MÁSTER EN INGENIERÍA INFORMÁTICA

Cloud Computing: Servicios y Aplicaciones

Practica 03 : MongoDB

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To count the total number of crimes, simply perform a general search and count the results :

> db.Sacramento.find({}).count()

Result: 7584

If we want to count those crimes that are related to robberies, without knowing their codes, we can search for synonyms in English in order to be able to count most of them. In my case I have included terms like burglary, theft, robbery and shoplift.

*> db.Sacramento.find({ $or: [{"crimedescr": /.*BURGLARY.*/},{"crimedescr": /.*THEFT.*/},*

*{"crimedescr": /.*ROBBERY.*/}, {"crimedescr": /.*SHOPLIFT.*/}] }).count()*

Result: 2099

To count them, first I transform the date from format to string to datetime and then I count the number of records grouped by hour for each day. As the result is extremely extensive, I attach only the first block of records obtained with the following command, which shows the number of crimes in each hour in the last days.

> db.Sacramento.aggregate({ $project: { cdatetime: { $dateFromString: {dateString:"$cdatetime"}}}}, { "$project": { "y":{"$year":"$cdatetime"}, "m":{"$month":"$cdatetime"}, "d":{"$dayOfMonth":"$cdatetime"}, "h":{"$hour":"$cdatetime"}, "count":1 } }, { "$group":{ "_id": { "year":"$y","month":"$m","day":"$d","hour":"$h"}, "total":{ "$sum":1} } }, {$sort:{hour:1}})

Result :

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 22 }, "total" : 15 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 17 }, "total" : 19 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 16 }, "total" : 8 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 14 }, "total" : 16 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 12 }, "total" : 19 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 11 }, "total" : 15 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 10 }, "total" : 8 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 9 }, "total" : 11 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 7 }, "total" : 12 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 4 }, "total" : 2 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 5 }, "total" : 1 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 2 }, "total" : 5 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 1 }, "total" : 3 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 31, "hour" : 0 }, "total" : 18 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 30, "hour" : 23 }, "total" : 9 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 30, "hour" : 22 }, "total" : 14 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 30, "hour" : 21 }, "total" : 12 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 30, "hour" : 20 }, "total" : 9 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 30, "hour" : 19 }, "total" : 9 }

{ "_id" : { "year" : 2006, "month" : 1, "day" : 30, "hour" : 18 }, "total" : 13 }

First, I count the number of records for each crime, I order them in descending order and show the first five.

> db.Sacramento.aggregate([{$group : {_id:"$ucr_ncic_code", count:{$sum:1}}}, {$sort: {count:-1}}, {$limit: 5}])

Result :

{ "_id" : 7000, "count" : 2470 }

{ "_id" : 2404, "count" : 881 }

{ "_id" : 2299, "count" : 474 }

{ "_id" : 5400, "count" : 357 }

{ "_id" : 2999, "count" : 356 }

References :

https://docs.mongodb.com/manual/reference/operator/query/or/

Stackoverflow, MongoDB group by hour :
https://stackoverflow.com/questions/23293082/mongodb-group-by-hour

Documentation on the dateFromString function :
https://docs.mongodb.com/manual/reference/operator/aggregation/dateFromString/

Documentation on the sort function for aggregations,
https://docs.mongodb.com/manual/reference/operator/aggregation/sort/

Documentation on the aggregate function :

https://docs.mongodb.com/manual/aggregation/