# AssignmentNo:10

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**Aim:**

ImplementaggregationandindexingwithsuitableexampleusingMongoDB.

(base) sspm@sspm:~$ sudosu[sudo]passwordforsspm:

root@sspm:/home/sspm#mongo

* uselibswitchedtodblib

# CreateCollection:

* db.createCollection("Tutorial")

{"ok":1}

# Insert:

* db.Tutorial.insert({title:"mongodb overview",description:"mongodb is easy touse",by\_user:"tutorialpoint",url:"[http://www.tuto.com](http://www.tuto.com/)",likes:"200"})WriteResult({"nInserted":1})
* db.Tutorial.insert({title:"sql overview",description:"sql is veryfast",by\_user:"tutorialpoint",url:"[http://www.tutorialpoint.com](http://www.tutorialpoint.com/)",likes:"450"})WriteResult({"nInserted":1})
* db.Tutorial.insert({title:"Neo4j overview",description:"Neo4j is SQLdatabase",by\_user:"Neo4j",url:"[http://www.neo4j.com](http://www.neo4j.com/)",likes:"700"})WriteResult({"nInserted":1})
* db.Tutorial.insert({title:"fb overview",description:"fb is SQLdatabase",by\_user:"fb",url:"[http://www.facebook.com](http://www.facebook.com/)",likes:"650"})WriteResult({"nInserted":1})

# ReadOperation:

* db.Tutorial.find().pretty()

{

"\_id" :ObjectId("670cded566f71e5764afd87a"),"title" :"mongodb overview",

"description" : "mongodb is easy to use","by\_user" :"tutorialpoint",

"url" : "[http://www.tuto.com](http://www.tuto.com/)","likes":"200"}

{

"\_id" :ObjectId("670cdf6566f71e5764afd87b"),"title" :"sqloverview",

"description" : "sql is very fast","by\_user":"tutorialpoint",

"url" : "[http://www.tutorialpoint.com](http://www.tutorialpoint.com/)","likes":"450"

}

{

"\_id" :ObjectId("670cdff066f71e5764afd87c"),"title" :"Neo4joverview",

"description" : "Neo4j is SQL database","by\_user" :"Neo4j",

"url" : "[http://www.neo4j.com](http://www.neo4j.com/)","likes":"700"

}

{

"\_id" :ObjectId("670ce02f66f71e5764afd87d"),"title" :"fboverview",

"description" : "fb is SQL database","by\_user" :"fb",

"url" : "[http://www.facebook.com](http://www.facebook.com/)","likes":"650"

}

# AggregateFunction:

**A.Group1.Sum:**

* db.Tutorial.aggregate([{$group:{\_id:"$by\_user",num\_tutorial:{$sum:1}}}])

{"\_id":"fb","num\_tutorial": 1}

{"\_id":"Neo4j","num\_tutorial":1}

{"\_id":"tutorialpoint","num\_tutorial":2}

* db.createCollection("Sales"){"ok":1}
* db.Sales.insert({"\_id":1,"item":"book","price":500,"quantity":2})WriteResult({"nInserted":1})
* db.Sales.insert({"\_id":2,"item":"pencil","price":10,"quantity":1})WriteResult({"nInserted":1})
* db.Sales.insert({"\_id":3,"item":"notebook","price":200,"quantity":5})WriteResult({"nInserted":1})
* db.Sales.insert({"\_id":4,"item":"scale","price":50,"quantity":3})WriteResult({"nInserted":1})
* db.Sales.insert({"\_id":5,"item":"bag","price":800,"quantity":1})WriteResult({"nInserted":1})
* db.Sales.find().pretty()

{"\_id":1,"item":"book","price":500,"quantity":2}

{"\_id":2,"item":"pencil","price":10,"quantity":1}

{"\_id":3,"item" :"notebook","price":200,"quantity":5}

{"\_id":4,"item":"scale","price":50,"quantity":3}

{"\_id":5,"item":"bag", "price":800,"quantity" : 1}

# Sum:

* db.Sales.aggregate([{$group:{\_id:"$item",total:{$sum:1}}}])

{"\_id":"bag","total": 1}

{"\_id":"scale","total" :1}

{"\_id":"notebook","total":1}

{"\_id":"pencil","total":1}

{"\_id":"book","total" :1 }

# Minimum:

* db.Sales.aggregate([{$group:{\_id:"$item",minQuantity:{$min:"$quantity"}}}])

{"\_id":"bag","minQuantity" :1}

{"\_id":"scale","minQuantity":3}

{"\_id":"notebook","minQuantity":5}

{"\_id":"pencil","minQuantity" :1}

{"\_id":"book","minQuantity":2}

# Maximum

>db.Sales.aggregate([{$group:{\_id:"$item",maxTotalAmount:{$max:{$multiply:["$price","$quantity"]}},maxQuantity:{$max:"$quantity"}}}]){"\_id" :"bag","maxTotalAmount" :800,"maxQuantity":1}

