

MarylandCourts

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1 How many cities are in the collection?

```
> db.cities.count();
99838
> db.cities.count({"name": {$ne : null}});
99838
>
```

2 Find the average population for all cities in the Europe/London time zone.

```
> db.cities.aggregate([{$group: {_id:"$timezone", avgPopulation : {$avg : "$population"}}, {$match: {_id: "Europe/London"}}]);
{ "_id" : "Europe/London", "avgPopulation" : 23226.22149712092 }
> db.cities.aggregate([{$match: {timezone: "Europe/London"}}, {$group: {_id: null, avgPopulation : {$avg : "$population"}}, {$project: {_id : 0, _id: 'Average Population', avgPopulation: "$avgPopulation"}}, {$project: {avgPopulation: "$_avgPopulation"}}]);
{ "_id" : "Average Population", "avgPopulation" : 23226.22149712092 }
```

2.1 Copy Paste Raw Query and Results

```
db.cities.aggregate([{$match: timezone: "Europe/London", $group: _id: null,
avgPopulation : $avg : "$population", $project:_id : 0,_id:'Average Population',_avgPopulation: "$avgPopulation",$project:avgPopulation:"$_avgPopulation"}]);
"_id" : "Average Population", "avgPopulation" : 23226.22149712092
```

- 3 “Find all documents in the Europe/London time-zone, sort them by decreasing population values, strip out all document information except name of the city and its population, and output the three cities with the largest population (in decreasing population order).”

```
> db.cities.aggregate([{$match:{timezone: "Europe/London"}},{$sort:{population: -1}},{$project: {name: 1, population: 1, _id:0}},{$limit:3}]);
{ "name" : "City of London", "population" : 7556900 }
{ "name" : "London", "population" : 7556900 }
{ "name" : "Birmingham", "population" : 984333 }
>
```

3.1 Copy Paste Raw Query and Results

```
db.cities.aggregate([{$match:timezone: "Europe/London",$sort:population: -1,$project: name: 1, population: 1, _id:0,$limit:3}); "name" : "City of London",
"population" : 7556900 "name" : "London", "population" : 7556900 "name" : "Birmingham", "population" : 984333
```

- 4 Find the largest and smallest cities in each state.

```
> db.states.aggregate([{$group:{_id: "$state", "biggestCity" : {"$max": "$pop"}, "smallestCity" : {"$min": "$pop"}},{$project:{_id: 0,biggestCity:1,smallestCity:1,"state": "$_id"}}, {$limit: 5}]).toArray();
[
  {
    "biggestCity" : 60670,
    "smallestCity" : 25,
    "state" : "CT"
  },
  {
    "biggestCity" : 32383,
    "smallestCity" : 0,
    "state" : "AK"
  },
  {
    "biggestCity" : 111396,
    "smallestCity" : 0,
    "state" : "NY"
  },
  {
    "biggestCity" : 65046,
    "smallestCity" : 0,
    "state" : "MA"
  },
  {
    "biggestCity" : 40434,
    "smallestCity" : 0,
    "state" : "ME"
  }
]
>
```

4.1 Copy Paste Raw Query and Results

```
db.states.aggregate([{$group:id: "$state", "biggestCity" : "$max": "$pop",
"smallestCity" : "$min": "$pop",$project:id: 0,biggestCity:1,smallestCity:1,"state"
```

```
: "$_id", $limit: 5]).toArray(); [  "biggestCity" : 60670, "smallestCity" : 25,
"state" : "CT" ,  "biggestCity" : 32383, "smallestCity" : 0, "state" : "AK"
,  "biggestCity" : 111396, "smallestCity" : 0, "state" : "NY" ,  "biggestC-
ity" : 65046, "smallestCity" : 0, "state" : "MA" ,  "biggestCity" : 40434,
"smallestCity" : 0, "state" : "ME"  ]
```