Document Databases: MongoDB

# Install MongoDB

Create a MongoDB repository config file.

$ sudo vim /etc/yum.repos.d/mongodb-org-3.4.repo

Switch vim into insert mode with pressing “i” and copy following into it.

[mongodb-org-3.4]

name=MongoDB Repository

baseurl=https://repo.mongodb.org/yum/redhat/$releasever/mongodb-org/3.4/x86\_64/

gpgcheck=1

enabled=1

gpgkey=https://www.mongodb.org/static/pgp/server-3.4.asc

Exit insert mode with **Esc** and save the file with **:wq** and pressing **Enter**.  
Check whether repo is added correctly.

$ yum repolist

…

mongodb-org-3.4 MongoDB Repository

…

Install main MongoDB package.

$ sudo yum install -y mongodb-org

Run the server.

$ sudo service mongod start

Perform a sanity check.

$ mongo

> db.version()

> db.help()

> exit

# Add the data

We’ll be using a sample dataset describing restaurants. Download it:

$ wget https://raw.githubusercontent.com/mongodb/docs-assets/primer-dataset/primer-dataset.json

If you wish, check its contents. Every line contains a JSON object describing a restaurant, including scores it was given by visitors.

Import the data into database “lab”, collection “restaurants” which will be created implicitly.

$ mongoimport --db lab --collection restaurants --drop --file primer-dataset.json

Switch to lab db in mongo shell.

$ mongo

> use lab

Output one of the records.

> db.restaurants.findOne()

Output 20 of the records with less formatting.

> db.restaurants.find()

Copy and paste a screenshot or text of the output for the above commands here:

[cloudera@quickstart ~]$ mongoimport --db lab --collection restaurants --drop --file primer-dataset.json

2019-02-20T03:44:03.980-0800 connected to: localhost

2019-02-20T03:44:03.988-0800 dropping: lab.restaurants

2019-02-20T03:44:05.605-0800 imported 25359 documents

[cloudera@quickstart ~]$ mongo

MongoDB shell version v3.4.19

connecting to: mongodb://127.0.0.1:27017

MongoDB server version: 3.4.19

Server has startup warnings:

2019-02-20T03:39:34.068-0800 I STORAGE [initandlisten]

2019-02-20T03:39:34.068-0800 I STORAGE [initandlisten] \*\* WARNING: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine

2019-02-20T03:39:34.068-0800 I STORAGE [initandlisten] \*\* See http://dochub.mongodb.org/core/prodnotes-filesystem

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten]

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten] \*\* WARNING: Access control is not enabled for the database.

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten] \*\* Read and write access to data and configuration is unrestricted.

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten]

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten]

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten] \*\* WARNING: /sys/kernel/mm/transparent\_hugepage/enabled is 'always'.

2019-02-20T03:39:34.142-0800 I CONTROL [initandlisten] \*\* We suggest setting it to 'never'

2019-02-20T03:39:34.143-0800 I CONTROL [initandlisten]

2019-02-20T03:39:34.143-0800 I CONTROL [initandlisten] \*\* WARNING: soft rlimits too low. rlimits set to 1024 processes, 64000 files. Number of processes should be at least 32000 : 0.5 times number of files.

2019-02-20T03:39:34.143-0800 I CONTROL [initandlisten]

> use lab

switched to db lab

> db.restaurants.findOne()

{

"\_id" : ObjectId("5c6d3d84e41678682011f83c"),

"address" : {

"building" : "1007",

"coord" : [

-73.856077,

40.848447

],

"street" : "Morris Park Ave",

"zipcode" : "10462"

},

"borough" : "Bronx",

"cuisine" : "Bakery",

"grades" : [

{

"date" : ISODate("2014-03-03T00:00:00Z"),

"grade" : "A",

"score" : 2

},

{

"date" : ISODate("2013-09-11T00:00:00Z"),

"grade" : "A",

"score" : 6

},

{

"date" : ISODate("2013-01-24T00:00:00Z"),

"grade" : "A",

"score" : 10

},

{

"date" : ISODate("2011-11-23T00:00:00Z"),

"grade" : "A",

"score" : 9

},

{

"date" : ISODate("2011-03-10T00:00:00Z"),

"grade" : "B",

"score" : 14

}

],

"name" : "Morris Park Bake Shop",

"restaurant\_id" : "30075445"

