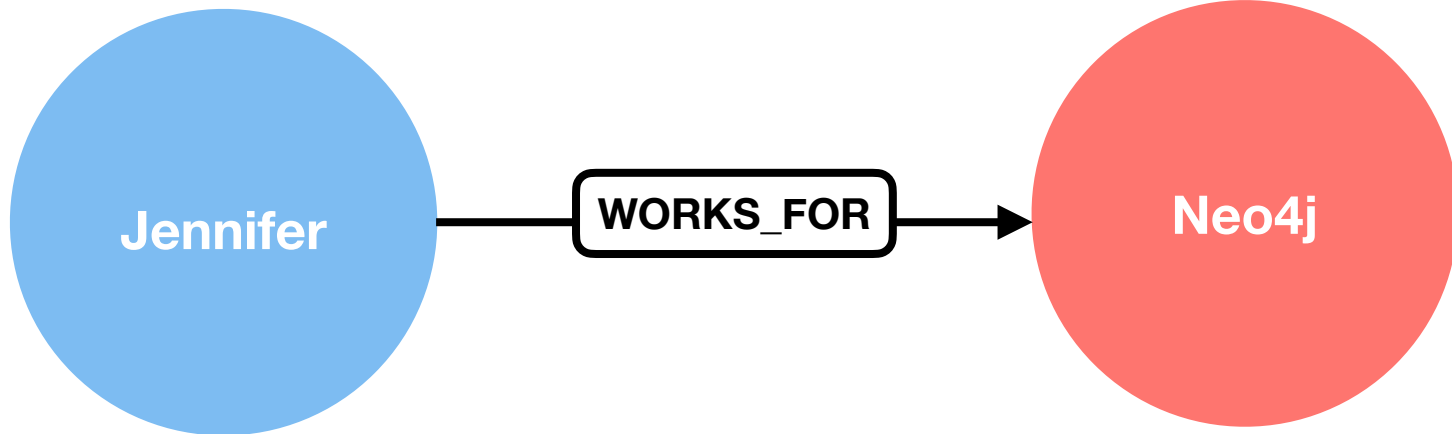
Cypher: powerful and expressive

CREATE (:Person { name: 'Jennifer'}) -[:WORKS_FOR]-> (:Company { name: 'Neo4j'})

Cypher: powerful and expressive
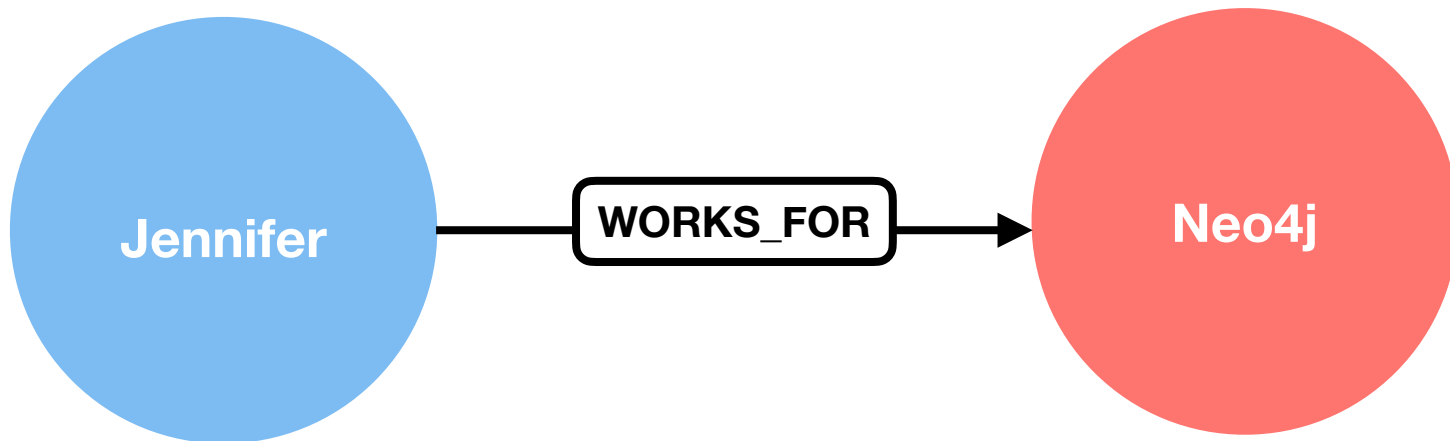
MATCH (:Person { name: 'Jennifer'}) -[:WORKS_FOR]-> (whom)
RETURN whom

Neo4j Aura

neo4j

Neo4j in the cloud

- Announced at NODES 2019
- Database-as-a-service (DBaaS)
- Neo4j-managed
  - Reduce maintenance/provisioning
  - Avoid staffing and skill training
  - Avoid downtime, improve reliability
- Cost: resource-usage

Aura Tiers

Aura Free

Forever
$0

For small development projects, learning, experimentation and prototyping.

