

Introduction

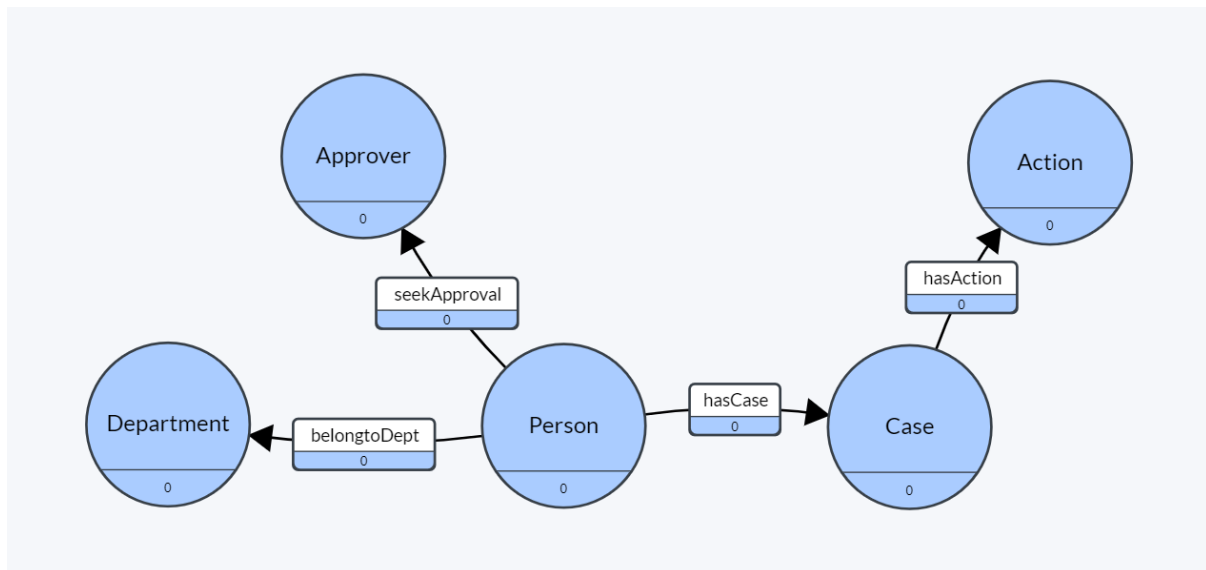
The following scenarios will ascertain the person's ability to seek understanding, research and develop a showcase to display Knowledge Graph and KG Data Science capability.

Notes

- It is expected that you use Neo4j for this work (If you required a cloud compute, let me know)
- The dataset has been provided as is (see below). Note that some data are intentionally left out
- That you create python scripts that will read off the Graph Database to deliver the functionality.
- For link prediction, please use neo4j data science features.
- Please feel free to use any form of front end interface that you are comfortable with to showcase the end result e.g. running a python script or jupyter notebook etc

Scenario – Create Knowledge Graph and Retrieve Information

- i) Using Neo4j Aura, create the Knowledge Graph below



- ii) Below is a dataset that is available (an excel is provided too)



DataSet.xlsx

belongtoDept

Department	Person	Role
HR	Gerard	Head
HR	Rachel	Team Member

Showcase

HR	Lee	Team Member
FIN	Jocelyn	Head
LOB	Dorothy	Team Member
LOB	Albert	Team Member

seekApproval

Approver	Person
Ken	Gerard
Gerard	Lee
Ken	Jocelyn
Keith	Dorothy
Keith	Albert

hasCase

Person	CaseID	CaseDescription
Gerard	1	Lack of Resource
Jocelyn	2	Lack of Fund
Dorothy	3	Poor Delivery Quality
Rachel	4	Need more room
Gerard	5	Need to create more awareness

hasAction

CaseID	Action	Status
1	Find Resource	Not Started
2	Sell Project	In Progress
3	Train Resource	Close
4	Find Resource	In Progress
	Brand	
5	Marketing	In Progress

Scenario 1 outcome – Using the Knowledge Graph, retrieve the following information:

- How many people are there in LOB department?
- How many case load are there for HR department?
- Please show your python script for this

Scenario 2 outcome – Knowledge Graph Data Science – Link prediction

- Using the above Knowledge Graph and dataset, Can you infer that Rachel's approving officer is Gerard.
- Please show your python script for this

Challenge Scenario – (no coding required) Describe how you can predict that most of the time, HR's Action is to 'Find Resource'. What Knowledge Graph techniques can be used? Please elaborate.