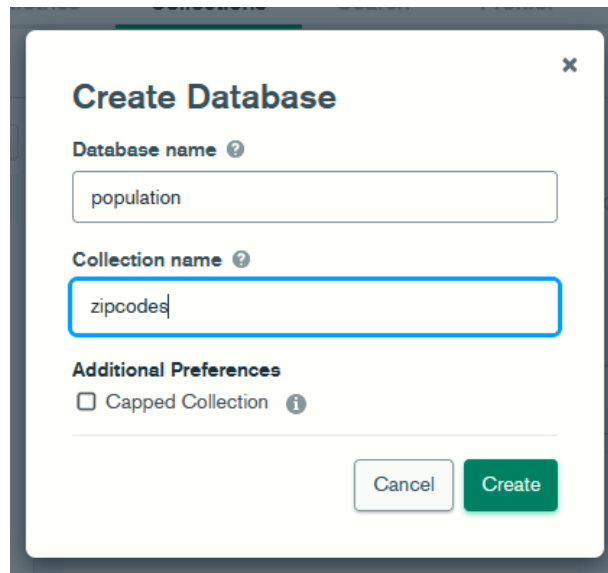
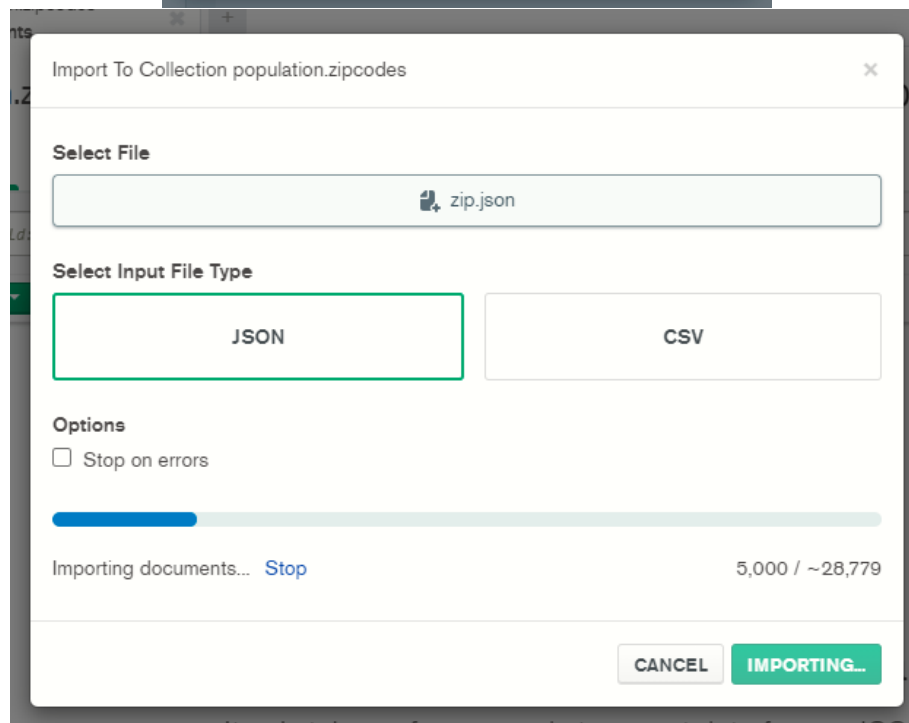


ASSIGNMENT 2.2

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



A dialog box titled "Create Database" with a close button (X) in the top right corner. It contains two input fields: "Database name" with the value "population" and "Collection name" with the value "zipcodes". Below these is a section titled "Additional Preferences" with a checkbox labeled "Capped Collection" which is currently unchecked. At the bottom right are two buttons: "Cancel" and "Create".



A dialog box titled "Import To Collection population.zipcodes" with a close button (X) in the top right corner. It contains a "Select File" section with a file named "zip.json" and a file icon. Below this is a "Select Input File Type" section with two buttons: "JSON" (highlighted with a green border) and "CSV". Underneath is an "Options" section with a checkbox labeled "Stop on errors" which is unchecked. At the bottom, there is a progress bar and the text "Importing documents..." followed by a "Stop" button. On the right side of the progress bar, it shows "5,000 / ~28,779". At the bottom right are two buttons: "CANCEL" and "IMPORTING..." (highlighted in green).

