

MongoDB Assignment - 2

Q1. 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([{$match:{$and:[{city:"ATLANTA"},{state:"GA"}]}}])
```

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

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

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

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

Q2. Populations By State

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

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

2. sort the results by population, highest first

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

Q3. 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}  
])
```

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

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

Q4. 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}])
```