

Atlanta Population

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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.find({'$and': [{'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", "loc" : [ -84.375744, 33.771839 ], "pop" : 8549, "state" : "GA" }
{ "_id" : "30309", "city" : "ATLANTA", "loc" : [ -84.388338, 33.798407 ], "pop" : 14766, "state" : "GA" }
{ "_id" : "30310", "city" : "ATLANTA", "loc" : [ -84.423173, 33.727849 ], "pop" : 34017, "state" : "GA" }
{ "_id" : "30311", "city" : "ATLANTA", "loc" : [ -84.470219, 33.722957 ], "pop" : 34880, "state" : "GA" }
{ "_id" : "30312", "city" : "ATLANTA", "loc" : [ -84.378125, 33.746749 ], "pop" : 17683, "state" : "GA" }
{ "_id" : "30313", "city" : "ATLANTA", "loc" : [ -84.39352, 33.76825 ], "pop" : 8038, "state" : "GA" }
{ "_id" : "30314", "city" : "ATLANTA", "loc" : [ -84.425546, 33.756103 ], "pop" : 26649, "state" : "GA" }
{ "_id" : "30315", "city" : "ATLANTA", "loc" : [ -84.380771, 33.705062 ], "pop" : 41061, "state" : "GA" }
{ "_id" : "30316", "city" : "ATLANTA", "loc" : [ -84.333913, 33.721686 ], "pop" : 34668, "state" : "GA" }
{ "_id" : "30317", "city" : "ATLANTA", "loc" : [ -84.31685, 33.749788 ], "pop" : 16395, "state" : "GA" }
{ "_id" : "30318", "city" : "ATLANTA", "loc" : [ -84.445432, 33.786454 ], "pop" : 53894, "state" : "GA" }
{ "_id" : "30319", "city" : "ATLANTA", "loc" : [ -84.335091, 33.868728 ], "pop" : 32138, "state" : "GA" }
{ "_id" : "30324", "city" : "ATLANTA", "loc" : [ -84.354867, 33.820609 ], "pop" : 15044, "state" : "GA" }
{ "_id" : "30326", "city" : "ATLANTA", "loc" : [ -84.358232, 33.848168 ], "pop" : 125, "state" : "GA" }
{ "_id" : "30327", "city" : "ATLANTA", "loc" : [ -84.419966, 33.862723 ], "pop" : 18467, "state" : "GA" }
{ "_id" : "30329", "city" : "ATLANTA", "loc" : [ -84.321402, 33.823555 ], "pop" : 17013, "state" : "GA" }
Type "it" for more
```

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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate({'$match': {'$and': [{'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", "loc" : [ -84.375744, 33.771839 ], "pop" : 8549, "state" : "GA" }
{ "_id" : "30309", "city" : "ATLANTA", "loc" : [ -84.388338, 33.798407 ], "pop" : 14766, "state" : "GA" }
{ "_id" : "30310", "city" : "ATLANTA", "loc" : [ -84.423173, 33.727849 ], "pop" : 34017, "state" : "GA" }
{ "_id" : "30311", "city" : "ATLANTA", "loc" : [ -84.470219, 33.722957 ], "pop" : 34880, "state" : "GA" }
{ "_id" : "30312", "city" : "ATLANTA", "loc" : [ -84.378125, 33.746749 ], "pop" : 17683, "state" : "GA" }
{ "_id" : "30313", "city" : "ATLANTA", "loc" : [ -84.39352, 33.76825 ], "pop" : 8038, "state" : "GA" }
{ "_id" : "30314", "city" : "ATLANTA", "loc" : [ -84.425546, 33.756103 ], "pop" : 26649, "state" : "GA" }
{ "_id" : "30315", "city" : "ATLANTA", "loc" : [ -84.380771, 33.705062 ], "pop" : 41061, "state" : "GA" }
{ "_id" : "30316", "city" : "ATLANTA", "loc" : [ -84.333913, 33.721686 ], "pop" : 34668, "state" : "GA" }
{ "_id" : "30317", "city" : "ATLANTA", "loc" : [ -84.31685, 33.749788 ], "pop" : 16395, "state" : "GA" }
{ "_id" : "30318", "city" : "ATLANTA", "loc" : [ -84.445432, 33.786454 ], "pop" : 53894, "state" : "GA" }
{ "_id" : "30319", "city" : "ATLANTA", "loc" : [ -84.335091, 33.868728 ], "pop" : 32138, "state" : "GA" }
{ "_id" : "30324", "city" : "ATLANTA", "loc" : [ -84.354867, 33.820609 ], "pop" : 15044, "state" : "GA" }
{ "_id" : "30326", "city" : "ATLANTA", "loc" : [ -84.358232, 33.848168 ], "pop" : 125, "state" : "GA" }
{ "_id" : "30327", "city" : "ATLANTA", "loc" : [ -84.419966, 33.862723 ], "pop" : 18467, "state" : "GA" }
{ "_id" : "30329", "city" : "ATLANTA", "loc" : [ -84.321402, 33.823555 ], "pop" : 17013, "state" : "GA" }
Type "it" for more
```

