

S17 T01: Bases de dades relacionals – Eduardo Baffi

Descripció*

Comencem a familiaritzar-nos amb bases de dades NoSQL !!! Comencem amb uns quants exercicis bàsics

Nivell 1

- Exercici 1

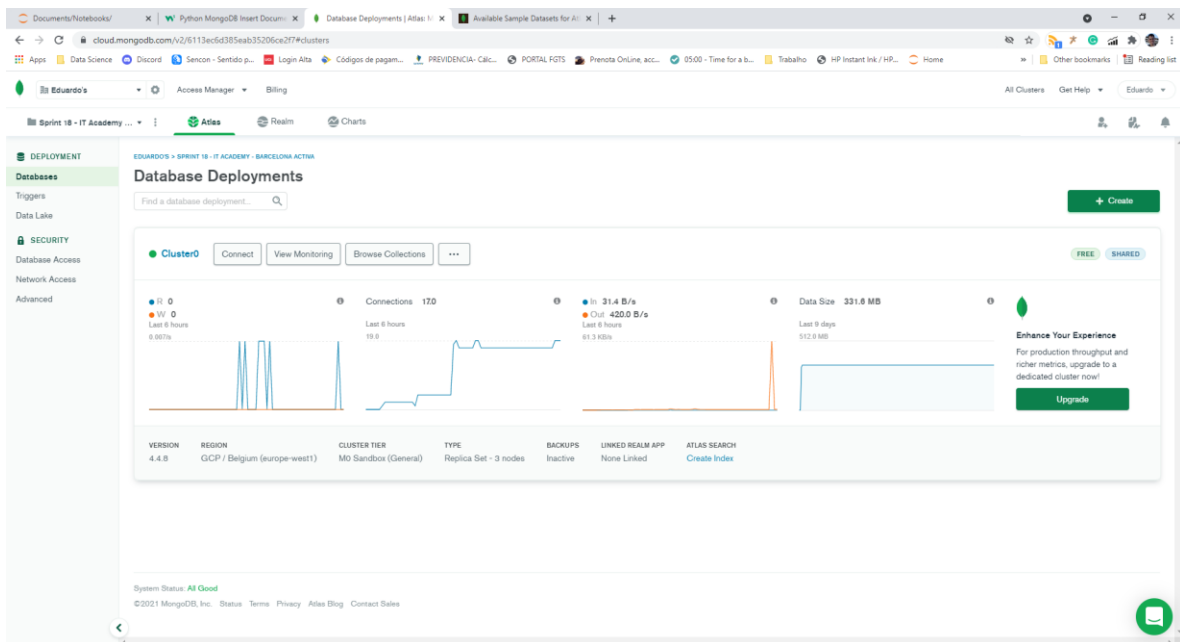
Crea una base de dades NoSQL utilitzant MongoDB. Afegeix-li algunes dades d'exemple que et permetin comprovar que ets capaç de processar-ne la informació de manera bàsica.

This exercise was done using the visual environment of *MongoDB Compass*. The following steps were followed:

1. Install MongoDB Compass.
2. Create a database called *myfirstdb*.
3. Create two collections (“car_fleet” and “city”).
4. Insert brief documents on both collections.
5. Load a sample dataset directly on MongoDB Atlas (Cloud Database). The sample include eight databases containing data about different sectors.

Some screenshots of the MongoDB Atlas and Compass interfaces are shown below:

Cluster0 Overview



Myfirstdb Database

MongoDB Compass - cluster0.mongodb.net/myfirstdb

Connect View Help

Local

12 DBS 31 COLLECTIONS

HOSTS

- cluster0-shard-00-02.opgt...
- cluster0-shard-00-00.opgt...
- cluster0-shard-00-01.opgt...

CLUSTER

Replica Set (atlas-mc20z-...

3 Nodes

EDITION

MongoDB 4.4.0 Enterprise

Filter your data

- > admin
- > config
- > local
- > mydatabase
- ✓ myfirstdb

car_fleet

city

sample_artab

sample_analytice

sample_geospacial

sample_mile

sample_restaurants

sample_supplies

sample_training

sample_weatherdata

+

Collections

CREATE COLLECTION

Collection Name	Documents	Avg. Document Size	Total Document Size	Num. Indexes	Total Index Size	Properties
car_fleet	5	90.6 B	453.0 B	1	36.0 KB	
city	5	87.6 B	439.0 B	1	36.0 KB	

- *car_fleet* collection documents

MongoDB Compass - cluster0.mongodb.net/myfirstdb.car_fleet

Connect View Collection Help

Local

12 DBS 31 COLLECTIONS

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- cluster0-shard-00-00.opgt...
- cluster0-shard-00-01.opgt...