Join the Waitlist

Top Features:

✔ 1 database

✔ Limits on graph size (50k nodes, 125k relationships)

✔ Multi-tenant infrastructure

✔ Standard procedure library (apoc-core)

Aura Professional

Starting at
$65/mo

For medium scale applications in advanced development or production environments.

Sign Up

View Pricing Table

Everything in Free, plus:

✔ Up to 64 GB memory per database instance

✔ Unlimited database instances

✔ Daily backups, 7-day retention

✔ On-demand snapshots

✔ Credit card payment or Cloud marketplace billing integration

Aura Enterprise

For large scale, mission-critical applications that require advanced security and 24x7 support.

**Contact Us**

Everything in Professional, plus:

✔ Up to 256 GB memory per database instance

✔ 99.95% guaranteed uptime SLA

✔ Role-based access control with granular security

✔ VPC isolation and dedicated infrastructure

✔ Custom pricing and sales contracts

✔ Premium 24x7 support and services

https://neo4j.com/cloud/aura/pricing/

Free Tier vs Sandbox

Aura Free
- Forever instance
- Always current features/version
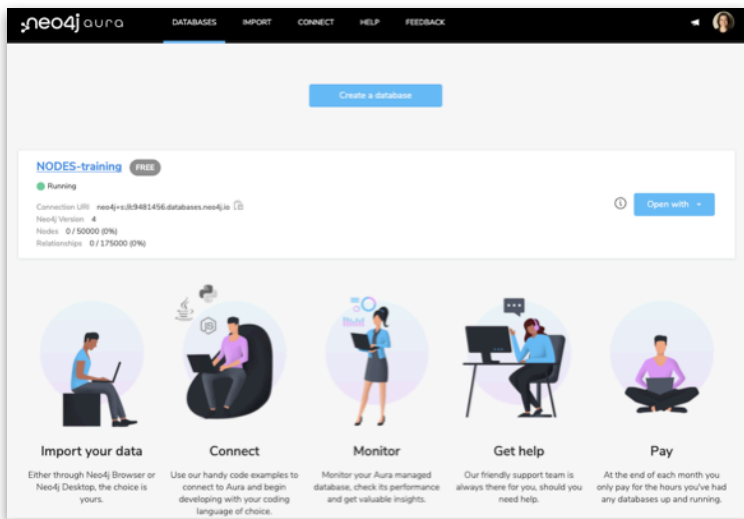
Neo4j Sandbox
- Temporary (3-10 days)
- Version updated ad hoc
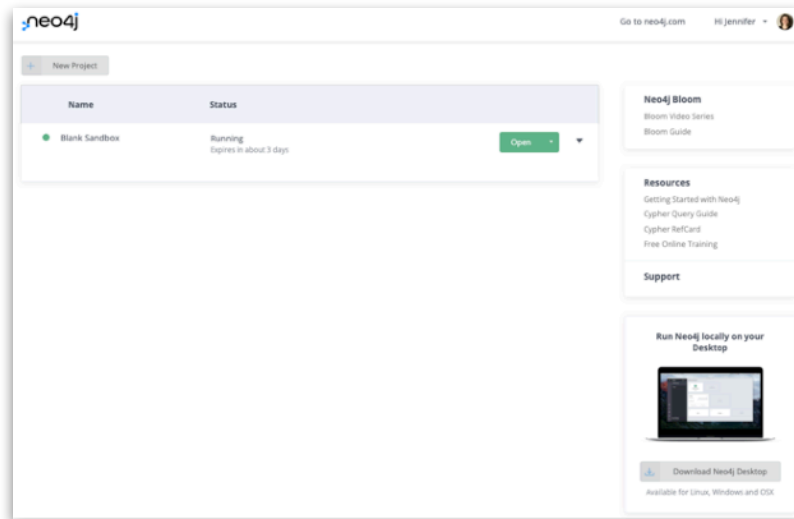
Aura Versioning

- Version: handled and upgraded in background
  - Aura version = Neo4j major version (i.e. 4)
- Downtime (free tier):
  - very little, always latest features
- Features:
  - In Neo4j version = In Aura
  - Exceptions (currently) = RBAC, Multi-DB
- Integrations:
  - APOC (core), not extended
  - Bloom (limited users)
  - More coming…

Quick note on monitoring

- Currently no monitoring panel in free tier
  - Pro and Enterprise tiers
- Halin graph app not integrated with Aura
- Need monitoring access?
  - Feedback! neo4j-aura.canny.io/

