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Database Systems

NEO4J Assignment

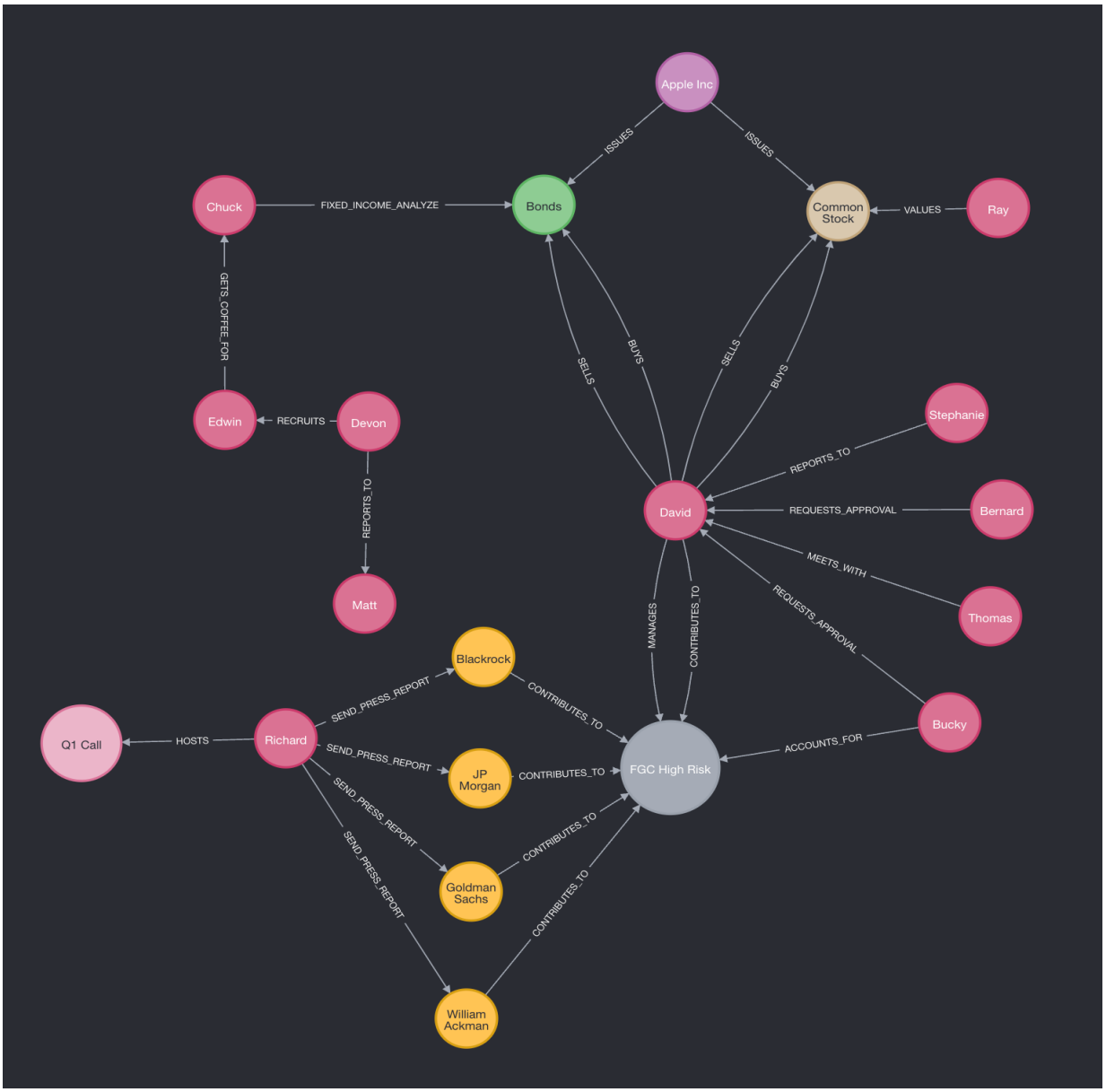
My diagram models a hedge fund, including employees, buying stocks and bonds of companies, partners (both people and institutions), investor relation events, and contributions and management of the fund.

