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Date: 05/26/2023

Q1:

A:

i

```
CREATE (:User);

LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_users.csv' AS row
CREATE (u:User {
user_id: row.user_id,
email: row.email,
first_name: row.first_name,
last_name: row.last_name,
joined_date: date(row.joined_date),
street: row.street,
city: row.city,
state: row.state,
zip: row.zip,
categories: split(row.categories,';')
});

CREATE INDEX FOR (u:User) ON (u.user_id);

CREATE (:Item);
LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_items.csv' AS row
CREATE (i:Item {
item_id:row.item_id,
category: row.category,
description: row.description,
name: row.name,
price: toFloat(row.price)
});
CREATE INDEX FOR (n:Item) ON (n.item_id);
```

Ii

```
LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_buyers.csv' AS row
MATCH (u:User {user_id:row.user_id})
SET u:Buyer;

LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_sells.csv' AS row
MATCH (u:User {user_id:row.user_id})
SET u:Seller,u.website = row.website;

LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_goods.csv' AS row
MATCH (i:Item {item_id:row.item_id})
SET i:Goods;

LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_services.csv' AS row
MATCH (i:Item {item_id:row.item_id})
SET i:Service, i.frequency = row.frequency;
```

Iii

```
LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_buys.csv' AS row
MATCH (item:Item {item_id: row.item_id})
MATCH (buyer:User {user_id: row.buyer_id})
CREATE (buyer)-[:BUYS {purchase_date: row.purchase_date}]->(item);

LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_
data_ratings.csv' AS row
MATCH (buyer:User {user_id: row.buyer_id})
MATCH (seller:User {user_id:row.seller_id})
```

```
CREATE (buyer)-[:RATED {
delivery: toFloat(row.delivery),
pricing: toFloat(row.pricing),
quality: toFloat(row.quality),
rating_date: date(row.rating_date)
}]->(seller);

LOAD CSV WITH HEADERS FROM
'file:///Users/bixingjian/Nutstore%20Files/Nutstore/UCI%202023S/CS122D/HW5/Interchange_data_sells.csv' AS row
MATCH (item:Item {item_id: row.item_id})
MATCH (seller:User {user_id: row.seller_id})
CREATE (seller)-[:SELLS {
list_date: date(row.list_date)
}]->(item)
```

B:

I

Ii

```
neo4j$ CALL db.labels;
```

Table | Text | Code

	label
1	"User"
2	"Item"
3	"Buyer"
4	"Goods"
5	"Service"

Started streaming 5 records after 2 ms and completed after 3 ms.

Q2:

```
1 MATCH (i:Item)
2 WITH i LIMIT 1000
3 UNWIND (keys(i)) AS itemKeys
4 RETURN DISTINCT itemKeys
5
```

Table | Text | Code

	itemKeys
1	"description"
2	"name"
3	"category"
4	"item_id"
5	"price"
6	"frequency"

Started streaming 6 records after 1 ms and completed after 8 ms.

Q3 A:

Query:

```
MATCH (item:Item)
RETURN item
ORDER BY item.price DESC
LIMIT 5

```

Results (screenshot below):

```
╒══════════════════════════════════════════════════════════════════════╕
│item                                                                  │
╞══════════════════════════════════════════════════════════════════════╡
│(:Item)                                                               │
├──────────────────────────────────────────────────────────────────────┤
│(:Goods:Item {item_id: "KAYLJ",price: 1999.97,name: "Pet Bed",category│
│: "Pet Supplies"})                                                    │
├──────────────────────────────────────────────────────────────────────┤
│(:Goods:Item {item_id: "VPIX6",price: 1999.84,name: "Handwash",descrip│
│tion: "Daily use helps to clean the skin, effectively eliminating acne│
│ and blackhead",category: "Beauty & Personal Care"})                  │
├──────────────────────────────────────────────────────────────────────┤
│(:Goods:Item {item_id: "JPL75",price: 1999.25,name: "Water and Food Bo│
│wls",description: "For your lovely pet",category: "Pet Supplies"})    │
├──────────────────────────────────────────────────────────────────────┤
│(:Item:Service {item_id: "SC1QX",price: 1999.19,name: "Canvas",descrip│
│tion: "Set of 10",category: "Arts, Crafts & Sewing",frequency: "quarte│
│rly"})                                                                │
└──────────────────────────────────────────────────────────────────────┘
```

Q3 B:

Query:

```
MATCH (u:User {user_id: 'JNP1L'})- [b:BUYS] → (item:Item)
RETURN item, b.purchase_date
ORDER BY item.item_id ASC;
```

