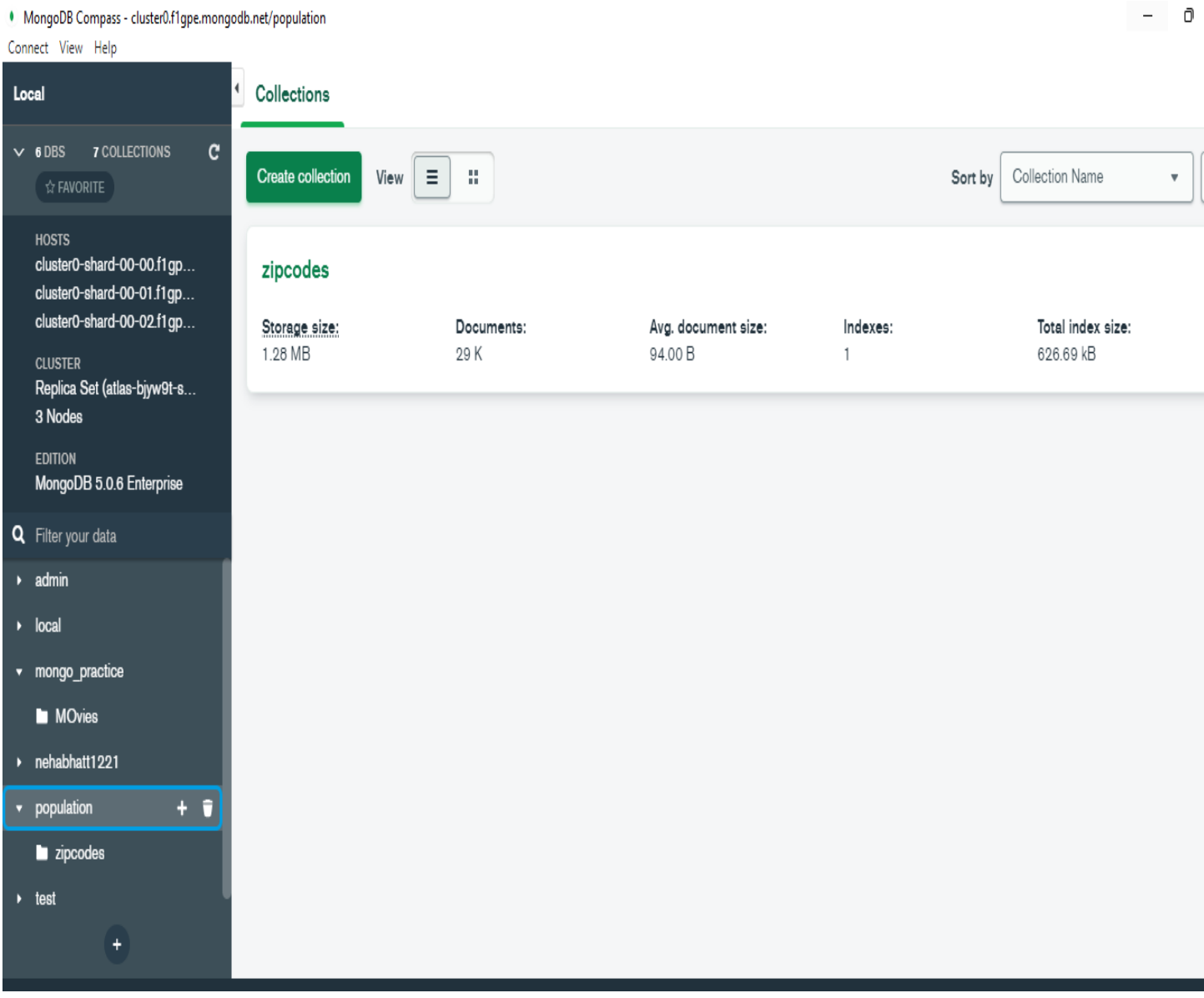
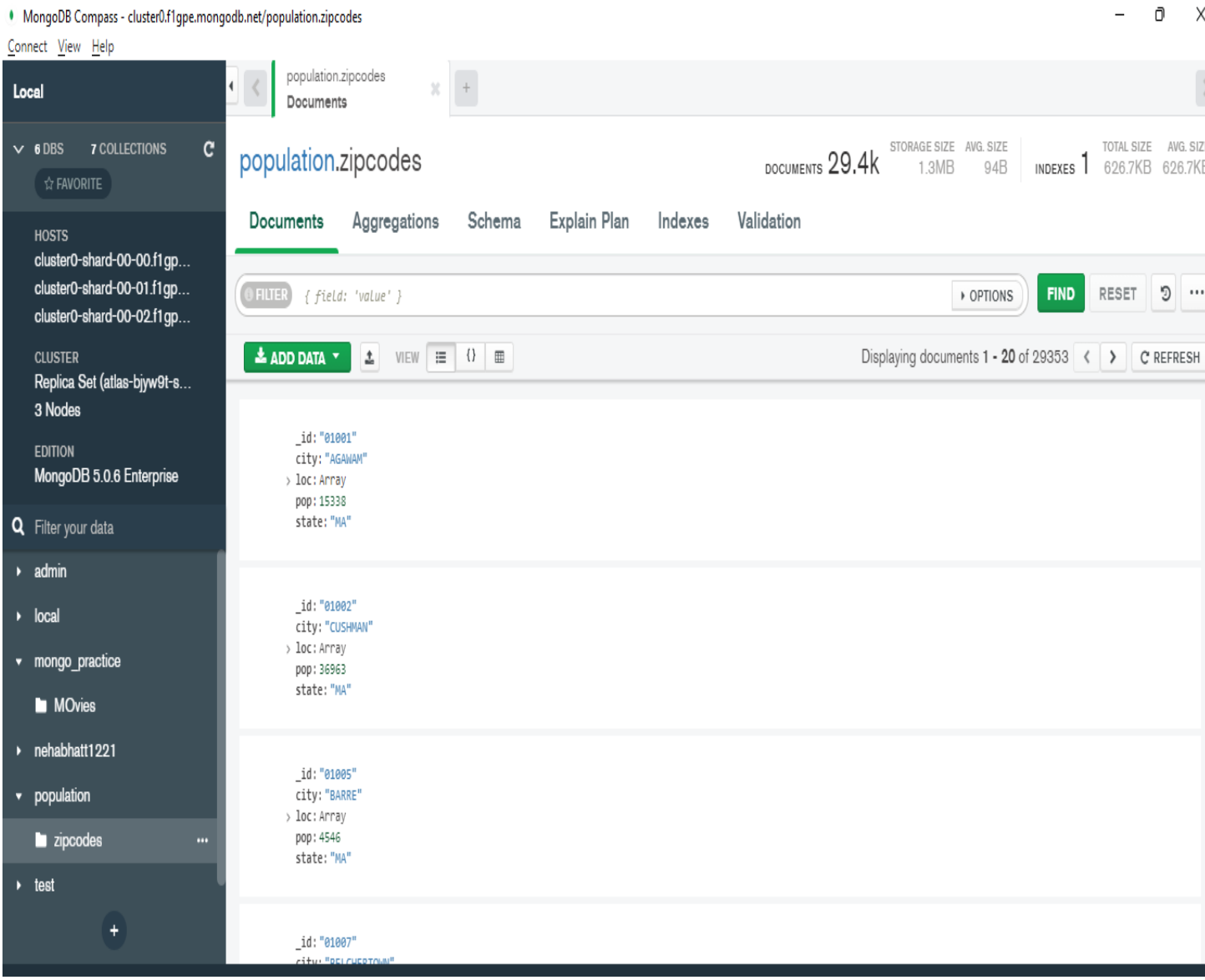
MongoDB -Aggregation Exercises

