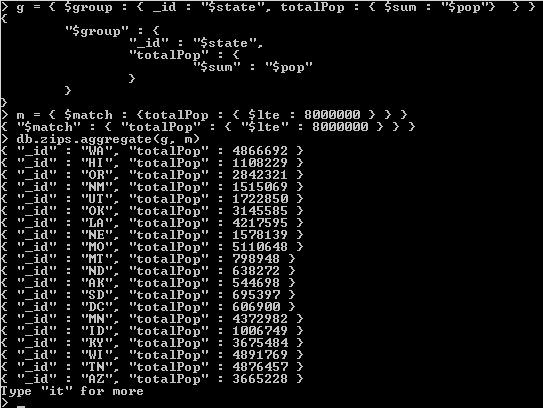
## Required Questions

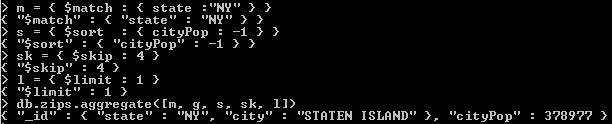
1. Which states have populations less than eight million?

|  |
| --- |
| g = { $group : { \_id : "$state", totalPop : { $sum : "$pop"} } }  m = { $match : {totalPop : { $lte : 8000000 } } }  db.zips.aggregate(g, m) |



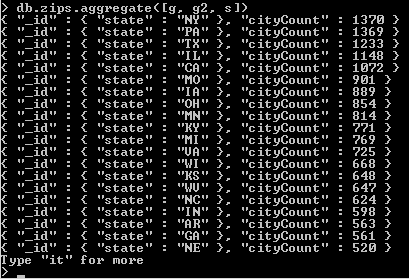
1. What is the fifth largest city in New York?

|  |
| --- |
| m = { $match : { state :"NY" } }  g = { $group :  { \_id : { state : "$state", city : "$city"}, cityPop : { $sum : "$pop"} }  }  s = { $sort : { cityPop : -1 } }  sk = { $skip : 4 }  l = { $limit : 1 }  db.zips.aggregate([m, g, s, sk, l]) |



1. What is the total number of cities in each state according to this data set?

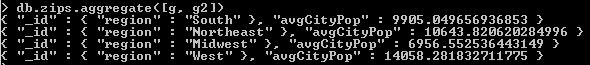
|  |
| --- |
| g = { $group : { \_id : { state : "$state", city : "$city"}, zipCount : { $sum : 1} } }  s = { $sort : { cityCount : -1 } }  g2 = { $group : { \_id : { state : "$\_id.state"}, cityCount : { $sum : 1} } }  db.zips.aggregate([g, g2, s]) |



## Challenge Questions

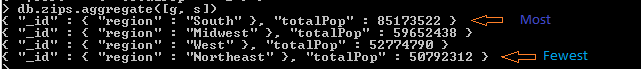
1. What is the average city population by region?

|  |
| --- |
| g = { $group : {  \_id : {  region: "$region", state: "$state", city : "$city"  },  cityPop : { $sum : "$pop"} } }  g2 = { $group : {  \_id : {  region : "$\_id.region"  },  avgCityPop : { $avg : "$cityPop" } } }  db.zips.aggregate([g, g2]) |



1. Which region has the most people? The fewest?

|  |
| --- |
| g = { $group : { \_id : { region: "$region"}, totalPop : { $sum : "$pop"} } }  s = { $sort : { totalPop : -1 } }  db.zips.aggregate([g, s]) |



1. What is the total population of each district?

|  |
| --- |
| g = { $group : { \_id : { district: "$division"}, totalPop : { $sum : "$pop"} } }  s = { $sort : { \_id: 1 } }  db.zips.aggregate([g, s]) |

