

Integrando Python MongoDB - Pymongo

Formação Python Developer

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Etapa 2

Integrando Python com MongoDB usando Pymongo

// Integração com Python

O que são Pymongo e MongoDB?

// Integração com Python

Pymongo

[Documentação](#)

- Módulo para MongoDB
- Autor: MongoDB Python Team
- Apache Software License
- Formato: BSON

```
{
  _id: ObjectId("5f339953491024badf1138ec"),
  title: "MongoDB Tutorial",
  isbn: "978-4-7766-7944-8",
  published_date: new Date('June 01, 2020'),
  author: {
    first_name: "John",
    last_name: "Doe"
  }
}
```

<https://www.mongodbtutorial.org/getting-started/mongodb-basics/>

Pymongo

[Documentação](#)

Installing with pip

We recommend using [pip](#) to install pymongo on all platforms:

```
$ python3 -m pip install pymongo
```

To get a specific version of pymongo:

```
$ python3 -m pip install pymongo==3.5.1
```

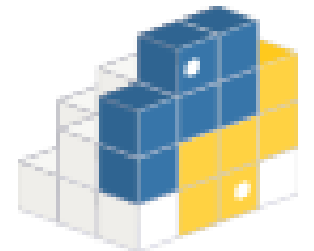
To upgrade using pip:

```
$ python3 -m pip install --upgrade pymongo
```

Pymongo

[Documentação](#)

- Interação com documentos
- Coleções e demais recursos do MongoDB
- Suporte MongoDB 3.6, 4.0, 4.2, 4.4, and 5.0.



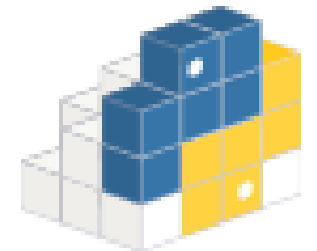
Pymongo

[Documentação](#)

```
>>> import pymongo
>>> client = pymongo.MongoClient("localhost", 27017)
>>> db = client.test
>>> db.name
'test'
>>> db.my_collection
Collection(Database(MongoClient('localhost', 27017), 'test'), 'my_collection')
>>> db.my_collection.insert_one({"x": 10}).inserted_id
ObjectId('4aba15ebe23f6b53b0000000')
>>> db.my_collection.insert_one({"x": 8}).inserted_id
ObjectId('4aba160ee23f6b543e000000')
>>> db.my_collection.insert_one({"x": 11}).inserted_id
ObjectId('4aba160ee23f6b543e000002')
>>> db.my_collection.find_one()
{'x': 10, '_id': ObjectId('4aba15ebe23f6b53b0000000')}
>>> for item in db.my_collection.find():
...     print(item["x"])
...
10
8
11
```

MongoDB

- Banco de Dados NoSQL
- Orientados a documentos
- Flexível (NoSQL) x estruturado e rígido (SQL)
- Schema opcional



MongoDB



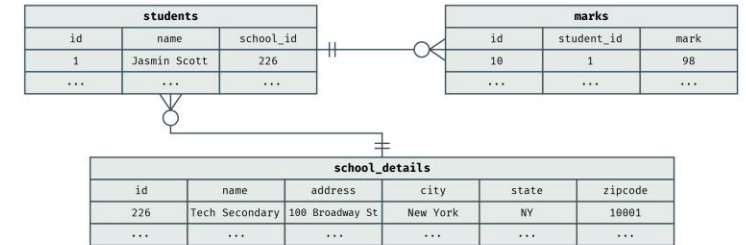
MongoDB

```
{
  "_id": 1,
  "student_name": "Jasmin Scott",
  "school": {
    "school_id": 226,
    "name": "Tech Secondary",
    "address": "100 Broadway St",
    "city": "New York",
    "state": "NY",
    "zipcode": "10001"
  },
  "marks": [98, 93, 95, 88, 100],
}
```

mongo

```
> db.students.find({"student_name":
  "Jasmin Scott"})
```

SQL



Results

| name | mark | school_name | city |
|--------------|------|----------------|----------|
| Jasmin Scott | 98 | Tech Secondary | New York |
| ... | ... | ... | ... |

sql

```
SELECT s.name, m.mark, d.name as "school name",
d.city
FROM students s
INNER JOIN marks m ON s.id = m.student_id
INNER JOIN school_details d ON s.school_id = d.id
WHERE s.name = "Jasmin Scott";
```

