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## Chapter 3: NoSQL Database

### Practical Assignment 5

Create a database called College Create a collection of “Students” with the following attributes:

StudRollNo, StudName, Grade, Hobbies and Fees write the queries for the following

```
test> use College
```

switched to db College

```
College> show dbs
```

```
admin          40.00 KiB
config         108.00 KiB
local          72.00 KiB
organization    72.00 KiB
College> db.createCollection('Students');
{ ok: 1 }
College> show dbs
College        8.00 KiB
admin          40.00 KiB
config         108.00 KiB
local          72.00 KiB
organization    72.00 KiB
```

1. Insert at least 10 documents.

Ans:

```
db.Student.insertMany([ {RollNo:1,Name:"Sanika",Grade:"A",Hobbies:"Sketching",fees:25000}, {RollNo:2,Name:"Krutika",Grade:"A",Hobbies:"Reading",fees:20000}, {RollNo:3,Name:"Kirti",Grade:"C",Hobbies:"Cycling",fees:7890}, {RollNo:4,Name:"Kiran",Grade:"B",Hobbies:"Reading",fees:6700}, {RollNo:5,Name:"Ananya",Grade:"A",Hobbies:"Dancing",fees:15000}, {RollNo:6,Name:"Arjun",Grade:"B",Hobbies:"Reading",fees:12000}, {RollNo:7,Name:"Bhavya",Grade:"C",Hobbies:"Sports",fees:9000}, {RollNo:8,Name:"Chiranjeev",Grade:"D",Hobbies:"Gardening",fees:5000}, {RollNo:9,Name:"Divya",Grade:"A",Hobbies:"Reading",fees:18000}, {RollNo:10,Name:"Esha",Grade:"B",Hobbies:"Dancing",fees:11000} ])
```

o:5,Name:"Bhakti",Grade:"C",Hobbies:"Cycling",fees:7000},{RollNo:6,Name:"Shivanya",Grade:"A",Hobbies:"Cycling",fees:2000},{RollNo:7,Name:"Vai shnavi",Grade:"B",Hobbies:"Reading",fees:10000},{RollNo:8,Name:"Rudrak sh",Grade:"B",Hobbies:"Dancing",fees:8000},{RollNo:9,Name:"Shravani",Grade:"A",Hobbies:"Sketching",fees:12000},{RollNo:10,Name:"Veer",Grade:"B",Hobbies:"Travelling",fees:15000},{RollNo:11,Name:"Gaurav",Grade:"A",Hobbies:"Coding",fees:50000}]);

```
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('6750526755538fe00a0d8190'),
    '1': ObjectId('6750526755538fe00a0d8191'),
    '2': ObjectId('6750526755538fe00a0d8192'),
    '3': ObjectId('6750526755538fe00a0d8193'),
    '4': ObjectId('6750526755538fe00a0d8194'),
    '5': ObjectId('6750526755538fe00a0d8195'),
    '6': ObjectId('6750526755538fe00a0d8196'),
    '7': ObjectId('6750526755538fe00a0d8197'),
    '8': ObjectId('6750526755538fe00a0d8198'),
    '9': ObjectId('6750526755538fe00a0d8199'),
    '10': ObjectId('6750526755538fe00a0d819a')
  }
}
```

