CMPINF 2110

Spring 2021

Homework 05

Instructions

You will build a graph to represent relationships between entities

- Your application corresponds to a company that 3D prints parts and assembles those parts together into devices.

The basic structure we are interested in capturing

- An Employee OPERATES a Machine.

- A Machine PRINTS a Job.

- Parts are PART OF a Job.

- An Employee ASSEMBLES a Device.

- A Part is a COMPONENT OF a Device.

Your graph should contain the following properties about the entities

- There are 2 Employees
    - Alice joined in 2017
    - Bob joined in 2018
- There are 2 Machines
    - Machine alpha is of the type printer
    - Machine bravo is of the type printer
- There are 2 Jobs
    - Job ID 1 started on Monday and finished on Wednesday
    - Job ID 2 started on Tuesday and finished on Tuesday
- There are 5 Parts
    - Part ID 1 is of the type widget
    - Part ID 2 is of the type gizmo
    - Part ID 3 is of the type gadget
    - Part ID 4 is of the type sprocket
    - Part ID 5 is of the type sprocket
- There are 2 Devices
    - Device ID 1 is of the class doohickey
    - Device ID 2 is of the class thing

Your graph should contain the following RELATIONSHIPS

- Machine-to-Job relationships
  - Machine alpha PRINTS Job ID 1
  - Machine bravo PRINTS Job ID 2
- Part-to-Job relationships
  - Part ID 1 IS PART OF Job ID 1
  - Part ID 2 IS PART OF Job ID 1
  - Part ID 3 IS PART OF Job ID 2
  - Part ID 4 IS PART OF Job ID 2
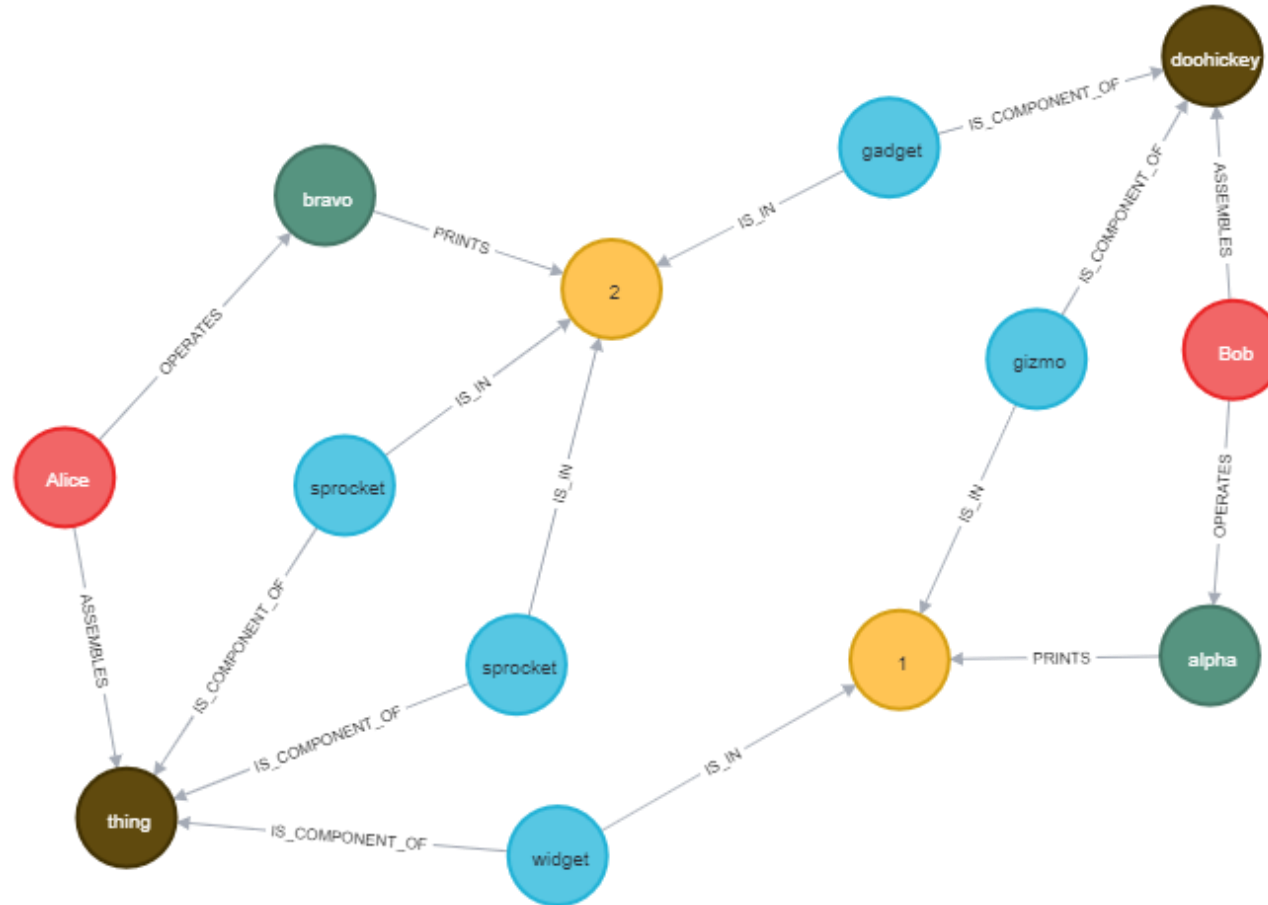 - Part ID 5 IS PART OF Job ID 2

Your graph should contain the following RELATIONSHIPS

- Part-to-Device relationships:
  - Part ID 1 IS COMPONENT OF Device ID 2
  - Part ID 2 IS COMPONENT OF Device ID 1
  - Part ID 3 IS COMPONENT OF Device ID 1
  - Part ID 4 IS COMPONENT OF Device ID 2
  - Part ID 5 IS COMPONENT OF Device ID 2
- Employee-to-Device relationships:
  - Alice ASSEMBLES Device ID 2
  - Bob ASSEMBLES Device ID 1
- Employee-to-Machine relationships:
  - Alice OPERATES Machine bravo
  - Bob OPERATES Machine alpha

Your assignment

- You must enter the previously described information into a GRAPH in Neo4j.

- You must create each of the NODES with appropriately assigned LABELS and containing the required properties.

- You must create the RELATIONSHIPS between NODES.

Your completed GRAPH should look like

Assignment submission

- You must submit a Powerpoint, PDF, or Word file that contains the images associated with several queries.

- Queries:
  - All nodes.
  - The relationships between all Employees and Devices.
  - The relationships between all Parts and Jobs.

- You must submit a CSV file associated with the query of all nodes in the GRAPH.

- Name the Powerpoint,PDF, Word file: LastName_FirstName_HW05_queries
- Name the CSV file: LastName_FirstName_HW05_all_nodes.csv

You can export the result of a query as a CSV and PNG within the Neo4j Browser