NoSQL Assignment – 1

Q) Create a database called College. Create a collection of “Students” with the following attributes: StudRollNo, StudName, Grade, Hobbies and Fees.

-> USE College;
db.createCollection(“Students”);

Output:

```
College> show dbs
College          72.00 KiB
admin            40.00 KiB
company          80.00 KiB
config           48.00 KiB
db_demo          72.00 KiB
local            40.00 KiB
user_management  72.00 KiB
```

```
College> show collections
Students
```

1) Insert at least 10 documents.

-> db.Students.insertMany([
{StudRollNo: 1, StudName: 'Pratyush', Grade: 'A', Hobbies:['Watching Anime', 'Studying'], Fees: 150000},
{StudRollNo: 2, StudName: 'Om', Grade: 'A', Hobbies:['Boxing', 'Biking'], Fees: 150000},
{StudRollNo: 3, StudName: 'Nupur', Grade: 'B', Hobbies:['Singing'], Fees: 100000},
{StudRollNo: 4, StudName: 'Nihal', Grade: 'A', Hobbies:['Learning new languages'], Fees: 150000},
{StudRollNo: 5, StudName: 'Saad', Grade: 'A', Hobbies:['Programming'], Fees: 150000},
{StudRollNo: 6, StudName: 'Sahil', Grade: 'A', Hobbies:['Programming', 'Editing'], Fees: 100000},
{StudRollNo: 7, StudName: 'Santosh', Grade: 'A', Hobbies:['Biking', 'Studying'], Fees: 150000},
{StudRollNo: 8, StudName: 'Soham', Grade: 'A', Hobbies:['Programming'], Fees: 150000},
{StudRollNo: 9, StudName: 'Krushna', Grade: 'A', Hobbies:['Watching anime', 'Reading'], Fees: 150000},
{StudRollNo: 10, StudName: 'Aaditya', Grade: 'B', Hobbies:['Watching anime', 'Reading'], Fees: 150000},
{StudRollNo: 11, StudName: 'Pawan', Grade: 'A', Hobbies:['Cycling'], Fees: 150000},
{StudRollNo: 12, StudName: 'Prem', Grade: 'A', Hobbies:['Cycling', 'Reading'], Fees: 150000}
]);

2) Retrieve the documents in a format way (use find()).

-> db.Students.find();

Output:

```
College> db.Students.find()
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 1,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8192'),
    StudRollNo: 3,
    StudName: 'Nupur',
    Grade: 'B',
    Hobbies: [ 'Singing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8193'),
    StudRollNo: 4,
    StudName: 'Nihal',
    Grade: 'A',
    Hobbies: [ 'Learning new languages' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
```

3) Find students with the grade 'A'.

-> db.Students.find({Grade: 'A'});

