

BANCO DE DADOS

MongoDB – Parte 1

MongoDB



- O nome Mongo deriva da palavra inglesa “Humongous” e significa imenso.
- Banco de dados **NoSQL** de código aberto (<https://github.com/mongodb/mongo>)
- Gratuito
- Alta Performance
- Sem Esquemas
- Orientado a documentos
- Criado em 2009 com a premissa de ser um banco que atende a grandes volumes de dados.

MongoDB



- Suporte a escalonamento vertical e horizontal.
- Para escala horizontal são usados os *replica sets* (espelhamento de instâncias) e *sharding* (dados distribuídos).
- Principal objetivo do MongoDB é reduzir os relacionamentos no banco de dados.

MongoDB



- **Alguns produtos do ecossistema Mongo:**
 - MongoDBCharts (Dashboards visualização),
 - MongoDB Atlas (Serviço Cloud Mongo),
 - MongoDB Data Lake (Recurso para agregação),
 - MongoDB Stitch (serviço de autenticação, acesso),
 - MongoDB Compass (Ferramenta para conexão e manipulação do MongoDB), entre outros...

MongoDB - BSON

- Formato de documentos do MongoDB é o BSON, representação binária do **padrão JSON**.
- **Tipos de dados do Padrão JSON:**
 - Booleans (true/false)
 - strings
 - numbers
 - null
 - arrays (listas)
 - objects/documents



JSON - TIPOS

```
1 {  
2   "nome": "Eduardo",  
3   "idade": 40,  
4   "brasileiro": true,  
5   "formacao": "Computação",  
6   "premios": null,  
7   "conhecimento": [  
8     "MongoDB",  
9     "PostgreSQL"  
10  ],  
11  "endereco": {  
12    "cidade": "Ribeirão Preto",  
13    "estado": "SP"  
14  }  
15 }
```

```
▼ object {7}  
  nome : Eduardo  
  idade : 40  
  brasileiro : ☒ true  
  formacao : Computação  
  premios : null  
  ▼ conhecimento [2]  
    0 : MongoDB  
    1 : PostgreSQL  
  ▼ endereco {2}  
    cidade : Ribeirão Preto  
    estado : SP
```

Mongo DB - TERMINOLOGIA

- Relação de nomes usados nos bancos relacionais e no MongoDB.

BD Relacional	MongoDB
Banco de Dados	Banco de Dados
Tabela	Coleção
Linha (Registro)	Documento
Coluna	Campo