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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$match:{city:"ATLANTA"}},{ $group:{_id:"$city"}},{ $count:"TotalZipcodeInAtlanta"}])
{ "TotalZipcodeInAtlanta" : 41 }
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([
... {$match:{city:'ATLANTA'}},
... { $group:{ _id:"$city",TotalPopulationInAtlanta:{$sum:"$pop"}}}
... ])
{ "_id" : "ATLANTA", "TotalPopulationInAtlanta" : 630046 }
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

Populations By State

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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate(
... {$group:{_id:"$state",TotalPopulationOfState:{$sum:"$pop"}}}
... )
{ "_id" : "WY", "TotalPopulationOfState" : 453528 }
{ "_id" : "FL", "TotalPopulationOfState" : 12686644 }
{ "_id" : "OH", "TotalPopulationOfState" : 10846517 }
{ "_id" : "ME", "TotalPopulationOfState" : 1226648 }
{ "_id" : "WV", "TotalPopulationOfState" : 1793146 }
{ "_id" : "IA", "TotalPopulationOfState" : 2776420 }
{ "_id" : "MA", "TotalPopulationOfState" : 6016425 }
{ "_id" : "SC", "TotalPopulationOfState" : 3486703 }
{ "_id" : "NH", "TotalPopulationOfState" : 1109252 }
{ "_id" : "MN", "TotalPopulationOfState" : 4372982 }
{ "_id" : "PA", "TotalPopulationOfState" : 11881643 }
{ "_id" : "ND", "TotalPopulationOfState" : 638272 }
{ "_id" : "IL", "TotalPopulationOfState" : 11427576 }
{ "_id" : "NC", "TotalPopulationOfState" : 6628637 }
{ "_id" : "NE", "TotalPopulationOfState" : 1578139 }
{ "_id" : "AR", "TotalPopulationOfState" : 2350725 }
{ "_id" : "UT", "TotalPopulationOfState" : 1722850 }
{ "_id" : "NM", "TotalPopulationOfState" : 1515069 }
{ "_id" : "SD", "TotalPopulationOfState" : 695397 }
{ "_id" : "LA", "TotalPopulationOfState" : 4217595 }
Type "it" for more
```

