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DBMS TASK - 9 REPORT

Title: CRUD operations in Graph databases

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TASK 9

CRUD operations in Graph databases

AIM:

To perform CRUD operations like creating, inserting, querying, finding, deleting operations on graph spaces.

The steps to get started with Neo4j's Aura Graph Database:

Step1: Copy and paste the following link into your web browser:

<https://neo4j.com/cloud/platform/aura-graph-database/?ref=docs-get-started-dropdown>

Step2: Click on "Start Free."

Step3: Choose the option to "Continue with Google."

Step4: Click the "Open" button.

Step5: After clicking "Open," a text file will be automatically downloaded. This file contains your user ID and password details.

Step6: Copy the password from the downloaded text file and paste it where required.

Step7: Close the "Get started with Neo4j with beginner guides" if it's open.

Step8: You're now ready to begin practicing with the Graph Database.

Create Node with Properties

Properties are the key-value pairs using which a node stores data. Create a node with properties using the CREATE clause and need to specify these properties separated by commas within the flower braces "{ }".

Syntax

```
CREATE (node:label{ key1: value, key2: value, . . . . . }) return node
```

To verify the creation of the node, type and execute the following query in the dollar prompt.

Syntax:

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

Creating Relationships

To create a relationship using the CREATE clause and specify relationship within the square braces “[]” depending on the direction of the relationship it is placed between hyphen “ - ” and arrow “ → ” as shown in the following syntax.

Syntax:

```
CREATE (node1)-[:RelationshipType]->(node2)
```

Syntax:

```
MATCH (a:LabeofNode1), (b:LabeofNode2)
```

```
WHERE a.name = "nameofnode1" AND b.name = " nameofnode2"
```

```
CREATE (a)-[: Relation]->(b) RETURN a,b
```

Deleting a Particular Node

To delete a particular node and need to specify the details of the node in the place of “n” in the above query.

Syntax:

```
MATCH (node:label {properties . . . . . }) DELETE node
```

Create a graph database for student course registration, create student and dept node and insert values of properties.

Create a CrickerBoard Node:

```
create(cb:CricketBoard{BoardID:'BID01',Name:'Chennai Cricket Board', Address:'Chennai',  
Phone:9988776699}) returncb
```

Create Team Nodes:

```
create(t1:Team{teamID:'CCB01',BoardID:'BID01',name:'ABS EXPRESS',  
Coach:'G.D.RAMESH', Captain:'SAMPATH KUMAR'}) return t1
```

```
create(t2:Team{teamID:'CCB02',BoardID:'BID01',name:'AVG EXPRESS',Coach:  
'T.KARTHIKH', Captain:'Y.JOHN'}) return t2
```

Create Player Nodes:

```
create(p1:Player{PlayerID:'1',TeamID:'CCB01',Name:'Raj',Age:23,DateofBirth:'29-JUN-1996',  
PlayingRole:'Bowler',email:'rajn@gmail.com'}) return p1
```

```
create(p2:Player{PlayerID:'33',TeamID:'CCB01',Name:'Anand',Age:23,DateofBirth:'02-JAN-  
1999', PlayingRole:'Batsman',email:'balajid@gmail.comm'}) return p2
```

```
create(p3:Player{PlayerID:'65',TeamID:'CCB02',Name:'Suresh',Age:27,DateofBirth:'02-JUN-1996', PlayingRole:'Batsman',email:'sureshd@gmail.comm'}) return p3
```

```
create(p4:Player{PlayerID:'75',TeamID:'CCB02',Name:'Rohit',Age:33,DateofBirth:'02-JUN-1991', PlayingRole:'Batsman',email:'srohit@gmail.comm'}) return p4
```

Creating Relationship among CricketBoard and Teams:

```
match(cb:CricketBoard{BoardID:'BID01'}),(t1:Team{teamID:'CCB01'}) create(cb)-[r:has]->(t1) return cb,r,t1
```

```
match(cb:CricketBoard{BoardID:'BID01'}),(t2:Team{teamID:'CCB02'}) create(cb)-[r:has]->(t2) return cb,r,t2
```