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sample_geospacial

sample_mile

sample_restaurants

sample_supplies

sample_training

sample_weatherdata

+

myfirstdb.car_fleet

Documents

Aggregations Schema Explain Plan Indexes Validation

5 DOCUMENTS TOTAL SIZE 453B AVG. SIZE 91B 1 INDEXES TOTAL SIZE 36.0KB AVG. SIZE 36.0KB

Filter [field: "value"]

ADD DATA VIEW

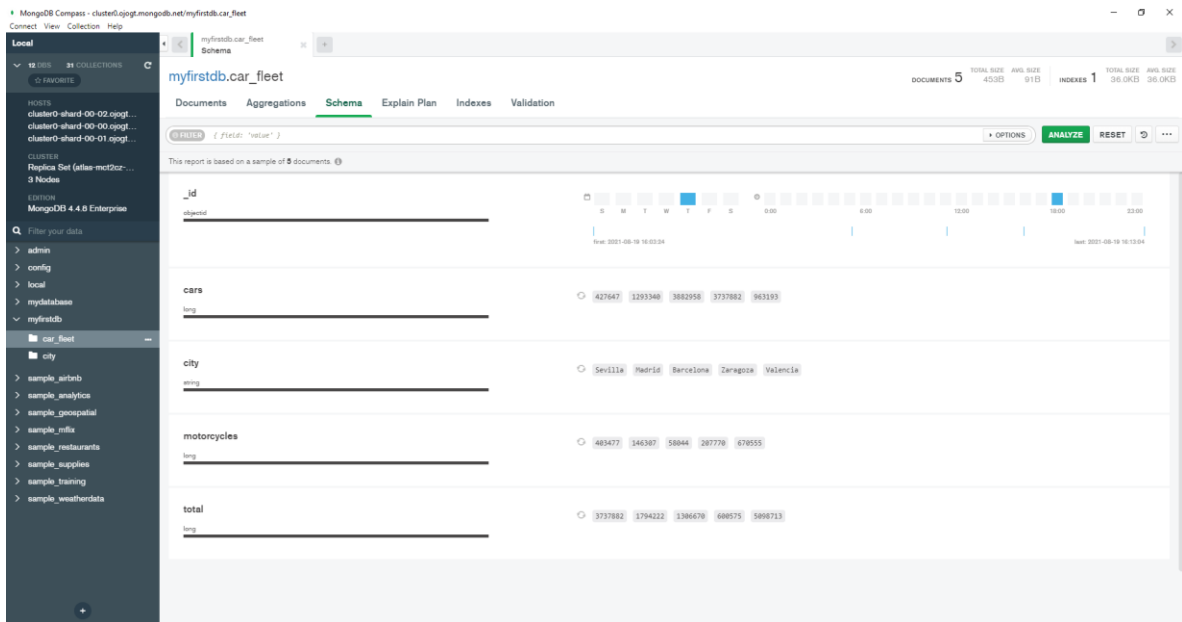
The content is outdated and no longer in sync with the current query. Press "Find" again to see the results for the current query.