```
Type "it" for more
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> it
{ "_id" : "OR", "TotalPopulationOfState" : 2842321 }
{ "_id" : "AK", "TotalPopulationOfState" : 544698 }
{ "_id" : "VA", "TotalPopulationOfState" : 6181479 }
{ "_id" : "VT", "TotalPopulationOfState" : 562758 }
{ "_id" : "TX", "TotalPopulationOfState" : 16984601 }
{ "_id" : "DE", "TotalPopulationOfState" : 666168 }
{ "_id" : "ID", "TotalPopulationOfState" : 1006749 }
{ "_id" : "MS", "TotalPopulationOfState" : 2573216 }
{ "_id" : "TN", "TotalPopulationOfState" : 4876457 }
{ "_id" : "KY", "TotalPopulationOfState" : 3675484 }
{ "_id" : "MI", "TotalPopulationOfState" : 9295297 }
{ "_id" : "IN", "TotalPopulationOfState" : 5544136 }
{ "_id" : "CA", "TotalPopulationOfState" : 29754890 }
{ "_id" : "AZ", "TotalPopulationOfState" : 3665228 }
{ "_id" : "DC", "TotalPopulationOfState" : 606900 }
{ "_id" : "NV", "TotalPopulationOfState" : 1201833 }
{ "_id" : "OK", "TotalPopulationOfState" : 3145585 }
{ "_id" : "AL", "TotalPopulationOfState" : 4040587 }
{ "_id" : "HI", "TotalPopulationOfState" : 1108229 }
{ "_id" : "GA", "TotalPopulationOfState" : 6478216 }
Type "it" for more
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

