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Task1: Populate MongoDB Datastore 30 marks

    A.   Identify mongo DB data model from csv file in terms of database, collections, documents - 10 marks

    B.   Populate the above data to mongo DB datastore – 20 marks

Ans: Manually uploaded the excel file into MobaXterm then write this command mongoimport -d db_name -c collection_name -type csv –file filename.csv –headerline to upload the data.
  -d is database name
  -c is collection name
  --headerline If using –type csv or type tsv, uses the first line as as field names. Otherwise , mongoimport will import the first line as a distinct document.

> mongoimport -d mydb -c cars --type csv --file mpg.csv --headerline

Database name: mydb

Collection name : cars

Document : record in mpg.csv

```
> show dbs
admin   0.000GB
config  0.000GB
demo    0.000GB
help    0.000GB
local   0.000GB
mydb    0.000GB
person  0.000GB
> show collections
cars
person
> use mydb
switched to db mydb
>
```

```
> use mydb
switched to db mydb
> db.cars.find()
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e7"), "mpg" : 18, "cylinders" : 8, "displacement" : 307, "horsepower" : 130, "weight
" : 3504, "acceleration" : 12, "modelyear" : 70, "origin" : 1, "name" : "chevrolet" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e8"), "mpg" : 15, "cylinders" : 8, "displacement" : 350, "horsepower" : 165, "weight
" : 3693, "acceleration" : 11.5, "modelyear" : 70, "origin" : 1, "name" : "buick" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e9"), "mpg" : 18, "cylinders" : 8, "displacement" : 318, "horsepower" : 150, "weight
" : 3436, "acceleration" : 11, "modelyear" : 70, "origin" : 1, "name" : "plymouth" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ea"), "mpg" : 16, "cylinders" : 8, "displacement" : 304, "horsepower" : 150, "weight
" : 3433, "acceleration" : 12, "modelyear" : 70, "origin" : 1, "name" : "amc" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7eb"), "mpg" : 17, "cylinders" : 8, "displacement" : 302, "horsepower" : 140, "weight
" : 3449, "acceleration" : 10.5, "modelyear" : 70, "origin" : 1, "name" : "ford" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ec"), "mpg" : 15, "cylinders" : 8, "displacement" : 429, "horsepower" : 198, "weight
" : 4341, "acceleration" : 10, "modelyear" : 70, "origin" : 1, "name" : "ford" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ed"), "mpg" : 14, "cylinders" : 8, "displacement" : 454, "horsepower" : 220, "weight
" : 4354, "acceleration" : 9, "modelyear" : 70, "origin" : 1, "name" : "chevrolet" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ee"), "mpg" : 14, "cylinders" : 8, "displacement" : 440, "horsepower" : 215, "weight
" : 4312, "acceleration" : 8.5, "modelyear" : 70, "origin" : 1, "name" : "plymouth" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ef"), "mpg" : 26, "cylinders" : 4, "displacement" : 97, "horsepower" : 46, "weight"
: 1835, "acceleration" : 20.5, "modelyear" : 70, "origin" : 2, "name" : "volkswagen" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f0"), "mpg" : 25, "cylinders" : 4, "displacement" : 110, "horsepower" : 87, "weight"
: 2672, "acceleration" : 17.5, "modelyear" : 70, "origin" : 2, "name" : "peugeot" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f1"), "mpg" : 24, "cylinders" : 4, "displacement" : 107, "horsepower" : 90, "weight"
: 2430, "acceleration" : 14.5, "modelyear" : 70, "origin" : 2, "name" : "audi" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f2"), "mpg" : 25, "cylinders" : 4, "displacement" : 104, "horsepower" : 95, "weight"
: 2375, "acceleration" : 17.5, "modelyear" : 70, "origin" : 2, "name" : "saab" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f3"), "mpg" : 26, "cylinders" : 4, "displacement" : 121, "horsepower" : 113, "weight
" : 2234, "acceleration" : 12.5, "modelyear" : 70, "origin" : 2, "name" : "bmw" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f4"), "mpg" : 21, "cylinders" : 6, "displacement" : 199, "horsepower" : 90, "weight"
: 2648, "acceleration" : 15, "modelyear" : 70, "origin" : 1, "name" : "amc" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f5"), "mpg" : 10, "cylinders" : 8, "displacement" : 360, "horsepower" : 215, "weight
" : 4615, "acceleration" : 14, "modelyear" : 70, "origin" : 1, "name" : "ford" }
```

Task 2: Generate the Reports 70 marks

    A.   List the vehicles with all the fields which have the cylinders more than or equal to 5 - 10 marks

Ans: find : find() will keep on searching the collection even if a document match has been found , therefore it is inefficient when used in a large collection , however by carefully modeling your data and/or using indexes you can increase the efficiency of find(). Therefore, it is better to use findone in case one object needed to be found..

