

DSCI 551 Lab 3

Question 1

Code:

```
db.country.find({$and:[{GNP:{$gte: 10000} }, {GNP:{$lte: 15000}}]},  
{Name: 1, _id: 0})
```

Output:

```
[  
  { Name: 'Bulgaria' },  
  { Name: 'Belarus' },  
  { Name: 'Brunei' },  
  { Name: 'Côte d'Ivoire' },  
  { Name: 'Costa Rica' },  
  { Name: 'Iraq' },  
  { Name: 'Lithuania' },  
  { Name: 'Sudan' },  
  { Name: 'El Salvador' },  
  { Name: 'Uzbekistan' }  
]
```

Question 2

Code:

```
db.country.aggregate({$addFields: {Converted: {$toString:  
'$Capital'}}}, {$match: {Converted: /0/}}, {$count:  
'count_contained_0'})
```

Output:

```
[ { count_contained_0: 63 } ]
```

Question 3

Code:

```
db.country.distinct('Continent').length
```

Output

7

Question 4

Code:

```
db.country.find({}, {Name: 1, GNP: 1, _id: 0}).sort({GNP: -1}).limit(5)
```

Output:

```
[
  { Name: 'United States', GNP: 8510700 },
  { Name: 'Japan', GNP: 3787042 },
  { Name: 'Germany', GNP: 2133367 },
  { Name: 'France', GNP: 1424285 },
  { Name: 'United Kingdom', GNP: 1378330 }
]
```

Question 5

Code:

```
db.countrylanguage.distinct('Language', {IsOfficial: 'T',
Percentage:{$gte: 95}})
```

Output:

```
[
  'Albaniana',      'Arabic',
  'Bengali',        'Dhivehi',
  'Dutch',          'English',
  'Faroese',        'Greek',
  'Hungarian',      'Icelandic',
  'Italian',        'Japanese',
  'Kiribati',       'Kirundi',
  'Korean',         'Malagasy',
  'Maltese',        'Marshallese',
  'Norwegian',      'Polish',
  'Portuguese',     'Rwanda',
  'Serbo-Croatian', 'Somali',
  'Spanish',        'Tongan'
]
```

Question 6

Code:

```
db.city.find({Name: /Los/i, Population:{$gte: 200000}}, {Name: 1, _id: 0})
```

Output:

```
[
  { Name: 'Santiago de los Caballeros' },
  { Name: 'Santo Domingo de los Colorados' },
  { Name: 'Ecatepec de Morelos' },
  { Name: 'San Nicolás de los Garza' },
  { Name: 'Los Angeles' }
]
```

Question 7

Code:

```
db.country.aggregate({$group:{_id: '$Continent', average: {$avg: '$GNP'}}})
```

Output:

```
[
  { _id: 'North America', average: 261854.78918918918 },
  { _id: 'Asia', average: 150105.72549019608 },
  { _id: 'Africa', average: 10006.465517241379 },
  { _id: 'South America', average: 107991 },
  { _id: 'Oceania', average: 14991.953571428572 },
  { _id: 'Europe', average: 206497.0652173913 },
  { _id: 'Antarctica', average: 0 }
]
```

Question 8

Code:

```
db.countrylanguage.aggregate({$match: {IsOfficial: 'T'}},
{$group: {_id: '$Language', count: {$sum: 1}}}, {$sort: {count: -1}},
{$limit: 10})
```

Output:

```
[
  { _id: 'English', count: 44 },
  { _id: 'Arabic', count: 22 },
  { _id: 'Spanish', count: 20 },
  { _id: 'French', count: 18 },
  { _id: 'Portuguese', count: 6 },
  { _id: 'German', count: 6 },
  { _id: 'Dutch', count: 4 },
  { _id: 'Italian', count: 4 },
  { _id: 'Malay', count: 4 },
  { _id: 'Serbo-Croatian', count: 3 }
]
```

Question 9

Code:

```
db.country.aggregate({$match: {Continent: 'North America', GNP: {$gte:
100000}}}, {$lookup: {from: 'city', localField: 'Capital',
foreignField: 'ID', as: 'res'}}}, {$project: {Name: 1, 'res.Name': 1,
_id: 0}})
```

Output:

```
[
  { Name: 'Canada', res: [ { Name: 'Ottawa' } ] },
  { Name: 'Mexico', res: [ { Name: 'Ciudad de MÃ©xico' } ] },
  { Name: 'United States', res: [ { Name: 'Washington' } ] }
]
```

Question 10

Code:

```
db.country.aggregate({$lookup: {from: 'countrylanguage', localField:
'Code', foreignField: 'CountryCode', as: 'res'}}}, {$match: {Continent:
'North America', 'res.Language': 'English', 'res.IsOfficial': 'T'}},
{$project: {Name: 1, _id: 0}})
```

Output:

```
[
  { Name: 'Aruba' },
  { Name: 'Anguilla' },
  { Name: 'Netherlands Antilles' },
  { Name: 'Antigua and Barbuda' },
  { Name: 'Belize' },
  { Name: 'Bermuda' },
  { Name: 'Barbados' },
  { Name: 'Canada' },
  { Name: 'Cayman Islands' },
  { Name: 'Saint Kitts and Nevis' },
  { Name: 'Saint Lucia' },
  { Name: 'Montserrat' },
  { Name: 'Puerto Rico' },
  { Name: 'Turks and Caicos Islands' },
  { Name: 'United States' },
  { Name: 'Saint Vincent and the Grenadines' },
  { Name: 'Virgin Islands, British' },
  { Name: 'Virgin Islands, U.S.' }
]
```