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## Practical 7: CRUD operations using Neo4j

### Create Person, City, and Hobby Nodes

```
// Create Person nodes
CREATE (:Person {name: 'Alice', age: 30})
CREATE (:Person {name: 'Bob', age: 35})
CREATE (:Person {name: 'Charlie', age: 28})
```

```
// Create City nodes
CREATE (:City {name: 'London'})
CREATE (:City {name: 'New York'})
CREATE (:City {name: 'Paris'})
```

```
// Create Hobby nodes
CREATE (:Hobby {name: 'Reading'})
CREATE (:Hobby {name: 'Hiking'})
CREATE (:Hobby {name: 'Painting'})
```

### Define Relationships

```
// Define relationships
// Alice lives in London and likes Reading
CREATE (alice)-[:LIVES_IN]->(london)
CREATE (alice)-[:LIKES]->(reading)

// Bob lives in New York and likes Hiking
CREATE (bob)-[:LIVES_IN]->(newYork)
CREATE (bob)-[:LIKES]->(hiking)

// Charlie lives in Paris and likes Painting
CREATE (charlie)-[:LIVES_IN]->(paris)
CREATE (charlie)-[:LIKES]->(painting)
```

Added 9 labels, created 18 nodes, set 12 properties, created 6 relationships, completed after 6 ms.

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## Add New Nodes and Relationships

// Create a new person

**CREATE** (:Person {name: 'David', age: 25})

// Create a new city

**CREATE** (:City {name: 'Berlin'})

// Create a new hobby

**CREATE** (:Hobby {name: 'Gardening'})

// Create a relationship: David lives in Berlin and likes Gardening

**CREATE** (david)-[:LIVES\_IN]->(berlin)

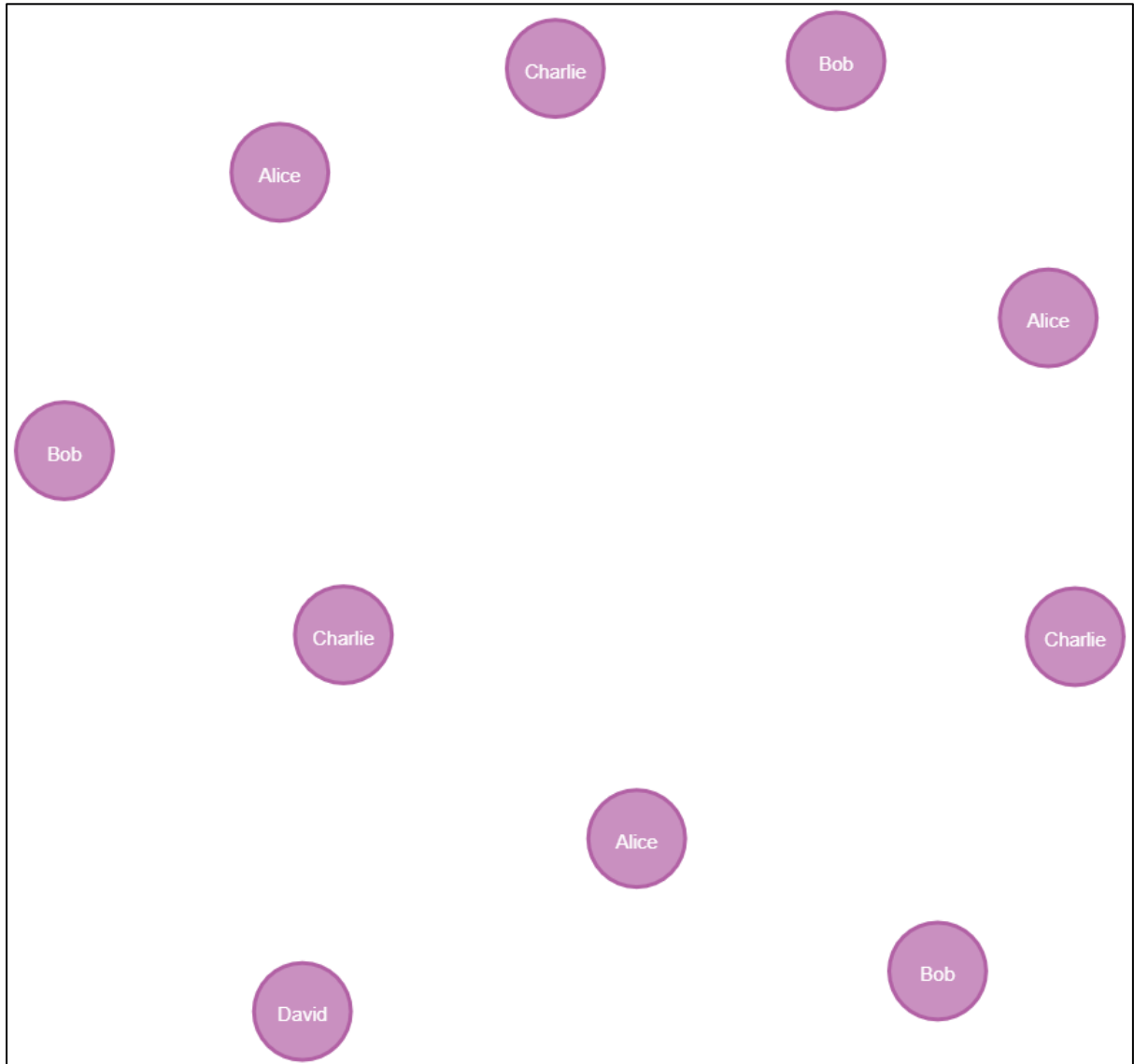
**CREATE** (david)-[:LIKES]->(gardening)