MongoDB - DOCUMENTO

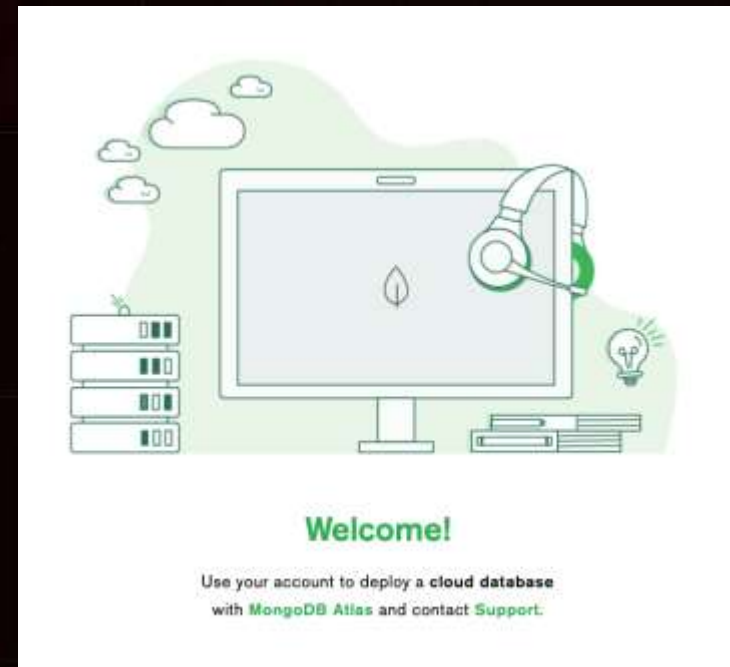
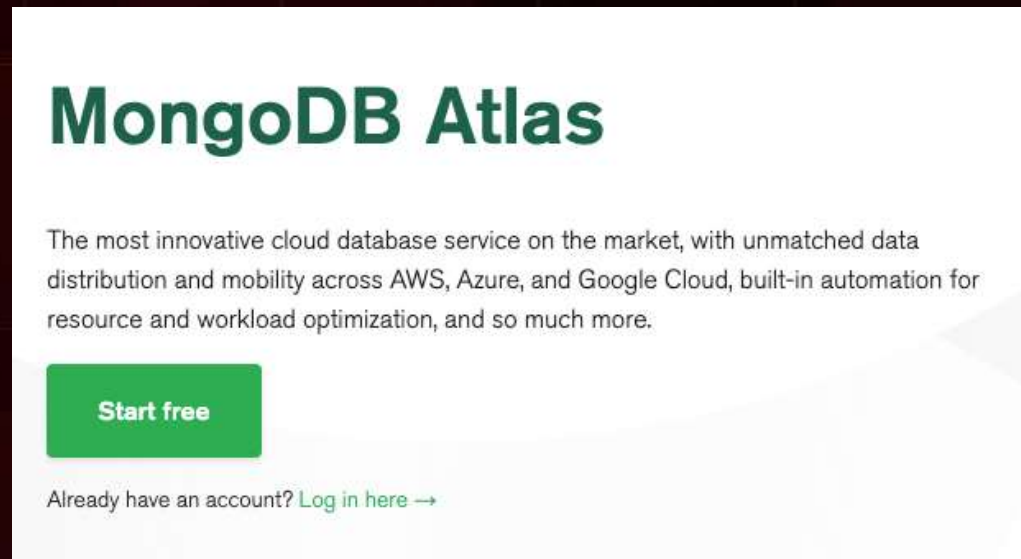
- Vamos entender um documento MongoDB.

```
> {
  _id: ObjectId("573a1390f29313caabcd5b9a")
  plot: "In the wayward western town known as Hell's Hinges, a local tough guy ..."
  genres: Array
  runtime: 64
  rated: "UNRATED"
  cast: Array
    0: "William S. Hart"
    1: "Clara Williams"
    2: "Jack Standing"
    3: "Alfred Hollingsworth"
  num_mflix_comments: 2
  title: "Hell's Hinges"
  fullplot: "When Reverend Robert Henley and his sister Faith arrive in the town of..."
  languages: Array
  released: 1916-03-05T00:00:00.000+00:00
  directors: Array
  writers: Array
  awards: Object
  lastupdated: "2015-08-16 01:13:00.090000000"
  year: 1916
  imdb: Object
  countries: Array
  type: "movie"
  tomatoes: Object
    viewer: Object
      rating: 3.2
      numReviews: 98
      meter: 36
    lastUpdated: 2015-09-01T19:31:17.000+00:00
}
```

Sempre há o campo **_id**:

CRIAR UMA CONTA – MongoDB Atlas

- Crie uma conta no MongoDB Atlas para experimentar o MongoDB.
 - <https://www.mongodb.com/cloud/atlas>
 - Use sua conta do Google!



CRIAR UMA CONTA – MongoDB ATLAS

1

← Organizations
Create Organization

Name and Service Add Members Next

Name Your Organization

MeuMongo Org

Select Cloud Service

Features	MongoDB Atlas	Cloud Manager
Automated database configuration	✓	✓
Continuous backup and point-in-time recovery	✓	✓

2

MeuMongo Org Access Manager Billing

ORGANIZATION MEUMONGO ORG

Projects

Alerts 0

Activity Feed

Settings

Access Manager

Billing

Support

Find a project...

Project Name

New Project

3

New Project

4

MeuMongo Org Access Manager Billing

Projeto1 Atlas Realm Charts

DATA STORAGE

Clusters

Triggers

Data Lake

SECURITY

Database Access

Network Access

Advanced

MEUMONGO ORG > PROJETO1

Clusters

Find a cluster...