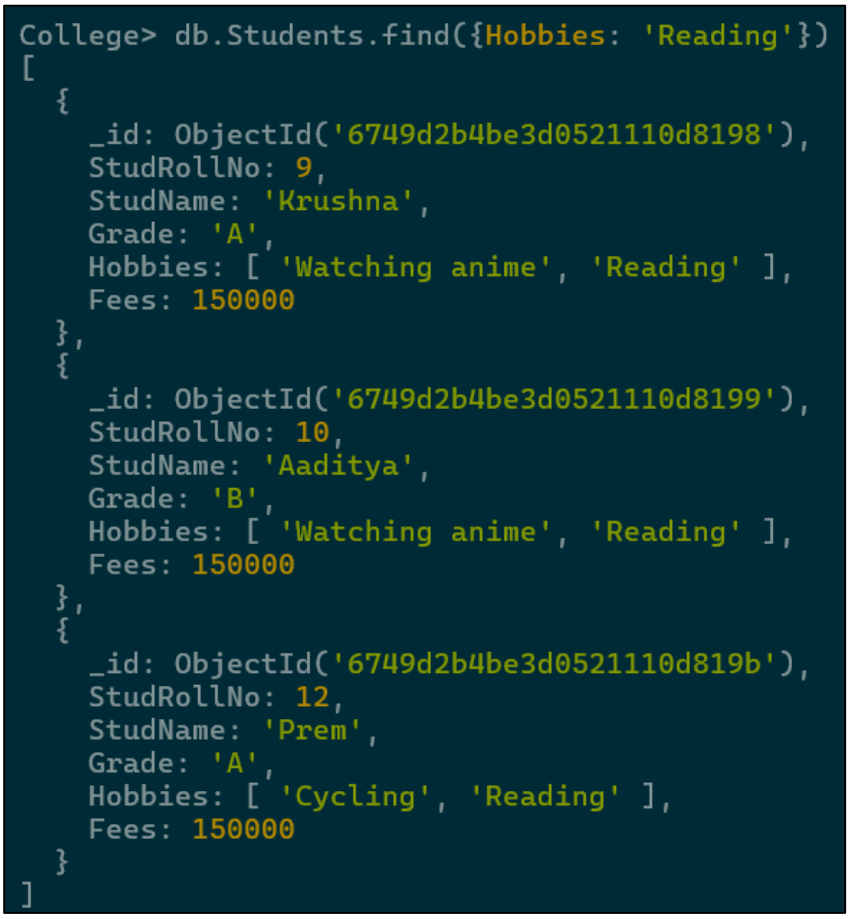
Output:

```
College> db.Students.find({Grade: 'A'})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 1,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8193'),
    StudRollNo: 4,
    StudName: 'Nihal',
    Grade: 'A',
    Hobbies: [ 'Learning new languages' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
```

4) Find students whose hobbies include 'Reading’.

-> db.Students.find({Hobbies: 'Reading'});

Output:

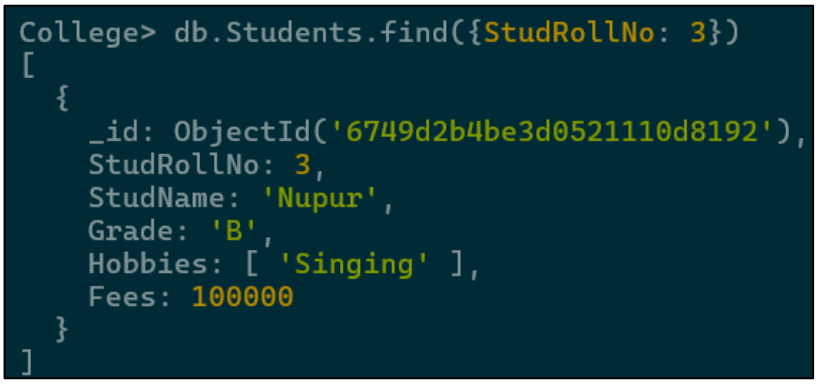


```
College> db.Students.find({Hobbies: 'Reading'})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8198'),
    StudRollNo: 9,
    StudName: 'Krushna',
    Grade: 'A',
    Hobbies: [ 'Watching anime', 'Reading' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8199'),
    StudRollNo: 10,
    StudName: 'Aaditya',
    Grade: 'B',
    Hobbies: [ 'Watching anime', 'Reading' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819b'),
    StudRollNo: 12,
    StudName: 'Prem',
    Grade: 'A',
    Hobbies: [ 'Cycling', 'Reading' ],
    Fees: 150000
  }
]
```

5) Find a student by their roll number (e.g., StudRollNo 3).

-> db.Students.find({StudRollNo: 3});

Output:



6) Update the grade of a student (e.g., changing ‘Smith’ grade to 'A').

-> db.Students.updateOne({StudName:'Santosh'},{$set:{Grade:'B'}})

Output:

7) Increment the StudRollNo of a student by 1 (e.g., for Kiran).

