Mongodb-Assignments2:

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.

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

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


```
mongosh mongodb+srv://populationss.s3tie.mongodb.net/myFirstDatabase
Microsoft Windows [Version 10.0.22000.493]
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C:\Users\poong>mongosh "mongodb+srv://populationss.s3tie.mongodb.net/myFirstDatabase" --username Poonguzhali
Enter password: **********
Current Mongosh Log ID: 6205f6e6c8ffa26227157c43
Connecting to:          mongodb+srv://populationss.s3tie.mongodb.net/myFirstDatabase?appName=mongosh+1.1.9
MongoServerError: bad auth : Authentication failed.

C:\Users\poong>mongosh "mongodb+srv://populationss.s3tie.mongodb.net/myFirstDatabase" --username Poonguzhali
Enter password: ***********
Current Mongosh Log ID: 6205f6f6518f713655a1ea56
Connecting to:          mongodb+srv://populationss.s3tie.mongodb.net/myFirstDatabase?appName=mongosh+1.1.9
Using MongoDB:          4.4.12
Using Mongosh:          1.1.9

For mongosh info see: https://docs.mongodb.com/mongodb-shell/

Atlas atlas-hk6cnr-shard-0 [primary] myFirstDatabase> show dbs
populationss  1.67 MB
admin          336 kB
local         4.08 GB
Atlas atlas-hk6cnr-shard-0 [primary] myFirstDatabase> use populationss
switched to db populationss
Atlas atlas-hk6cnr-shard-0 [primary] populationss> show collections
zipcode
Atlas atlas-hk6cnr-shard-0 [primary] populationss> db.zipcode.find({$and:[{city:"ATLANTA"},{state:"GA"
...
...
Atlas atlas-hk6cnr-shard-0 [primary] populationss> db.zipcode.find({$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 ],
```

```
      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
Atlas atlas-hk6cnr-shard-0 [primary] populationss> _
```

```
]
Type "it" for more
Atlas atlas-hk6cnr-shard-0 [primary] populationss> db.zipcode.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',
```

```
      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
Atlas atlas-hk6cnr-shard-0 [primary] populationss> _
```

Populations By State:

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

2. sort the results by population, highest first

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

```
Microsoft Windows [Version 10.0.22000.493]
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C:\Users\poong>mongosh "mongodb+srv://populationss.uazjq.mongodb.net/myFirstDatabase" --username Poonguzhali
Enter password: ***********
Current Mongosh Log ID: 62061aee3048eb46b7f99c34
Connecting to:          mongodb+srv://populationss.uazjq.mongodb.net/myFirstDatabase?appName=mongosh+1.1.9
Using MongoDB:          4.4.12
Using Mongosh:          1.1.9

For mongosh info see: https://docs.mongodb.com/mongodb-shell/

Atlas atlas-11iltc-shard-0 [primary] myFirstDatabase> show dbs
populationss  1.65 MB
admin          340 kB
local         4.71 GB
Atlas atlas-11iltc-shard-0 [primary] myFirstDatabase> use populationss