Atlanta Population

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

```
Atlas atlas-102tzf-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',
    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'
  }
]
```

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

```
Atlas atlas-102tzf-shard-0 [primary] population> 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'
  }
]
```

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([
... {$match:{city:"ATLANTA"}},
... {$group:{_id:"$_id"}},
... {$count:"Total number of zipcodes in ATLANTA"}])
[ { 'Total number of zipcodes in ATLANTA': 41 } ]
Atlas atlas-102tzf-shard-0 [primary] population>
```

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([
... {$group:{_id:'$city', total:{$sum:"$pop"}}},
... {$match:{_id:'ATLANTA'}}]])
[ { _id: 'ATLANTA', total: 630046 } ]
Atlas atlas-102tzf-shard-0 [primary] population>
```

Populations By State

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}}])
[
  { _id: { city: 'SHARONVILLE', state: 'OH' }, total: 21992 },
  { _id: { city: 'SAINT JOHN', state: 'KS' }, total: 2292 },
  { _id: { city: 'ROCKAWAY', state: 'NJ' }, total: 20388 },
  { _id: { city: 'CAMDEN', state: 'MO' }, total: 641 },
  { _id: { city: 'BALDWIN', state: 'WV' }, total: 2768 },
  { _id: { city: 'BISHOPVILLE', state: 'SC' }, total: 11965 },
  { _id: { city: 'BENNINGTON', state: 'KS' }, total: 844 },
  { _id: { city: 'SPRINGFIELD', state: 'NE' }, total: 2961 },
  { _id: { city: 'IRONTO', state: 'VA' }, total: 4216 },
  { _id: { city: 'GREER', state: 'SC' }, total: 43033 },
  { _id: { city: 'NEBO', state: 'NC' }, total: 5018 },
  { _id: { city: 'HOLTSVILLE', state: 'NY' }, total: 10141 },
  { _id: { city: 'UPPER SAINT CLAI', state: 'PA' }, total: 20276 },
  { _id: { city: 'LINWOOD', state: 'NC' }, total: 2823 },
  { _id: { city: 'DONA VISTA', state: 'FL' }, total: 7866 },
  { _id: { city: 'BELLEVUE', state: 'PA' }, total: 22168 },
  { _id: { city: 'MOUNT OLIVET', state: 'KY' }, total: 2124 },
  { _id: { city: 'KANOPOLIS', state: 'KS' }, total: 641 },
  { _id: { city: 'CAWKER CITY', state: 'KS' }, total: 637 },
  { _id: { city: 'WHEATLAND', state: 'MO' }, total: 1730 }
]
Type "it" for more
Atlas atlas-102tzf-shard-0 [primary] population>
```

2. sort the results by population, highest first

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}},{ $sort:{_id:-1}}])
[
  { _id: { city: 'ZWOLLE', state: 'LA' }, total: 5325 },
  { _id: { city: 'ZWINGLE', state: 'IA' }, total: 1320 },
  { _id: { city: 'ZURICH', state: 'KS' }, total: 318 },
  { _id: { city: 'ZUNI', state: 'VA' }, total: 2162 },
  { _id: { city: 'ZUNI', state: 'NM' }, total: 7382 },
  { _id: { city: 'ZUMBROTA', state: 'MN' }, total: 3535 },
  { _id: { city: 'ZORTMAN', state: 'MT' }, total: 394 },
  { _id: { city: 'ZOLFO SPRINGS', state: 'FL' }, total: 3515 },
  { _id: { city: 'ZOE', state: 'KY' }, total: 190 },
  { _id: { city: 'ZOARVILLE', state: 'OH' }, total: 2969 },
  { _id: { city: 'ZIRCONIA', state: 'NC' }, total: 2350 },
  { _id: { city: 'ZIONVILLE', state: 'NC' }, total: 1633 },
  { _id: { city: 'ZIONSVILLE', state: 'PA' }, total: 2312 },
  { _id: { city: 'ZIONSVILLE', state: 'IN' }, total: 9759 },
  { _id: { city: 'ZION GROVE', state: 'PA' }, total: 2070 },
  { _id: { city: 'ZION', state: 'IL' }, total: 24944 },
  { _id: { city: 'ZION', state: 'AR' }, total: 1880 },
  { _id: { city: 'ZIMMERMAN', state: 'MN' }, total: 5786 },
  { _id: { city: 'ZIM', state: 'MN' }, total: 507 },
  { _id: { city: 'ZILLAH', state: 'WA' }, total: 5266 }
]
Type "it" for more
```