-> db.Students.updateOne({StudName: 'Pratyush'}, {$inc: {StudRollNo: 1}});

Output:

```
College> db.Students.find({StudName: 'Pratyush'});
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 2,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  }
]
```

8) Delete a student by their roll number (e.g., removing student with StudRollNo 4) .

-> db.Students.deleteOne({StudRollNo: 4});

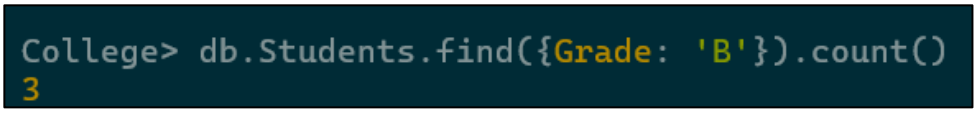
Output:

```
College> db.Students.find({StudRollNo: 4})
```

9) Count the number of students with grade 'B'.

-> db.Students.find({Grade: 'B'}).count();

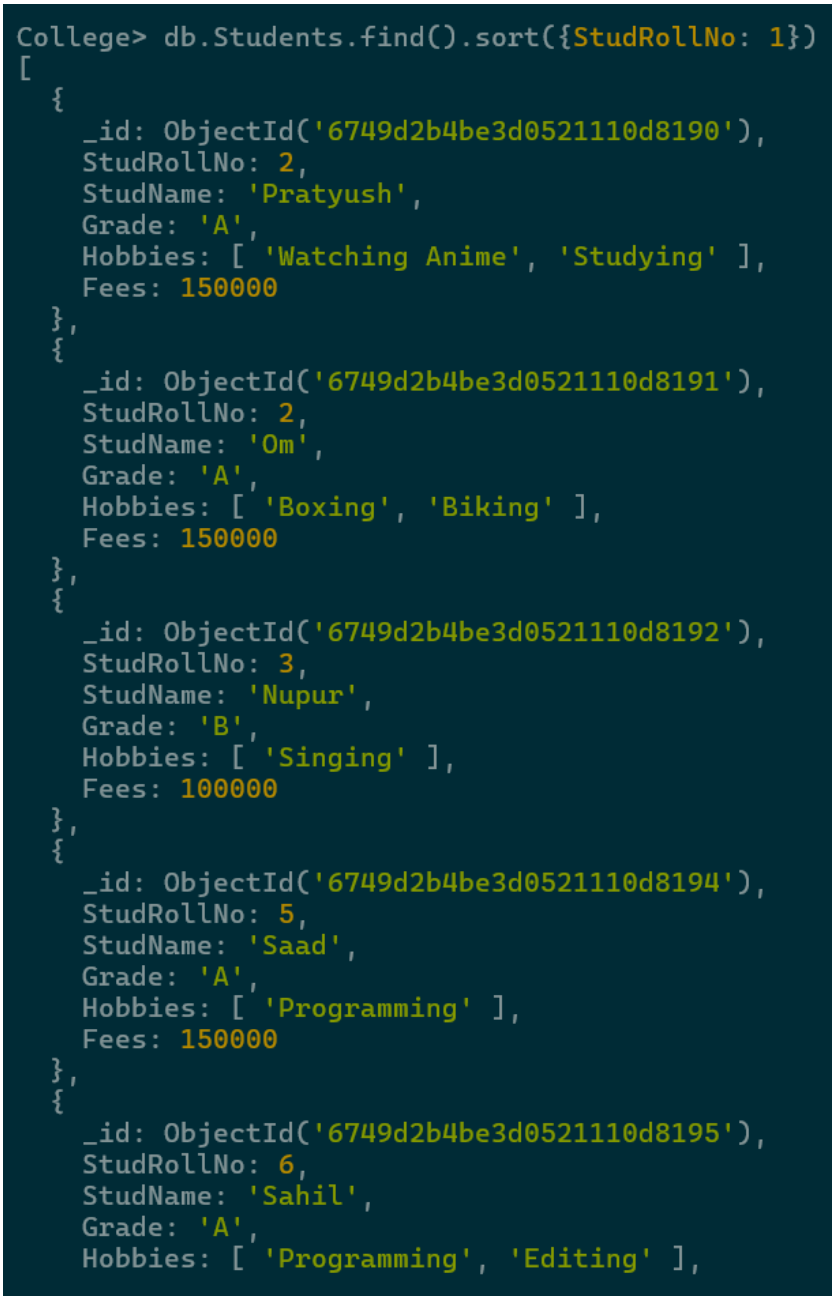
Output:



10) Sort students by their roll number in ascending order.

-> db.Students.find().sort({StudRollNo: 1});

Output:



```
College> db.Students.find().sort({StudRollNo: 1})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 2,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8192'),
    StudRollNo: 3,
    StudName: 'Nupur',
    Grade: 'B',
    Hobbies: [ 'Singing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
```

11) Project only the StudName and Grade fields of students.

-> db.Students.find({}, { StudName: 1, Grade: 1, _id: 0 });

Output:

```
College> db.Students.find({}, { StudName: 1, Grade: 1, _id: 0 })
[
  { StudName: 'Pratyush', Grade: 'A' },
  { StudName: 'Om', Grade: 'A' },
  { StudName: 'Nupur', Grade: 'B' },
  { StudName: 'Saad', Grade: 'A' },
  { StudName: 'Sahil', Grade: 'A' },
  { StudName: 'Santosh', Grade: 'B' },
  { StudName: 'Soham', Grade: 'A' },
  { StudName: 'Krushna', Grade: 'A' },
  { StudName: 'Aaditya', Grade: 'B' },
  { StudName: 'Pawan', Grade: 'A' },
  { StudName: 'Prem', Grade: 'A' }
]
```

12) Retrieve a page of students, skipping the first 3 documents and limiting to 2 documents.

-> db.Students.find().skip(3).limit(2);

Output:

```
College> db.Students.find().skip(3).limit(2)
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
    Fees: 100000
  }
]
```

13) Find students with the grade 'A' and hobbies including 'Cycling'.

-> db.Students.find({Grade: 'A', Hobbies: 'Cycling'});

Output:

```
College> db.Students.find({Grade: 'A', Hobbies: 'Cycling'})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d819a'),
    StudRollNo: 11,
    StudName: 'Pawan',
    Grade: 'A',
    Hobbies: [ 'Cycling' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819b'),
    StudRollNo: 12,
    StudName: 'Prem',
    Grade: 'A',
    Hobbies: [ 'Cycling', 'Reading' ],
    Fees: 150000
  }
]
```

14) Delete any one of the documents From collections.

-> db.Students.deleteOne({StudRollNo: 9});

Output:

```
College> db.Students.find({StudRollNo: 9})
```

15) Use $in and $nin **t**o compare an array of values.

-> db.Students.find({Hobbies:{$in:['Programming', 'Reading']}});

Output:

```
College> db.Students.find({Hobbies:{$in:['Programming', 'Reading']}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8197'),
    StudRollNo: 8,
    StudName: 'Soham',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8199'),
    StudRollNo: 10,
    StudName: 'Aaditya',
    Grade: 'B',
    Hobbies: [ 'Watching anime', 'Reading' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819b'),
    StudRollNo: 12,
    StudName: 'Prem',
    Grade: 'A',
    Hobbies: [ 'Cycling', 'Reading' ],
```

-> db.Students.find({Hobbies:{$nin:['Programming', 'Reading']}});

Output:

```
College> db.Students.find({Hobbies:{$nin:['Programming', 'Reading']}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 2,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8192'),
    StudRollNo: 3,
    StudName: 'Nupur',
    Grade: 'B',
    Hobbies: [ 'Singing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8196'),
    StudRollNo: 7,
    StudName: 'Santosh',
    Grade: 'B',
    Hobbies: [ 'Biking', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819a'),
    StudRollNo: 11,
    StudName: 'Pawan',
    Grade: 'A',
    Hobbies: [ 'Cycling' ],
```

16) Find the total number of documents in students collection using count function.

