Atlanta Population

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

```
Atlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.find({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',
```

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

```
mongosh mongodb+srv://workcluster.pclcu.mongodb.net/population
]
Type "it" for more
Atlas atlas-zoofki-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',
    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 ],
```

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

```
Atlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA",state:"GA"}},{$group:{_id:null,count:{$sum: 1}}}])
[ { _id: null, count: 31 } ]
Atlas atlas-zoofki-shard-0 [primary] population>
```

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

```
Atlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{city:"ATLANTA",state:"GA"}},{$group:{_id:null,population:{$sum:"$pop"}}}])
[ { _id: null, population: 609591 } ]
Atlas atlas-zoofki-shard-0 [primary] population>
```

Populations By State

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

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",population:{$sum:"$pop"}}}])

{ _id: 'UT', population: 1722850 },
{ _id: 'IA', population: 2776420 },
{ _id: 'TX', population: 16984601 },
{ _id: 'MI', population: 9295297 },
{ _id: 'WV', population: 1793146 },
{ _id: 'SC', population: 3486703 },
{ _id: 'OH', population: 10846517 },
{ _id: 'DE', population: 666168 },
{ _id: 'LA', population: 4217595 },
{ _id: 'KY', population: 3675484 },
{ _id: 'ID', population: 1006749 },
{ _id: 'DC', population: 606900 },
{ _id: 'IL', population: 11427576 },
{ _id: 'NM', population: 1515069 },
{ _id: 'OR', population: 2842321 },
{ _id: 'NC', population: 6628637 },
{ _id: 'CO', population: 3293755 },
{ _id: 'MD', population: 4781379 },
{ _id: 'NY', population: 17990402 },
{ _id: 'ME', population: 1226648 }

ype "it" for more
tlas atlas-zoofki-shard-0 [primary] population>
```

2. Sort the results by population, highest first

```
ype "it" for more
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",totalpop:{$sum:"pop"}}},{$sort:{totalpop:-1}}])

{ _id: 'MA', totalpop: 0 },
{ _id: 'NJ', totalpop: 0 },
{ _id: 'ND', totalpop: 0 },
{ _id: 'KS', totalpop: 0 },
{ _id: 'AK', totalpop: 0 },
{ _id: 'NE', totalpop: 0 },
{ _id: 'MN', totalpop: 0 },
{ _id: 'WY', totalpop: 0 },
{ _id: 'CA', totalpop: 0 },
{ _id: 'NH', totalpop: 0 },
{ _id: 'MO', totalpop: 0 },
{ _id: 'PA', totalpop: 0 },
{ _id: 'RI', totalpop: 0 },
{ _id: 'FL', totalpop: 0 },
{ _id: 'AR', totalpop: 0 },
{ _id: 'AZ', totalpop: 0 },
{ _id: 'OK', totalpop: 0 },
{ _id: 'HI', totalpop: 0 },
{ _id: 'NV', totalpop: 0 },
{ _id: 'WI', totalpop: 0 }
```

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

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:"$state",totalpop:{$sum:"$pop"}}},{$sort:{totalpop:-1}},{$limit:3}])

{ _id: 'CA', totalpop: 29754890 },
{ _id: 'NY', totalpop: 17990402 },
{ _id: 'TX', totalpop: 16984601 }
```

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' }

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},totalpop:{$sum:"pop"}}}])

{ _id: { city: 'MC CALLA', state: 'AL' }, totalpop: 0 },
{ _id: { city: 'MAGNOLIA', state: 'AL' }, totalpop: 0 },
{ _id: { city: 'JONESBORO', state: 'ME' }, totalpop: 0 },
{ _id: { city: 'LEXINGTON', state: 'MS' }, totalpop: 0 },
{ _id: { city: 'TAVARES', state: 'FL' }, totalpop: 0 },
{ _id: { city: 'LOCKPORT', state: 'LA' }, totalpop: 0 },
{ _id: { city: 'WATTSBURG', state: 'PA' }, totalpop: 0 },
{ _id: { city: 'TERRACE PARK', state: 'OH' }, totalpop: 0 },
{ _id: { city: 'GROVETON', state: 'TX' }, totalpop: 0 },
{ _id: { city: 'MONTGOMERY CREEK', state: 'CA' }, totalpop: 0 },
{ _id: { city: 'NORTH BELLMORE', state: 'NY' }, totalpop: 0 },
{ _id: { city: 'VERNON HILLS', state: 'IL' }, totalpop: 0 },
{ _id: { city: 'BLUM', state: 'TX' }, totalpop: 0 },
{ _id: { city: 'BYRON', state: 'NE' }, totalpop: 0 },
{ _id: { city: 'ENCAMPMENT', state: 'WY' }, totalpop: 0 },
{ _id: { city: 'PLAINS', state: 'GA' }, totalpop: 0 },
{ _id: { city: 'SUMMIT', state: 'MS' }, totalpop: 0 },
{ _id: { city: 'BERLIN', state: 'NJ' }, totalpop: 0 },
{ _id: { city: 'NEWPORT', state: 'OH' }, totalpop: 0 },
{ _id: { city: 'MAXWELL', state: 'IA' }, totalpop: 0 }

