

MongoDB -Aggregation Exercises

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 } ] )
```