Assignment 03

NoSQL

Q1) Demonstrate basic Commands in MongoDB

a. Create and drop a database

```
test> use student
switched to db student
student> show dbs
admin   40.00 KiB
config  72.00 KiB
local   40.00 KiB
student> db.createCollection("studentdetails")
{ ok: 1 }
student> db.createCollection("student_details")
{ ok: 1 }
student> db.createCollection("stud_details")
{ ok: 1 }
student> db.createCollection("studdetails")
{ ok: 1 }
student> show collections
stud_details
studdetails
student_details
studentdetails
student> show dbs
admin    40.00 KiB
config   72.00 KiB
local    40.00 KiB
student  32.00 KiB
student> db.dropDatabase("student")
{ ok: 1, dropped: 'student' }
student> show dbs
admin   40.00 KiB
config  72.00 KiB
local   40.00 KiB
student> show collections
```

b. Creating the Collection in MongoDB

```
student> db.createCollection("studentdetails")
{ ok: 1 }
student> db.createCollection("student_details")
{ ok: 1 }
student> db.createCollection("stud_details")
{ ok: 1 }
student> db.createCollection("studdetails")
{ ok: 1 }
student> show collections
stud_details
studdetails
student_details
studentdetails
```

c. Renaming a collection

```
student> db.createCollection("studentdetails")
{ ok: 1 }
student> db.createCollection("student_details")
{ ok: 1 }
student> db.createCollection("stud_details")
{ ok: 1 }
student> db.createCollection("studdetails")
{ ok: 1 }
student> db.studentdetails.renameCollection("STUDENTDETAILS")
{ ok: 1 }
student> show collections
stud_details
studdetails
student_details
STUDENTDETAILS
student>
```

d. **MongoDB Insert Document (insert single document, insert multiple documents)**

- **Inserting single document**

```
student> db.studentdetails.insertOne({
...   name: "Vinayak",
...   age: 21,
...   gender: "Male",
...   course: "Computer Science",
...   marks: {
...     math: 85,
...     science: 90,
...     english: 88
...   }
... })
{
  acknowledged: true,
  insertedId: ObjectId('66c7731f19270ad5ff2710bc')
}
student> db.studentdetails.find()
[
  {
    _id: ObjectId('66c7731f19270ad5ff2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  }
]
student>
```

- **Inserting multiple document**

```
student> db.studentdetails.insertMany([
...   {
...     name: "Samiksha",
...     age: 22,
...     gender: "Female",
...     course: "Mechanical Engineering",
...     marks: {
...       math: 78,
...       science: 82,
...       english: 80
...     }
...   },
...   {
...     name: "Divya",
...     age: 23,
...     gender: "Male",
...     course: "Electronics",
...     marks: {
...       math: 88,
...       science: 85,
...       english: 90
...     }
...   },
...   {
...     name: "Deepika",
...     age: 21,
...     gender: "Female",
...     course: "Biotechnology",
...     marks: {
...       math: 79,
...       science: 89,
...       english: 87
...     }
...   },
```

```
...   {
...     name: "Sairaj",
...     age: 21,
...     gender: "Female",
...     course: "Biotechnology",
...     marks: {
...       math: 79,
...       science: 89,
...       english: 87
...     }
...   },
...   {
...     name: "Bhakti",
...     age: 21,
...     gender: "Female",
...     course: "Biotechnology",
...     marks: {
...       math: 79,
...       science: 89,
...       english: 87
...     }
...   },
...   {
...     name: "Purva",
...     age: 21,
...     gender: "Female",
...     course: "Biotechnology",
...     marks: {
...       math: 79,
...       science: 89,
...       english: 87
...     }
...   }
... ])
{
```

```
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66c7758c422cdcdf1f2710bd'),
    '1': ObjectId('66c7758c422cdcdf1f2710be'),
    '2': ObjectId('66c7758c422cdcdf1f2710bf'),
    '3': ObjectId('66c7758c422cdcdf1f2710c0'),
    '4': ObjectId('66c7758c422cdcdf1f2710c1'),
    '5': ObjectId('66c7758c422cdcdf1f2710c2')
  }
}
student>
```

```
student> db.studentdetails.find()
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bd'),
    name: 'Samiksha',
    age: 22,
    gender: 'Female',
    course: 'Mechanical Engineering',
    marks: { math: 78, science: 82, english: 80 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710be'),
    name: 'Divya',
    age: 23,
    gender: 'Male',
    course: 'Electronics',
    marks: { math: 88, science: 85, english: 90 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bf'),
    name: 'Deepika',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
```

```
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c0'),
    name: 'Sairaj',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c1'),
    name: 'Bhakti',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c2'),
    name: 'Purva',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  }
]
student>
```

e. **Querying all the documents in json format and Querying based on the criteria (find() method) [Use comparison operators, logical query operators]**