5

Create a cluster

Choose your cloud provider, region, and specs.

Build a Cluster

Once your cluster is up and running, live migrate an existing MongoDB database into Atlas with our [Live Migration Service](#).

CRIAR UMA CONTA – MongoDB ATLAS

6

Shared Clusters

For teams learning MongoDB or developing small applications.

- ✓ Highly available auto-healing cluster
- ✓ End-to-end encryption
- ✓ Role-based access control

Create a cluster

Starting at
FREE




7

Create a Shared Cluster

Welcome to MongoDB Atlas! We've recommended some of our most popular options, but feel free to customize your cluster to your needs. For more information, check our [documentation](#).

Cloud Provider & Region

GCP, Sao Paulo (southamerica-east1) ▾


  


★ Recommended region ⓘ


NORTH AMERICA / SOUTH AMERICA


EUROPE / MIDDLE EAST / AFRICA


ASIA PACIFIC


 Iowa (us-central1) ★


 Sao Paulo (southamerica-east1) ★

 Belgium (europe-west1) ★

 Taiwan (asia-east1) ★

 Singapore (asia-southeast1) ★

 Tokyo (asia-northeast1) ★

 Mumbai (asia-south1) ★

FREE

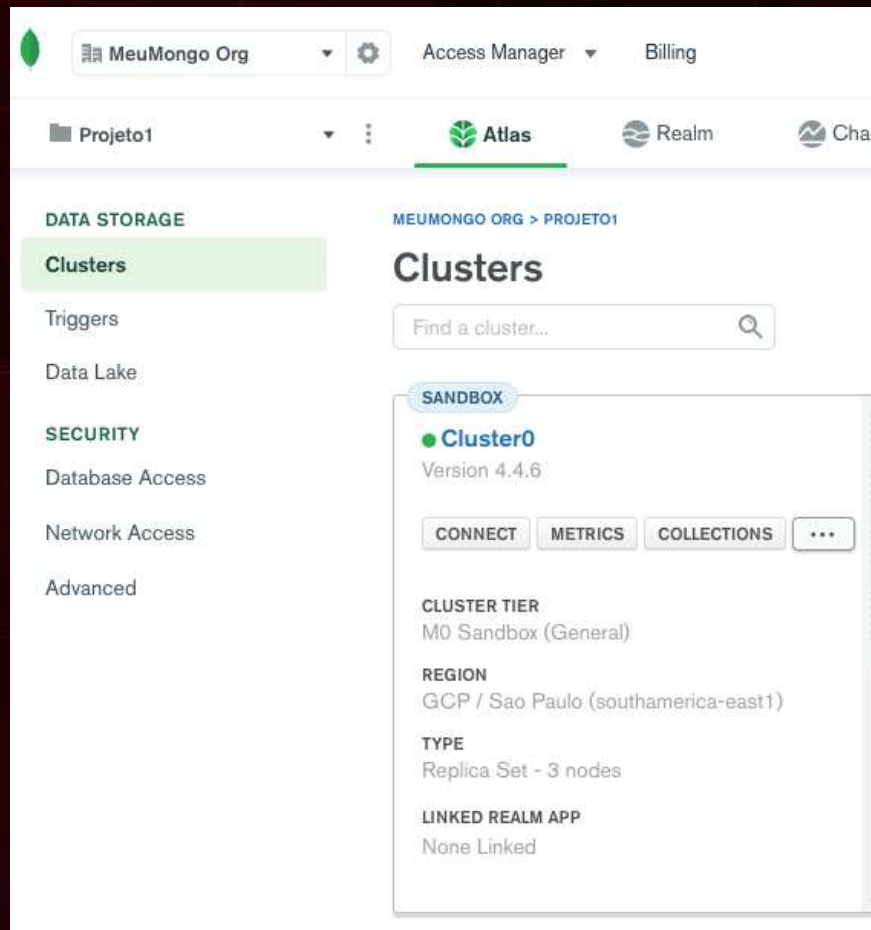
Free forever! Your M0 cluster is ideal for experimenting in a limited sandbox. You can upgrade to a production cluster anytime.

