

Cho cấu trúc **collection “restaurant”** như sau

```
{
  "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"
}
```

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

```
> data = {
  "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"
}
```

2. Hiển thị tất cả document có trong restaurant

```

> db["LAB1_RESTAURANT"].find()
< {
  _id: ObjectId('67821117ff3025149addb19b'),
  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
    }
  ],
}

```

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

```

> db["LAB1_RESTAURANT"].find({}, {restaurant_id:1, name:1, borough:1, cuisine:1})
< {
  _id: ObjectId('67821117ff3025149addb19b'),
  borough: 'Bronx',
  cuisine: 'Bakery',
  name: 'Morris Park Bake Shop',
  restaurant_id: '30075445'
}
{
  _id: ObjectId('67821117ff3025149addb19c'),
  borough: 'Brooklyn',
  cuisine: 'Hamburgers',
  name: "Wendy'S",
  restaurant_id: '30112340'
}
{
  _id: ObjectId('67821117ff3025149addb19d'),
  borough: 'Manhattan',
  cuisine: 'Irish',
  name: 'Dj Reynolds Pub And Restaurant',
  restaurant_id: '30191841'
}

```

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

```

> db["LAB1-RESTAURANT"].find({}, {_id:0, restaurant_id:1, name:1, borough:1, cuisine:1})
< {
  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',
  name: 'Dj Reynolds Pub And Restaurant',
  restaurant_id: '30191841'
}

```

5. Hiện thị tất cả restaurant có borough là Bronx

```

> db.restaurant.find({borough:"Bronx"}, {_id:0, restaurant_id:1, name:1, borough:1, cuisine:1})
< {
  borough: 'Bronx',
  cuisine: 'Bakery',
  name: 'Morris Park Bake Shop',
  restaurant_id: '30075445'
}
{
  borough: 'Bronx',
  cuisine: 'American ',
  name: 'Wild Asia',
  restaurant_id: '40357217'
}
{
  borough: 'Bronx',
  cuisine: 'Ice Cream, Gelato, Yogurt, Ices',
  name: 'Carvel Ice Cream',
  restaurant_id: '40363093'
}
{
  borough: 'Bronx',
  cuisine: 'Chinese',
  name: 'Happy Garden',
  restaurant_id: '40363289'
}

```

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

```
> db.restaurant.find({borough:"Bronx"},{_id:0,restaurant_id:1,name:1,borough:1,cuisine:1}).limit(5)
< {
  borough: 'Bronx',
  cuisine: 'Bakery',
  name: 'Morris Park Bake Shop',
  restaurant_id: '30075445'
}
{
  borough: 'Bronx',
  cuisine: 'American ',
  name: 'Wild Asia',
  restaurant_id: '40357217'
}
{
  borough: 'Bronx',
  cuisine: 'Ice Cream, Gelato, Yogurt, Ices',
  name: 'Carvel Ice Cream',
  restaurant_id: '40363093'
}
{
  borough: 'Bronx',
  cuisine: 'Chinese',
  name: 'Happy Garden',
  restaurant_id: '40363289'
}
{
  borough: 'Bronx',
  cuisine: 'Chinese',
  name: 'Happy Garden',
  restaurant_id: '40364296'
}
```

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

```
> db["LAB1_RESTAURANT"].find({borough:"Bronx"},{_id:0,restaurant_id:1,name:1,borough:1,cuisine:1}).skip(5).limit(5)
< {
  borough: 'Bronx',
  cuisine: 'American ',
  name: 'Manhem Club',
  restaurant_id: '40364363'
}
{
  borough: 'Bronx',
  cuisine: 'American ',
  name: 'The New Starling Athletic Club Of The Bronx',
  restaurant_id: '40364956'
}
{
  borough: 'Bronx',
  cuisine: 'American ',
  name: 'Yankee Tavern',
  restaurant_id: '40365499'
}
```

8. Cho biết những restaurant có điểm số > 90

```
> db["LAB1_RESTAURANT"].find({"grades.score":{$gt:90}})
< {
  _id: ObjectId('67821117ff3025149addb2f9'),
  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
    },
  ],
}
```

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

```
> db["LAB1_RESTAURANT"].find({"grades.score":{$gt:80,$lt:100}},{_id:0,grades:1,borough:1,cuisine:1})
< {
  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
    },
  ],
}
```

