LAB ASSIGNMENT – 4

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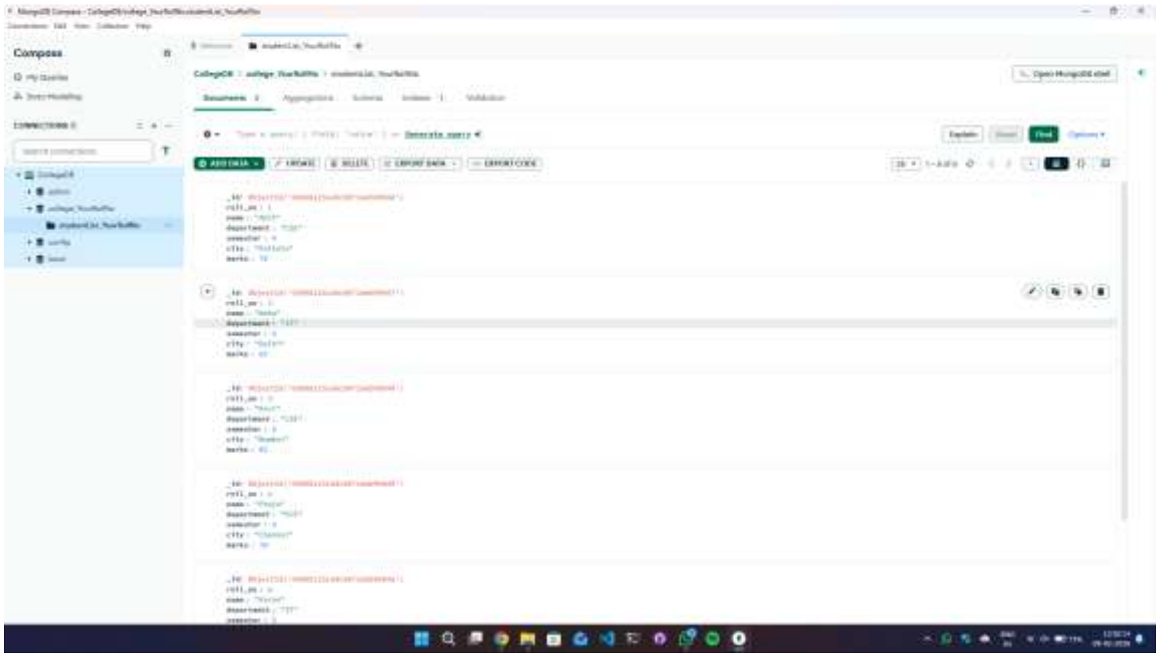
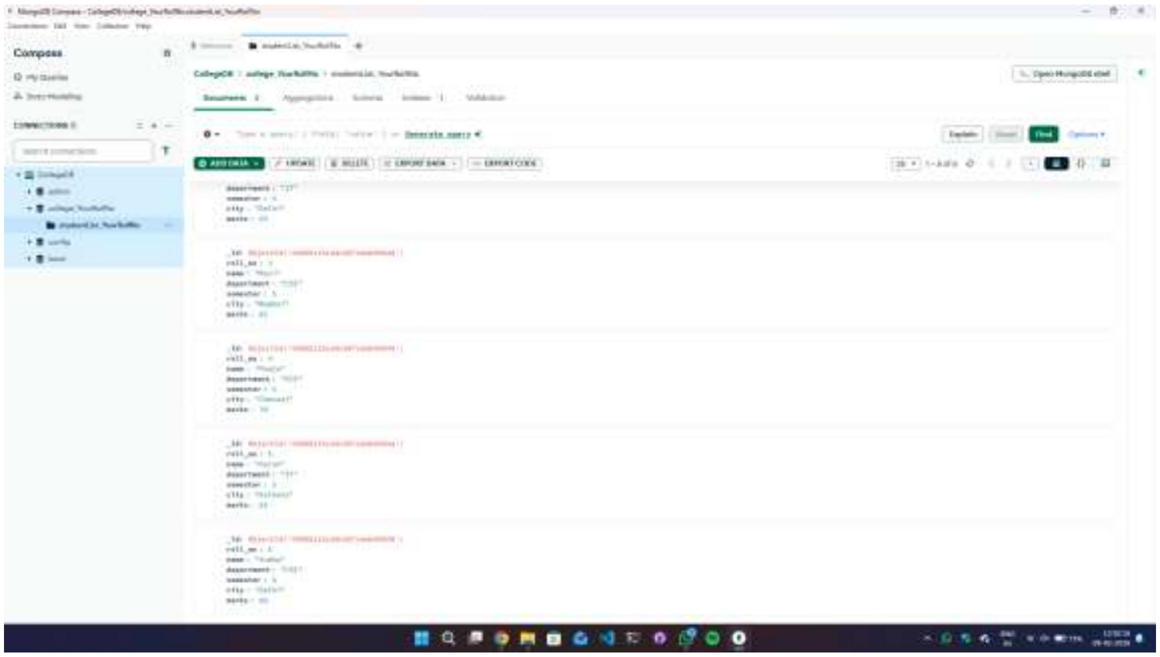
Programme: B.Tech CSE(DA)
Roll Number: UG/02/BTCSEDA/2023/004
Registration No: AU/2023/0009796

MongoDB Aggregation Lab Answers

Given table :