<https://www.mongodb.com/docs/>

MongoDB



Coleções

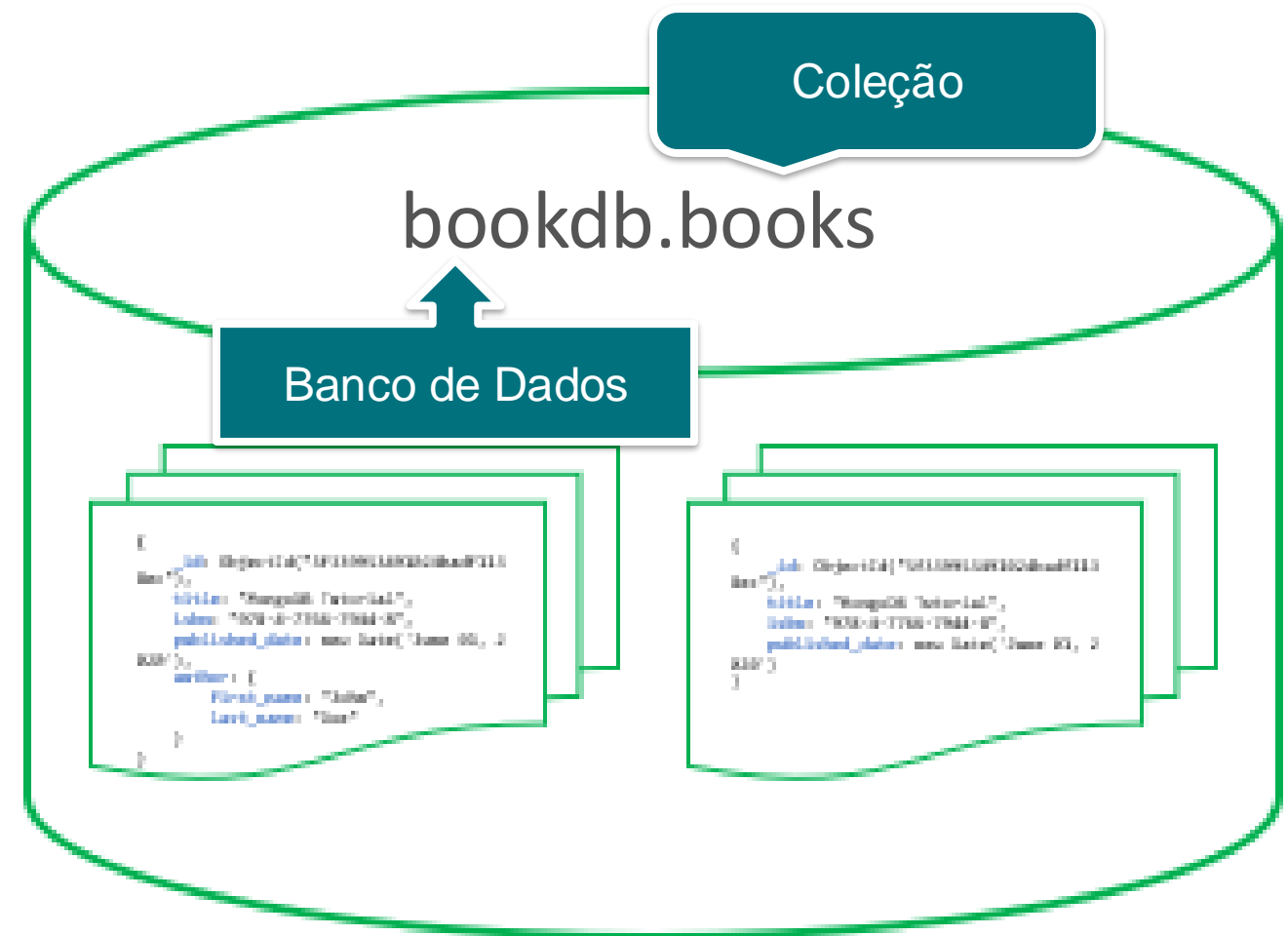
```
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  _id: ObjectId("5f339953491024badf1138ec"),
  title: "MongoDB Tutorial",
  isbn: "978-4-7766-7944-8",
  published_date: new Date('June 01, 2020'),
  author: {
    first_name: "John",
    last_name: "Doe"
  }
}
```