2. sort the results by population, highest first

```
db.Zipcodes.aggregate([{$group:{_id:"$state",TotalPopulationOfState:{sum:"$pop"}}},{sort:{TotalPopulationOfState:-1}} ] )
90 }
02 }
01 }
44 }
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$group:{_id:"$state",TotalPopulationOfState:{sum:"$pop"}}},{sort:{TotalPopulationOfState:-1}} ] )
{ "_id" : "CA", "TotalPopulationOfState" : 29754890 }
{ "_id" : "NY", "TotalPopulationOfState" : 17990402 }
{ "_id" : "TX", "TotalPopulationOfState" : 16984601 }
{ "_id" : "FL", "TotalPopulationOfState" : 12686644 }
{ "_id" : "PA", "TotalPopulationOfState" : 11881643 }
{ "_id" : "IL", "TotalPopulationOfState" : 11427576 }
{ "_id" : "OH", "TotalPopulationOfState" : 10846517 }
{ "_id" : "MI", "TotalPopulationOfState" : 9295297 }
{ "_id" : "NJ", "TotalPopulationOfState" : 7730188 }
{ "_id" : "NC", "TotalPopulationOfState" : 6628637 }
{ "_id" : "GA", "TotalPopulationOfState" : 6478216 }
{ "_id" : "VA", "TotalPopulationOfState" : 6181479 }
{ "_id" : "MA", "TotalPopulationOfState" : 6016425 }
{ "_id" : "IN", "TotalPopulationOfState" : 5544136 }
{ "_id" : "MO", "TotalPopulationOfState" : 5110648 }
{ "_id" : "WI", "TotalPopulationOfState" : 4891769 }
{ "_id" : "TN", "TotalPopulationOfState" : 4876457 }
{ "_id" : "WA", "TotalPopulationOfState" : 4866692 }
{ "_id" : "MD", "TotalPopulationOfState" : 4781379 }
{ "_id" : "MN", "TotalPopulationOfState" : 4372982 }
Type "it" for more
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> it
{ "_id" : "LA", "TotalPopulationOfState" : 4217595 }
{ "_id" : "AL", "TotalPopulationOfState" : 4040587 }
{ "_id" : "KY", "TotalPopulationOfState" : 3675484 }
{ "_id" : "AZ", "TotalPopulationOfState" : 3665228 }
{ "_id" : "SC", "TotalPopulationOfState" : 3486703 }
{ "_id" : "CO", "TotalPopulationOfState" : 3293755 }
{ "_id" : "CT", "TotalPopulationOfState" : 3287116 }
{ "_id" : "OK", "TotalPopulationOfState" : 3145585 }
{ "_id" : "OR", "TotalPopulationOfState" : 2842321 }
{ "_id" : "IA", "TotalPopulationOfState" : 2776420 }
{ "_id" : "MS", "TotalPopulationOfState" : 2573216 }
{ "_id" : "KS", "TotalPopulationOfState" : 2475285 }
{ "_id" : "AR", "TotalPopulationOfState" : 2350725 }
{ "_id" : "WV", "TotalPopulationOfState" : 1793146 }
{ "_id" : "UT", "TotalPopulationOfState" : 1722850 }
{ "_id" : "NE", "TotalPopulationOfState" : 1578139 }
{ "_id" : "NM", "TotalPopulationOfState" : 1515069 }
{ "_id" : "ME", "TotalPopulationOfState" : 1226648 }
{ "_id" : "NV", "TotalPopulationOfState" : 1201833 }
{ "_id" : "NH", "TotalPopulationOfState" : 1109252 }
Type "it" for more
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$group:{_id:"$state",TotalPopulationOfState:{sum:"$pop"}}},{sort:{TotalPopulationOfState:-1}},{$limit:3} ] )
{ "_id" : "CA", "TotalPopulationOfState" : 29754890 }
{ "_id" : "NY", "TotalPopulationOfState" : 17990402 }
{ "_id" : "TX", "TotalPopulationOfState" : 16984601 }
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

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"}, PopulationOfCity: { $sum: "$pop" }}} )
```

```
{ "_id" : { "city" : "ELDRIDGE", "state" : "IA" }, "PopulationOfCity" : 6947 }
{ "_id" : { "city" : "LEAVENWORTH", "state" : "IN" }, "PopulationOfCity" : 1152 }
{ "_id" : { "city" : "CENTRAHOMA", "state" : "OK" }, "PopulationOfCity" : 435 }
{ "_id" : { "city" : "LUTHER", "state" : "OK" }, "PopulationOfCity" : 2111 }
{ "_id" : { "city" : "BAINBRIDGE ISLAN", "state" : "WA" }, "PopulationOfCity" : 15846 }
{ "_id" : { "city" : "GILMER", "state" : "TX" }, "PopulationOfCity" : 10141 }
{ "_id" : { "city" : "ASHLAND", "state" : "MO" }, "PopulationOfCity" : 2989 }
{ "_id" : { "city" : "WATSON", "state" : "MN" }, "PopulationOfCity" : 436 }
{ "_id" : { "city" : "PLAINVIEW", "state" : "NY" }, "PopulationOfCity" : 28207 }
{ "_id" : { "city" : "THE ROCK", "state" : "GA" }, "PopulationOfCity" : 333 }
{ "_id" : { "city" : "MONARCH", "state" : "MT" }, "PopulationOfCity" : 150 }
{ "_id" : { "city" : "GREENWICH", "state" : "CT" }, "PopulationOfCity" : 14545 }
{ "_id" : { "city" : "HAYNESVILLE", "state" : "ME" }, "PopulationOfCity" : 244 }
{ "_id" : { "city" : "ROUND TOP", "state" : "NY" }, "PopulationOfCity" : 454 }
{ "_id" : { "city" : "WHEELER", "state" : "IL" }, "PopulationOfCity" : 809 }
{ "_id" : { "city" : "AVONDALE", "state" : "AZ" }, "PopulationOfCity" : 12321 }
{ "_id" : { "city" : "FAYETTEVILLE", "state" : "NC" }, "PopulationOfCity" : 125013 }
{ "_id" : { "city" : "HAMDEN", "state" : "CT" }, "PopulationOfCity" : 52289 }
{ "_id" : { "city" : "DAVISBORO", "state" : "GA" }, "PopulationOfCity" : 2032 }
{ "_id" : { "city" : "PLAINS", "state" : "KS" }, "PopulationOfCity" : 1417 }
```