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

Ans: db.Student.find();

```
{
  _id: ObjectId('6750526755538fe00a0d8190'),
  RollNo: 1,
  Name: 'Sanika',
  Grade: 'A',
  Hobbies: 'Sketching',
  fees: 25000
},
{
  _id: ObjectId('6750526755538fe00a0d8191'),
  RollNo: 2,
  Name: 'Krutika',
  Grade: 'A',
  Hobbies: 'Reading',
  fees: 20000
},
{
  _id: ObjectId('6750526755538fe00a0d8192'),
  RollNo: 3,
  Name: 'Kirti',
  Grade: 'C',
  Hobbies: 'Cycling',
  fees: 7890
},
{
  _id: ObjectId('6750526755538fe00a0d8193'),
  RollNo: 4,
  Name: 'Kiran',
  Grade: 'B',
  Hobbies: 'Reading',
  fees: 6700
},
{
  _id: ObjectId('6750526755538fe00a0d8194'),
  RollNo: 5,
  Name: 'Bhakti',
  Grade: 'C',
  Hobbies: 'Cycling',
  fees: 7000
},
```

```

    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8196'),
    RollNo: 7,
    Name: 'Vaishnavi',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 10000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8197'),
    RollNo: 8,
    Name: 'Rudraksh',
    Grade: 'B',
    Hobbies: 'Dancing',
    fees: 8000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8198'),
    RollNo: 9,
    Name: 'Shravani',
    Grade: 'A',
    Hobbies: 'Sketching',
    fees: 12000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8199'),
    RollNo: 10,
    Name: 'Veer',
    Grade: 'B',
    Hobbies: 'Travelling',
    fees: 15000
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    RollNo: 11,
    Name: 'Gaurav',
    Grade: 'A',
    Hobbies: 'Coding',

```

3. Find students with the grade 'A'

Ans: db.Student.find({Grade:"A"});

```

[
  {
    _id: ObjectId('6750526755538fe00a0d8190'),
    RollNo: 1,
    Name: 'Sanika',
    Grade: 'A',
    Hobbies: 'Sketching',
    fees: 25000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8191'),
    RollNo: 2,
    Name: 'Krutika',
    Grade: 'A',
    Hobbies: 'Reading',
    fees: 20000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8198'),
    RollNo: 9,
    Name: 'Shravani',
    Grade: 'A',
    Hobbies: 'Sketching',
    fees: 12000
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    RollNo: 11,
    Name: 'Gaurav',
    Grade: 'A',
    Hobbies: 'Coding',
    fees: 50000
  }
]

```

4. Find students whose hobbies include 'Reading'

Ans: `db.Student.find({ Hobbies: "Reading" });`

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8191'),
    RollNo: 2,
    Name: 'Krutika',
    Grade: 'A',
    Hobbies: 'Reading',
    fees: 20000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8193'),
    RollNo: 4,
    Name: 'Kiran',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 6700
  },
  {
    _id: ObjectId('6750526755538fe00a0d8196'),
    RollNo: 7,
    Name: 'Vaishnavi',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 10000
  }
]
```

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

Ans: `db.Student.find({RollNo:6})`

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  }
]
```

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

Ans: `db.Student.updateOne({Name:"Shravani"},{ $set:{Grade:"B"}})`

```
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

```
{
  _id: ObjectId('6750526755538fe00a0d8198'),
  RollNo: 9,
  Name: 'Shravani',
  Grade: 'B',
  Hobbies: 'Sketching',
  fees: 12000
},
```

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

Ans: `db.Student.updateOne({Name:"Kiran"},{ $inc: {RollNo : 1}});`

```
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

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

Ans: `db.employee.deleteOne({RollNo1: 1});`

```
College> db.employee.deleteOne({RollNo1: 1});
{ acknowledged: true, deletedCount: 0 }
```

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

Ans: `db.Student.countDocuments({Grade:"B"})`

```
College> db.Student.countDocuments({Grade:"B"})
5
College>
```

10. Sort students by their roll number in ascending order

Ans: `db.Student.find().sort({ RollNo: 1 });`

11. Project only the StudName and Grade fields of students

Ans: `db.Student.find({}, { Name: 1, Grade: 1});`

```
College> db.Student.find({}, { Name: 1, Grade: 1});
[
  {
    _id: ObjectId('6750526755538fe00a0d8190'),
    Name: 'Sanika',
    Grade: 'A'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8191'),
    Name: 'Krutika',
    Grade: 'A'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8192'),
    Name: 'Kirti',
    Grade: 'C'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8193'),
    Name: 'Kiran',
    Grade: 'B'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8194'),
    Name: 'Bhakti',
    Grade: 'C'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    Name: 'Shivanya',
    Grade: 'A'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8196'),
    Name: 'Vaishnavi',
    Grade: 'B'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8197'),
    Name: 'Rudraksh',
    Grade: 'B'
  },
  {
    _id: ObjectId('6750526755538fe00a0d8198'),
    Name: 'Shravani',

