**MongoDB -Aggregation Exercises**

**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({city: "ATLANTA", state: "GA"})

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

> db.zipcodes.aggregate([

... {$match: {city: "ATLANTA", state: "GA"}}

... ])

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

> db.zipcodes.aggregate([

... {$match: {city: "ATLANTA"}},

... {$group: {\_id: 1,count: {$sum: 1}}}

... ])

1. use $group to find the total population in Atlanta.

db.zipcodes.aggregate([

{$match: {city: "ATLANTA"}},

{$group: {\_id: "$city", total: {$sum: "$pop"}}}

])

**Populations By State**

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

> db.zipcodes.aggregate(

... {$group: {\_id: "$state", total: {$sum: "$pop"}}}

... )

1. sort the results by population, highest first

> db.zipcodes.aggregate([

... {$group: {\_id: "$state", total: {$sum: "$pop"}}},

... {$sort : {total: -1}}

... ])

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

> db.zipcodes.aggregate([

... {$group: {\_id: "$state", total: {$sum: "$pop"}}},

... {$sort : {total: -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: '$state' } , total: {$sum: "$pop"}}}

... ])

1. sort the results by population, highest first

> db.zipcodes.aggregate([

... {$group: {\_id: { city: '$city', state: '$state' } , total: {$sum: "$pop"}}},

... {$sort : {total: -1}}

... ])

1. 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: '$state' } , total: {$sum: "$pop"}}},

... {$sort : {total: -1}},

... {$limit: 3}

... ])

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

> db.zipcodes.aggregate([

... {$match: {state: "TX"}},

... {$group: {\_id: { city: '$city', state: '$state' } , total: {$sum: "$pop"}}},

... {$sort : {total: -1}},

... {$limit: 3}

... ])

**Bonus**

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

> db.zipcodes.aggregate([

... {$group: {\_id: {state: '$state' } , total: {$avg: "$pop"}}}

... ])

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

> db.zipcodes.aggregate([

... {$group: {\_id: {state: '$state' } , total: {$avg: "$pop"}}},

... {$sort : {total: -1}},

... {$limit: 3}

... ])