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The database for the Web

Orient DB

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Oficina de Banco de Dados – 2013/02

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Apresentação

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- **Motivações**
- **Sobre o OrientDB**
- **Autopromoção**
- **Recursos**
- **Armazenamento**
- **Funcionalidades**

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Motivações...

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- Porque outra base de dados?
- Milhares hoje, centenas de milhares amanhã
- + social + relações + interconexões = **Grafo**
- Aplicações modernas requerem mais **I/O** ao invés de **CPU**

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Sobre o OrientDB

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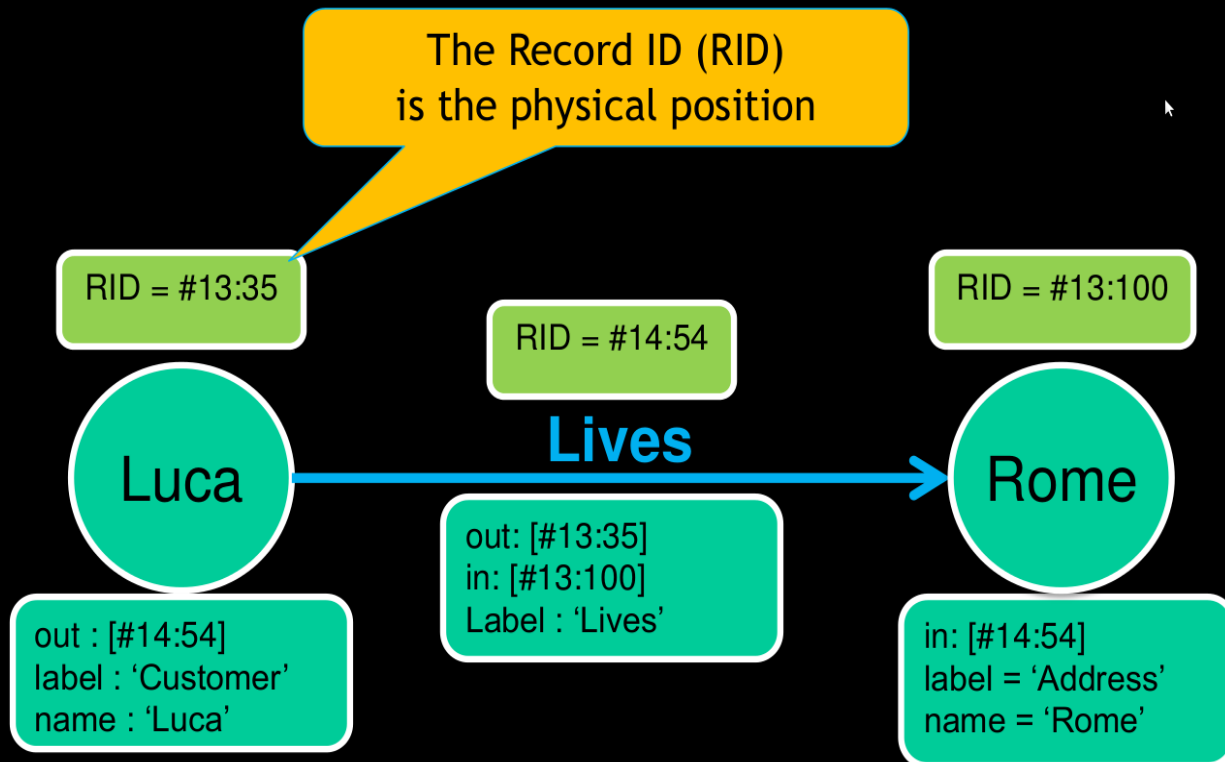
- **Open Source (Apache2 License) Graph Database: modelo híbrido de **Document Database** e **Object Orientation****
- **Desenvolvido por Luca Garulli**
- **Escrito em Java**
- **+ de 12 anos de pesquisa**
- **+ de 1 ano de desenvolvimento**

