MANGODB ASSIGNMENT 2

Atlanta Population

1. use db.zipcodes.find() to filter results to only the results where city is ATLANTA and state is GA.

Sol: db.zipcodes.find({$and :[{"city":"Atlanta"},{"state":"GA"}]}).pretty()

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

Sol: db.zipcodes.aggregate([{$and{$match: {"city":"Atlanta"},{"state":"GA"}}}])

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

Sol:

db.zipcodes.aggregate([

  { $group: { _id: { state: "GA", city: "Atlanta", zipcode: "_id"}, zip: { $sum: 1 } } },

  { $group: { _id: "$_id.city", zcount: {$sum: "$zip"}} },

  {$sort: {zcount: -1} }
])

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

Sol:

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

Group by state

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

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

2.sort the results by population, highest first

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

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

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

Bonus

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

Sol:

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


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

Sol:

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


Group 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' }

Sol:

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

```
] )
```

2. sort the results by population, highest first

Sol:

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

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

Sol:

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

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

Sol:

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