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



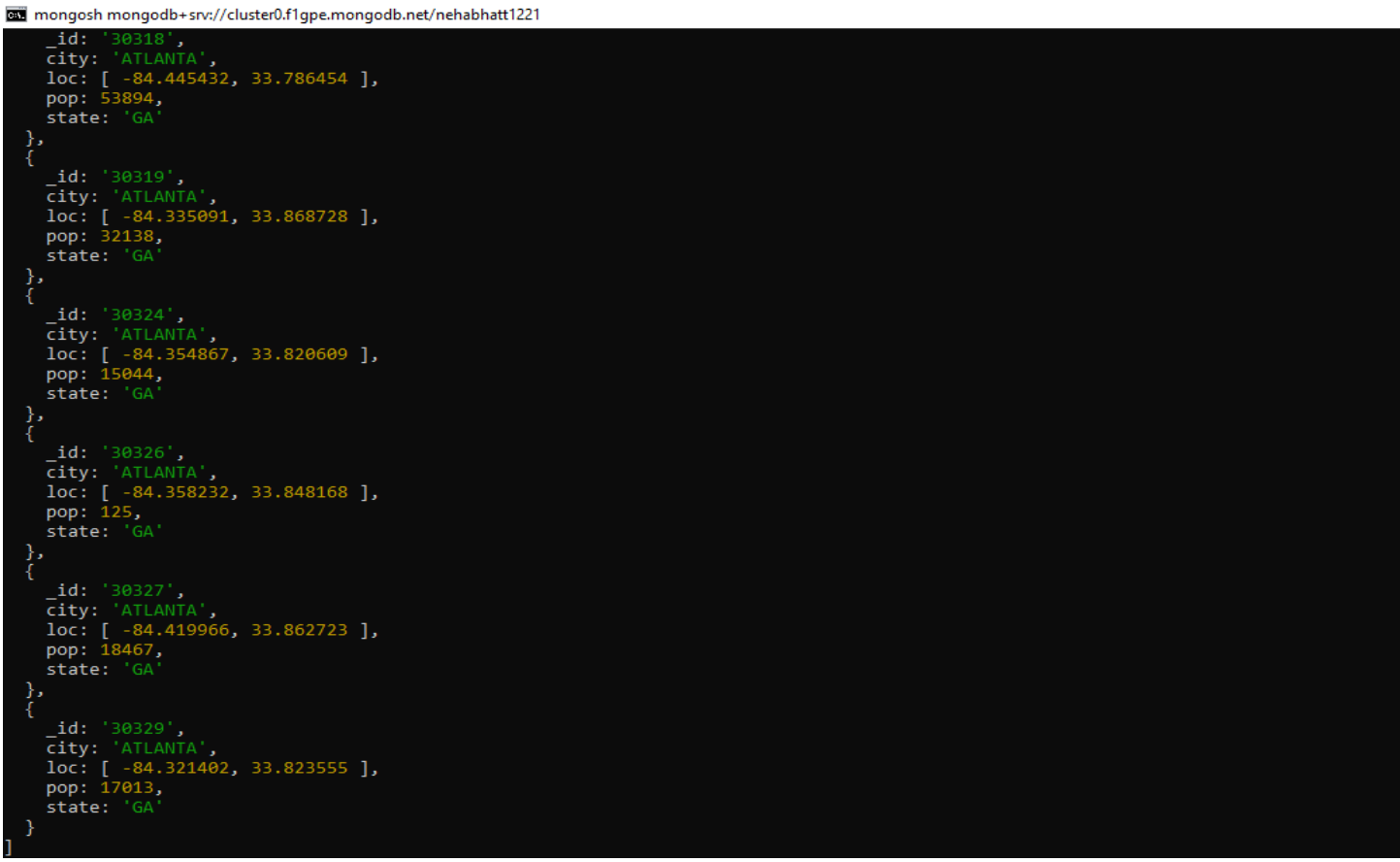


Atlanta Population