The main inheritance present is that the Person object can be either an Employee or Partner. Additionally, Institutions can be partners. My definition of institution is a large company or bank that is investing in the fund, like JP Morgan or Goldman Sachs. Additionally, Conference Calls are Event object types, allowing for creation of other events which are not calls.

My queries are below.

QUERY 1:

MATCH (a) – [] – (b) RETURN a,b



Node labels

* (20) | Company (1) | Common_Stock (1) | Bonds (1) | Employee (11) | Person (12) | Fund (1) | Conference_Call (1) | Event (1) | Institution (3) | Partner (4)

Relationship types

* (27) | ISSUES (2) | BUYS (2) | SELLS (2) | MANAGES (1) | CONTRIBUTES_TO (5) | REPORTS_TO (2) | RECRUITS (1) | GETS_COFFEE_FOR (1) | FIXED_INCOME_ANALYZE (1) | ACCOUNTS_FOR (1) | REQUESTS_APPROVAL (2) | MEETS_WITH (1) | HOSTS (1) | SEND_PRESS_REPORT (4) | VALUES (1)

Displaying 20 nodes, 27 relationships.

QUERY 2

Return the ownership stake of 'JP Morgan' in the 'FGC High Risk' Fund. Return it as a percentage.

```
match(p:Partner) - [:CONTRIBUTES_TO] - (f:Fund)
where p.name = 'JP Morgan' AND f.name = 'FGC High Risk'
return (p.ownership) * 100 + '%' AS JP_Morgan_Ownership
```

Table

	JP_Morgan_Ownership
1	"21.0%"

QUERY 3

Return the ownership stake of 'JP Morgan' in the 'FGC High Risk' Fund. Return it as a **numeric value based on total assets under management in the fund.** This output is in USD. The output is equal to $16.8B. f.aum is a field in 'FGC High Risk' for the total value of all assets in the fund.

```
match(p:Partner) - [:CONTRIBUTES_TO] - (f:Fund)
where p.name = 'JP Morgan' AND f.name = 'FGC High Risk'
return (p.ownership) * (f.aum) AS JP_Stake_In_Dollars
```

Table

	JP_Stake_In_Dollars
1	16800000000.0

QUERY 4

Return my longest (and by result favorite) investor in the 'FGC High Risk' Fund.

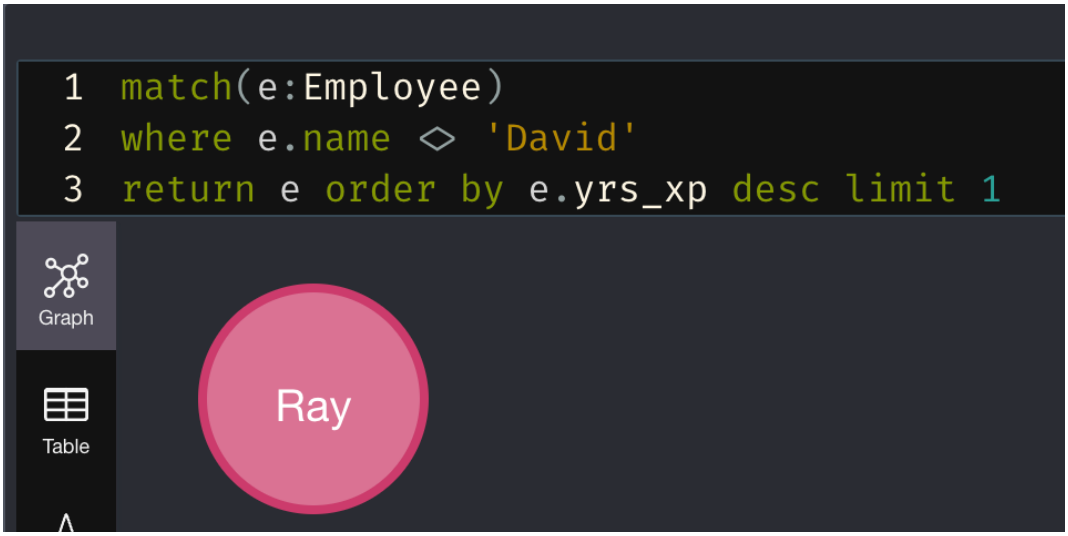
```
match (p:Partner) - [:CONTRIBUTES_TO] → (f:Fund)
where f.name = 'FGC High Risk'
return p order by p.yrs_invested desc limit 1
```