-> db.Students.find().count();

Output:

```
College> db.Students.find().count()
10
```

17) Display the documents based on the specified field using $group function.

-> db.Students.aggregate([{$group:{_id:'$Hobbies', count:{$sum:1}}}]);

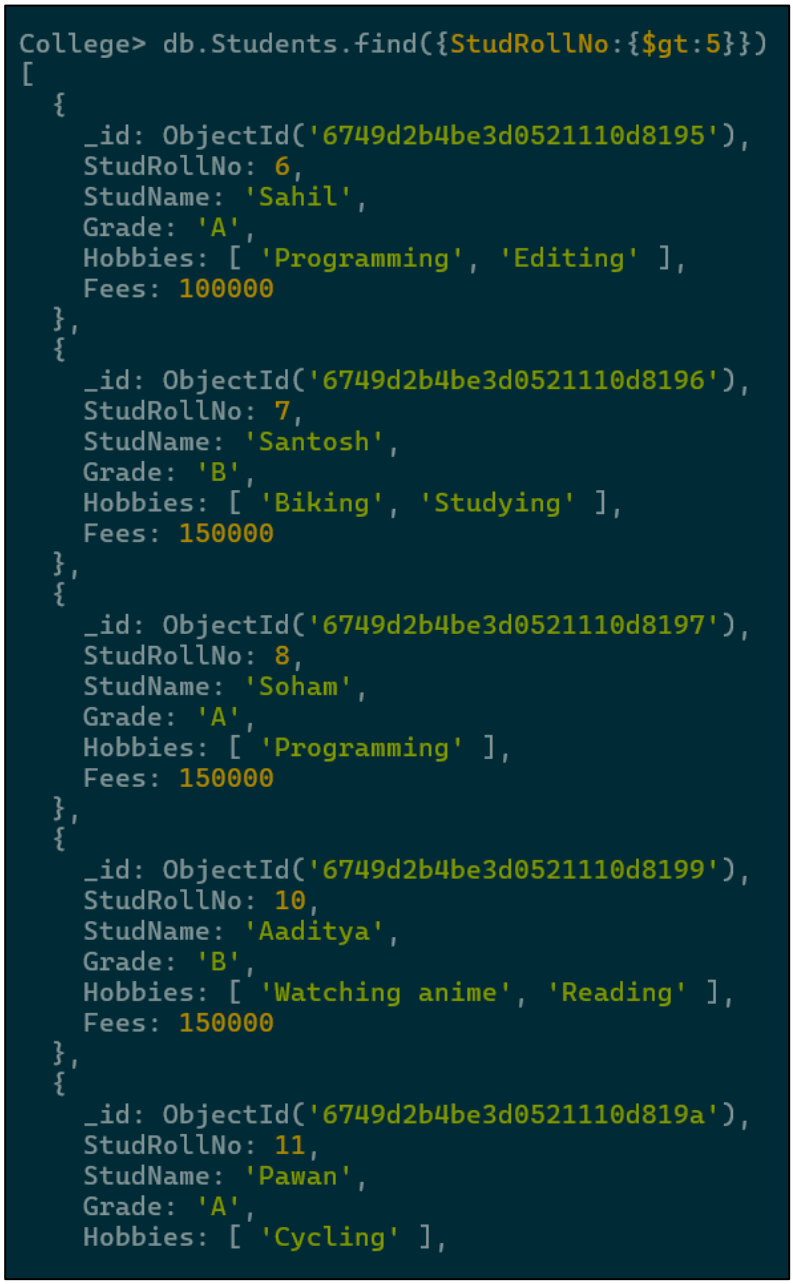
Output:

```
College> db.Students.aggregate([{$group:{_id:'$Hobbies', count:{$sum:1}}}])
[
  { _id: [ 'Watching anime', 'Reading' ], count: 1 },
  { _id: [ 'Biking', 'Studying' ], count: 1 },
  { _id: [ 'Singing' ], count: 1 },
  { _id: [ 'Programming', 'Editing' ], count: 1 },
  { _id: [ 'Boxing', 'Biking' ], count: 1 },
  { _id: [ 'Cycling' ], count: 1 },
  { _id: [ 'Programming' ], count: 2 },
  { _id: [ 'Cycling', 'Reading' ], count: 1 },
  { _id: [ 'Watching Anime', 'Studying' ], count: 1 }
]
```