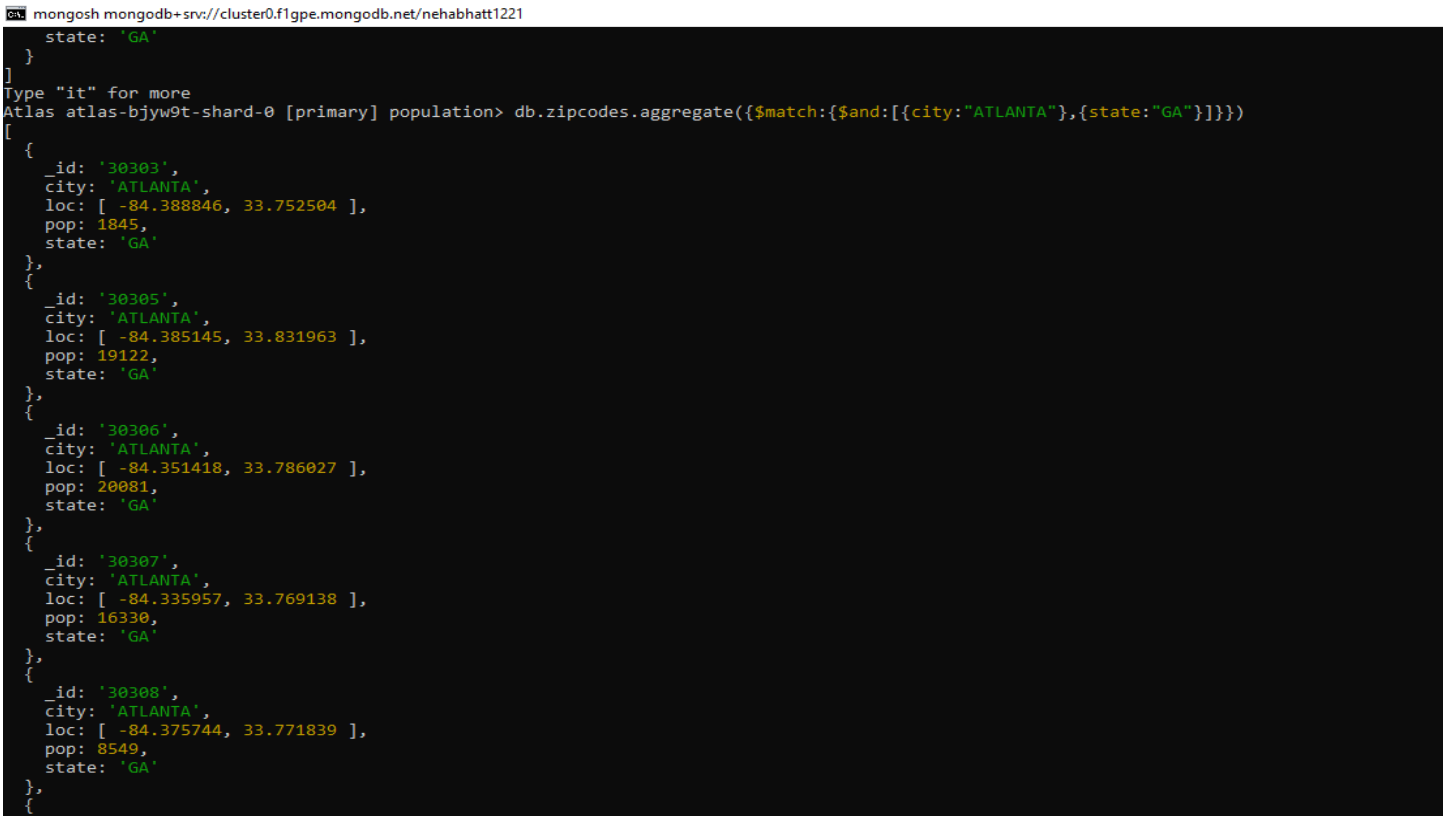
1. use db.zipcodes.find() to filter results to only the results where city is ATLANTA and state is GA.

