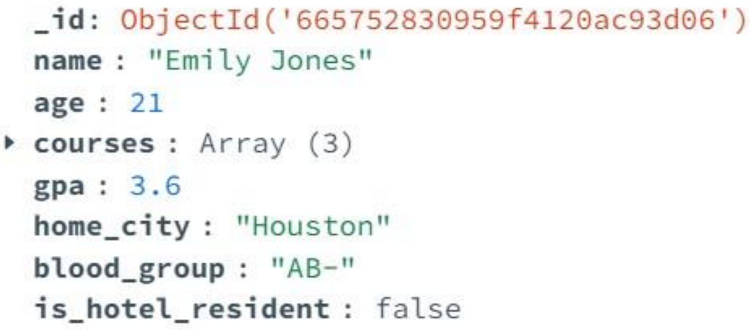
Class 5: Projection Operators

Projection:

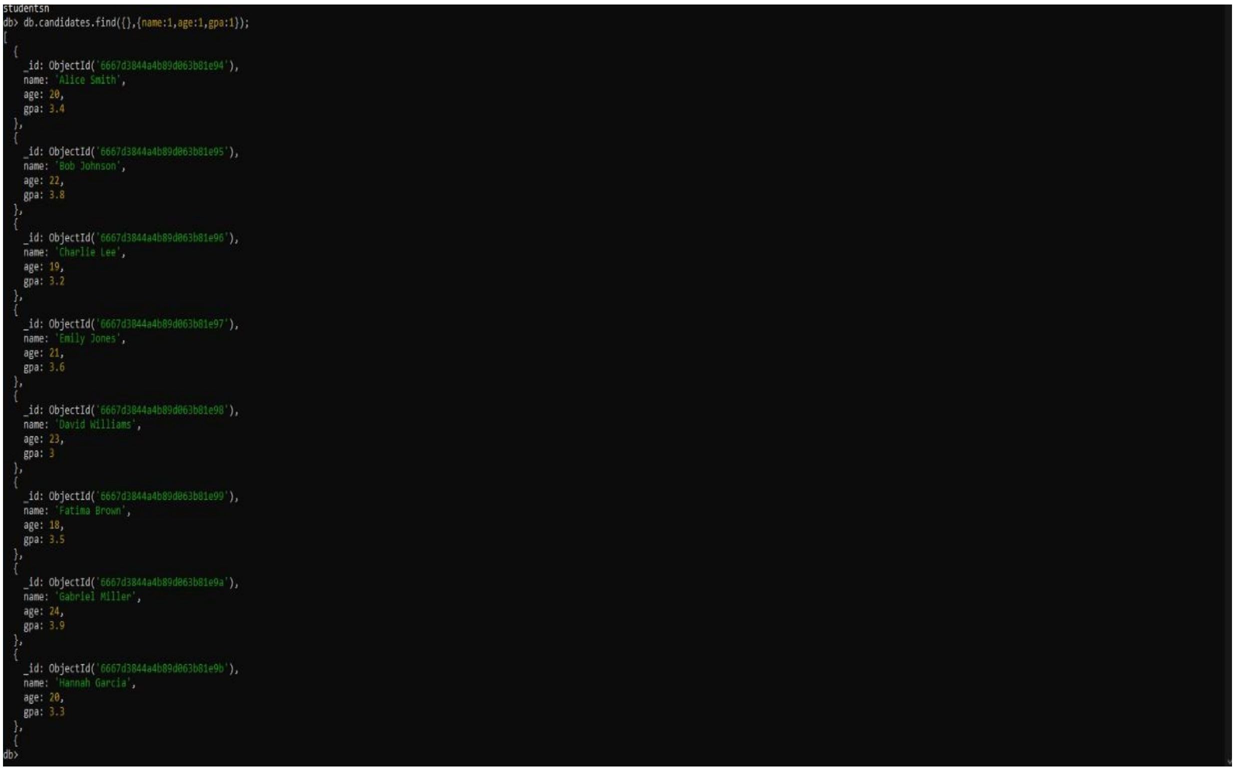
- Create new collection called candidates.
- Upload the dataset link



```
  _id: ObjectId('665752830959f4120ac93d06')
  name : "Emily Jones"
  age : 21
▸ courses : Array (3)
  gpa : 3.6
  home_city : "Houston"
  blood_group : "AB-"
  is_hotel_resident : false
```

Example 1: Retrieve Name , Age, and GPA

db.condidates.find({},{name:1,age:1,gpa:1});