db.cars.find({cylinders:{$gte:5}})

```
> db.cars.find({cylinders:{$gte:5}})
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e7"), "mpg" : 18, "cylinders" : 8, "displacement" : 307, "horsepower" : 130, "weight
" : 3504, "acceleration" : 12, "modelyear" : 70, "origin" : 1, "name" : "chevrolet" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e8"), "mpg" : 15, "cylinders" : 8, "displacement" : 350, "horsepower" : 165, "weight
" : 3693, "acceleration" : 11.5, "modelyear" : 70, "origin" : 1, "name" : "buick" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e9"), "mpg" : 18, "cylinders" : 8, "displacement" : 318, "horsepower" : 150, "weight
" : 3436, "acceleration" : 11, "modelyear" : 70, "origin" : 1, "name" : "plymouth" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ea"), "mpg" : 16, "cylinders" : 8, "displacement" : 304, "horsepower" : 150, "weight
" : 3433, "acceleration" : 12, "modelyear" : 70, "origin" : 1, "name" : "amc" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7eb"), "mpg" : 17, "cylinders" : 8, "displacement" : 302, "horsepower" : 140, "weight
" : 3449, "acceleration" : 10.5, "modelyear" : 70, "origin" : 1, "name" : "ford" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ec"), "mpg" : 15, "cylinders" : 8, "displacement" : 429, "horsepower" : 198, "weight
" : 4341, "acceleration" : 10, "modelyear" : 70, "origin" : 1, "name" : "ford" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ed"), "mpg" : 14, "cylinders" : 8, "displacement" : 454, "horsepower" : 220, "weight
" : 4354, "acceleration" : 9, "modelyear" : 70, "origin" : 1, "name" : "chevrolet" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7ee"), "mpg" : 14, "cylinders" : 8, "displacement" : 440, "horsepower" : 215, "weight
" : 4312, "acceleration" : 8.5, "modelyear" : 70, "origin" : 1, "name" : "plymouth" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f4"), "mpg" : 21, "cylinders" : 6, "displacement" : 199, "horsepower" : 90, "weight"
: 2648, "acceleration" : 15, "modelyear" : 70, "origin" : 1, "name" : "amc" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f5"), "mpg" : 10, "cylinders" : 8, "displacement" : 360, "horsepower" : 215, "weight
" : 4615, "acceleration" : 14, "modelyear" : 70, "origin" : 1, "name" : "ford" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f6"), "mpg" : 10, "cylinders" : 8, "displacement" : 307, "horsepower" : 200, "weight
" : 4376, "acceleration" : 15, "modelyear" : 70, "origin" : 1, "name" : "chevy" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7f7"), "mpg" : 11, "cylinders" : 8, "displacement" : 318, "horsepower" : 210, "weight
" : 4382, "acceleration" : 13.5, "modelyear" : 70, "origin" : 1, "name" : "dodge" }
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b808"), "mpg" : 20, "cylinders" : 6, "displacement" : 156, "horsepower" : 122, "weight
" : 2807, "acceleration" : 13.5, "modelyear" : 73, "origin" : 3, "name" : "toyota" }
> show dbs
```

B. List the vehicles with all the fields those have 18 miles per gallon (mpg) and weigh (weight) more than or equal to 3500 – 20 marks

Ans:

db.cars.find({

$and:

[{"mpg":{$eq:18}},

{weight:{$gte:3500}}]

})

```
> db.cars.find({
... $and:
... [{"mpg":{$eq:18}},
... {weight:{$gte:3500}}]
... })
{ "_id" : ObjectId("631dec2e1b6a4c8ca578b7e7"), "mpg" : 18, "cylinders" : 8, "displacement" : 307, "horsepower" : 130, "weight
" : 3504, "acceleration" : 12, "modelyear" : 70, "origin" : 1, "name" : "chevrolet" }
>
```

C. Update the vehicles with acceleration to 8 those weighs more than or equal to 3500 – 20 marks

Ans:

db.collection.updateMany
To modify multiple documents

db.cars.updateMany({

weight:

{$gte:3500}},{$set:{acceleration:8}

})

```
. 3504,  acceleration  . 12,  modelyear  . 70,  origin  . 1,  name  .  chevrolet  }
> db.cars.updateMany({
... weight:
... {$gte:3500}},{$set:{acceleration:8}
... })
{ "acknowledged" : true, "matchedCount" : 8, "modifiedCount" : 8 }
>
```

D. List the vehicles with the fields horsepower, displacement those have cylinders more than or equal to 4:

Ans:

db.cars.find({cylinders:{$gte:4}},{horsepower:1,displacement:1,_id:0})

```
> db.cars.find({cylinders:{$gte:4}},{horsepower:1,displacement:1,_id:0})
{ "displacement" : 307, "horsepower" : 130 }
{ "displacement" : 350, "horsepower" : 165 }
{ "displacement" : 318, "horsepower" : 150 }
{ "displacement" : 304, "horsepower" : 150 }
{ "displacement" : 302, "horsepower" : 140 }
{ "displacement" : 429, "horsepower" : 198 }
{ "displacement" : 454, "horsepower" : 220 }
{ "displacement" : 440, "horsepower" : 215 }
{ "displacement" : 97, "horsepower" : 46 }
{ "displacement" : 110, "horsepower" : 87 }
{ "displacement" : 107, "horsepower" : 90 }
{ "displacement" : 104, "horsepower" : 95 }
{ "displacement" : 121, "horsepower" : 113 }
{ "displacement" : 199, "horsepower" : 90 }
{ "displacement" : 360, "horsepower" : 215 }
{ "displacement" : 307, "horsepower" : 200 }
{ "displacement" : 318, "horsepower" : 210 }
{ "displacement" : 97, "horsepower" : 88 }
{ "displacement" : 113, "horsepower" : 95 }
{ "displacement" : 116, "horsepower" : 90 }
Type "it" for more
>
```