Type "it" for more

MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> it

```
{ "_id" : { "city" : "MAGNET", "state" : "NE" }, "PopulationOfCity" : 218 }
{ "_id" : { "city" : "SAINT JOHNS", "state" : "AZ" }, "PopulationOfCity" : 3844 }
{ "_id" : { "city" : "GLENDORA", "state" : "CA" }, "PopulationOfCity" : 48836 }
{ "_id" : { "city" : "CLARKSBURG", "state" : "MA" }, "PopulationOfCity" : 19054 }
{ "_id" : { "city" : "YOUNGSTOWN", "state" : "NY" }, "PopulationOfCity" : 5728 }
{ "_id" : { "city" : "ALDIE", "state" : "VA" }, "PopulationOfCity" : 1574 }
{ "_id" : { "city" : "MAX", "state" : "MN" }, "PopulationOfCity" : 140 }
{ "_id" : { "city" : "LOOKOUT MOUNTAIN", "state" : "TN" }, "PopulationOfCity" : 1899 }
{ "_id" : { "city" : "ABERDEEN PROVING", "state" : "MD" }, "PopulationOfCity" : 5294 }
{ "_id" : { "city" : "BERWYN", "state" : "NE" }, "PopulationOfCity" : 318 }
{ "_id" : { "city" : "INCHELIUM", "state" : "WA" }, "PopulationOfCity" : 1297 }
{ "_id" : { "city" : "SUGARLOAF", "state" : "PA" }, "PopulationOfCity" : 5007 }
{ "_id" : { "city" : "CLIMAX", "state" : "MI" }, "PopulationOfCity" : 983 }
{ "_id" : { "city" : "INDUSTRY", "state" : "CA" }, "PopulationOfCity" : 77114 }
{ "_id" : { "city" : "ATLANTIC CITY", "state" : "NJ" }, "PopulationOfCity" : 31907 }
{ "_id" : { "city" : "DANVILLE", "state" : "KS" }, "PopulationOfCity" : 168 }
{ "_id" : { "city" : "BUCKVILLE", "state" : "AR" }, "PopulationOfCity" : 1857 }
{ "_id" : { "city" : "BULL SHOALS", "state" : "AR" }, "PopulationOfCity" : 1967 }
{ "_id" : { "city" : "LYNDON STATION", "state" : "WI" }, "PopulationOfCity" : 2010 }
{ "_id" : { "city" : "LOWER PEACH TREE", "state" : "AL" }, "PopulationOfCity" : 323 }
```

