

Student Performance Tracker

Context:

A university wants to track students' marks across various subjects using MongoDB.

Collection: students

Sample Document:

```
{
  "roll_no": 101,
  "name": "Ankita Desai",
  "department": "IT",
  "marks": [
    { "subject": "DBMS", "score": 78 },
    { "subject": "AI", "score": 89 },
    { "subject": "OS", "score": 91 }
  ]
}
```

Tasks:

1. Insert at least 5 student documents with varying subjects and marks.
2. Retrieve all students with more than 85 in "AI".
3. Update the DBMS score of student roll_no: 101 to 85.
4. Delete a student with roll_no: 105.
5. Use aggregation to find the average score in OS across all students.

```
-- Step 1: Create & Use Database
use university
```

```
-- Step 2: Create the students Collection (Automatically created on insert)
db.createCollection("students")
```

```
-- Step 3: Insert 5 Student Documents
```

```
db.students.insertMany([
  {
    roll_no: 101,
    name: "Ankita Desai",
    department: "IT",
    marks: [
      { subject: "DBMS", score: 78 },
      { subject: "AI", score: 89 },
      { subject: "OS", score: 91 }
    ]
  },
  {
    roll_no: 102,
    name: "Rahul Mehta",
    department: "CSE",
    marks: [
      { subject: "DBMS", score: 88 },
      { subject: "AI", score: 92 },

```

```

    { subject: "OS", score: 85 }
  ]
},
{
  roll_no: 103,
  name: "Priya Nair",
  department: "ECE",
  marks: [
    { subject: "DBMS", score: 67 },
    { subject: "AI", score: 72 },
    { subject: "OS", score: 79 }
  ]
},
{
  roll_no: 104,
  name: "Suresh Kumar",
  department: "IT",
  marks: [
    { subject: "DBMS", score: 91 },
    { subject: "AI", score: 86 },
    { subject: "OS", score: 88 }
  ]
},
{
  roll_no: 105,
  name: "Neha Patel",
  department: "CSE",
  marks: [
    { subject: "DBMS", score: 84 },
    { subject: "AI", score: 68 },
    { subject: "OS", score: 80 }
  ]
}
])

-- Step 4: Find Students with AI > 85
db.students.find({
  marks: {
    $elemMatch: { subject: "AI", score: { $gt: 85 } }
  }
})

-- Step 5: Update DBMS Score of Roll No 101 to 85
db.students.updateOne(
  { roll_no: 101, "marks.subject": "DBMS" },
  { $set: { "marks.$.score": 85 } }
)

-- Step 6: Delete Student with Roll No 105
db.students.deleteOne({ roll_no: 105 })

```

```
-- Step 7: Find Average Score in OS (Across All Students)
db.students.aggregate([
  { $unwind: "$marks" },
  { $match: { "marks.subject": "OS" } },
  {
    $group: {
      _id: null,
      average_OS_score: { $avg: "$marks.score" }
    }
  }
])
```