Resolução PL05 - Bases de Dados NoSQL

Introdução ao MongoDB

1. customers.json

- **Alíneas 1, 2, 3, 4 e 5**

```
> show databases
```

Através do comando acima descrito conseguimos verificar as *databases* disponíveis. Após a criação da *collection* e da *database* customers, conseguimos validar a criação de ambas.

```
> show databases
admin   0.000GB
config  0.000GB
local   0.000GB
> show databases
admin      0.000GB
config     0.000GB
customers  0.000GB
local      0.000GB
```

- **Alínea 6**

```
> use customers
> db.customers.insertOne( {first_name: "John", last_name: "Doe", age: 30} )
```

- **Alínea 7**

```
    {first_name: "Steven", last_name: "Williams", gender: "male"},
    {first_name: "Mary", last_name: "Troy", age: 19}
  ] )
```

- **Alínea 8**

```
> db.customers.insertOne( {first_name: "Ric", last_name: "Foe", adress: {street:
"4 main st", city: "Boston"} } )
```

- **Alínea 9**

```
> db.customers.insertOne( {first_name: "Ana", last_name: "Durant", graduations:
["phD", "Msc"], adress: {street: "4 Square Garden", city: "New York"}, age: 32}
```

- **Alínea 10**

```
db.customers.insertOne( {first_name: "Natalia", last_name: "Will", age: 44,
gender: "female"}
```

- **Alínea 11 e 12**

```
> db.customers.find()
```

```
{ "_id" : ObjectId("5db01c6143fc08bbc84349a7"), "first_name" : "John", "last_name" : "Doe", "age" : 30 }
{ "_id" : ObjectId("5db01d4d99e411bb481d9688"), "first_name" : "Steven", "last_name" : "Williams", "gender" : "male" }
{ "_id" : ObjectId("5db01d4d99e411bb481d9689"), "first_name" : "Mary", "last_name" : "Troy", "age" : 19 }
{ "_id" : ObjectId("5db01e5a99e411bb481d968a"), "first_name" : "Ric", "last_name" : "Foe", "adress" : { "street" : "4 m
ain st", "city" : "Boston" } }
{ "_id" : ObjectId("5db01f1a99e411bb481d968b"), "first_name" : "Ana", "last_name" : "Durant", "graduations" : [ "phD",
"Msc" ], "adress" : { "street" : "4 Square Garden", "city" : "New York" }, "age" : 32 }
{ "_id" : ObjectId("5db01f8c99e411bb481d968c"), "first_name" : "Natalia", "last_name" : "Will", "age" : 44, "gender" :
"female" }
```

```
> db.customers.find().pretty()
```

```
{
        "_id" : ObjectId("5db01c6143fc08bbc84349a7"),
        "first_name" : "John",
        "last_name" : "Doe",
        "age" : 30
}
{
        "_id" : ObjectId("5db01d4d99e411bb481d9688"),
        "first_name" : "Steven",
        "last_name" : "Williams",
        "gender" : "male"
}
{
        "_id" : ObjectId("5db01d4d99e411bb481d9689"),
        "first_name" : "Mary",
        "last_name" : "Troy",
        "age" : 19
}
```

etc.

- **Alínea 13**

```
> db.customers.update( {first_name: "Ric"}, {$set: {age: 45}}
```

- **Alínea 14**

```
> db.customers.find( {last_name: {$regex: ".*Wil.*"}} )
```

- **Alínea 15**

```
> db.customers.update( {first_name: "Steven"}, {$set: {age: 35}} )
```

- **Alínea 16**

```
> db.customers.update( {first_name: "Ana", age: {$gt: 30}}, {$inc: {age: 10}} )
```

- **Alínea 17**

```
> db.customers.update( {first_name: "Ric"}, {$unset: {age: ""}} )
```

- **Alínea 18**

```
> db.customers.find( {first_name: "Jimy"}, {first_name: "Jimmy", last_name:
"Connors", age: 25, gender: "male"}, {upsert: true})
```

- **Alínea 19**

```
> db.customers.find( {age: {$gt: 25}} )
```

- **Alínea 20**

```
> db.customers.find( {gender: "male"} )
```

- **Alínea 21**

```
> db.customers.deleteOne( {first_name: "Mary"} )
```

- **Alínea 22**

```
> db.customers.find( {first_name: {$in: ["Ana", "Ric"]}} )
```

2. restaurants.json

- **Alínea 1**

```
FILTER: {}
```

```
db.getCollection("restaurants").find({})
```

- **Alínea 2**

```
FILTER: {}
PROJECT: {"restaurante_id": 1, "name": 1, "borough": 1, "cuisine": 1}
```

```
db.getCollection("restaurants").find({},
    {
        "restaurante_id" : 1.0,
        "name" : 1.0,
        "borough" : 1.0,
        "cuisine" : 1.0
    }
)
```

- **Alínea 3**

```
FILTER: {}
PROJECT: {"restaurante_id": 1, "name": 1, "borough": 1, "cuisine": 1, "_id": 0}
```

```
db.getCollection("restaurants").find({},
    {
        "restaurante_id" : 1.0,
        "name" : 1.0,
        "borough" : 1.0,
        "cuisine" : 1.0,
        "_id" : 0.0
    }
)
```

- **Alínea 4**

```
FILTER: {}
PROJECT: {"restaurante_id": 1, "name": 1, "borough": 1, "address.zipcode": 1,
"_id": 0}
```

```
db.getCollection("restaurants").find({},
    {
        "restaurante_id" : 1.0,
        "name" : 1.0,
        "borough" : 1.0,
        "address.zipcode" : 1.0,
        "_id" : 0.0
    }
);
```

