Assignment 6: Graph Database Application

Homework questions:

1. **Use the provided Cypher script to create the graph database**:

   a. **You could use any names for your project and the graph database**.

   Created Project "**Assign 8"**

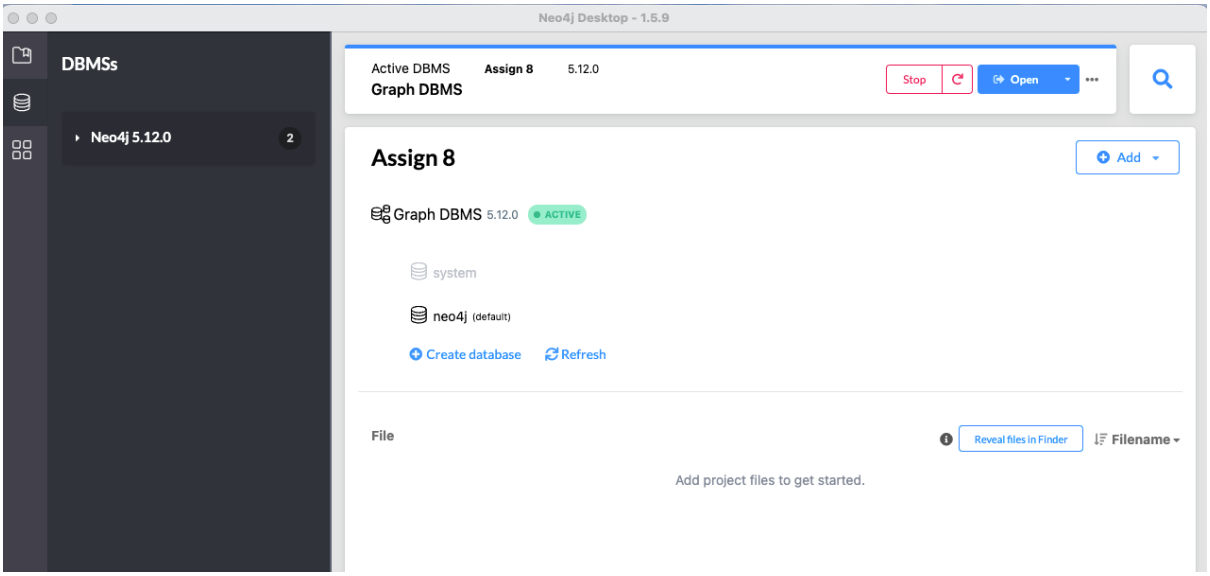


Fig 1: Project "Assign 8" Created and connected to Local DBMS

   b. **Copy the ENTIRE Cypher code in the script and paste it in neo4j$ prompt and then click the blue play button on the right**.

   Created Database using the Cypher code provided with assignment and ran it in neo4j browser console. Attaching below screenshot for reference:

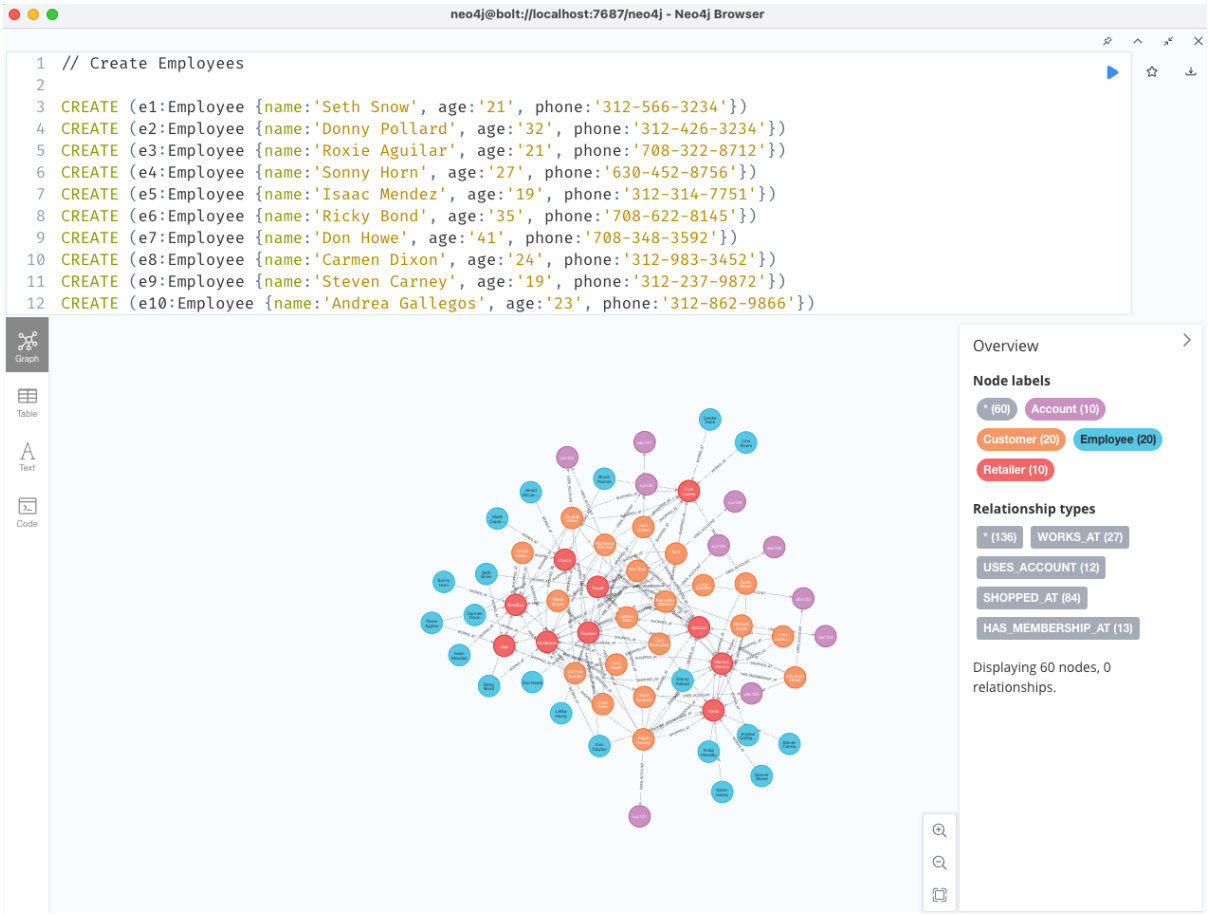


Fig 2: Graph DB Created using Cypher code

c. NOTE in step 15 above that your version may only allow one command at a time.

