

MongoDB-Assignment Aggregation

• 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({state: 'GA',city: 'ATLANTA'})`
2. use `db.zipcodes.aggregate` with `$match` to do the same as above.
`db.zipcodes.aggregate (`
 `[{ $match : {state: 'GA',city: 'ATLANTA'}}]);`
3. use `$group` to count the number of zip codes in Atlanta.
`db.zipcodes.aggregate (`
 `[{ $match : {state: 'GA',city: 'ATLANTA'}}, { $group: { _id: null, count: { $sum: 1 } } }]);`
4. use `$group` to find the total population in Atlanta.
`db.zipcodes.aggregate (`
 `[{ $match : {state: 'GA',city: 'ATLANTA'}}, { $group: { Total Population: { $sum: "pop" } } }]);`

• Populations By State

1. use `aggregate` to calculate the total population for each state
`db.zipcodes.aggregate([{ $group: { _id: "$state", totalPop: { $sum: "$pop" } } }]);`
2. sort the results by population, highest first
`db.zipcodes.aggregate([{ $group: { _id: "$state", totalPop: { $sum: "$pop" } } }`
 `{ $sort: { pop: 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", totalPop: { $sum: "$pop" } } }`
 `{ $sort: { pop: 1 } },`
 `{ $group:`
 `{`
 `_id: "$_id.state",`
 `Statename: { $last: "$_id.state" },`
 `StatePop: { $last: "$totalpop" },`
 `}`
 `},`
 `{ $group:`
 `{`
 `{ $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: { state: "$state", city: "$city" },
 pop: { $sum: "$pop" } } }));

```
- sort the results by population, highest first  

```

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

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

```

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

 cityname: { $last: "$_id.city" },

 }
 },
]);

```
  - What are the top 3 cities in population in Texas?  

```

db.zipcodes.aggregate([{ $group:{
 _id: { state: "TEXAS", city: "$city" },
 pop: { $sum: "$pop" } } }, ,
 { $sort: { pop: -1 } } }, { $group:
 {
 { $limit : 3 }
 }
 }, { $group:
 {
 _id : "$_id.state",
 cityname: { $last: "$_id.city" },

 }
 },
]);

```

- **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: { avgcitypop: 1 } }, { $group:
 {
 { $limit : 3 } },])
```