mongosh mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt1221

```
Microsoft Windows [Version 10.0.22000.493]
(c) Microsoft Corporation. All rights reserved.

C:\Users\neha_\Downloads\mongosh-1.1.9-win32-x64\mongosh-1.1.9-win32-x64\bin>mongosh "mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt122
nehabhatt1221
Enter password: ************
Current Mongosh Log ID: 6219b15fe07e90234cd18f63
Connecting to:          mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt1221?appName=mongosh+1.1.9
Using MongoDB:          5.0.6 (API Version 1)
Using Mongosh:          1.1.9

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

Atlas atlas-bjyw9t-shard-0 [primary] nehabhatt1221> show dbs
mongo_practice  73.7 kB
nehabhatt1221    221 kB
population      2.42 MB
test            49.2 kB
admin            340 kB
local           4.25 GB
Atlas atlas-bjyw9t-shard-0 [primary] nehabhatt1221> use population
switched to db population
Atlas atlas-bjyw9t-shard-0 [primary] population> show collections
zipcodes
Atlas atlas-bjyw9t-shard-0 [primary] population> 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',
```



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://cluster0.f1gpe.mongodb.net/nehabhatt1221
    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-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$group:{_id:"city",count:{$sum:1}}}])
[ { _id: 'city', count: 41 } ]
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$group:{_id:"city",count:{$sum:"$pop"}}}])