Added 3 labels, created 6 nodes, set 4 properties, created 2 relationships, completed after 21 ms.
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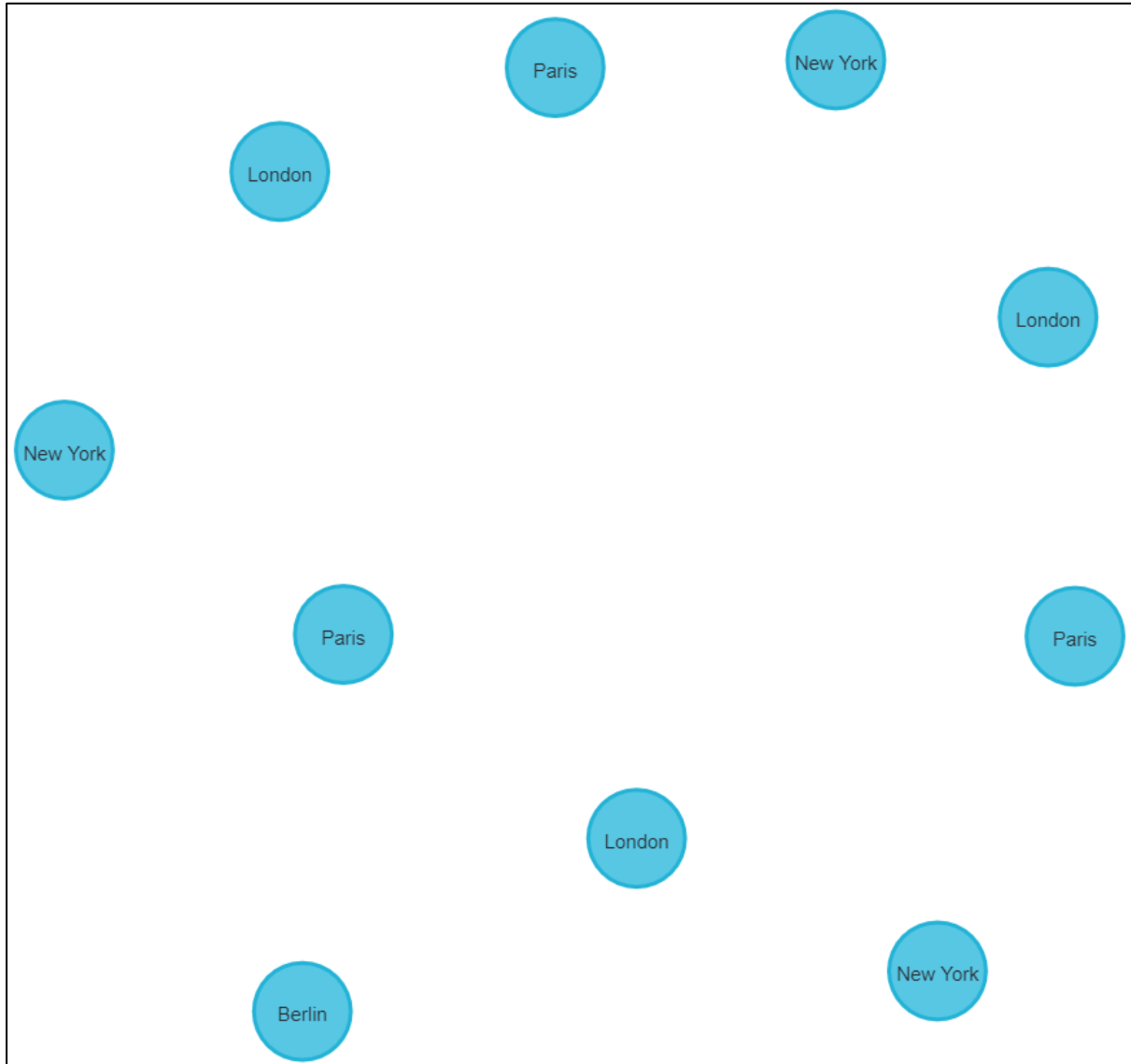
## Retrieve Data

```
// Retrieve all persons  
MATCH (p:Person)  
RETURN p
```



