

## 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:{$eq: 'ATLANTA'}}, {state:{$eq:'GA'}}]}).pretty()
```

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

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

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

```
$db.zipcodes.aggregate([{$match: {city: 'ATLANTA'}}, {$group: {_id: {city:$city}, zipcodes: {$sum:1}}}]
```

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

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

### Populations By State

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

```
$db.zipcodes.aggregate([{$group: {_id: {state:$state'}, population:{$sum:$pop'}}}]
```

2. sort the results by population, highest first

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

### 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'}, population: {$sum:$pop'}}}]
```

2. sort the results by population, highest first

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

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

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

## **Bonus**

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

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

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

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

2.