**Aggregation and indexing in MongoDB**

**MongoDB Query Statements for Assignment No. 11**

Aggregation and indexing with suitable example using MongoDB

> show dbs;

admin (empty)

computer 0.078GB

mymdb 0.078GB

t4 0.078GB

> use myddb

switched to db myddb

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CREATE COLLECTION:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CMD:db.createCollection("student");

{ "ok" : 1 }

CMD:

db.student.insert({Rollno:1,name:'Navin ',subject:'DMSA',marks:78});

WriteResult({ "nInserted" : 1 })

db.student.insert({Rollno:2,name:'anusha',subject:'OSD',marks:75});

WriteResult({ "nInserted" : 1 })

db.student.insert({Rollno:3,name:'ravi',subject:'TOC',marks:69});

WriteResult({ "nInserted" : 1 })

db.student.insert({Rollno:4,name:'veena',subject:'TOC',marks:70});

WriteResult({ "nInserted" : 1 })

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DISPALY RECORD:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CMD: db.student.find();

{ "\_id" : ObjectId("541bffb74ebca325353a6529"), "Rollno" : 1, "name" : "Navin", "subject" : "DMSA", "marks" : 78 }

{ "\_id" : ObjectId("541bffd34ebca325353a652a"), "Rollno" : 2, "name" : "anusha", "subject" : "OSD", "marks" : 75 }

{ "\_id" : ObjectId("541c00134ebca325353a652b"), "Rollno" : 3, "name" : "ravi", "subject" : "TOC", "marks" : 69 }

{ "\_id" : ObjectId("541c00134ebca325353a652b"), "Rollno" : 4, "name" : "veena", "subject" : "TOC", "marks" : 70 }

CMD:db.student.find().pretty();

{

"\_id" : ObjectId("541bffb74ebca325353a6529"),

"Rollno" : 1,

"name" : "Navin",

"subject" : "DMSA",

"marks" : 78

}

{

"\_id" : ObjectId("541bffd34ebca325353a652a"),

"Rollno" : 2,

"name" : "anusha",

"subject" : "OSD",

"marks" : 75

}

{

"\_id" : ObjectId("541c00134ebca325353a652b"),

"Rollno" : 3,

"name" : "ravi",

"subject" : "TOC",

"marks" : 69

}

{

"\_id" : ObjectId("541e00134ebca325353a652b"),

"Rollno" : 4,

"name" : "veena",

"subject" : "TOC",

"marks" : 70

}

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AGGREGATE FUNCTIONS:

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MIN():

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

{ "\_id" : "TOC", "marks" : 70 }

{ "\_id" : "OSD", "marks" : 75 }

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

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MAX():

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

{ "\_id" : "TOC", "marks" : 69 }

{ "\_id" : "OSD", "marks" : 75 }

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

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SUM():

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

{ "\_id" : "TOC", "marks" : 139 }

{ "\_id" : "OSD", "marks" : 75 }

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

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AVG():

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

{ "\_id" : "TOC", "marks" : 69.5 }

{ "\_id" : "OSD", "marks" : 75 }

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

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FIRST():

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

{ "\_id" : "TOC", "marks : 69 }

{ "\_id" : "OSD", "marks" : 75 }

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

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LAST():

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

{ "\_id" : "TOC", "marks" : 70 }

{ "\_id" : "OSD", "marks" : 75 }

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

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Practical: B mongodb indexing

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> show dbs

TE 0.078GB

admin (empty)

computer 0.078GB

gj 0.078GB

local 0.078GB

mydb 0.078GB

mymdb 0.078GB

t4 0.078GB

> use mydb

switched to db mydb

//CREATE COLLECTION:

> db.createCollection("student");

{ "ok" : 1 }

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

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:2,name:'kiran',subject:'OSD',marks:75});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:3,name:'komal',subject:'TOC',marks:69});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:4,name:'snehal',subject:'TOC',marks:81});

WriteResult({ "nInserted" : 1 })

> db.student.insert({Rollno:5,name:'saurabh',subject:'TOC',marks:78});