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

```
> db["LAB1_RESTAURANT"].find({"address.coord.0":{$lt: -95.754168}},{_id:0,coord:1,borough:1,cuisine:1,coord:1})
< {
  borough: 'Queens',
  cuisine: 'American '
}
{
  borough: 'Queens',
  cuisine: 'Italian'
}
{
  borough: 'Manhattan',
  cuisine: 'Japanese'
}
```

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

```
> db["LAB1_RESTAURANT"].find({borough:"Brooklyn",cuisine:"American"},{_id:0})
<
LAB1> |
```

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

```
> db["LAB1_RESTAURANT"].find({borough:"Manhattan","grades.grade":"A"},{_id:0,borough:1,grades:1,grade:1})
< {
  borough: 'Manhattan',
  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["LAB1_RESTAURANT"].aggregate([
  { $group: { _id: "$borough", total: { $sum: 1 } } },
  { $project: { _id: 0, borough: "$_id", total: 1 } }
])
< {
  total: 158,
  borough: 'Staten Island'
}
{
  total: 1883,
  borough: 'Manhattan'
}
{
  total: 309,
  borough: 'Bronx'
}
{
  total: 738,
  borough: 'Queens'
}
{
  total: 684,
  borough: 'Brooklyn'
}
```

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

```
> db["LAB1_RESTAURANT"].aggregate([ {$unwind:"$grades"},
  { $group: { _id: "$borough", totalscore: { $sum: "$grades.score" } } },
  { $project: { _id: 0, borough: "$_id", totalscore: 1 } }
])
< {
  totalscore: 7443,
  borough: 'Staten Island'
}
{
  totalscore: 37648,
  borough: 'Brooklyn'
}
{
  totalscore: 42340,
  borough: 'Queens'
}
{
  totalscore: 16966,
  borough: 'Bronx'
}
{
  totalscore: 102925,
  borough: 'Manhattan'
}
```

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

```
> db["LAB1_RESTAURANT"].aggregate([ {$unwind:"$grades"},{ $match: { "grades.score": { $gt: 50 } } },
  { $group: { _id: "$borough", totalscore: { $sum: "$grades.score" } } },
  { $project: { _id: 0, borough: "$_id", totalscore: 1 } }
])
< {
  totalscore: 881,
  borough: 'Brooklyn'
}
{
  totalscore: 670,
  borough: 'Queens'
}
{
  totalscore: 110,
  borough: 'Staten Island'
}
{
  totalscore: 2226,
  borough: 'Manhattan'
}
{
  totalscore: 402,
  borough: 'Bronx'
}
```

16. Cho biết tổng số score cho từng restaurant

```

> db["LAB1_RESTAURANT"].aggregate([ {$unwind:"$grades"},
  { $group: { _id: "$name", totalscore: { $sum: "$grades.score" } } },
  { $project: { restaurant_name: "$_id", totalscore: 1 } }
])
< {
  _id: 'Georgia Diner',
  totalscore: 88,
  restaurant_name: 'Georgia Diner'
}
{
  _id: 'Arte Restaurant',
  totalscore: 61,
  restaurant_name: 'Arte Restaurant'
}
{
  _id: 'Triple Crown Diner',
  totalscore: 95,
  restaurant_name: 'Triple Crown Diner'
}
{
  _id: 'Mayer, Brown & Platt',
  totalscore: 41,
  restaurant_name: 'Mayer, Brown & Platt'
}

```

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

```

> db["LAB1_RESTAURANT"].aggregate([ {$unwind:"$grades"},
  { $group: { _id: "$borough", totalgrade: { $sum: 1 } } },
  { $project: { _id: 0, borough: "$_id", totalgrade: 1 } }
])
< {
  totalgrade: 668,
  borough: 'Staten Island'
}
{
  totalgrade: 3276,
  borough: 'Brooklyn'
}
{
  totalgrade: 3649,
  borough: 'Queens'
}
{
  totalgrade: 1501,
  borough: 'Bronx'
}
{
  totalgrade: 9048,
  borough: 'Manhattan'
}

```

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


```
> db["LAB1_RESTAURANT"].aggregate([ {$unwind:"$grades"},
  { $group: { _id: "$name", totalgrade: { $sum:1} } },
  { $project: { _id: 0, restaurant_name: "$_id", totalgrade: 1} }
])
< {
  totalgrade: 7,
  restaurant_name: 'Los Amigos Mexican Restaurant'
}
{
  totalgrade: 4,
  restaurant_name: 'Ideal Donut'
}
{
  totalgrade: 6,
  restaurant_name: 'Campus Eatery'
}
{
  totalgrade: 5,
  restaurant_name: 'Gottscheer Hall'
}
```