[ { _id: 'city', count: 630046 } ]
Atlas atlas-bjyw9t-shard-0 [primary] population>
```

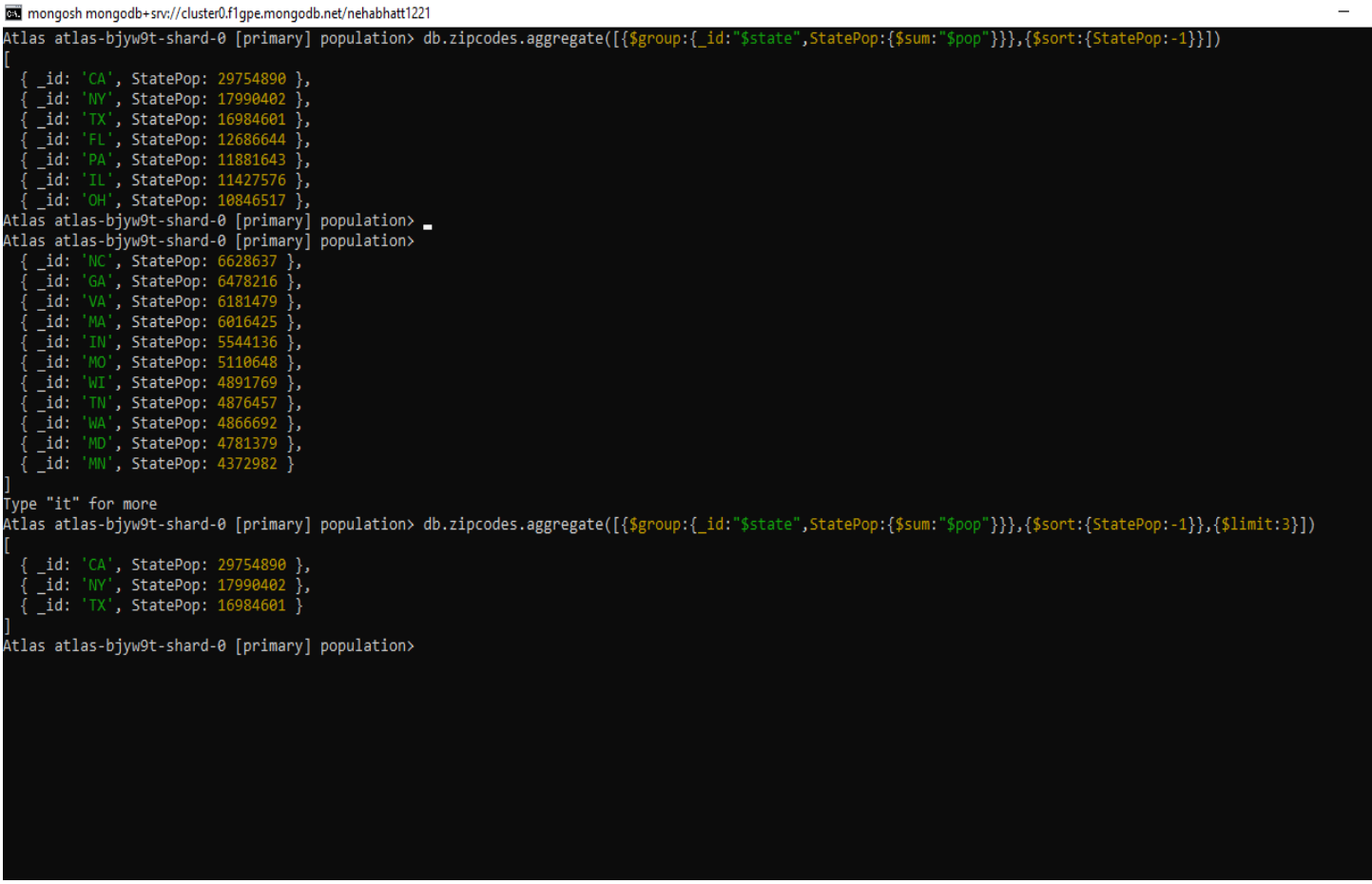
Populations By State

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

```
mongosh mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt1221
  }
]
Type "it" for more
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$group:{_id:"city",count:{$sum:1}}}])
[ { _id: 'city', count: 41 } ]
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$group:{_id:"city",count:{$sum:"$pop"}}}])
[ { _id: 'city', count: 630046 } ]
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([($group:{_id:"state",TotalPopulation:{$sum:"$pop"}}}])
Uncaught:
SyntaxError: Unexpected token, expected "," (1:30)

> 1 | db.zipcodes.aggregate([($group:{_id:"state",TotalPopulation:{$sum:"$pop"}}}])
    |                              ^
  2 |

Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"state",TotalPopulation:{$sum:"$pop"}}}])
[ { _id: 'state', TotalPopulation: 248408400 } ]
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"state",TotPop:{$sum:"$pop"}}}])
[ { _id: 'state', TotPop: 248408400 } ]
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",StatePop:{$sum:"$pop"}}}])
[
  { _id: 'ND', StatePop: 638272 },
  { _id: 'MO', StatePop: 5110648 },
  { _id: 'VA', StatePop: 6181479 },
  { _id: 'OK', StatePop: 3145585 },
  { _id: 'CO', StatePop: 3293755 },
  { _id: 'AZ', StatePop: 3665228 },
