1. Student Collection (`students`)

- **Total Records:** 10-15 students
- **Fields:**
  - **`_id` (Unique student ID)**
  - **`name` (Full name)**
  - **`age` (Student's age)**
  - **`department` (CSE)**
  - **`year` (Year of study: 1 to 4)**
  - **`subjects` (Array of subjects enrolled)**
  - **`cgpa` (Cumulative Grade Point Average)**

Example Data for `students`

```
db.students.insertMany([
  { _id: 1, name: "Amit Kumar", age: 20, department: "CSE",
year: 2, subjects: ["DBMS", "OS", "DSA"], cgpa: 8.5 },
  { _id: 2, name: "Priya Sharma", age: 21, department: "CSE",
year: 3, subjects: ["Networks", "AI", "DSA"], cgpa: 8.9 },
  { _id: 3, name: "Rahul Verma", age: 22, department: "CSE",
year: 4, subjects: ["Web Dev", "Cloud", "DBMS"], cgpa: 8.2 },
  { _id: 4, name: "Sneha Singh", age: 19, department: "CSE",
year: 1, subjects: ["Math", "Physics", "Python"], cgpa: 7.9 }
]);
```

---

2. Faculty Collection (`faculty`)

- **Total Records:** 5-10 faculty members
- **Fields:**
  - `_id` (Unique faculty ID)
  - `name` (Full name)
  - `age` (Faculty member's age)
  - `department` (CSE)
  - `designation` (Assistant Professor, Associate Professor, HOD, etc.)
  - `experience` (Years of experience)
  - `courses_taught` (Array of subjects they teach)

Example Data for `faculty`

```
db.faculty.insertMany([
  { _id: 101, name: "Dr. Rajesh Mehta", age: 45, department:
"CSE", designation: "Professor", experience: 20,
courses_taught: ["DBMS", "AI"] },
  { _id: 102, name: "Prof. Anjali Das", age: 38, department:
"CSE", designation: "Associate Professor", experience: 12,
courses_taught: ["OS", "Networks"] },
  { _id: 103, name: "Dr. Vikram Sinha", age: 50, department:
"CSE", designation: "HOD", experience: 25, courses_taught:
["Cloud Computing", "Cyber Security"] },
```

```
  { _id: 104, name: "Ms. Neha Reddy", age: 30, department:
"CSE", designation: "Assistant Professor", experience: 6,
courses_taught: ["Python", "DSA"] }
]);
```

---

20 MongoDB CRUD and Aggregation Questions

Basic CRUD Operations

1. Insert a new student named "Ankit Tiwari" who is in the 2nd year with subjects "OS" and "DBMS".
2. Retrieve all students in the **3rd year**.
3. Find the student named "Priya Sharma" and display only their **name and CGPA**.
4. Update "Rahul Verma" to add **"Cyber Security"** to his subjects.
5. Delete the student **"Sneha Singh"** from the database.
6. Increase the **CGPA of all students** by **0.2 points**.
7. Fetch all students who have enrolled in the **"DSA"** subject.
8. Insert a **new faculty member** named "Dr. Manish Gupta", an **Assistant Professor** with 5 years of experience, teaching **"AI"**.
9. Find all faculty members who have more than **10 years of experience**.
10. Update **Dr. Vikram Sinha's** designation from **HOD to Dean**.

Aggregation & Filtering

11. Count the total number of students in the **CSE department**.
12. Find the **average CGPA** of all students.
13. Get the **youngest student** in the CSE department.
14. Retrieve faculty members who teach **both "OS" and "Networks"**.
15. Find students who have more than **2 subjects enrolled**.
16. Retrieve the student with the **highest CGPA**.
17. Find the faculty member with the **most years of experience**.
18. Sort students by **CGPA in descending order**.
19. Group students by **year of study** and count how many are in each year.
20. Get the total number of **faculty members** who have **more than 15 years of experience**.