<https://www.mongodbtutorial.org/getting-started/mongodb-basics/>

MongoDB



Namespace



<https://www.mongodbtutorial.org/getting-started/mongodb-basics/>

Diferenças entre MongoDB e o Modelo Relacional

// Integração com Python

MongoDB x SQL

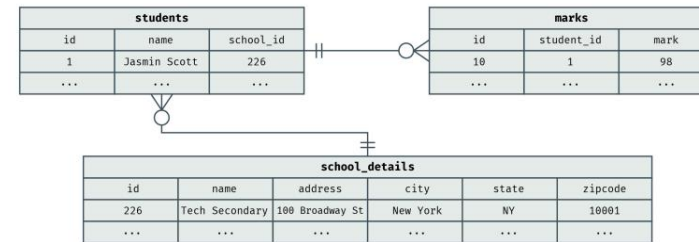
MongoDB

```
{
  "_id": 1,
  "student_name": "Jasmin Scott",
  "school": {
    "school_id": 226,
    "name": "Tech Secondary",
    "address": "100 Broadway St",
    "city": "New York",
    "state": "NY",
    "zipcode": "10001"
  },
  "marks": [98, 93, 95, 88, 100],
}
```

mongo

```
> db.students.find({"student_name":
  "Jasmin Scott"})
```

SQL



Results

| name | mark | school_name | city |
|--------------|------|----------------|----------|
| Jasmin Scott | 98 | Tech Secondary | New York |
| ... | ... | ... | ... |

sql

```
SELECT s.name, m.mark, d.name as "school name",
d.city
FROM students s
INNER JOIN marks m ON s.id = m.student_id
INNER JOIN school_details d ON s.school_id = d.id
WHERE s.name = "Jasmin Scott";
```

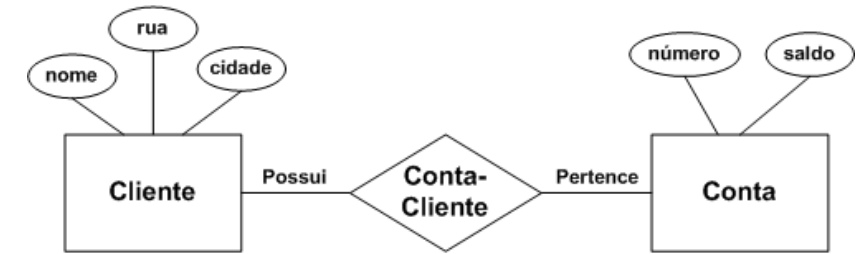
MongoDB x SQL



| MONGODB | MODELO RELACIONAL |
|---------------|-------------------|
| Documento | Instância (linha) |
| Campo (field) | Coluna (atributo) |
| Coleção | Tabelas |



MongoDB x SQL



- Documento
- Flexível & Dinâmica
- Escalável
- Melhor do JOINS em "excesso"



- Estrutura rígida
- ACID – Transacional
- Dados dispersos
- Diferentes perspectivas