I am using Neo4j Desktop 1.5.9 on Mac OS platform, we can expand the console to execute more than 1 line at a time. Attaching screenshot with highlighted icon to do the same.

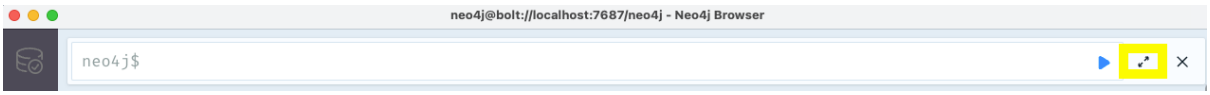


Fig 3: Neo4j command console expand icon

d. Run the command below. Find the Customer Ashlee Reid and pull the node to the far left of the screen. Include a screen capture of this view to show you were able to load the database. (5 points)

```
MATCH (n) RETURN (n);
```

Ran the command successfully and pulled the customer **Ashlee Reid** node to the far left of the screen. Attaching the below screenshot for the same.

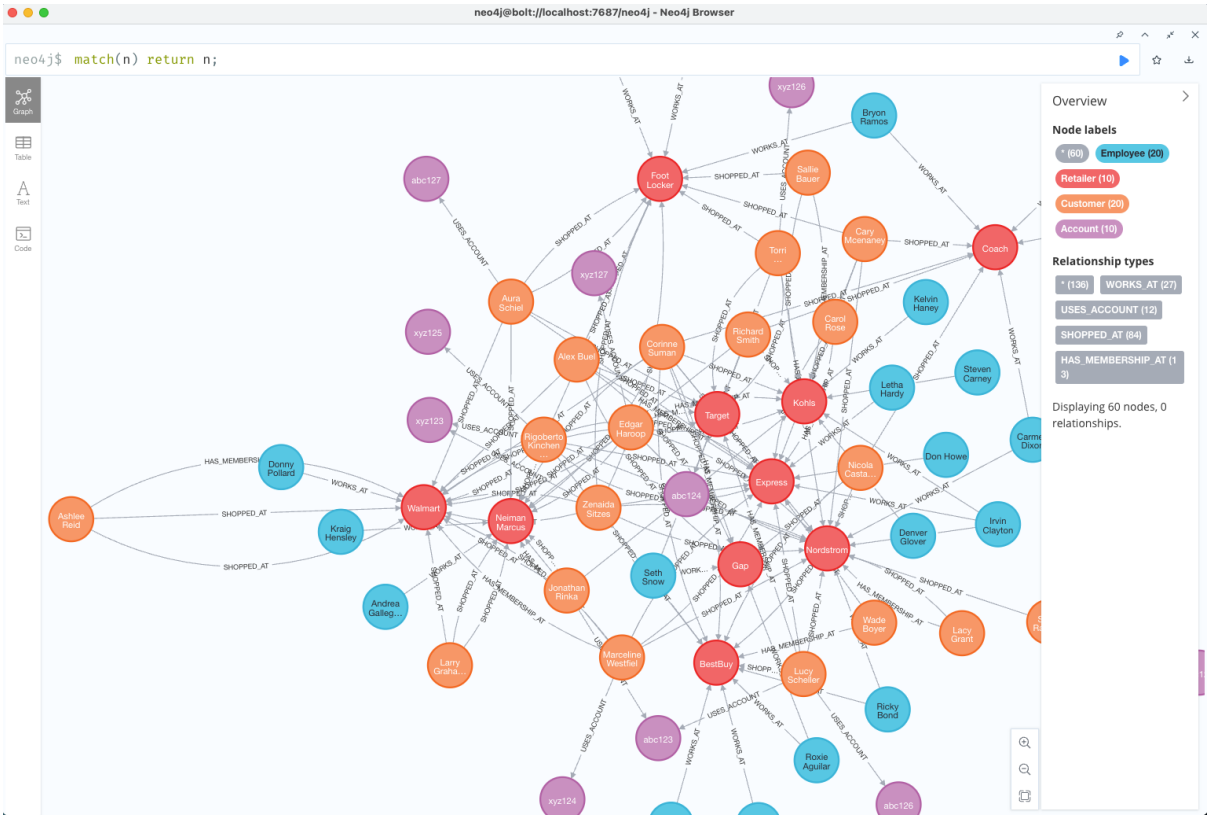