WriteResult({ "nInserted" : 1 })

//DISPLAY COLLECTION:

> db.student.find();

{ "\_id" : ObjectId("541bffb74ebca325353a6529"), "Rollno" : 1, "name" : "nikita", "subject" : "DMSA", "marks" : 78 }

{ "\_id" : ObjectId("541bffd34ebca325353a652a"), "Rollno" : 2, "name" : "kiran", "subject" : "OSD", "marks" : 75 }

{ "\_id" : ObjectId("541c00134ebca325353a652b"), "Rollno" : 3, "name" : "komal", "subject" : "TOC", "marks" : 69 }

{ "\_id" : ObjectId("541c00274ebca325353a652c"), "Rollno" : 4, "name" : "snehal", "subject" : "TOC", "marks" : 81 }

{ "\_id" : ObjectId("541c007c4ebca325353a652d"), "Rollno" : 5, "name" : "saurabh", "subject" : "TOC", "marks" : 78 }

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

{

"\_id" : ObjectId("541bffb74ebca325353a6529"),

"Rollno" : 1,

"name" : "nikita",

"subject" : "DMSA",

"marks" : 78

}

{

"\_id" : ObjectId("541bffd34ebca325353a652a"),

"Rollno" : 2,

"name" : "kiran",

"subject" : "OSD",

"marks" : 75

}

{

"\_id" : ObjectId("541c00134ebca325353a652b"),

"Rollno" : 3,

"name" : "komal",

"subject" : "TOC",

"marks" : 69

}

{

"\_id" : ObjectId("541c0e05a8dc3dd4fa9f859e"),

"Rollno" : 4,

"name" : "snehal",

"subject" : "TOC",

"marks" : 81

}

{

"\_id" : ObjectId("541c0e2ca8dc3dd4fa9f85a1"),

"Rollno" : 5,

"name" : "saurabh",

"subject" : "TOC",

"marks" : 78

}

//USING ENSURE INDEX

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

{ "numIndexesBefore" : 3, "note" : "all indexes already exist", "ok" : 1 }

//USING GET INDEX:

> db.student.getIndexes();

[

{

"v" : 1,

"key" : {

"\_id" : 1

},

"name" : "\_id\_",

"ns" : "mydb.student"

},

{

"v" : 1,

"key" : {

"marks" : 1

},

"name" : "marks\_1",

"ns" : "mydb.student"

},

{

"v" : 1,

"key" : {

"Rollno" : 1

},

"name" : "Rollno\_1",

"ns" : "mydb.student"

}

// USING MINIMUM INDEX:

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

{ "\_id" : ObjectId("541c0e05a8dc3dd4fa9f859e"), "Rollno" : 4, "name" : "snehal", "subject" : "TOC", "marks" : 81 }

{ "\_id" : ObjectId("541c0e05a8dc3dd4fa9f859f"), "Rollno" : 5, "name" : "saurabh", "subject" : "TOC", "marks" : 78 }

//USING MAXIMUM INDEX:

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

{ "\_id" : ObjectId("541c0cf4a8dc3dd4fa9f859b"), "Rollno" : 1, "name" : "nikita", "subject" : "DMSA", "marks" : 78 }

//USING MINIMUM INDEX:

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

{ "\_id" : ObjectId("541c0cf4a8dc3dd4fa9f859b"), "Rollno" : 1, "name" : "nikita", "subject" : "DMSA", "marks" : 78 }

{ "\_id" : ObjectId("541c0d92a8dc3dd4fa9f859c"), "Rollno" : 2, "name" : "kiran", "subject" : "OSD", "marks" : 75 }

//USING MINIMUM INDEX:

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

{ "\_id" : ObjectId("541c0d92a8dc3dd4fa9f859c"), "Rollno" : 2, "name" : "kiran", "subject" : "OSD", "marks" : 75 }

{ "\_id" : ObjectId("541c0ddca8dc3dd4fa9f859d"), "Rollno" : 3, "name" : "komal", "subject" : "TOC", "marks" : 69 }

