

## MongoDB – Aggregation Assignment

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### Atlanta Population

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

Sol:

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

2. Use `$match` and the `aggregate` function for the same query as question number 1.

Sol:

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

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

Sol:

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

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

Sol:

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

## **Population By State**

1. Use Aggregate to calculate the total population for each state

Sol:

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

2. Sort the results by population, highest first

Sol:

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

3. Limit the results to just the first 3 results. What are the top three states in population

Sol:

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

## Population 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' }

Sol:

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

2. Sort the results by population, highest first.

Sol:

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

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

Sol:

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

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

Sol:

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

**Bonus:**

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

Sol:

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

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

Sol:

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