Fig 4: Screenshot of customer Ashlee Reid node on the far left

2. Execute the following Cypher code to get the list of retailers. (0 point).

```
MATCH (r:Retailer) RETURN (r);
```

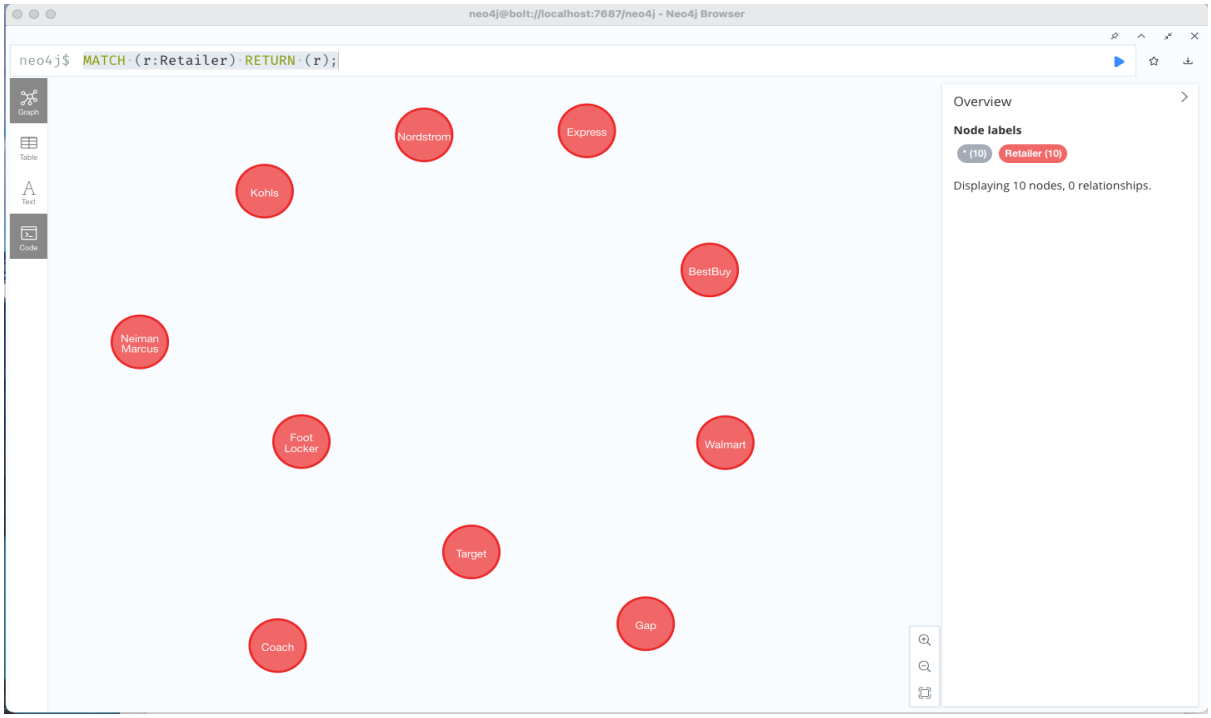


Fig 5: Screenshot of graph result contains nodes of all Retailers

3. Execute the following Cypher code to the get the list of employees. (0 point)

```
MATCH (e:Employee) RETURN (e);
```

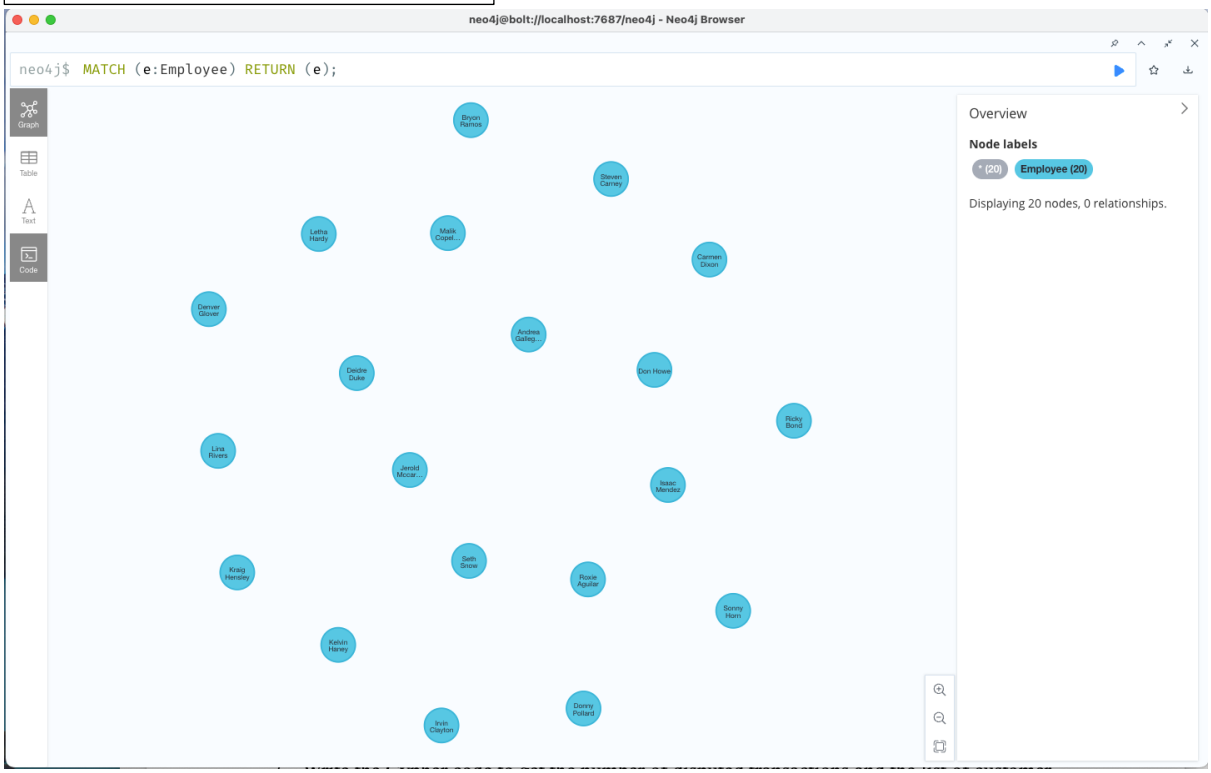


Fig 6: Screenshot of graph result contains nodes of all Employees

4. **Execute the following Cypher code to the get the list of customers. (0 point)**

```
MATCH (c:Customer) RETURN (c);
```