Relacional



```
create database if not exists first_example;
use first_example;
CREATE TABLE person(
    person_id smallint unsigned,
    fname varchar(20),
    lname varchar(20),
    gender enum('M','F'),
    birth_date DATE,
    street varchar(30),
    city varchar(20),
    state varchar(20),
    country varchar(20),
    postal_code varchar(20),
    constraint pk_person primary key (person_id)
);
```

```
desc person;
```

```
insert into person values      ('5','Roberta','Silva','F', '1979-08-21',
                                'rua tal', 'Cidade J', 'RJ', 'Brasil', '26054-89'),
                                ('6','Luiz','Silva','M', '1979-08-21',
                                'rua tal', 'Cidade J', 'RJ', 'Brasil', '26054-89');
```

```
select * from person;
```


MongoDB

```
MongoDB Shell ▼
db.inventory.insertMany([
  { item: "journal", qty: 25, size: { h: 14, w: 21, uom: "cm" }, status: "A" },
  { item: "notebook", qty: 50, size: { h: 8.5, w: 11, uom: "in" }, status: "A" },
  { item: "paper", qty: 100, size: { h: 8.5, w: 11, uom: "in" }, status: "D" },
  { item: "planner", qty: 75, size: { h: 22.85, w: 30, uom: "cm" }, status: "D" },
  { item: "postcard", qty: 45, size: { h: 10, w: 15.25, uom: "cm" }, status: "A" }
]);
```

<https://www.mongodb.com/docs/manual/tutorial/query-documents/>

```
MongoDB Shell ▼
db.inventory.find( {} )
```

```
{
  "first_name": "John",
  "last_name": "Doe",
  "age": 22,
  "skills": ["Programming", "Databases", "API"]
}
```



MongoDB Atlas - Instância em nuvem

// Integração com Python

MongoDB Atlas

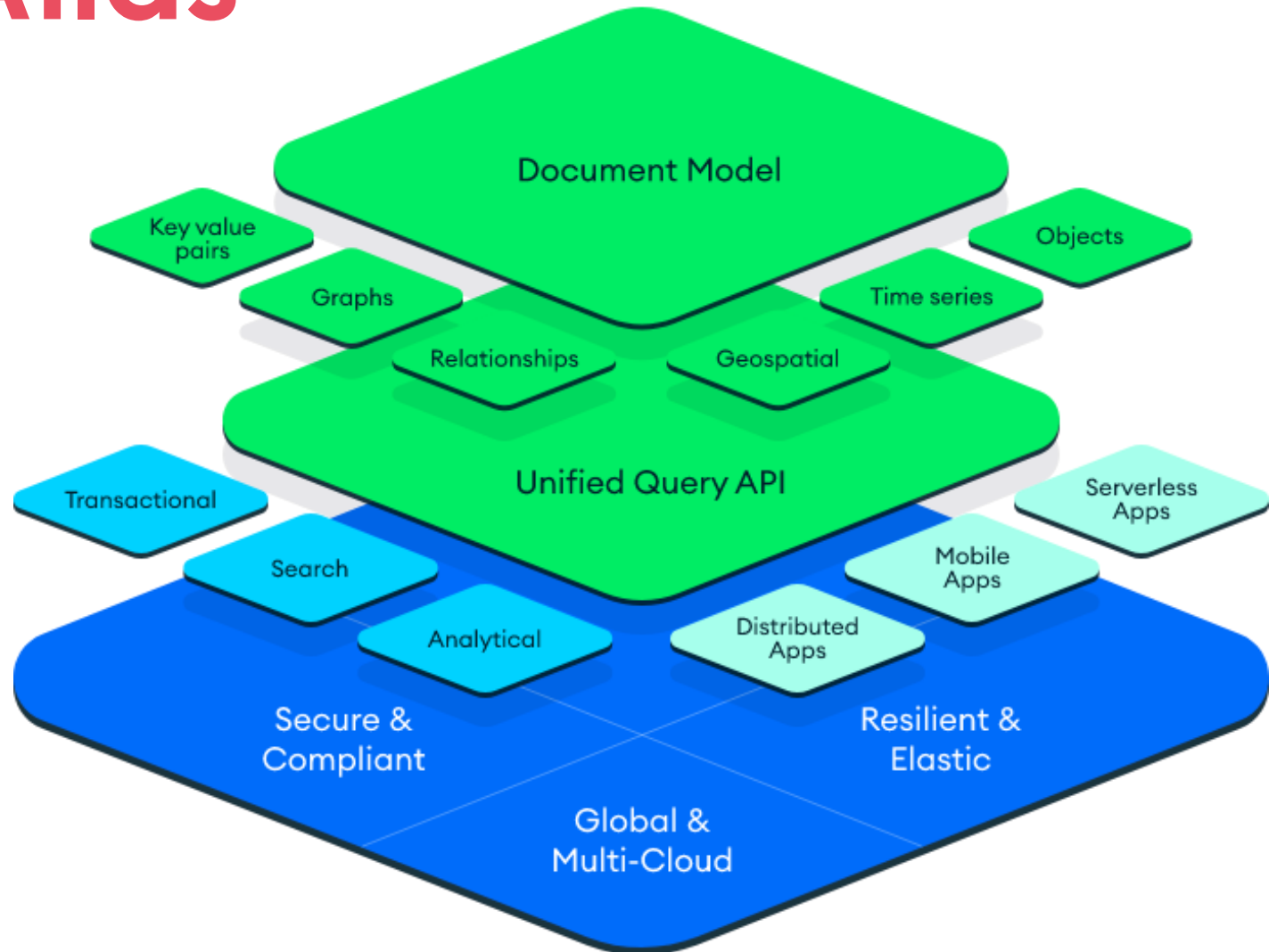
- Plataforma cloud
- Azure, AWS e GCP
- Deploy

