

## MongoDB Assignment 2

### Atlanta Population:

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

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-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
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

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

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> 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", "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
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

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

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$match: {city:"ATLANTA"}}, {$group: {_id: "$_id"}}]).itcount()
41
```

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$match: {city:"ATLANTA"}}, {$group: {_id: "$_id"}}]).toArray().length
41
```

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$match: {city:"ATLANTA"}}, {$group: {_id: "$_id"}}, {$count: "cityCount"}])
{ "cityCount" : 41 }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

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

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$match: {city:"ATLANTA"}}, {$group: {_id: "city", "totalPopulation": {$sum: "$pop"}}}])
{ "_id" : "city", "totalPopulation" : 630046 }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$match: {city:"ATLANTA"}}, {$group: {_id: 0, "totalPopulation": {$sum: "$pop"}}}])
{ "_id" : 0, "totalPopulation" : 630046 }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

### **Population By State:**

5. Use aggregate to calculate total population for each state.

C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri

```
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id : "$state", totalPopulation: {$sum:"$pop"}}}])
{ "_id" : "IL", "totalPopulation" : 11427576 }
{ "_id" : "CO", "totalPopulation" : 3293755 }
{ "_id" : "IA", "totalPopulation" : 2776420 }
{ "_id" : "HI", "totalPopulation" : 1108229 }
{ "_id" : "WI", "totalPopulation" : 4891769 }
{ "_id" : "TX", "totalPopulation" : 16984601 }
{ "_id" : "WA", "totalPopulation" : 4866692 }
{ "_id" : "DE", "totalPopulation" : 666168 }
{ "_id" : "ID", "totalPopulation" : 1006749 }
{ "_id" : "DC", "totalPopulation" : 606900 }
{ "_id" : "TN", "totalPopulation" : 4876457 }
{ "_id" : "MA", "totalPopulation" : 6016425 }
{ "_id" : "OH", "totalPopulation" : 10846517 }
{ "_id" : "MI", "totalPopulation" : 9295297 }
{ "_id" : "KY", "totalPopulation" : 3675484 }
{ "_id" : "NH", "totalPopulation" : 1109252 }
{ "_id" : "VA", "totalPopulation" : 6181479 }
{ "_id" : "SC", "totalPopulation" : 3486703 }
{ "_id" : "WV", "totalPopulation" : 1793146 }
{ "_id" : "MN", "totalPopulation" : 4372982 }
Type "it" for more
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

6.Sort the results by population,highest first.



C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri

```
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id : "$state", totalPopulation: {$sum:"$pop"}}},{$sort:{totalPopulation:-1}}])
{ "_id" : "CA", "totalPopulation" : 29754890 }
{ "_id" : "NY", "totalPopulation" : 17990402 }
{ "_id" : "TX", "totalPopulation" : 16984601 }
{ "_id" : "FL", "totalPopulation" : 12686644 }
{ "_id" : "PA", "totalPopulation" : 11881643 }
{ "_id" : "IL", "totalPopulation" : 11427576 }
{ "_id" : "OH", "totalPopulation" : 10846517 }
{ "_id" : "MI", "totalPopulation" : 9295297 }
{ "_id" : "NJ", "totalPopulation" : 7730188 }
{ "_id" : "NC", "totalPopulation" : 6628637 }
{ "_id" : "GA", "totalPopulation" : 6478216 }
{ "_id" : "VA", "totalPopulation" : 6181479 }
{ "_id" : "MA", "totalPopulation" : 6016425 }
{ "_id" : "IN", "totalPopulation" : 5544136 }
{ "_id" : "MO", "totalPopulation" : 5110648 }
{ "_id" : "WI", "totalPopulation" : 4891769 }
{ "_id" : "TN", "totalPopulation" : 4876457 }
{ "_id" : "WA", "totalPopulation" : 4866692 }
{ "_id" : "MD", "totalPopulation" : 4781379 }
{ "_id" : "MN", "totalPopulation" : 4372982 }
Type "it" for more
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

7.Limit the results to just the first 3 results.