[Back](#)

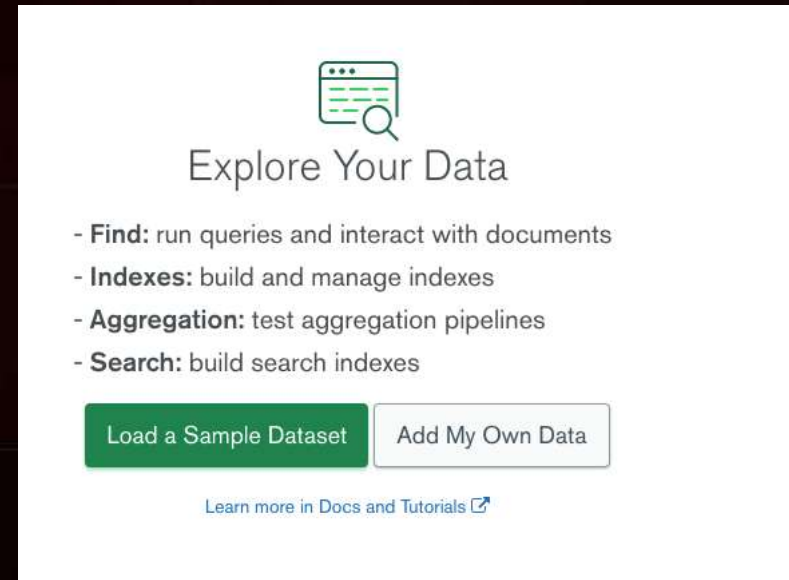
Create Cluster

CRIAR UMA CONTA – MongoDB ATLAS

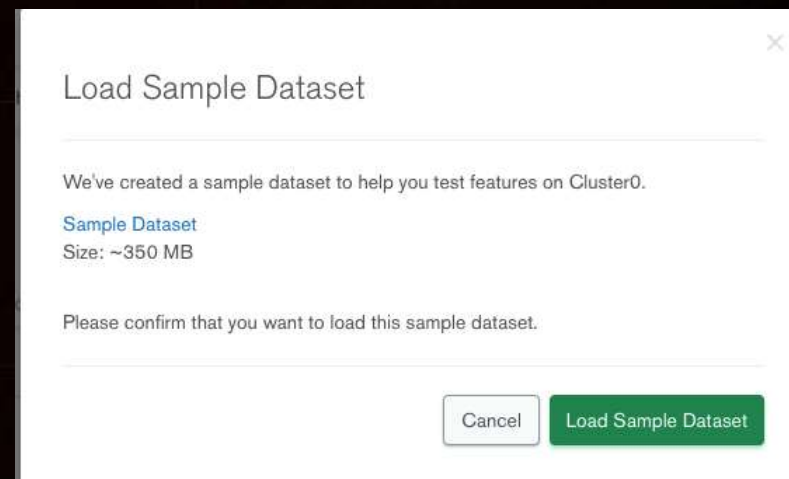
8 – Clique em Collections



9



10



CRIAR UMA CONTA – PARABÉNS!

