MongoDB -Aggregation Exercises

Import the zips.json file into your MongoDB. Database name is "population" and collection name is "zipcodes".

mongoimport --db population --collection zipcodes --file zips.json

Atlanta Population

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

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
  }
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA",state:"GA"}}])
[
  {
    _id: '30303',
    city: 'ATLANTA',
    loc: [ -84.388846, 33.752504 ],
    pop: 1845,
    state: 'GA'
  },
  {
    _id: '30305',
    city: 'ATLANTA',
    loc: [ -84.385145, 33.831963 ],
    pop: 19122,
    state: 'GA'
  },
  {
    _id: '30306',
    city: 'ATLANTA',
    loc: [ -84.351418, 33.786027 ],
    pop: 20081,
    state: 'GA'
  },
  {
    _id: '30307',
    city: 'ATLANTA',
    loc: [ -84.335957, 33.769138 ],
    pop: 16330,
    state: 'GA'
  },
  {
    _id: '30308',
    city: 'ATLANTA',
Atlas atlas-bwguj6-shard-0 [primary] population>
```

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$grou$group:{_id:{_id:"$_id"}}},{$count:"Count of zipcodes"}])
[ { 'Count of zipcodes': 41 } ]
Atlas atlas-bwguj6-shard-0 [primary] population>
```

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$grou$group:{_id:"$city",population:{$sum:"$pop"}}}])
[ { _id: 'ATLANTA', population: 630046 } ]
Atlas atlas-bwguj6-shard-0 [primary] population>
```

Populations By State

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
[ { 'Count of zipcodes': 41 } ]
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANT
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",Statepopulation:{$sum:"$pop"}}}])
[
  { _id: 'UT', Statepopulation: 1722850 },
  { _id: 'AZ', Statepopulation: 3665228 },
  { _id: 'OR', Statepopulation: 2842321 },
  { _id: 'IN', Statepopulation: 5544136 },
  { _id: 'TN', Statepopulation: 4876457 },
  { _id: 'DC', Statepopulation: 606900 },
  { _id: 'KY', Statepopulation: 3675484 },
  { _id: 'MI', Statepopulation: 9295297 },
  { _id: 'OK', Statepopulation: 3145585 },
  { _id: 'NV', Statepopulation: 1201833 },
  { _id: 'MT', Statepopulation: 798948 },
  { _id: 'MO', Statepopulation: 5110648 },
  { _id: 'CO', Statepopulation: 3293755 },
  { _id: 'WA', Statepopulation: 4866692 },
  { _id: 'GA', Statepopulation: 6478216 },
  { _id: 'RI', Statepopulation: 1003218 },
  { _id: 'MD', Statepopulation: 4781379 },
  { _id: 'AL', Statepopulation: 4040587 },
  { _id: 'NJ', Statepopulation: 7730188 },
  { _id: 'WI', Statepopulation: 4891769 }
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population>
```

2. sort the results by population, highest first

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",Statepopulation:{$sum:"$pop"}}},{$sort:{Statepopulation:-1}}])
[
  { _id: 'CA', Statepopulation: 29754890 },
  { _id: 'NY', Statepopulation: 17990402 },
  { _id: 'TX', Statepopulation: 16984601 },
  { _id: 'FL', Statepopulation: 12686644 },
  { _id: 'PA', Statepopulation: 11881643 },
  { _id: 'IL', Statepopulation: 11427576 },
  { _id: 'OH', Statepopulation: 10846517 },
  { _id: 'MI', Statepopulation: 9295297 },
  { _id: 'NJ', Statepopulation: 7730188 },
  { _id: 'NC', Statepopulation: 6628637 },
  { _id: 'GA', Statepopulation: 6478216 },
  { _id: 'VA', Statepopulation: 6181479 },
  { _id: 'MA', Statepopulation: 6016425 },
  { _id: 'IN', Statepopulation: 5544136 },
  { _id: 'MO', Statepopulation: 5110648 },
  { _id: 'WI', Statepopulation: 4891769 },
  { _id: 'TN', Statepopulation: 4876457 },
  { _id: 'WA', Statepopulation: 4866692 },
  { _id: 'MD', Statepopulation: 4781379 },
  { _id: 'MN', Statepopulation: 4372982 }
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population>
```

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",Statepopulation:{$sum:"$pop"}}},{$sort:{Statepopulation:-1}},{$limit:3}])
[
  { _id: 'CA', Statepopulation: 29754890 },
  { _id: 'NY', Statepopulation: 17990402 },
  { _id: 'TX', Statepopulation: 16984601 }
]
Atlas atlas-bwguj6-shard-0 [primary] population>
```

