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Lab1

1. Mở tập tin restaurant_documents.txt và nhập dữ liệu theo cấu trúc trên

```
{  
  "address": {  
    "building": "1007",  
    "coord": [ -73.856077, 40.848447],  
    "street": "Morris Park Ave",  
    "zipcode": "10462"  
  },  
  "borough": "Bronx",  
  "cuisine": "Bakery",  
  "grades": [  
    { "date": { "$date": 1393804800000 }, "grade": "A", "score": 2},  
    { "date": { "$date": 1378857600000 }, "grade": "A", "score": 6},  
    { "date": { "$date": 1358985600000 }, "grade": "A", "score": 10 },  
    { "date": { "$date": 1322006400000 }, "grade": "A", "score": 9},  
    { "date": { "$date": 1299715200000 }, "grade": "B", "score": 14 }  
  ],  
  "name": "Morris Park Bake Shop",  
  "restaurant_id": "30075445"  
}
```

```
< {  
  address: {  
    building: '1007',  
    coord: [ -73.856077, 40.848447 ],  
    street: 'Morris Park Ave',  
    zipcode: '10462'  
  },  
  borough: 'Bronx',  
  cuisine: 'Bakery',  
  grades: [  
    { date: [Object], grade: 'A', score: 2 },  
    { date: [Object], grade: 'A', score: 6 },  
    { date: [Object], grade: 'A', score: 10 },  
    { date: [Object], grade: 'A', score: 9 },  
    { date: [Object], grade: 'B', score: 14 }  
  ],  
  name: 'Morris Park Bake Shop',  
  restaurant_id: '30075445'  
}  
>  
>  
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```

2. Hiển thị tất cả document có trong restaurant

```
> db.restaurant.find()
< {
  _id: ObjectId('678211490bf029eb3b15b2a6'),
  address: {
    building: '1007',
    coord: [
      -73.856077,
      40.848447
    ],
    street: 'Morris Park Ave',
    zipcode: '10462'
  },
  borough: 'Bronx',
  cuisine: 'Bakery',
  grades: [
    {
      date: 2014-03-03T00:00:00.000Z,
      grade: 'A',
      score: 2
    },
    {
      date: 2013-09-11T00:00:00.000Z,
      grade: 'A',
      score: 6
    },
    {
      date: 2013-01-24T00:00:00.000Z,
      grade: 'A',
      score: 10
    }
  ]
}
```

3. Hiển thị các key restaurant_id, name, borough, cuisine

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```
> db.restaurant.find({}, {restaurant_id:1, name:1, borough:1, cuisine:1})
< {
  _id: ObjectId('678211490bf029eb3b15b2a6'),
  borough: 'Bronx',
  cuisine: 'Bakery',
  name: 'Morris Park Bake Shop',
  restaurant_id: '30075445'
}
{
  _id: ObjectId('678211490bf029eb3b15b2a7'),
  borough: 'Brooklyn',
  cuisine: 'Hamburgers',
  name: 'Wendy'S',
  restaurant_id: '30112340'
}
{
  _id: ObjectId('678211490bf029eb3b15b2a8'),
  borough: 'Manhattan',
  cuisine: 'Irish',
  name: 'Dj Reynolds Pub And Restaurant',
  restaurant_id: '30191841'
}
```

4. Hiển thị các key restaurant_id, name, borough, cuisine nhưng không hiển thị _id

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```
> db.restaurant.find({}, {restaurant_id:1, name:1, borough:1, cuisine:1, _id:0})
< {
  borough: 'Bronx',
  cuisine: 'Bakery',
  name: 'Morris Park Bake Shop',
  restaurant_id: '30075445'
}
{
  borough: 'Brooklyn',
  cuisine: 'Hamburgers',
  name: 'Wendy'S',
  restaurant_id: '30112340'
}
{
  borough: 'Manhattan',
  cuisine: 'Irish',
```

5. Hiển thị tất cả restaurant có borough là Bronx

```
> db.restaurant.find({borough:"Bronx"})
< {
  _id: ObjectId('678211490bf029eb3b15b2a6'),
  address: {
    building: '1007',
    coord: [
      -73.856077,
      40.848447
    ],
    street: 'Morris Park Ave',
    zipcode: '10462'
  },
  borough: 'Bronx',
  cuisine: 'Bakery',
  grades: [
    {
```

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6. Hiển thị 5 restaurant đầu tiên có borough là Bronx