{"\_id":"scale","maxTotalAmount":150,"maxQuantity" :3}

{"\_id":"notebook","maxTotalAmount":1000,"maxQuantity" :5}

{"\_id":"pencil","maxTotalAmount":10,"maxQuantity":1}

{"\_id":"book","maxTotalAmount":1000,"maxQuantity":2}

# Average:

* db.Sales.aggregate([{$group:{\_id:"$item",avgQuantity:{$avg:"$quantity"}}}]);

{"\_id":"bag","avgQuantity":1}

{"\_id":"scale","avgQuantity" :3}

{"\_id":"notebook","avgQuantity" :5}

{"\_id":"pencil","avgQuantity":1}

{"\_id":"book","avgQuantity":2}

# FindFirst :

* db.Sales.aggregate([{$group:{\_id:"$item",FirstQuantity:{$first:"$quantity"}}}]);

{"\_id":"bag", "FirstQuantity":1}

{"\_id":"scale","FirstQuantity":3}

{"\_id":"notebook","FirstQuantity" :5}

{"\_id":"pencil","FirstQuantity" :1}

{"\_id":"book","FirstQuantity":2}

# FindLast :

* db.Sales.aggregate([{$group:{\_id:"$item",LastQuantity:{$last:"$quantity"}}}]);

{"\_id":"bag","LastQuantity" :1}

{"\_id":"scale","LastQuantity" :3}

{"\_id":"notebook","LastQuantity" :5}

{"\_id":"pencil","LastQuantity" :1}

{"\_id":"book","LastQuantity":2}

# Push:

* db.Sales.aggregate([{$group:{\_id:"$item",pushQuantity:{$push:"$quantity"}}}]);

{"\_id":"bag","pushQuantity":[1]}

{"\_id":"scale","pushQuantity":[3] }

{"\_id":"notebook","pushQuantity": [5] }

{"\_id":"pencil","pushQuantity":[1]}

{"\_id":"book","pushQuantity":[2]}**B.Sort:**

# Sum:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",total:{$sum:1}}}])

{"\_id":"bag","total": 1}

{"\_id":"scale","total" :1}

{"\_id":"notebook","total":1}

{"\_id":"pencil","total":1}

{"\_id":"book","total" :1 }

# Min:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",minQuantity:{$min:"quantity"}}}]);

{"\_id":"bag","minQuantity" :"quantity" }

{"\_id":"scale","minQuantity" :"quantity" }

{"\_id":"notebook","minQuantity":"quantity" }

{"\_id":"pencil","minQuantity" :"quantity" }

{"\_id":"book","minQuantity" :"quantity" }

# Max:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",maxQuantity:{$max:"quantity"}}}]);

{"\_id":"bag","maxQuantity" :"quantity" }

{"\_id":"scale","maxQuantity" :"quantity"}

{"\_id":"notebook","maxQuantity" :"quantity"}

{"\_id":"pencil","maxQuantity":"quantity" }

{"\_id":"book","maxQuantity" :"quantity" }

# Average:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",avgQuantity:{$avg:"$quantity"}}}]);

{"\_id":"bag","avgQuantity":1}

{"\_id":"scale","avgQuantity" :3}

{"\_id":"notebook","avgQuantity" :5}

{"\_id":"pencil","avgQuantity":1}

{"\_id":"book","avgQuantity":2}

# First:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",firstQuantity:{$first:"$quantity"}}}]);

{"\_id":"bag","firstQuantity" :1}

{"\_id":"scale","firstQuantity":3}{"\_id":"notebook","firstQuantity" :5}

{"\_id":"pencil","firstQuantity":1}

{"\_id":"book","firstQuantity": 2}

# Last:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",lastQuantity:{$last:"$quantity"}}}]);

{"\_id":"bag","lastQuantity": 1}

{"\_id":"scale","lastQuantity" :3}

{"\_id":"notebook","lastQuantity":5}

{"\_id":"pencil","lastQuantity" :1}

{"\_id":"book","lastQuantity" :2}

# Push:

* db.Sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",pushQuantity:{$push:"$quantity"}}}]);

{"\_id":"bag","pushQuantity":[1]}

{"\_id":"scale","pushQuantity":[3] }

{"\_id":"notebook","pushQuantity": [5] }

{"\_id":"pencil","pushQuantity":[1]}

{"\_id":"book","pushQuantity":[2]}

# C.Skip:

1. **Sum:**

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",totalQuantity:{$sum:"$quantity"}}}]);