C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri

```
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id : "$state", totalPopulation: {$sum:"$pop"}}},{$sort:{totalPopulation:-1}},{$limit:3}])
{ "_id" : "CA", "totalPopulation" : 29754890 }
{ "_id" : "NY", "totalPopulation" : 17990402 }
{ "_id" : "TX", "totalPopulation" : 16984601 }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

## Population By City:

8. Use aggregate to calculate the total population for each city.

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri

MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id : {city:"$city", state: "$state"}, totalPopulation: {$sum:"$pop"}}}])
{ "_id" : { "city" : "SORRENTO", "state" : "ME" }, "totalPopulation" : 295 }
{ "_id" : { "city" : "LEWISBURG", "state" : "KY" }, "totalPopulation" : 3241 }
{ "_id" : { "city" : "TREXLERTOWN", "state" : "PA" }, "totalPopulation" : 690 }
{ "_id" : { "city" : "LOMPOC", "state" : "CA" }, "totalPopulation" : 59806 }
{ "_id" : { "city" : "ARCADIA", "state" : "KS" }, "totalPopulation" : 664 }
{ "_id" : { "city" : "SNOQUALMIE", "state" : "WA" }, "totalPopulation" : 3913 }
{ "_id" : { "city" : "POLLOCKSVILLE", "state" : "NC" }, "totalPopulation" : 2406 }
{ "_id" : { "city" : "FORT LEE", "state" : "NJ" }, "totalPopulation" : 32030 }
{ "_id" : { "city" : "STEWARTSVILLE", "state" : "NJ" }, "totalPopulation" : 3582 }
{ "_id" : { "city" : "SURGOINSVILLE", "state" : "TN" }, "totalPopulation" : 7229 }
{ "_id" : { "city" : "HAMLIN", "state" : "PA" }, "totalPopulation" : 1575 }
{ "_id" : { "city" : "NAPAKIAK", "state" : "AK" }, "totalPopulation" : 328 }
{ "_id" : { "city" : "DEXTER", "state" : "ME" }, "totalPopulation" : 5875 }
{ "_id" : { "city" : "WASHINGTON", "state" : "OK" }, "totalPopulation" : 1670 }
{ "_id" : { "city" : "RIPTON", "state" : "VT" }, "totalPopulation" : 433 }
{ "_id" : { "city" : "NORTH SHAPLEIGH", "state" : "ME" }, "totalPopulation" : 302 }
{ "_id" : { "city" : "PIPER CITY", "state" : "IL" }, "totalPopulation" : 1187 }
{ "_id" : { "city" : "ANTONINO", "state" : "KS" }, "totalPopulation" : 20703 }
{ "_id" : { "city" : "BURTON", "state" : "SC" }, "totalPopulation" : 43849 }
{ "_id" : { "city" : "MOSCOW", "state" : "KS" }, "totalPopulation" : 804 }
Type "it" for more
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

9. Sort the results by population, highest first.

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id : {city:"$city", state: "$state"}, totalPopulation: {$sum:"$pop"}}},{ $sort: {totalPopulation:-1}}])
{ "_id" : { "city" : "CHICAGO", "state" : "IL" }, "totalPopulation" : 2452177 }
{ "_id" : { "city" : "BROOKLYN", "state" : "NY" }, "totalPopulation" : 2300504 }
{ "_id" : { "city" : "LOS ANGELES", "state" : "CA" }, "totalPopulation" : 2102295 }
{ "_id" : { "city" : "HOUSTON", "state" : "TX" }, "totalPopulation" : 2095918 }
{ "_id" : { "city" : "PHILADELPHIA", "state" : "PA" }, "totalPopulation" : 1610956 }
{ "_id" : { "city" : "NEW YORK", "state" : "NY" }, "totalPopulation" : 1476790 }
{ "_id" : { "city" : "BRONX", "state" : "NY" }, "totalPopulation" : 1209548 }
{ "_id" : { "city" : "SAN DIEGO", "state" : "CA" }, "totalPopulation" : 1049298 }
{ "_id" : { "city" : "DETROIT", "state" : "MI" }, "totalPopulation" : 963243 }
{ "_id" : { "city" : "DALLAS", "state" : "TX" }, "totalPopulation" : 940191 }
{ "_id" : { "city" : "PHOENIX", "state" : "AZ" }, "totalPopulation" : 890853 }
{ "_id" : { "city" : "MIAMI", "state" : "FL" }, "totalPopulation" : 825232 }
{ "_id" : { "city" : "SAN JOSE", "state" : "CA" }, "totalPopulation" : 816653 }
{ "_id" : { "city" : "SAN ANTONIO", "state" : "TX" }, "totalPopulation" : 811792 }
{ "_id" : { "city" : "BALTIMORE", "state" : "MD" }, "totalPopulation" : 733081 }
{ "_id" : { "city" : "SAN FRANCISCO", "state" : "CA" }, "totalPopulation" : 723993 }
{ "_id" : { "city" : "MEMPHIS", "state" : "TN" }, "totalPopulation" : 632837 }
{ "_id" : { "city" : "SACRAMENTO", "state" : "CA" }, "totalPopulation" : 628279 }
{ "_id" : { "city" : "JACKSONVILLE", "state" : "FL" }, "totalPopulation" : 610160 }
{ "_id" : { "city" : "ATLANTA", "state" : "GA" }, "totalPopulation" : 609591 }
Type "it" for more
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

10.Limit the results to just the first 3 results.

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id: {city : " $city", state: "$state"}, totalPopulation: {$sum: "$pop"}}}, {$sort: {totalPopulation: -1}}, {$limit: 3}])
{ "_id" : { "city" : " $city", "state" : "CA" }, "totalPopulation" : 29754890 }
{ "_id" : { "city" : " $city", "state" : "NY" }, "totalPopulation" : 17990402 }
{ "_id" : { "city" : " $city", "state" : "TX" }, "totalPopulation" : 16984601 }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

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

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$match: {state: "TX"}}, {$group: {_id: {city : " $city", state: "$state"}, totalPopulation: {$sum: "$pop"}}}, {$sort: {totalPopulation: -1}}, {$limit: 3}])
{ "_id" : { "city" : " $city", "state" : "TX" }, "totalPopulation" : 16984601 }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

### **Bonus:**

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