- **Comparison Operator: -**

1. **Equal to(“$eq”):**

```
student> db.studentdetails.find({ age: { $eq: 21 } })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bf'),
    name: 'Deepika',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c0'),
    name: 'Sairaj',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c1'),
    name: 'Bhakti',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c2'),
    name: 'Purva',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  }
]
student>
```

2. **Greater than(“$gt”):**

```
student> db.studentdetails.find({ "marks.math": { $gt: 80 } })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710be'),
    name: 'Divya',
    age: 23,
    gender: 'Male',
    course: 'Electronics',
    marks: { math: 88, science: 85, english: 90 }
  }
]
student>
```

3. **Less than(“$lt”):**

```
student> db.studentdetails.find({ age: { $lt: 23 } })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bd'),
    name: 'Samiksha',
    age: 22,
    gender: 'Female',
    course: 'Mechanical Engineering',
    marks: { math: 78, science: 82, english: 80 }
  },
```

```
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bf'),
    name: 'Deepika',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c0'),
    name: 'Sairaj',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c1'),
    name: 'Bhakti',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c2'),
    name: 'Purva',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  }
]
student>
```

4. **Greater than equal to(“$gte”):**

```
student> db.studentdetails.find({ "marks.science": { $gte: 85 } })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710be'),
    name: 'Divya',
    age: 23,
    gender: 'Male',
    course: 'Electronics',
    marks: { math: 88, science: 85, english: 90 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bf'),
    name: 'Deepika',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c0'),
    name: 'Sairaj',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c1'),
    name: 'Bhakti',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
```

```
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c2'),
    name: 'Purva',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  }
]
student>
```

5. **Less than equal to(“$lte”):**

```
student> db.studentdetails.find({ "marks.english": { $lte: 88 } })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bd'),
    name: 'Samiksha',
    age: 22,
    gender: 'Female',
    course: 'Mechanical Engineering',
    marks: { math: 78, science: 82, english: 80 }
  },
```

```
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bf'),
    name: 'Deepika',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c0'),
    name: 'Sairaj',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c1'),
    name: 'Bhakti',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c2'),
    name: 'Purva',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  }
]
student>
```

- **Logical Operators: -**

1. **AND(“$and”):**

```
student> db.studentdetails.find({
...   $and: [
...     { age: 21 },
...     { "marks.math": { $gt: 80 } }
...   ]
... })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  }
]
student>
```

2. **OR(“$or”):**

```
student> db.studentdetails.find({
...   $or: [
...     { age: 21 },
...     { course: "Computer Science" }
...   ]
... })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
```

```
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bf'),
    name: 'Deepika',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c0'),
    name: 'Sairaj',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c1'),
    name: 'Bhakti',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710c2'),
    name: 'Purva',
    age: 21,
    gender: 'Female',
    course: 'Biotechnology',
    marks: { math: 79, science: 89, english: 87 }
  }
]
student>
```

3. **IN(“$in”):**

```
student> db.studentdetails.find({
...   course: { $in: ["Computer Science", "Mechanical Engineering"] }
... })
[
  {
    _id: ObjectId('66c77579422cdcdf1f2710bc'),
    name: 'Vinayak',
    age: 21,
    gender: 'Male',
    course: 'Computer Science',
    marks: { math: 85, science: 90, english: 88 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bd'),
    name: 'Samiksha',
    age: 22,
    gender: 'Female',
    course: 'Mechanical Engineering',
    marks: { math: 78, science: 82, english: 80 }
  }
]
student>
```

4. **NOR(“$nor”):**

```
student> db.studentdetails.find({
...   $nor: [
...     { age: 21 },
...     { course: "Biotechnology" }
...   ]
... })
[
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bd'),
    name: 'Samiksha',
    age: 22,
    gender: 'Female',
    course: 'Mechanical Engineering',
    marks: { math: 78, science: 82, english: 80 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710be'),
    name: 'Divya',
    age: 23,
    gender: 'Male',
    course: 'Electronics',
    marks: { math: 88, science: 85, english: 90 }
  }
]
student>
```