}

> db.restaurants.find()

{ "\_id" : ObjectId("5c6d3d84e41678682011f83c"), "address" : { "building" : "1007", "coord" : [ -73.856077, 40.848447 ], "street" : "Morris Park Ave", "zipcode" : "10462" }, "borough" : "Bronx", "cuisine" : "Bakery", "grades" : [ { "date" : ISODate("2014-03-03T00:00:00Z"), "grade" : "A", "score" : 2 }, { "date" : ISODate("2013-09-11T00:00:00Z"), "grade" : "A", "score" : 6 }, { "date" : ISODate("2013-01-24T00:00:00Z"), "grade" : "A", "score" : 10 }, { "date" : ISODate("2011-11-23T00:00:00Z"), "grade" : "A", "score" : 9 }, { "date" : ISODate("2011-03-10T00:00:00Z"), "grade" : "B", "score" : 14 } ], "name" : "Morris Park Bake Shop", "restaurant\_id" : "30075445" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f83d"), "address" : { "building" : "469", "coord" : [ -73.961704, 40.662942 ], "street" : "Flatbush Avenue", "zipcode" : "11225" }, "borough" : "Brooklyn", "cuisine" : "Hamburgers", "grades" : [ { "date" : ISODate("2014-12-30T00:00:00Z"), "grade" : "A", "score" : 8 }, { "date" : ISODate("2014-07-01T00:00:00Z"), "grade" : "B", "score" : 23 }, { "date" : ISODate("2013-04-30T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2012-05-08T00:00:00Z"), "grade" : "A", "score" : 12 } ], "name" : "Wendy'S", "restaurant\_id" : "30112340" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f83e"), "address" : { "building" : "351", "coord" : [ -73.98513559999999, 40.7676919 ], "street" : "West 57 Street", "zipcode" : "10019" }, "borough" : "Manhattan", "cuisine" : "Irish", "grades" : [ { "date" : ISODate("2014-09-06T00:00:00Z"), "grade" : "A", "score" : 2 }, { "date" : ISODate("2013-07-22T00:00:00Z"), "grade" : "A", "score" : 11 }, { "date" : ISODate("2012-07-31T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2011-12-29T00:00:00Z"), "grade" : "A", "score" : 12 } ], "name" : "Dj Reynolds Pub And Restaurant", "restaurant\_id" : "30191841" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f83f"), "address" : { "building" : "2780", "coord" : [ -73.98241999999999, 40.579505 ], "street" : "Stillwell Avenue", "zipcode" : "11224" }, "borough" : "Brooklyn", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-06-10T00:00:00Z"), "grade" : "A", "score" : 5 }, { "date" : ISODate("2013-06-05T00:00:00Z"), "grade" : "A", "score" : 7 }, { "date" : ISODate("2012-04-13T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2011-10-12T00:00:00Z"), "grade" : "A", "score" : 12 } ], "name" : "Riviera Caterer", "restaurant\_id" : "40356018" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f840"), "address" : { "building" : "97-22", "coord" : [ -73.8601152, 40.7311739 ], "street" : "63 Road", "zipcode" : "11374" }, "borough" : "Queens", "cuisine" : "Jewish/Kosher", "grades" : [ { "date" : ISODate("2014-11-24T00:00:00Z"), "grade" : "Z", "score" : 20 }, { "date" : ISODate("2013-01-17T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2012-08-02T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2011-12-15T00:00:00Z"), "grade" : "B", "score" : 25 } ], "name" : "Tov Kosher Kitchen", "restaurant\_id" : "40356068" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f841"), "address" : { "building" : "8825", "coord" : [ -73.8803827, 40.7643124 ], "street" : "Astoria Boulevard", "zipcode" : "11369" }, "borough" : "Queens", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-11-15T00:00:00Z"), "grade" : "Z", "score" : 38 }, { "date" : ISODate("2014-05-02T00:00:00Z"), "grade" : "A", "score" : 10 }, { "date" : ISODate("2013-03-02T00:00:00Z"), "grade" : "A", "score" : 7 }, { "date" : ISODate("2012-02-10T00:00:00Z"), "grade" : "A", "score" : 13 } ], "name" : "Brunos On The Boulevard", "restaurant\_id" : "40356151" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f842"), "address" : { "building" : "2206", "coord" : [ -74.1377286, 40.6119572 ], "street" : "Victory Boulevard", "zipcode" : "10314" }, "borough" : "Staten Island", "cuisine" : "Jewish/Kosher", "grades" : [ { "date" : ISODate("2014-10-06T00:00:00Z"), "grade" : "A", "score" : 9 }, { "date" : ISODate("2014-05-20T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2013-04-04T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2012-01-24T00:00:00Z"), "grade" : "A", "score" : 9 } ], "name" : "Kosher Island", "restaurant\_id" : "40356442" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f843"), "address" : { "building" : "7114", "coord" : [ -73.9068506, 40.6199034 ], "street" : "Avenue U", "zipcode" : "11234" }, "borough" : "Brooklyn", "cuisine" : "Delicatessen", "grades" : [ { "date" : ISODate("2014-05-29T00:00:00Z"), "grade" : "A", "score" : 10 }, { "date" : ISODate("2014-01-14T00:00:00Z"), "grade" : "A", "score" : 10 }, { "date" : ISODate("2013-08-03T00:00:00Z"), "grade" : "A", "score" : 8 }, { "date" : ISODate("2012-07-18T00:00:00Z"), "grade" : "A", "score" : 10 }, { "date" : ISODate("2012-03-09T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2011-10-14T00:00:00Z"), "grade" : "A", "score" : 9 } ], "name" : "Wilken'S Fine Food", "restaurant\_id" : "40356483" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f844"), "address" : { "building" : "6409", "coord" : [ -74.00528899999999, 40.628886 ], "street" : "11 Avenue", "zipcode" : "11219" }, "borough" : "Brooklyn", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-07-18T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2013-07-30T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2013-02-13T00:00:00Z"), "grade" : "A", "score" : 11 }, { "date" : ISODate("2012-08-16T00:00:00Z"), "grade" : "A", "score" : 2 }, { "date" : ISODate("2011-08-17T00:00:00Z"), "grade" : "A", "score" : 11 } ], "name" : "Regina Caterers", "restaurant\_id" : "40356649" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f845"), "address" : { "building" : "1839", "coord" : [ -73.9482609, 40.6408271 ], "street" : "Nostrand Avenue", "zipcode" : "11226" }, "borough" : "Brooklyn", "cuisine" : "Ice Cream, Gelato, Yogurt, Ices", "grades" : [ { "date" : ISODate("2014-07-14T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2013-07-10T00:00:00Z"), "grade" : "A", "score" : 8 }, { "date" : ISODate("2012-07-11T00:00:00Z"), "grade" : "A", "score" : 5 }, { "date" : ISODate("2012-02-23T00:00:00Z"), "grade" : "A", "score" : 8 } ], "name" : "Taste The Tropics Ice Cream", "restaurant\_id" : "40356731" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f846"), "address" : { "building" : "2300", "coord" : [ -73.8786113, 40.8502883 ], "street" : "Southern Boulevard", "zipcode" : "10460" }, "borough" : "Bronx", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-05-28T00:00:00Z"), "grade" : "A", "score" : 11 }, { "date" : ISODate("2013-06-19T00:00:00Z"), "grade" : "A", "score" : 4 }, { "date" : ISODate("2012-06-15T00:00:00Z"), "grade" : "A", "score" : 3 } ], "name" : "Wild Asia", "restaurant\_id" : "40357217" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f847"), "address" : { "building" : "7715", "coord" : [ -73.9973325, 40.61174889999999 ], "street" : "18 Avenue", "zipcode" : "11214" }, "borough" : "Brooklyn", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-04-16T00:00:00Z"), "grade" : "A", "score" : 5 }, { "date" : ISODate("2013-04-23T00:00:00Z"), "grade" : "A", "score" : 2 }, { "date" : ISODate("2012-04-24T00:00:00Z"), "grade" : "A", "score" : 5 }, { "date" : ISODate("2011-12-16T00:00:00Z"), "grade" : "A", "score" : 2 } ], "name" : "C & C Catering Service", "restaurant\_id" : "40357437" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f848"), "address" : { "building" : "1269", "coord" : [ -73.871194, 40.6730975 ], "street" : "Sutter Avenue", "zipcode" : "11208" }, "borough" : "Brooklyn", "cuisine" : "Chinese", "grades" : [ { "date" : ISODate("2014-09-16T00:00:00Z"), "grade" : "B", "score" : 21 }, { "date" : ISODate("2013-08-28T00:00:00Z"), "grade" : "A", "score" : 7 }, { "date" : ISODate("2013-04-02T00:00:00Z"), "grade" : "C", "score" : 