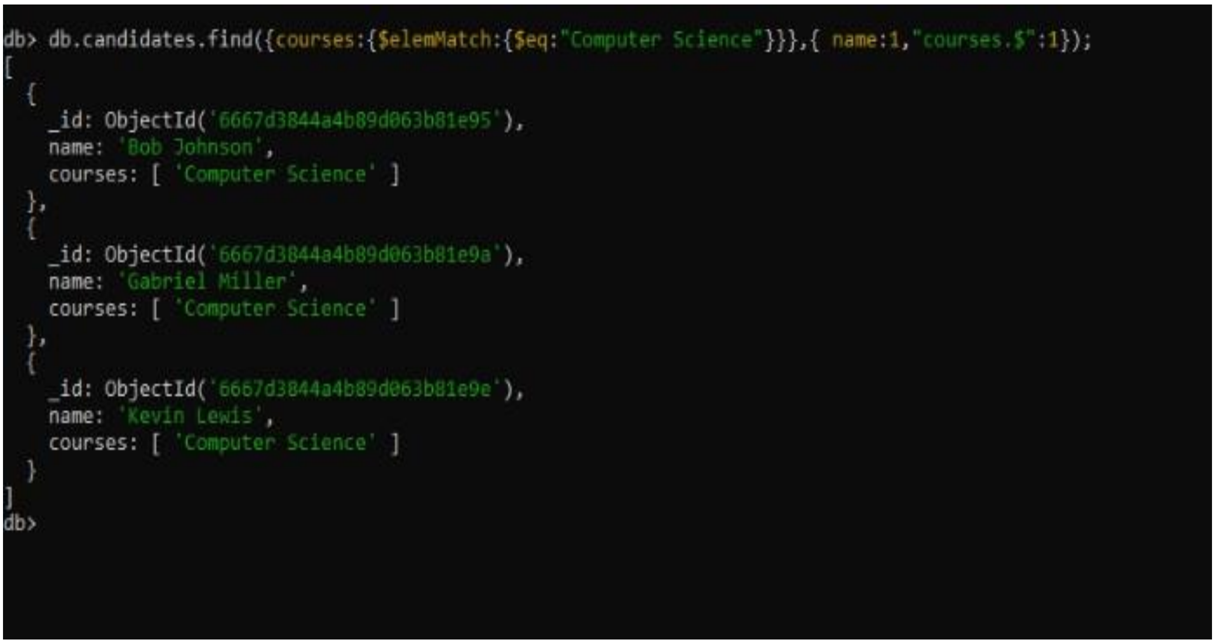


```
studentsn
db> db.candidates.find({},{name:1,age:1,gpa:1});
[
  {
    _id: ObjectId('6667d3844a4b89d063b81e94'),
    name: 'Alice Smith',
    age: 20,
    gpa: 3.4
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e95'),
    name: 'Bob Johnson',
    age: 22,
    gpa: 3.8
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e96'),
    name: 'Charlie Lee',
    age: 19,
    gpa: 3.2
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e97'),
    name: 'Emily Jones',
    age: 21,
    gpa: 3.6
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e98'),
    name: 'David Williams',
    age: 23,
    gpa: 3
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e99'),
    name: 'Fatima Brown',
    age: 18,
    gpa: 3.5
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9a'),
    name: 'Gabriel Miller',
    age: 24,
    gpa: 3.9
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9b'),
    name: 'Hannah Garcia',
    age: 20,
    gpa: 3.3
  },
  {
db>
```

2.Projection operator($elemMatch):

Example 2: Find Candidates Enrolled in “Computer Science” with Specific Projection.

db. candidates. find({ courses:{ $elemMatch: {$eq:” Computer Science”}{name: 1, ”courses.$”:1});

