ASSIGNMENT-06

Connect with MongoDB from mongo shell and perform the following operations using the MongoDB functions.

use('assi6db')

1. Create two collections named studentInfo and studentAcademicInfo.

db.createCollection("studentInfo");

db.createCollection("studentAcademicInfo");

OUTPUT:-

assi6db

LOGICAL DATA SIZE: 2.76KB   STORAGE SIZE: 72KB   INDEX SIZE: 72KB   TOTAL COLLECTIONS: 2   **CREATE COLLECTION**

Collection Name	Documents	Logical Data Size	Avg Document Size	Storage Size	Indexes	Index Size	Avg Index Size
studentAcademicInfo	10	989B	99B	36KB	1	36KB	36KB
studentInfo	10	1.8KB	184B	36KB	1	36KB	36KB

2. Insert the respective record of "Rahul Sharma" in both collections.

db.studentInfo.insertOne({

   name: "Rahul Sharma",

   rollno: 101,

   mobile: "9876543210",

   email: "rahul.sharma@example.com",

   address: { city: "Bhubaneswar", state: "Odisha", pin: "400001" }});

db.studentAcademicInfo.insertOne({

   rollno: 101,

   program: "B.Tech",

   branch: "Computer Science",

   cgpa: 8.8

});

OUTPUT:-

studentInfo	studentAcademicInfo
_id: ObjectId('67c0877477427df861451d38') name : "Rahul Sharma" rollno : 101 mobile : "9876543210" email : "rahul.sharma@example.com" ▸ address : Object	_id: ObjectId('67c0877477427df861451d39') rollno : 101 program : "B.Tech" branch : "Computer Science" cgpa : 8.8

NAME: Subhasish Tripathy   SIC: 22BCSH15   ROLL NO: 21(A1)

NAME: Subhasish Tripathy   SIC: 22BCSH15   ROLL NO: 21(A1)

3. Using the insertMany function insert the reset of the documents in the respective collections.

```
db.studentInfo.insertMany([
    {
        name: "Priya Patel",
        rollno: 102,
        mobile: "8765432109",
        email: "priya.patel@example.com",
        address: { city: "Ahmedabad", state: "Gujarat", pin: "380001" }
    },
    {
        name: "Sandeep Singh",
        rollno: 103,
        mobile: "7654321098",
        email: "sandeep.singh@example.com",
        address: { city: "Delhi", state: "Delhi", pin: "110001" }
    },
    {
        name: "Neha Gupta",
        rollno: 104,
        mobile: "6543210987",
        email: "neha.gupta@example.com",
        address: { city: "Bangalore", state: "Karnataka", pin: "560001" }
    },
    {
        name: "Rajesh Verma",
        rollno: 105,
        mobile: "5432109876",
        email: "rajesh.verma@example.com",
        address: { city: "Chennai", state: "Tamil Nadu", pin: "600001" }
    },
    {
```

```
      name: "Anita Sharma",

      rollno: 106,

      mobile: "4321098765",

      email: "anita.sharma@example.com",

      address: { city: "Kolkata", state: "West Bengal", pin: "700001" }

    },

    {

      name: "Amit Patel",

      rollno: 107,

      mobile: "3210987654",

      email: "amit.patel@example.com",

      address: { city: "Hyderabad", state: "Telangana", pin: "500001" }

    },

    {

      name: "Deepa Singh",

      rollno: 108,

      mobile: "2109876543",

      email: "deepa.singh@example.com",

      address: { city: "Pune", state: "Maharashtra", pin: "411001" }

    },

    {

      name: "Rajat Verma",

      rollno: 109,

      mobile: "1098765432",

      email: "rajat.verma@example.com",

      address: { city: "Jaipur", state: "Rajasthan", pin: "302001" }

    },

    {

      name: "Pooja Gupta",

      rollno: 110,

      mobile: "9876543210",
```

```
        email: "pooja.gupta@example.com",

        address: { city: "Lucknow", state: "Uttar Pradesh", pin: "226001" }

    }

]);

db.studentAcademicInfo.insertMany([

    {

        rollno: 102,

        program: "B.Tech",

        branch: "Mechanical Engineering",

        cgpa: 9.5

    },

    {

        rollno: 103,

        program: "B.Tech",

        branch: "Electrical Engineering",

        cgpa: 8.9

    },

    {

        rollno: 104,

        program: "B.Tech",

        branch: "Civil Engineering",

        cgpa: 7.7

    },

    {

        rollno: 105,

        program: "B.Tech",

        branch: "Electrical Engineering",

        cgpa: 9.0

    },

    {

        rollno: 106,
```

```
      program: "B.Tech",

      branch: "Information Technology",

      cgpa: 9.6

    },

    {

      rollno: 107,

      program: "M.Tech",

      branch: "Aerospace Engineering",

      cgpa: 9.9

    },

    {

      rollno: 108,

      program: "M.Tech",

      branch: "Biotechnology",

      cgpa: 8.8

    },

    {

      rollno: 109,

      program: "B.Tech",

      branch: "Computer Science",

      cgpa: 9.7

    },

    {

      rollno: 110,

      program: "B.Tech",

      branch: "Computer Science",

      cgpa: 9.0

    }

]);
```