  { _id: 'NM', StatePop: 1515069 },
  { _id: 'OR', StatePop: 2842321 },
  { _id: 'MD', StatePop: 4781379 },
  { _id: 'CT', StatePop: 3287116 },
  { _id: 'ID', StatePop: 1006749 },
  { _id: 'WV', StatePop: 1793146 },
  { _id: 'NY', StatePop: 17990402 },
  { _id: 'NJ', StatePop: 7730188 },
  { _id: 'NE', StatePop: 1578139 },
  { _id: 'MI', StatePop: 9295297 },
  { _id: 'TX', StatePop: 16984601 },
  { _id: 'WY', StatePop: 453528 },
  { _id: 'MA', StatePop: 6016425 },
  { _id: 'DC', StatePop: 606900 }
]
```

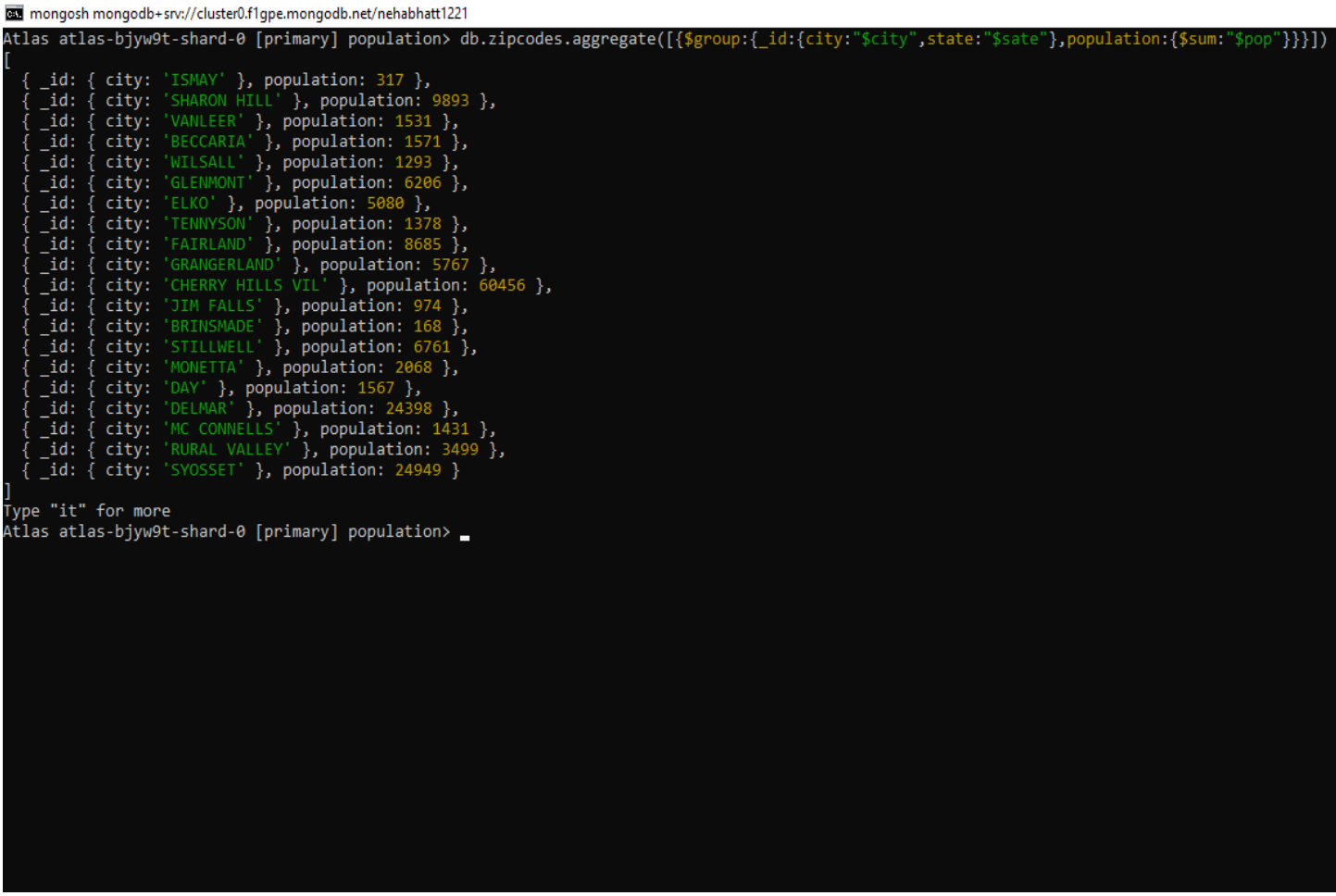
2. sort the results by population, highest first

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



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' }

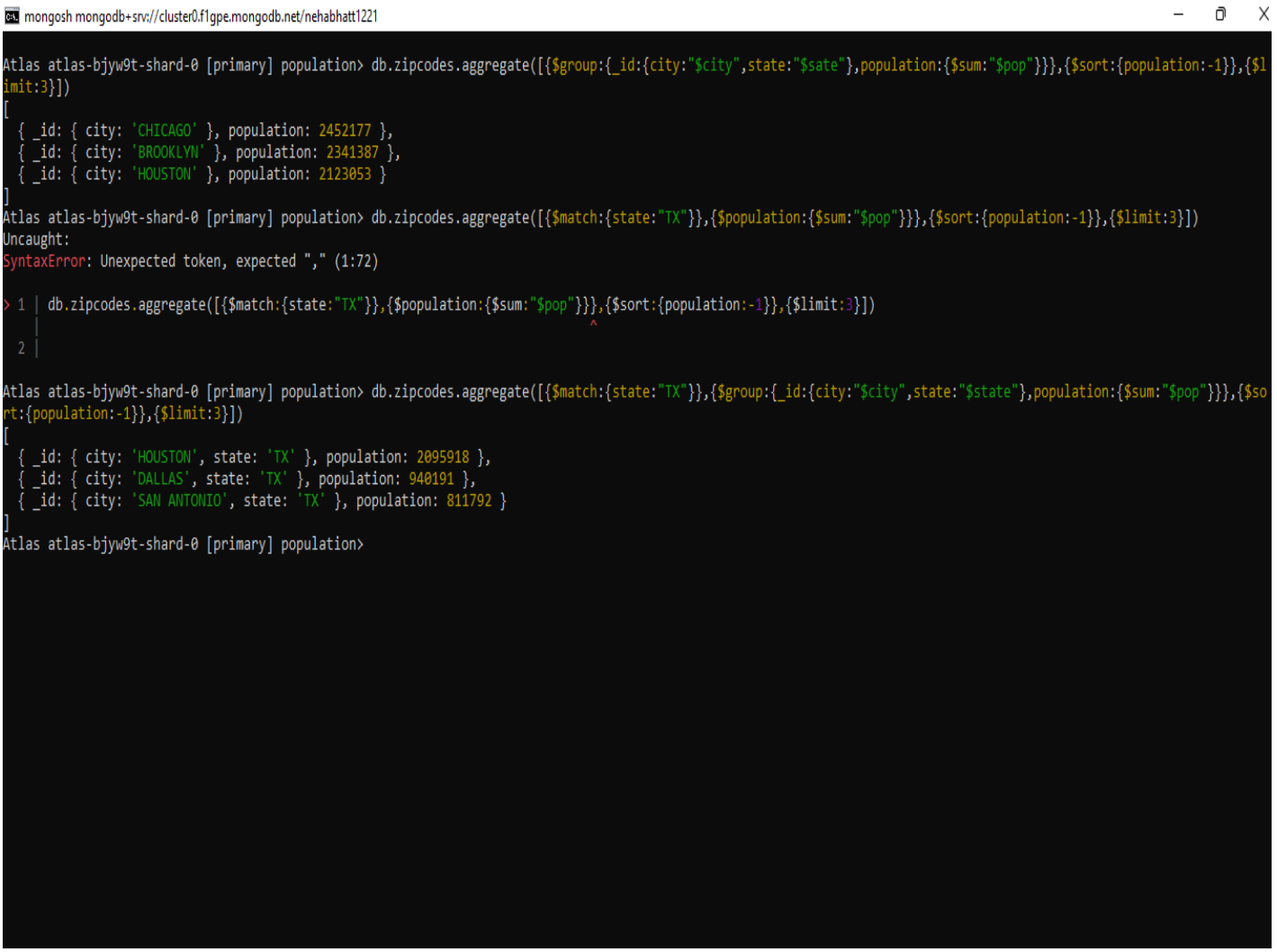


2. sort the results by population, highest first

```
mongosh mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt1221
nehabhatt1221
Enter password: ************
Current Mongosh Log ID: 6219c1cc8b7950b1c65b3b90
Connecting to:          mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt1221?appName=mongosh+1.1.9
Using MongoDB:          5.0.6 (API Version 1)
Using Mongosh:          1.1.9

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

Atlas atlas-bjyw9t-shard-0 [primary] nehabhatt1221> show dbs
mongo_practice  73.7 kB
nehabhatt1221    221 kB
population      2.42 MB
test            49.2 kB
admin            340 kB
local           4.25 GB
Atlas atlas-bjyw9t-shard-0 [primary] nehabhatt1221> use population