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' }

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},population:{$sum:"$pop"}}}])
[
  { _id: { city: 'LERONA', state: 'WV' }, population: 507 },
  { _id: { city: 'ORLANDO', state: 'FL' }, population: 297711 },
  { _id: { city: 'OAKLEY', state: 'CA' }, population: 20920 },
  { _id: { city: 'WALTON', state: 'OR' }, population: 298 },
  { _id: { city: 'GABLE', state: 'SC' }, population: 790 },
  { _id: { city: 'FRANKLIN', state: 'TN' }, population: 40509 },
  { _id: { city: 'BERWYN', state: 'PA' }, population: 9482 },
  { _id: { city: 'CYPRESS INN', state: 'TN' }, population: 764 },
  { _id: { city: 'CATRON', state: 'MO' }, population: 174 },
  { _id: { city: 'TASWELL', state: 'IN' }, population: 950 },
  { _id: { city: 'CLARKSVILLE', state: 'MD' }, population: 3147 },
  { _id: { city: 'DAKOTA', state: 'IL' }, population: 1134 },
  { _id: { city: 'MILLVILLE', state: 'NJ' }, population: 36591 },
  { _id: { city: 'LAKEFIELD', state: 'MN' }, population: 3233 },
  { _id: { city: 'WILMOT', state: 'SD' }, population: 1095 },
  { _id: { city: 'WORTHVILLE', state: 'PA' }, population: 65 },
  { _id: { city: 'LIBERTY', state: 'IL' }, population: 1331 },
  { _id: { city: 'NORWAY', state: 'SC' }, population: 2487 },
  { _id: { city: 'REMUS', state: 'MI' }, population: 4990 },
  { _id: { city: 'CARSON', state: 'CA' }, population: 112915 }
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population>
```

2. sort the results by population, highest first

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},population:{$sum:"$pop"}}},{$sort:{population:-1}}])
[
  { _id: { city: 'CHICAGO', state: 'IL' }, population: 2452177 },
  { _id: { city: 'BROOKLYN', state: 'NY' }, population: 2300504 },
  { _id: { city: 'LOS ANGELES', state: 'CA' }, population: 2102295 },
  { _id: { city: 'HOUSTON', state: 'TX' }, population: 2095918 },
  { _id: { city: 'PHILADELPHIA', state: 'PA' }, population: 1610956 },
  { _id: { city: 'NEW YORK', state: 'NY' }, population: 1476790 },
  { _id: { city: 'BRONX', state: 'NY' }, population: 1209548 },
  { _id: { city: 'SAN DIEGO', state: 'CA' }, population: 1049298 },
  { _id: { city: 'DETROIT', state: 'MI' }, population: 963243 },
  { _id: { city: 'DALLAS', state: 'TX' }, population: 940191 },
  { _id: { city: 'PHOENIX', state: 'AZ' }, population: 890853 },
  { _id: { city: 'MIAMI', state: 'FL' }, population: 825232 },
  { _id: { city: 'SAN JOSE', state: 'CA' }, population: 816653 },
  { _id: { city: 'SAN ANTONIO', state: 'TX' }, population: 811792 },
  { _id: { city: 'BALTIMORE', state: 'MD' }, population: 733081 },
  { _id: { city: 'SAN FRANCISCO', state: 'CA' }, population: 723993 },
  { _id: { city: 'MEMPHIS', state: 'TN' }, population: 632837 },
  { _id: { city: 'SACRAMENTO', state: 'CA' }, population: 628279 },
  { _id: { city: 'JACKSONVILLE', state: 'FL' }, population: 610160 },
  { _id: { city: 'ATLANTA', state: 'GA' }, population: 609591 }
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population>
```

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},population:{$sum:"$pop"}}},{$sort:{population:-1}},{$limit:3}])
[
  { _id: { city: 'CHICAGO', state: 'IL' }, population: 2452177 },
  { _id: { city: 'BROOKLYN', state: 'NY' }, population: 2300504 },
  { _id: { city: 'LOS ANGELES', state: 'CA' }, population: 2102295 }
]
Atlas atlas-bwguj6-shard-0 [primary] population>
```

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{state:"TX"}}
,{$group:{_id:{city:"$city",state:"$state"},population:{$sum:"$pop"}}},{$sort:{population:-1}
},{$limit:3}])
[
  { _id: { city: 'HOUSTON', state: 'TX' }, population: 2095918 },
  { _id: { city: 'DALLAS', state: 'TX' }, population: 940191 },
  { _id: { city: 'SAN ANTONIO', state: 'TX' }, population: 811792 }
]
Atlas atlas-bwguj6-shard-0 [primary] population>
```

Bonus

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$city",AvgPopulation:{$avg:"$pop"}}}])
[
  { _id: 'MORAVIAN FALLS', AvgPopulation: 3071 },
  { _id: 'REMLAP', AvgPopulation: 6013 },
  { _id: 'GLENSHAW', AvgPopulation: 16588 },
  { _id: 'JARRETTSVILLE', AvgPopulation: 6667 },
  { _id: 'RICHLANDTOWN', AvgPopulation: 1199 },
  { _id: 'VESELI', AvgPopulation: 4020 },
  { _id: 'MANTER', AvgPopulation: 354 },
  { _id: 'GREENTOP', AvgPopulation: 859 },
  { _id: 'WEEHAWKEN', AvgPopulation: 69646 },
  { _id: 'AUGUSTA', AvgPopulation: 8433.76923076923 },
  { _id: 'WEST PALM BEACH', AvgPopulation: 15039.333333333334 },
  { _id: 'FINLAND', AvgPopulation: 565 },
  { _id: 'NAVAL ACADEMY', AvgPopulation: 5780 },
  { _id: 'MIDDLE GRANVILLE', AvgPopulation: 249 },
  { _id: 'BARLOW', AvgPopulation: 1335 },
  { _id: 'CREOLA', AvgPopulation: 1552 },
  { _id: 'RUBY', AvgPopulation: 988.6666666666666 },
  { _id: 'INGOMAR', AvgPopulation: 118 },
  { _id: 'WILEY', AvgPopulation: 711 },
  { _id: 'PILGRIM GARDENS', AvgPopulation: 32559 }
]
Type "it" for more
Atlas atlas-bwguj6-shard-0 [primary] population> 
```

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

```
mongosh mongodb+srv://test.obeu7.mongodb.net/mongo_practice
Atlas atlas-bwguj6-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$city",AvgPopulation:{$avg:"$pop"}}},{$sort:{AvgPopulation:-1}},{$limit:3}])
[
  { _id: 'BELL GARDENS', AvgPopulation: 99568 },
  { _id: 'ARLETA', AvgPopulation: 88114 },
  { _id: 'SOUTH GATE', AvgPopulation: 87026 }
]
Atlas atlas-bwguj6-shard-0 [primary] population> 
```