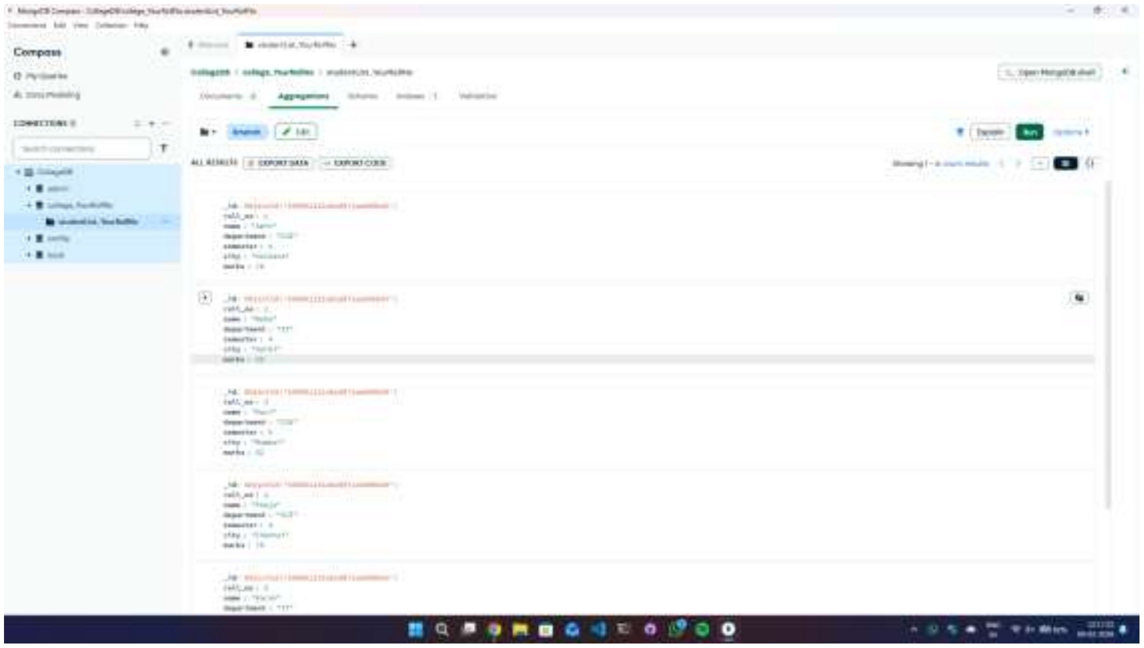
Roll No	Name	Department	Semester	City	Marks
1	Amit	CSE	4	Kolkata	78
2	Neha	IT	4	Delhi	65
3	Ravi	CSE	5	Mumbai	82
4	Pooja	ECE	4	Chennai	70
5	Karan	IT	5	Kolkata	55
6	Sneha	CSE	4	Delhi	88





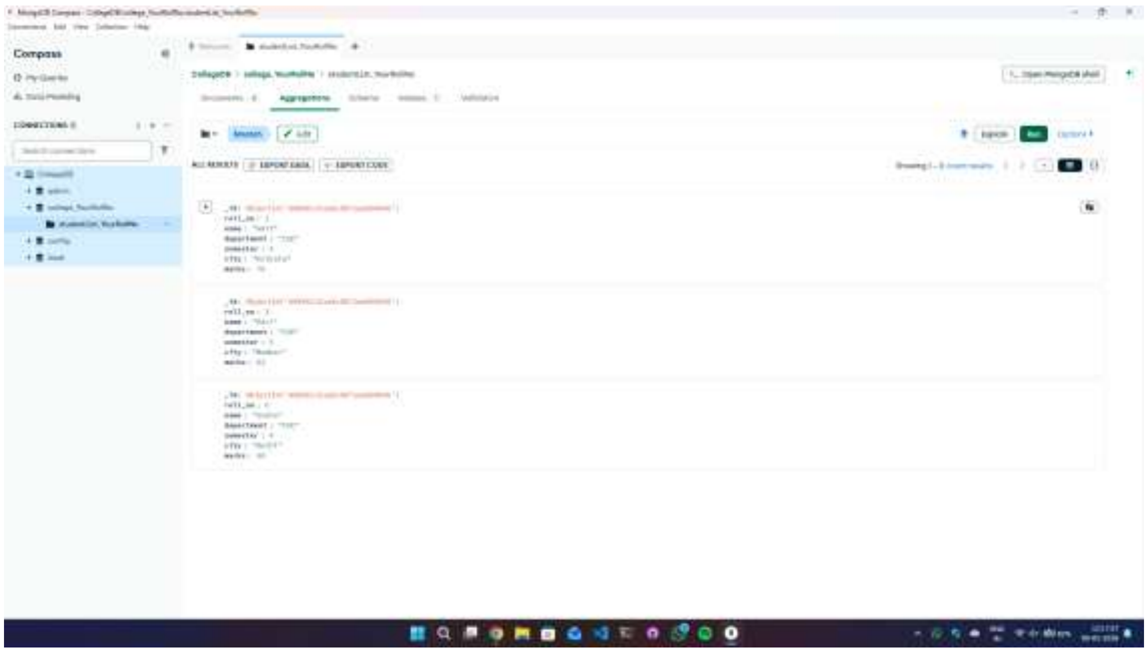
Q1. Display all student records using aggregation.

db.studentList.aggregate([{ $match: {} }])



Q2. Display students belonging to CSE department.