```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id: {state: "$state", city: "$city"}, totalPopulation: {$sum: "$pop"}}}, {$group: {_id: "$_id.state", avgCityPopulation: {$avg: "totalPopulation"}}}])
{ "_id" : "CA", "avgCityPopulation" : null }
{ "_id" : "IN", "avgCityPopulation" : null }
{ "_id" : "MN", "avgCityPopulation" : null }
{ "_id" : "VA", "avgCityPopulation" : null }
{ "_id" : "PA", "avgCityPopulation" : null }
{ "_id" : "NY", "avgCityPopulation" : null }
{ "_id" : "NE", "avgCityPopulation" : null }
{ "_id" : "WV", "avgCityPopulation" : null }
{ "_id" : "NC", "avgCityPopulation" : null }
{ "_id" : "MD", "avgCityPopulation" : null }
{ "_id" : "OR", "avgCityPopulation" : null }
{ "_id" : "AR", "avgCityPopulation" : null }
{ "_id" : "NM", "avgCityPopulation" : null }
{ "_id" : "NH", "avgCityPopulation" : null }
{ "_id" : "RI", "avgCityPopulation" : null }
{ "_id" : "LA", "avgCityPopulation" : null }
{ "_id" : "IA", "avgCityPopulation" : null }
{ "_id" : "IL", "avgCityPopulation" : null }
{ "_id" : "WI", "avgCityPopulation" : null }
{ "_id" : "TX", "avgCityPopulation" : null }
Type "it" for more
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```

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

```
C:\Windows\System32\cmd.exe - mongo "mongodb+srv://cluster0.fbzn5.mongodb.net/myFirstDatabase" --username madhuri
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY> db.zipcodes.aggregate([{$group: {_id: {state: "$state", city: "$city"}, totalPopulation: {$sum: "$pop"}}}, {$group: {_id: "$_id.state", avgCityPopulation: {$avg: "totalPopulation"}}}, {$sort: {avgCityPopulation: -1}}, {$limit: 3}])
{ "_id" : "AZ", "avgCityPopulation" : null }
{ "_id" : "WY", "avgCityPopulation" : null }
{ "_id" : "VT", "avgCityPopulation" : null }
MongoDB Enterprise atlas-1bnk7y-shard-0:PRIMARY>
```