Graph

Table

QUERY 5

Return the employee who has worked for me the longest, **excluding myself.**

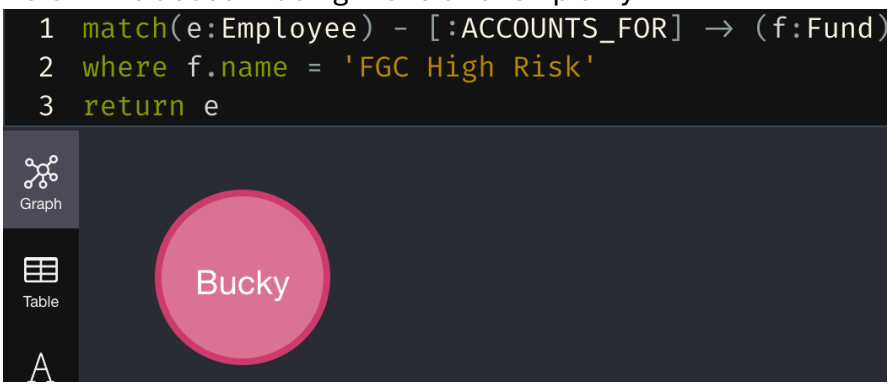


QUERY 6

Return the potential upside(or downside) to purchasing Apple stock today, considering Ray's calculation(Ray is the quantitative analyst for the firm).

QUERY 7

Q1 is almost done, and I need to touch base with my accountant, but I forgot his name! Return the account using the relationship only.



QUERY 8

After talking to my quant, I am bullish on Apple stock. I decide to put in an order to buy some shares today. Return the **dollar amount** I spent on Apple shares in that buy order.

```
match(e:Employee) - [b:BUYS] → (cs:Common_Stock) ← [:ISSUES] - (c:Company)
where e.name = 'David' AND c.name = 'Apple Inc'
return '$' + b.amt_shares * c.share_price AS Total_Order_Cost
```

Table

	Total_Order_Cost
1	"$1100000"

QUERY 9

Ray, my quantitative, had perfect timing. Our Corporate AAA Apple bonds just reached their term, and I am going to use some of the interest from those contracts to buy their common stock. Return how many contracts I sold today.

```
match(e:Employee) - [s:SELLS] → (b:Bonds) ← [:ISSUES] - (c:Company)
where e.name = 'David' AND c.name = 'Apple Inc'
return s.contracts_sold AS Bond_Contracts_Sold
```

Table

Bond_Contracts_Sold
5

QUERY 10

Now that I bought my shares, I want to explore what my profits will be if Ray's upside of 36% pans out. Return my **potential dollar profit from this Apple stock buy.**

```
match(e:Employee) - [b:BUYS] → (cs:Common_Stock) ← [:ISSUES] - (c:Company)
match(quant:Employee) - [v:VALUES] → (cs:Common_Stock) ← [:ISSUES] - (c:Company)
return '$' + round((toFloat(v.fair_value - c.share_price) / toFloat(c.share_price))
    * b.amt_shares * c.share_price) AS Potential_Profits
```

Table

Potential_Profits
"$400000.0"