

MongoDB Lab - Advanced Functions for Beginners

MongoDB Advanced Functions (Beginner Friendly)

1. Query Operators

Find documents with age greater than 18:

```
db.students.find({ age: { $gt: 18 } })
```

Find students with age between 18 and 21:

```
db.students.find({ age: { $gte: 18, $lte: 21 } })
```

Find students with grade A or B:

```
db.students.find({ grade: { $in: ["A", "B"] } })
```

2. Sorting and Limiting

Sort students by age ascending:

```
db.students.find().sort({ age: 1 })
```

Sort by age descending:

```
db.students.find().sort({ age: -1 })
```

Limit results to 2 documents:

```
db.students.find().limit(2)
```

3. Projection (Return selected fields only)

Return only name and age (hide _id):

```
db.students.find({}, { name: 1, age: 1, _id: 0 })
```

4. Aggregation Framework

Count number of students per grade:

```
db.students.aggregate([
  { $group: { _id: "$grade", count: { $sum: 1 } } }
])
```

Average age of students:

```
db.students.aggregate([
  { $group: { _id: null, averageAge: { $avg: "$age" } } }
])
```

5. Indexing

Create an index on name field:

```
db.students.createIndex({ name: 1 })
```

View all indexes:

```
db.students.getIndexes()
```

6. Embedded Documents and Arrays

Insert document with embedded address:

```
db.students.insertOne({  
  name: "Sita",  
  age: 22,  
  address: { city: "Delhi", zip: "110001" }  
})
```

Query on embedded field:

```
db.students.find({ "address.city": "Delhi" })
```

Insert with array of subjects:

```
db.students.insertOne({  
  name: "Ram",  
  subjects: ["Math", "English", "Science"]  
})
```

Query students taking "Math":

```
db.students.find({ subjects: "Math" })
```

7. Count Documents

Total documents in collection:

```
db.students.countDocuments({})
```

Count documents with grade A:

```
db.students.countDocuments({ grade: "A" })
```

8. Rename Field

Rename field 'grade' to 'performance':

```
db.students.updateMany({}, { $rename: { "grade": "performance" } })
```

9. Backup & Restore (from system command line)

Backup:

```
mongodump --db=school --out=C:\backup\school
```

Restore:

```
mongorestore --db=school C:\backup\school
```