

CSE 4410
DATABASE MANAGEMENT SYSTEMS II LAB

Neo4J Scenario

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- Let's assume you want to build a recommendation engine for your online bookshop. Your online bookshop sells a variety of books and you want to improve the customer's buying experience by recommending books that they are likely to purchase.

This type of scenario generally includes three types of nodes-

- Customer: Contains information about customers such as customer ID, name, phone_no, and demographic information like age, gender, country etc.
- Author: Contains information about authors such as name, country etc.
- Book: Contains information like title, genre, published_year, price etc.

And the relations are the following-

- Customers purchase or rate books. The purchase information also includes amount. The rating information includes rating & rating_date.
- Customer can also rate authors. And this includes rating & rating_date.
- Authors write books.
- Customer can follow Authors.
- Customer can follow Customers.

Now, your task is to:

1. Customer creation: (3)

customer_id	name	phone_no	age	gender	country
102	John	123-456-7890	30	Male	USA
123	Alice	987-654-3210	25	Female	UK
311	Bob	555-555-5555	40	Male	Canada

2. Author creation: (1)

author_name	country
J.K. Rowling	UK

3. Book creation: (2)

isbn	title	genre	published_year	price
1408855652	Harry Potter and the Philosopher's Stone	Fantasy	1997	9.99
0439064866	Harry Potter and the Chamber of Secrets	Fantasy	1998	10.99

4. Create 'wrote' relation: (2)

author_name	wrote	isbn
J.K. Rowling	->	1408855652
J.K. Rowling	->	0439064866

5. Create Book with Author: (hint: creating nodes and edge at a time) (2*2=4)

author_name	country	wrote	isbn	title	genre	published_year	price
Stephen King	USA	->	1982102319	The Shining	Horror	1977	12.99
Agatha Christie	UK	->	0062073492	Murder on the Orient Express	Mystery	1934	8.99

6. Create 'purchased' relation:

(4)

customer_id	purchased(amount)	isbn
123	-> (3)	1408855652
123	-> (1)	0439064866
311	-> (1)	0062073492
102	-> (1)	0062073492

7. Create 'rated' relation:

(6)

customer_id	rated(rating , rating_date)	isbn/author_name
123	-> (5, 2021-02-11)	1408855652
311	-> (3, 2022-04-19)	1408855652
311	-> (4, 2024-01-09)	0062073492
102	-> (5, 2023-04-04)	0062073492
123	-> (5, 2021-03-12)	J.K. Rowling
123	-> (2, 2023-03-18)	Stephen King

8. Create 'follows' relation:

(6)

customer_id	follows	customer_id/author_name
123	->	311
311	->	123
311	->	102
123	->	J.K. Rowling
311	->	Agatha Christie
102	->	Agatha Christie

9. Make a data dump of the database.

10. Data Retrieval

(3*1+5*2=13)

- Find all the 'rated' books node with associated the customers.
- Find all the 'follows' relation.
- Find the average rating of 'Harry Potter and the Philosopher's Stone'.
- Find the name of the second expensive book.
- Find the name of customer who bought books of the authors they follow along with the amount.
- Find the customer who both rated the books of J.K. Rowling and follows her.
- Find the latest rated author.
- Find the name of authors who write books of Mystery or Fantasy genre along with author's rating. [hint: use optional before the MATCH which may or may not be present]

11. Data Update

(2*1+1*2=4)

- Add a new label playwright for 'Agatha Christie'.
- Modify the published year to 1980 for the book titled "The Shining."
- Update the relationship attribute from "rating" to "star" while retaining the same value for the rating attribute in the relationship between customers and authors.

12. Data Delete

 $(2*1+1*2=4)$

- (a) Delete the author 'Stephen King'.
- (b) Delete all the customer to customer 'follows' relation.
- (c) Delete all the rating (relation) that occurred before 2022.