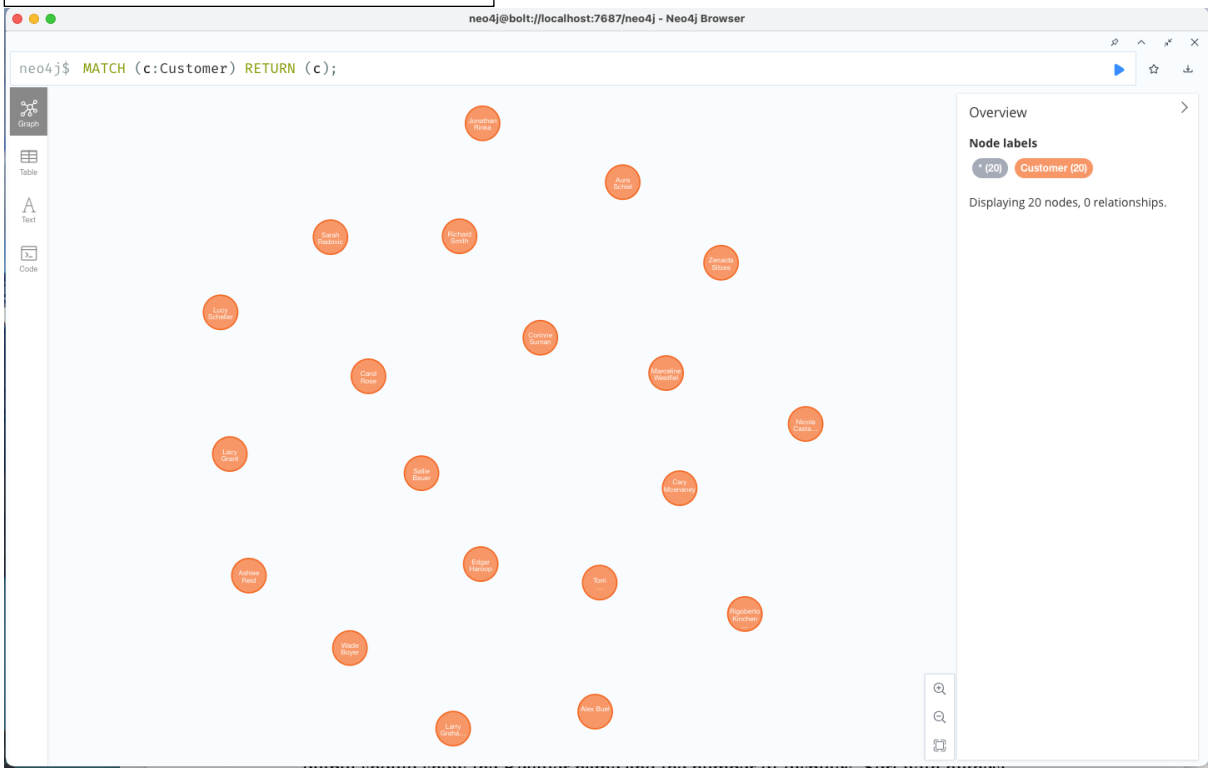
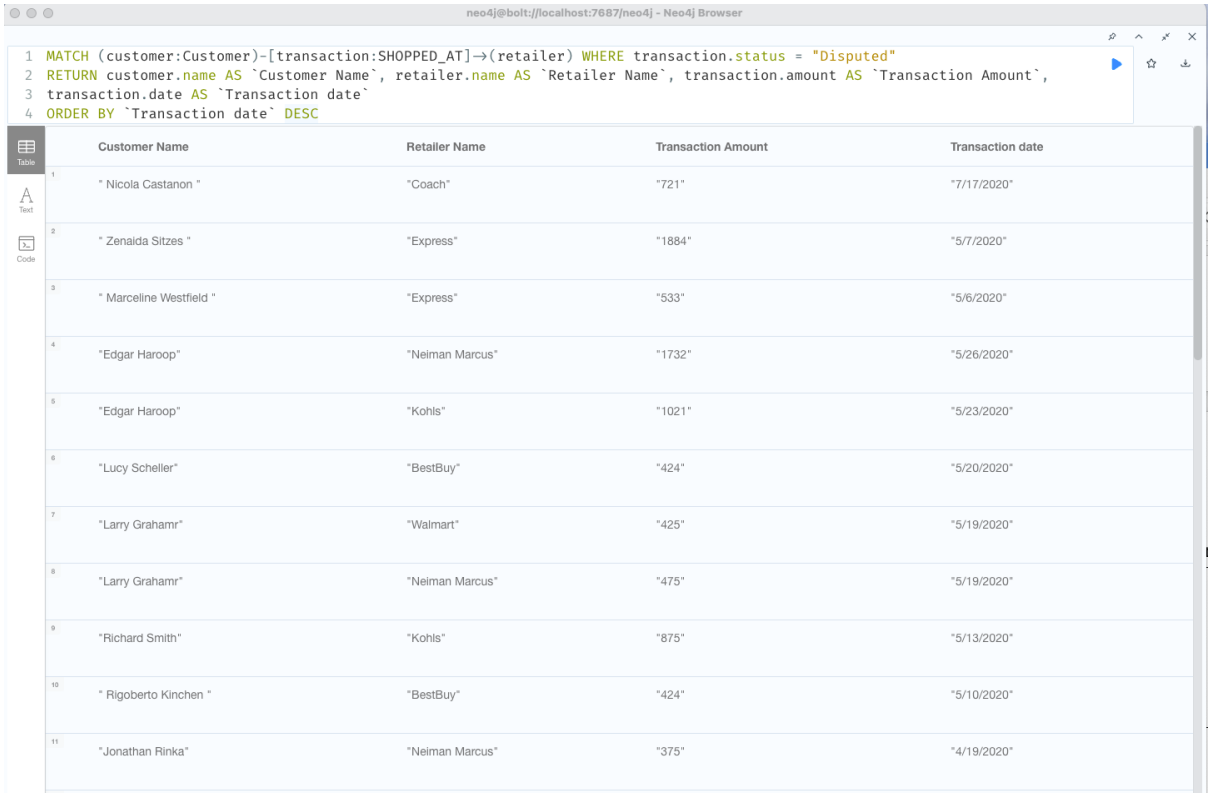