56 }, { "date" : ISODate("2012-08-15T00:00:00Z"), "grade" : "B", "score" : 27 }, { "date" : ISODate("2012-03-28T00:00:00Z"), "grade" : "B", "score" : 27 } ], "name" : "May May Kitchen", "restaurant\_id" : "40358429" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f849"), "address" : { "building" : "1", "coord" : [ -73.96926909999999, 40.7685235 ], "street" : "East 66 Street", "zipcode" : "10065" }, "borough" : "Manhattan", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-05-07T00:00:00Z"), "grade" : "A", "score" : 3 }, { "date" : ISODate("2013-05-03T00:00:00Z"), "grade" : "A", "score" : 4 }, { "date" : ISODate("2012-04-30T00:00:00Z"), "grade" : "A", "score" : 6 }, { "date" : ISODate("2011-12-27T00:00:00Z"), "grade" : "A", "score" : 0 } ], "name" : "1 East 66Th Street Kitchen", "restaurant\_id" : "40359480" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f84a"), "address" : { "building" : "705", "coord" : [ -73.9653967, 40.6064339 ], "street" : "Kings Highway", "zipcode" : "11223" }, "borough" : "Brooklyn", "cuisine" : "Jewish/Kosher", "grades" : [ { "date" : ISODate("2014-11-10T00:00:00Z"), "grade" : "A", "score" : 11 }, { "date" : ISODate("2013-10-10T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2012-10-04T00:00:00Z"), "grade" : "A", "score" : 7 }, { "date" : ISODate("2012-05-21T00:00:00Z"), "grade" : "A", "score" : 9 }, { "date" : ISODate("2011-12-30T00:00:00Z"), "grade" : "B", "score" : 19 } ], "name" : "Seuda Foods", "restaurant\_id" : "40360045" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f84b"), "address" : { "building" : "203", "coord" : [ -73.97822040000001, 40.6435254 ], "street" : "Church Avenue", "zipcode" : "11218" }, "borough" : "Brooklyn", "cuisine" : "Ice Cream, Gelato, Yogurt, Ices", "grades" : [ { "date" : ISODate("2014-02-10T00:00:00Z"), "grade" : "A", "score" : 2 }, { "date" : ISODate("2013-01-02T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2012-01-09T00:00:00Z"), "grade" : "A", "score" : 3 }, { "date" : ISODate("2011-11-07T00:00:00Z"), "grade" : "P", "score" : 12 }, { "date" : ISODate("2011-07-21T00:00:00Z"), "grade" : "A", "score" : 13 } ], "name" : "Carvel Ice Cream", "restaurant\_id" : "40360076" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f84c"), "address" : { "building" : "265-15", "coord" : [ -73.7032601, 40.7386417 ], "street" : "Hillside Avenue", "zipcode" : "11004" }, "borough" : "Queens", "cuisine" : "Ice Cream, Gelato, Yogurt, Ices", "grades" : [ { "date" : ISODate("2014-10-28T00:00:00Z"), "grade" : "A", "score" : 9 }, { "date" : ISODate("2013-09-18T00:00:00Z"), "grade" : "A", "score" : 10 }, { "date" : ISODate("2012-09-20T00:00:00Z"), "grade" : "A", "score" : 13 } ], "name" : "Carvel Ice Cream", "restaurant\_id" : "40361322" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f84d"), "address" : { "building" : "6909", "coord" : [ -74.0259567, 40.6353674 ], "street" : "3 Avenue", "zipcode" : "11209" }, "borough" : "Brooklyn", "cuisine" : "Delicatessen", "grades" : [ { "date" : ISODate("2014-08-21T00:00:00Z"), "grade" : "A", "score" : 4 }, { "date" : ISODate("2014-03-05T00:00:00Z"), "grade" : "A", "score" : 3 }, { "date" : ISODate("2013-01-10T00:00:00Z"), "grade" : "A", "score" : 10 } ], "name" : "Nordic Delicacies", "restaurant\_id" : "40361390" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f84e"), "address" : { "building" : "522", "coord" : [ -73.95171, 40.767461 ], "street" : "East 74 Street", "zipcode" : "10021" }, "borough" : "Manhattan", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-09-02T00:00:00Z"), "grade" : "A", "score" : 12 }, { "date" : ISODate("2013-12-19T00:00:00Z"), "grade" : "B", "score" : 16 }, { "date" : ISODate("2013-05-28T00:00:00Z"), "grade" : "A", "score" : 9 }, { "date" : ISODate("2012-12-07T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2012-03-29T00:00:00Z"), "grade" : "A", "score" : 11 } ], "name" : "Glorious Food", "restaurant\_id" : "40361521" }