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}},{ $sort:{_id:-1}},{ $limit:3}])
[
  { _id: { city: 'ZWOLLE', state: 'LA' }, total: 5325 },
  { _id: { city: 'ZWINGLE', state: 'IA' }, total: 1320 },
  { _id: { city: 'ZURICH', state: 'KS' }, total: 318 }
]
Atlas atlas-102tzf-shard-0 [primary] 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'}`

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}}])
[
  { _id: { city: 'SHARONVILLE', state: 'OH' }, total: 21992 },
  { _id: { city: 'SAINT JOHN', state: 'KS' }, total: 2292 },
  { _id: { city: 'ROCKAWAY', state: 'NJ' }, total: 20388 },
  { _id: { city: 'CAMDEN', state: 'MO' }, total: 641 },
  { _id: { city: 'BALDWIN', state: 'WV' }, total: 2768 },
  { _id: { city: 'BISHOPVILLE', state: 'SC' }, total: 11965 },
  { _id: { city: 'BENNINGTON', state: 'KS' }, total: 844 },
  { _id: { city: 'SPRINGFIELD', state: 'NE' }, total: 2961 },
  { _id: { city: 'IRONTO', state: 'VA' }, total: 4216 },
  { _id: { city: 'GREER', state: 'SC' }, total: 43033 },
  { _id: { city: 'NEBO', state: 'NC' }, total: 5018 },
  { _id: { city: 'HOLTSVILLE', state: 'NY' }, total: 10141 },
  { _id: { city: 'UPPER SAINT CLAI', state: 'PA' }, total: 20276 },
  { _id: { city: 'LINWOOD', state: 'NC' }, total: 2823 },
  { _id: { city: 'DONA VISTA', state: 'FL' }, total: 7866 },
  { _id: { city: 'BELLEVUE', state: 'PA' }, total: 22168 },
  { _id: { city: 'MOUNT OLIVET', state: 'KY' }, total: 2124 },
  { _id: { city: 'KANOPOLIS', state: 'KS' }, total: 641 },
  { _id: { city: 'CAWKER CITY', state: 'KS' }, total: 637 },
  { _id: { city: 'WHEATLAND', state: 'MO' }, total: 1730 }
]
Type "it" for more
Atlas atlas-102tzf-shard-0 [primary] population>
```

2. sort the results by population, highest first.

```
Atlas atlas-102tzf-shard-0 [secondary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}},{ $sort:{total:-1}}])
[
  { _id: { city: 'CHICAGO', state: 'IL' }, total: 2452177 },
  { _id: { city: 'BROOKLYN', state: 'NY' }, total: 2300504 },
  { _id: { city: 'LOS ANGELES', state: 'CA' }, total: 2102295 },
  { _id: { city: 'HOUSTON', state: 'TX' }, total: 2095918 },
  { _id: { city: 'PHILADELPHIA', state: 'PA' }, total: 1610956 },
  { _id: { city: 'NEW YORK', state: 'NY' }, total: 1476790 },
  { _id: { city: 'BRONX', state: 'NY' }, total: 1209548 },
  { _id: { city: 'SAN DIEGO', state: 'CA' }, total: 1049298 },
  { _id: { city: 'DETROIT', state: 'MI' }, total: 963243 },
  { _id: { city: 'DALLAS', state: 'TX' }, total: 940191 },
  { _id: { city: 'PHOENIX', state: 'AZ' }, total: 890853 },
  { _id: { city: 'MIAMI', state: 'FL' }, total: 825232 },
  { _id: { city: 'SAN JOSE', state: 'CA' }, total: 816653 },
  { _id: { city: 'SAN ANTONIO', state: 'TX' }, total: 811792 },
  { _id: { city: 'BALTIMORE', state: 'MD' }, total: 733081 },
  { _id: { city: 'SAN FRANCISCO', state: 'CA' }, total: 723993 },
  { _id: { city: 'MEMPHIS', state: 'TN' }, total: 632837 },
  { _id: { city: 'SACRAMENTO', state: 'CA' }, total: 628279 },
  { _id: { city: 'JACKSONVILLE', state: 'FL' }, total: 610160 },
  { _id: { city: 'ATLANTA', state: 'GA' }, total: 609591 }
]
Type "it" for more
Atlas atlas-102tzf-shard-0 [primary] population>
```

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