The screenshot displays the MongoDB Atlas web interface. At the top, there are navigation tabs for 'Atlas', 'Realm', and 'Charts'. Below this, the breadcrumb path 'MEUMONGO.ORG > PROJETO1 > CLUSTERS' is visible. The main heading is 'Cluster0', with a version indicator '4.4.6' on the right. A horizontal menu contains several options: 'Overview', 'Real Time', 'Metrics', 'Collections' (which is highlighted), 'Search', 'Profiler', 'Performance Advisor', 'Online Archive', and 'Comr'. Below the menu, it states 'DATABASES: 8 COLLECTIONS: 21'. On the left sidebar, there is a '+ Create Database' button and a search bar for 'NAMESPACES'. A list of namespaces is shown, including 'sample_airbnb', 'sample_analytics', 'sample_geospatial', 'sample_mflix', 'sample_restaurants', 'sample_supplies', 'sample_training', and 'sample_weatherdata'. The main content area is titled 'sample_airbnb.listingsAndReviews'. It provides statistics: 'COLLECTION SIZE: 89.99MB', 'TOTAL DOCUMENTS: 5555', and 'INDEXES TOTAL SIZE: 556KB'. Below these are tabs for 'Find', 'Indexes', 'Schema Anti-Patterns', 'Aggregation', and 'Search Indexes'. A 'FILTER' input field contains the JSON query: `{"filter": "example"}`. The section 'QUERY RESULTS 1-20 OF MANY' displays a single document in JSON format:

```
{
  "_id": "10006546",
  "listing_url": "https://www.airbnb.com/rooms/10006546",
  "name": "Ribeira Charming Duplex",
  "summary": "Fantastic duplex apartment with three bedrooms, located in the histori...",
  "space": "Privileged views of the Douro River and Ribeira square, our apartment ...",
  "description": "Fantastic duplex apartment with three bedrooms, located in the histori...",
  "neighborhood_overview": "In the neighborhood of the river, you can find several restaurants as ...",
  "notes": "Lose yourself in the narrow streets and staircases zone, have lunch in...",
  "transit": "Transport: * Metro station and S. Bento railway 5min; * Bus stop a 50 ...",
  "access": "We are always available to help guests. The house is fully available t...",
  "interaction": "Cot - 10 € / night Dog - € 7,5 / night",
  "house_rules": "Make the house your home...",
  "property_type": "House"
}
```


ESQUEMAS FLEXÍVEIS

```
_id: ObjectId("573a13a3f29313caabd0d1e3")
fullplot: "Danny Ocean wants to score the biggest heist in history. He combines a..."
> imdb: Object
  year: 2001
  plot: "Danny Ocean and his eleven accomplices plan to rob three Las Vegas cas..."
> genres: Array
  rated: "PG-13"
  metacritic: 74
  title: "Ocean's Eleven"
  lastupdated: "2015-09-03 01:18:05.693000000"
> languages: Array
> writers: Array
  type: "movie"
> tomatoes: Object
  poster: "https://m.media-amazon.com/images/M/MV5BYzVmYzVkMmUtOGRhMi00MTNmLTlMm..."
  num_mflix_comments: 424
  released: 2001-12-07T00:00:00.000+00:00
> awards: Object
> countries: Array
> cast: Array
> directors: Array
  runtime: 116
```

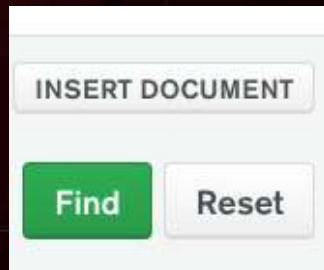
Observe os campos não organizados na mesma ordem e atente-se a:

- num_mflix_coments e metacritic no documento superior

```
_id: ObjectId("573a1390f29313caabcd5ea4")
plot: "A District Attorney's outspoken stand on abortion gets him in trouble ..."
> genres: Array
  runtime: 62
  rated: "APPROVED"
> cast: Array
  title: "Where Are My Children?"
  fullplot: "While prosecuting a physician for the death of a client after an abort..."
> languages: Array
  released: 1916-05-01T00:00:00.000+00:00
> directors: Array
> writers: Array
> awards: Object
  lastupdated: "2015-09-07 00:51:32.560000000"
  year: 1916
> imdb: Object
> countries: Array
  type: "movie"
> tomatoes: Object
```

INSERIR UM DOCUMENTO



Ao inserir um documento, não é necessário seguir qualquer tipo de estrutura. Mas é importante que haja uma certa organização.