The screenshot shows the MongoDB Atlas website. The top navigation bar includes links for Products, Solutions, Resources, Company, and Pricing, along with a search icon, a 'Sign In' link, and a green 'Try Free' button. The main content area features the heading 'MongoDB Atlas. The multi-cloud developer data platform.' followed by a subheading: 'An integrated suite of cloud database and data services to accelerate and simplify how you build with data.' Below this is another 'Try Free' button and a 'Contact sales' link with a right-pointing arrow. On the right side, there is a sidebar with a green background. It contains two main sections: 'Cluster' and 'Serverless'. Each section has a 'Read' and 'Write' toggle, a 'Connections' section, and a 'Network In' / 'Network Out' section. A chatbot window is overlaid on the sidebar, displaying 'Hi there!' and 'Can I help you with anything?'. At the bottom of the sidebar, there are links for 'Migrate to MongoDB', 'Build a new application using MongoDB', 'Learn about MongoDB', and 'Something Else'. A 'Connect To Your Database' button is also visible at the bottom of the sidebar.

[MongoDB Atlas](#)

MongoDB Atlas

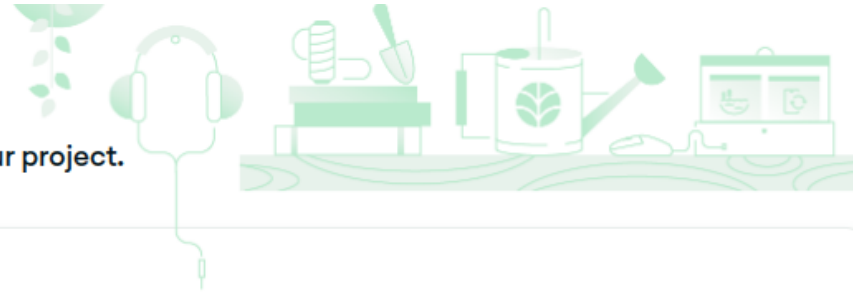
- Documentos
- UQ-API
- Multi-cloud



MongoDB Atlas

Welcome to Atlas! 

Tell us a few things about yourself and your project.