ype "it" for more
tlas atlas-zoofki-shard-0 [primary] population>
```

2. Sort the results by population, highest first

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},totalpop:{$sum:"$pop"}}},{$sort:{totalpop:-1}}])

{ _id: { city: 'CHICAGO', state: 'IL' }, totalpop: 2452177 },
{ _id: { city: 'BROOKLYN', state: 'NY' }, totalpop: 2300504 },
{ _id: { city: 'LOS ANGELES', state: 'CA' }, totalpop: 2102295 },
{ _id: { city: 'HOUSTON', state: 'TX' }, totalpop: 2095918 },
{ _id: { city: 'PHILADELPHIA', state: 'PA' }, totalpop: 1610956 },
{ _id: { city: 'NEW YORK', state: 'NY' }, totalpop: 1476790 },
{ _id: { city: 'BRONX', state: 'NY' }, totalpop: 1209548 },
{ _id: { city: 'SAN DIEGO', state: 'CA' }, totalpop: 1049298 },
{ _id: { city: 'DETROIT', state: 'MI' }, totalpop: 963243 },
{ _id: { city: 'DALLAS', state: 'TX' }, totalpop: 940191 },
{ _id: { city: 'PHOENIX', state: 'AZ' }, totalpop: 890853 },
{ _id: { city: 'MIAMI', state: 'FL' }, totalpop: 825232 },
{ _id: { city: 'SAN JOSE', state: 'CA' }, totalpop: 816653 },
{ _id: { city: 'SAN ANTONIO', state: 'TX' }, totalpop: 811792 },
{ _id: { city: 'BALTIMORE', state: 'MD' }, totalpop: 733081 },
{ _id: { city: 'SAN FRANCISCO', state: 'CA' }, totalpop: 723993 },
{ _id: { city: 'MEMPHIS', state: 'TN' }, totalpop: 632837 },
{ _id: { city: 'SACRAMENTO', state: 'CA' }, totalpop: 628279 },
{ _id: { city: 'JACKSONVILLE', state: 'FL' }, totalpop: 610160 },
{ _id: { city: 'ATLANTA', state: 'GA' }, totalpop: 609591 },
```

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

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},totalpop:{$sum:"$pop"}}},{$sort:{totalpop:-1}},{$sort:{totalpop:-1}},{$limit:
}])

{ _id: { city: 'CHICAGO', state: 'IL' }, totalpop: 2452177 },
{ _id: { city: 'BROOKLYN', state: 'NY' }, totalpop: 2300504 },
{ _id: { city: 'LOS ANGELES', state: 'CA' }, totalpop: 2102295 }
```

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

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$match:{state:"TX"}},{$group:{_id:{state:"$TX",city:"$city"},totalpop:{$sum:"$pop"}}},{$sort:{totalpop:-1}},{$limit:3}])

{ _id: { city: 'HOUSTON' }, totalpop: 2095918 },
{ _id: { city: 'DALLAS' }, totalpop: 940191 },
{ _id: { city: 'SAN ANTONIO' }, totalpop: 811792 }

tlas atlas-zoofki-shard-0 [primary] population>
```

Bonus

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

```
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{state:"$state",city:"$city"},avgpop:{$avg:"pop"}}}])

{ _id: { state: 'AL', city: 'SAINT STEPHENS' }, avgpop: null },
{ _id: { state: 'KY', city: 'ISONVILLE' }, avgpop: null },
{ _id: { state: 'NY', city: 'NEW ROCHELLE' }, avgpop: null },
{ _id: { state: 'SD', city: 'WENTWORTH' }, avgpop: null },
{ _id: { state: 'WI', city: 'MENOMONIE' }, avgpop: null },
{ _id: { state: 'TX', city: 'ANNONA' }, avgpop: null },
{ _id: { state: 'AL', city: 'WEAVER' }, avgpop: null },
{ _id: { state: 'NM', city: 'SHIPROCK' }, avgpop: null },
{ _id: { state: 'OR', city: 'ALOHA' }, avgpop: null },
{ _id: { state: 'FL', city: 'ALTOONA' }, avgpop: null },
{ _id: { state: 'LA', city: 'BELCHER' }, avgpop: null },
{ _id: { state: 'WV', city: 'MARMET' }, avgpop: null },
{ _id: { state: 'KY', city: 'VEST' }, avgpop: null },
{ _id: { state: 'NY', city: 'LITTLE GENESEE' }, avgpop: null },
{ _id: { state: 'KY', city: 'PHILPOT' }, avgpop: null },
{ _id: { state: 'ME', city: 'BERWICK' }, avgpop: null },
{ _id: { state: 'IL', city: 'AMBOY' }, avgpop: null },
{ _id: { state: 'UT', city: 'JENSEN' }, avgpop: null },
{ _id: { state: 'MO', city: 'UNION' }, avgpop: null },
{ _id: { state: 'WA', city: 'ROOSEVELT' }, avgpop: null }

ype "it" for moreDALLAS' }, totalpop: 940191 },
tlas atlas-zoofki-shard-0 [primary] population>
```

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

```
ype "it" for moreDALLAS' }, totalpop: 940191 },
tlas atlas-zoofki-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{state:"$state",city:"$city"},avgpop:{$avg:"pop"}}},{$sort:{avgpop:-1}},{$limit:3}])

{ _id: { state: 'VA', city: 'BUENA VISTA' }, avgpop: null },
{ _id: { state: 'SC', city: 'MC CONNELLS' }, avgpop: null },
{ _id: { state: 'CA', city: 'SANTA FE SPRINGS' }, avgpop: null }

tlas atlas-zoofki-shard-0 [primary] population>
```