5. **NOT(“$not”):**

```
student> db.studentdetails.find({
...    age: { $not: { $eq: 21 } }
... })
[
  {
    _id: ObjectId('66c7758c422cdcdf1f2710bd'),
    name: 'Samiksha',
    age: 22,
    gender: 'Female',
    course: 'Mechanical Engineering',
    marks: { math: 78, science: 82, english: 80 }
  },
  {
    _id: ObjectId('66c7758c422cdcdf1f2710be'),
    name: 'Divya',
    age: 23,
    gender: 'Male',
    course: 'Electronics',
    marks: { math: 88, science: 85, english: 90 }
  }
]
student>
```

f. Update Document

- **UpdateOne:**

```
student> db.studentdetails.updateOne(
...    { name: "Vinayak" },
...    {
...      $set: { course: "Data Science", "marks.science": 95 }
...    }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
student> db.studentdetails.findOne({ name: "Vinayak" })
{
  _id: ObjectId('66c77579422cdcdf1f2710bc'),
  name: 'Vinayak',
  age: 21,
  gender: 'Male',
  course: 'Data Science',
  marks: { math: 85, science: 95, english: 88 }
}
student>
```

- **UpdateMany:**

```
student> db.studentdetails.updateMany(
...     { age: 21 },
...     { $set: { course: "Software Engineering" } }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 5,
  modifiedCount: 5,
  upsertedCount: 0
}
student> db.studentdetails.findOne({age:21 })
{
  _id: ObjectId('66c77579422cdcdf1f2710bc'),
  name: 'Vinayak',
  age: 21,
  gender: 'Male',
  course: 'Software Engineering',
  marks: { math: 85, science: 95, english: 88 }
}
student>
```

g. Delete document from a collection

- **DeleteOne:**

```
student> db.studentdetails.deleteOne({ name: "Purva" })
{ acknowledged: true, deletedCount: 1 }
student> db.studentdetails.findOne({name:"Purva" })
null
student>
```

- **DeleteMany**

```
student> db.studentdetails.deleteMany({ age: 21 })
{ acknowledged: true, deletedCount: 4 }
student> db.studentdetails.findOne({age:21 })
null
student>
```

Q2) Create a student Collection with the fields: (SRN, Sname, Degree, Sem, CGPA)

```
student> db.createCollection("student")
{ ok: 1 }
student> show collections
student
studentdetails
student>
```

```
student> db.student.insertMany([
...    { SRN: "001", Sname: "Vinayak", Degree: "MCA", Sem: 1, CGPA: 8.5 },
...    { SRN: "002", Sname: "Samiksa", Degree: "BCA", Sem: 2, CGPA: 7.2 },
...    { SRN: "003", Sname: "Divya", Degree: "MCA", Sem: 3, CGPA: 9.0 },
...    { SRN: "004", Sname: "Deepika", Degree: "BCA", Sem: 4, CGPA: 6.8 },
...    { SRN: "005", Sname: "Bhakti", Degree: "MCA", Sem: 2, CGPA: 7.9 },
...    { SRN: "006", Sname: "Sairaj", Degree: "MCA", Sem: 4, CGPA: 9.1 },
...    { SRN: "007", Sname: "Purva", Degree: "BCA", Sem: 3, CGPA: 6.2 }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66c78c5e7bc2ba84222710bc'),
    '1': ObjectId('66c78c5e7bc2ba84222710bd'),
    '2': ObjectId('66c78c5e7bc2ba84222710be'),
    '3': ObjectId('66c78c5e7bc2ba84222710bf'),
    '4': ObjectId('66c78c5e7bc2ba84222710c0'),
    '5': ObjectId('66c78c5e7bc2ba84222710c1'),
    '6': ObjectId('66c78c5e7bc2ba84222710c2')
  }
}
student>
```