Displaying documents 1 - 5 of 5

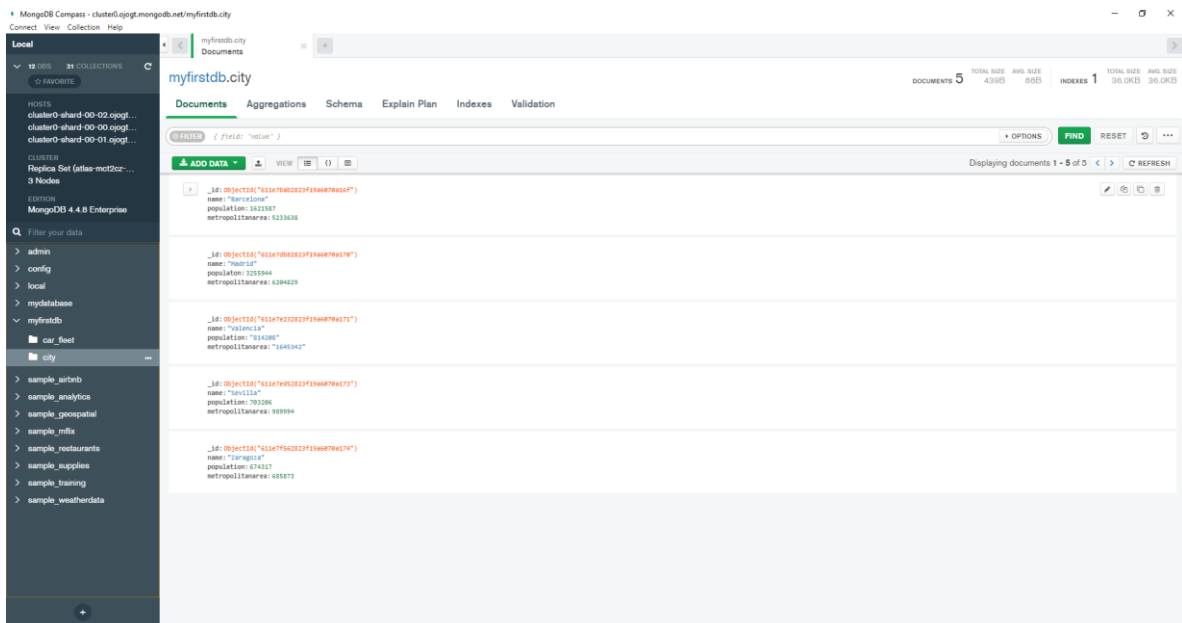
REFRESH

```
{ "_id": "003c1c361c630861c2823f336687861797",  
  "city": "Barcelona",  
  "cars": 3737882,  
  "motorcycles": 678955,  
  "total": 3737882 }  
  
{ "_id": "003c1c361c630861c2823f336687861797",  
  "city": "Madrid",  
  "cars": 5803580,  
  "motorcycles": 483477,  
  "total": 5803580 }  
  
{ "_id": "003c1c361c630861c2823f336687861797",  
  "city": "Cangas",  
  "cars": 427647,  
  "motorcycles": 18864,  
  "total": 446511 }  
  
{ "_id": "003c1c361c630861c2823f336687861797",  
  "city": "Sevilla",  
  "cars": 762183,  
  "motorcycles": 146387,  
  "total": 908570 }  
  
{ "_id": "003c1c361c630861c2823f336687861797",  
  "city": "Valencia",  
  "cars": 1293548,  
  "motorcycles": 247776,  
  "total": 1541324 }
```