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Sobre o OrientDB Grafos

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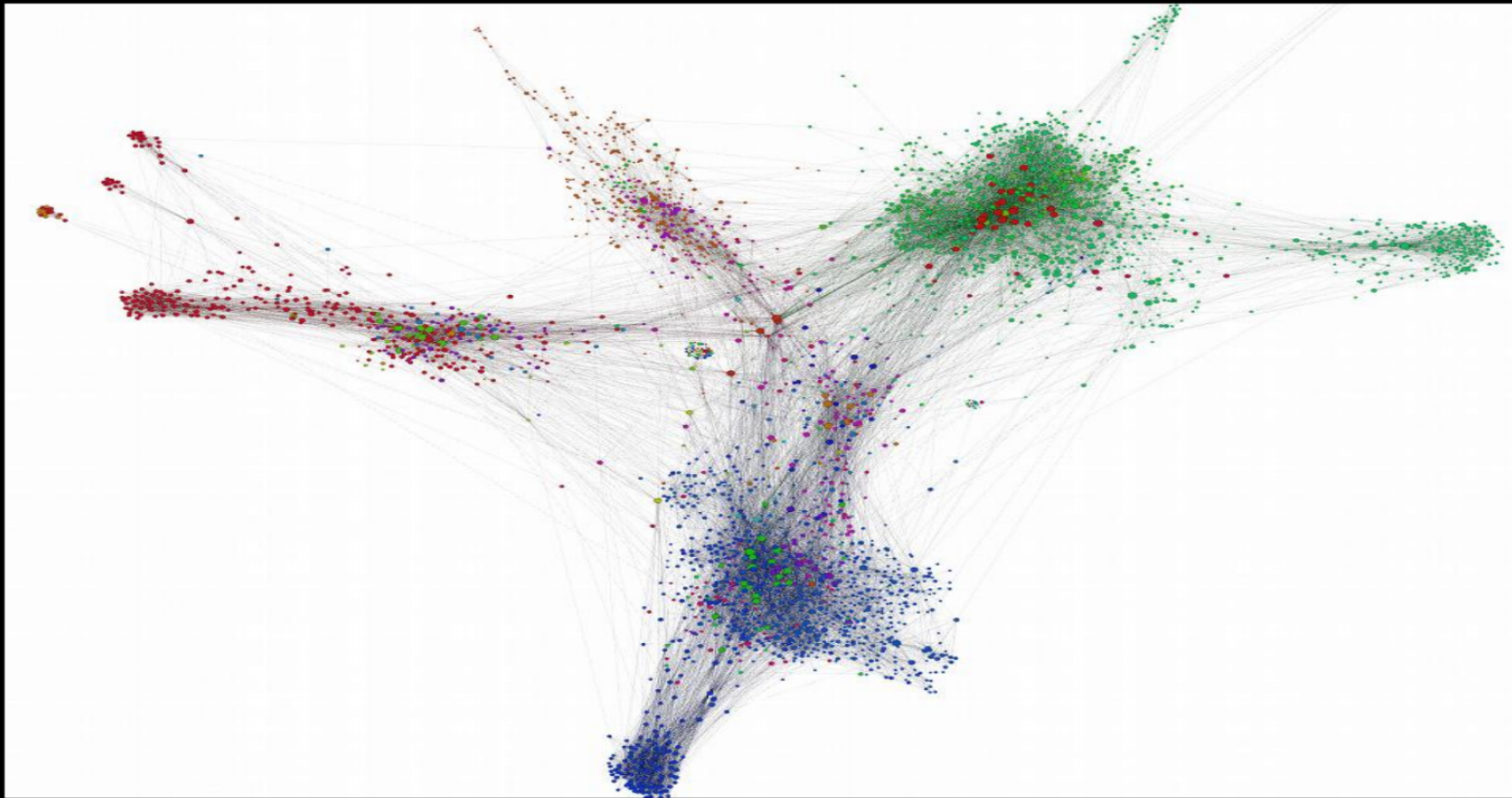
OrientDB: traverse a relationship



