Introduction to Database Systems: CS312 Compass, MongoDB's DB Interface

Oliver Bonham-Carter

1 April 2019

Getting started with Mongo

Start MongoDB
Operators
Start MongoDB and Compass

Setup a data directory (if you have not already done so)

```
mkdir ~/mongodbData
```

Start the Mongo server with data directory as a parameter
Note: Control-C to exit.

```
mongod --dbpath ~/mongodbData/
```

With new another terminal, start the Mongo client

```
mongo
```

Find databases or collections, from Mongo's client

```
show dbs
show collections
```

Begin a new database, from Mongo's client

```
use myDB
```

How Do I Compare Values?

Operation	MongoDB	RDBMS
Equality	db.employees.find({"salary":"5000"})	where 'salary '= '5000'
Less Than	db.employees.find({"age":{**$lt**:30}})	where age < 30
Less Than Equals	db.employees.find({"age":{**$lte**:30}})	where age <= 30
Greater Than	db.employees.find({"age":{**$gt**:30}})	where age > 30
Greater Than Equals	db.employees.find({"age":{**$gte**:30}})	where age >= 30
Not Equals	db.employees.find({"age":{**$ne**:30}})	where age != 30

Details where age `less than` 30

```
db.employee.find({"age":{$lt:30}},{"email":1}).pretty()
```

```
> db.employee.find({"age":{$lt:30}},{"email":1}).pretty()
{
        "_id" : "5c89c73ec4863a49668b3784",
        "email" : "belinda.guzman@beadzza.org"
}
{ "_id" : "5c89c73e5e7b4f23f0a32660", "email" : "cora.keith@combogen.io" }
```

How Do I Compare Values?

Details where age greater than 30

```
db.employee.find({"age":{$gt:30}},{"email":1}).pretty()
```

```
> db.employee.find({"age":{$gt:30}},{"email":1}).pretty()
{
        "_id" : "5c89c73ea91e2b221611b950",
        "email" : "pennington.moss@radiantix.tv"
}
{
        "_id" : "5c89c73ea080dbf02bd40f0e",
        "email" : "rosemary.french@prosure.co.uk"
}
```

Details where age not equal to 30

```
db.employee.find({"age":{$gt:30}},{"email":1}).pretty()
```

```
> db.employee.find({"age":{$ne:27}},{"email":1}).pretty()
{
        "_id" : "5c89c73ea91e2b221611b950",
        "email" : "pennington.moss@radiantix.tv"
}
{
        "_id" : "5c89c73ea080dbf02bd40f0e",
        "email" : "rosemary.french@prosure.co.uk"
}
{ "_id" : "5c89c73e5e7b4f23f0a32660", "email" : "cora.keith@combogen.io" }
```

Cool! Let's See That in Action!

BTW: This graphic found as a result of image searching, "The Coolest Thing." Apologies.

Getting started with Compass

Start MongoDB
Operators
Start MongoDB and Compass

Setup a data directory (if you have not already done so)

```
mkdir ~/mongodbData
```

Start the Mongo server with data directory as a parameter
Note: Control-C to exit.

```
mongod --dbpath ~/mongodbData/
```

With new another terminal, start the Compass client

```
compass
```

Find databases or collections, from Mongo's client

```
show dbs
show collections
```