```

```

  },
  {
    _id: ObjectId('6750526755538fe00a0d8199'),
    Name: 'Veer',
    Grade: 'B'
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    Name: 'Gaurav',
    Grade: 'A'
  }
]

```

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

Ans: `db.Student.find().sort({ RollNo: 1 }).skip(3).limit(2);`

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8193'),
    RollNo: 5,
    Name: 'Kiran',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 6700
  },
  {
    _id: ObjectId('6750526755538fe00a0d8194'),
    RollNo: 5,
    Name: 'Bhakti',
    Grade: 'C',
    Hobbies: 'Cycling',
    fees: 7000
  }
]
```

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

Ans: `db.Student.find({ Grade: "A", Hobbies: "Cycling" });`

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  }
]
```

14. Delete any one of the documents from the collection.

Ans: db.Student.deleteOne({ Name: "Bhakti" });

```
College> db.Student.deleteOne({ Name: "Bhakti" });
{ acknowledged: true, deletedCount: 1 }
```

15. Use \$in and \$nin to compare an array of values

Ans: db.Student.find({ Grade: { \$in: ["C"] } });

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8192'),
    RollNo: 3,
    Name: 'Kirti',
    Grade: 'C',
    Hobbies: 'Cycling',
    fees: 7890
  }
]
```

db.Student.find({ Grade: { \$nin: ["B"] } });

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8190'),
    RollNo: 1,
    Name: 'Sanika',
    Grade: 'A',
    Hobbies: 'Sketching',
    fees: 25000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8191'),
    RollNo: 2,
    Name: 'Krutika',
    Grade: 'A',
    Hobbies: 'Reading',
    fees: 20000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8192'),
    RollNo: 3,
    Name: 'Kirti',
    Grade: 'C',
    Hobbies: 'Cycling',
    fees: 7890
  },
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    RollNo: 11,
    Name: 'Gaurav',
    Grade: 'A',
    Hobbies: 'Coding',
    fees: 50000
  }
]
```

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

Ans: db.Student.countDocuments();

```
College> db.Student.countDocuments();  
10  
College>
```

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

Ans: db.Student.aggregate([ { \$group: { \_id: "\$Grade", count: { \$sum: 1 } } } ] );

```
[  
  { _id: 'A', count: 4 },  
  { _id: 'B', count: 5 },  
  { _id: 'C', count: 1 }  
]
```

18. Find students whose StudRollNo is greater than 5.

Ans: db.Student.find({ RollNo: { \$gt: 5 } });

```
[  
  {  
    _id: ObjectId('6750526755538fe00a0d8195'),  
    RollNo: 6,  
    Name: 'Shivanya',  
    Grade: 'A',  
    Hobbies: 'Cycling',  
    fees: 2000  
  },  
  {  
    _id: ObjectId('6750526755538fe00a0d8196'),  
    RollNo: 7,  
    Name: 'Vaishnavi',  
    Grade: 'B',  
    Hobbies: 'Reading',  
    fees: 10000  
  },  
  {  
    _id: ObjectId('6750526755538fe00a0d8197'),  
    RollNo: 8,  
    Name: 'Rudraksh',  
    Grade: 'B',  
    Hobbies: 'Dancing',  
    fees: 8000  
  },  
  {  
    _id: ObjectId('6750526755538fe00a0d8198'),  
    RollNo: 9,  
    Name: 'Shravani',  
    Grade: 'B',  
    Hobbies: 'Sketching',  
    fees: 12000  
  },  
  {  
    _id: ObjectId('6750526755538fe00a0d8199'),  
    RollNo: 10,  
    Name: 'Veer',  
    Grade: 'B',  
    Hobbies: 'Travelling',  
    fees: 15000  
  },  
  {  
    _id: ObjectId('6750526755538fe00a0d819a'),  
    RollNo: 11,  
    Name: 'Gaurav',  
    Grade: 'A',  
    Hobbies: 'Coding',  
    fees: 50000  
  }  
]
```

