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Master in Fundamental Principles of Data Science

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MongoDB Query

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Do at home

1) Run the following command and start mongoDB using docker

docker run -p 27017:27017 -v <an empty folder path to store data>:/data/db mongo

Make sure to replace ***<an empty folder path to store data>*** with an actual folder path in your disk.

2) Install MongoDB Compass

https://docs.mongodb.com/compass/master/install/

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The mongo shell

- The mongo shell is an interactive JavaScript interface to MongoDB. You can use the mongo shell to query and update data as well as perform administrative operations.

- The mongo shell is included as part of the MongoDB Server installation. MongoDB also provides the mongo shell as a standalone package.

- You can run mongo shell without any command-line options to connect to a MongoDB instance running on your localhost with default port 27017:

```
mongo
```

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The mongo shell

- To explicitly specify the port, include the --port command-line option.

```
mongo --port 28015
```

- You can use the command-line option --host <host>:<port>. For example, to connect to a MongoDB instance running on a remote host machine:

```
mongo --host mongodb0.example.com:28015
```

- You can use the --username <user> and --password, --authenticationDatabase <db> command-line options:

```
mongo --username alice --password --authenticationDatabase admin --host mongodb0.examples.com --port 28015
```

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The mongo shell

- To display the database you are using, type db. The operation should return test, which is the default database.

- To switch databases, issue the use <db> helper, as in the following example:

```
use restaurants
```

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Lets Query

- Download the restaurants data virtual campus.

https://campusvirtual.ub.edu/pluginfile.php/5320526/mod_lesson/intro/restaurants.zip

- Use MongoDB Compass for the following
  1. Create a database as ***ub***
  2. Create a collection as ***restaurants***
  3. Unzip and import the restaurants.json in the collection ***restaurants***.

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Lets Query

Use Mongo Shell to run these queries

- Write a MongoDB query to display the fields restaurant_id, name, borough and cuisine for all the documents in the collection restaurant.
- Write a MongoDB query to display the fields restaurant_id, name, borough and cuisine, but exclude the field _id for all the documents in the collection restaurant.
- Write a MongoDB query to display all the restaurant which is in the borough Bronx.

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Solution

```
db.restaurants.find({},{"restaurant_id" :
1,"name":1,"borough":1,"cuisine" :1});

db.restaurants.find({},{"restaurant_id" :
1,"name":1,"borough":1,"cuisine" :1,"_id":0});

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

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Lets Query

- Write a MongoDB query to display the first 5 restaurant which is in the borough Bronx.
- Write a MongoDB query to display the next 5 restaurants after skipping first 5 which are in the borough Bronx.
- Write a MongoDB query to find the restaurants who achieved a score more than 90.
- Write a MongoDB query to find the restaurants that achieved a score, more than 80 but less than 100.

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Solution

- db.restaurants.find({"borough": "Bronx"}).limit(5);
- db.restaurants.find({"borough": "Bronx"}).skip(5).limit(5);
- db.restaurants.find({grades : { $elemMatch:{"score":{$gt : 90}}}});
- db.restaurants.find({grades : { $elemMatch:{"score":{$gt : 80 , $lt :100}}}});

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Lets Query

Write a MongoDB query to find the restaurants that do not prepare any cuisine of 'American' and their grade score more than 70 and latitude less than -65.754168.

```
db.restaurants.find(
        {$and:
            [
              {"cuisine" : {$ne :"American "}},
              {"grades.score" : {$gt : 70}},
              {"address.coord" : {$lt : -65.754168}}
            ]
         }
            );

db.restaurants.find(
                  {
                    "cuisine" : {$ne : "American "},
                    "grades.score" :{$gt: 70},
                    "address.coord" : {$lt : -65.754168}
                   }
               );
```

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Lets Query

- Write a MongoDB query to find the restaurants which contain 'Wil' as first three letters for its name.
- Write a MongoDB query to find the restaurants which contain 'ces' as last three letters for its name.
- Write a MongoDB query to find the restaurants which contain 'Reg' as three letters somewhere in its name.
- Write a MongoDB query to find the restaurants which belong to the borough Bronx and prepared either American or Chinese dish.

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Solution

- db.restaurants.find({name: /^Wil/});
- db.restaurants.find({name: /ces$/});
- db.restaurants.find({"name": /.*Reg.*/});
- db.restaurants.find(

```
{
 "borough": "Bronx" ,
 $or : [
 { "cuisine" : "American " },
 { "cuisine" : "Chinese" }
 ]
}
);
```

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Connectors and Drivers

python

mongoDB

Java

cassandra

R

MySQL

APACHE Spark

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Pymongo

```
import pymongo

myclient =
pymongo.MongoClient("mongodb://localhost:27017/")

mydb = myclient[”restaurants"]

mycol = mydb["restaurants "]
```

Home work: Use Pymongo to run all the queries we tried in class today.

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Work at home

- https://university.mongodb.com/courses/M001
- Chapter 4 and 5