Sobre o OrientDB Grafos

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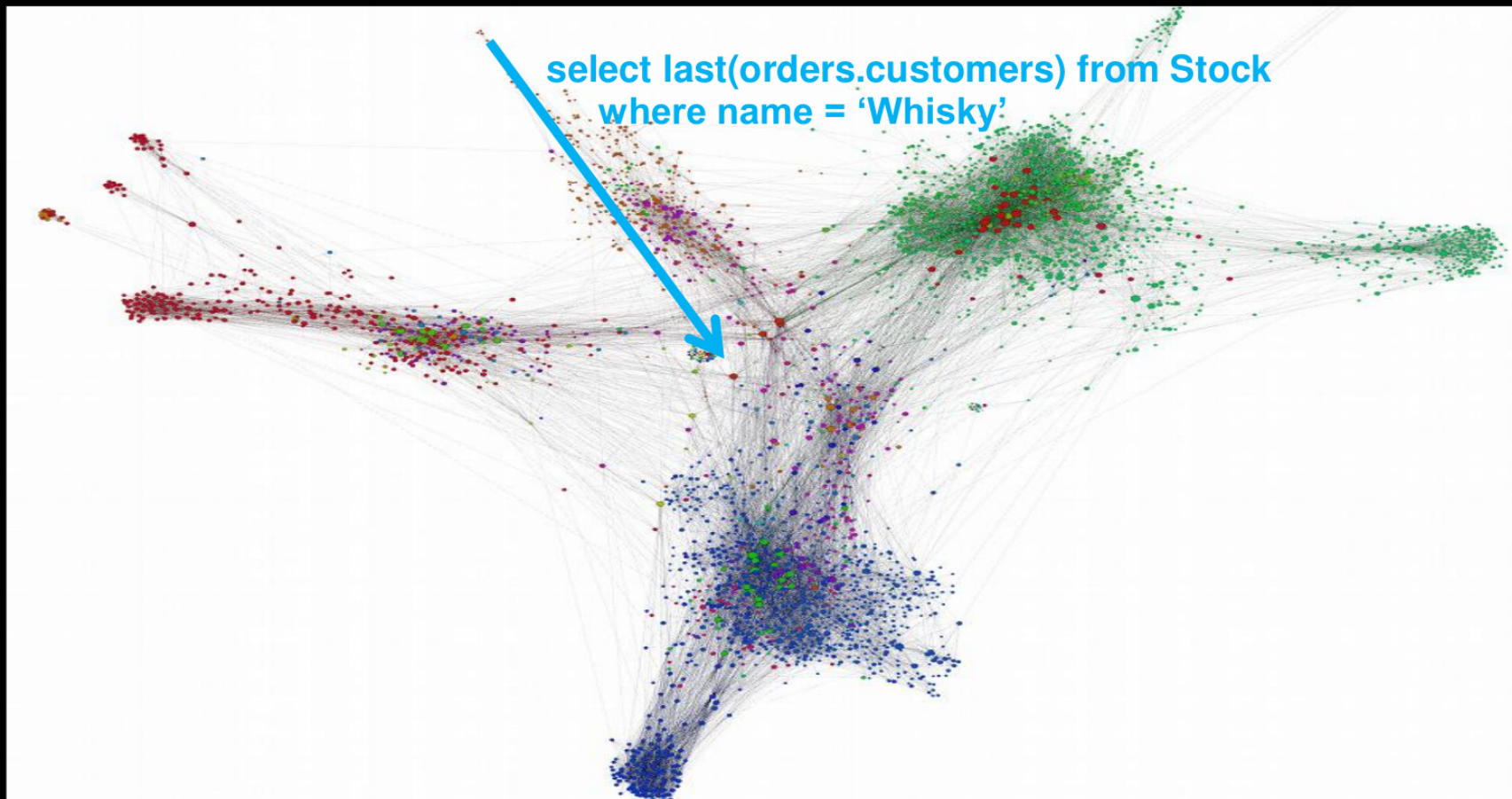
This is your database



