

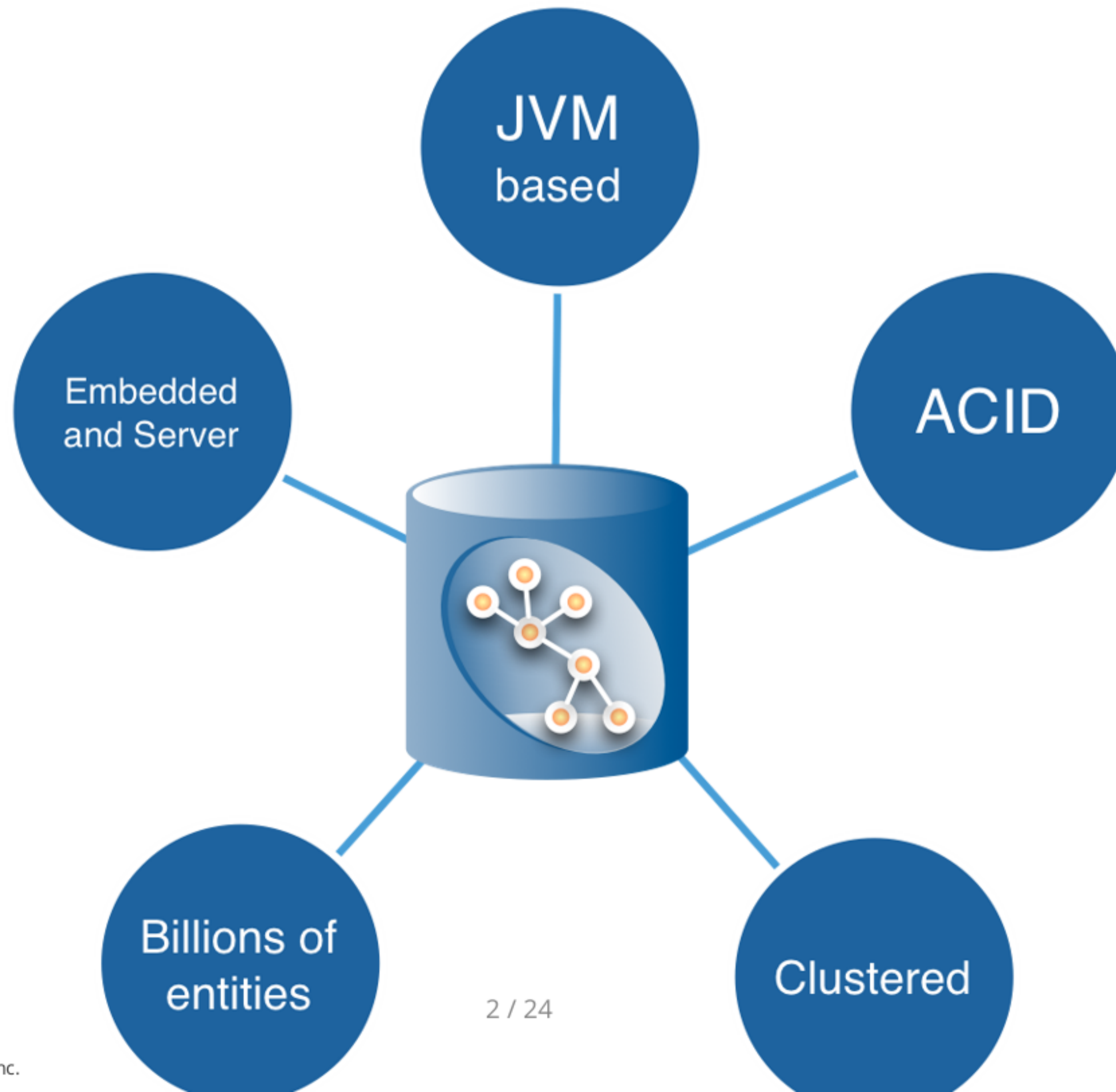


Neo4j 101

Stefan Armbruster