Type "it" for more

2. sort the results by population, highest first

```
PRIMARY> db.Zipcodes.aggregate([{$group: {_id: {city: "$city", state: "$state"}, PopulationOfCity: { $sum: "$pop" }}, {$sort: {PopulationOfCity: -1}}], {$sort: {PopulationOfCity: -1}}])
```

```

MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$group: {_id: { "city": "$city", "state": "$state" }, "PopulationOfCity": {"$sum": "$pop"} }}, {$sort: {"PopulationOfCity": -1}}, {$limit: 30}])
{ "_id" : { "city" : "CHICAGO", "state" : "IL" }, "PopulationOfCity" : 2452177 }
{ "_id" : { "city" : "BROOKLYN", "state" : "NY" }, "PopulationOfCity" : 2300504 }
{ "_id" : { "city" : "LOS ANGELES", "state" : "CA" }, "PopulationOfCity" : 2102295 }
{ "_id" : { "city" : "HOUSTON", "state" : "TX" }, "PopulationOfCity" : 2095918 }
{ "_id" : { "city" : "PHILADELPHIA", "state" : "PA" }, "PopulationOfCity" : 1610956 }
{ "_id" : { "city" : "NEW YORK", "state" : "NY" }, "PopulationOfCity" : 1476790 }
{ "_id" : { "city" : "BRONX", "state" : "NY" }, "PopulationOfCity" : 1209548 }
{ "_id" : { "city" : "SAN DIEGO", "state" : "CA" }, "PopulationOfCity" : 1049298 }
{ "_id" : { "city" : "DETROIT", "state" : "MI" }, "PopulationOfCity" : 963243 }
{ "_id" : { "city" : "DALLAS", "state" : "TX" }, "PopulationOfCity" : 940191 }
{ "_id" : { "city" : "PHOENIX", "state" : "AZ" }, "PopulationOfCity" : 890853 }
{ "_id" : { "city" : "MIAMI", "state" : "FL" }, "PopulationOfCity" : 825232 }
{ "_id" : { "city" : "SAN JOSE", "state" : "CA" }, "PopulationOfCity" : 816653 }
{ "_id" : { "city" : "SAN ANTONIO", "state" : "TX" }, "PopulationOfCity" : 811792 }
{ "_id" : { "city" : "BALTIMORE", "state" : "MD" }, "PopulationOfCity" : 733081 }
{ "_id" : { "city" : "SAN FRANCISCO", "state" : "CA" }, "PopulationOfCity" : 723993 }
{ "_id" : { "city" : "MEMPHIS", "state" : "TN" }, "PopulationOfCity" : 632837 }
{ "_id" : { "city" : "SACRAMENTO", "state" : "CA" }, "PopulationOfCity" : 628279 }
{ "_id" : { "city" : "JACKSONVILLE", "state" : "FL" }, "PopulationOfCity" : 610160 }
{ "_id" : { "city" : "ATLANTA", "state" : "GA" }, "PopulationOfCity" : 609591 }
Type "it" for more
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> it
{ "_id" : { "city" : "WASHINGTON", "state" : "DC" }, "PopulationOfCity" : 606879 }
{ "_id" : { "city" : "LAS VEGAS", "state" : "NV" }, "PopulationOfCity" : 597557 }
{ "_id" : { "city" : "MILWAUKEE", "state" : "WI" }, "PopulationOfCity" : 597324 }
{ "_id" : { "city" : "TUCSON", "state" : "AZ" }, "PopulationOfCity" : 586451 }
{ "_id" : { "city" : "CLEVELAND", "state" : "OH" }, "PopulationOfCity" : 536759 }
{ "_id" : { "city" : "AUSTIN", "state" : "TX" }, "PopulationOfCity" : 530049 }
{ "_id" : { "city" : "COLUMBUS", "state" : "OH" }, "PopulationOfCity" : 520096 }
{ "_id" : { "city" : "SEATTLE", "state" : "WA" }, "PopulationOfCity" : 520096 }
{ "_id" : { "city" : "PORTLAND", "state" : "OR" }, "PopulationOfCity" : 518543 }
{ "_id" : { "city" : "EL PASO", "state" : "TX" }, "PopulationOfCity" : 511351 }
{ "_id" : { "city" : "TAMPA", "state" : "FL" }, "PopulationOfCity" : 498997 }
{ "_id" : { "city" : "NEW ORLEANS", "state" : "LA" }, "PopulationOfCity" : 496937 }
{ "_id" : { "city" : "CHARLOTTE", "state" : "NC" }, "PopulationOfCity" : 465833 }
{ "_id" : { "city" : "FORT WORTH", "state" : "TX" }, "PopulationOfCity" : 451415 }
{ "_id" : { "city" : "DENVER", "state" : "CO" }, "PopulationOfCity" : 451182 }
{ "_id" : { "city" : "ALBUQUERQUE", "state" : "NM" }, "PopulationOfCity" : 449584 }
{ "_id" : { "city" : "SAINT LOUIS", "state" : "MO" }, "PopulationOfCity" : 397802 }
{ "_id" : { "city" : "HONOLULU", "state" : "HI" }, "PopulationOfCity" : 396643 }
{ "_id" : { "city" : "ROCHESTER", "state" : "NY" }, "PopulationOfCity" : 396013 }
{ "_id" : { "city" : "TULSA", "state" : "OK" }, "PopulationOfCity" : 389072 }
Type "it" for more