Sobre o OrientDB Grafos

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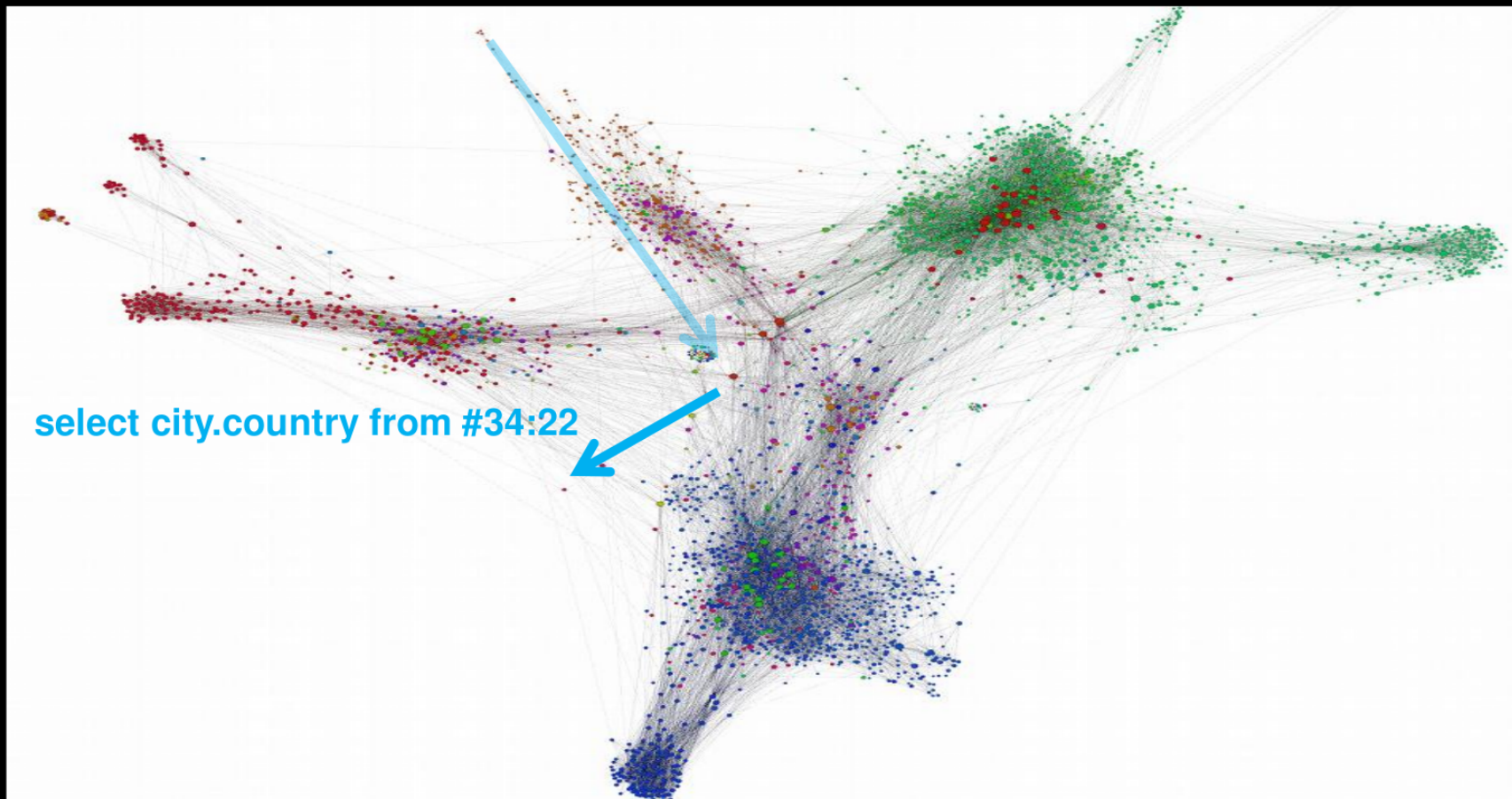
Get last customer bought Whisky



Sobre o OrientDB Grafos

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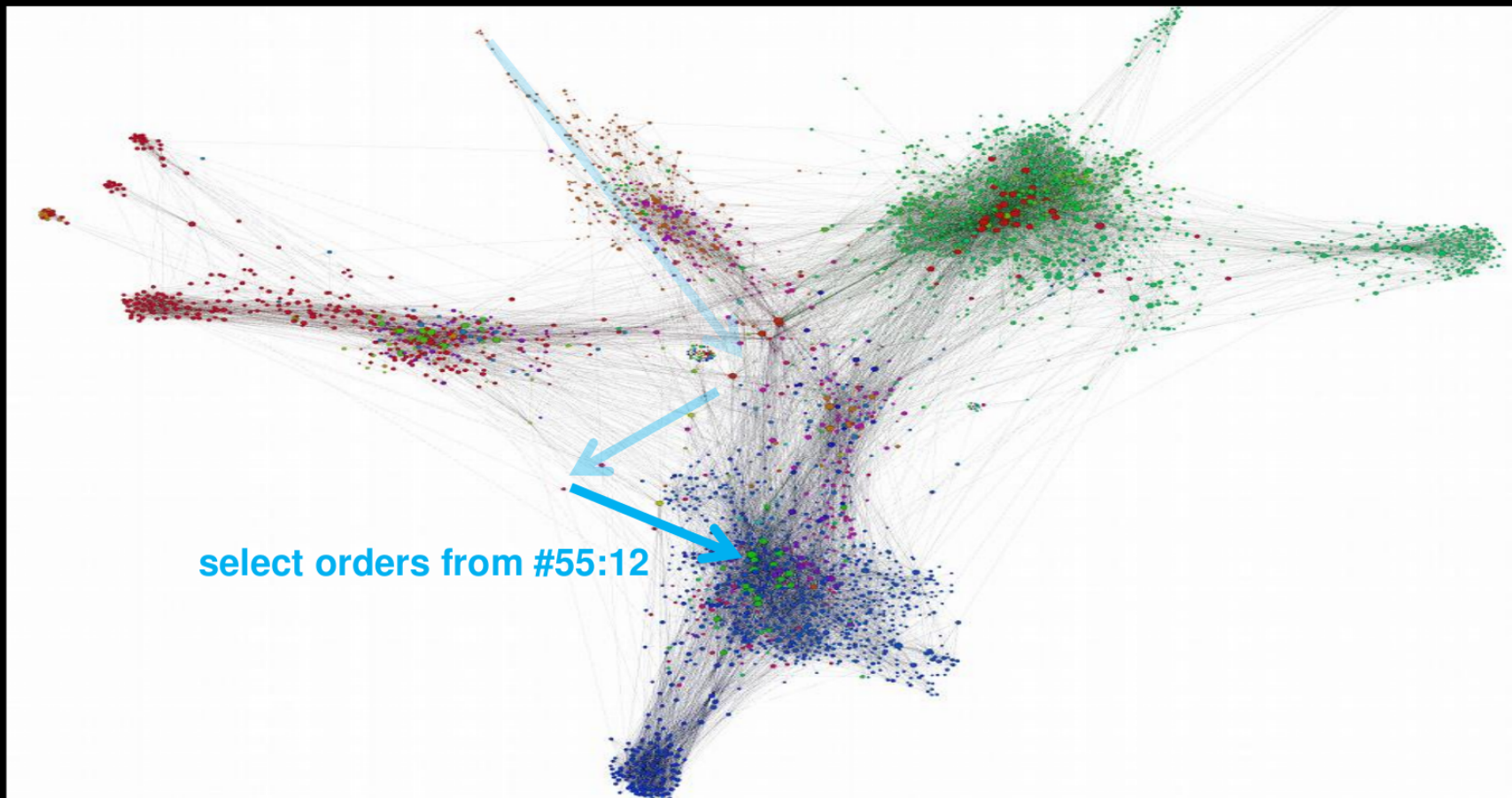
Get it's country