Begin a new database, from Mongo's client

```
use myDB
```

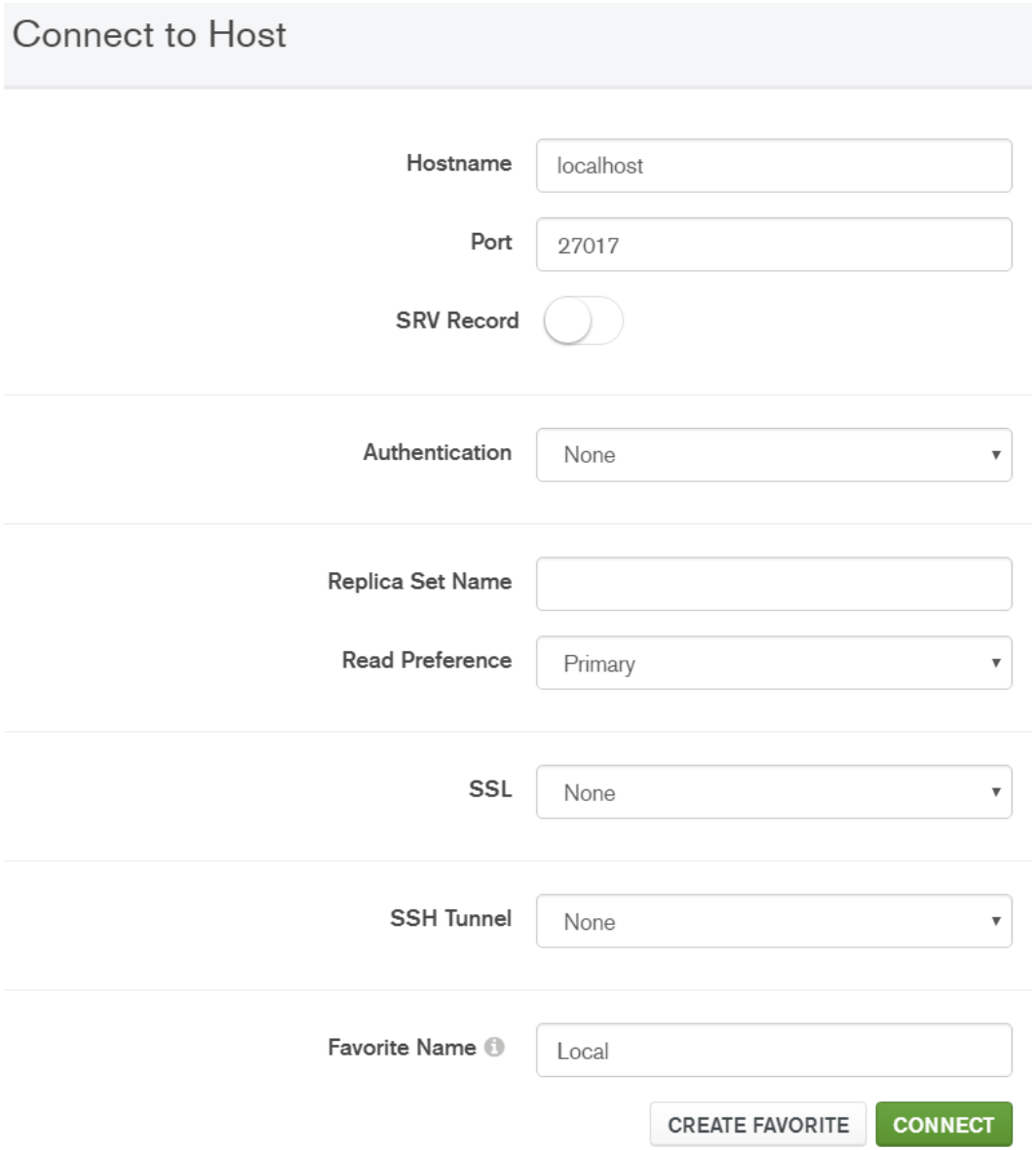
Compass Main screen

Connect to the server

Start MongoDB

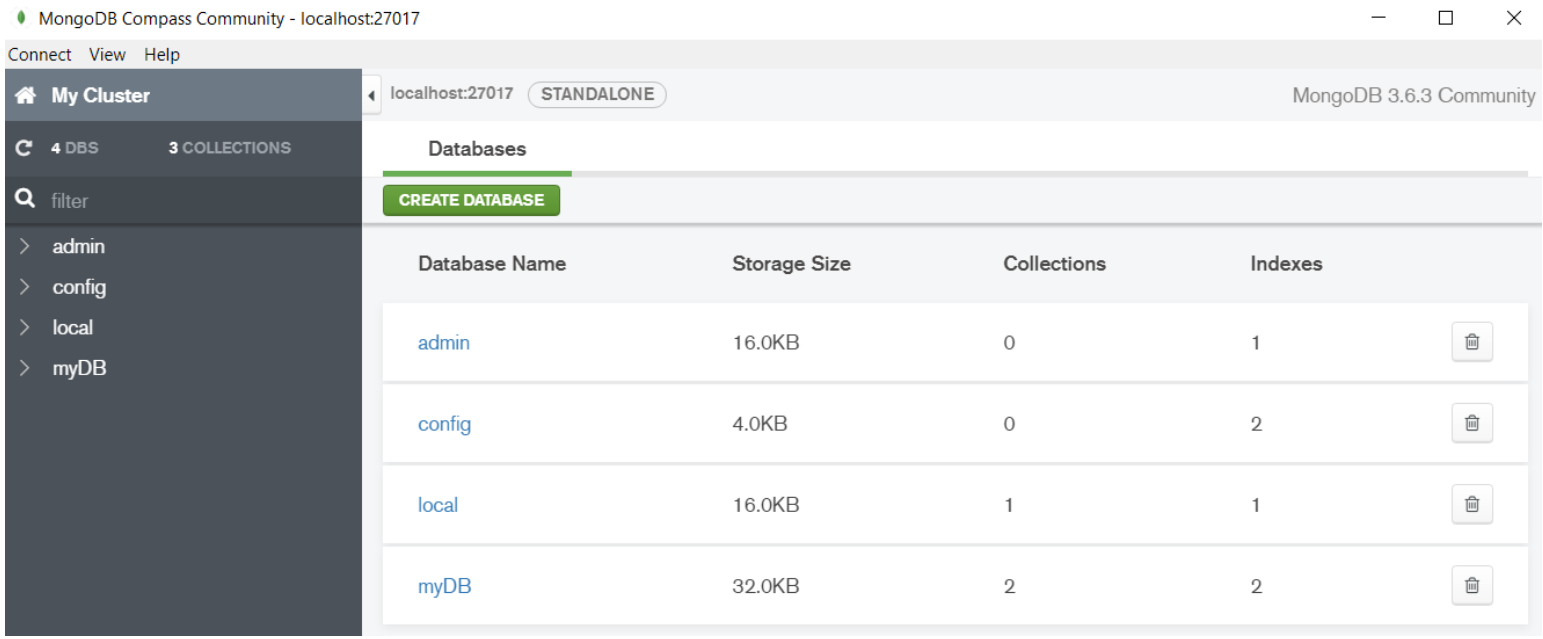
Operators

Start MongoDB and Compass



Compass Databases Menu