EXCLUIR UM DOCUMENTO

>

```
_id: ObjectId("573a1390f29313caabcd42e8")
plot: "A group of bandits stage a brazen train hold-up, only to find a determ..."
> genres: Array
  runtime: 11
> cast: Array
  poster: "https://m.media-amazon.com/images/M/MV5BMTU3NjE5NzYtYTtyNS00MDVmLWIwYj..."
  title: "The Great Train Robbery"
  fullplot: "Among the earliest existing films in American cinema - notable as the ..."
> languages: Array
  released: 1903-12-01T00:00:00.000+00:00
> directors: Array
  rated: "TV-G"
> awards: Object
  lastupdated: "2015-08-13 00:27:59.177000000"
  year: 1903
> imdb: Object
> countries: Array
  type: "movie"
> tomatoes: Object
```



```
_id: ObjectId("573a1390f29313caabcd42e8")
plot: "A group of bandits stage a brazen train hold-up, only to find a determ..."
> genres: Array
  runtime: 11
> cast: Array
  poster: "https://m.media-amazon.com/images/M/MV5BMTU3NjE5NzYtYTtyNS00MDVmLWIwYj..."
  title: "The Great Train Robbery"
  fullplot: "Among the earliest existing films in American cinema - notable as the ..."
> languages: Array
  released: 1903-12-01T00:00:00.000+00:00
> directors: Array
  rated: "TV-G"
> awards: Object
  lastupdated: "2015-08-13 00:27:59.177000000"
  year: 1903
> imdb: Object
> countries: Array
  type: "movie"
> tomatoes: Object
```

Document Flagged For Deletion.



CANCEL

DELETE

Além da **lixeira**, temos a opção de copiar um documento, ou **clonar** (que abre uma tela de **inserção** com o registro copiado)

CLONAR UM DOCUMENTO

Insert to Collection

VIEW  

```
1  _id : ObjectId("60cbf86f3f6e19eae7ccd5cb ")
2  plot : "Cartoon figures announce, via comic str..."
3  > genres : Array
4    runtime : 7
5  > cast : Array
6    num_mflix_comments : 1
7    poster : "https://m.media-amazon.com/images/M/MV5..."
8    title : "Winsor McCay, the Famous Cartoonist of ..."
9    fullplot : "Cartoonist Winsor McCay agrees to creat..."
10 > languages : Array
11   released : 1911-04-08T00:00:00.000+00:00
12 > directors : Array
13 > writers : Array
14 > awards : Object
15   lastupdated : "2015-08-29 01:09:03.030000000 "
16   year : 1911
17 > imdb : Object
18 > countries : Array
19   type : "movie "
20 > tomatoes : Object
```

ObjectId

String

Array

Int32

Array

Int32

String

String

String

Array

Date

Array

Array

Object

String

Int32

Object

Array

String

Object

Clone Document

Cancel

Insert

EDITAR UM DOCUMENTO

```
_id: ObjectId("573a1390f29313caabcd4eaf")
plot: "A woman, with the aid of her police officer sweetheart, endeavors to u..."
> genres: Array
runtime: 88
```



```
1  _id: ObjectId("573a1390f29313caabcd4eaf")
2  plot: "A woman, with the aid of her police officer sweetheart, endeavors to uncover the prostitution ring that has kidnapped her sister, an..."
3  > genres : Array
4  runtime : 88
5  > cast : Array
6  num_mflix_comments : 2
7  poster : "https://m.media-amazon.com/images/M/MV5BYzk0YWQzMGYtYTM5MC00NmZLMWE5YzYtMjgyNDVhZDg1N2YzXkEyXkFqcGdeQXVyMzE0MjY5ODAA@._V1_SY1000_SX675..."
8  title : "Traffic in Souls "
9  lastupdated : "2015-09-15 02:07:14.247000000 "
10 > languages : Array
11   0 : "English"
12 released : 1913-11-24T00:00:00.000+00:00
13 > directors : Array
14 rated : "TV-PG "
15 > awards : Object
16 year : 1913
17 > imdb : Object
18 > countries : Array
19 type : "movie "
20 > tomatoes : Object
```

ObjectId
String
Array
Int32
Array
Int32
String
String
String
Array
String
Date
Array
String
Object
Int32
Object
Array
String
Object

CANCEL UPDATE

BANCO DE DADOS

MongoDB – Parte 1