

MongoDB -Aggregation Exercises

Import the zips.json file into your MongoDB. Database name is "population" and collection name is "zipcodes".
`mongoimport --db population --collection zipcodes --file zips.json`

Atlanta Population

1. use `db.zipcodes.find()` to filter results to only the results where city is ATLANTA and state is GA.

```
db.zipcodes.find({'$and':[{'city':'ATLANTA'},{'state':'GA'}]}))
```

2. use `db.zipcodes.aggregate` with `$match` to do the same as above.

```
db.zipcodes.aggregate([{'$match':{'city':'ATLANTA','state':'GA'}}])
```

3. use `$group` to count the number of zip codes in Atlanta.

```
db.zipcodes.aggregate([{'$match': {'city': 'ATLANTA' } }, {'$group': { '_id': '$_id' } }, {'$count': "Number of zipcodes in Atlanta:" } ]])
```

4. use `$group` to find the total population in Atlanta.

```
db.zipcodes.aggregate([{'$match': {'city': 'ATLANTA' } }, {'$group': { '_id': '$city', 'Total Population': { '$sum': '$pop' } } } ]])
```

Populations By State

1. use `aggregate` to calculate the total population for each state

```
db.zipcodes.aggregate([{'$group':{'_id':'$state'," Total Population":{'$sum':'$pop'}}}])
```

2. sort the results by population, highest first

```
db.zipcodes.aggregate([{'$group':{'_id':'$state'," Total Population":{'$sum':'$pop'}}},{'$sort':{'Total Population':-1}}])
```

3. limit the results to just the first 3 results. What are the top 3 states in population?

```
db.zipcodes.aggregate([{$group:{_id:"$state"," Total  
Population":{$sum:"$pop"}}},{ $sort:{Total Population:-1},{ $limit:3}}])
```

Top 3 states: ["CA","NY","TX"]

Populations by City

1. use aggregate to calculate the total population for each city (you have to use city/state combination). You can use a combination for the _id of the \$group: { city: '\$city', state: '\$state' }

```
db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},TotalPopulation  
:{$sum:"$pop"}}}])
```

2. sort the results by population, highest first

```
db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},TotalPopulation  
:{$sum:"$pop"}}},{ $sort:{TotalPopulation:-1}}])
```

3. limit the results to just the first 3 results. What are the top 3 cities in population?

```
db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},TotalPopulation  
:{$sum:"$pop"}}},{ $sort:{TotalPopulation:-1}},{ $limit:3}}])
```

Top 3 Cities:["Chicago","Brooklyn","Los Angeles"]

4. What are the top 3 cities in population in Texas?

```
db.zipcodes.aggregate([{$match:{state:"  
TX"}},{ $group:{_id:{city:"$city"},Population:{$sum:"$pop"}},{ $sort:{Population:-  
1}},{ $limit:3}}])
```

Top 3 cities:["Houston", "Dallas", "San Antonio"]

Bonus

1. Write a query to get the average city population for each state.

```
db.zipcodes.aggregate([{$group: {_id: "$state", "AvgPopulation": {$avg: "$pop"}}}])
```

2. What are the top 3 states in terms of average city population?

```
db.zipcodes.aggregate([{$group: {_id: "$state", "AvgPopulation": {$avg: "$pop"}}}, {  
  $sort: {"AvgPopulation": -1}}, {$limit: 3}])
```

Top 3: ["DC", "CA", "FLs"]