Modelagem NoSQL

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Entendendo a Modelagem NoSQL

Documentação Retirada Diretamente do Site.

Fonte/Referências:
https://docs.mongodb.org/manual/core/data-modeling-introduction/

Entendendo a Modelagem NoSQL

- Data in MongoDB has a flexible schema.

- Unlike SQL databases, where you must determine and declare a table's schema before inserting data, MongoDB's collections do not enforce document structure.

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- This flexibility facilitates the mapping of documents to an entity or an object.

- Each document can match the data fields of the represented entity, even if the data has substantial variation. In practice, however, the documents in a collection share a similar structure.

Principais Desafios

- The key challenge in data modeling is balancing the needs of the application, the performance characteristics of the database engine, and the data retrieval patterns.

Projetando Modelos NoSQL

- When designing data models, always consider the application usage of the data (i.e. queries, updates, and processing of the data) as well as the inherent structure of the data itself.

Entendendo a Decisão Chave

- The key decision in designing data models for MongoDB applications revolves around the structure of documents and how the application represents relationships between data.

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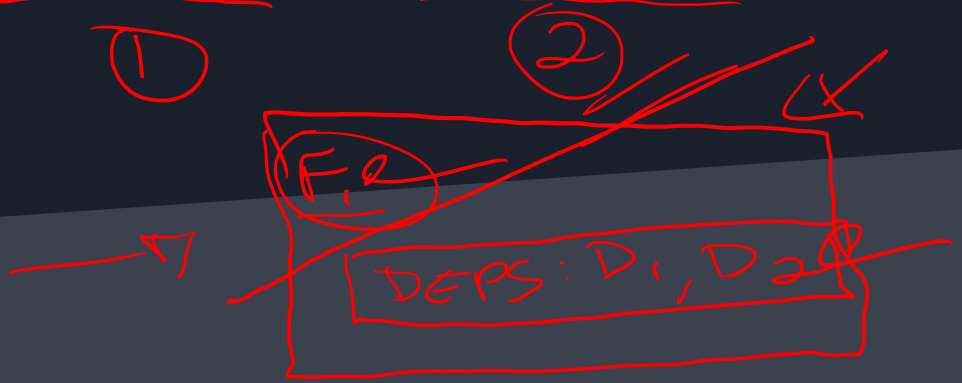
- There are two tools that allow applications to represent these relationships: references and embedded documents.



Principais Relacionamentos na Modelagem NoSQL

- Model One-to-One Relationships with Embedded Documents
  - Presents a data model that uses embedded documents to describe one-to-one relationships between connected data.
- Model One-to-Many Relationships with Embedded Documents
  - Presents a data model that uses embedded documents to describe one-to-many relationships between connected data.
- Model One-to-Many Relationships with Document References
  - Presents a data model that uses references to describe one-to-many relationships between documents.

Entendendo as Referências

Modelos Normalizados

user document

```
{
  _id: <ObjectId1>,
  username: "123xyz"
}
```

contact document

```
{
  _id: <ObjectId2>,
  user_id: <ObjectId1>,
  phone: "123-456-7890",
  email: "xyz@example.com"
}
```

access document

```
{
  _id: <ObjectId3>,
  user_id: <ObjectId1>,
  level: 5,
  group: "dev"
}
```

Entendendo o Aninhamento

Modelos Desnormalizados

```
{
    _id: <ObjectId1>,
    username: "123xyz",
    contact: {
                phone: "123-456-7890",
                email: "xyz@example.com"
              },
    access: {
                level: 5,
                group: "dev"
             }
}
```