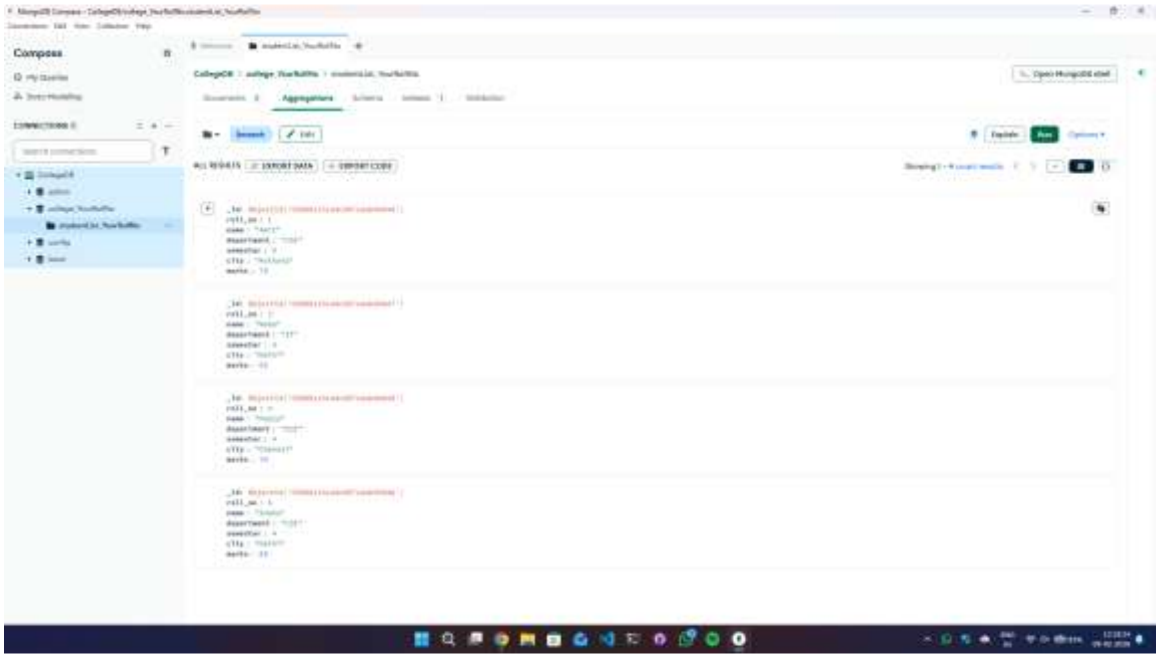
db.studentList.aggregate([{ $match: { department: 'CSE' } }])



```
_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : [illegible]
semester : [illegible]
city : [illegible]
marks : [illegible]

_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : [illegible]
semester : [illegible]
city : [illegible]
marks : [illegible]

_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : [illegible]
semester : 4
city : [illegible]
marks : [illegible]
```

Q3. Display students of semester 4.

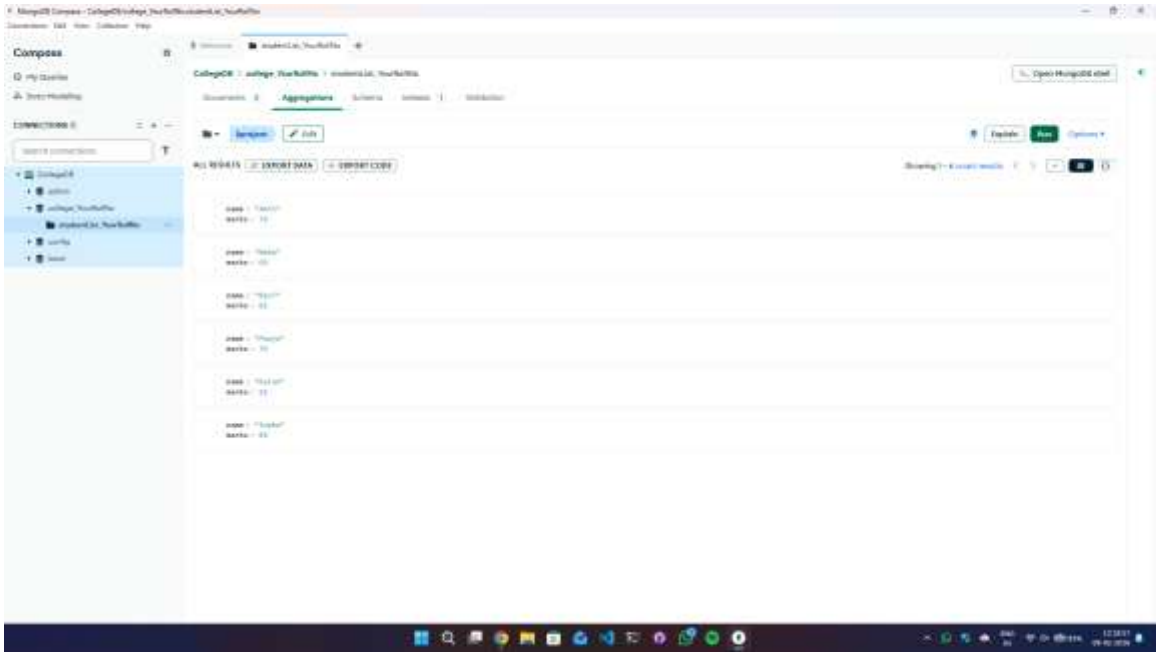
db.studentList.aggregate([{ $match: { semester: 4 } }])



```
_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : [illegible]
semester : 4
city : [illegible]
marks : [illegible]

_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : "IT"
semester : 4
city : [illegible]
marks : [illegible]

_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : [illegible]
semester : 4
city : [illegible]
marks : [illegible]

_id: [illegible]
roll_no : [illegible]
name : [illegible]
department : [illegible]
semester : 4
city : [illegible]
marks : [illegible]
```

Q4. Display only name and marks of all students.

