

Constraints syntax

CIP

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- Cypher is *schema optional*
 - Example: two nodes with the same label(s) may have a different set of properties
- Query planning becomes harder, valid expectations on data becomes weaker

Enter **constraints**: force the graph to adhere to certain shapes.

Proposal

Syntax outline:

```
ADD CONSTRAINT <name>  
FOR <pattern>  
REQUIRE <expression>
```

```
DROP CONSTRAINT <name>
```

- Constraints are *named*
 - User-provided names are optional
 - Provides easy handle for dropping
- Re-use pattern syntax from MATCH
- No formal restrictions on expressions

Proposal -- NODE KEY and Uniqueness

REQUIRE functions similarly to WHERE, with two exceptions:

- UNIQUE
 - **FOR (n:Person) REQUIRE UNIQUE n.name**
 - Limited to one property expression
- NODE KEY
 - **FOR (n:Person) REQUIRE NODE KEY n.name, n.email**
 - One or more property expressions
 - Nodes in the domain must have the listed properties defined
 - Combination of properties must be unique

Proposal -- return record

- System-generated names must be fed back to user
 - Scripting scenario

Result record contains three fields:

- name
- definition
 -
- details
 - unspecified

Examples

- Label co-existence constraint
 - **ADD CONSTRAINT** programmers_are_people_too
FOR (p:Programmer)
REQUIRE p:Person
- Cardinality constraints
 - **ADD CONSTRAINT** spread_the_love
FOR (p:Person)
REQUIRE size((p)-[:LOVES]->()) > 3
- Property value limitations
 - **ADD CONSTRAINT** road_width
FOR ()-[r:ROAD]-()
REQUIRE 5 < r.width < 50

Examples

- Node key
 - **ADD CONSTRAINT** person_details
FOR (p:Person)
REQUIRE NODE KEY p.name, p.email, p.address
- Uniqueness
 - **ADD CONSTRAINT** unique_products
FOR (p:Product)
REQUIRE **UNIQUE** p.serialNbr