What DBs (database groups) are on my server?



Click *myDB*

Note: We have already established this DB during another class but, you could create a new DB by typing, `use myOtherDB`.

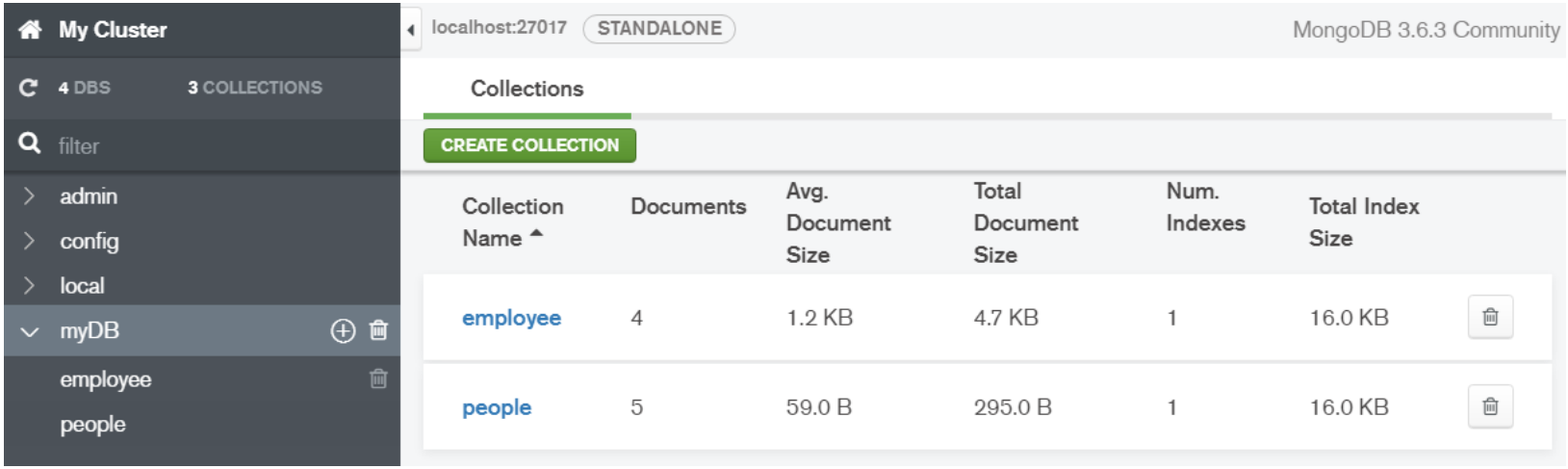
Compass Collections Menu

What Collections are on my server?