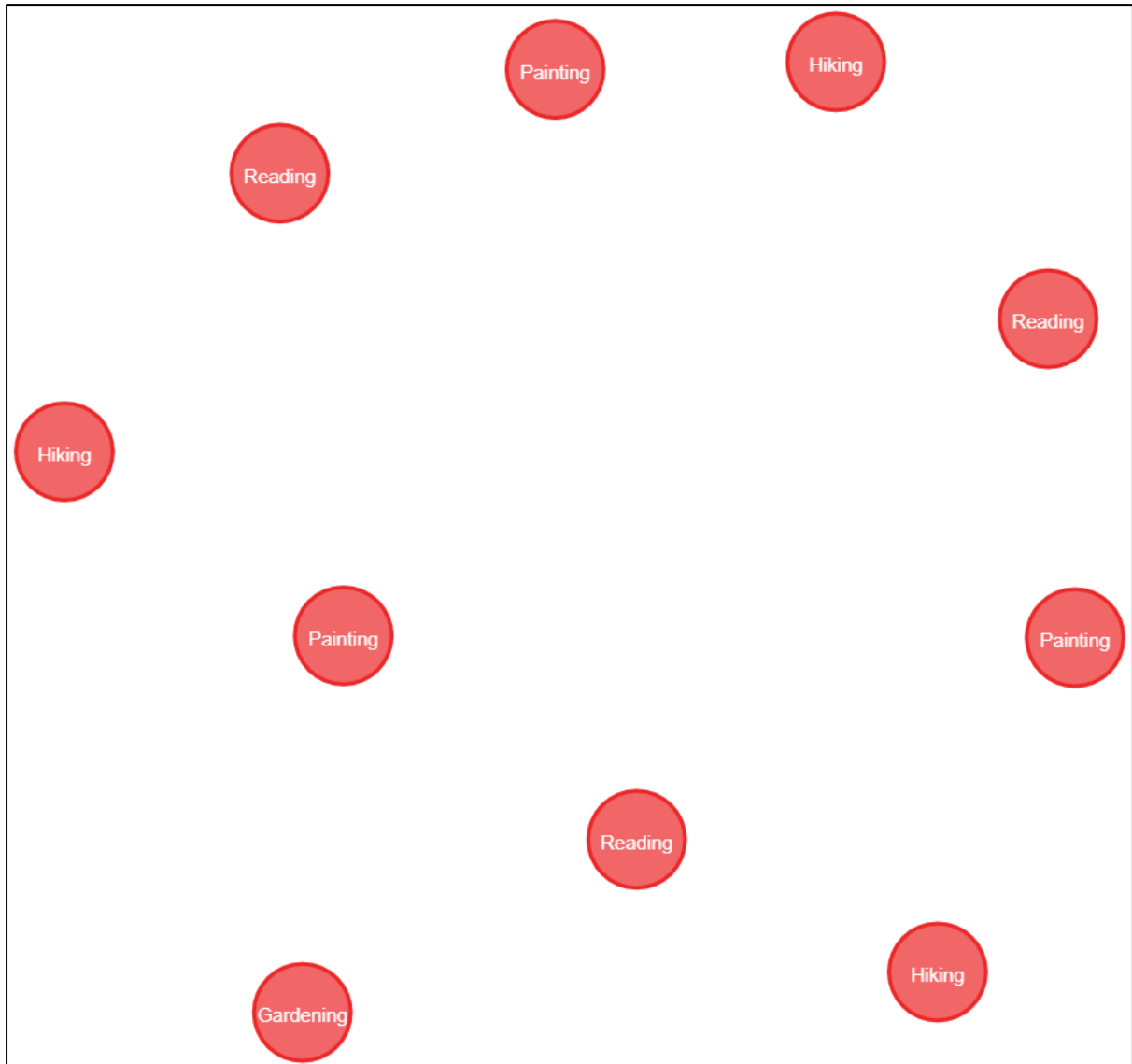
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// Retrieve all cities  
**MATCH** (c:City)  
**RETURN** c



