Kennedy Uzoho
8-1 Assignment: Data Aggregation Pipeline
CS-340 Client/Server Development

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1. Creating the database:

a. db.research.find({"name" : "AdventNet"})

b. db.research.find({"founded_year" : 1996},{"name" : 1}).limit(10)

2. Using MongoDB queries:

a. List only the first 20 names of companies founded after the year 2010, ordered alphabetically.

db.research.find({"founded_year":{"$gt":2010}},{"name":1}).sort({"name":1}).limit(20)

b. List only the first 20 names of companies with offices in either California or Texas, ordered by the number of employees and sorted from largest to smallest.

db.research.find({$or:[{"offices.state_code":"CA"},{"offices.state_code":"TX"}]},{"name":1}).sort({"number_of_employees":-1}).limit(20)

3. Design and implement a MongoDB aggregation pipeline:

Design and implement a MongoDB aggregation pipeline to show the total number of employees by the state for all companies that have offices in the United States. Be sure that you account for the fact that some companies have offices in several states.

db.research.aggregate([{$match:{"offices.country_code":"USA"}},{$group:{_id:"$offices.state_code",sumQuantity:{$sum: "$number_of_employees"}}}])

```
kennedy.uzoho_snhu@msnv-snhu3-l001: /usr/local/datasets
File   Edit   View   Search   Terminal   Help
> show collections
research
> db.research.aggregate([{$match:{"offices.country_code":"USA"}},{$group:{_id:"$offices.state_code",sumQuantity:{$sum: "$number_of_employees"}}}])
{ "_id" : [ "WA", null ], "sumQuantity" : 61 }
{ "_id" : [ "AR" ], "sumQuantity" : 12412 }
{ "_id" : [ "MA", "NV" ], "sumQuantity" : 0 }
{ "_id" : [ "MD", "OR" ], "sumQuantity" : 10 }
{ "_id" : [ "NJ", "NY", "PA" ], "sumQuantity" : 0 }
{ "_id" : [ "CA", "NY", "IL", null ], "sumQuantity" : 0 }
{ "_id" : [ "CA", "NY", "PA", "VA", "CA", "TX" ], "sumQuantity" : 10 }
{ "_id" : [ null, "ME" ], "sumQuantity" : 25 }
{ "_id" : [ "CT", "IL" ], "sumQuantity" : 0 }
{ "_id" : [ "IL", "NY", null ], "sumQuantity" : 500 }
{ "_id" : [ null, "NY", null, null, null ], "sumQuantity" : 300 }
{ "_id" : [ null, null, null, null, null, "NY" ], "sumQuantity" : 60 }
{ "_id" : [ null, null, "NV" ], "sumQuantity" : 75 }
{ "_id" : [ "KS" ], "sumQuantity" : 337 }
{ "_id" : [ "CA", "MA", "CO", null ], "sumQuantity" : 0 }
{ "_id" : [ "GA", null ], "sumQuantity" : 90 }
{ "_id" : [ "CA", "WI" ], "sumQuantity" : 0 }
{ "_id" : [ "CO", "WY" ], "sumQuantity" : 72 }
{ "_id" : [ null, "CA", "NY", null, null, null, null, null, null ], "sumQuantity" : 150 }
{ "_id" : [ "MA", "CA", null, null ], "sumQuantity" : 100 }
Type "it" for more
> it
{ "_id" : [ "FL", "GA" ], "sumQuantity" : 165 }
{ "_id" : [ "NY", "PA" ], "sumQuantity" : 0 }
{ "_id" : [ "CA", null, "NY", null ], "sumQuantity" : 55 }
{ "_id" : [ "NY", "MA" ], "sumQuantity" : 131 }
{ "_id" : [ "NC", "NC" ], "sumQuantity" : 110 }
{ "_id" : [ "UT", "CA", "NY", null ], "sumQuantity" : 0 }
{ "_id" : [ null, null, "CA" ], "sumQuantity" : 661 }
{ "_id" : [ "NJ", "PA" ], "sumQuantity" : 6 }
{ "_id" : [ "NH", null, null ], "sumQuantity" : 8 }
{ "_id" : [ "MD", "DC" ], "sumQuantity" : 38 }
{ "_id" : [ "CA", "NY", "IL", "AZ", "CA" ], "sumQuantity" : 148 }
{ "_id" : [ null, null, "VA" ], "sumQuantity" : 4 }
{ "_id" : [ "NY", null ], "sumQuantity" : 915 }
{ "_id" : [ null, "CA", null, null, null ], "sumQuantity" : 92 }
{ "_id" : [ "MA", "CA", "NY" ], "sumQuantity" : 60 }
{ "_id" : [ "NV", "CA" ], "sumQuantity" : 224 }
{ "_id" : [ "IL", "NC", "MA", "FL", "AZ", null, null ], "sumQuantity" : 500 }
{ "_id" : [ "MA", "WA" ], "sumQuantity" : 0 }
{ "_id" : [ "NV" ], "sumQuantity" : 206 }
{ "_id" : [ "IL", "NY", "CA", "NJ", null ], "sumQuantity" : 90 }
Type "it" for more
>
```

```
kennedy.uzoho_snhu@msnv-snhu3-l001: /usr/local/datasets
File   Edit   View   Search   Terminal   Help
> exit
bye
(base) kennedy.uzoho_snhu@msnv-snhu3-l001:/usr/local/datasets$ mongod_ctl stop
+++ Stopping MongoDB for kennedy.uzoho_snhu
(base) kennedy.uzoho_snhu@msnv-snhu3-l001:/usr/local/datasets$
```