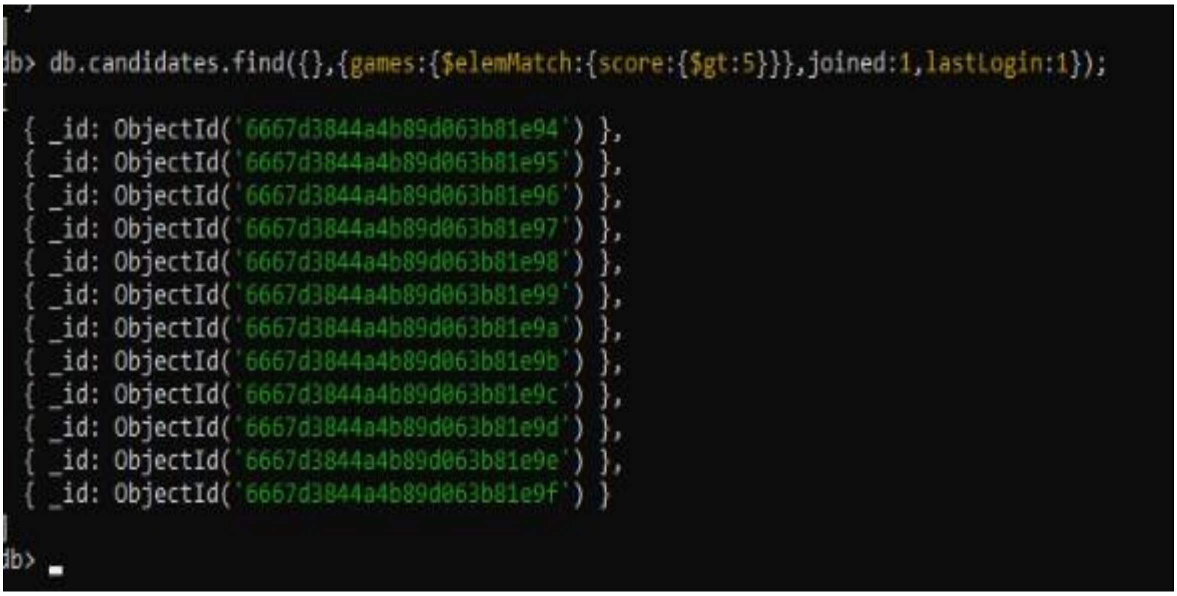


```
db> db.candidates.find({courses:{$elemMatch:{$eq:"Computer Science"}}},{ name:1,"courses.$":1});
[
  {
    _id: ObjectId('6667d3844a4b89d063b81e95'),
    name: 'Bob Johnson',
    courses: [ 'Computer Science' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9a'),
    name: 'Gabriel Miller',
    courses: [ 'Computer Science' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9e'),
    name: 'Kevin Lewis',
    courses: [ 'Computer Science' ]
  }
]
db>
```

$elemMatch: link

Insert few players in above.

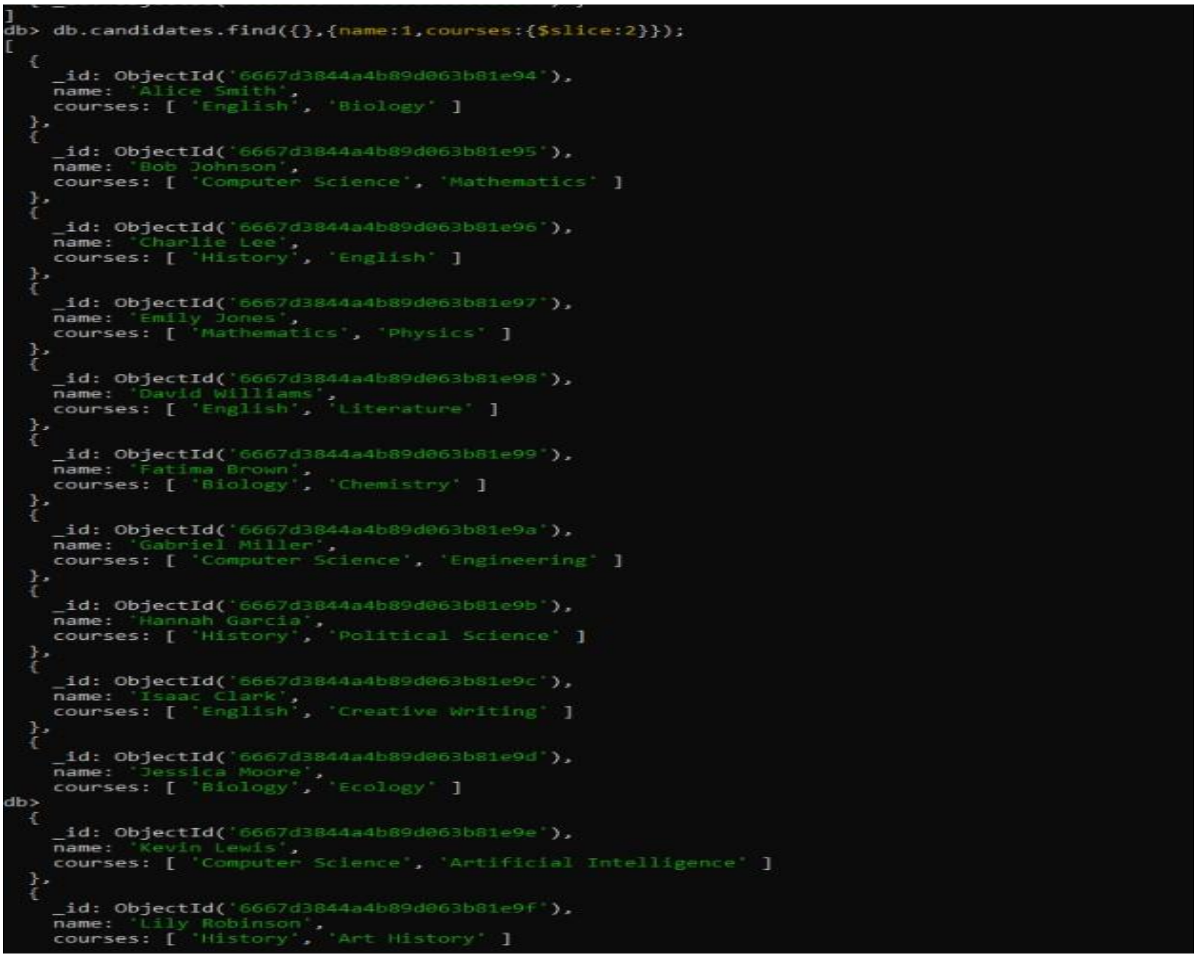
db. players. find({},(ganes:{$elemMatch:{score:{$gt:5}}},joined:1,lastlogin:1})



```
]
db> db.candidates.find({},{games:{$elemMatch:{score:{$gt:5}}},joined:1,lastLogin:1});
[
  { _id: ObjectId('6667d3844a4b89d063b81e94') },
  { _id: ObjectId('6667d3844a4b89d063b81e95') },
  { _id: ObjectId('6667d3844a4b89d063b81e96') },
  { _id: ObjectId('6667d3844a4b89d063b81e97') },
  { _id: ObjectId('6667d3844a4b89d063b81e98') },
  { _id: ObjectId('6667d3844a4b89d063b81e99') },
  { _id: ObjectId('6667d3844a4b89d063b81e9a') },
  { _id: ObjectId('6667d3844a4b89d063b81e9b') },
  { _id: ObjectId('6667d3844a4b89d063b81e9c') },
  { _id: ObjectId('6667d3844a4b89d063b81e9d') },
  { _id: ObjectId('6667d3844a4b89d063b81e9e') },
  { _id: ObjectId('6667d3844a4b89d063b81e9f') }
]
db> _
```