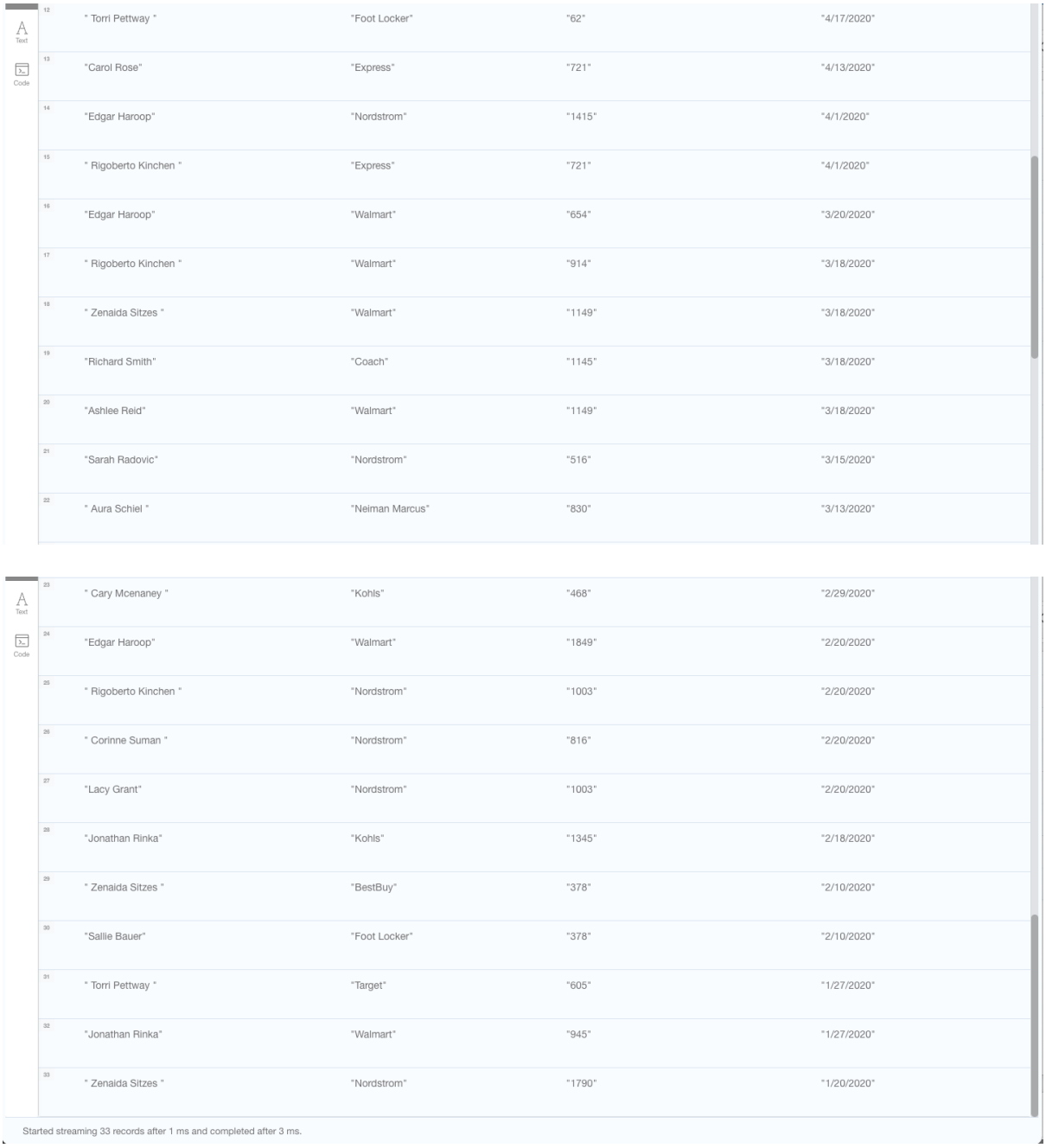
Fig 7: Screenshot of graph result contains nodes of all Customers

5. **Execute the following Cypher code to the get the list of all disputed transactions. (0 point)**

```
MATCH (customer:Customer)-[transaction:SHOPPED_AT]->(retailer) WHERE
transaction.status = "Disputed"
RETURN customer.name AS `Customer Name`, retailer.name AS `Retailer Name`,
transaction.amount AS `Transaction Amount`,
transaction.date AS `Transaction date`
ORDER BY `Transaction date` DESC
```



	Customer Name	Retailer Name	Transaction Amount	Transaction date
1	" Nicola Castanon "	"Coach"	"721"	"7/17/2020"
2	" Zenaida Sitzes "	"Express"	"1884"	"5/7/2020"
3	" Marceline Westfield "	"Express"	"533"	"5/6/2020"
4	"Edgar Haroop"	"Neiman Marcus"	"1732"	"5/26/2020"
5	"Edgar Haroop"	"Kohls"	"1021"	"5/23/2020"
6	"Lucy Scheller"	"BestBuy"	"424"	"5/20/2020"
7	"Larry Grahamr"	"Walmart"	"425"	"5/19/2020"
8	"Larry Grahamr"	"Neiman Marcus"	"475"	"5/19/2020"
9	"Richard Smith"	"Kohls"	"875"	"5/13/2020"
10	" Rigoberto Kinchen "	"BestBuy"	"424"	"5/10/2020"
11	"Jonathan Rinka"	"Neiman Marcus"	"375"	"4/19/2020"