1. **Display all the documents**

```
student> db.student.find()
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bc'),
    SRN: '001',
    Sname: 'Vinayak',
    Degree: 'MCA',
    Sem: 1,
    CGPA: 8.5
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bd'),
    SRN: '002',
    Sname: 'Samiksa',
    Degree: 'BCA',
    Sem: 2,
    CGPA: 7.2
  },
```

```
  {
    _id: ObjectId('66c78c5e7bc2ba84222710be'),
    SRN: '003',
    Sname: 'Divya',
    Degree: 'MCA',
    Sem: 3,
    CGPA: 9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bf'),
    SRN: '004',
    Sname: 'Deepika',
    Degree: 'BCA',
    Sem: 4,
    CGPA: 6.8
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c0'),
    SRN: '005',
    Sname: 'Bhakti',
    Degree: 'MCA',
    Sem: 2,
    CGPA: 7.9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c1'),
    SRN: '006',
    Sname: 'Sairaj',
    Degree: 'MCA',
    Sem: 4,
    CGPA: 9.1
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c2'),
    SRN: '007',
    Sname: 'Purva',
    Degree: 'BCA',
    Sem: 3,
    CGPA: 6.2
  }
]
student>
```

2. **Display all the students in MCA**

```
student> db.student.find({ Degree: "MCA" })
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bc'),
    SRN: '001',
    Sname: 'Vinayak',
    Degree: 'MCA',
    Sem: 1,
    CGPA: 8.5
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710be'),
    SRN: '003',
    Sname: 'Divya',
    Degree: 'MCA',
    Sem: 3,
    CGPA: 9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c0'),
    SRN: '005',
    Sname: 'Bhakti',
    Degree: 'MCA',
    Sem: 2,
    CGPA: 7.9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c1'),
    SRN: '006',
    Sname: 'Sairaj',
    Degree: 'MCA',
    Sem: 4,
    CGPA: 9.1
  }
]
student>
```

3. **Display all the students in ascending order**

```
student> db.student.find().sort({ Sname: 1 })
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c0'),
    SRN: '005',
    Sname: 'Bhakti',
    Degree: 'MCA',
    Sem: 2,
    CGPA: 7.9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bf'),
    SRN: '004',
    Sname: 'Deepika',
    Degree: 'BCA',
    Sem: 4,
    CGPA: 6.8
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710be'),
    SRN: '003',
    Sname: 'Divya',
    Degree: 'MCA',
    Sem: 3,
    CGPA: 9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c2'),
    SRN: '007',
    Sname: 'Purva',
    Degree: 'BCA',
    Sem: 3,
    CGPA: 6.2
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c1'),
    SRN: '006',
    Sname: 'Sairaj',
    Degree: 'MCA',
    Sem: 4,
    CGPA: 9.1
  },
```

```
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bd'),
    SRN: '002',
    Sname: 'Samiksa',
    Degree: 'BCA',
    Sem: 2,
    CGPA: 7.2
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bc'),
    SRN: '001',
    Sname: 'Vinayak',
    Degree: 'MCA',
    Sem: 1,
    CGPA: 8.5
  }
]
student>
```

4. **Display first 5 students**

```
student> db.student.find().limit(5).pretty()
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bc'),
    SRN: '001',
    Sname: 'Vinayak',
    Degree: 'MCA',
    Sem: 1,
    CGPA: 8.5
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bd'),
    SRN: '002',
    Sname: 'Samiksa',
    Degree: 'BCA',
    Sem: 2,
    CGPA: 7.2
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710be'),
    SRN: '003',
    Sname: 'Divya',
    Degree: 'MCA',
    Sem: 3,
    CGPA: 9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bf'),
    SRN: '004',
    Sname: 'Deepika',
    Degree: 'BCA',
    Sem: 4,
    CGPA: 6.8
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c0'),
    SRN: '005',
    Sname: 'Bhakti',
    Degree: 'MCA',
    Sem: 2,
    CGPA: 7.9
  }
]
student>
```

5. **Display the degree of student “Rahul”**

```
]
student> db.student.find({ Sname: "Bhakti" }, { Degree: 1, _id: 0 })
[ { Degree: 'MCA' } ]
student>
```

6. **Display student details in descending order of percentage**

```
student> db.student.find().sort({ CGPA: -1 })
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c1'),
    SRN: '006',
    Sname: 'Sairaj',
    Degree: 'MCA',
    Sem: 4,
    CGPA: 9.1
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710be'),
    SRN: '003',
    Sname: 'Divya',
    Degree: 'MCA',
    Sem: 3,
    CGPA: 9
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bc'),
    SRN: '001',
    Sname: 'Vinayak',
    Degree: 'MCA',
    Sem: 1,
    CGPA: 8.5
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c0'),
    SRN: '005',
    Sname: 'Bhakti',
    Degree: 'MCA',
    Sem: 2,
    CGPA: 7.9
  },
```

```
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bd'),
    SRN: '002',
    Sname: 'Samiksa',
    Degree: 'BCA',
    Sem: 2,
    CGPA: 7.2
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bf'),
    SRN: '004',
    Sname: 'Deepika',
    Degree: 'BCA',
    Sem: 4,
    CGPA: 6.8
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c2'),
    SRN: '007',
    Sname: 'Purva',
    Degree: 'BCA',
    Sem: 3,
    CGPA: 6.2
  }
]
student>
```