switched to db population
Atlas atlas-bjyw9t-shard-0 [primary] population> show collections
zipcodes
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$sate"},population:{$sum:"$pop"}}},{$sort:{population:
[
  { _id: { city: 'CHICAGO' }, population: 2452177 },
  { _id: { city: 'BROOKLYN' }, population: 2341387 },
  { _id: { city: 'HOUSTON' }, population: 2123053 },
  { _id: { city: 'LOS ANGELES' }, population: 2102295 },
  { _id: { city: 'PHILADELPHIA' }, population: 1639862 },
  { _id: { city: 'NEW YORK' }, population: 1476790 },
  { _id: { city: 'BRONX' }, population: 1209548 },
  { _id: { city: 'SAN DIEGO' }, population: 1054316 },
  { _id: { city: 'DALLAS' }, population: 999042 },
  { _id: { city: 'DETROIT' }, population: 967468 },
  { _id: { city: 'PHOENIX' }, population: 902249 },
  { _id: { city: 'MIAMI' }, population: 848436 },
  { _id: { city: 'COLUMBUS' }, population: 825448 },
  { _id: { city: 'SAN JOSE' }, population: 817497 },
  { _id: { city: 'SAN ANTONIO' }, population: 813188 },
  { _id: { city: 'WASHINGTON' }, population: 780954 },
  { _id: { city: 'BALTIMORE' }, population: 738846 },
  { _id: { city: 'JACKSONVILLE' }, population: 735505 },
  { _id: { city: 'SAN FRANCISCO' }, population: 723993 },
  { _id: { city: 'CLEVELAND' }, population: 687451 }
```

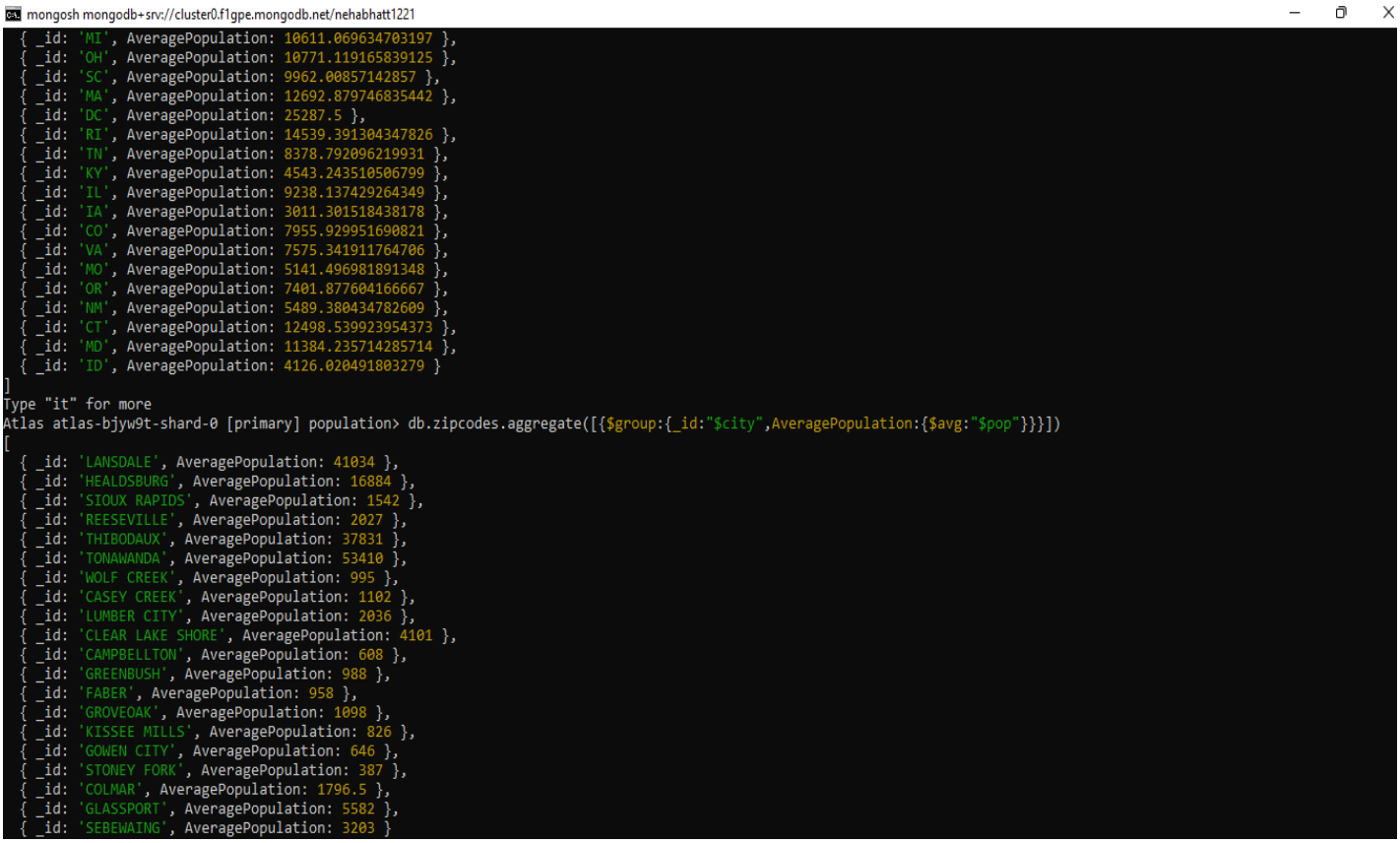
3. limit the results to just the first 3 results. What are the top 3 cities in population?