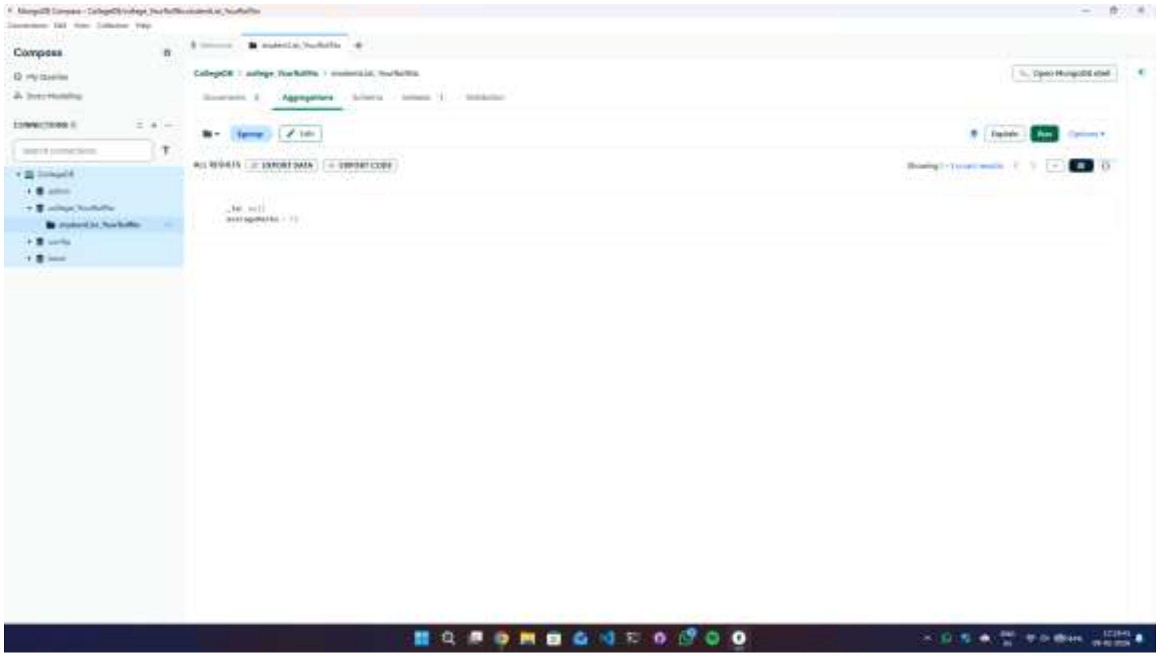
db.studentList.aggregate([{ $project: { _id: 0, name: 1, marks: 1 } }])



```
name : [illegible]
marks : [illegible]

name : [illegible]
marks : [illegible]

name : [illegible]
marks : [illegible]

name : [illegible]
marks : [illegible]

name : [illegible]
marks : [illegible]

name : [illegible]
marks : [illegible]
```

Q5. Find the average marks of all students.

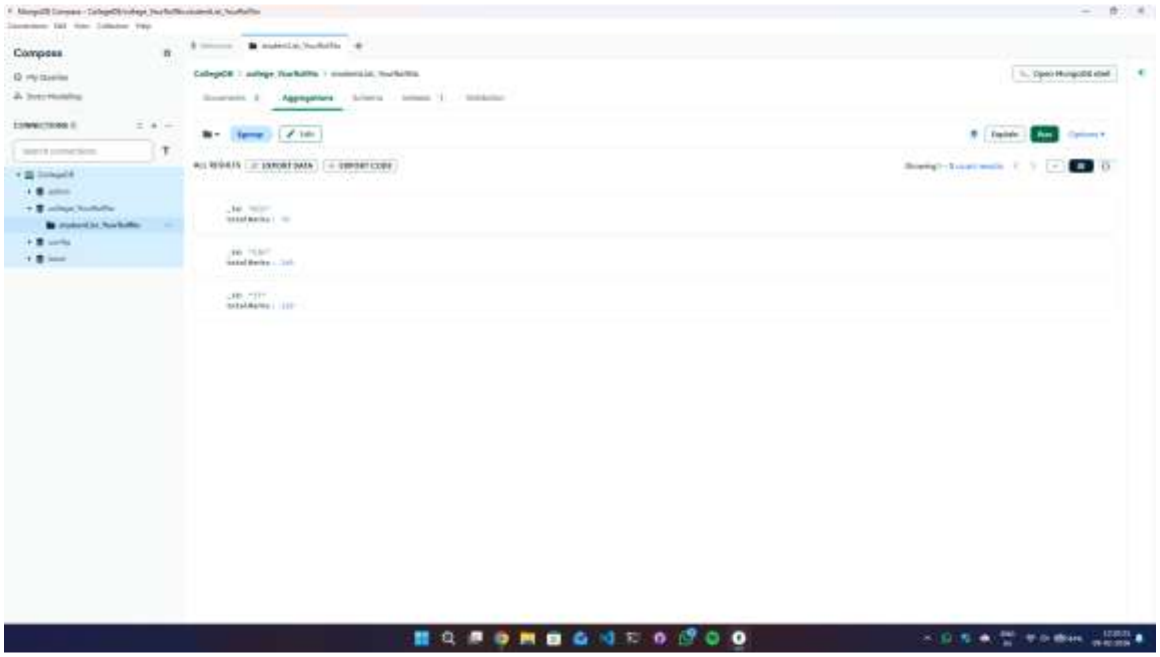
db.studentList.aggregate([{ $group: { _id: null, averageMarks: { $avg: '$marks' } } }])



```
_id : null
averageMarks : [illegible]
```

