Assignment 2

Aggregation

1.

```
> 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", "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
```

2.

```
> db.zipcodes.aggregate ( [{$match:{state:"GA", city: "ATLANTA"}}])
{ "_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
>
```

3.

```
> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$group:{_id:{city:"$city",zipcode:"$_id"}}},{$count:"zipcode"}])
{ "zipcode" : 41 }
>
```

4.

```
> db.zipcodes.aggregate([{$match:{city:"ATLANTA"}},{$group:{_id:{city:"$city"},pop:{$sum:"$pop"}}}])
{ "_id" : { "city" : "ATLANTA" }, "pop" : 630046 }
>
```

Population By state

1.

```
> db.zipcodes.aggregate ( {$group: { _id: '$state', population: {$sum: '$pop'} } } )
{ "_id" : "MT", "population" : 798948 }
{ "_id" : "AR", "population" : 2350725 }
{ "_id" : "UT", "population" : 1722850 }
{ "_id" : "CT", "population" : 3287116 }
{ "_id" : "NY", "population" : 17990402 }
{ "_id" : "FL", "population" : 12686644 }
{ "_id" : "ME", "population" : 1226648 }
{ "_id" : "NJ", "population" : 7730188 }
{ "_id" : "IN", "population" : 5544136 }
{ "_id" : "ND", "population" : 638272 }
{ "_id" : "VT", "population" : 562758 }
{ "_id" : "KS", "population" : 2475285 }
{ "_id" : "WY", "population" : 453528 }
{ "_id" : "MO", "population" : 5110648 }
{ "_id" : "CA", "population" : 29754890 }
{ "_id" : "AZ", "population" : 3665228 }
{ "_id" : "RI", "population" : 1003218 }
{ "_id" : "LA", "population" : 4217595 }
{ "_id" : "WA", "population" : 4866692 }
{ "_id" : "AK", "population" : 544698 }
Type "it" for more
>
```

2.

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

3.

```
> db.zipcodes.aggregate([{$limit:3},{$group:{_id:{pop:"$pop", city:"$city"}}}])
{ "_id" : { "pop" : 36963, "city" : "CUSHMAN" } }
{ "_id" : { "pop" : 4546, "city" : "BARRE" } }
{ "_id" : { "pop" : 15338, "city" : "AGAWAM" } }
>
```

Population by City

1

```
> db.zipcodes.aggregate ( {$group: { _id: {state:'$state',city:'$city', population: {$sum: '$pop'} } } })
{ "_id" : { "state" : "TX", "city" : "KINGSBURY", "population" : 1073 } }
{ "_id" : { "state" : "LA", "city" : "LACAMP", "population" : 276 } }
{ "_id" : { "state" : "NJ", "city" : "STRATHMERE", "population" : 163 } }
{ "_id" : { "state" : "FL", "city" : "WEST PALM BEACH", "population" : 25017 } }
{ "_id" : { "state" : "WI", "city" : "CRANDON", "population" : 3419 } }
{ "_id" : { "state" : "WI", "city" : "ELDORADO", "population" : 765 } }
{ "_id" : { "state" : "CO", "city" : "LAFAYETTE", "population" : 17111 } }
{ "_id" : { "state" : "PA", "city" : "RECTOR", "population" : 376 } }
{ "_id" : { "state" : "HI", "city" : "HANAPEPE", "population" : 1523 } }
{ "_id" : { "state" : "MO", "city" : "SHELBINA", "population" : 2714 } }
{ "_id" : { "state" : "KS", "city" : "ALAMOTA", "population" : 1666 } }
{ "_id" : { "state" : "AR", "city" : "MURFREESBORO", "population" : 3775 } }
{ "_id" : { "state" : "SC", "city" : "GREEN POND", "population" : 2068 } }
{ "_id" : { "state" : "IA", "city" : "MALLARD", "population" : 721 } }
{ "_id" : { "state" : "WV", "city" : "SETH", "population" : 1095 } }
{ "_id" : { "state" : "TX", "city" : "RANDOLPH A F B", "population" : 13215 } }
{ "_id" : { "state" : "IL", "city" : "TIMEWELL", "population" : 539 } }
{ "_id" : { "state" : "NY", "city" : "CHESTNUT RIDGE", "population" : 43435 } }
{ "_id" : { "state" : "PA", "city" : "HEGINS", "population" : 2499 } }
{ "_id" : { "state" : "TX", "city" : "DEL VALLE", "population" : 5635 } }
Type "it" for more
>
```