7. **Display the number of of students in MCA**

```
]
student> db.student.countDocuments({ Degree: "MCA" })
4
student>
```

8. **Display all BCA students with CGPA greater than 6 but less than 8**

```
student> db.student.find({ Degree: "BCA", CGPA: { $gt: 6, $lt: 8 } })
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bd'),
    SRN: '002',
    Sname: 'Samiksa',
    Degree: 'BCA',
    Sem: 2,
    CGPA: 7.2
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bf'),
    SRN: '004',
    Sname: 'Deepika',
    Degree: 'BCA',
    Sem: 4,
    CGPA: 6.8
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c2'),
    SRN: '007',
    Sname: 'Purva',
    Degree: 'BCA',
    Sem: 3,
    CGPA: 6.2
  }
]
student>
```

9. **Display all the students in MCA and in 4th Sem**

```
student> db.student.find({ Degree: "MCA", Sem: 4 })
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c1'),
    SRN: '006',
    Sname: 'Sairaj',
    Degree: 'MCA',
    Sem: 4,
    CGPA: 9.1
  }
]
student>
```

10. **Display all information where student name starts with “A”**

```
student> db.student.find({ Sname: { $regex: /^S/ } })
[
  {
    _id: ObjectId('66c78c5e7bc2ba84222710bd'),
    SRN: '002',
    Sname: 'Samiksa',
    Degree: 'BCA',
    Sem: 2,
    CGPA: 7.2
  },
  {
    _id: ObjectId('66c78c5e7bc2ba84222710c1'),
    SRN: '006',
    Sname: 'Sairaj',
    Degree: 'MCA',
    Sem: 4,
    CGPA: 9.1
  }
]
student>
```

11. **Display name and degree of the students whose name starts with “A”**

```
student> db.student.find({ Sname: { $regex: /^D/ } }, { Sname: 1, Degree: 1, _id: 0 })
[
  { Sname: 'Divya', Degree: 'MCA' },
  { Sname: 'Deepika', Degree: 'BCA' }
]
student>
```

12. **Display name and degree of all students**

```
student> db.student.find({}, { Sname: 1, Degree: 1, _id: 0 })
[
  { Sname: 'Vinayak', Degree: 'MCA' },
  { Sname: 'Samiksa', Degree: 'BCA' },
  { Sname: 'Divya', Degree: 'MCA' },
  { Sname: 'Deepika', Degree: 'BCA' },
  { Sname: 'Bhakti', Degree: 'MCA' },
  { Sname: 'Sairaj', Degree: 'MCA' },
  { Sname: 'Purva', Degree: 'BCA' }
]
student>
```

Q3) Peform the following in MongoDB

Create an employee Collection with th fields: (eid, ename, dept, desig,salary,address{dno,street,locality,city})

```
student> use employee
switched to db employee
employee> db.createCollection("employee")
{ ok: 1 }
employee> show collections
employee
employee>
```