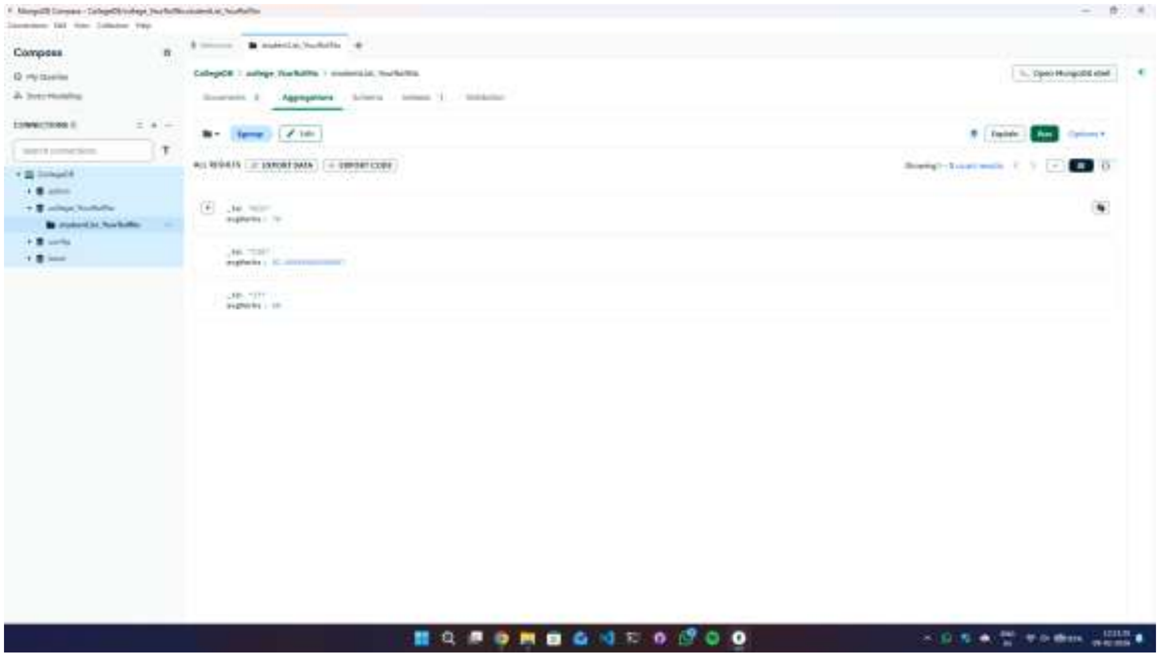
Q6. Find total marks scored department-wise.

db.studentList.aggregate([{ $group: { _id: '$department', totalMarks: { $sum: '$marks' } } }])



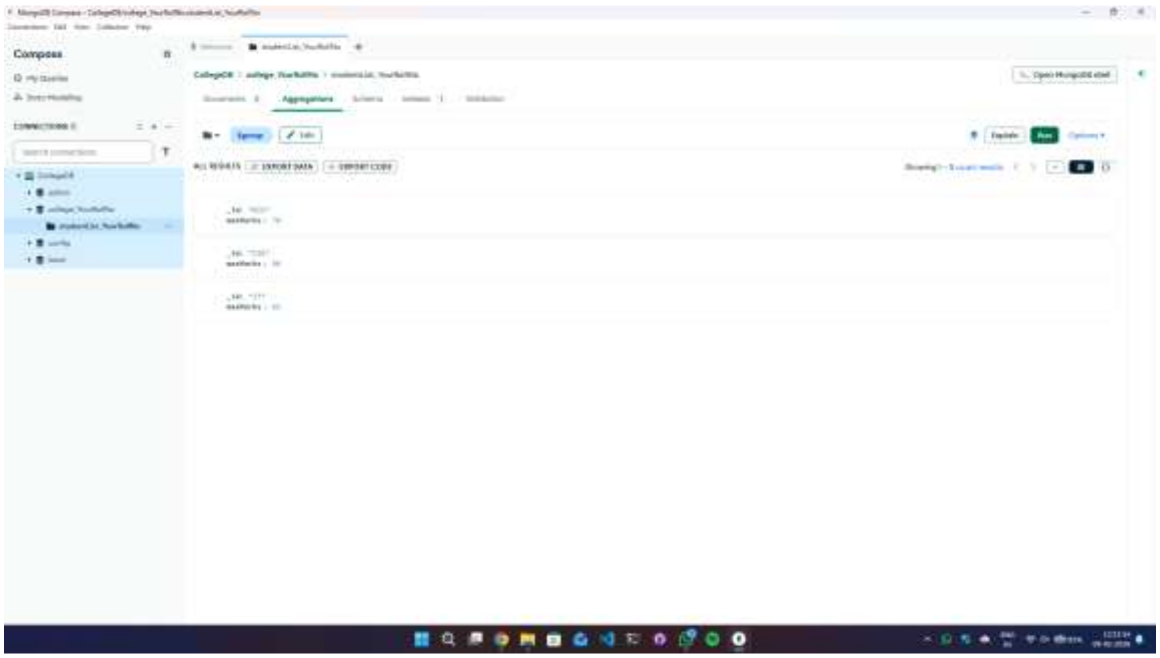
Q7. Find average marks department-wise.

db.studentList.aggregate([{ $group: { _id: '$department', averageMarks: { $avg: '$marks' } } }])