12	" Torri Pettway "	"Foot Locker"	"62"	"4/17/2020"
13	"Carol Rose"	"Express"	"721"	"4/13/2020"
14	"Edgar Haroop"	"Nordstrom"	"1415"	"4/1/2020"
15	" Rigoberto Kinchen "	"Express"	"721"	"4/1/2020"
16	"Edgar Haroop"	"Walmart"	"654"	"3/20/2020"
17	" Rigoberto Kinchen "	"Walmart"	"914"	"3/18/2020"
18	" Zenaida Sitzes "	"Walmart"	"1149"	"3/18/2020"
19	"Richard Smith"	"Coach"	"1145"	"3/18/2020"
20	"Ashlee Reid"	"Walmart"	"1149"	"3/18/2020"
21	"Sarah Radovic"	"Nordstrom"	"516"	"3/15/2020"
22	" Aura Schiel "	"Neiman Marcus"	"830"	"3/13/2020"
23	" Cary Mcenaney "	"Kohls"	"468"	"2/29/2020"
24	"Edgar Haroop"	"Walmart"	"1849"	"2/20/2020"
25	" Rigoberto Kinchen "	"Nordstrom"	"1003"	"2/20/2020"
26	" Corinne Suman "	"Nordstrom"	"816"	"2/20/2020"
27	"Lacy Grant"	"Nordstrom"	"1003"	"2/20/2020"
28	"Jonathan Rinka"	"Kohls"	"1345"	"2/18/2020"
29	" Zenaida Sitzes "	"BestBuy"	"378"	"2/10/2020"
30	"Sallie Bauer"	"Foot Locker"	"378"	"2/10/2020"
31	" Torri Pettway "	"Target"	"605"	"1/27/2020"
32	"Jonathan Rinka"	"Walmart"	"945"	"1/27/2020"
33	" Zenaida Sitzes "	"Nordstrom"	"1790"	"1/20/2020"

Started streaming 33 records after 1 ms and completed after 3 ms.

Fig 8: Screenshot of list of all disputed transactions

6. Write the Cypher code to get the number of disputed transactions for every retailer. The output should show the Retailer name and the number of disputes. Sort with highest number of disputes on top. (10 points)

```
MATCH (customer:Customer)-[transaction:SHOPPED_AT]->(r:Retailer) WHERE
transaction.status = "Disputed"
RETURN r.name AS `Retailer Name`, count(transaction) AS `Disputed Transaction
Count`
ORDER BY `Disputed Transaction Count` DESC
```

Fig 9: Screenshot of disputed transactions for every retailer

7. Write the Cypher code to get the number of disputed transactions and the list of customer names for these disputed transactions for every retailer. The output should show the Retailer and the customer name(s). You can consider using a collect() container, but it is not required. (10 points)

```
MATCH (c:Customer)-[transaction:SHOPPED_AT]->(r:Retailer) WHERE
transaction.status = "Disputed"
RETURN r.name AS `Retailer Name`, collect(c.name) AS `Customer Names`,
count(transaction) AS `Disputed Transaction Count`
ORDER BY `Disputed Transaction Count` DESC
```

Fig 10: Screenshot of disputed transactions for every customer for every retailer

8. Write the Cypher code to get the number of disputed transactions for every customer that has more than one disputed transaction. (10 points)

```
MATCH (c:Customer)-[transaction:SHOPPED_AT]->(r:Retailer) WHERE
transaction.status = "Disputed"
WITH c.name AS `Customer Name`, count(transaction) AS `Disputed Transaction Count`
WHERE `Disputed Transaction Count` > 1
RETURN `Customer Name`,`Disputed Transaction Count`
ORDER BY `Disputed Transaction Count` DESC
```

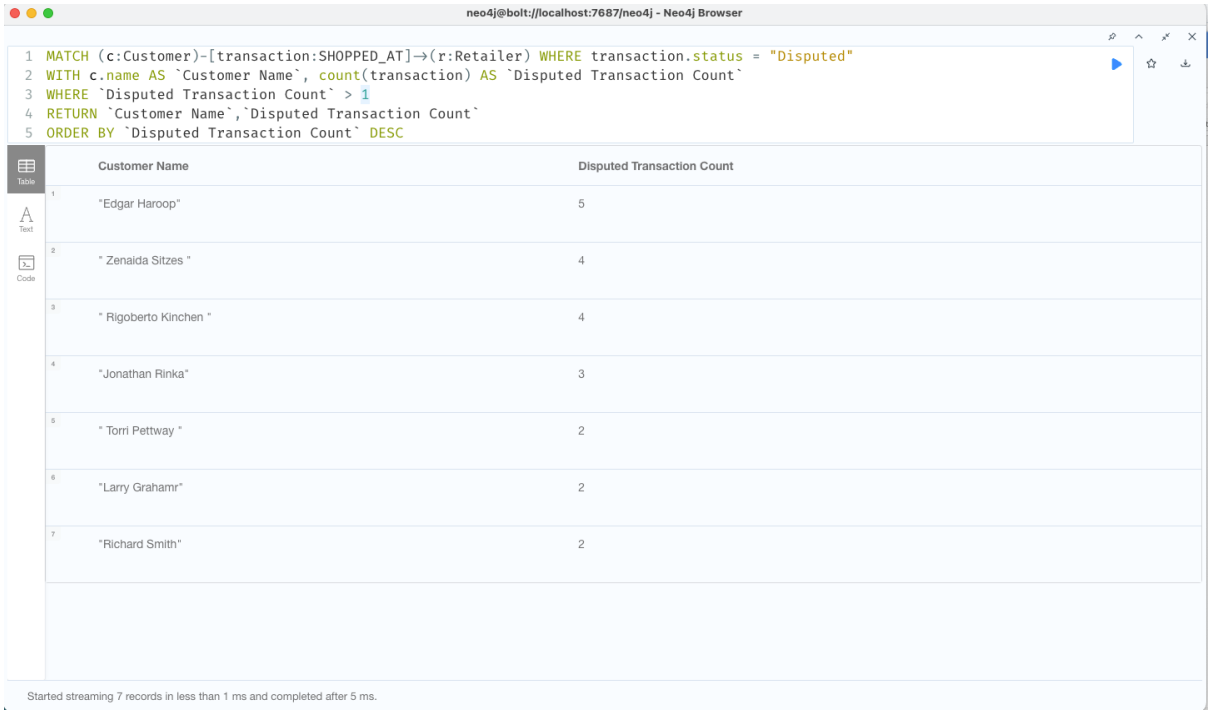


Fig 11: Screenshot of customers which have more than 1 disputed transaction

9. Write the Cypher code to get the list of stores on LaSalle street that have disputed transactions and the number of disputed transactions for every store; the store list must be sorted by store name in ascending order. (10 points)

```
MATCH (c:Customer)-[transaction:SHOPPED_AT]->(r:Retailer)
WHERE transaction.status = "Disputed" AND r.street CONTAINS "LaSalle"
RETURN r.name AS `Retailer Name`,count(transaction) AS `Disputed Transaction Count`
ORDER BY `Retailer Name` ASC
```