{ "\_id" : ObjectId("541c0e05a8dc3dd4fa9f859e"), "Rollno" : 4, "name" : "snehal", "subject" : "TOC", "marks" : 81 }

{ "\_id" : ObjectId("541c0e05a8dc3dd4fa9f859f"), "Rollno" : 5, "name" : "saurabh", "subject" : "TOC", "marks" : 78 }

//SORT INDEX IN ASCENDING

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

{

"\_id" : ObjectId("541c0cf4a8dc3dd4fa9f859b"),

"Rollno" : 1,

"name" : "nikita",

"subject" : "DMSA",

"marks" : 78

}

{

"\_id" : ObjectId("541c0d92a8dc3dd4fa9f859c"),

"Rollno" : 2,

"name" : "kiran",

"subject" : "OSD",

"marks" : 75

}

{

"\_id" : ObjectId("541c0ddca8dc3dd4fa9f859d"),

"Rollno" : 3,

"name" : "komal",

"subject" : "TOC",

"marks" : 69

}

{

"\_id" : ObjectId("541c0e05a8dc3dd4fa9f859e"),

"Rollno" : 4,

"name" : "snehal",

"subject" : "TOC",

"marks" : 81

}

{

"\_id" : ObjectId("541c0e2ca8dc3dd4fa9f85a1"),

"Rollno" : 5,

"name" : "saurabh",

"subject" : "TOC",

"marks" : 78

}

//SORTING IN DESCENDING

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

{

"\_id" : ObjectId("541c0e05a8dc3dd4fa9f859f"),

"Rollno" : 5,

"name" : "saurabh",

"subject" : "TOC",

"marks" : 78

}

{

"\_id" : ObjectId("541c0e2ca8dc3dd4fa9f85a0"),

"Rollno" : 4,

"name" : "snehal",

"subject" : "TOC",

"marks" : 81

}

{

"\_id" : ObjectId("541c0ddca8dc3dd4fa9f859d"),

"Rollno" : 3,

"name" : "komal",

"subject" : "TOC",

"marks" : 69

}

{

"\_id" : ObjectId("541c0d92a8dc3dd4fa9f859c"),

"Rollno" : 2,

"name" : "kiran",

"subject" : "OSD",

"marks" : 75

}

{

"\_id" : ObjectId("541c0cf4a8dc3dd4fa9f859b"),

"Rollno" : 1,

"name" : "nikita",

"subject" : "DMSA",

"marks" : 78

}

//ENSURE INDEX:

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

{

"createdCollectionAutomatically" : false,

"numIndexesBefore" : 3,

"numIndexesAfter" : 4,

"ok" : 1

}

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

{ "numIndexesBefore" : 4, "note" : "all indexes already exist", "ok" : 1 }

//GET SIZE OF INDEX:

> db.student.stats();

{

"ns" : "mydb.student",

"count" : 7,

"size" : 784,

"avgObjSize" : 112,

"storageSize" : 8192,

"numExtents" : 1,

"nindexes" : 4,

"lastExtentSize" : 8192,

"paddingFactor" : 1,

"systemFlags" : 1,

"userFlags" : 1,

"totalIndexSize" : 32704,

"indexSizes" : {

"\_id\_" : 8176,

"marks\_1" : 8176,

"Rollno\_1" : 8176,

"Rollno\_-1" : 8176

},

"ok" : 1

}

//EXPLAIN:

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

{

"cursor" : "BasicCursor",

"isMultiKey" : false,

"n" : 7,

"nscannedObjects" : 7,

"nscanned" : 7,

"nscannedObjectsAllPlans" : 7,

"nscannedAllPlans" : 7,

"scanAndOrder" : false,

"indexOnly" : false,

"nYields" : 0,

"nChunkSkips" : 0,

"millis" : 0,

"server" : "gescoe:27017",

"filterSet" : false

}

//DROP INDEX:

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

{ "nIndexesWas" : 4, "ok" : 1 }