> db.createCollection("student");

{ "ok" : 1 }

> db.student.insert({Rollno:1,name:'Anom',subject:'DBMS',marks:78});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:24,name:'Rushikesh',subject:'OS',marks:90});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:73,name:'Gayatri',subject:'TOC',marks:80});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:73,name:'Himali',subject:'TOC',marks:78});

WriteResult({ "nInserted" : 1 })

> db.student.find()

{ "\_id" : ObjectId("5eabcd1f681a2cb3fbb871fd"), "Rollno" : 1, "name" : "Anom", "subject" : "DBMS", "marks" : 78 }

{ "\_id" : ObjectId("5eabcd73681a2cb3fbb871fe"), "Rollno" : 24, "name" : "Rushikesh", "subject" : "OS", "marks" : 90 }

{ "\_id" : ObjectId("5eabcdc0681a2cb3fbb871ff"), "Rollno" : 73, "name" : "Gayatri", "subject" : "TOC", "marks" : 80 }

{ "\_id" : ObjectId("5eabcdd1681a2cb3fbb87200"), "Rollno" : 73, "name" : "Himali", "subject" : "TOC", "marks" : 78 }

**MIN():**

>> db.student.aggregate([{$group : {\_id : "$subject", marks : {$min : "$marks"}}}]);

{ "\_id" : "OS", "marks" : 90 }

{ "\_id" : "DBMS", "marks" : 78 }

{ "\_id" : "TOC", "marks" : 78 }

**MAX():**

> db.student.aggregate([{$group : {\_id : "$subject", marks : {$max : "$marks"}}}]);

{ "\_id" : "OS", "marks" : 90 }

{ "\_id" : "DBMS", "marks" : 78 }

{ "\_id" : "TOC", "marks" : 80 }

**SUM():**

> db.student.aggregate([{$group : {\_id : "$subject", marks : {$sum : "$marks"}}}]);

{ "\_id" : "OS", "marks" : 90 }

{ "\_id" : "DBMS", "marks" : 78 }

{ "\_id" : "TOC", "marks" : 158 }

**AVG():**

> db.student.aggregate([{$group : {\_id : "$subject", marks : {$avg : "$marks"}}}]);

{ "\_id" : "OS", "marks" : 90 }

{ "\_id" : "DBMS", "marks" : 78 }

{ "\_id" : "TOC", "marks" : 79 }

**FIRST():**

> db.student.aggregate([{$group : {\_id : "$subject", marks : {$first : "$marks"}}}]);

{ "\_id" : "OS", "marks" : 90 }

{ "\_id" : "DBMS", "marks" : 78 }

{ "\_id" : "TOC", "marks" : 80 }

**LAST():**

> db.student.aggregate([{$group : {\_id : "$subject", marks : {$last : "$marks"}}}]);

{ "\_id" : "OS", "marks" : 90 }

{ "\_id" : "DBMS", "marks" : 78 }

{ "\_id" : "TOC", "marks" : 78 }

***mongodb indexing***

> use mydb

switched to db mydb

> db.student.insert({Rollno:1,name:'Anom ',subject:'DBMS',marks:78});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:2,name:'Gayatri ',subject:'TOC',marks:80});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:3,name:'Himali ',subject:'TOC',marks:79});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:4,name:'Rushikesh ',subject:'OS',marks:90});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:5,name:'Viraj ',subject:'TOC',marks:70});

WriteResult({ "nInserted" : 1 })

> db.student.find();

{ "\_id" : ObjectId("5eabd58663764a265e7a254e"), "Rollno" : 1, "name" : "Anom ", "subject" : "DBMS", "marks" : 78 }

{ "\_id" : ObjectId("5eabd58763764a265e7a254f"), "Rollno" : 2, "name" : "Gayatri ", "subject" : "TOC", "marks" : 80 }

{ "\_id" : ObjectId("5eabd58863764a265e7a2550"), "Rollno" : 3, "name" : "Himali ", "subject" : "TOC", "marks" : 79 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2551"), "Rollno" : 4, "name" : "Rushikesh ", "subject" : "OS", "marks" : 90 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2552"), "Rollno" : 5, "name" : "Viraj ", "subject" : "TOC", "marks" : 70 }

**USING ENSURE INDEX:**

> db.student.ensureIndex({Rollno:1});

{

"createdCollectionAutomatically" : false,

"numIndexesBefore" : 1,

"numIndexesAfter" : 2,

"ok" : 1

}

**USING GET INDEX:**

> db.student.getIndexes();

[

{

"v" : 2,

"key" : {

"\_id" : 1

},

"name" : "\_id\_",

"ns" : "mydb.student"

},

{

"v" : 2,

"key" : {

"Rollno" : 1

},

"name" : "Rollno\_1",

"ns" : "mydb.student"

}

**USING MINIMUM INDEX:**

> db.student.find().min({Rollno:4}).hint({Rollno:1});