Start MongoDB

Operators

Start MongoDB and Compass

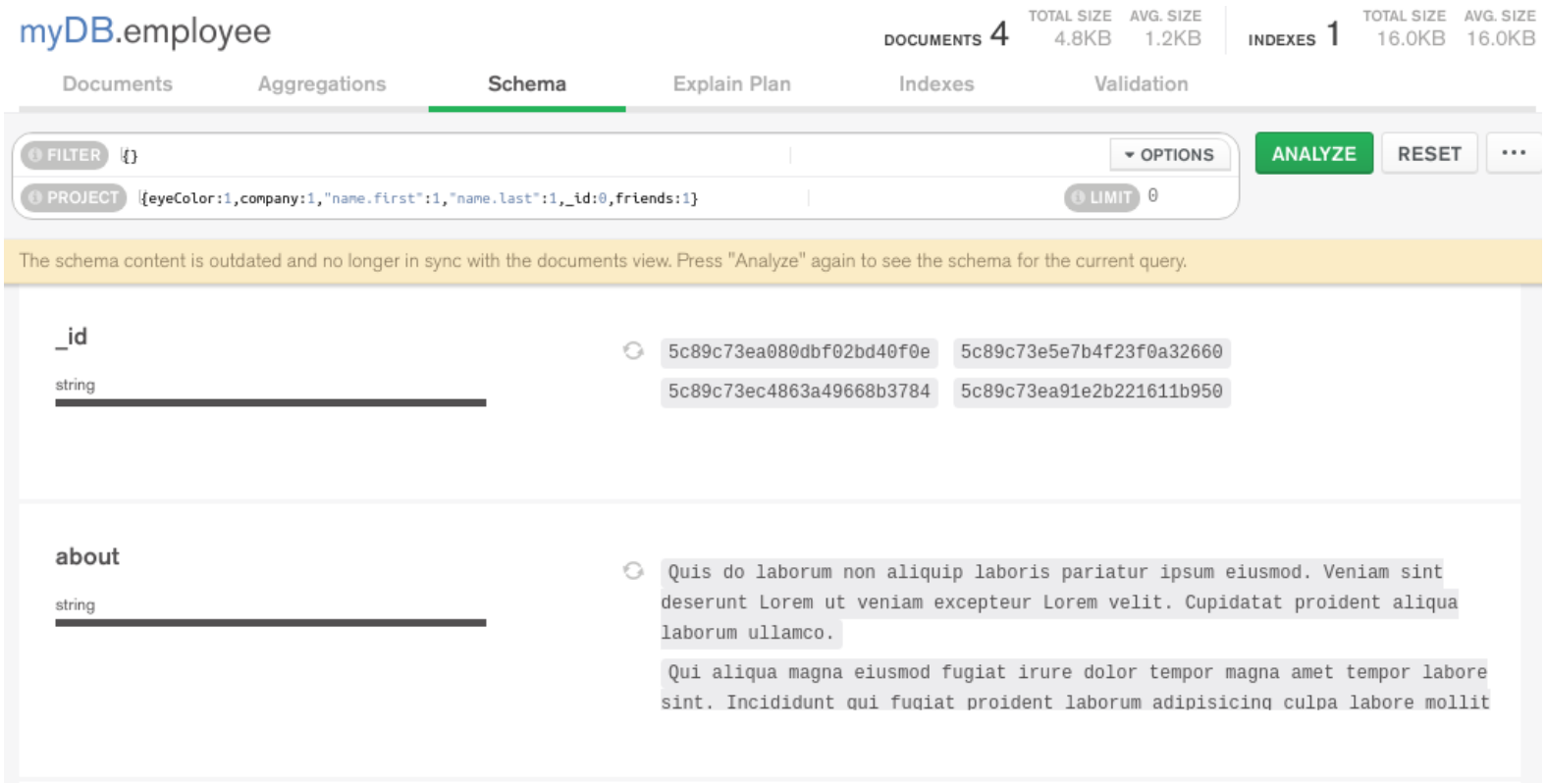


Click *employee*

Note: We have already established this collection during another class.