switched to db populationss
Atlas atlas-11iltc-shard-0 [primary] populationss> show collections
zipcode
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$group:{_id:"$state",Statepopulation:{$sum:"$pop"}}}])
[
  { _id: 'NE', Statepopulation: 1578139 },
  { _id: 'MO', Statepopulation: 5110648 },
  { _id: 'WY', Statepopulation: 453528 },
  { _id: 'NY', Statepopulation: 17990402 },
  { _id: 'MT', Statepopulation: 798948 },
  { _id: 'NJ', Statepopulation: 7730188 },
  { _id: 'KS', Statepopulation: 2475285 },
  { _id: 'CT', Statepopulation: 3287116 },
  { _id: 'RI', Statepopulation: 1003218 },
  { _id: 'GA', Statepopulation: 6478216 },
  { _id: 'FL', Statepopulation: 12686644 },
  { _id: 'AL', Statepopulation: 4040587 },
  { _id: 'ND', Statepopulation: 638272 },
  { _id: 'AR', Statepopulation: 2350725 },
  { _id: 'CO', Statepopulation: 3293755 },
  { _id: 'CA', Statepopulation: 29754890 },
  { _id: 'HI', Statepopulation: 1108229 },
  { _id: 'WI', Statepopulation: 4891769 },
  { _id: 'OR', Statepopulation: 2842321 },
  { _id: 'UT', Statepopulation: 1722850 }
]
Type "it" for more
Atlas atlas-11iltc-shard-0 [primary] populationss>
```

```
{ _id: 'MT', Statepopulation: 798948 },
{ _id: 'NJ', Statepopulation: 7730188 },
{ _id: 'KS', Statepopulation: 2475285 },
{ _id: 'CT', Statepopulation: 3287116 },
{ _id: 'RI', Statepopulation: 1003218 },
{ _id: 'GA', Statepopulation: 6478216 },
{ _id: 'FL', Statepopulation: 12686644 },
{ _id: 'AL', Statepopulation: 4040587 },
{ _id: 'ND', Statepopulation: 638272 },
{ _id: 'AR', Statepopulation: 2350725 },
{ _id: 'CO', Statepopulation: 3293755 },
{ _id: 'CA', Statepopulation: 29754890 },
{ _id: 'HI', Statepopulation: 1108229 },
{ _id: 'WI', Statepopulation: 4891769 },
{ _id: 'OR', Statepopulation: 2842321 },
{ _id: 'UT', Statepopulation: 1722850 }
]
Type "it" for more
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$group:{_id:"$state",Statepopulation:{$sum:"$pop"}}},{$sort:{Statepopulation:-1}}])
[
{ _id: 'CA', Statepopulation: 29754890 },
{ _id: 'NY', Statepopulation: 17990402 },
{ _id: 'TX', Statepopulation: 16984601 },
{ _id: 'FL', Statepopulation: 12686644 },
{ _id: 'PA', Statepopulation: 11881643 },
{ _id: 'IL', Statepopulation: 11427576 },
{ _id: 'OH', Statepopulation: 10846517 },
{ _id: 'MI', Statepopulation: 9295297 },
{ _id: 'NJ', Statepopulation: 7730188 },
{ _id: 'NC', Statepopulation: 6628637 },
{ _id: 'GA', Statepopulation: 6478216 },
{ _id: 'VA', Statepopulation: 6181479 },
{ _id: 'MA', Statepopulation: 6016425 },
{ _id: 'IN', Statepopulation: 5544136 },
{ _id: 'MO', Statepopulation: 5110648 },
{ _id: 'WI', Statepopulation: 4891769 },
{ _id: 'TN', Statepopulation: 4876457 },
{ _id: 'WA', Statepopulation: 4866692 },
{ _id: 'MD', Statepopulation: 4781379 },
{ _id: 'MN', Statepopulation: 4372982 }
]
Type "it" for more
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$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-11iltc-shard-0 [primary] populationss>
```