Results (screenshot below):

item	b.purchase_date
(:Item:Service {item_id: "3C5S5",price: 514.47,name: "Barbie",description: "Unbox the package to find a soft, plush, sparkly doll!",category: "Toys & Games",frequency: "once"})	"2022-10-28"
(:Item:Service {item_id: "H78YV",price: 1610.32,name: "Chair",description: "for everyday use",category: "Others",frequency: "monthly"})	"2022-10-29"
(:Item:Goods {item_id: "ICCZ6",price: 856.59,name: "Notebook",description: "for everyday use",category: "Others"})	"2022-03-06"
(:Item:Service {item_id: "N1OKM",price: 412.25,name: "Bath Soap",category: "Beauty & Personal Care",frequency: "weekly"})	"2022-05-24"

Q3 C:

Query:

```
MATCH (u:User)
WHERE NOT (u)-[:BUYS]-() AND NOT (u)-[:SELLS]-()
RETURN COUNT(u) AS count
```

Results (screenshot below):

```
┌─────┐
│count│
╞═════╡
│804  │
└─────┘
```

Q3 D:

Query:

```
MATCH (seller:User)-[:SELLS]→(item:Item)←[:BUYS]-()
WITH seller.user_id AS sellerId, count(item) AS itemCount
WHERE itemCount > 5
RETURN sellerId, itemCount
ORDER BY itemCount DESC
```

Results (screenshot below):

sellerId	itemCount
"3FLK5"	8
"SZXQH"	7
"HVJUT"	6
"3KLP3"	6
"IJ61L"	6
"X9W2Z"	6

Q3 E:

Query:

```
MATCH (seller:User)-[:SELLS]→(item:Item {category: 'Electronics'})
MATCH (buyer:User)-[rating:RATED]→(seller)
WHERE rating.quality = 5
RETURN DISTINCT seller.first_name, seller.last_name
ORDER BY seller.first_name ASC, seller.last_name ASC
LIMIT 5;
```

Results (screenshot below):

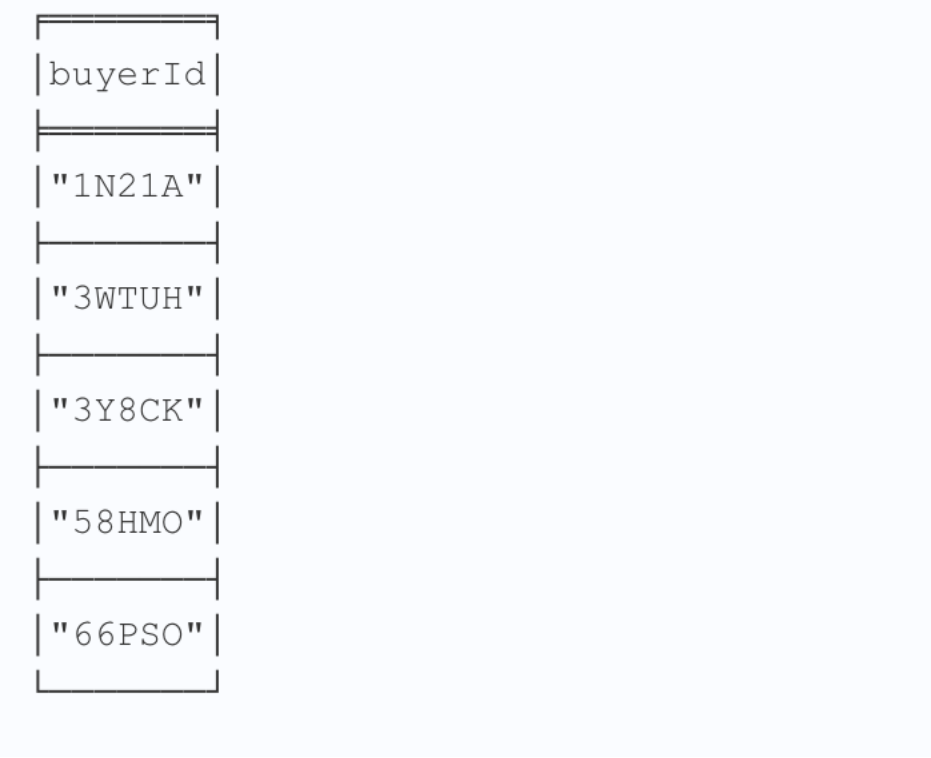
seller.first_name	seller.last_name
"Adrian"	"Blackwell"
"Adrian"	"Frey"
"Amanda"	"Bentley"
"Amanda"	"Sanchez"
"Amber"	"Ward"

Q3 F:

Query:

```
MATCH (buyer:User)-[:BUYS]→(:Item)
WITH buyer, count(*) AS itemsBought
WHERE itemsBought > 2
WITH buyer, itemsBought
MATCH (buyer)-[:RATED]→(rated:User)
WITH buyer, itemsBought, count(rated) AS usersRated
WHERE usersRated > 2
RETURN buyer.user_id AS buyerId
ORDER BY buyerId ASC
LIMIT 5
```

Results (screenshot below):

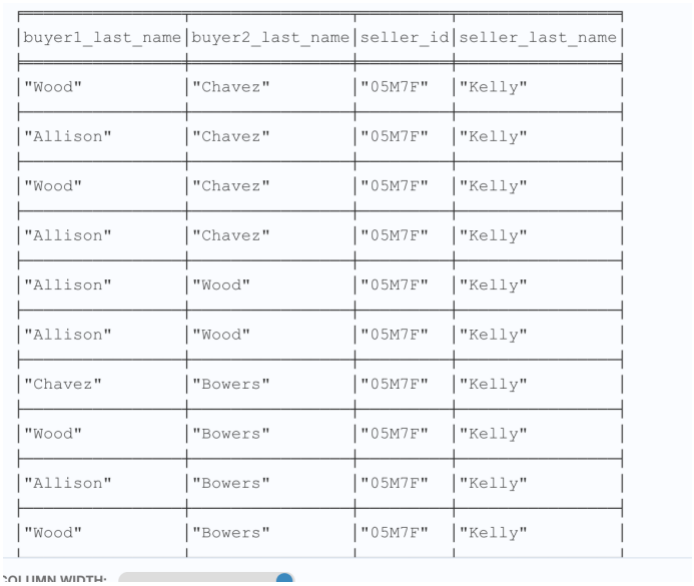


Q3 G:

Query:

```
MATCH (buyer1:User)-[rating1:RATED]→(seller:User)←[rating2:RATED]-(buyer2:User)
WHERE id(buyer1) < id(buyer2)
RETURN buyer1.last_name AS buyer1_last_name,
       buyer2.last_name AS buyer2_last_name,
       seller.user_id AS seller_id,
       seller.last_name AS seller_last_name
ORDER BY seller_id ASC
LIMIT 10
```

Results (screenshot below):



buyer1_last_name	buyer2_last_name	seller_id	seller_last_name
"Wood"	"Chavez"	"05M7F"	"Kelly"
"Allison"	"Chavez"	"05M7F"	"Kelly"
"Wood"	"Chavez"	"05M7F"	"Kelly"
"Allison"	"Chavez"	"05M7F"	"Kelly"
"Allison"	"Wood"	"05M7F"	"Kelly"
"Allison"	"Wood"	"05M7F"	"Kelly"
"Chavez"	"Bowers"	"05M7F"	"Kelly"
"Wood"	"Bowers"	"05M7F"	"Kelly"
"Allison"	"Bowers"	"05M7F"	"Kelly"
"Wood"	"Bowers"	"05M7F"	"Kelly"

Q3 H:

Query:

```
MATCH (buyer:User)-[:RATED]→(seller:User), (seller)-[:SELLS]→(:Goods), (seller)-[:SELLS]→(:Service)
RETURN DISTINCT buyer.last_name AS buyerLastName, seller.last_name AS sellerLastName
ORDER BY buyerLastName ASC, sellerLastName ASC
LIMIT 5
```

Results (screenshot below):

buyerLastName	sellerLastName
"Adams"	"Blackwell"
"Adams"	"Cole"
"Adams"	"Farley"
"Adams"	"Gonzales"
"Adams"	"Jones"

Q3 I:

i

Query:

```
MATCH (start:Item {item_id: "P8WKJ"})
MATCH (end:Item)
WHERE start <> end
RETURN min(length(shortestPath((start)-[*]-(end)))) AS shortestPathLength
```

Results (screenshot below):

```
╒═══════════════════════╕
│shortestPathLength     │
╞═══════════════════════╡
│2                      │
└───────────────────────┘
```

Ii

Query:

```
MATCH (start:Item {item_id: "P8WKJ"}), (end:Item)
WHERE start <> end
MATCH path = (start)-[*3]-(end)
RETURN end.item_id AS recommendedItemId
ORDER BY recommendedItemId ASC
LIMIT 5
```

Results (screenshot below):

```
╒═══════════════════════╕
│recommendedItemId      │
╞═══════════════════════╡
│"0QHP8"                │
├───────────────────────┤
│"0QHP8"                │
├───────────────────────┤
│"0VJPX"                │
├───────────────────────┤
│"0VJPX"                │
├───────────────────────┤
│"1PZ5H"                │
└───────────────────────┘
```