Battle of the Databases : MySQL v Neo4j v Mongodb

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The Question

For a long time relational databases ruled supreme in the database world. It was accepted that data should be split up into tables and normalized in order to ensure data consistency and minimize data redundancy.

However in recent years there has been the rise of NoSQL databases and the dominance of the relational database has been challenged.

We decided to compare a relational database against 2 NoSQL Databases : one a graph and the other a document database.

Methodology

In order to compare the relative merits and drawbacks of the different databases we decided to build a database system to support an English as a foreign language school using the 3 different databases.. As far as the frontend is concerned it should appear the same but in the background in the database things will be very different.
We will compare the:

    Modelling Process
    Build Process
    End Database Output

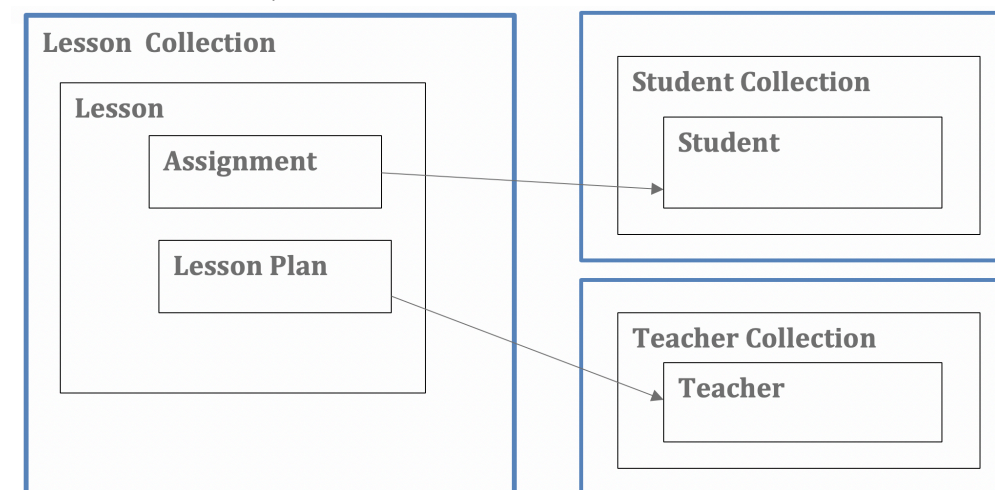## MySQL

Is a relational database.
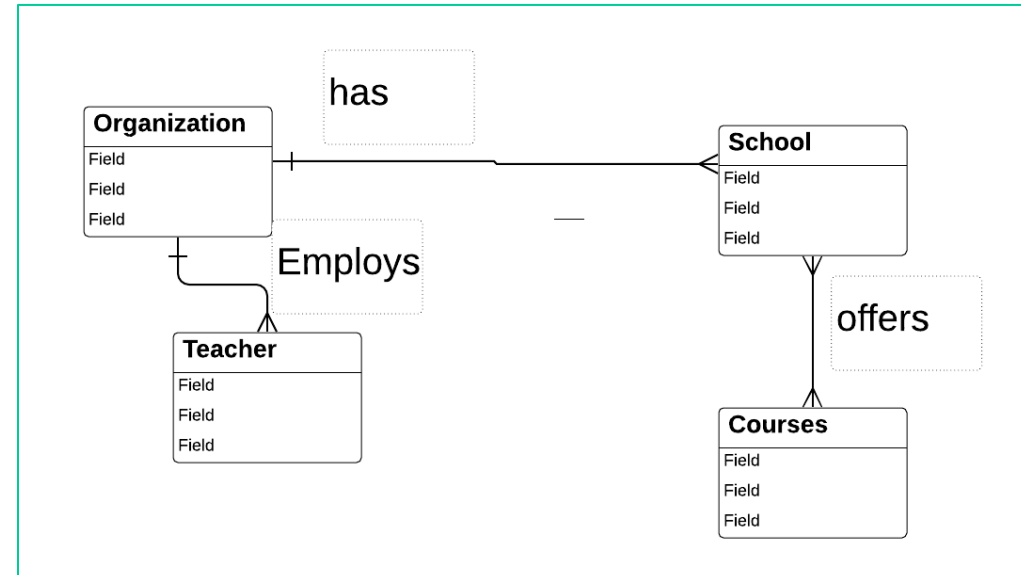
An Enterprise Resource Diagram was built for the English School and from that the physical data model was built.
The key characteristics come from ACID:

    Atomicity   Consistency
    Isolation   Durability

Mongodb
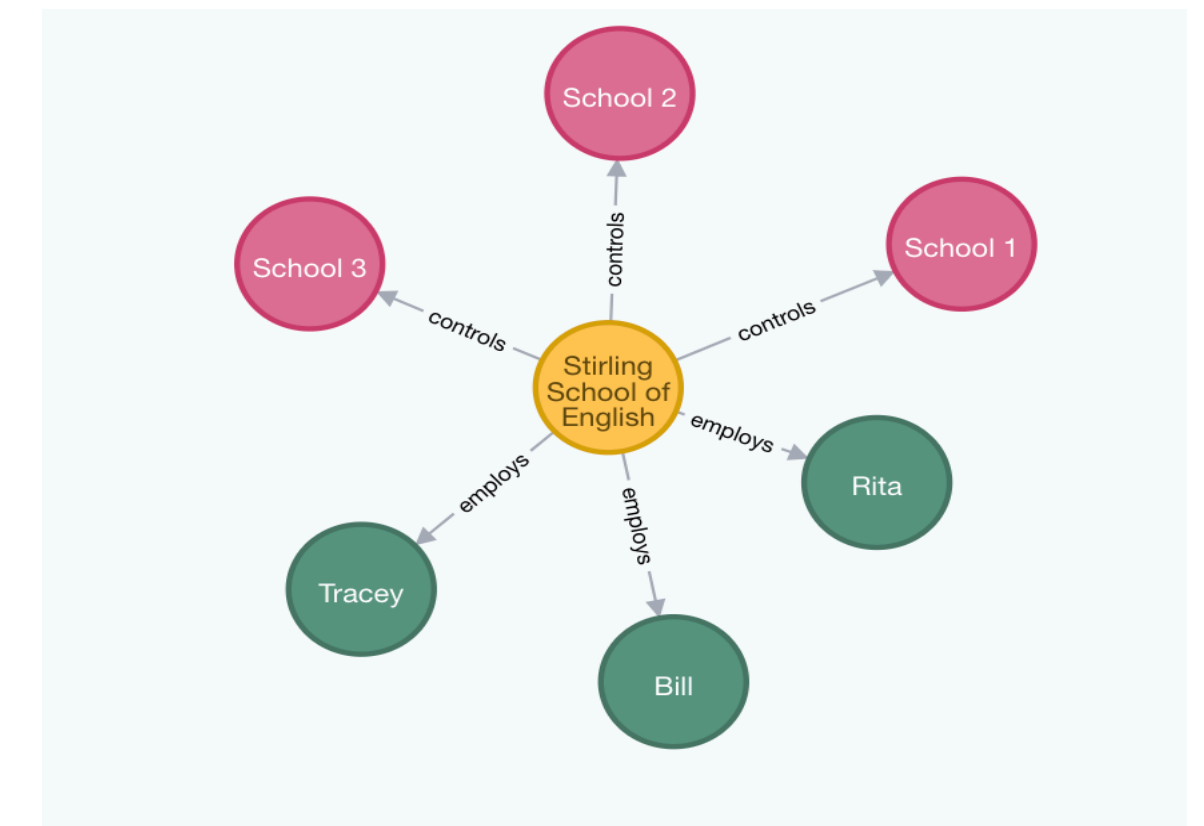
Is a NoSQL document database.

The Characteristics:

    Clustering for Big Data
    Handles unstructured data

    Speed

    Not so visual

Neo4j

Neo4j is a NoSQL graph database and is built on the strong mathematical foundations of Graph theory.

The Characteristics:

    Truly relational
    Intuitive
    Highly visual
    Speed
    Handles pattern detection
    Handles unstructured data

Results

By doing a detailed comparison I hope to highlight the advantages and disadvantages of each.
Hope to be able to show when to use each database i.e.: what data and structure is appropriate for each database to be used. Hope to give an opinion as to how I think things will develop in the future.