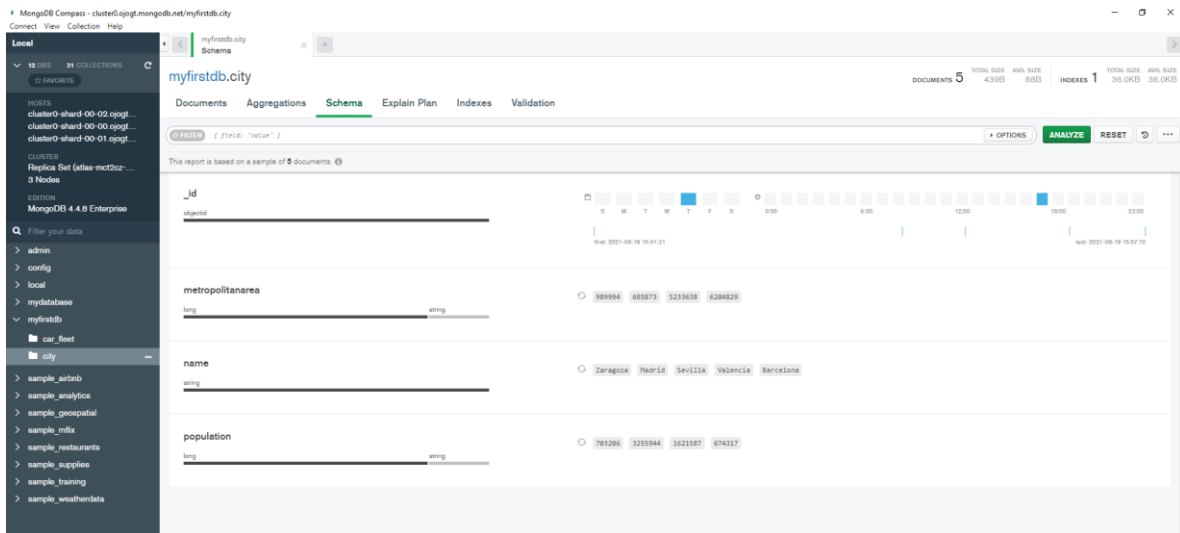
- *car_fleet* collection schema



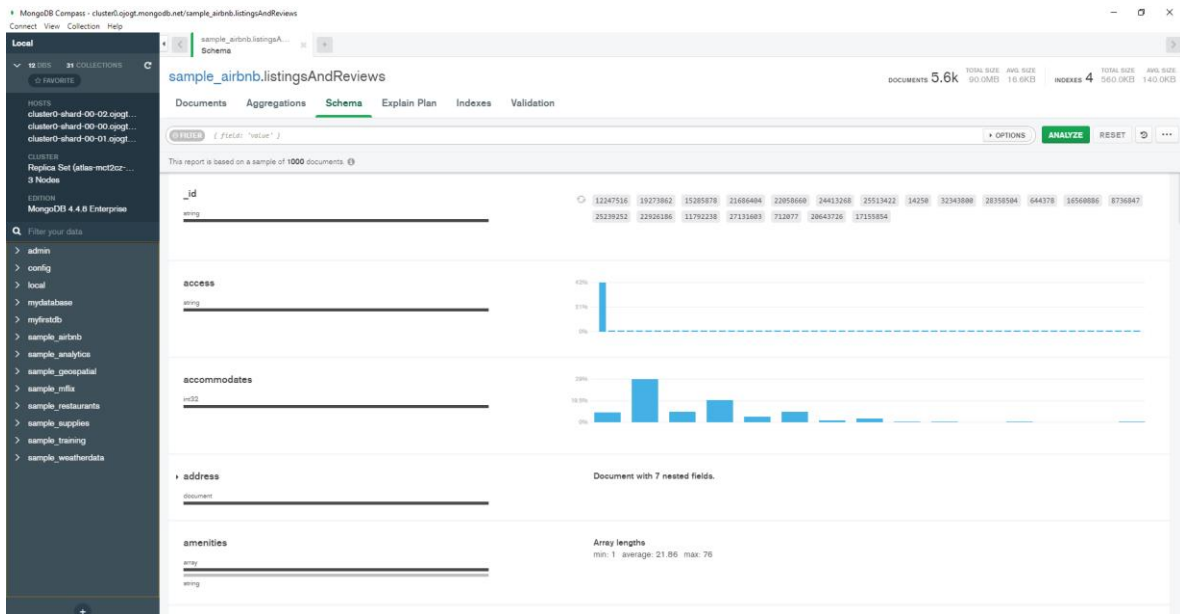
- *city* collection documents



- *city* collection schema



Examples of Sample Databases

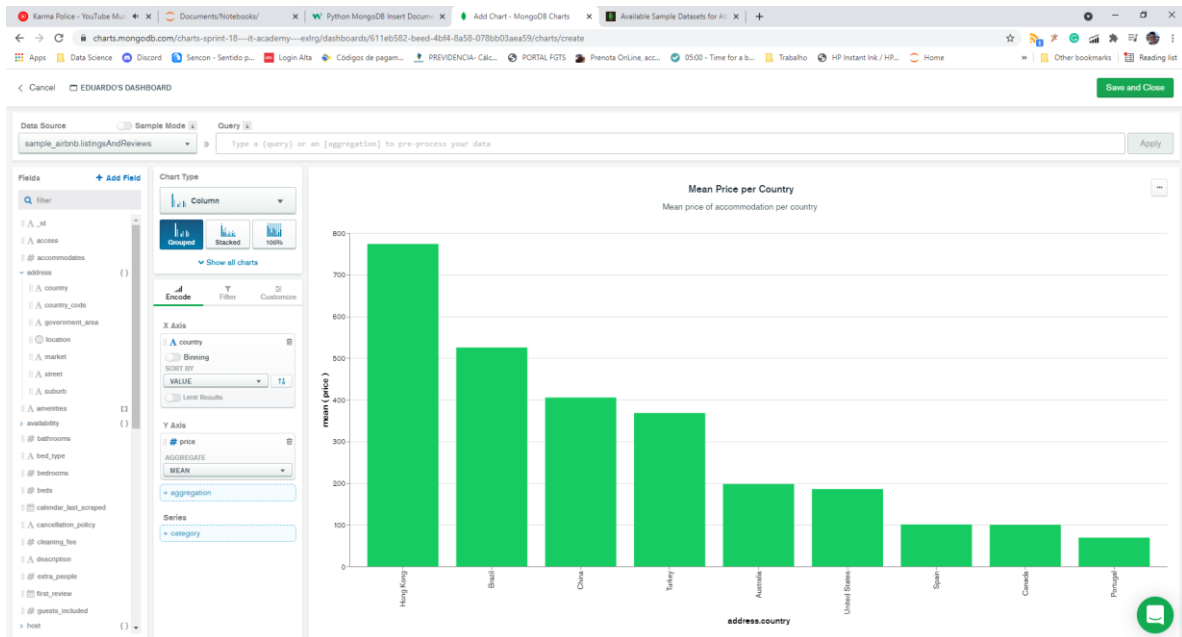


- *sample_airbnb*

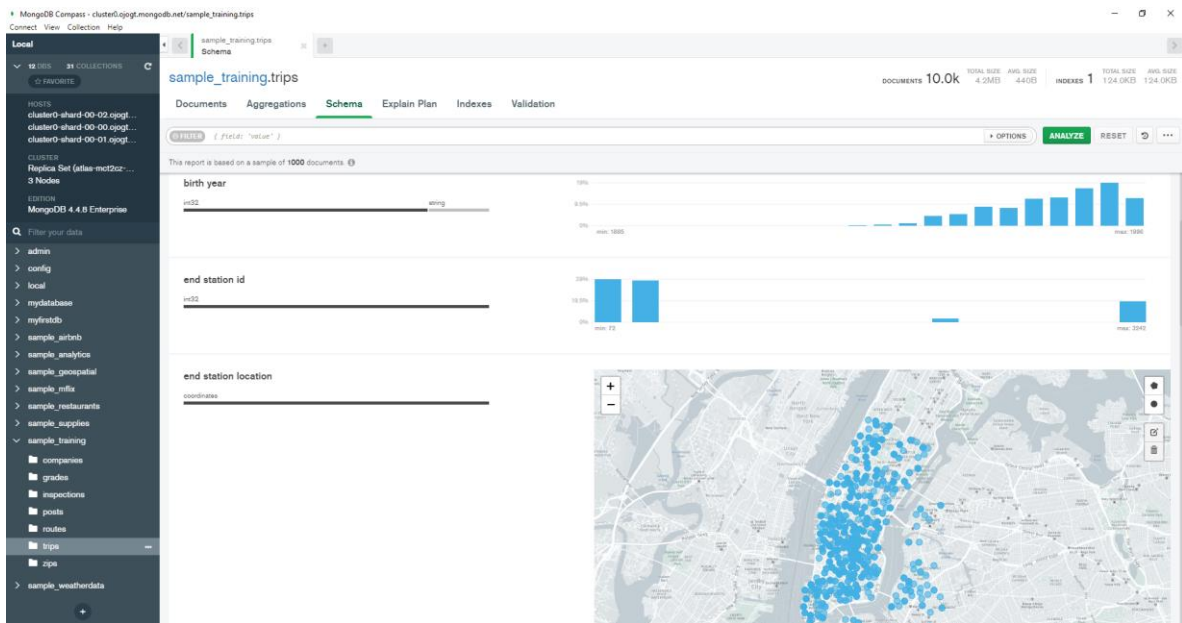
The screenshot shows the MongoDB Atlas interface. On the left, the 'DEPLOYMENT' sidebar is visible with sections for Databases, Triggers, Data Lake, SECURITY, Database Access, Network Access, and Advanced. The main panel displays the 'sample_airbnb.listingsAndReviews' collection. At the top, it shows 'COLLECTION SIZE: 89.99MB', 'TOTAL DOCUMENTS: 5555', and 'INDEXES TOTAL SIZE: 860KB'. Below this, there are tabs for 'Find', 'Indexes', 'Schema Anti-Patterns', 'Aggregation', and 'Search Indexes'. The 'Indexes' tab is active, showing a table of indexes with columns: Name, Definition, and Type; Size; Usage; Properties; and Action. The table lists five indexes: '_id_' (152.0KiB, < 1/min, REGULAR), 'property_type_1_room_type_1_beds_1' (64.0KiB, < 1/min, COMPOUND), 'name_1' (248.0KiB, < 1/min, REGULAR), 'address.location_3dsphere' (96.0KiB, < 1/min, SPARSE), and 'address.location' (96.0KiB, < 1/min, GEOSPATIAL). A 'CREATE INDEXES' button is in the top right. At the bottom, a 'System Status: All Good' message is shown.