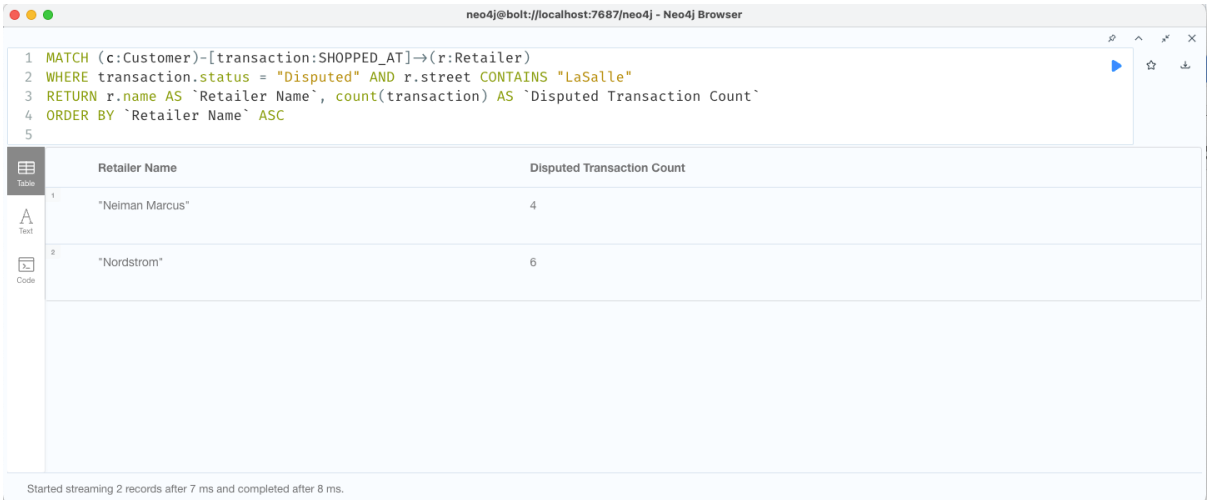


Fig 12: Screenshot of list of Retailers on LaSalle street that have disputed transactions

10. Write the Cypher code to get the list of Employees who work in at least 2 stores where disputed transactions reported in these retailers. (10 points)

```
MATCH (e:Employee)-[:WORKS_AT]->(r:Retailer)<-[:SHOPPED_AT {status:
'Disputed'}]-(:Customer)
WITH e, COUNT(DISTINCT r) AS numStores
WHERE numStores >= 2
RETURN e.name AS `Employee Name`
ORDER BY `Employee Name`
```

Fig 13: Screenshot of Employees who work in at least 2 stores where disputed transactions reported

11. Write the Cypher code to show the total amount customers spent shopping at retailers. List the customer's name and the total amount spent. (10 points)

```
MATCH (c:Customer)-[t:SHOPPED_AT]->(r:Retailer)
RETURN c.name AS `Customer Name`, SUM(toInteger(t.amount)) AS `Total Amount Spend`
ORDER BY `Total Amount Spend` DESC
```