19. Find students whose grade is not 'B'

Ans: db.Student.find({ Grade: { \$ne: "B" } });



```
[
  {
    _id: ObjectId('6750526755538fe00a0d8190'),
    RollNo: 1,
    Name: 'Sanika',
    Grade: 'A',
    Hobbies: 'Sketching',
    fees: 25000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8191'),
    RollNo: 2,
    Name: 'Krutika',
    Grade: 'A',
    Hobbies: 'Reading',
    fees: 20000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8192'),
    RollNo: 3,
    Name: 'Kirti',
    Grade: 'C',
    Hobbies: 'Cycling',
    fees: 7890
  },
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    RollNo: 11,
    Name: 'Gaurav',
    Grade: 'A',
    Hobbies: 'Coding',
    fees: 50000
  }
]
```

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

Ans: db.Student.find({ RollNo: { \$gte: 7 } });

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8196'),
    RollNo: 7,
    Name: 'Vaishnavi',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 10000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8197'),
    RollNo: 8,
    Name: 'Rudraksh',
    Grade: 'B',
    Hobbies: 'Dancing',
    fees: 8000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8198'),
    RollNo: 9,
    Name: 'Shravani',
    Grade: 'B',
    Hobbies: 'Sketching',
    fees: 12000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8199'),
    RollNo: 10,
    Name: 'Veer',
    Grade: 'B',
    Hobbies: 'Travelling',
    fees: 15000
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    RollNo: 11,
    Name: 'Gaurav',
    Grade: 'A',
    Hobbies: 'Coding',
    fees: 50000
  }
]
```

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

Ans: db.Student.find({ RollNo: { \$lt: 4 } });

```

{
  _id: ObjectId('6750526755538fe00a0d8190'),
  RollNo: 1,
  Name: 'Sanika',
  Grade: 'A',
  Hobbies: 'Sketching',
  fees: 25000
},
{
  _id: ObjectId('6750526755538fe00a0d8191'),
  RollNo: 2,
  Name: 'Krutika',
  Grade: 'A',
  Hobbies: 'Reading',
  fees: 20000
},
{
  _id: ObjectId('6750526755538fe00a0d8192'),
  RollNo: 3,
  Name: 'Kirti',
  Grade: 'C',
  Hobbies: 'Cycling',
  fees: 7890
}
}

```

db.Student.find({ RollNo: { \$lte: 4 } });

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

Ans: db.Student.find({ Grade: { \$in: ["A", "C"] } });

```

[
  {
    _id: ObjectId('6750526755538fe00a0d8190'),
    RollNo: 1,
    Name: 'Sanika',
    Grade: 'A',
    Hobbies: 'Sketching',
    fees: 25000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8191'),
    RollNo: 2,
    Name: 'Krutika',
    Grade: 'A',
    Hobbies: 'Reading',
    fees: 20000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8192'),
    RollNo: 3,
    Name: 'Kirti',
    Grade: 'C',
    Hobbies: 'Cycling',
    fees: 7890
  },
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  },
  {
    _id: ObjectId('6750526755538fe00a0d819a'),
    RollNo: 11,
    Name: 'Gaurav',
    Grade: 'A',
    Hobbies: 'Coding',
    fees: 50000
  }
]

```

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

Ans: db.Student.find({ RollNo: { \$gte: 3, \$lte: 7 } });

```
[
  {
    _id: ObjectId('6750526755538fe00a0d8192'),
    RollNo: 3,
    Name: 'Kirti',
    Grade: 'C',
    Hobbies: 'Cycling',
    fees: 7890
  },
  {
    _id: ObjectId('6750526755538fe00a0d8193'),
    RollNo: 5,
    Name: 'Kiran',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 6700
  },
  {
    _id: ObjectId('6750526755538fe00a0d8195'),
    RollNo: 6,
    Name: 'Shivanya',
    Grade: 'A',
    Hobbies: 'Cycling',
    fees: 2000
  },
  {
    _id: ObjectId('6750526755538fe00a0d8196'),
    RollNo: 7,
    Name: 'Vaishnavi',
    Grade: 'B',
    Hobbies: 'Reading',
    fees: 10000
  }
]
```