1. **Insert 10 documents**

```
employee> db.employee.insertMany([
...   { eid: "E001", ename: "Vinayak", dept: "IT", desig: "Developer", salary: 60000, address: { dno: "101", street: "Main St", locality: "Downtown", city: "Mumbai" } },
...   { eid: "E002", ename: "Samiksa", dept: "HR", desig: "Manager", salary: 90000, address: { dno: "102", street: "Second St", locality: "Midtown", city: "Navimumbai" }
},
...   { eid: "E003", ename: "Divya", dept: "Finance", desig: "Analyst", salary: 55000, address: { dno: "103", street: "Third St", locality: "Uptown", city: "Thane" } },
...   { eid: "E004", ename: "Deepika", dept: "IT", desig: "Developer", salary: 65000, address: { dno: "104", street: "Fourth St", locality: "Suburb", city: "Mumbai" } },
...   { eid: "E005", ename: "Bhakti", dept: "Sales", desig: "Executive", salary: 45000, address: { dno: "105", street: "Fifth St", locality: "Rural", city: "Navimumbai" }
 },
...   { eid: "E006", ename: "Purva", dept: "IT", desig: "Tester", salary: 50000, address: { dno: "106", street: "Sixth St", locality: "Downtown", city: "Thane" } },
...   { eid: "E007", ename: "Sairaj", dept: "Marketing", desig: "Manager", salary: 85000, address: { dno: "107", street: "Seventh St", locality: "Midtown", city: "Mumbai"
 } },
...   { eid: "E008", ename: "Yash", dept: "HR", desig: "Executive", salary: 40000, address: { dno: "108", street: "Eighth St", locality: "Suburb", city: "Navimumbai" } },

...   { eid: "E009", ename: "Pratik", dept: "Finance", desig: "Manager", salary: 95000, address: { dno: "109", street: "Ninth St", locality: "Uptown", city: "Thane" } },
...   { eid: "E010", ename: "Shubham", dept: "IT", desig: "Developer", salary: 70000, address: { dno: "110", street: "Tenth St", locality: "Downtown", city: "Mumbai" } }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66c796e07bc2ba84222710c3'),
    '1': ObjectId('66c796e07bc2ba84222710c4'),
    '2': ObjectId('66c796e07bc2ba84222710c5'),
    '3': ObjectId('66c796e07bc2ba84222710c6'),
    '4': ObjectId('66c796e07bc2ba84222710c7'),
    '5': ObjectId('66c796e07bc2ba84222710c8'),
    '6': ObjectId('66c796e07bc2ba84222710c9'),
    '7': ObjectId('66c796e07bc2ba84222710ca'),
    '8': ObjectId('66c796e07bc2ba84222710cb'),
    '9': ObjectId('66c796e07bc2ba84222710cc')
  }
}
employee>
```

2. **Display the salary of "Rohan"**

```
employee> db.employee.find({ ename: "Yash" }, { salary: 1, _id: 0 })
[ { salary: 40000 } ]
employee>
```

3. **Display the city of employee "Ajit"**

```
employee> db.employee.find({ ename: "Deepika" }, { "address.city": 1, _id: 0 })
[ { address: { city: 'Mumbai' } } ]
employee>
```

4. **Update the salary of developers by 5000 increment**

```
employee> db.employee.find({ desig: "Developer" })
[
  {
    _id: ObjectId('66c796e07bc2ba84222710c3'),
    eid: 'E001',
    ename: 'Vinayak',
    dept: 'IT',
    desig: 'Developer',
    salary: 65000,
    address: {
      dno: '101',
      street: 'Main St',
      locality: 'Downtown',
      city: 'Mumbai'
    }
  },
```

5. **Add file age to employee “Ajit”**

```
employee> db.employee.find({ ename: "Purva" })
[
  {
    _id: ObjectId('66c796e07bc2ba84222710c8'),
    eid: 'E006',
    ename: 'Purva',
    dept: 'IT',
    desig: 'Tester',
    salary: 50000,
    address: {
      dno: '106',
      street: 'Sixth St',
      locality: 'Downtown',
      city: 'Thane'
    },
    age: 30
  }
]
employee>
```

6. **Remove all fields desig from “Rahul”**

```
employee> db.employee.updateOne(
...    { ename: "Divya" },
...    { $unset: { desig: "" } }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
employee> db.employee.find({ ename: "Divya" })
[
  {
    _id: ObjectId('66c796e07bc2ba84222710c5'),
    eid: 'E003',
    ename: 'Divya',
    dept: 'Finance',
    salary: 55000,
    address: {
      dno: '103',
      street: 'Third St',
      locality: 'Uptown',
      city: 'Thane'
    }
  }
]
employee>
```

7. **Display all employees from having designation “Manager” and salary 90000**

```
]
employee> db.employee.find({ desig: "Manager", salary: 90000 })
[
  {
    _id: ObjectId('66c796e07bc2ba84222710c4'),
    eid: 'E002',
    ename: 'Samiksa',
    dept: 'HR',
    desig: 'Manager',
    salary: 90000,
    address: {
      dno: '102',
      street: 'Second St',
      locality: 'Midtown',
      city: 'Navimumbai'
    }
  }
]
employee>
```

8. **Delete all documents where salary<2000**

```
employee> db.employee.deleteMany({ salary: { $lt: 55000 } })
{ acknowledged: true, deletedCount: 3 }
employee> db.employee.find({ ename: "Bhakti" })

employee> db.employee.find({ ename: "Purva" })

employee> db.employee.find({ ename: "Yash" })

employee>
```