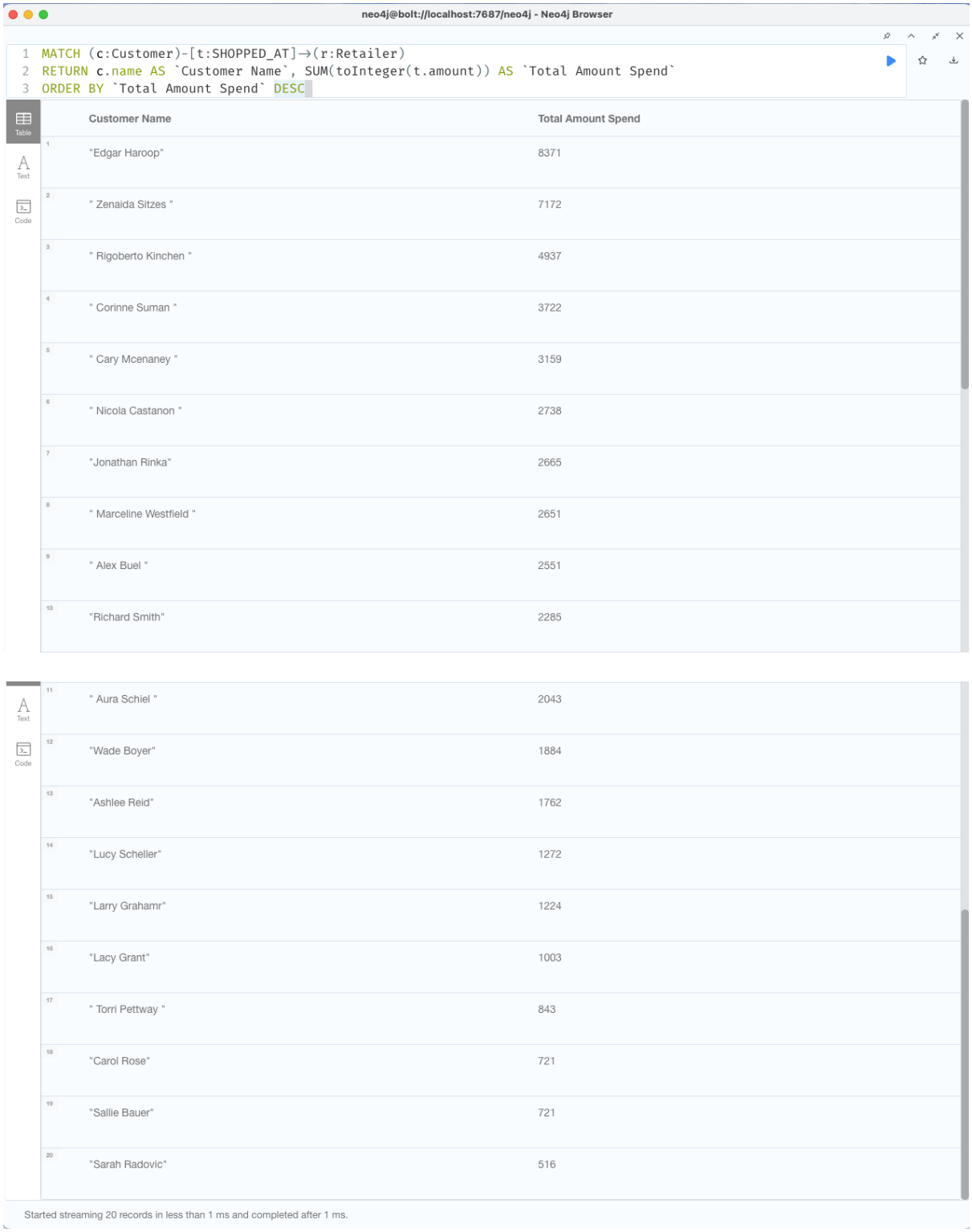


Fig 14: Screenshot of total amount spent by customers on shopping at retailers

12. Write the Cypher code to show the average amount spent at each Retailer. List the Retailer and the average amount spent. Sort with highest amount on top. (10 points)

```
MATCH (r:Retailer)<-[t:SHOPPED_AT]-()
WITH r, round(AVG(toFloat(t.amount)),2) AS `Average Amount Spent`
RETURN r.name AS `Retailer Name`, `Average Amount Spent`
ORDER BY `Average Amount Spent` DESC
```

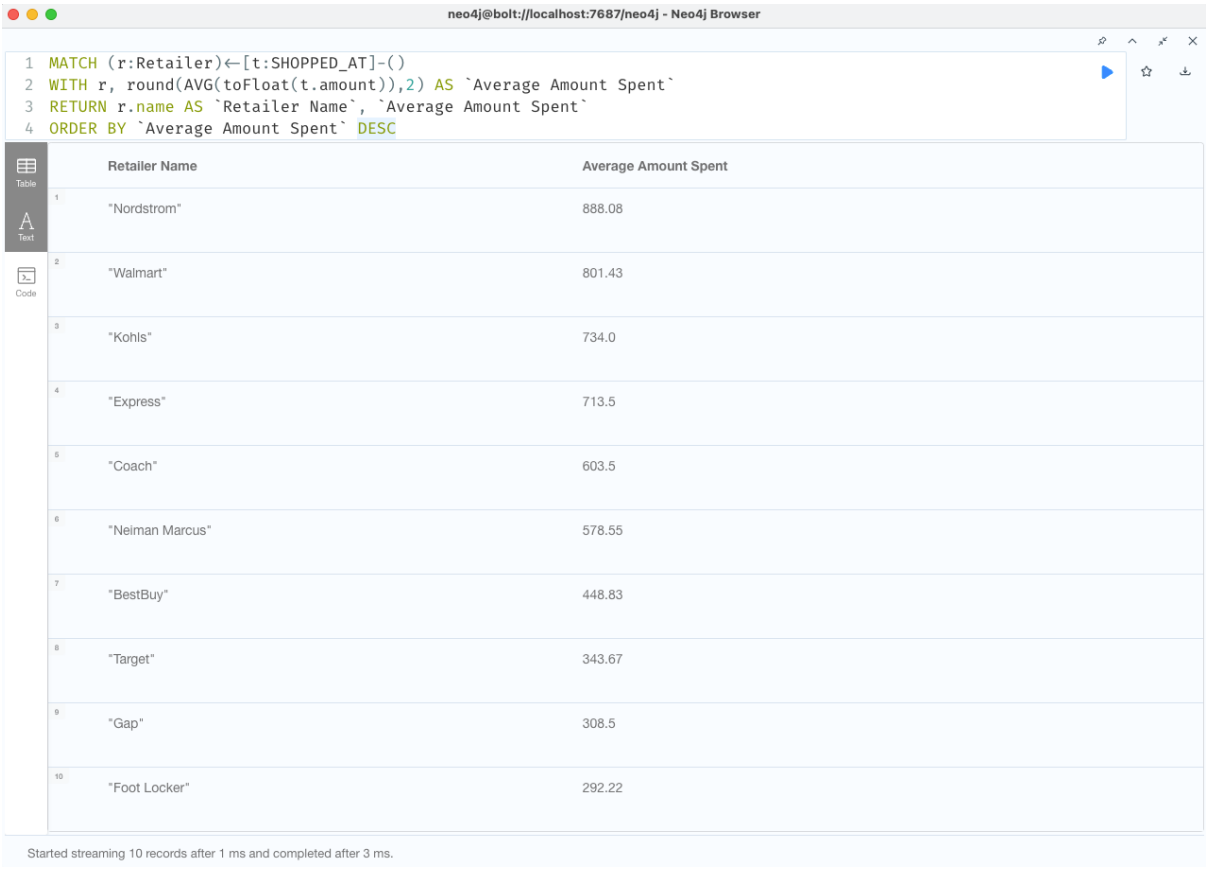


Fig 15: Screenshot to show the average amount spent at each Retailer