Homework 4: MongoDB Queries

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1.

```sql
select count(Language)
from countrylanguage
where IsOfficial = "T" and Percentage > .5;
```

MongoDB Query:

```js
db.countrylanguage.countDocuments({ IsOfficial: "T", Percentage: { $gt:
0.5 } });
```

```
Atlas atlas-l6rufu-shard-0 [primary] test551> use world
switched to db world
Atlas atlas-l6rufu-shard-0 [primary] world> db.countrylanguage.countDocuments({ IsOfficial: "T", Percentage: { $gt: 0.5 } }
)
202
Atlas atlas-l6rufu-shard-0 [primary] world> ▊
```

2.

```sql
select Name, GNP
from country
where Continent like '%America%' and GNP > 100000;
```

MongoDB Query:

```js
db.country.find({ Continent: /America/, GNP: { $gt: 100000 } }, { Name: 1,
GNP: 1, _id: 0 });
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.country.find({ Continent: /America/, GNP: { $gt: 100000 } }, { Name: 1, GNP:
 1, _id: 0 });
[
  { Name: 'Brazil', GNP: 776739 },
  { Name: 'Colombia', GNP: 102896 },
  { Name: 'Canada', GNP: 598862 },
  { Name: 'Argentina', GNP: 340238 },
  { Name: 'Mexico', GNP: 414972 },
  { Name: 'United States', GNP: 8510700 }
]
Atlas atlas-l6rufu-shard-0 [primary] world> ▊
```

3.

```
select avg(GNP)

from country

where Continent = 'North America' and Population > 100000;
```

MongoDB Query:

```
db.country.aggregate([
  { $match: { Continent: "North America", Population: { $gt: 100000 } } },
  { $group: { _id: null, avgGNP: { $avg: "$GNP" } } }
]).toArray()[0].avgGNP;
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.country.aggregate([
|   { $match: { Continent: "North America", Population: { $gt: 100000 } } },
|   { $group: { _id: null, avgGNP: { $avg: "$GNP" } } }
| ]).toArray()[0].avgGNP;
403444.625
Atlas atlas-l6rufu-shard-0 [primary] world>
```

4.

```
select country.Name, city.Name

from country join city on country.Capital = city.ID

order by country.Name

limit 5;
```

MongoDB Query:

```
db.country.aggregate([
  {
    $lookup: {
      from: "city",
      localField: "Capital",
      foreignField: "_id.ID",
      as: "capital_city"
    }
  },
  { $unwind: "$capital_city" },
  { $sort: { Name: 1 } },
  {
    $project: {
```

```
      _id: 0,
      countryName: "$Name",
      cityName: "$capital_city.Name"
    }
  },
  { $limit: 5 }
]);
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.country.aggregate([
|   {
|     $lookup: {
|       from: "city",
|       localField: "Capital",
|       foreignField: "_id.ID",
|       as: "capital_city"
|     }
|   },
|   { $unwind: "$capital_city" },
|   { $sort: { Name: 1 } },
|   {
|     $project: {
|       _id: 0,
|       countryName: "$Name",
|       cityName: "$capital_city.Name"
|     }
|   },
|   { $limit: 5 }
| ]);
[
  { countryName: 'Afghanistan', cityName: 'Kabul' },
  { countryName: 'Albania', cityName: 'Tirana' },
  { countryName: 'Algeria', cityName: 'Alger' },
  { countryName: 'American Samoa', cityName: 'Fagatogo' },
  { countryName: 'Andorra', cityName: 'Andorra la Vella' }
]
Atlas atlas-l6rufu-shard-0 [primary] world> █
```

5.

```
select Language, count(*)

from countrylanguage

group by Language

having count(*) > 20

order by count(*) desc, Language;
```