- **Alínea 5**

```
FILTER: {"borough": "Bronx"}
```

```
db.getCollection("restaurants").find(
    {
        "borough" : "Bronx"
    }
)
```

- **Alínea 6**

```
FILTER: {"borough": "Bronx"}
LIMIT: 5
```

```
db.getCollection("restaurants").find(
    {
        "borough" : "Bronx"
    }
).limit(5)
```

- **Alínea 7**

```
FILTER: {"borough": "Bronx"}
LIMIT: 5
SKIP: 5
```

```
db.getCollection("restaurants").find(
    { "borough" : "Bronx" }
).skip(5).limit(5)
```

- **Alínea 8**

```
FILTER: {"grades.score": {$gte: 90}}
```

```
db.getCollection("restaurants").find(
    { "grades.score" : {"$gte" : 90.0} }
)
```

- **Alínea 9**

```
FILTER: {"grades": {$elemMatch: {"score": {$gt:80, $lt: 100}} }
```

```
db.getCollection("restaurants").find(
    {
        "grades" : {
            "$elemMatch" : {
                "score" : { "$gt" : 80.0, "$lt" : 100.0 }
            }
        }
    }
)
```

- **Alínea 10**

```
FILTER: {"address.coord.0": {$lt :-95.754168}}
```

```
db.getCollection("restaurants").find(
    { "address.coord.0" : {"$lt" : -95.754168} }
)
```

- **Alínea 11**

```
FILTER: {$and: [
            { "cuisine": {$nin : ["American"]} },
            { "grades.score": {$gt :70} },
            { "address.coord.0": {$lt: -65.754168} }
        ]}
```

```
db.getCollection("restaurants").find(
    {
        "$and" : [
            { "cuisine" : { "$nin" : ["American"] } },
            { "grades.score" : {"$gt" : 70.0} },
            { "address.coord.0" : {"$lt" : -65.754168} }
        ]
    }
)
```

- **Alínea 12**

```
FILTER: {
            "cuisine": { $nin : ["American"] },
            "grades.score": {$gt :70},
            "address.coord.0": {$lt: -65.754168}
        }
```

```
db.getCollection("restaurants").find(
    {
        "cuisine" : { "$nin" : ["American"] },
        "grades.score" : {"$gt" : 70.0},
        "address.coord.0" : {"$lt" : -65.754168}
    }
)
```

- **Alínea 13**

```
FILTER: {
            "cuisine": {$nin : ["American "]},
            "grades.grade": {$in: ["A"]} ,
            "borough": {$nin: ["Brookly"]}
        }
SORT: {"cuisine": 1}
```

```
db.getCollection("restaurants").find(
    {
        "cuisine" : { "$nin" : ["American"] },
        "grades.grade" : { "$in" : ["A"] },
        "borough" : { "$nin" : ["Brookly"] }
    }
).sort({"cuisine" : 1.0})
```

- **Alínea 14**

```
FILTER: {
            "borough": "Bronx",
            "cuisine": {$in : ["American ","Chinese"]}
        }
```

```
db.getCollection("restaurants").find(
    {
        "borough" : "Bronx",
        "cuisine" : { "$in" : ["American ", "Chinese"] }
    }
)
```

- **Alínea 15**

```
// Duas formas diferentes de se fazer.
FILTER: { "address.coord": {$type: 1} }
FILTER: {$or: [
            {"address.coord.0":{$type :1}},
            {"address.coord.1":{$type :1}}
        ]}
```

```
db.getCollection("restaurants").find(
    { "address.coord" : {"$type" : 1.0} }
)
```

- **Alínea 16**

```
FIELD: { "address.street" : {$exists: true} }
```

```
db.getCollection("restaurants").find(
    { "address.street" : {"$exists" : true} }
)
```

- **Alínea 17**

```
SORT: {"cuisine": -1, "borough": 1}
```

```
db.getCollection("restaurants").find({}).sort(
    {"cuisine" : -1.0, "borough" : 1.0}
)
```

- **Alínea 18**

```
FILTER: { "address.coord.1": { $gt: NumberInt(42), $lte: NumberInt(52) } }
```

```
db.getCollection("restaurants").find(
    {
        "address.coord.1" : {
            "$gt" : NumberInt(42),
            "$lte" : NumberInt(52)
        }
    }
)
```

- **Alínea 19**

```
FILTER: { "grades.score": {$lt : 10} }
PROJECT: {"restaurant_id": 1, "name": 1, "borough": 1, "cuisine":1}
```

```
db.getCollection("restaurants").find(
    { "grades.score" : {"$lt" : 10.0} },
    {
        "restaurant_id" : 1.0,
        "name" : 1.0,
        "borough" : 1.0,
        "cuisine" : 1.0
    }
)
```

- **Alínea 20**

```
FILTER: { "borough": {$nin: ["Staten Island", "Queens", "Bronx", "Brooklin" ]} }
PROJECT: {"restaurant_id": 1, "name": 1, "borough": 1, "cuisine":1}
```

```
db.getCollection("restaurants").find(
    {
        "borough" : { "$nin" : ["Staten Island", "Queens", "Bronx", "Brooklin"]
}
    },
    {
        "restaurant_id" : 1.0,
        "name" : 1.0,
        "borough" : 1.0,
        "cuisine" : 1.0
    }
)
```