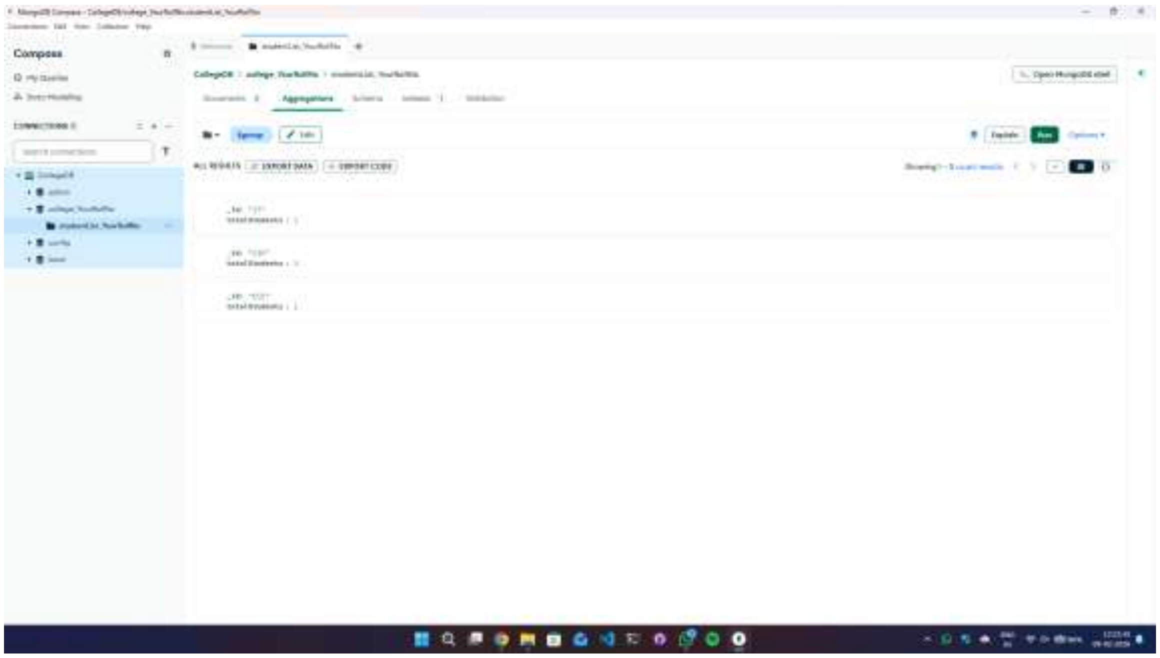
Q8. Find maximum marks scored in each department.

db.studentList.aggregate([{ $group: { _id: '$department', maxMarks: { $max: '$marks' } } }])



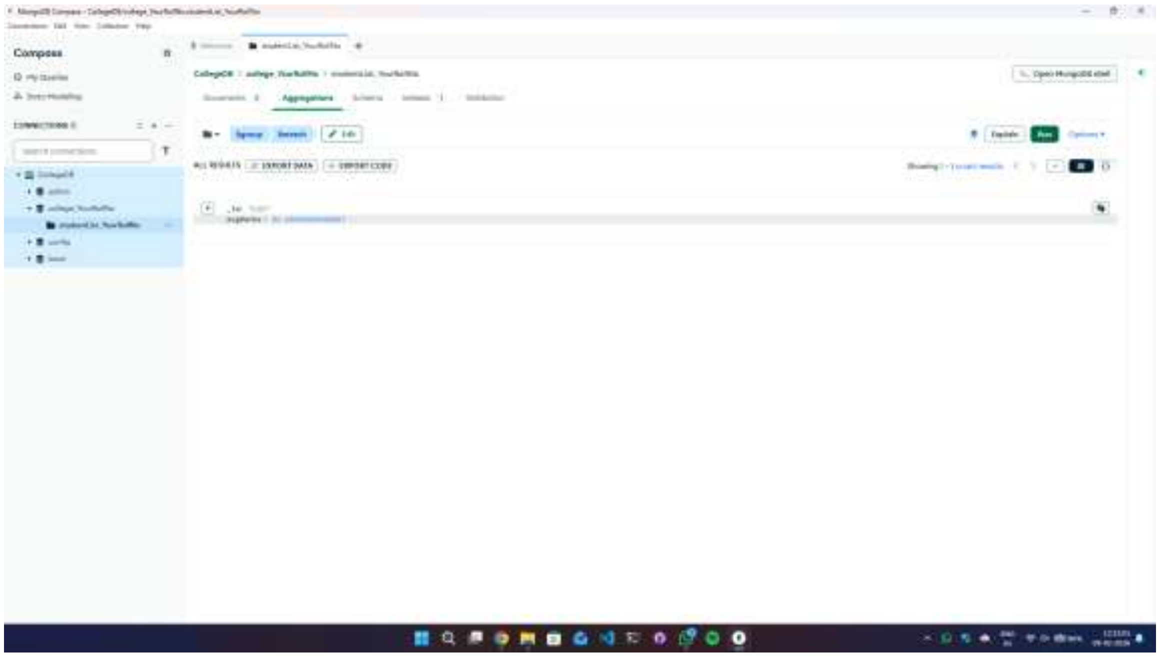
Q9. Count number of students in each department.

db.studentList.aggregate([{ $group: { _id: '$department', count: { $sum: 1 } } }])