```
type it for more
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}},{ $sort:{total:-1}},{$limit:3}])
[
  { _id: { city: 'CHICAGO', state: 'IL' }, total: 2452177 },
  { _id: { city: 'BROOKLYN', state: 'NY' }, total: 2300504 },
  { _id: { city: 'LOS ANGELES', state: 'CA' }, total: 2102295 }
]
Atlas atlas-102tzf-shard-0 [primary] population>
```

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([{$group:{_id:{city:"$city",state:"$state"},total:{$sum:"$pop"}}},{ $sort:{total:-1}},{$match:{ "_id.state":"TX"}},{$limit:3}])
[
  { _id: { city: 'HOUSTON', state: 'TX' }, total: 2095918 },
  { _id: { city: 'DALLAS', state: 'TX' }, total: 940191 },
  { _id: { city: 'SAN ANTONIO', state: 'TX' }, total: 811792 }
]
Atlas atlas-102tzf-shard-0 [primary] population>
```

Bonus

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([
... {$group:{_id:{state:"$state",city:"$city"},pop:{$sum:"$pop"}}},
... {$group:{_id:"$_id.state",avgcitypop:{$avg:"$pop"}}}
... ])
```

```
[
  { _id: 'WV', avgcitypop: 2771.4775888717154 },
  { _id: 'MS', avgcitypop: 7524.023391812865 },
  { _id: 'NM', avgcitypop: 5872.360465116279 },
  { _id: 'MT', avgcitypop: 2593.987012987013 },
  { _id: 'LA', avgcitypop: 10465.496277915632 },
  { _id: 'RI', avgcitypop: 19292.653846153848 },
  { _id: 'KS', avgcitypop: 3819.884259259259 },
  { _id: 'AK', avgcitypop: 2976.4918032786886 },
  { _id: 'ND', avgcitypop: 1645.0309278350514 },
  { _id: 'HI', avgcitypop: 15831.842857142858 },
  { _id: 'VT', avgcitypop: 2315.8765432098767 },
  { _id: 'AL', avgcitypop: 7907.2152641878665 },
  { _id: 'GA', avgcitypop: 11547.62210338681 },
  { _id: 'IA', avgcitypop: 3123.0821147356583 },
  { _id: 'WA', avgcitypop: 12258.670025188916 },
  { _id: 'PA', avgcitypop: 8679.067202337472 },
  { _id: 'NH', avgcitypop: 5232.320754716981 },
  { _id: 'WI', avgcitypop: 7323.00748502994 },
  { _id: 'AR', avgcitypop: 4175.355239786856 },
  { _id: 'AZ', avgcitypop: 20591.16853932584 }
]
```

Type "it" for more

```
Atlas atlas-102tzf-shard-0 [primary] population>
```

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

```
Atlas atlas-102tzf-shard-0 [primary] population> db.zipcodes.aggregate([
... {$group:{_id:{state:"$state",city:"$city"},pop:{$sum:"$pop"}}},
... {$group:{_id:"$_id.state",avgcitypop:{$avg:"$pop"}}},{ $sort:{total:-1}},{ $limit:3}])
```

```
[
  { _id: 'MT', avgcitypop: 2593.987012987013 },
  { _id: 'WV', avgcitypop: 2771.4775888717154 },
  { _id: 'SC', avgcitypop: 11139.626198083068 }
]
```

```
Atlas atlas-102tzf-shard-0 [primary] population>
```