{ "\_id" : ObjectId("5c6d3d84e41678682011f84f"), "address" : { "building" : "284", "coord" : [ -73.9829239, 40.6580753 ], "street" : "Prospect Park West", "zipcode" : "11215" }, "borough" : "Brooklyn", "cuisine" : "American", "grades" : [ { "date" : ISODate("2014-11-19T00:00:00Z"), "grade" : "A", "score" : 11 }, { "date" : ISODate("2013-11-14T00:00:00Z"), "grade" : "A", "score" : 2 }, { "date" : ISODate("2012-12-05T00:00:00Z"), "grade" : "A", "score" : 13 }, { "date" : ISODate("2012-05-17T00:00:00Z"), "grade" : "A", "score" : 11 } ], "name" : "The Movable Feast", "restaurant\_id" : "40361606" }

Type "it" for more

>

# Try queries

Let’s write some queries that refine the results. Find a restaurant in Manhattan borough.

> db.restaurants.findOne({"borough": "Manhattan"})

Find more restaurants in Manhattan, but output only name of the restaurant, its street and building.

> db.restaurants.find({"borough": "Manhattan" }, {"\_id": 0, "name": 1, "address.street": 1, "address.building": 1 })

Display name and type of cuisine for 10 restaurants in Manhattan that are not Italian or Irish and have not been graded.

> db.restaurants.find({"borough": "Manhattan", $nor: [{"cuisine": "Italian"}, {"cuisine": "Irish"}], "grades.score": {$exists: false}}, {"cuisine": 1, "name": 1, "\_id": 0}).limit(10)

You might notice that one of the records returned by previous query is following.

{ "cuisine" : "Other", "name" : "Test" }

You can change the cuisine type of that restaurant like this.

> db.restaurants.update({name: "Test"}, {$set: {cuisine: "Italian"}})

Similarly, you can remove a record.

> db.restaurants.remove({"name" : "Biters Llc"})

Pick one restaurant of your own choosing. Look up 5 restaurants on the same street but with different cuisine, output only their names and scores. If you can output an average score, you are a hero, but don’t spend too much time, separate grades are okay.

Paste your query and results here:

> db.restaurants.find({"address.street": "Wall Street", $nor: [{"name": "The Country Cafe"}], $nor: [{"cuisine": "Turkish"}], "grades.score": {$exists: true}}, {"name": 1, "grades.score": 1, "\_id": 0}).limit(5)

{ "grades" : [ { "score" : 10 }, { "score" : 7 }, { "score" : 2 }, { "score" : 11 } ], "name" : "Bank Of New York Cafe" }

{ "grades" : [ { "score" : 3 }, { "score" : 10 }, { "score" : 7 } ], "name" : "Bank Of New York" }

{ "grades" : [ { "score" : 11 }, { "score" : 5 }, { "score" : 15 }, { "score" : 17 }, { "score" : 8 }, { "score" : 11 } ], "name" : "Le Glacier" }

{ "grades" : [ { "score" : 12 }, { "score" : 7 }, { "score" : 7 }, { "score" : 0 }, { "score" : 49 } ], "name" : "The Country Cafe" }

{ "grades" : [ { "score" : 7 }, { "score" : 13 }, { "score" : 13 }, { "score" : 11 }, { "score" : 10 } ], "name" : "Deutsche Bank" }