18) Find students whose StudRollNo is greater than 5.

-> db.Students.find({StudRollNo:{$gt:5}});

Output:



```
College> db.Students.find({StudRollNo:{$gt:5}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8196'),
    StudRollNo: 7,
    StudName: 'Santosh',
    Grade: 'B',
    Hobbies: [ 'Biking', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8197'),
    StudRollNo: 8,
    StudName: 'Soham',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8199'),
    StudRollNo: 10,
    StudName: 'Aaditya',
    Grade: 'B',
    Hobbies: [ 'Watching anime', 'Reading' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819a'),
    StudRollNo: 11,
    StudName: 'Pawan',
    Grade: 'A',
    Hobbies: [ 'Cycling' ],
```

19) Find students whose grade is not 'B'.

-> db.Students.find({Grade:{$nin:['B']}});

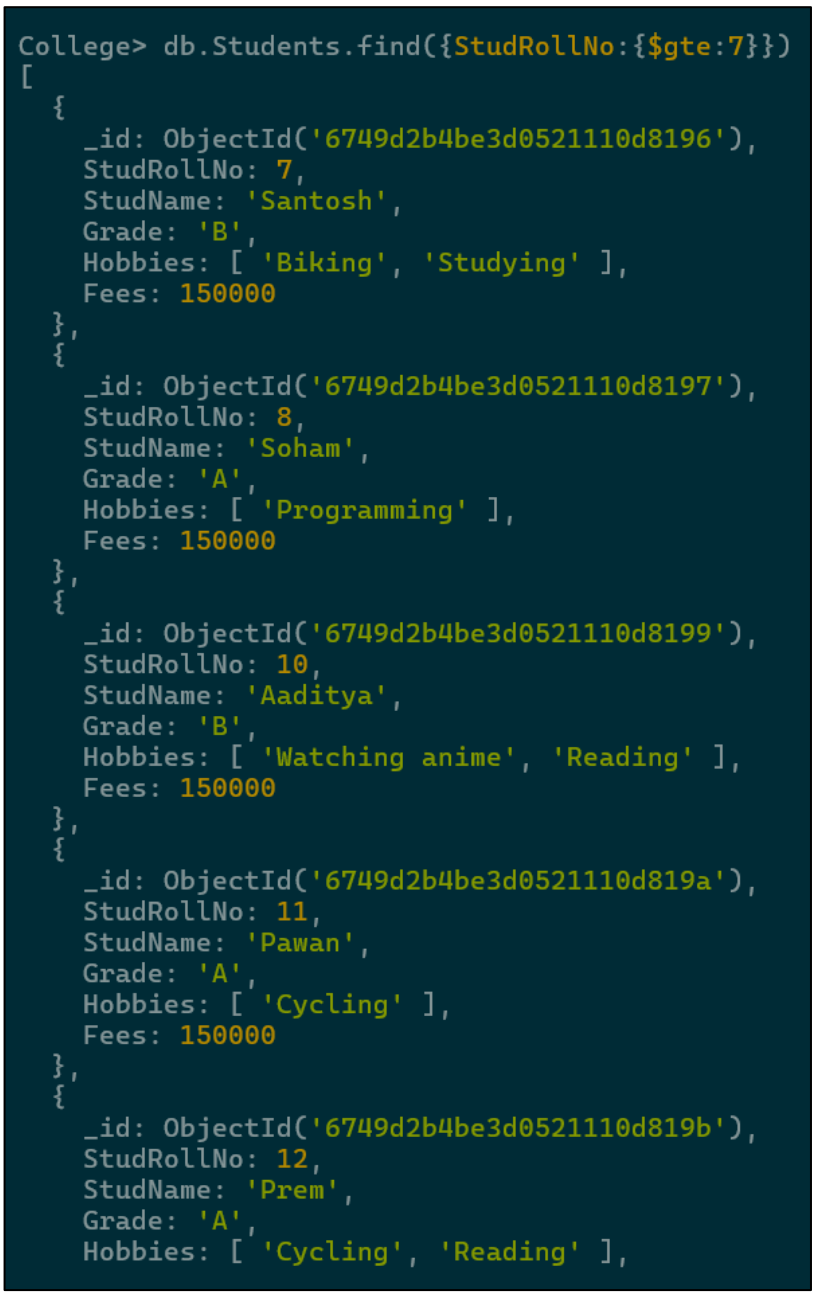
Output:

```
College> db.Students.find({Grade:{$nin:['B']}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 2,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8197'),
    StudRollNo: 8,
    StudName: 'Soham',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
```

