db.students.insertMany([

{ name: "Ravi", age: 20, course: "BSc", marks: 75 },

{ name: "Sita", age: 19, course: "BA", marks: 85 },

{ name: "Amit", age: 21, course: "BSc", marks: 90 },

{ name: "Pooja", age: 18, course: "BA", marks: 70 }

])

### **1. $group – Group by course and calculate average marks**

db.students.aggregate([

{

$group: {

\_id: "$course",

averageMarks: { $avg: "$marks" }

}

}

])

### **2. $match – Filter before grouping (like WHERE)**

db.students.aggregate([

{ $match: { course: "BSc" } },

{ $group: { \_id: "$course", totalMarks: { $sum: "$marks" } } }

])

### **3. $sort – Sort results**

db.students.aggregate([

{ $sort: { marks: -1 } } // -1 = descending

])

### **4. $project – Show only selected fields**

db.students.aggregate([

{ $project: { name: 1, course: 1, \_id: 0 } }

])

PART 2: Indexing in MongoDB

1.**Create Index on a field**

db.students.createIndex({ name: 1 }) // 1 = ascending

### **2. Create Compound Index (multiple fields)**

db.students.createIndex({ course: 1, marks: -1 })

### **3. View all indexes**

db.students.getIndexes()

### **4. Drop an index**

db.students.dropIndex("name\_1") // index name from getIndexes()