```

- 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": "$state" }, "PopulationOfCity": {"$sum": "$pop"} }}, {$sort: {"PopulationOfCity": -1}}, {$limit: 3}])
{ "_id" : { "city" : "CHICAGO", "state" : "IL" }, "PopulationOfCity" : 2452177 }
{ "_id" : { "city" : "BROOKLYN", "state" : "NY" }, "PopulationOfCity" : 2300504 }
{ "_id" : { "city" : "LOS ANGELES", "state" : "CA" }, "PopulationOfCity" : 2102295 }

```

```

MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$group: {_id: { "city": "$city", "state": "$state" }, "PopulationOfCity": {"$sum": "$pop"} }}, {$sort: {"PopulationOfCity": -1}}, {$limit: 3}])
{ "_id" : { "city" : "CHICAGO", "state" : "IL" }, "PopulationOfCity" : 2452177 }
{ "_id" : { "city" : "BROOKLYN", "state" : "NY" }, "PopulationOfCity" : 2300504 }
{ "_id" : { "city" : "LOS ANGELES", "state" : "CA" }, "PopulationOfCity" : 2102295 }

```


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

```
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$match:{state:"TX"}},{$group:{_id:{city:"$city",state:"$state"},PopulationOfCity:{sum:"$pop"}},{$sort:{PopulationOfCity:-1}},{$limit:3}}]
{ "_id" : { "city" : "HOUSTON", "state" : "TX" }, "PopulationOfCity" : 2095918 }
{ "_id" : { "city" : "DALLAS", "state" : "TX" }, "PopulationOfCity" : 940191 }
{ "_id" : { "city" : "SAN ANTONIO", "state" : "TX" }, "PopulationOfCity" : 811792 }
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

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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"}}}]]
}
}
}
}
```

```
{ "_id" : "SD", "avgCityPop" : 1839.6746031746031 }
{ "_id" : "LA", "avgCityPop" : 10465.496277915632 }
{ "_id" : "OR", "avgCityPop" : 8262.561046511628 }
{ "_id" : "NV", "avgCityPop" : 18209.590909090908 }
{ "_id" : "VA", "avgCityPop" : 8526.177931034483 }
{ "_id" : "DC", "avgCityPop" : 303450 }
{ "_id" : "TX", "avgCityPop" : 13775.02108678021 }
{ "_id" : "VT", "avgCityPop" : 2315.8765432098767 }
{ "_id" : "MS", "avgCityPop" : 7524.023391812865 }
{ "_id" : "ID", "avgCityPop" : 4320.811158798283 }
{ "_id" : "ME", "avgCityPop" : 3006.4901960784314 }
{ "_id" : "OH", "avgCityPop" : 12700.839578454332 }
{ "_id" : "SC", "avgCityPop" : 11139.626198083068 }
{ "_id" : "AR", "avgCityPop" : 4175.355239786856 }
{ "_id" : "FL", "avgCityPop" : 27400.958963282937 }
{ "_id" : "MN", "avgCityPop" : 5372.21375921376 }
{ "_id" : "WV", "avgCityPop" : 2771.4775888717154 }
{ "_id" : "IA", "avgCityPop" : 3123.0821147356583 }
{ "_id" : "ND", "avgCityPop" : 1645.0309278350514 }
{ "_id" : "NE", "avgCityPop" : 3034.882692307692 }
type "it" for more
```

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

```
type "it" for more
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY> db.Zipcodes.aggregate([{$group:{_id:{state:"$state",city:"$city"},pop:{sum:"$pop"}},{$group:{_id:"$_id.state", avgCityPop:{avg:"$pop"}},{$sort:{avgCityPop:-1}},{$limit:3}}]
{ "_id" : "DC", "avgCityPop" : 303450 }
{ "_id" : "CA", "avgCityPop" : 27756.42723880597 }
{ "_id" : "FL", "avgCityPop" : 27400.958963282937 }
MongoDB Enterprise atlas-61bq41-shard-0:PRIMARY>
```

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