{ "\_id" : ObjectId("5eabd58963764a265e7a2551"), "Rollno" : 4, "name" : "Rushikesh ", "subject" : "OS", "marks" : 90 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2552"), "Rollno" : 5, "name" : "Viraj ", "subject" : "TOC", "marks" : 70 }

**USING MAXIMUM INDEX:**

> db.student.find().max({Rollno:2}).hint({Rollno:1});

{ "\_id" : ObjectId("5eabd58663764a265e7a254e"), "Rollno" : 1, "name" : "Anom ", "subject" : "DBMS", "marks" : 78 }

**USING MINIMUM INDEX:**

> db.student.find().max({Rollno:3}).hint({Rollno:1});

{ "\_id" : ObjectId("5eabd58663764a265e7a254e"), "Rollno" : 1, "name" : "Anom ", "subject" : "DBMS", "marks" : 78 }

{ "\_id" : ObjectId("5eabd58763764a265e7a254f"), "Rollno" : 2, "name" : "Gayatri ", "subject" : "TOC", "marks" : 80 }

> db.student.find().min({Rollno:2}).hint({Rollno:1});

{ "\_id" : ObjectId("5eabd58763764a265e7a254f"), "Rollno" : 2, "name" : "Gayatri ", "subject" : "TOC", "marks" : 80 }

{ "\_id" : ObjectId("5eabd58863764a265e7a2550"), "Rollno" : 3, "name" : "Himali ", "subject" : "TOC", "marks" : 79 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2551"), "Rollno" : 4, "name" : "Rushikesh ", "subject" : "OS", "marks" : 90 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2552"), "Rollno" : 5, "name" : "Viraj ", "subject" : "TOC", "marks" : 70 }

**SORT INDEX IN ASCENDING**

> db.student.find().sort({Rollno:1});

{ "\_id" : ObjectId("5eabd58663764a265e7a254e"), "Rollno" : 1, "name" : "Anom ", "subject" : "DBMS", "marks" : 78 }

{ "\_id" : ObjectId("5eabd58763764a265e7a254f"), "Rollno" : 2, "name" : "Gayatri ", "subject" : "TOC", "marks" : 80 }

{ "\_id" : ObjectId("5eabd58863764a265e7a2550"), "Rollno" : 3, "name" : "Himali ", "subject" : "TOC", "marks" : 79 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2551"), "Rollno" : 4, "name" : "Rushikesh ", "subject" : "OS", "marks" : 90 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2552"), "Rollno" : 5, "name" : "Viraj ", "subject" : "TOC", "marks" : 70 }

**SORTING IN DESCENDING**

> db.student.find().sort({Rollno:-1});

{ "\_id" : ObjectId("5eabd58963764a265e7a2552"), "Rollno" : 5, "name" : "Viraj ", "subject" : "TOC", "marks" : 70 }

{ "\_id" : ObjectId("5eabd58963764a265e7a2551"), "Rollno" : 4, "name" : "Rushikesh ", "subject" : "OS", "marks" : 90 }

{ "\_id" : ObjectId("5eabd58863764a265e7a2550"), "Rollno" : 3, "name" : "Himali ", "subject" : "TOC", "marks" : 79 }

{ "\_id" : ObjectId("5eabd58763764a265e7a254f"), "Rollno" : 2, "name" : "Gayatri ", "subject" : "TOC", "marks" : 80 }

{ "\_id" : ObjectId("5eabd58663764a265e7a254e"), "Rollno" : 1, "name" : "Anom ", "subject" : "DBMS", "marks" : 78 }

**ENSURE INDEX:**

> db.student.ensureIndex({Rollno:-1});

{

"createdCollectionAutomatically" : false,

"numIndexesBefore" : 2,

"numIndexesAfter" : 3,

"ok" : 1

}

> db.student.getIndexes();

[

{

"v" : 2,

"key" : {

"\_id" : 1

},

"name" : "\_id\_",

"ns" : "mydb.student"

},

{

"v" : 2,

"key" : {

"Rollno" : 1

},

"name" : "Rollno\_1",

"ns" : "mydb.student"

},

{

"v" : 2,

"key" : {

"Rollno" : -1

},

"name" : "Rollno\_-1",

"ns" : "mydb.student"

}

]

**EXPLAIN:**

> db.student.find().explain();

{

"queryPlanner" : {

"plannerVersion" : 1,

"namespace" : "mydb.student",

"indexFilterSet" : false,

"parsedQuery" : {

},

"queryHash" : "8B3D4AB8",

"planCacheKey" : "8B3D4AB8",

"winningPlan" : {

"stage" : "COLLSCAN",

"direction" : "forward"

},

"rejectedPlans" : [ ]

},

"serverInfo" : {

"host" : "DESKTOP-DV27PE6",

"port" : 27017,

"version" : "4.2.6",

"gitVersion" : "20364840b8f1af16917e4c23c1b5f5efd8b352f8"

},

"ok" : 1

}

**DROP INDEX:**

> db.student.dropIndex({Rollno:1});

{ "nIndexesWas" : 3, "ok" : 1 }

>