```
> db.restaurant.find({borough:"Bronx"}).limit(5)
< {
  _id: ObjectId('678211490bf029eb3b15b2a6'),
  address: {
    building: '1007',
    coord: [
      -73.856077,
      40.848447
    ],
    street: 'Morris Park Ave',
    zipcode: '10462'
  },
  borough: 'Bronx',
  cuisine: 'Bakery',
  grades: [
    {
```

7. Hiển thị 5 restaurant tiếp theo sau khi đã bỏ qua 5 restaurant đầu có borough là Bronx

```
> db.restaurant.find({borough:"Bronx"}).skip(5).limit(5)
< {
  _id: ObjectId('678211490bf029eb3b15b2e3'),
  address: {
    building: '658',
    coord: [
      -73.81363999999999,
      40.829411000000001
    ],
    street: 'Clarence Ave',
    zipcode: '10465'
  },
  borough: 'Bronx',
  cuisine: 'American ',
  grades: [
    {
      date: 2014-06-21T00:00:00.000Z,
      grade: 'A',
      score: 5
    }
  ],
}
```

8. Cho biết những restaurant có điểm số > 90

```
> db.restaurant.find({"grades.score": {$gt:90}})
< {
  _id: ObjectId('678211490bf029eb3b15b404'),
  address: {
    building: '65',
    coord: [
      -73.9782725,
      40.7624022
    ],
    street: 'West 54 Street',
    zipcode: '10019'
  },
  borough: 'Manhattan',
  cuisine: 'American ',
  grades: [
    {
      date: 2014-08-22T00:00:00.000Z,
      grade: 'A',
      score: 11
    },
    {
      date: 2014-03-28T00:00:00.000Z,
      grade: 'C',
      score: 131
    }
  ]
}
```

9. Cho biết những restaurant có điểm số > 80 và < 100


```
> db.restaurant.find({"grades.score": {$gt:90, $lt:100}})
< {
  _id: ObjectId('678211490bf029eb3b15b404'),
  address: {
    building: '65',
    coord: [
      -73.9782725,
      40.7624022
    ],
    street: 'West 54 Street',
    zipcode: '10019'
  },
  borough: 'Manhattan',
  cuisine: 'American ',
  grades: [
    {
      date: 2014-08-22T00:00:00.000Z,
      grade: 'A',

```

10. Cho biết restaurant có có tung độ (latitude) < -95.754.168

```
> db.restaurant.find({"address.coord": {$lt: -95.754168}})
< {
  _id: ObjectId('6782114a0bf029eb3b15b8ee'),
  address: {
    building: '3707',
    coord: [
      -101.8945214,
      33.5197474
    ],
    street: '82 Street',
    zipcode: '11372'
  },
  borough: 'Queens',
  cuisine: 'American ',
  grades: [
    {
      date: 2014-06-04T00:00:00.000Z,
      grade: 'A',
      score: 12
    },
    {
      date: 2013-11-07T00:00:00.000Z,
      grade: 'B',
      score: 19
    },
    {
      date: 2013-05-17T00:00:00.000Z,
      grade: 'A',
      score: 11
    },
    {
      date: 2012-08-29T00:00:00.000Z,
```

11. Cho biết restaurant có borough là Brooklyn và có cuisine là American

```
> db.restaurant.find({ borough: "Brooklyn", cuisine: "American " })
< {
  _id: ObjectId('678211490bf029eb3b15b2a9'),
  address: {
    building: '2780',
    coord: [
      -73.98241999999999,
      40.579505
    ],
    street: 'Stillwell Avenue',
    zipcode: '11224'
  },
  borough: 'Brooklyn',
  cuisine: 'American ',
  grades: [
    {
      date: 2014-06-10T00:00:00.000Z,
      grade: 'A',
      score: 5
    },
  ],
}
```

12. Cho biết restaurant có borough là Manhattan và có grade là A