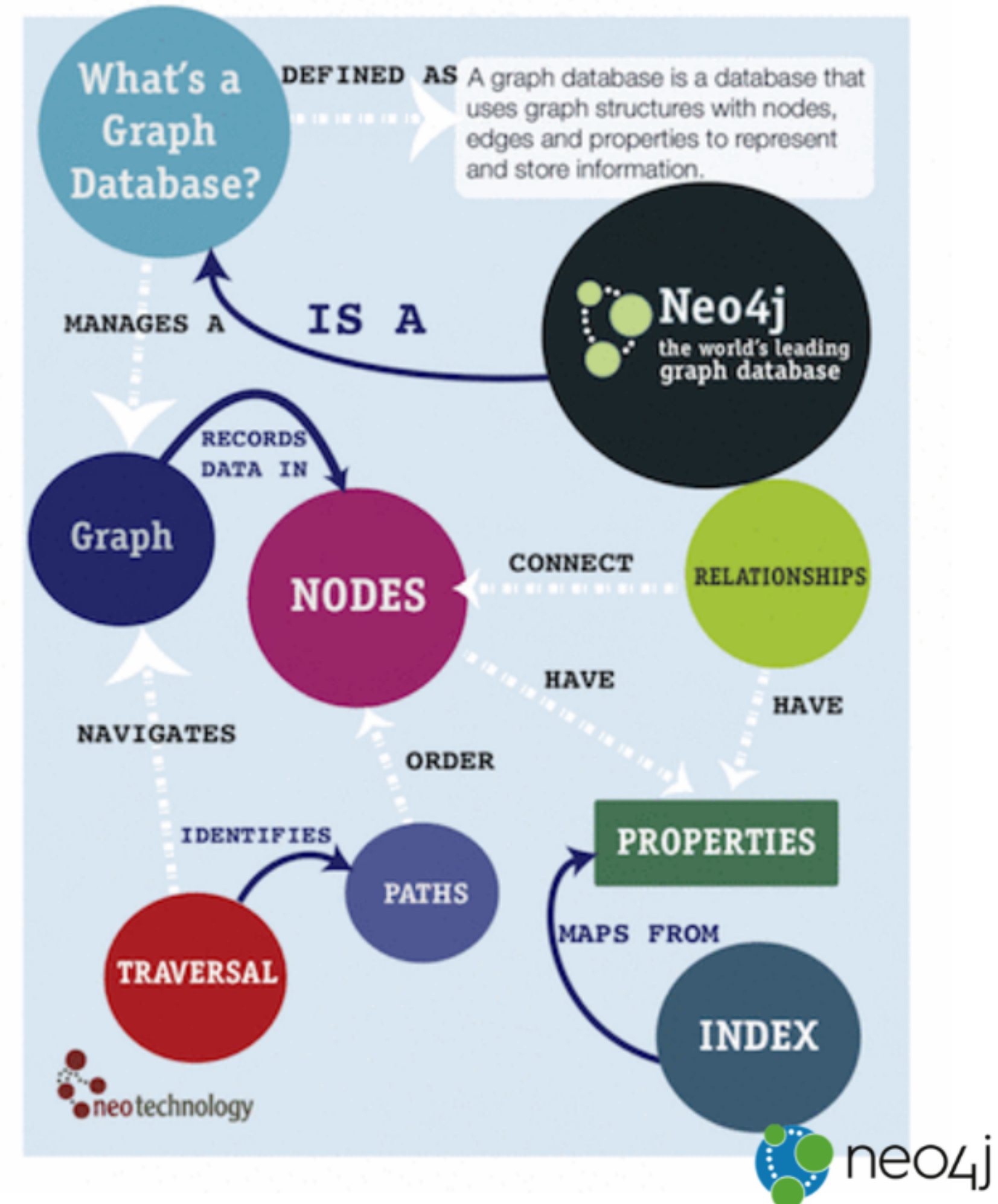
stefan@neo4j.com | [@darthvader42](https://twitter.com/darthvader42)