The screenshot shows the MongoDB Compass Schema Explorer for the 'sample_airbnb.listingsAndReviews' collection. The left sidebar shows the 'Local' connection and a list of collections, with 'listingsAndReviews' selected. The main panel displays the 'Schema' tab, showing a sample of 1000 documents. The schema is visualized with a tree structure on the left and a bar chart on the right. The tree structure shows the following fields: '_id' (string), 'access' (string), 'accommodates' (integer), 'address' (document with 7 nested fields), and 'amenities' (array). The bar chart shows the distribution of values for each field. The 'access' field has a single value 'wing'. The 'accommodates' field has values ranging from 1 to 10. The 'address' field is a document with 7 nested fields. The 'amenities' field is an array with values ranging from 1 to 75. The top right of the panel shows 'DOCUMENTS 5.6k', 'TOTAL SIZE 90.0MB', 'AVG. SIZE 16.6KB', and 'INDEXES 4'.

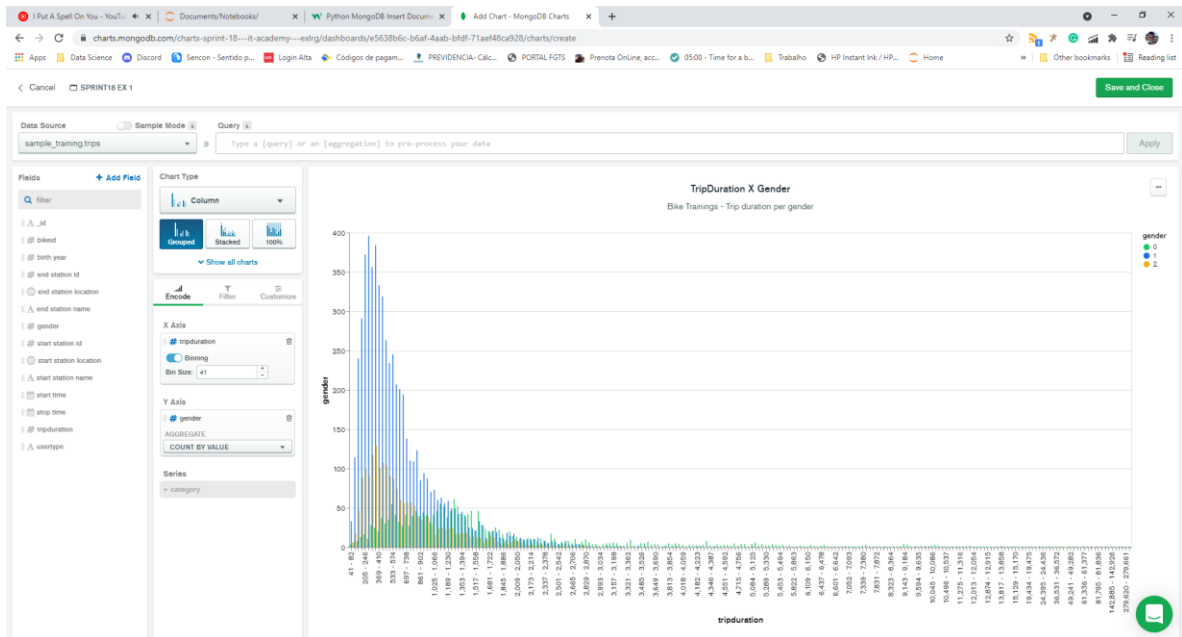
- *sample_airbnb using MongoDB Chart*



- *sample_training*



- *sample_training* Chart



***The rest of the exercises were done in a *Jupyter Notebook* and the file is available on *GitHub*.**