Creating Relationship among Players and Teams:

```
match(p1:Player{PlayerID:'1'}),(t1:Team{teamID:'CCB01'}) create(p1)-[r1:playfor]->(t1) return p1,r1,t1
```

```
match(p2:Player{PlayerID:'33'}),(t1:Team{teamID:'CCB01'}) create(p2)-[r2:playfor]->(t1) return p2,r2,t1
```

```
match(p3:Player{PlayerID:'65'}),(t2:Team{teamID:'CCB02'}) create(p3)-[r3:playfor]->(t2) return p3,r3,t2
```

```
match(p4:Player{PlayerID:'75'}),(t2:Team{teamID:'CCB02'}) create(p3)-[r4:playfor]->(t2) return p4,r4,t2
```

Display All nodes: match(n) return n

Output:

The screenshot displays the Neo4j Aura interface. On the left, the 'Database Information' panel shows 8 nodes (CricketBoard, Player, Team) and 7 relationships (has, playfor). The central query editor shows the query 'neo4j\$ match(n) return n'. The results are displayed in a graph view, showing a network of nodes and relationships. The 'Results Overview' panel on the right shows the distribution of nodes: CricketBoard (1), Player (4), and Team (2). The bottom status bar indicates the system temperature is 35°C and the date is 06-10-2023.

OUTPUT:

The screenshot shows the Neo4j Workspace interface. The left sidebar displays 'Database Information' with 8 nodes (CricketBoard, Player, Team) and 7 relationships (has, playfor). The main area shows a query result for the query `neo4j$ match(n) return n`. The result is displayed as a graph with 8 nodes and 7 relationships. The 'Node Details' panel on the right shows the details for a 'Team' node with the following properties:

Property	Value
<id>	6
BoardID	"BID01"
teamID	"CCB01"
name	"ABS EXPRESS"
Captain	"SAMPATH KUMAR"
Coach	"G.D.RAMESH"

Retrieve particular player details:

`match(p:Player{PlayerID:'33'}) return p`

The screenshot shows the Neo4j Workspace interface. The left sidebar displays 'Database Information' with 8 nodes (CricketBoard, Player, Team) and 7 relationships (has, playfor). The main area shows a query result for the query `neo4j$ match(p:Player{PlayerID:'33'}) return p`. The result is displayed as a graph with 1 node and 0 relationships. The 'Node Details' panel on the right shows the details for a 'Player' node with the following properties:

Property	Value
<id>	1
PlayerID	"33"
PlayingRole	"Batsman"
DateofBirth	"02-JAN-1999"
TeamID	"CCB01"
email	"balajid@gmail.comm"
Age	23
Name	"Anand"

Update particular player details:

`match(p:Player{PlayerID:'1'}) set p.age=27 return p`

Output:

The screenshot displays the Neo4j Aura workspace interface. On the left, the 'Database Information' panel shows 8 nodes (CricketBoard, Player, Team) and 7 relationships (has, playfor). The 'Property keys' section lists various attributes like Address, Age, age, BoardID, Captain, Coach, data, DateofBirth, did, dname, eid, email, ename, id, name, Name, nodes, Phone, PlayerID, and PlayingRole. The main query editor shows the query: `neo4j $ match(p:Player{PlayerID:'1'}) set p.age=27 return p`. The results are displayed in a graph view, showing a single node labeled 'Raj' with a blue border. The 'Node Details' panel on the right shows the properties of the node: <id> 8, PlayerID '1', PlayingRole 'Bowler', DateofBirth '29-JUN-1996', TeamID 'CCB01', age 27, email 'rajn@gmail.com', and Name 'Raj'.

Delete particular player from the team:

`match(p:Player{PlayerID:'33'}) delete p`

The screenshot displays the Neo4j Aura workspace interface. The main query editor shows the query: `neo4j $ match(p:Player{PlayerID:'33'}) delete p`. The results section shows an error message: **Neo.ClientError.Schema.ConstraintValidationFailed** with the text: "Cannot delete node<1>, because it still has relationships. To delete this node, you must first delete its relationships." The left sidebar shows the database information, including 8 nodes and 7 relationships.

Result:

Thus the CRUD operations like creating, inserting, querying, finding, deleting operations on graph spaces were executed successfully.