

Projection & Limit

PROJECTION :

- Use the projection document as the second argument to the `find` method.
- Include field names with a value of `1` to specify fields to be returned.
- Omit fields or set them to `0` to exclude them from the results.
- Given a Collection you want to FILTER a subset of attributes. That is the place Projection is used.

TO GET SELECTED ATTRIBUTES :

```
test> db.stu.find({}, {name:1, age:1}).count();
500
test>
```

IGNORING ATTRIBUTES :

```
test> db.stu.find({}, {_id:0}).count();
500
test>
```

Retrieving Specific Fields from Nested Objects :

The `$slice` operator in MongoDB is used to select a subset of an array. It is particularly useful when you have large arrays stored in your documents and you only need to retrieve certain elements, optimizing data retrieval and reducing overhead.

```

test> db.stu.find({}, {
...     name:1,
...     courses:{$slice:1}
... });
[
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef535'),
    name: 'Student 948',
    courses: "['English', 'Computer Science', 'Physics', 'Mathematics']"
  },
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef536'),
    name: 'Student 157',
    courses: "['Physics', 'English']"
  },
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef537'),
    name: 'Student 316',
    courses: "['Physics', 'Computer Science', 'Mathematics', 'History']"
  },
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef538'),
    name: 'Student 346',
    courses: "['Mathematics', 'History', 'English']"
  },
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef539'),
    name: 'Student 930',
    courses: "['English', 'Computer Science', 'Mathematics', 'History']"
  },
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef53a'),
    name: 'Student 305',
    courses: "['History', 'Physics', 'Computer Science', 'Mathematics']"
  },
  {
    _id: ObjectId('6661e4dad45a6fc3f4eef53b'),
    name: 'Student 268',
    courses: "['Mathematics', 'History', 'Physics']"
  },
]

```

```

]
Type "it" for more
test>

```

Benefits of Projection :

1. Performance Improvement
2. Optimized Resource Usage
3. Simplified Data Handling

4. Better Index Utilization

5. Flexible Query Results

LIMIT

\$limit takes a number, n, and returns the first n resulting documents.

```
test> db.stu.find({}, {_id:0}).limit(5);
[
  {
    name: 'Student 948',
    age: 19,
    courses: "['English', 'Computer Science', 'Physics', 'Mathematics']",
    gpa: 3.44,
    home_city: 'City 2',
    blood_group: 'O+',
    is_hotel_resident: true
  },
  {
    name: 'Student 157',
    age: 20,
    courses: "['Physics', 'English']",
    gpa: 2.27,
    home_city: 'City 4',
    blood_group: 'O-',
    is_hotel_resident: true
  },
  {
    name: 'Student 316',
    age: 20,
    courses: "['Physics', 'Computer Science', 'Mathematics', 'History']",
    gpa: 2.32,
    blood_group: 'B+',
    is_hotel_resident: true
  },
  {
    name: 'Student 346',
    age: 25,
    courses: "['Mathematics', 'History', 'English']",
    gpa: 3.31,
    home_city: 'City 8',
    blood_group: 'O-',
    is_hotel_resident: true
  },
  {
    name: 'Student 930',
    age: 25,
    courses: "['English', 'Computer Science', 'Mathematics', 'History']",
    gpa: 3.63,
    home_city: 'City 3',
    blood_group: 'A-',
    is_hotel_resident: true
  }
]
```

Getting first five documents :

```
test> db.stu.find({}, {_id:0}).limit(5);
[
  {
    name: 'Student 948',
    age: 19,
    courses: "['English', 'Computer Science', 'Physics', 'Mathematics']",
    gpa: 3.44,
    home_city: 'City 2',
    blood_group: 'O+',
    is_hotel_resident: true
  },
  {
    name: 'Student 157',
    age: 20,
    courses: "['Physics', 'English']",
    gpa: 2.27,
    home_city: 'City 4',
    blood_group: 'O-',
    is_hotel_resident: true
  },
  {
    name: 'Student 316',
    age: 20,
    courses: "['Physics', 'Computer Science', 'Mathematics', 'History']",
    gpa: 2.32,
    blood_group: 'B+',
    is_hotel_resident: true
  },
  {
    name: 'Student 346',
    age: 25,
    courses: "['Mathematics', 'History', 'English']",
    gpa: 3.31,
    home_city: 'City 8',
    blood_group: 'O-',
    is_hotel_resident: true
  },
  {
    name: 'Student 930',
    age: 25,
    courses: "['English', 'Computer Science', 'Mathematics', 'History']",
    gpa: 3.63,
    home_city: 'City 3',
    blood_group: 'A-',
    is_hotel_resident: true
  }
]
```

Limiting results :

```
test> db.stu.find({gpa:{$gt:3.5}},{_id:0}).limit(2);
[
  {
    name: 'Student 930',
    age: 25,
    courses: "['English', 'Computer Science', 'Mathematics', 'History']",
    gpa: 3.63,
    home_city: 'City 3',
    blood_group: 'A-',
    is_hotel_resident: true
  },
  {
    name: 'Student 268',
    age: 21,
    courses: "['Mathematics', 'History', 'Physics']",
    gpa: 3.98,
    blood_group: 'A+',
    is_hotel_resident: false
  }
]
```

Top 10 results :

```
test> db.stu.find({}, {_id:0}).sort({_id:-1}).limit(3);
[
  {
    name: 'Student 591',
    age: 20,
    courses: "['Mathematics', 'History', 'English']",
    gpa: 2.27,
    home_city: 'City 4',
    blood_group: 'AB+',
    is_hotel_resident: false
  },
  {
    name: 'Student 933',
    age: 18,
    courses: "['Mathematics', 'English', 'Physics', 'History']",
    gpa: 2.54,
    home_city: 'City 10',
    blood_group: 'B-',
    is_hotel_resident: true
  },
  {
    name: 'Student 780',
    age: 18,
    courses: "['Mathematics', 'English', 'Computer Science', 'Physics']",
    gpa: 2.86,
    home_city: 'City 7',
    blood_group: 'B-',
    is_hotel_resident: false
  }
]
test>
```