MongoDB Query:

```
db.countrylanguage.aggregate([
  {
    $group: {
      _id: "$_id.Language",
      count: { $sum: 1 }
    }
  },
  {
    $match: {
      count: { $gt: 20 }
    }
  },
  {
    $sort: {
      count: -1,
      _id: 1
    }
  },
  {
    $project: {
      _id: 0,
      Language: "$_id",
      count: 1
    }
  }
]);
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.countrylanguage.aggregate([
|   {
|     $group: {
|       _id: "$_id.Language",
|       count: { $sum: 1 }
|     }
|   },
|   {
|     $match: {
|       count: { $gt: 20 }
|     }
|   },
|   {
|     $sort: {
|       count: -1,
|       _id: 1
|     }
|   },
|   {
|     $project: {
|       _id: 0,
|       Language: "$_id",
|       count: 1
|     }
|   }
| ]);
[
  { count: 60, Language: 'English' },
  { count: 33, Language: 'Arabic' },
  { count: 28, Language: 'Spanish' },
  { count: 25, Language: 'French' }
]
Atlas atlas-l6rufu-shard-0 [primary] world> █
```

6.

```
select District, avg(Population)

from city

where CountryCode = "USA"

group by district

having count(*) > 10;
```

MongoDB Query:

```
db.city.aggregate([
  { $match: { CountryCode: "USA" } },
  {
    $group: {
      _id: "$District",
      avgPopulation: { $avg: "$Population" },
      cityCount: { $sum: 1 }
```

```
      }
    },
    { $match: { cityCount: { $gt: 10 } } },
    {
      $project: {
        _id: 0,
        District: "$_id",
        avgPopulation: 1
      }
    }
  ]);
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.city.aggregate([
|    { $match: { CountryCode: "USA" } },
|    {
|      $group: {
|        _id: "$District",
|        avgPopulation: { $avg: "$Population" },
|        cityCount: { $sum: 1 }
|      }
|    },
|    { $match: { cityCount: { $gt: 10 } } },
|    {
|      $project: {
|        _id: 0,
|        District: "$_id",
|        avgPopulation: 1
|      }
|    }
| ]);
|
[
  { avgPopulation: 354164.6538461539, District: 'Texas' },
  { avgPopulation: 245833.91176470587, District: 'California' },
  { avgPopulation: 210093.86666666667, District: 'Florida' }
]
Atlas atlas-l6rufu-shard-0 [primary] world>
```

7.

```
insert into city values(4080, "LA suburb", "USA", "California", 1000),
 (4081, "LA dessert", "USA",  "California", 2000);
```

MongoDB Query:

```
db.city.insertMany([
  { _id: { ID: 4080 }, Name: "LA suburb", Country: "USA", District:
"California", Population: 1000 },
  { _id: { ID: 4081 }, Name: "LA dessert", Country: "USA", District:
```

```
    "California", Population: 2000 }
  ]);
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.city.insertMany([
|   { _id: { ID: 4080 }, Name: "LA suburb", Country: "USA", District: "California", Population: 1000 },
|   { _id: { ID: 4081 }, Name: "LA dessert", Country: "USA", District: "California", Population: 2000 }
| ]);
{
  acknowledged: true,
  insertedIds: { '0': { ID: 4080 }, '1': { ID: 4081 } }
}
Atlas atlas-l6rufu-shard-0 [primary] world> █
```

8.

```
update city set `Name` = "LA orange",  Population = 3000 where ID = 4081;
```

MongoDB Query:

```
db.city.updateOne(
  { _id: { ID: 4081 } },
  { $set: { Name: "LA orange", Population: 3000 } }
);
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.city.updateOne(
|   { _id: { ID: 4081 } },
|   { $set: { Name: "LA orange", Population: 3000 } }
| );
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
Atlas atlas-l6rufu-shard-0 [primary] world> db.city.find({ _id: { ID: 4081 } });
[
  {
    _id: { ID: 4081 },
    Name: 'LA orange',
    Country: 'USA',
    District: 'California',
    Population: 3000
  }
]
```

9.

```
delete from city where ID = 4080 or ID = 4081;
```

MongoDB Query:

```
db.city.deleteMany({ _id: { $in: [ { ID: 4080 }, { ID: 4081 } ] } });
```

```
Atlas atlas-l6rufu-shard-0 [primary] world> db.city.deleteMany({ _id: { $in: [ { ID: 4080 }, { ID: 4081 }
] } });
{ acknowledged: true, deletedCount: 2 }
Atlas atlas-l6rufu-shard-0 [primary] world> db.city.find({ _id: { ID: 4081 } }
```