```
> db.restaurant.find({ borough: "Manhattan", "grades.grade": "A" })
< {
  _id: ObjectId('678211490bf029eb3b15b2a8'),
  address: {
    building: '351',
    coord: [
      -73.98513559999999,
      40.7676919
    ],
    street: 'West 57 Street',
    zipcode: '10019'
  },
  borough: 'Manhattan',
  cuisine: 'Irish',
  grades: [
    {
      date: 2014-09-06T00:00:00.000Z,
      grade: 'A',
      score: 2
    },
    {
      date: 2013-07-22T00:00:00.000Z,
      grade: 'A',
      score: 11
    },
    {
      date: 2012-07-31T00:00:00.000Z,
      grade: 'A',
      score: 12
    }
  ]
}
```

13. Cho biết có bao nhiêu restaurant theo borough

```
> db.restaurant.aggregate([
  {
    $group: {
      _id: "$borough",
      total_restaurants: { $sum: 1 }
    }
  }
])
< {
  _id: 'Queens',
  total_restaurants: 738
}
{
  _id: 'Staten Island',
  total_restaurants: 158
}
{
  _id: 'Bronx',
  total_restaurants: 309
}
{
  _id: 'Manhattan',
  total_restaurants: 1883
}
{
  _id: 'Brooklyn',
  total_restaurants: 684
}
```

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14. Cho biết tổng số score của các restaurant theo borough

```
> db.restaurant.aggregate([
  {
    $unwind: "$grades"
  },
  {
    $group: {
      _id: "$borough",
      total_score: { $sum: "$grades.score" }
    }
  }
])
< {
  _id: 'Manhattan',
  total_score: 102925
}
{
  _id: 'Queens',
  total_score: 42340
}
{
  _id: 'Bronx',
  total_score: 16966
}
{
  _id: 'Staten Island',
  total_score: 7443
}
{
  _id: 'Brooklyn',
```

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15. Cho biết tổng số score của các restaurant theo borough và chỉ lấy những score > 50

```
>_MONGOSH
> db.restaurant.aggregate([
  {
    $unwind: "$grades"
  },
  {
    $match: { "grades.score": { $gt: 50 } }
  },
  {
    $group: {
      _id: "$borough",
      total_score: { $sum: "$grades.score" }
    }
  }
])
< {
  _id: 'Queens',
  total_score: 670
}
{
  _id: 'Staten Island',
  total_score: 110
}
{
  _id: 'Brooklyn',
  total_score: 881
}
{
  _id: 'Manhattan',
  total_score: 2226
}
{
  _id: 'Bronx',
  total_score: 402
}
```

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16. Cho biết tổng số score cho từng restaurant

```
> db.restaurant.aggregate([
  {
    $unwind: "$grades"
  },
  {
    $group: {
      _id: "$restaurant_id",
      name: { $first: "$name" },
      total_score: { $sum: "$grades.score" }
    }
  }
])
< {
  _id: '40850448',
  name: 'Burger King',
  total_score: 57
}
{
  _id: '40842393',
  name: 'Peter Dillon'S Bar',
  total_score: 50
}
{
  _id: '40546082',
  name: 'Don Pepi Pizza',
  total_score: 29
}
{
  _id: '40829514',
  name: 'Clinton Street Baking Company',
  total_score: 50
}
```


17. Cho biết số đánh giá (grade) của các restaurant theo từng borough

```
> db.restaurant.aggregate([
  {
    $unwind: "$grades"
  },
  {
    $group: {
      _id: "$borough",
      total_grades: { $sum: 1 }
    }
  }
])
< {
  _id: 'Manhattan',
  total_grades: 9048
}
{
  _id: 'Brooklyn',
  total_grades: 3276
}
{
  _id: 'Staten Island',
  total_grades: 668
}
{
  _id: 'Bronx',
  total_grades: 1501
}
{
  _id: 'Queens',
  total_grades: 3649
}
```

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18. Cho biết số đánh giá (grade) của từng restaurant.

```
>_MONGOSH
✓
> db.restaurant.aggregate([
  {
    $project: {
      _id: "$restaurant_id",
      name: 1,
      total_grades: { $size: "$grades" }
    }
  }
])
< {
  name: 'Morris Park Bake Shop',
  _id: '30075445',
  total_grades: 5
}
{
  name: 'Wendy'S',
  _id: '30112340',
  total_grades: 4
}
{
  name: 'Dj Reynolds Pub And Restaurant',
  _id: '30191841',
  total_grades: 4
}
{
  name: 'Riviera Caterer',
  _id: '40356018',
  total_grades: 4
}
{
  name: 'Tov Kosher Kitchen',
  _id: '40356068',
```