2.

```
> db.zipcodes.aggregate([{$group:{_id:{pop: "$pop",city:"$city"}}}, {$sort:{"_id.pop":-1}}])
{ "_id" : { "pop" : 112047, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 111396, "city" : "BROOKLYN" } }
{ "_id" : { "pop" : 106564, "city" : "NEW YORK" } }
{ "_id" : { "pop" : 100027, "city" : "NEW YORK" } }
{ "_id" : { "pop" : 99568, "city" : "BELL GARDENS" } }
{ "_id" : { "pop" : 98612, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 96074, "city" : "LOS ANGELES" } }
{ "_id" : { "pop" : 95971, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 94317, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 94188, "city" : "NORWALK" } }
{ "_id" : { "pop" : 92005, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 91814, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 89762, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 88377, "city" : "CHICAGO" } }
{ "_id" : { "pop" : 88241, "city" : "JACKSON HEIGHTS" } }
{ "_id" : { "pop" : 88114, "city" : "ARLETA" } }
{ "_id" : { "pop" : 87079, "city" : "BROOKLYN" } }
{ "_id" : { "pop" : 87026, "city" : "SOUTH GATE" } }
{ "_id" : { "pop" : 85732, "city" : "RIDGEWOOD" } }
{ "_id" : { "pop" : 85710, "city" : "BRONX" } }
Type "it" for more
>
```

3.

```
> db.zipcodes.aggregate([{$limit:3}, {$group:{_id:{pop: "$pop",city:"$city"}}}, {$sort:{"_id.pop":-1}}])
"_id" : { "pop" : 36963, "city" : "CUSHMAN" } }
"_id" : { "pop" : 15338, "city" : "AGAWAM" } }
"_id" : { "pop" : 4546, "city" : "BARRE" } }
```

Bonus

1

```
> db.zipcodes.aggregate([ {$group:{_id: {state:"$state",city:"$city"},AvgPop:{$avg:"$pop"}}}])
{ "_id" : { "state" : "WV", "city" : "SAINT MARYS" }, "AvgPop" : 5523 }
{ "_id" : { "state" : "SD", "city" : "CROOKS" }, "AvgPop" : 1262 }
{ "_id" : { "state" : "MI", "city" : "CARNEY" }, "AvgPop" : 1014 }
{ "_id" : { "state" : "ND", "city" : "BROCKET" }, "AvgPop" : 131 }
{ "_id" : { "state" : "KS", "city" : "HAZELTON" }, "AvgPop" : 201 }
{ "_id" : { "state" : "AL", "city" : "DALEVILLE" }, "AvgPop" : 8885 }
{ "_id" : { "state" : "FL", "city" : "NORTH PORT" }, "AvgPop" : 16491 }
{ "_id" : { "state" : "OH", "city" : "NORTH CANTON" }, "AvgPop" : 26282 }
{ "_id" : { "state" : "FL", "city" : "APOLLO BEACH" }, "AvgPop" : 6074 }
{ "_id" : { "state" : "MD", "city" : "GLEN ARM" }, "AvgPop" : 3679 }
{ "_id" : { "state" : "TN", "city" : "MOSS" }, "AvgPop" : 980 }
{ "_id" : { "state" : "IN", "city" : "KEMPTON" }, "AvgPop" : 1501 }
{ "_id" : { "state" : "LA", "city" : "SAINT LANDRY" }, "AvgPop" : 5679 }
{ "_id" : { "state" : "PA", "city" : "BEAVERTOWN" }, "AvgPop" : 2226 }
{ "_id" : { "state" : "AL", "city" : "DEER PARK" }, "AvgPop" : 723 }
{ "_id" : { "state" : "OK", "city" : "BOKCHITO" }, "AvgPop" : 1812 }
{ "_id" : { "state" : "TX", "city" : "BLUFFTON" }, "AvgPop" : 31 }
{ "_id" : { "state" : "KY", "city" : "JABEZ" }, "AvgPop" : 364 }
{ "_id" : { "state" : "MI", "city" : "NORTH MUSKEGON" }, "AvgPop" : 18797 }
{ "_id" : { "state" : "NY", "city" : "WESTHAMPTON" }, "AvgPop" : 1306 }
Type "it" for more
```

2.

```
> db.zipcodes.aggregate([{$limit:3}, {$group:{_id: {state:"$state",city:"$city"},AvgPop:{$avg:"$pop"}}}])
{ "_id" : { "state" : "MA", "city" : "CUSHMAN" }, "AvgPop" : 36963 }
{ "_id" : { "state" : "MA", "city" : "BARRE" }, "AvgPop" : 4546 }
{ "_id" : { "state" : "MA", "city" : "AGAWAM" }, "AvgPop" : 15338 }
>
```