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

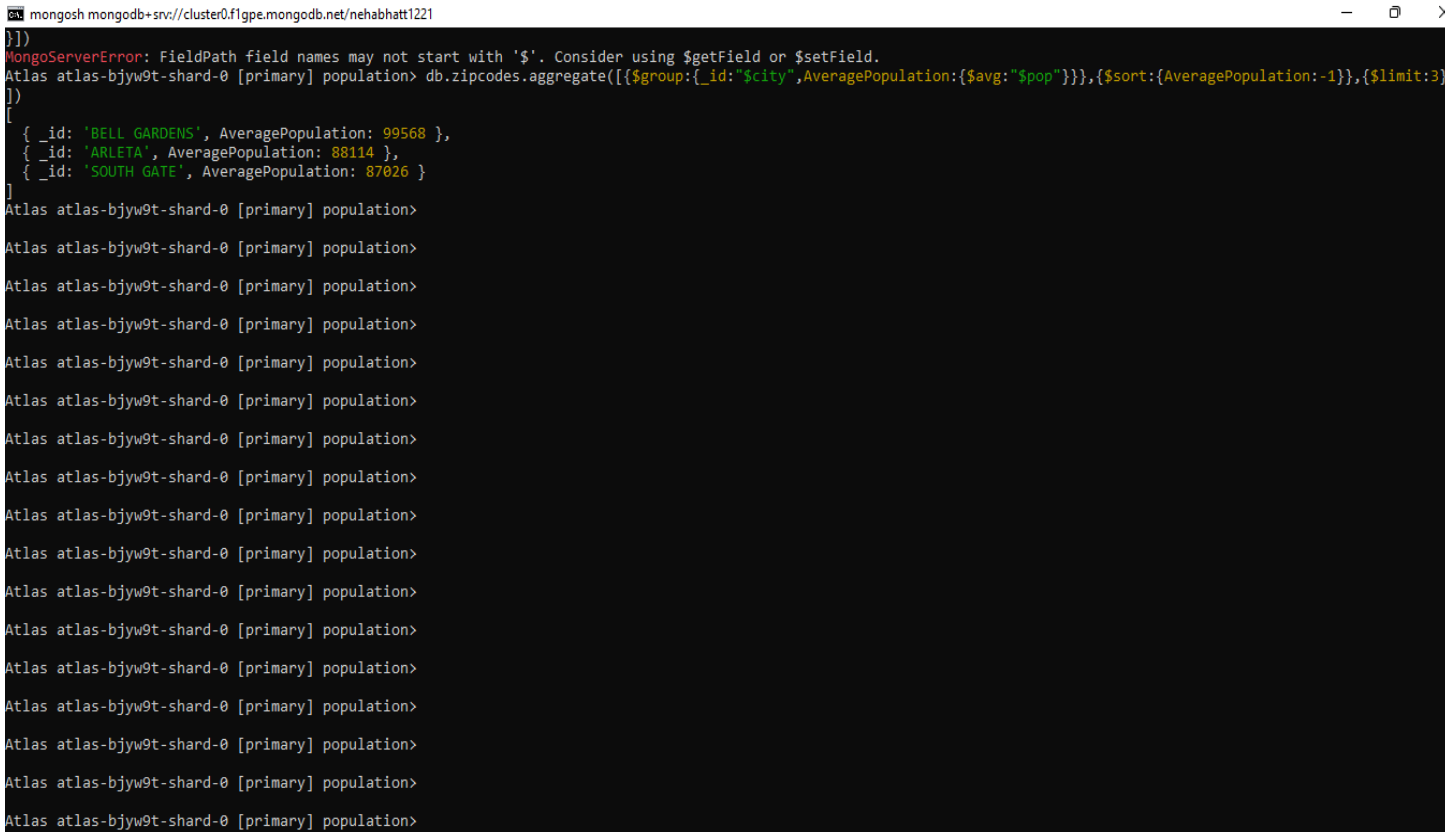


Bonus

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.


mongosh mongodb+srv://cluster0.f1gpe.mongodb.net/nehabhatt1221
}])
MongoServerError: FieldPath field names may not start with '$'. Consider using $getField or $setField.
Atlas atlas-bjyw9t-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$city",AveragePopulation:{$avg:"$pop"}}},{$sort:{AveragePopulation:-1}},{$limit:3}
])
[
{ _id: 'BELL GARDENS', AveragePopulation: 99568 },
{ _id: 'ARLETA', AveragePopulation: 88114 },
{ _id: 'SOUTH GATE', AveragePopulation: 87026 }
]
Atlas atlas-bjyw9t-shard-0 [primary] population>