20) Find students whose StudRollNo is greater than or equal to 7.

-> db.Students.find({StudRollNo:{$gte:7}});

Output:



```
College> db.Students.find({StudRollNo:{$gte:7}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8196'),
    StudRollNo: 7,
    StudName: 'Santosh',
    Grade: 'B',
    Hobbies: [ 'Biking', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8197'),
    StudRollNo: 8,
    StudName: 'Soham',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8199'),
    StudRollNo: 10,
    StudName: 'Aaditya',
    Grade: 'B',
    Hobbies: [ 'Watching anime', 'Reading' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819a'),
    StudRollNo: 11,
    StudName: 'Pawan',
    Grade: 'A',
    Hobbies: [ 'Cycling' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d819b'),
    StudRollNo: 12,
    StudName: 'Prem',
    Grade: 'A',
    Hobbies: [ 'Cycling', 'Reading' ],
```

21) Find students whose StudRollNo is less than 4 & less than equal to 4.

-> db.Students.find({StudRollNo:{$lte:4}});

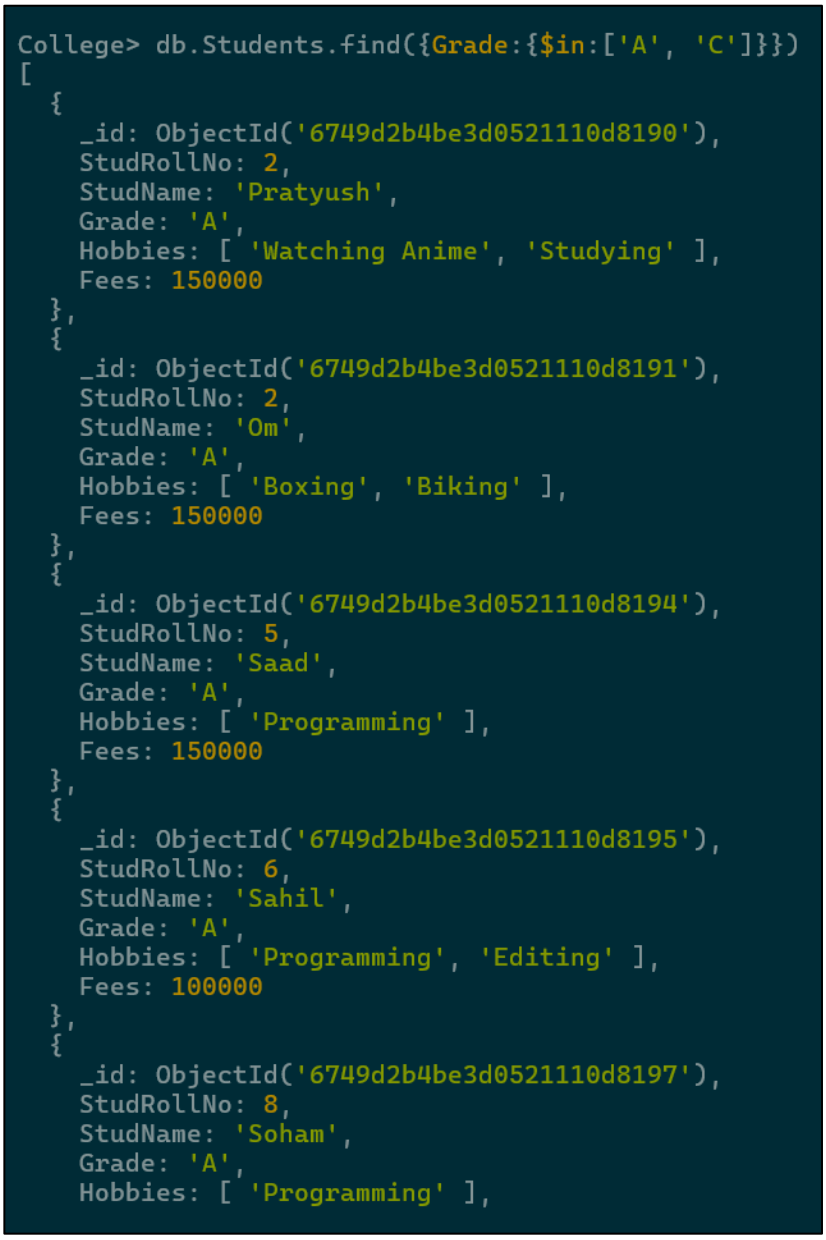
Output:

```
College> db.Students.find({StudRollNo:{$lte:4}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 2,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8192'),
    StudRollNo: 3,
    StudName: 'Nupur',
    Grade: 'B',
    Hobbies: [ 'Singing' ],
    Fees: 100000
  }
]
```

22) Find students whose grade is either 'A' or 'C'.

-> db.Students.find({Grade:{$in:['A', 'C']}});