Schema

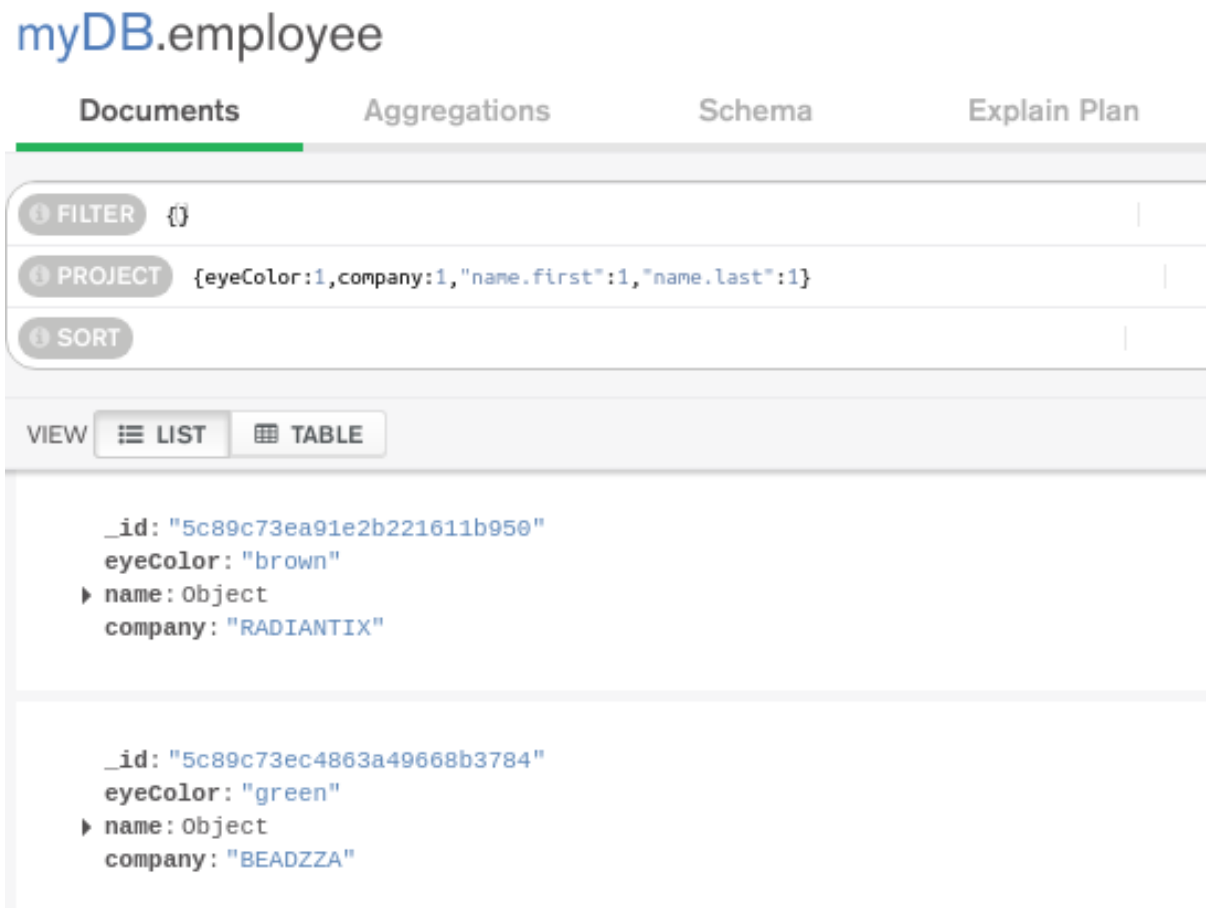
How do I see how my data is organized?



We get a look at how MongoDB organizes its data in this tab. Good for debugging.

Query!!

How do I run a query?



We have already established this collection from the file `syntheticData_small.json` during another class.

Query!!

Awesome! How do I run another query?