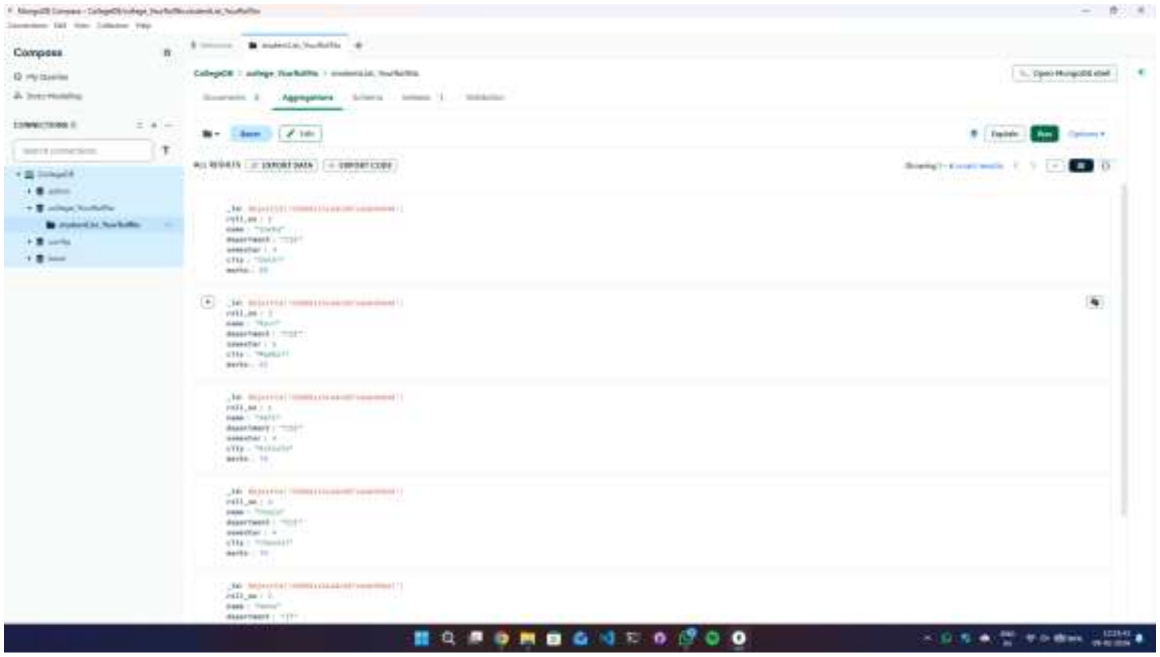
Q10. Display departments having average marks greater than 70.

db.studentList.aggregate([{ $group: { _id: '$department', averageMarks: { $avg: '$marks' } } }, { $match: { averageMarks: { $gt: 70 } } }])



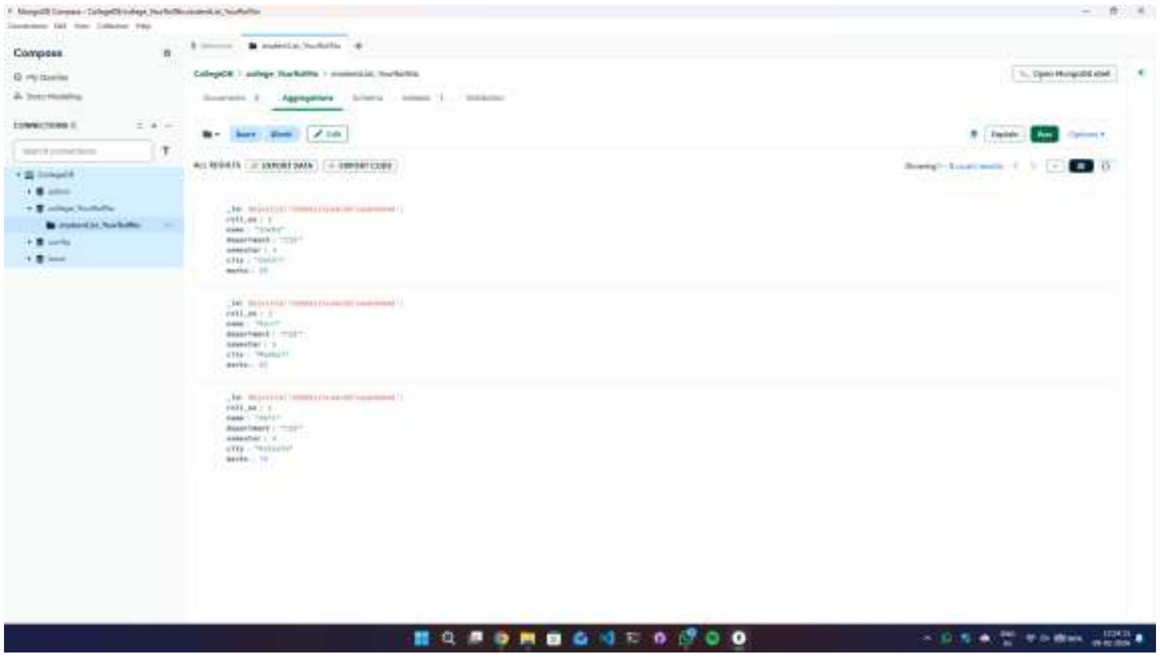
Q11. Sort students by marks in descending order.

```
db.studentList.aggregate([{ $sort: { marks: -1 } }])
```