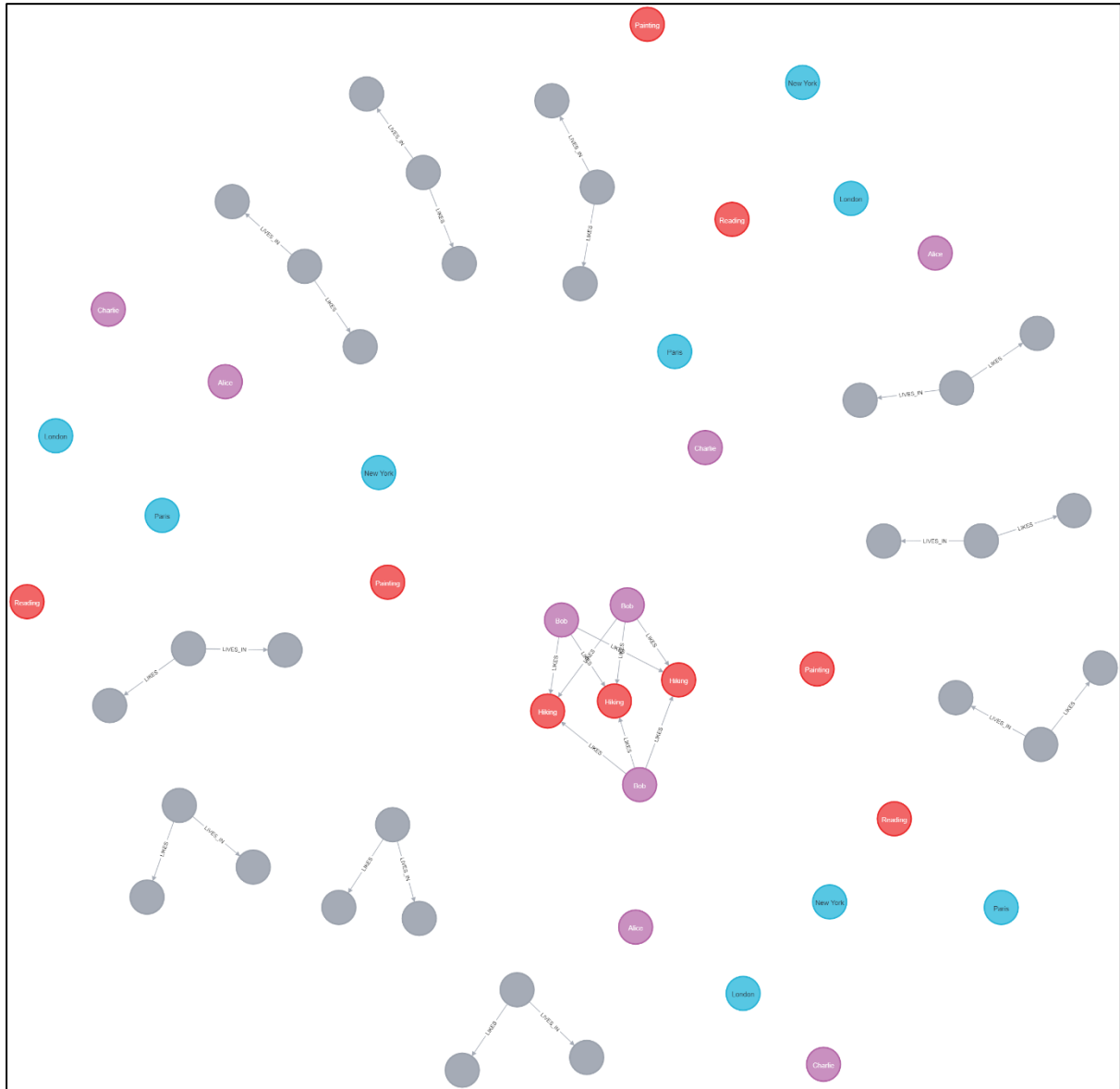
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// Retrieve all hobbies  
**MATCH** (h:Hobby)  
**RETURN** h



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MATCH (n)  
 OPTIONAL MATCH (n)-[r]->(m)  
 RETURN n, r, m



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## Update Data

```
// Update Alice's age  
MATCH (alice:Person {name: 'Alice'})  
SET alice.age = 31
```

Set 3 properties, completed after 31 ms.

## Modify Relationships

```
// Add a new hobby for Bob  
MATCH (bob:Person {name: 'Bob'})  
MERGE (hiking:Hobby {name: 'Hiking'})  
CREATE (bob)-[:LIKES]->(hiking)  
Created 9 relationships, completed after 26 ms.
```

## Delete Nodes and Relationships

```
// Delete a specific person (e.g., David) and all relationships associated with them  
MATCH (david:Person {name: 'David'})  
DETACH DELETE david
```

Deleted 1 node, completed after 15 ms.

```
// Delete a specific city (e.g., Berlin) and all relationships associated with it  
MATCH (berlin:City {name: 'Berlin'})  
DETACH DELETE berlin
```

Deleted 1 node, completed after 15 ms.

```
// Delete a specific hobby (e.g., Gardening) and all relationships associated with it  
MATCH (gardening:Hobby {name: 'Gardening'})  
DETACH DELETE gardening
```

Deleted 1 node, completed after 17 ms.