3.Projection operator($slice):

Example 3: Retrieve All Candidates with first two courses.
db. candidates. find({},{ name:1,courses:{$slice:2}});



```
]
db> db.candidates.find({},{name:1,courses:{$slice:2}});
[
  {
    _id: ObjectId('6667d3844a4b89d063b81e94'),
    name: 'Alice Smith',
    courses: [ 'English', 'Biology' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e95'),
    name: 'Bob Johnson',
    courses: [ 'Computer Science', 'Mathematics' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e96'),
    name: 'Charlie Lee',
    courses: [ 'History', 'English' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e97'),
    name: 'Emily Jones',
    courses: [ 'Mathematics', 'Physics' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e98'),
    name: 'David Williams',
    courses: [ 'English', 'Literature' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e99'),
    name: 'Fatima Brown',
    courses: [ 'Biology', 'Chemistry' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9a'),
    name: 'Gabriel Miller',
    courses: [ 'Computer Science', 'Engineering' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9b'),
    name: 'Hannah Garcia',
    courses: [ 'History', 'Political Science' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9c'),
    name: 'Isaac Clark',
    courses: [ 'English', 'Creative Writing' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9d'),
    name: 'Jessica Moore',
    courses: [ 'Biology', 'Ecology' ]
db>
  {
    _id: ObjectId('6667d3844a4b89d063b81e9e'),
    name: 'Kevin Lewis',
    courses: [ 'Computer Science', 'Artificial Intelligence' ]
  },
  {
    _id: ObjectId('6667d3844a4b89d063b81e9f'),
    name: 'Lily Robinson',
    courses: [ 'History', 'Art History' ]
```

name:1: This includes the name field in the returned documents.

courses: {$slice:2}: This uses the $slice operator to limit the courses array to only the first two elements. If a candidate has fewer than two courses, the array will be empty.

$Slice: link

- First 3 comments
- Last 3 comments

The $slice operator in MongoDB is used to retrieve a specific portion of an array field within a document. It can be used in two contexts:

Projection: When used with the find or aggregation commands, it limits the number of elements returned from an array field in the query results.

Update: Though less common, $slice can also be used with update operations to modify an array field within a document.