**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"}}])

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

db.zipcodes.aggregate([{$match: {city: "ATLANTA"}},

{ $group: { \_id: {city:"$city"}, count:{$sum: 1}}}])

Output:

[ { \_id: { city: 'ATLANTA' }, count: 41 } ]

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

db.zipcodes.aggregate([ {$match: {city: "ATLANTA"}},

{$group: {\_id:{city: "$city"}, "totalPop": {$sum: "$pop"}}}])

Output:

[ { \_id: { city: 'ATLANTA' }, totalPop: 630046 } ]

**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: {totalPop: -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"}}},{$sort: {totalPop: -1}},{$limit: 3}])

OutPut:

[

{ \_id: 'CA', totalPop: 29754890 },

{ \_id: 'NY', totalPop: 17990402 },

{ \_id: 'TX', totalPop: 16984601 }

]

**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: "$State"}, "totalPop": {$sum: "$pop"}}}])

2.sort the results by population, highest first

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

OutPut:

[

{ \_id: { city: 'CHICAGO' }, totalPop: 2452177 },

{ \_id: { city: 'BROOKLYN' }, totalPop: 2341387 },

{ \_id: { city: 'HOUSTON' }, totalPop: 2123053 }

]

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

db.zipcodes.aggregate([{$match: {state: "TX"}}, {$group: {\_id: {city: "$city", state: "$State"}, "totalPop": {$sum: "$pop"}}},

{$sort: {totalPop: -1}},{$limit: 3}])

OutPut:

[

{ \_id: { city: 'HOUSTON' }, totalPop: 2095918 },

{ \_id: { city: 'DALLAS' }, totalPop: 940191 },

{ \_id: { city: 'SAN ANTONIO' }, totalPop: 811792 }

**Bonus**

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

db.zipcodes.aggregate([{ $group: {\_id: {state: "$state", city: "$city"}, "totalPop": {$sum: "$pop"}}},

{$group: { \_id: "$\_id.state", avgCityPop: { $avg: "$totalPop"}}}])

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

db.zipcodes.aggregate([{ $group: {\_id: {state: "$state", city: "$city"}, "totalPop": {$sum: "$pop"}}},

{$group: { \_id: "$\_id.state", avgCityPop: { $avg: "$totalPop"}}},{$sort: {avgCityPop: -1}},{$limit: 3}])

OutPut:

[

{ \_id: 'DC', avgCityPop: 303450 },

{ \_id: 'CA', avgCityPop: 27756.42723880597 },

{ \_id: 'FL', avgCityPop: 27400.958963282937 }

]