Output:



```
College> db.Students.find({Grade:{$in:['A', 'C']}})
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8190'),
    StudRollNo: 2,
    StudName: 'Pratyush',
    Grade: 'A',
    Hobbies: [ 'Watching Anime', 'Studying' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8191'),
    StudRollNo: 2,
    StudName: 'Om',
    Grade: 'A',
    Hobbies: [ 'Boxing', 'Biking' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8197'),
    StudRollNo: 8,
    StudName: 'Soham',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
```

23) Find students with StudRollNo between 3 and 7 (inclusive).

-> db.Students.find({ StudRollNo: { $gte: 3, $lte: 7 } });

Output:

```
College> db.Students.find({ StudRollNo: { $gte: 3, $lte: 7 } })
[
  {
    _id: ObjectId('6749d2b4be3d0521110d8192'),
    StudRollNo: 3,
    StudName: 'Nupur',
    Grade: 'B',
    Hobbies: [ 'Singing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8194'),
    StudRollNo: 5,
    StudName: 'Saad',
    Grade: 'A',
    Hobbies: [ 'Programming' ],
    Fees: 150000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8195'),
    StudRollNo: 6,
    StudName: 'Sahil',
    Grade: 'A',
    Hobbies: [ 'Programming', 'Editing' ],
    Fees: 100000
  },
  {
    _id: ObjectId('6749d2b4be3d0521110d8196'),
    StudRollNo: 7,
    StudName: 'Santosh',
    Grade: 'B',
    Hobbies: [ 'Biking', 'Studying' ],
    Fees: 150000
  }
]
```