Neo4j is a Graph Database

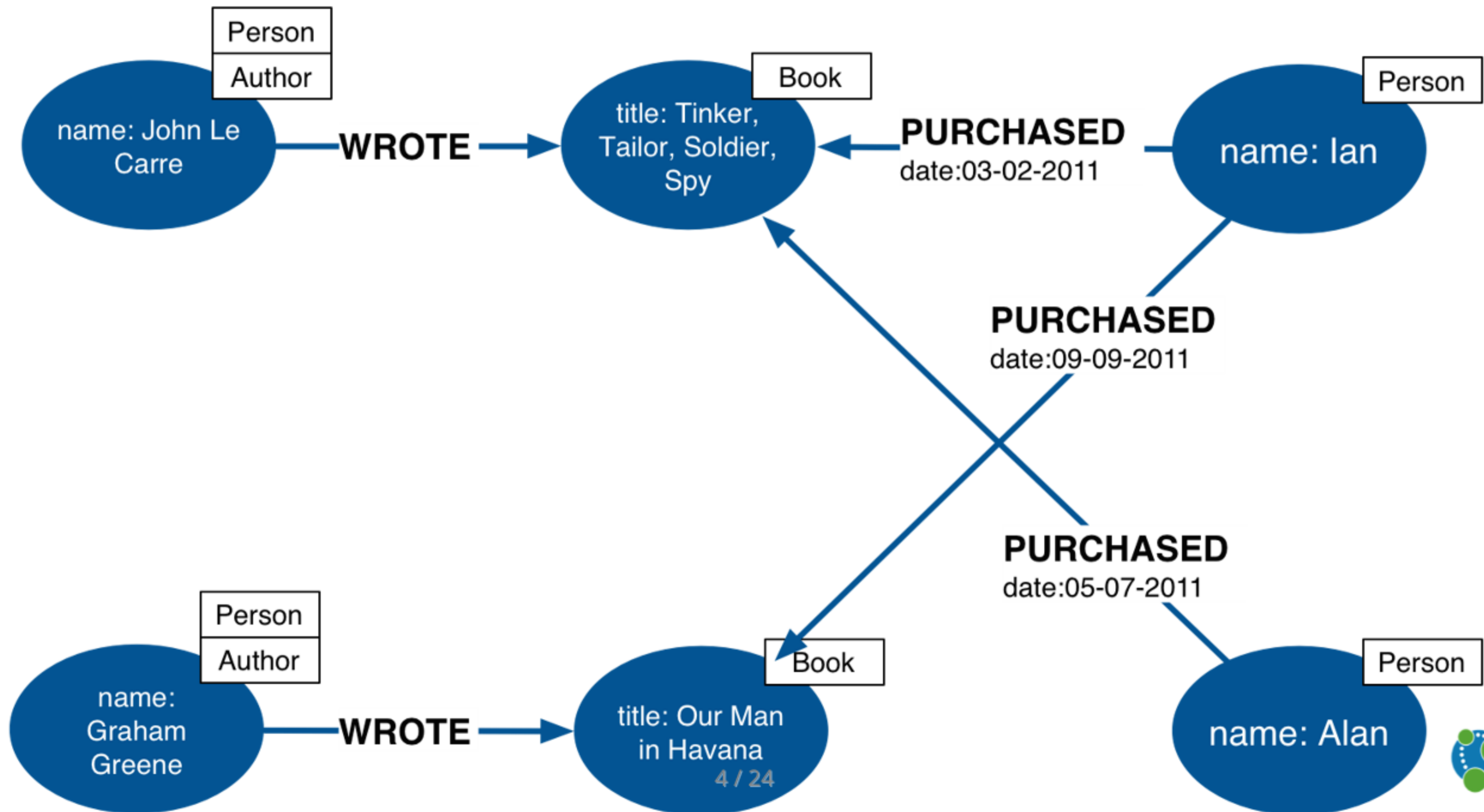


Four Building Blocks

- Nodes
- Relationships
- Properties
- Labels



Labeled Property Graph Data Model : Example



Demo time

Graph Data Modeling

Example Application

Example Application

Knowledge Management

- People, companies, skills
- Cross organizational

Example Application

Knowledge Management

- People, companies, skills
- Cross organizational

Find my professional social network

- Exchange knowledge
- Interest groups
- Staff projects

Application/End-User Goals

As an employee

**I want to know who in the company
has similar skills to me**

So that we can exchange knowledge

Questions To Ask of the Domain

Which people, who work for the same company as me, have similar skills to me?

Identify Entities

Which **people**, who work for the same **company** as me, have similar **skills** to me?

- Person
- Company
- Skill

Identify Relationships Between Entities

Which people, who **work** for the same company as me, **have** similar skills to me?

- Person WORKS_FOR Company
- Person HAS_SKILL Skill

Convert to Cypher Paths

Relationship

Person WORKS_FOR Company

Person HAS_SKILL Skill

Label



```
(:Person)-[:WORKS_FOR]->(:Company),  
(:Person)-[:HAS_SKILL]->(:Skill)
```

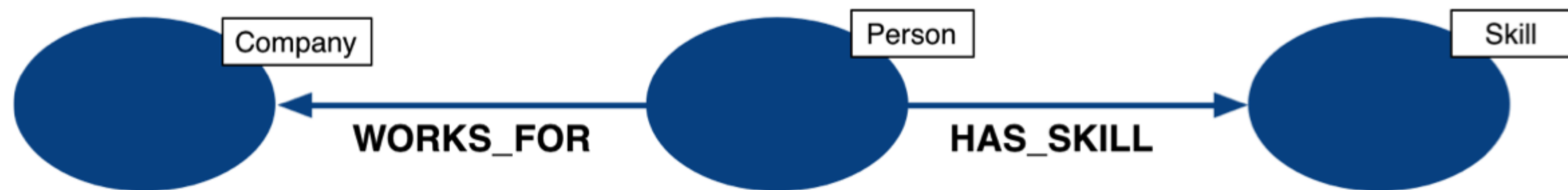
Consolidate Paths

From

```
(:Person) -[:WORKS_FOR]->(:Company),  
(:Person) -[:HAS_SKILL]->(:Skill)
```