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' }

2. sort the results by population, highest first

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

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

```
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$group:{_id:{city:"$city",state:"$state"},populationss:{$sum:"$pop"}}}])
[
{ _id: { city: 'AVILLA', state: 'MO' }, populationss: 678 },
{ _id: { city: 'TINKER AFB', state: 'OK' }, populationss: 3714 },
{ _id: { city: 'EDMESTON', state: 'NY' }, populationss: 788 },
{ _id: { city: 'ARBELA', state: 'MO' }, populationss: 564 },
{
  _id: { city: 'SULPHUR SPRINGS', state: 'TX' },
  populationss: 21479
},
{ _id: { city: 'POWAY', state: 'CA' }, populationss: 43490 },
{ _id: { city: 'WANBLEE', state: 'SD' }, populationss: 1269 },
{ _id: { city: 'PARKDALE', state: 'AR' }, populationss: 560 },
{ _id: { city: 'ROWLEY', state: 'MA' }, populationss: 4368 },
{ _id: { city: 'FINGAL', state: 'ND' }, populationss: 349 },
{ _id: { city: 'WOODWAY', state: 'TX' }, populationss: 14756 },
{ _id: { city: 'BLOOMFIELD', state: 'NJ' }, populationss: 46131 },
{ _id: { city: 'CONESVILLE', state: 'IA' }, populationss: 497 },
{ _id: { city: 'SIDNEY', state: 'TX' }, populationss: 92 },
{ _id: { city: 'WINCHESTER', state: 'MA' }, populationss: 20232 },
{ _id: { city: 'NARROWSBURG', state: 'NY' }, populationss: 1576 },
{ _id: { city: 'STOCKTON', state: 'NY' }, populationss: 1894 },
{ _id: { city: 'HALIFAX', state: 'MA' }, populationss: 6526 },
{ _id: { city: 'WARNER', state: 'OK' }, populationss: 2501 },
{ _id: { city: 'BREA', state: 'CA' }, populationss: 45577 }
]
Type "it" for more
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$group:{_id:{city:"$city",state:"$state"},populationss:{$sum:"$pop"}}},{$sort:{populationss:-1}}])
[
{ _id: { city: 'CHICAGO', state: 'IL' }, populationss: 2452177 },
{ _id: { city: 'BROOKLYN', state: 'NY' }, populationss: 2300504 },
{ _id: { city: 'LOS ANGELES', state: 'CA' }, populationss: 2102295 },
{ _id: { city: 'HOUSTON', state: 'TX' }, populationss: 2095918 },
{ _id: { city: 'PHILADELPHIA', state: 'PA' }, populationss: 1610956 },
{ _id: { city: 'NEW YORK', state: 'NY' }, populationss: 1476790 },
{ _id: { city: 'BRONX', state: 'NY' }, populationss: 1209548 },
{ _id: { city: 'SAN DIEGO', state: 'CA' }, populationss: 1049298 },
{ _id: { city: 'DETROIT', state: 'MI' }, populationss: 963243 },
{ _id: { city: 'DALLAS', state: 'TX' }, populationss: 940191 },
{ _id: { city: 'PHOENIX', state: 'AZ' }, populationss: 890853 },
{ _id: { city: 'MIAMI', state: 'FL' }, populationss: 825232 },
{ _id: { city: 'SAN JOSE', state: 'CA' }, populationss: 816653 },
{ _id: { city: 'SAN ANTONIO', state: 'TX' }, populationss: 811792 },
{ _id: { city: 'BALTIMORE', state: 'MD' }, populationss: 733081 },
{ _id: { city: 'SAN FRANCISCO', state: 'CA' }, populationss: 723993 },
{ _id: { city: 'MEMPHIS', state: 'TN' }, populationss: 632837 },
{ _id: { city: 'SACRAMENTO', state: 'CA' }, populationss: 628279 },
{ _id: { city: 'JACKSONVILLE', state: 'FL' }, populationss: 610160 },
{ _id: { city: 'ATLANTA', state: 'GA' }, populationss: 609591 }
```

```
Type "it" for more
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$group:{_id:{city:"$city",state:"$state"},populationss:{$sum:"$pop"}}},{$sort:{populationss:-1}},{$limit:3}])
[
  { _id: { city: 'CHICAGO', state: 'IL' }, populationss: 2452177 },
  { _id: { city: 'BROOKLYN', state: 'NY' }, populationss: 2300504 },
  { _id: { city: 'LOS ANGELES', state: 'CA' }, populationss: 2102295 }
]
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$match:{state:"TX"}},{$group:{_id:{city:"$city",state:"$state"},populationss:{$sum:"$pop"}}},{$sort:{populationss:-1}},{$limit:3}])
[
  { _id: { city: 'HOUSTON', state: 'TX' }, populationss: 2095918 },
  { _id: { city: 'DALLAS', state: 'TX' }, populationss: 940191 },
  { _id: { city: 'SAN ANTONIO', state: 'TX' }, populationss: 811792 }
]
Atlas atlas-11iltc-shard-0 [primary] populationss>
```

Bonus

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

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

```
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.aggregate([{$group:{_id:"$city",AvgPopulation:{$avg:"$pop"}}}])
[
  { _id: 'MOUNTAIN REST', AvgPopulation: 1717 },
  { _id: 'LAVALLETTE', AvgPopulation: 3985 },
  { _id: 'BIVALVE', AvgPopulation: 307 },
  { _id: 'MOREAUVILLE', AvgPopulation: 1914 },
  { _id: 'WESTBOROUGH', AvgPopulation: 14132 },
  { _id: 'PRUNEDALE', AvgPopulation: 21061 },
  { _id: 'KINGS BEACH', AvgPopulation: 3247 },
  { _id: 'FORT LORAMIE', AvgPopulation: 2639 },
  { _id: 'CLARKS', AvgPopulation: 749 },
  { _id: 'SMITH CENTER', AvgPopulation: 2848 },
  { _id: 'WABENO', AvgPopulation: 1308 },
  { _id: 'DIXIANA', AvgPopulation: 17068 },
  { _id: 'NEW ROADS', AvgPopulation: 7642 },
  { _id: 'JACKSONVILLE', AvgPopulation: 22288.030303030304 },
  { _id: 'TOLAR', AvgPopulation: 2586 },
  { _id: 'CARRIE', AvgPopulation: 457 },
  { _id: 'LEWES', AvgPopulation: 9503 },
  { _id: 'LITTLE GENESEE', AvgPopulation: 1240 },
  { _id: 'FAIRBURN', AvgPopulation: 7156.5 },
  { _id: 'VESTAVIA HILLS', AvgPopulation: 29224 }
]
Type "it" for more
Atlas atlas-11iltc-shard-0 [primary] populationss> db.zipcode.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-11iltc-shard-0 [primary] populationss>
```