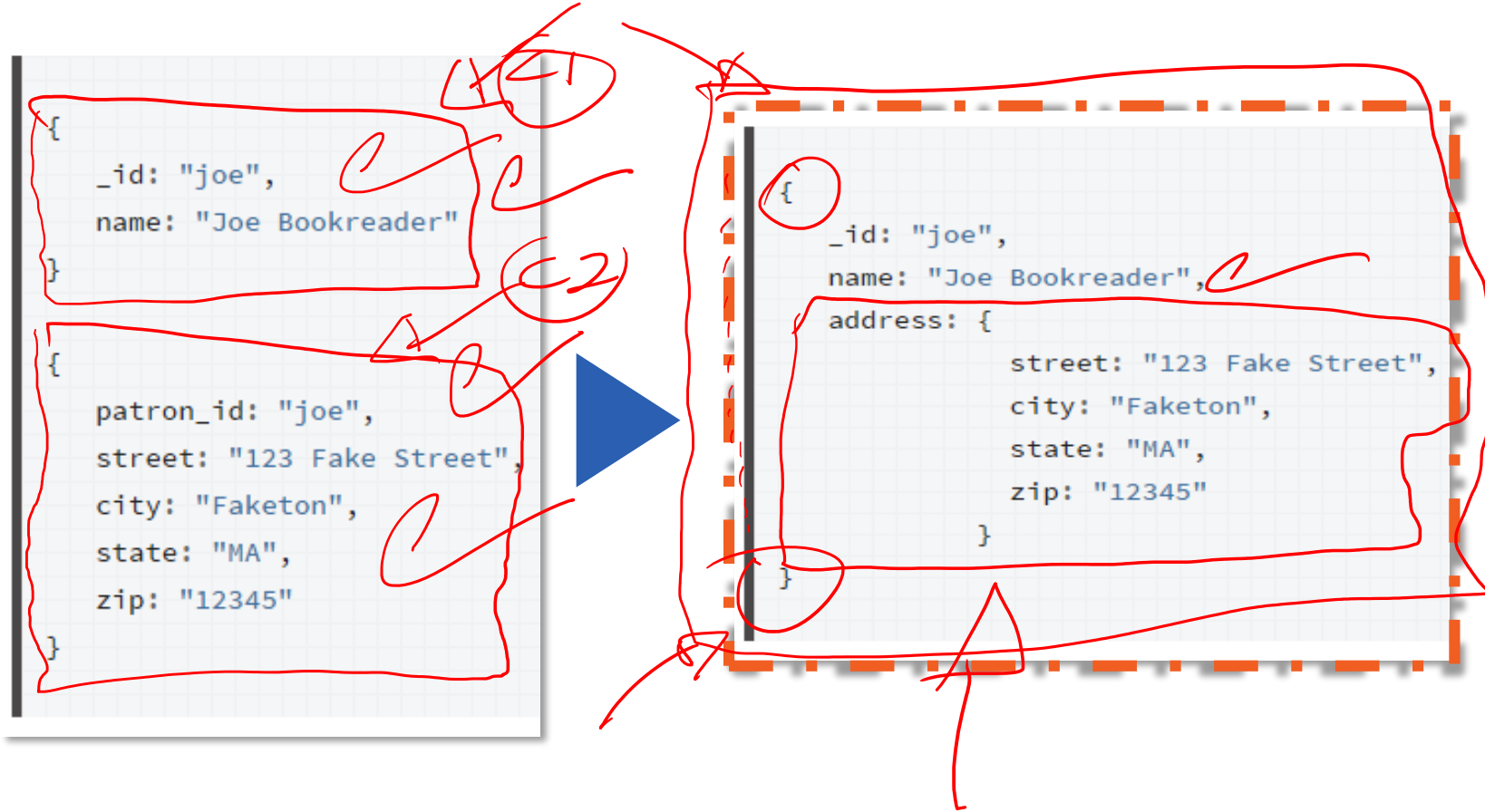
Embedded sub-document

Embedded sub-document

Exemplo: 1:1

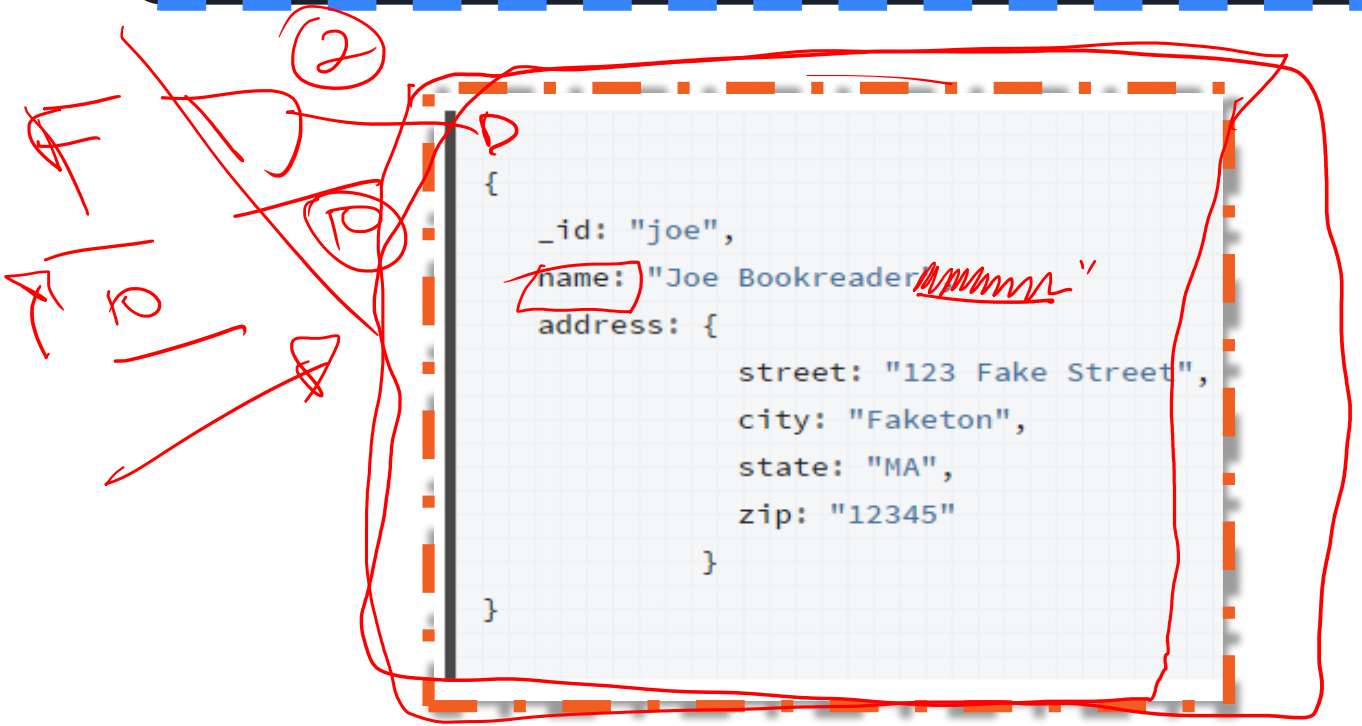
```
{
    _id: "joe",
    name: "Joe Bookreader",
    address: {
                 street: "123 Fake Street",
                 city: "Faketon",
                 state: "MA",
                 zip: "12345"
             }
}
```

Exemplo: 1:1 (Embedded)



Exemplo: 1:1 (Embedded)

Vantagens: Atomic Writes e Leitura do Documento com apenas 1 roundtrip!



```
{
    _id: "joe",
    name: "Joe Bookreader",
    address: {
                street: "123 Fake Street",
                city: "Faketon",
                state: "MA",
                zip: "12345"
              }
}
```

Exemplo: 1:N (Embedded)

```
{
    _id: "joe",
    name: "Joe Bookreader"
}

{
    patron_id: "joe",
    street: "123 Fake Street",
    city: "Faketon",
    state: "MA",
    zip: "12345"
}

{
    patron_id: "joe",
    street: "1 Some Other Street",
    city: "Boston",
    state: "MA",
    zip: "12345"
}
```

Pense neste Desafio!

Vamos imaginar a melhor forma de modelar Livros e Editoras?

Exemplo: 1:N (Referência)

```
{
    title: "MongoDB: The Definitive Guide",
    author: [ "Kristina Chodorow", "Mike Dirolf" ],
    published_date: ISODate("2010-09-24"),
    pages: 216,
    language: "English",
    publisher: {
                name: "O'Reilly Media",
                founded: 1980,
                location: "CA"
              }