OUTPUT:-

studentInfo	studentAcademicInfo
_id: ObjectId('67c0877477427df861451d38') name : "Rahul Sharma" rollno : 101 mobile : "9876543210" email : "rahul.sharma@example.com" ▸ address : Object	_id: ObjectId('67c0877477427df861451d39') rollno : 101 program : "B.Tech" branch : "Computer Science" cgpa : 8.8
_id: ObjectId('67c088aef6d3d31e3be61b3c') name : "Priya Patel" rollno : 102 mobile : "8765432109" email : "priya.patel@example.com" ▸ address : Object	_id: ObjectId('67c088aff6d3d31e3be61b45') rollno : 102 program : "B.Tech" branch : "Mechanical Engineering" cgpa : 9.5
_id: ObjectId('67c088aef6d3d31e3be61b3d') name : "Sandeep Singh" rollno : 103 mobile : "7654321098" email : "sandeep.singh@example.com" ▸ address : Object	_id: ObjectId('67c088aff6d3d31e3be61b46') rollno : 103 program : "B.Tech" branch : "Electrical Engineering" cgpa : 8.9 _id: ObjectId('67c088aff6d3d31e3be61b47')

4. Display all the available documents from both the collections.

db.studentInfo.find();

db.studentAcademicInfo.find();

OUTPUT:-

studentInfo	studentAcademicInfo

[
  {
    "_id": {
     "$oid": "67c0877477427df861451d38"
    },
    "name": "Rahul Sharma",
    "rollno": 101,
    "mobile": "9876543210",
    "email": "rahul.sharma@example.com",
    "address": {
     "city": "Bhubaneswar",
     "state": "Odisha",
     "pin": "400001"
    }
  },
 {
    "_id": {
     "$oid": "67c088aef6d3d31e3be61b3c"
    },
    "name": "Priya Patel",............
	[
	  {
	    "_id": {
	     "$oid": "67c0877477427df861451d39"
	    },
	    "rollno": 101,
	    "program": "B.Tech",
	    "branch": "Computer Science",
	    "cgpa": 8.8
	  },
	  {
	    "_id": {
	     "$oid": "67c088aff6d3d31e3be61b45"
	    },
	    "rollno": 102,
	    "program": "B.Tech",
	    "branch": "Mechanical Engineering",
	    "cgpa": 9.5
	  },
	  {..........

5. Display all the available documents from both the collections.

db.studentAcademicInfo.find({ rollno: 102 });

OUTPUT:-

```
"_id": {

    "$oid": "67c088aff6d3d31e3be61b45"

  },

  "rollno": 102,

  "program": "B.Tech",

  "branch": "Mechanical Engineering",

  "cgpa": 9.5
```

6. Update the mobile number of roll number 103 to 9876543211

db.studentInfo.updateOne({ rollno: 103 }, { $set: { mobile: "9876543211" } });

OUTPUT:-

{"_id":{"$oid":"67c088aef6d3d31e3be61b3d"},"name":"Sandeep Singh","rollno":{"$numberInt":"103"},"mobile":"9876543211","email":"sandeep.singh@example.com","address":{"city":"Delhi","state":"Delhi","pin":"110001"}}

7. Update the address of roll number 106 and set city to Cuttack and state to Odisha

db.studentInfo.updateOne({ rollno: 106 }, { $set: { "address.city": "Cuttack", "address.state": "Odisha" } });

OUTPUT:-

{"_id":{"$oid":"67c088aef6d3d31e3be61b40"},"name":"Anita Sharma","rollno":{"$numberInt":"106"},"mobile":"4321098765","email":"anita.sharma@example.com","address":{"city":"Cuttack","state":"Odisha","pin":"700001"}}

8. Update the branch name from "Computer Science" to "Computer Science and Engineering"

db.studentAcademicInfo.updateMany(

  { branch: "Computer Science" },

  { $set: { branch: "Computer Science and Engineering" } }

);

OUTPUT:-

{"_id":{"$oid":"67c0877477427df861451d39"},"rollno":{"$numberInt":"101"},"program":"B.Tech","branch":"Computer Science and Engineering","cgpa":{"$numberDouble":"8.8"}}

9. Display the academic details of the students who have a 9 or more CGPA.

db.studentAcademicInfo.find({ cgpa: { $gte: 9 } });

OUTPUT:-

```
"_id": {
    "$oid": "67c088aff6d3d31e3be61b45"
  },
  "rollno": 102,
  "program": "B.Tech",
  "branch": "Mechanical Engineering",
  "cgpa": 9.5
},.....
```

10. Display the academic details of the Computer Science and engineering students who have scored more than 9.

db.studentAcademicInfo.find({ branch: "Computer Science and Engineering", cgpa: { $gt: 9 } });

