

# Practical MongoDB Questions

## ♦ Find / Query Operations

- Find the names and CGPAs of all students from the "IT" department.  
`db.students.find({ department: "IT" }, { name: 1, cgpa: 1 });`
  - List all students whose CGPA is greater than or equal to 8.5. Show only their name, roll number, and department. `db.students.find( { cgpa: { $gte: 8.5 } }, { name: 1, roll_no: 1, department: 1 } );`
  - Find students who are in either the "ECE" or "ME" department using \$in.  
`db.students.find( { department: { $in: ["ECE", "ME"] } } );`
  - Get the name and CGPA of students who are in the 4th year and have a CGPA greater than 8.0.  
`db.students.find( { year: 4, cgpa: { $gt: 8.0 } }, { name: 1, cgpa: 1, _id: 0 } );`
  - Find all students who are not in the "CSE" department and have a CGPA less than or equal to 7.5 using \$and and \$ne. `db.students.find( { $and: [ { department: { $ne: "CSE" } }, { cgpa: { $lte: 7.5 } } ] });`
- 

## ♦ Sort / Pagination

- Display the top 3 students with the highest CGPA across all departments.  
`db.students.find() .sort({ cgpa: -1 }) .limit(3) ;`
  - Show the next 3 students after skipping the top 3 based on CGPA (pagination).  
`db.students.find() .sort({ cgpa: -1 }) .skip(3) .limit(3) ;`
- 

## ♦ Update Operations

- Increase the CGPA by 0.2 for all students in the "CSE" department.  
`db.students.updateMany( { department: "CSE" }, { $inc: { cgpa: 0.2 } } );`
  - Set the department to "Probation" for all students with CGPA less than 7.0.  
`db.students.updateMany( { cgpa: { $lt: 7.0 } }, { $set: { department: "Probation" } } );`
  - Remove the email field from all students in the "ME" department.  
`db.students.updateMany( { department: "ME" }, { $unset: { email: "" } } );`
- 

## Bonus (Advanced)

- Rename the field cgpa to gpa for all students.  
`db.students.updateMany({}, { $rename: { "cgpa": "gpa" } } );`
- Replace the entire document of a student with roll number "CSE2104" with a new record containing updated values. `db.students.replaceOne( { roll_no: "CSE2104" }, { roll_no: "CSE2104", name: "Updated Name", year: 3, department: "IT", gpa: 8.9, });`

DataSet:

```
db.students.insertMany([
    { roll_no: "CSE2101", name: "Aarav Sharma", year: 2, department: "CSE", cgpa: 8.5,
      email: "aarav.cse@univ.edu" },
    { roll_no: "ECE2102", name: "Priya Verma", year: 2, department: "ECE", cgpa: 8.2,
      email: "priya.ece@univ.edu" },
    { roll_no: "ME2103", name: "Rahul Singh", year: 2, department: "ME", cgpa: 7.8,
      email: "rahul.me@univ.edu" },
    { roll_no: "CSE2104", name: "Simran Kaur", year: 2, department: "CSE", cgpa: 9.0,
      email: "simran.cse@univ.edu" },
    { roll_no: "IT2105", name: "Aditya Patel", year: 2, department: "IT", cgpa: 8.7,
      email: "aditya.it@univ.edu" },
    { roll_no: "CSE2201", name: "Neha Jain", year: 3, department: "CSE", cgpa: 9.1,
      email: "neha.cse@univ.edu" },
    { roll_no: "ECE2202", name: "Rohan Mehta", year: 3, department: "ECE", cgpa: 8.3,
      email: "rohan.ece@univ.edu" },
    { roll_no: "ME2203", name: "Sneha Reddy", year: 3, department: "ME", cgpa: 7.6,
      email: "sneha.me@univ.edu" },
    { roll_no: "IT2204", name: "Vikas Nair", year: 3, department: "IT", cgpa: 8.4, email:
      "vikas.it@univ.edu" },
    { roll_no: "CSE2301", name: "Meera Joshi", year: 4, department: "CSE", cgpa: 9.3,
      email: "meera.cse@univ.edu" },
    { roll_no: "ECE2302", name: "Ankit Bansal", year: 4, department: "ECE", cgpa: 8.1,
      email: "ankit.ece@univ.edu" },
    { roll_no: "ME2303", name: "Pooja Yadav", year: 4, department: "ME", cgpa: 7.5,
      email: "pooja.me@univ.edu" },
    { roll_no: "IT2304", name: "Karan Gupta", year: 4, department: "IT", cgpa: 8.9,
      email: "karan.it@univ.edu" },
    { roll_no: "CSE2401", name: "Riya Malhotra", year: 1, department: "CSE", cgpa: 8.0,
      email: "riya.cse@univ.edu" },
    { roll_no: "ECE2402", name: "Aman Khan", year: 1, department: "ECE", cgpa: 7.9,
      email: "aman.ece@univ.edu" },
    { roll_no: "ME2403", name: "Ishita Desai", year: 1, department: "ME", cgpa: 8.1,
      email: "ishita.me@univ.edu" },
    { roll_no: "IT2404", name: "Dev Mishra", year: 1, department: "IT", cgpa: 8.6, email:
      "dev.it@univ.edu" },
    { roll_no: "CSE2405", name: "Tanya Roy", year: 1, department: "CSE", cgpa: 8.7,
      email: "tanya.cse@univ.edu" },
    { roll_no: "ECE2406", name: "Nikhil Rao", year: 1, department: "ECE", cgpa: 7.8,
      email: "nikhil.ece@univ.edu" },
    { roll_no: "ME2407", name: "Shreya Pandey", year: 1, department: "ME", cgpa: 8.2,
      email: "shreya.me@univ.edu" }
]);
```