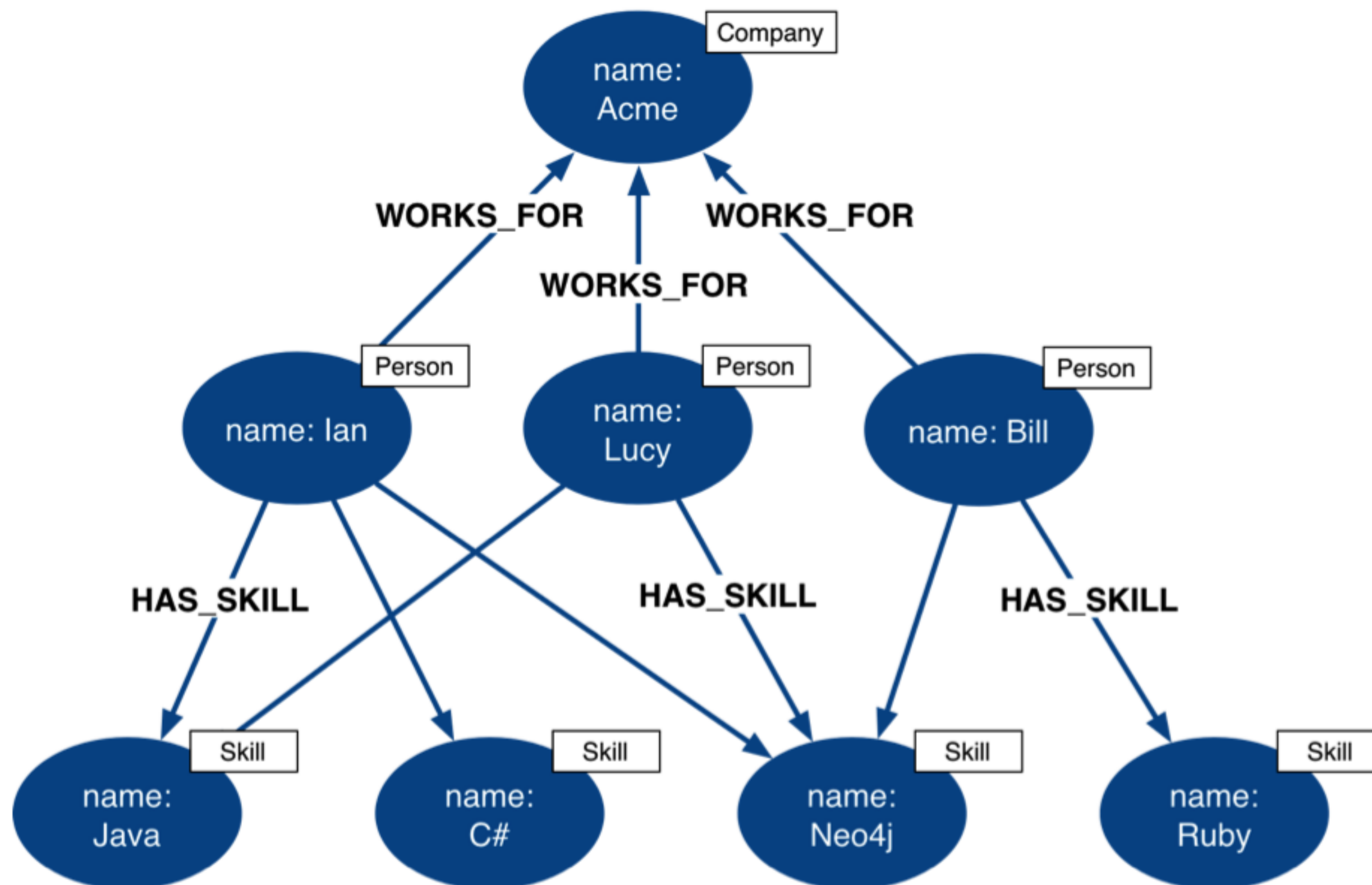
To

```
(:Company)<-[:WORKS_FOR]-(:Person)-[:HAS_SKILL]->(:Skill)
```



