Question 6: Cypher CRUD operations / MongoDB Modelling

IT-NSQ1Y-S22

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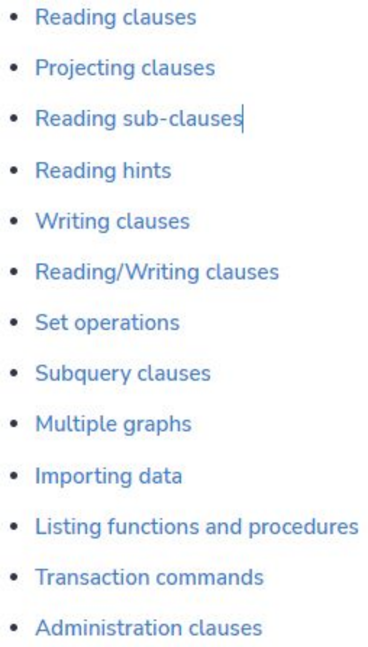
Explain the clauses of the Cypher language and demonstrate how it is used for creating and updating data

Clauses of the Cypher language

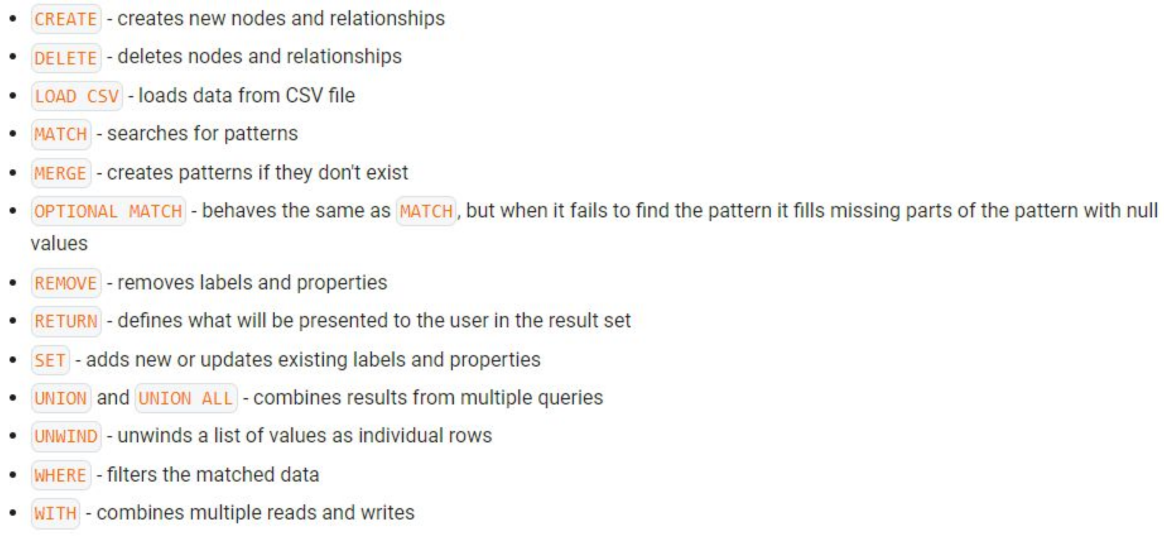
- The Cypher language enables users to perform standard database operations by using clauses.
- There are a total of 13 categories for all clauses.



- Reading clauses
- Projecting clauses
- Reading sub-clauses
- Reading hints
- Writing clauses
- Reading/Writing clauses
- Set operations
- Subquery clauses
- Multiple graphs
- Importing data
- Listing functions and procedures
- Transaction commands
- Administration clauses

Clauses of the Cypher language

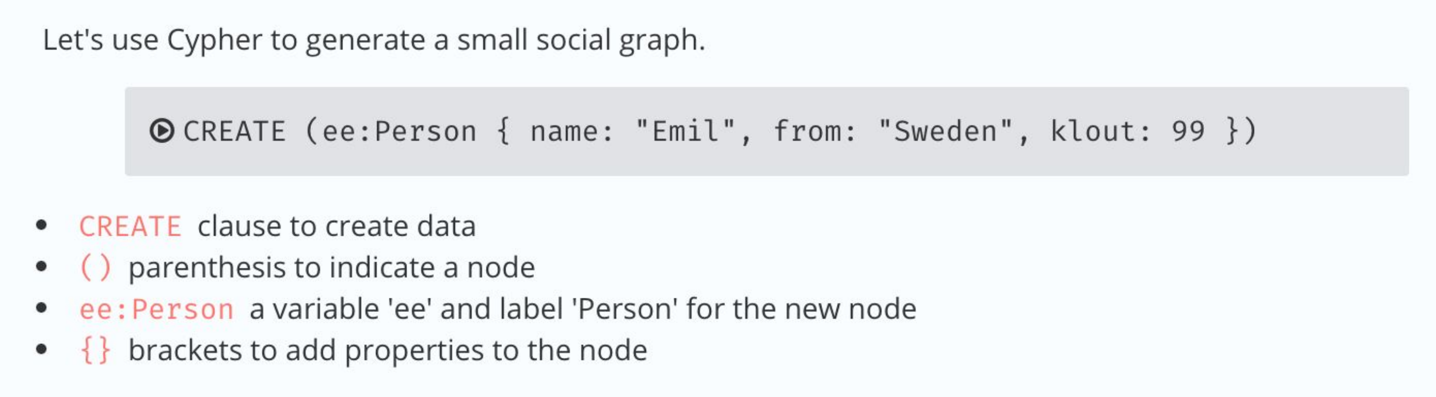
- Most important clauses are:



- `CREATE` - creates new nodes and relationships
- `DELETE` - deletes nodes and relationships
- `LOAD CSV` - loads data from CSV file
- `MATCH` - searches for patterns
- `MERGE` - creates patterns if they don't exist
- `OPTIONAL MATCH` - behaves the same as `MATCH`, but when it fails to find the pattern it fills missing parts of the pattern with null values
- `REMOVE` - removes labels and properties
- `RETURN` - defines what will be presented to the user in the result set
- `SET` - adds new or updates existing labels and properties
- `UNION` and `UNION ALL` - combines results from multiple queries
- `UNWIND` - unwinds a list of values as individual rows
- `WHERE` - filters the matched data
- `WITH` - combines multiple reads and writes

Clauses of the Cypher language: CREATE

- The **CREATE** clause is used to create nodes and relationships.



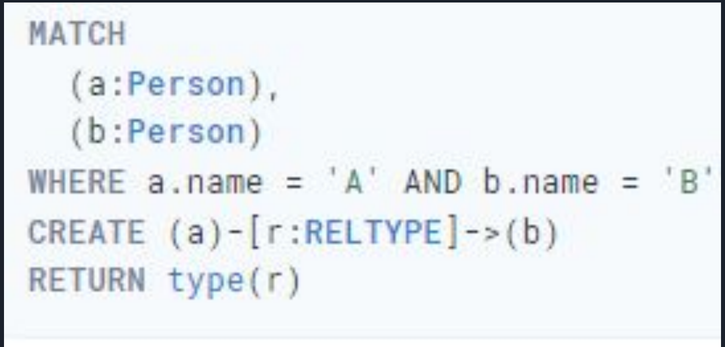
Let's use Cypher to generate a small social graph.

```
CREATE (ee:Person { name: "Emil", from: "Sweden", klout: 99 })
```

- `CREATE` clause to create data
- `()` parenthesis to indicate a node
- `ee:Person` a variable 'ee' and label 'Person' for the new node
- `{}` brackets to add properties to the node

Clauses of the Cypher language: CREATE

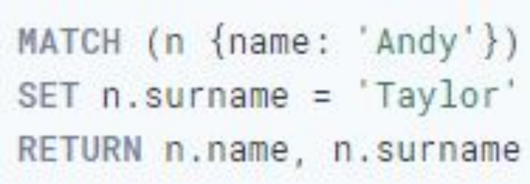
- The **CREATE** clause used to create relationships.
- To create a relationship between two nodes, we first get the two nodes. Once the nodes are loaded, we simply create a relationship between them.



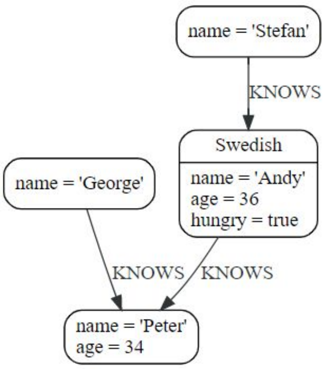
```
MATCH
  (a:Person),
  (b:Person)
WHERE a.name = 'A' AND b.name = 'B'
CREATE (a)-[r:RELTYPE]->(b)
RETURN type(r)
```

Clauses of the Cypher language: SET

- The **SET** clause is used to update labels on nodes and properties on nodes and relationships.
- Use SET to set a property on a node or relationship:

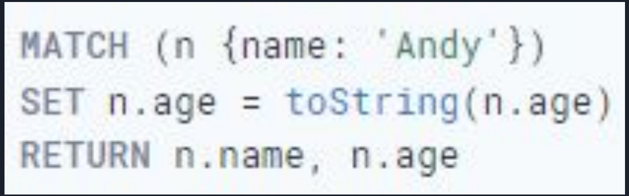


```
MATCH (n {name: 'Andy'})
SET n.surname = 'Taylor'
RETURN n.name, n.surname
```



Clauses of the Cypher language: SET

- SET can be used to update a property on a node or relationship. This query forces a change of type in the age property:



```
MATCH (n {name: 'Andy'})
SET n.age = toString(n.age)
RETURN n.name, n.age
```

Present your hand-in to course assignment 2 with a focus on modelling and creating the database