OUTPUT:-

```
"_id": {
    "$oid": "67c088aff6d3d31e3be61b4c"
  },
  "rollno": 109,
  "program": "B.Tech",
  "branch": "Computer Science and Engineering",
  "cgpa": 9.7
```

11. Display the students' details from the states – Odisha, Maharashtra, and Karnataka.

db.studentInfo.find({ "address.state": { $in: ["Odisha", "Maharashtra", "Karnataka"] } });

OUTPUT:-

12. Display the academic details in descending order of CGPA.

db.studentAcademicInfo.find().sort({ cgpa: -1 });

OUTPUT:-

```
"_id": {
    "$oid": "67c0877477427df861451d38"
```

```
  },

  "name": "Rahul Sharma",

  "rollno": 101,

  "mobile": "9876543210",

  "email": "rahul.sharma@example.com",

  "address": {

   "city": "Bhubaneswar",

   "state": "Odisha",

   "pin": "400001"

},……….
```

13. Display the academic details in descending order of CGPA.

```
db.studentAcademicInfo.aggregate([

  { $group: { _id: "$branch", count: { $sum: 1 } } }

]);
```

OUTPUT:-

```
{

  "_id": "Computer Science and Engineering",

  "count": 3

 },

 {

  "_id": "Biotechnology",

  "count": 1

 },

 {

  "_id": "Mechanical Engineering",

  "count": 1

 },

 {

  "_id": "Aerospace Engineering",

  "count": 1

 },
```

```
 {
  "_id": "Civil Engineering",
  "count": 1
 },
 {
  "_id": "Electrical Engineering",
  "count": 2
 },
 {
  "_id": "Information Technology",
  "count": 1
 }
```

14. Display the number of students enrolled in the M.Tech program.

db.studentAcademicInfo.countDocuments({ program: "M.Tech" });

OUTPUT:-

2

15. Display the average CGPA of all the students.

```
db.studentAcademicInfo.aggregate([
   { $group: { _id: null, avgCGPA: { $avg: "$cgpa" } } }
]);
```

OUTPUT:-

```
"_id": null,
   "avgCGPA": 9.09
```

16. Display all the details of each student available in the database.

```
db.studentInfo.aggregate([
  {
    $lookup: {
       from: "studentAcademicInfo",
       localField: "rollno",
       foreignField: "rollno",
       as: "academicDetails"
```

```
      }
    }
]);
```

OUTPUT:-

```
{
  "_id": {
    "$oid": "67c0877477427df861451d38"
  },
  "name": "Rahul Sharma",
  "rollno": 101,
  "mobile": "9876543210",
  "email": "rahul.sharma@example.com",
  "address": {
    "city": "Bhubaneswar",
    "state": "Odisha",
    "pin": "400001"
  },
  "academicDetails": [
    {
      "_id": {
        "$oid": "67c0877477427df861451d39"
      },
      "rollno": 101,
      "program": "B.Tech",
      "branch": "Computer Science and Engineering",
      "cgpa": 8.8
    }
  ]
},.........
```

17. Display the roll, name, program, branch, and cgpa of each student.

db.studentAcademicInfo.find({}, { rollno: 1, program: 1, branch: 1, cgpa: 1, _id: 0 });

OUTPUT:-

```
{
   "rollno": 101,
   "program": "B.Tech",
   "branch": "Computer Science and Engineering",
   "cgpa": 8.8
 },
 {
   "rollno": 102,
   "program": "B.Tech",
   "branch": "Mechanical Engineering",
   "cgpa": 9.5
 },.......
```

18. Display the roll, name, city, state, and cgpa of the students who are from Odisha.

```
db.studentInfo.aggregate([
  {
    $lookup: {
      from: "studentAcademicInfo",
      localField: "rollno",
      foreignField: "rollno",
      as: "academicDetails"
    }
  },
  { $match: { "address.state": "Odisha" } },
  { $project: { rollno: 1, name: 1, "address.city": 1, "address.state": 1, "academicDetails.cgpa": 1, _id:
0 } }
]);
```

OUTPUT:-

```
{
  "name": "Rahul Sharma",
  "rollno": 101,
  "address": {
    "city": "Bhubaneswar",
    "state": "Odisha"
  },
  "academicDetails": [
    {
      "cgpa": 8.8
    }
  ]
},
{
  "name": "Anita Sharma",
  "rollno": 106,
  "address": {
    "city": "Cuttack",
    "state": "Odisha"
  },
  "academicDetails": [
    {
      "cgpa": 9.6
    }
  ]
}
```

19. Delete the Info and Academic Info of roll number 109

db.studentInfo.deleteOne({ rollno: 109 });

db.studentAcademicInfo.deleteOne({ rollno: 109 });

20. Delete all the students from the M.Tech program

db.studentInfo.deleteMany({ rollno: { $in: db.studentAcademicInfo.distinct("rollno", { program: "M.Tech" }) } });

db.studentAcademicInfo.deleteMany({ program: "M.Tech" });

NAME: Subhasish Tripathy
SIC: 22BCSH15
ROLL NO: 21(A1)