Start MongoDB

Operators

Start MongoDB and Compass

myDB.employee

Documents | Aggregations | Schema | Expla

FILTER {}

PROJECT {eyeColor:1,company:1,"name.first":1,"name.last":1,_id:0,friends:1}

SORT

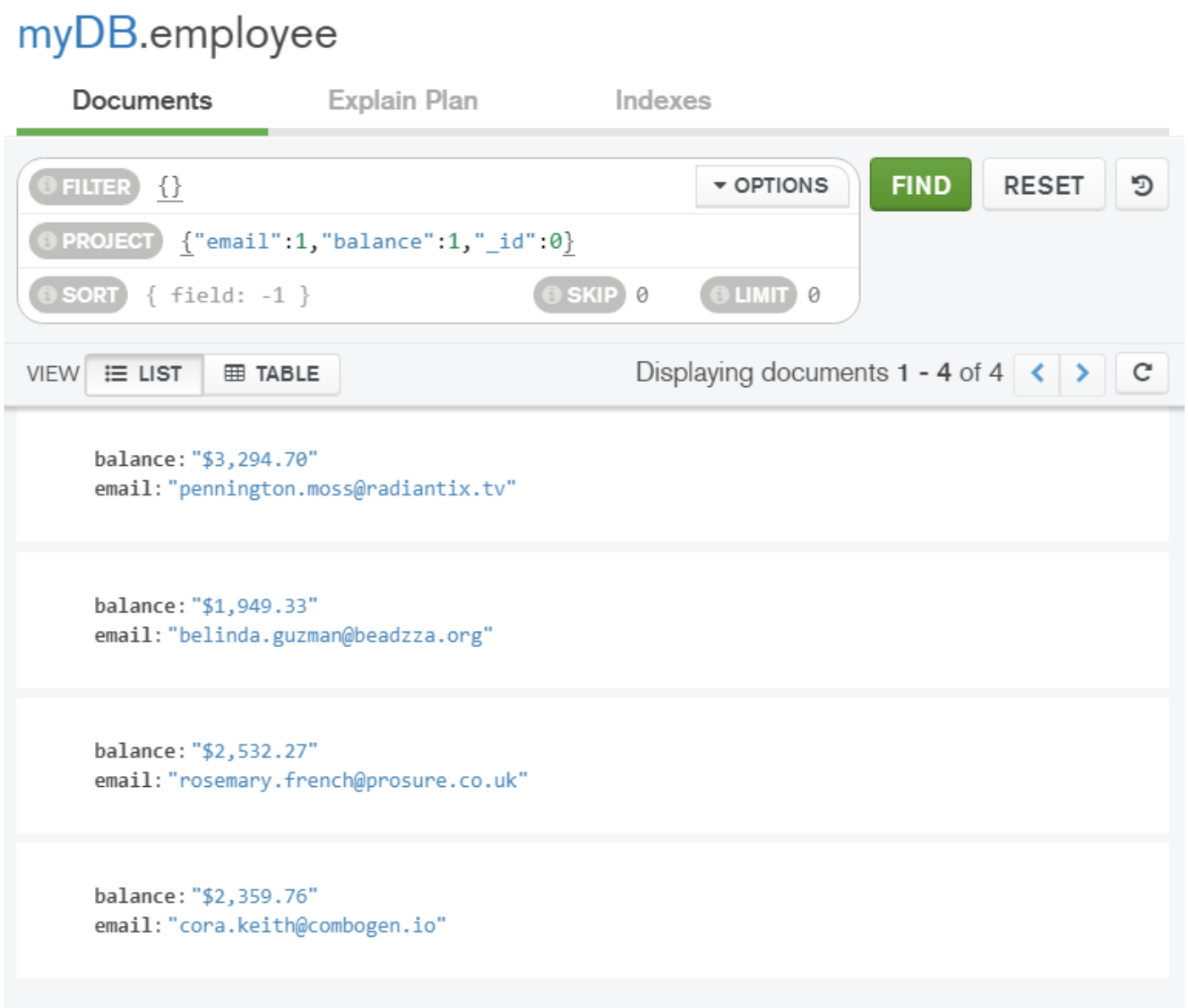
VIEW LIST TABLE

```
eyeColor: "brown"
▸ name: Object
company: "RADIANTIX"
▸ friends: Array
```

```
eyeColor: "green"
▸ name: Object
company: "BEADZZA"
▾ friends: Array
  ▾ 0: Object
      id: 0
      name: "Bryan Frederick"
  ▾ 1: Object
      id: 1
      name: "Navarro Rutledge"
  ▾ 2: Object
      id: 2
      name: "Jacklyn Eaton"
```

Query!!

Cool! How do I run yet another query?



Query As a Table!!

Can I display my query as a table?