}

{
    title: "50 Tips and Tricks for MongoDB Developer",
    author: "Kristina Chodorow",
    published_date: ISODate("2011-05-06"),
    pages: 68,
    language: "English",
    publisher: {
                name: "O'Reilly Media",
                founded: 1980,
                location: "CA"
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}
```

Exemplo: 1:N (Referência)

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    publisher: {
                name: "O'Reilly Media",
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{
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    language: "English",
    publisher: {
                name: "O'Reilly Media",
                founded: 1980,
                location: "CA"
              }
}
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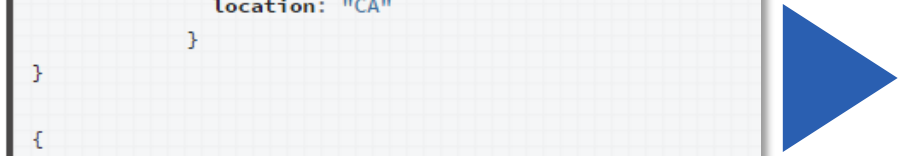

```
{
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    name: "O'Reilly Media",
    founded: 1980,
    location: "CA"
}

{
    _id: 123456789,
    title: "MongoDB: The Definitive Guide",
    author: [ "Kristina Chodorow", "Mike Dirolf" ],
    published_date: ISODate("2010-09-24"),
    pages: 216,
    language: "English",
    publisher_id: "oreilly"
}

{
    _id: 234567890,
    title: "50 Tips and Tricks for MongoDB Developer",
    author: "Kristina Chodorow",
    published_date: ISODate("2011-05-06"),
    pages: 68,
    language: "English",
    publisher_id: "oreilly"
}
```