

OrientDB

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What is OrientDB?

- an open-source NoSQL database
- document-based database with the ability to define relationships between documents, which essentially creates a hybrid document/graph-based database

Queries

- OrientDB's query language is based on SQL
 - No need to learn an OrientDB-specific query language
 - SQL extended to add the ability to query and manipulate graphs

‘JOINS’

- The links between documents in an OrientDB can mimic JOINS in a relational database

```
SELECT *  
FROM Employee A, City B  
WHERE A.city = B.id  
AND B.name = 'Rome'
```

example JOIN using
relational database

```
SELECT * FROM Employee  
WHERE city.name = 'Rome'
```

equivalent query of OrientDB

Indexing

- OrientDB supports 3 types of indexing:
 - SB-tree indexing
 - Hash indexing
 - Lucene indexing

SB-Tree

- Similar to B-tree indexing, with optimizations for better performance on insertions and range queries
- Default index type
- Both durable and transactional

Hash

- Very fast on lookups
- Utilizes fewer resources
- Cannot be used for range queries

```
SELECT FROM INDEX:coordinates WHERE key BETWEEN 10.3 AND 10.7
```

(This query cannot be performed with hash indexing)

Lucene

- Both full-text and spatial indexes

```
SELECT * FROM V WHERE name LUCENE "test*"
```

example Lucene full-text query

```
SELECT FROM Class WHERE [<lat-field>,<long-field>] NEAR [<x>,<y>]
```

example Lucene spatial query

Transactions

- OrientDB is ACID-compliant
 - Atomicity - all transactions are all-or-nothing
 - Consistency - all transactions bring the database into a valid state
 - Isolation - simultaneous transactions result in the same database that would have resulted if those transactions had been performed serially
 - Durability - completed transactions are permanent

Sharding, Scalability & Replication

- OrientDB is shardable, making it horizontally-scalable over multiple servers
- OrientDB uses a multi-master architecture, so if one master fails, there are still other functional masters that can continue to update the database

Resources

- [OrientDB website](#)
- [Documentation](#)