Hands-on #2

What we'll do:

- Explore Aura console
    - Console tabs
    - Database tabs

- Prep - import:
    - github.com/JMHReif/nodes2021-aura-training
    - Open Browser
    - Run Cypher to load data

Import with Neo4j Aura

What to know about import

- Console methods
    - Dump, Cypher, language drivers
- External methods
    - Cloud Tool, public URLs, secure data
- Differences
    - ❌ Import directory access
    - ❌ APOC import local files
    - ❌ Store API credentials in config
    - ❌ Import with custom procedures
    - ❌ Import with neo4j-admin tool
    - ❌ Neo4j ETL Tool (<v1.4.1)

neo4j.com/developer/aura-data-import/

Hands-on #3

What we'll do:

- Repo import:
  - github.com/JMHReif/nodes2021-aura-training
- Aura console: open Browser
- Explore data with queries

- Extra:
  - Load via dump file (Aura console)

neo4j.com/developer/aura-data-import/

Hands-on #4

What we'll do:

- Aura console: open Bloom
- Queries with Bloom

neo4j.com/developer/neo4j-bloom/

Connect to the database

neo4j

Ways to connect

- Desktop
    - Remote connection
    - Graph apps
- Cypher shell
    - Command line tool
- Programmatically
    - Language drivers
    - Applications

Hands-on #5

What we'll do:

- Open Neo4j Desktop
- Aura console:
    - copy Connection URI
- Desktop: Add remote instance

neo4j.com/developer/aura-connect-neo4j-desktop/

Cypher shell

- Included in Neo4j
  - Also can be downloaded
- Run Cypher statements for admin or data load
- Command line tool
- Will need username/password

neo4j.com/developer/aura-connect-cypher-shell/

Connect a graph app

- Graph apps
  - Single-page app with HTML/JS
  - Use Neo4j Desktop to interact with db
  - Can also be webpage
- Full list: install.graphapp.io/
- Users can build their own
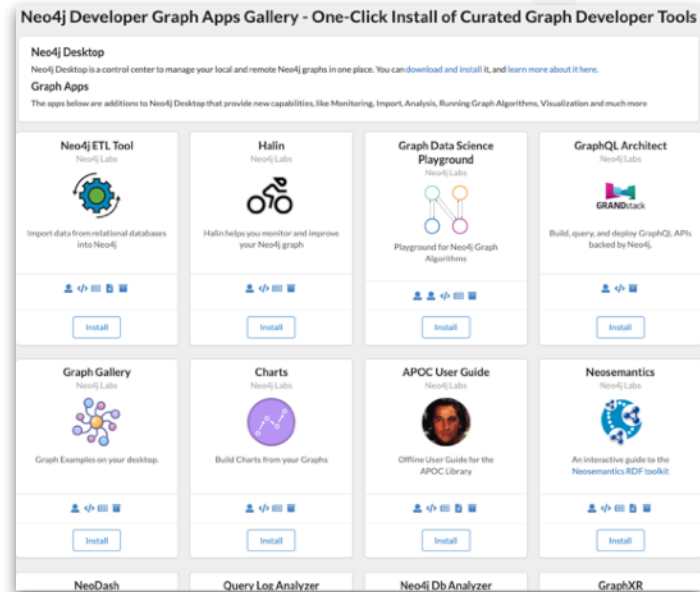
neo4j.com/developer/graph-apps/

Hands-on #6

What we'll do:

- Open Neo4j Desktop
- Open Graph Apps Gallery
- Review graph apps

neo4j.com/developer/graph-apps/

Applications with Aura

Connect an application

- Need:
  - Connection URI, username, password, dependencies
- Aura console contains examples
  - Code for each language
  - Steps to reproduce
- App can be local or deployed
  - Guide: neo4j.com/developer/aura-grandstack/

Hands-on #7

What we'll do:

- Aura console:
  - Instance console
  - Connect tab
- Choose language
- Follow steps (right pane)
- Backup - repo:
  - github.com/JMHReif/nodes2021-aura-training

neo4j.com/developer/aura-connect-driver/

Jennifer Reif
jennifer.reif@neo4j.com
@JMHReif
linkedin.com/in/jmhreif/

Resources

- Aura Feature Request / Feedback:
  - dev.neo4j.com/aura-feedback
- Aura Documentation:
  - dev.neo4j.com/aura-docs
- Aura Developer Guides:
  - dev.neo4j.com/aura-guides
- Aura Support Guides:
  - dev.neo4j.com/aura-support
- Review today:
  - dev.neo4j.com/aura-guides
- Github repository:
  - github.com/JMHReif/nodes2021-aura-training