What is your goal today?

Your answer will help us guide you to successfully getting started with MongoDB Atlas.

- ☐ Build a new application
- ☐ Migrate an existing application
- ☐ Learn MongoDB
- ☐ Explore what I can build

What type of application are you building?

Select...

MongoDB Atlas

What type of application are you building?


Content Management ▼

What is your preferred language?

We'll use this to customize code samples and content we share with you. You can always change this later.

 Python ▼

MongoDB Atlas




MONGODB.ATLAS

Deploy a cloud database

Experience the best of MongoDB on AWS, Azure, and Google Cloud. Choose a deployment option to get started.

NEW

 **Serverless**


For application development and testing, or workloads with variable traffic. Minimal configuration required.

- ✓ Pay only for the operations you run
- ✓ Resources scale seamlessly to meet your workload
- ✓ Always-on security and backups

Create

Starting at
\$0.10/1M reads

ADVANCED

 **Dedicated**


For production applications with sophisticated workload requirements. Advanced configuration controls.

- ✓ Network isolation and fine-grained access controls
- ✓ On-demand performance advice
- ✓ Multi-region and multi-cloud options available

Create

Starting at
\$0.08/hr*
*estimated cost \$56.94/month

FREE


 **Shared**

For learning and exploring MongoDB in a cloud environment. Basic configuration options.

- ✓ No credit card required to start
- ✓ Explore with sample datasets
- ✓ Upgrade to dedicated clusters for full functionality

Create

Starting at
FREE



MongoDB Atlas

[CLUSTERS](#) > [CREATE A SHARED CLUSTER](#)

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](#).

Serverless

Dedicated

FREE Shared

For learning and exploring MongoDB in a sandbox environment. Basic configuration controls.

No credit card required to start. Upgrade to dedicated clusters for full functionality.

Explore with sample datasets. Limit of one free cluster per project.

Cloud Provider & Region

AWS, Sao Paulo (sa-east-1) ▼

aws

Google Cloud


Azure

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





MongoDB Atlas


Cloud Provider & Region

GCP, Sao Paulo (southamerica-east1) ▼









★ Recommended region ⓘ  Dedicated tier region ⓘ



NORTH AMERICA / SOUTH AMERICA



EUROPE / MIDDLE EAST / AFRICA



ASIA PACIFIC



 Sao Paulo (southamerica-east1) ★


 Iowa (us-central1) ★



 South Carolina (us-east1) ★ 



 N. Virginia (us-east4) ★ 



 Los Angeles (us-west2) ★ 



 Salt Lake City (us-west3) ★ 


 Belgium (europe-west1) ★


 Warsaw (europe-central2) ★ 


 Finland (europe-north1) ★ 


 London (europe-west2) ★ 


 Frankfurt (europe-west3) ★ 


 Netherlands (europe-west4) ★


 Mumbai (asia-south1) ★

 Singapore (asia-southeast1) ★

 Seoul (asia-northeast3) ★

 Jakarta (asia-southeast2) ★

 Taiwan (asia-east1) ★


 Tokyo (asia-northeast1) ★

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



Dúvidas?

- > Fórum/Artigos
- > Comunidade Online (Discord)



Para saber mais

Python e MongoDB

- <https://pymongo.readthedocs.io/en/stable/>
- <https://pymongo.readthedocs.io/en/stable/tutorial.html>
- <https://www.mongodb.com/docs/>
- <https://www.mongodb.com/json-and-bson>
- <https://www.mongodbtutorial.org/getting-started/mongodb-basics>



Para saber mais

Python e MongoDB

- <https://acervolima.com/consultas-aninhadas-em-pymongo/#:~:text=PyMongo%C3%A9%20um%C3%B3dulo%20Python,est%C3%A3o%20no%20formato%20JSON%20bin%C3%A1rio>
- <https://www.mongodb.com/docs/manual/tutorial/query-documents/>

`pip install pymongo`

`pip install build-essential python3-dev`