Start MongoDB

Operators

Start MongoDB and Compass

myDB.employee

Documents | Explain Plan | Indexes

FILTER {} OPTIONS FIND RESET

PROJECT {"email":1,"balance":1,"_id":0}

SORT { field: -1 } SKIP 0 LIMIT 0

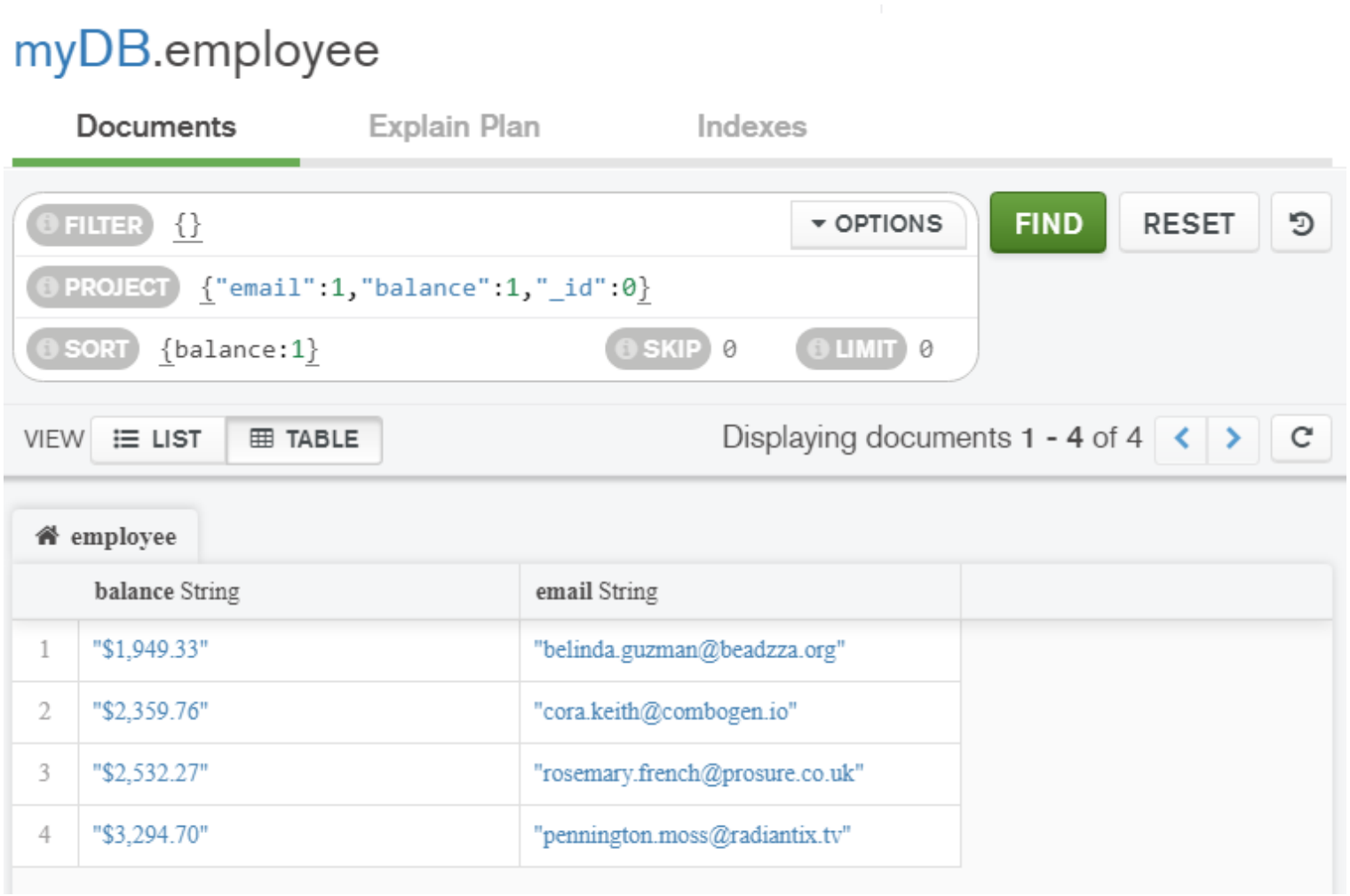
VIEW LIST TABLE Displaying documents 1 - 4 of 4

employee

	balance String	email String
1	"$3,294.70"	"pennington.moss@radiantix.tv"
2	"$1,949.33"	"belinda.guzman@beadzza.org"
3	"$2,532.27"	"rosemary.french@prosure.co.uk"
4	"$2,359.76"	"cora.keith@combogen.io"

Query As a SORTED Table!!

Can I display sorted results in my table?



Consider this...

- Can you create and populate a completely new MongoDB database?
- Can you write sophisticated queries in your database to isolate meaningful information from the data?