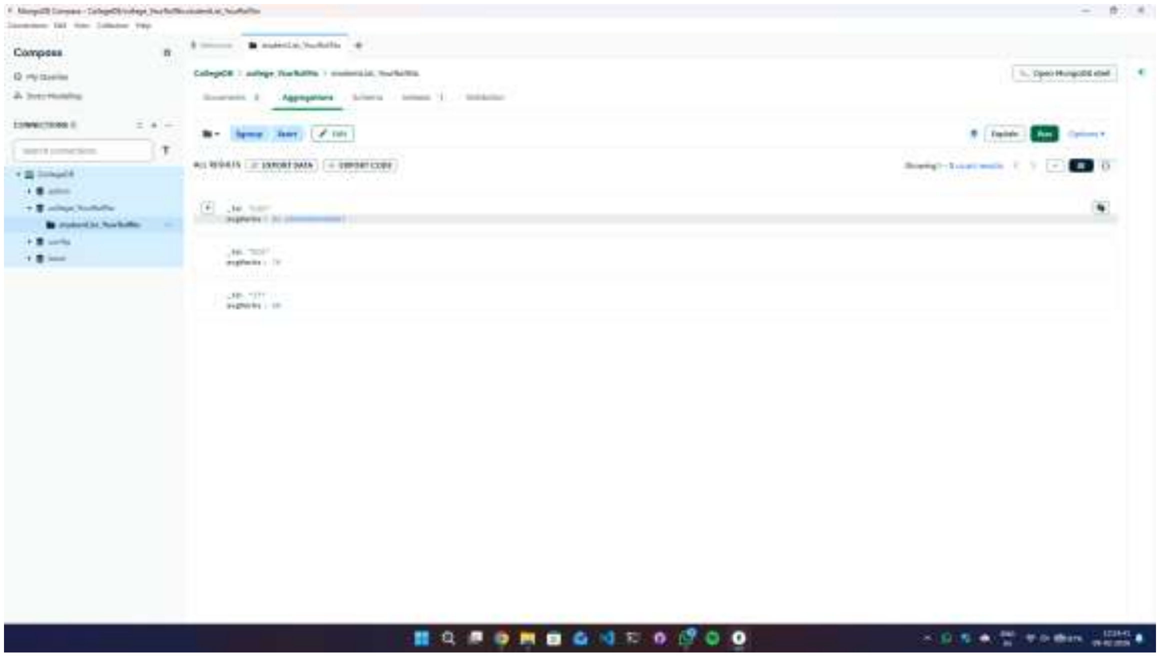
Q12. Display top 3 students based on marks.

```
db.studentList.aggregate([{ $sort: { marks: -1 } }, { $limit: 3 }])
```



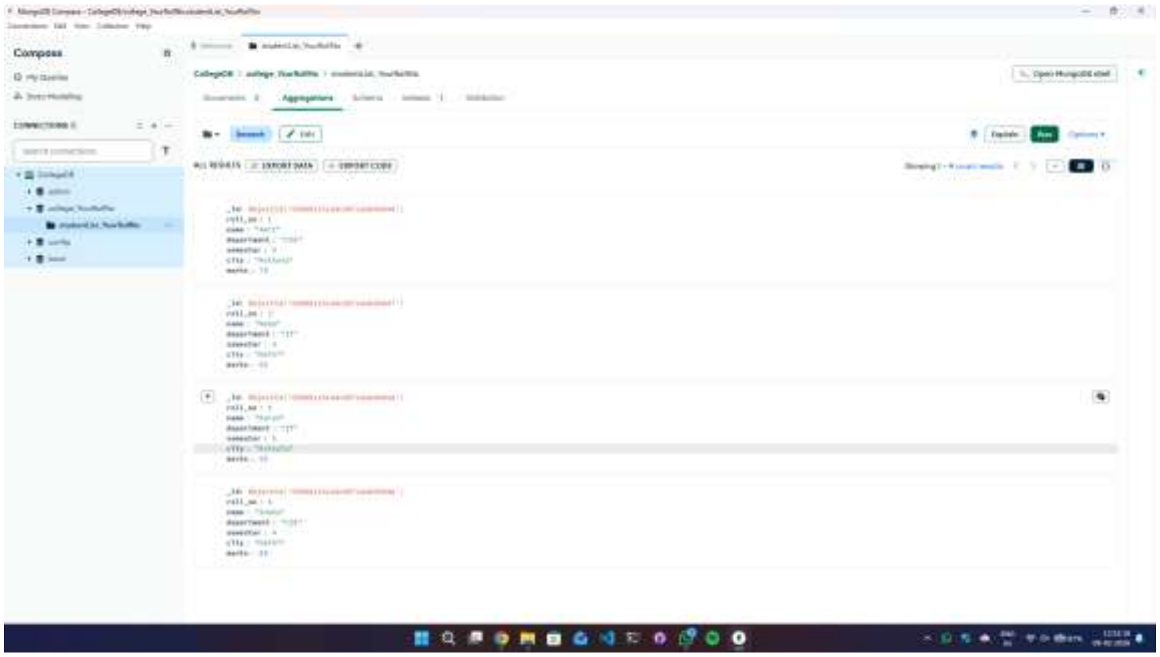
Q13. Display department-wise average marks sorted in descending order.

db.studentList.aggregate([{ $group: { _id: '$department', averageMarks: { $avg: '$marks' } } }, { $sort: { averageMarks: -1 } }])



Q14. Display students belonging to Delhi or Kolkata.

db.studentList.aggregate([{ $match: { city: { $in: ['Delhi', 'Kolkata'] } } }])



```
_id: ObjectId('[illegible]')
roll_no : 1
name : "[illegible]"
department : "CSE"
semester : [illegible]
city : "[illegible]"
marks : [illegible]

_id: ObjectId('[illegible]')
roll_no : 2
name : "[illegible]"
department : "IT"
semester : [illegible]
city : "[illegible]"
marks : [illegible]

_id: ObjectId('[illegible]')
roll_no : [illegible]
name : "[illegible]"
department : "IT"
semester : [illegible]
city : "[illegible]"
marks : [illegible]

_id: ObjectId('[illegible]')
roll_no : [illegible]
name : "[illegible]"
department : "CSE"
semester : 4
city : "[illegible]"
marks : [illegible]
```