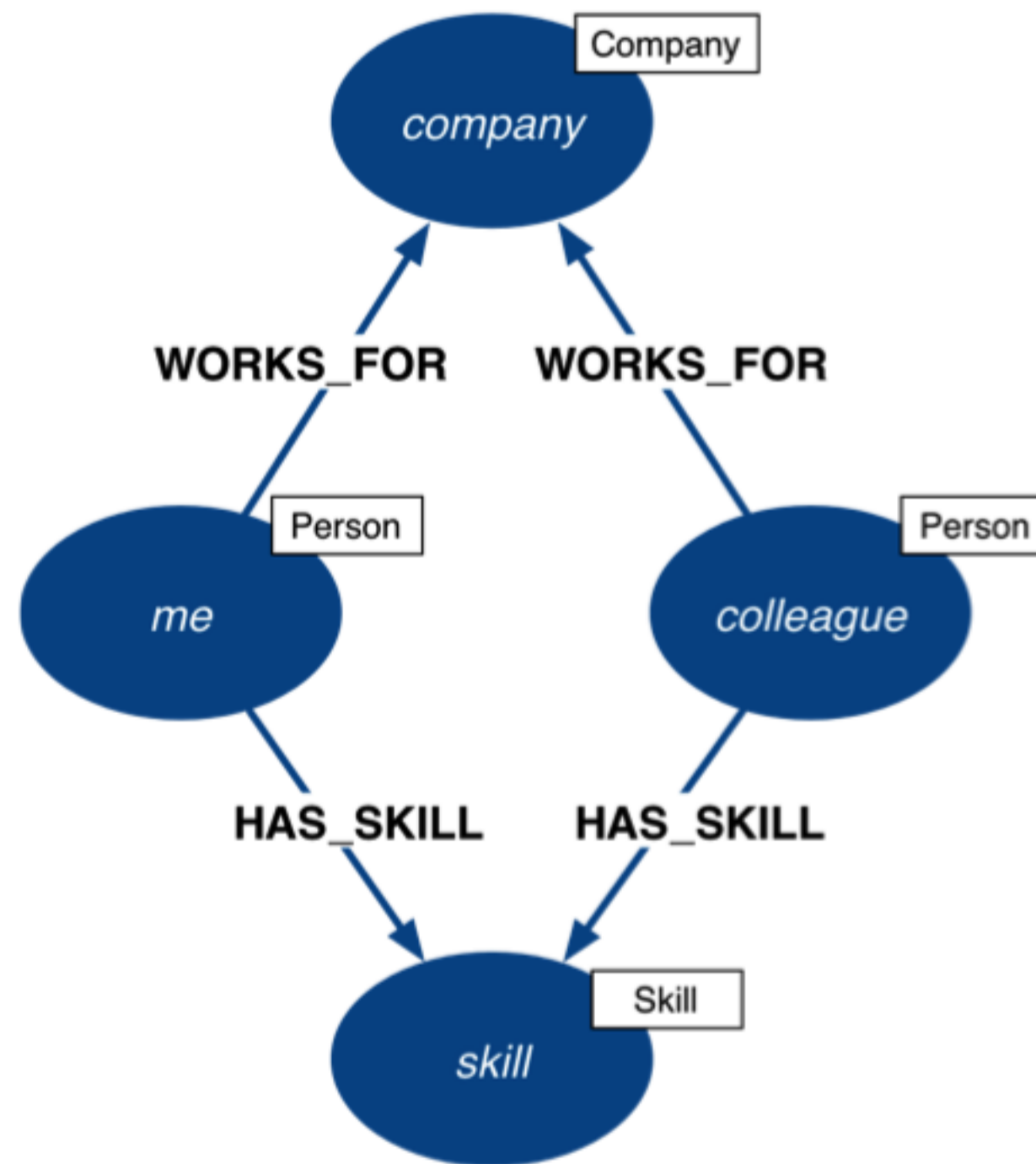
Candidate Data Model

`(:Company) <-[:WORKS_FOR] - (:Person) -[:HAS_SKILL] -> (:Skill)`



Express Question as a Graph Pattern

Which people, who work for the same company **as** me, have similar sl

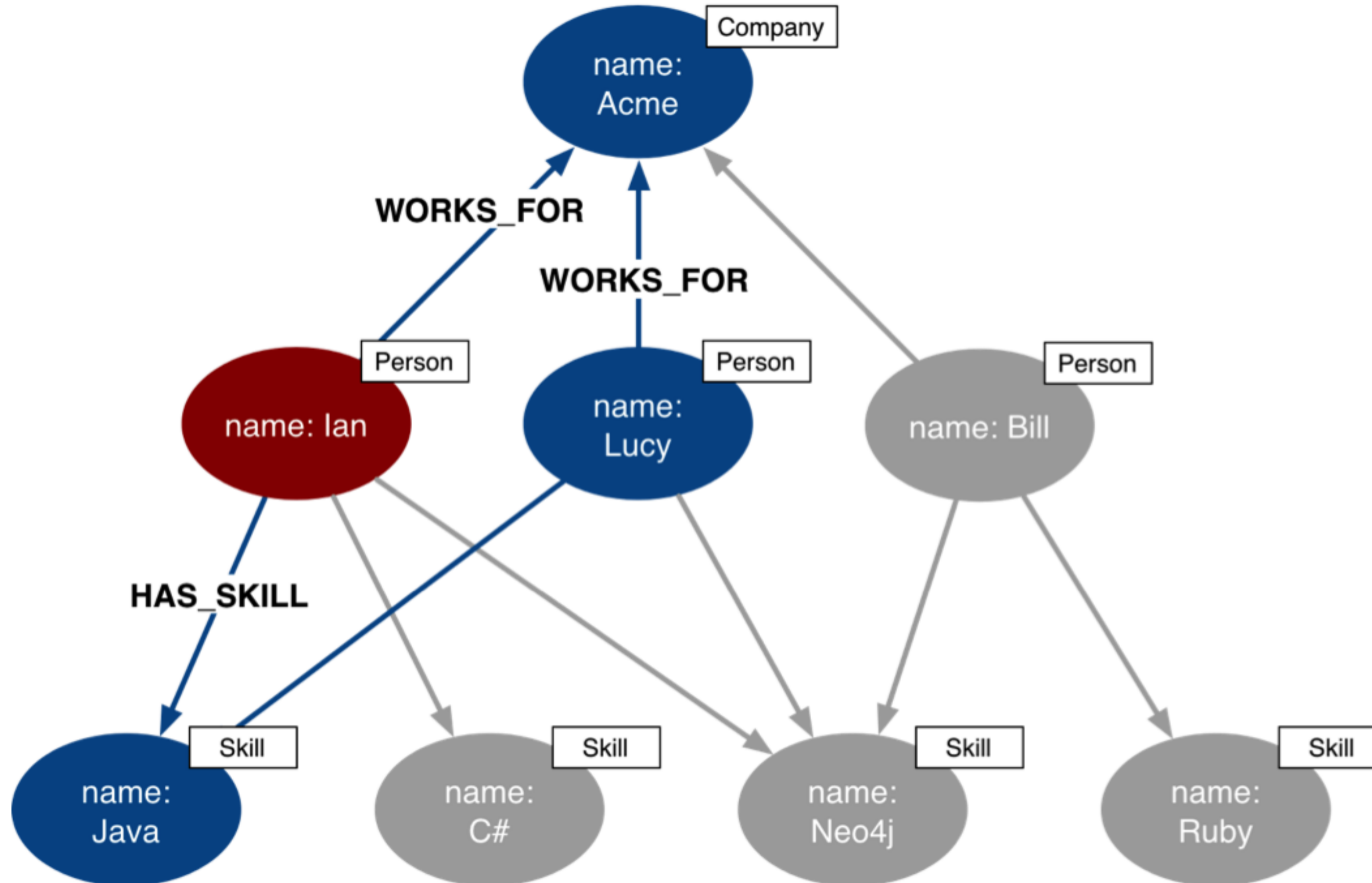


Cypher Query

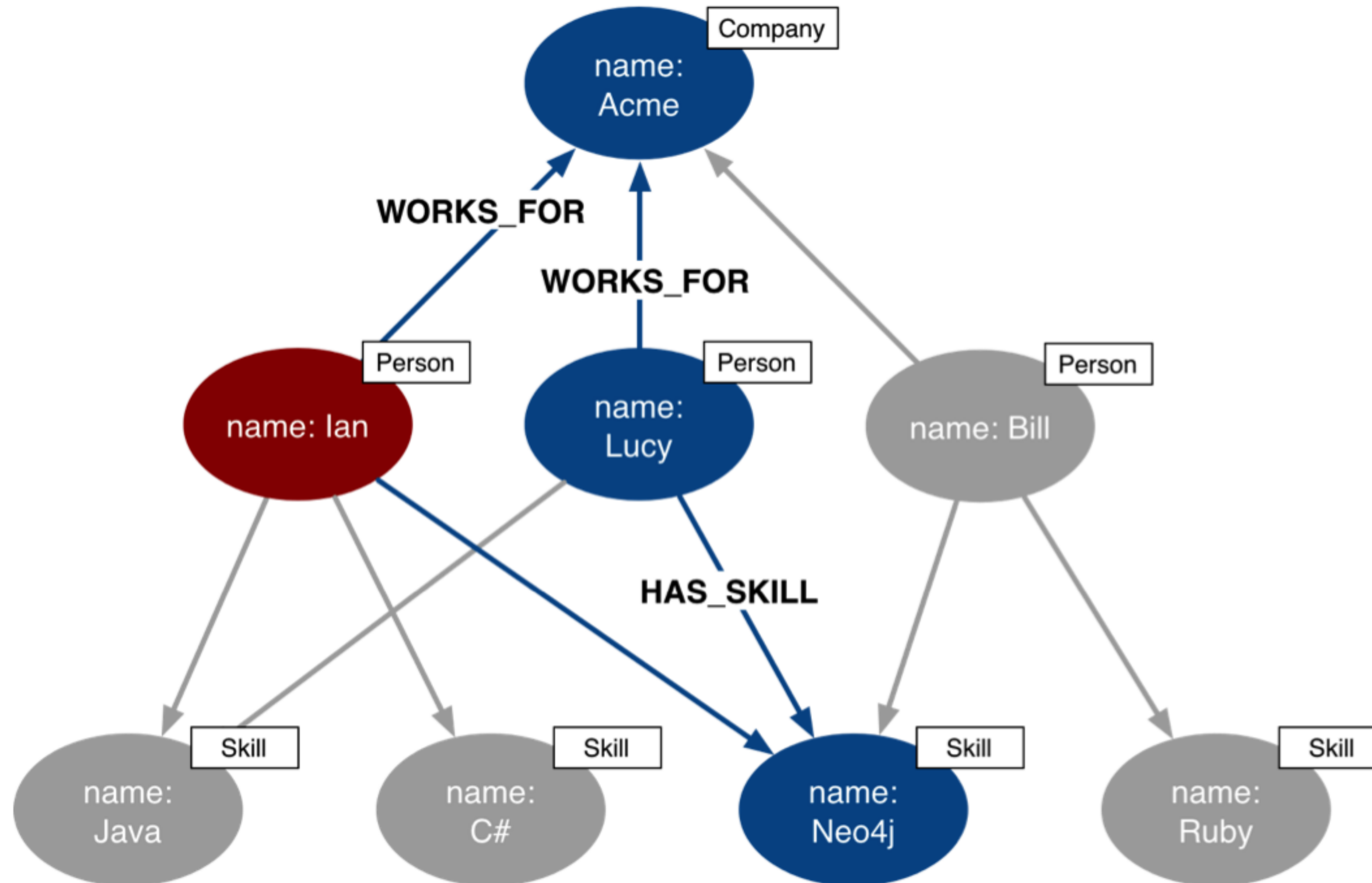
Which people, who work for the same company as me, have similar skills to me?

```
MATCH (company) <-[:WORKS_FOR] - (:Person{name:'Ian'})
      -[:HAS_SKILL] ->(skill),
      (company) <-[:WORKS_FOR] - (colleague) -[:HAS_SKILL] ->(skill)
RETURN colleague.name AS name,
      count(skill) AS score,
      collect(skill.name) AS skills
ORDER BY score DESC
```