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Get orders from that country



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Do we have enough time for a demo?

Database: tinkerpop

Database Query Document Graph Raw access Server Help Disconnect

@rid #6:5

Edit

Depth 2

Reload

Blueprints Graph model

Edge type curve

Auto Zoom

Circular layout

Random layout

Legend

- OGraphVertex
- OGraphEdge

Output: Query executed in 0.542 sec. Returned 20 record(s)

Graph properties for #7:1944:

- @type : d
- @rid : #7:1944
- @version : 0
- @class : OGraphEdge
- out : #6:5
- in : #6:361
- label : followed_by
- weight : 1

Sobre o OrientDB

Código

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Create the graph in Java

```
OGraphDatabase graph = new OGraphDatabase("local:/tmp/db/graph");
```

```
ODocument luca = graph.createVertex("Customer");  
luca.field("name", "Luca");
```

```
ODocument rome = graph.createVertex("Address");  
rome.field("name", "Rome");
```

```
ODocument edge = graph.createEdge(luca, rome, "Lives");  
edge.save();
```

```
graph.close();
```

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Create the graph in SQL

```
$luca> cd bin  
$luca> ./console.sh  
OrientDB console v.1.3.0-SNAPSHOT (www.orientdb.org)  
Type 'help' to display all the commands supported.
```

```
orientdb> create vertex Customer set name = 'Luca'  
Created vertex #13:35 in 0.03 secs
```

```
orientdb> create vertex Address set name = 'Rome'  
Created vertex #13:100 in 0.02 secs
```

```
orientdb> create edge Lives from #13:35 to #13:100  
Created edge #14:54 in 0.02 secs
```

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Query the graph in SQL

```
orientdb> select in.out from Address where name = 'Rome'
```

```
-----+-----+-----+-----+-----+-----+-----+
#| RID  |@class  |label  |out  |in  |
-----+-----+-----+-----+-----+-----+
0| 13:35|Customer|Luca  |[#14:54]|
-----+-----+-----+-----+-----+
1 item(s) found. Query executed in 0.007 sec(s).
```

Incoming vertices

Sobre o OrientDB

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- OrientDB is a novel document-store database
- OrientDB also has a graph layer which allows for documents to have edges between them, emulating the property of index-free adjacency of documents
- *ODocuments* representing (the nodes of the)
- *ODocuments* representing (the references (edges))

“Comparative Analysis of Data Persistence Technologies for Large-Scale Models”

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Autopromoção

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- **Novas ideias e conceitos**
- **Zero Config**
- **150.000 records per second**
- **Sem dependências**

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Recursos

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- **Schema-less, full e hybrid**
- **ACID Transactions**
- **Native JSON**
- **Binary Protocol**

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Armazenamento

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- **Embedded**
- **Client/Server**
- **Distributed**
- **In-Memory**

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Funcionalidades

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- **Consultas: Sql, Native Query**
- **Indexação: MVRB-Tree: Red-Black Tree & B+Tree**
- **Framework: Tinkerpop**

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