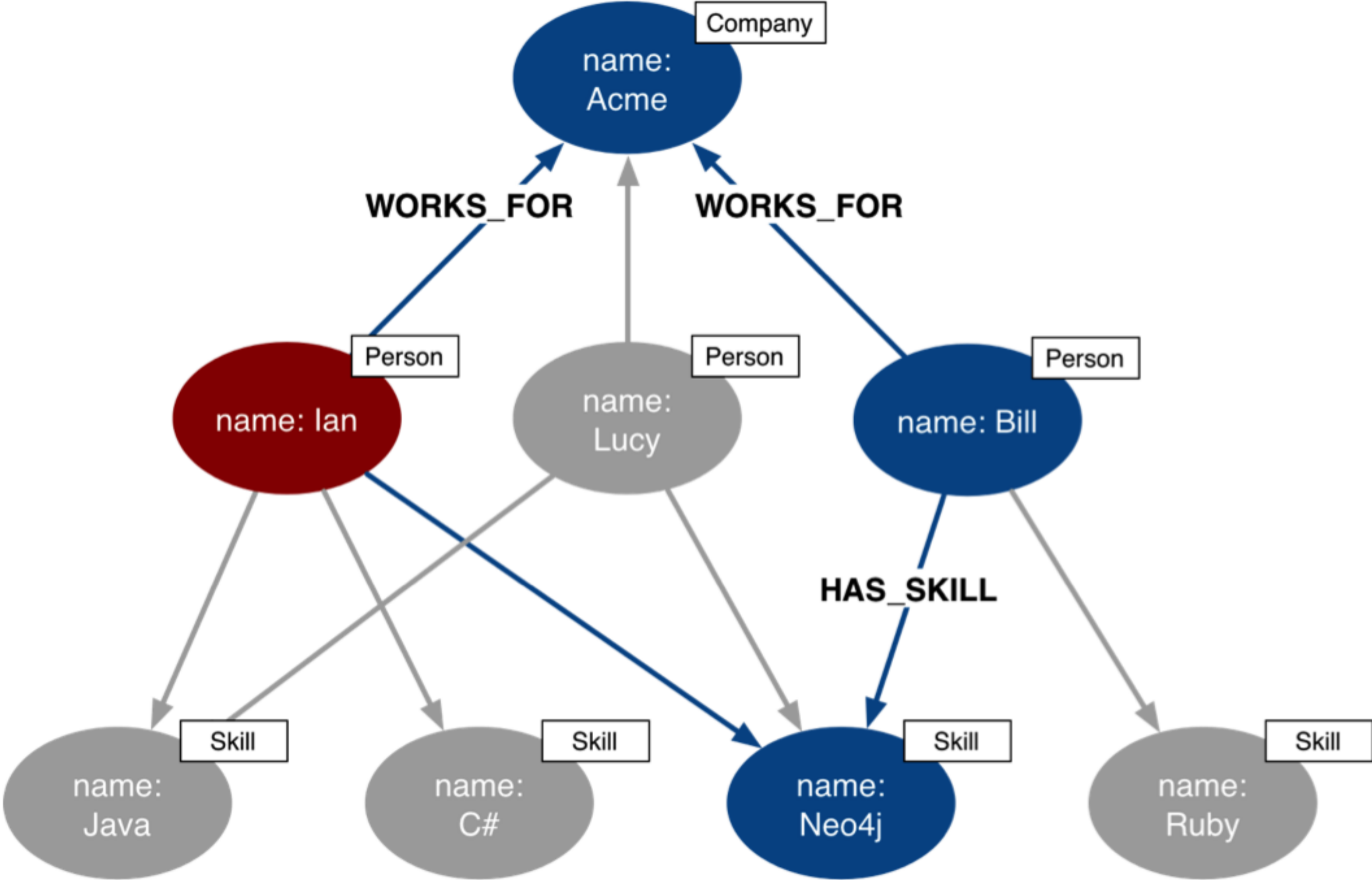
First Match



Second Match



Third Match



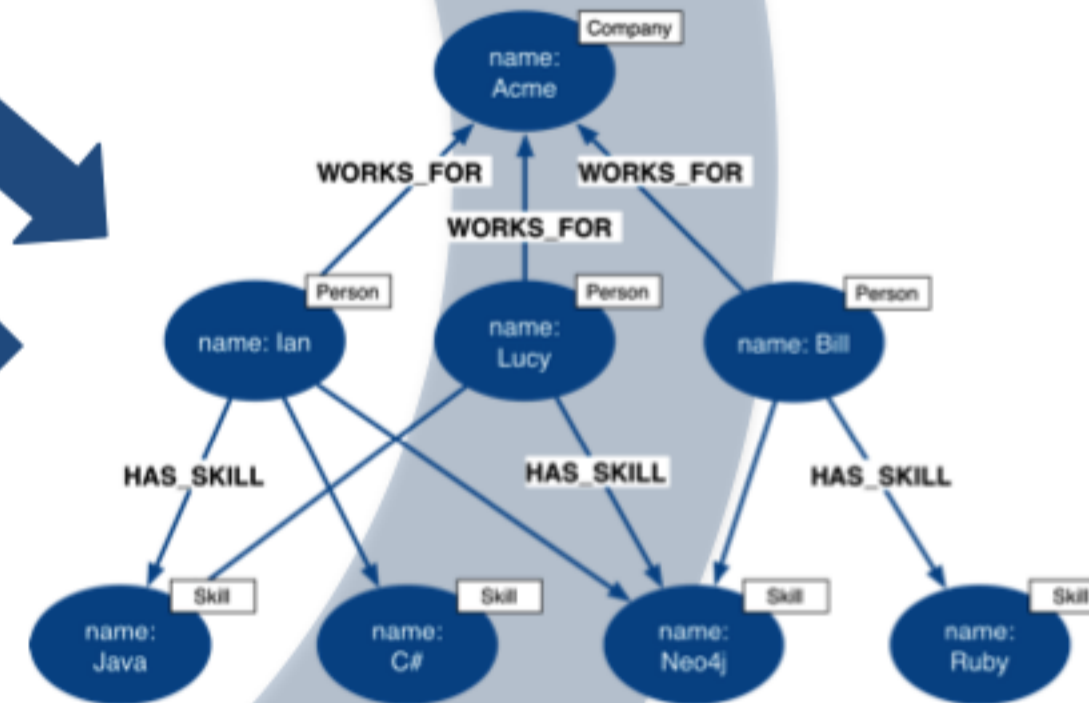
From User Story to Full Query

As an employee
I want to know who in the company
has similar skills to me
So that we can exchange knowledge

```
MATCH (company)<-[:WORKS_FOR]-(me:Person)-[:HAS_SKILL]->(skill),  
      (company)<-[:WORKS_FOR]-(colleague)-[:HAS_SKILL]->(skill)  
WHERE me.name = {name}  
RETURN colleague.name AS name,  
       count(skill) AS score,  
       collect(skill.name) AS skills  
ORDER BY score DESC
```

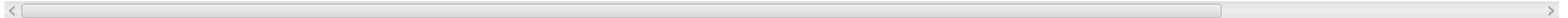
Which people, who work for the same company as me, have similar skills to me?

Person WORKS_FOR Company
Person HAS_SKILL Skill



How to build our killer app on Neo4j?

```
import org.neo4j.driver.v1.Driver;  
import org.neo4j.driver.v1.GraphDatabase;  
import org.neo4j.driver.v1.Session;  
import org.neo4j.driver.v1.StatementResult;  
  
Driver driver = GraphDatabase.driver("bolt://localhost");  
Session session = driver.session();  
StatementResult result = session.run("match (n) return count(n) as  
int result.single().get("numberOfNodes").asInt();
```



railroad network in Germany



Thank You

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Status of the presentation

Cypher queries execution