{"\_id":"bag","totalQuantity" :1}

{"\_id":"scale","totalQuantity":3}

{"\_id":"notebook","totalQuantity" :5}

{"\_id":"pencil","totalQuantity" :1}

# Min:

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",minQuantity:{$min:"$quantity"}}}]);

{"\_id":"bag","minQuantity" :1}

{"\_id":"scale","minQuantity":3}

{"\_id":"notebook","minQuantity":5}

{"\_id":"pencil","minQuantity" :1}

# Max:

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",maxQuantity:{$max:"$quantity"}}}]);

{"\_id":"bag", "maxQuantity" :1}{"\_id" :"scale","maxQuantity" :3}

{"\_id":"notebook","maxQuantity":5}

{"\_id":"pencil","maxQuantity":1}

# First:

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",firstQuantity:{$first:"$quantity"}}}]);

{"\_id":"bag","firstQuantity" :1}

{"\_id":"scale","firstQuantity": 3}

{"\_id":"notebook","firstQuantity":5}

{"\_id":"pencil","firstQuantity":1}

# Last:

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",lastQuantity:{$last:"$quantity"}}}]);

{"\_id":"bag","lastQuantity": 1}

{"\_id":"scale","lastQuantity" :3}

{"\_id":"notebook","lastQuantity":5}

{"\_id":"pencil","lastQuantity" :1}

# Average:

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",avgQuantity:{$avg:"$quantity"}}}]);

{"\_id":"bag","avgQuantity":1}

{"\_id":"scale","avgQuantity" :3}

{"\_id":"notebook","avgQuantity" :5}

{"\_id":"pencil","avgQuantity":1}

* db.Sales.aggregate([{$skip:2},{$group:{\_id:"$item",avgQuantity:{$avg:"$quantity"}}}]);

{"\_id":"bag","avgQuantity":1}

{"\_id":"scale","avgQuantity" :3}

{"\_id":"notebook","avgQuantity" :5}

* db.Sales.aggregate([{$skip:3},{$group:{\_id:"$item",avgQuantity:{$avg:"$quantity"}}}]);

{"\_id":"bag","avgQuantity":1}

{"\_id":"scale","avgQuantity" :3}

# Push:

* db.Sales.aggregate([{$skip:1},{$group:{\_id:"$item",pushQuantity:{$push:"$quantity"}}}]);

{"\_id":"bag","pushQuantity":[1]}

{"\_id":"scale","pushQuantity":[3] }

{"\_id":"notebook","pushQuantity": [5] }{"\_id": "pencil","pushQuantity": [1]}

# D.Limit:

1. **Sum:**

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",totalQuantity:{$sum:"$quantity"}}}]);

{"\_id":"pencil","totalQuantity" :1}

{"\_id":"book","totalQuantity":2}

# Max:

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",maxQuantity:{$max:"$quantity"}}}]);

{"\_id":"pencil","maxQuantity":1}

{"\_id":"book","maxQuantity":2}

# Min:

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",minQuantity:{$min:"$quantity"}}}]);

{"\_id":"pencil","minQuantity" :1}

{"\_id":"book","minQuantity":2}

# Average:

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",avgQuantity:{$avg:"$quantity"}}}]);

{"\_id":"pencil","avgQuantity":1}

{"\_id":"book","avgQuantity":2}

# First:

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",firstQuantity:{$first:"$quantity"}}}]);

{"\_id":"pencil","firstQuantity":1}

{"\_id":"book","firstQuantity": 2}

* db.Sales.aggregate([{$limit:1},{$group:{\_id:"$item",firstQuantity:{$first:"$quantity"}}}]);

{"\_id":"book","firstQuantity": 2}

# Last:

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",lastQuantity:{$last:"$quantity"}}}]);

{"\_id":"pencil","lastQuantity" :1}

{"\_id":"book","lastQuantity" :2}

* db.Sales.aggregate([{$limit:1},{$group:{\_id:"$item",lastQuantity:{$last:"$quantity"}}}]);

{"\_id":"book","lastQuantity" :2}

# Push:

* db.Sales.aggregate([{$limit:2},{$group:{\_id:"$item",pushQuantity:{$push:"$quantity"}}}]);

{"\_id":"pencil","pushQuantity":[1]}{"\_id":"book","pushQuantity":[2] }

# INDEX :

1. **CreateIndex:**

* db.Sales.ensureIndex({item:1})

{

"createdCollectionAutomatically" : false,"numIndexesBefore" :1,

"numIndexesAfter":2,

"ok":1

}

# DisplayIndexes:

* db.Sales.getIndexes()[

{

"v" :2,

"key":{

"\_id":1

},

"name": "id",

"ns":"lib.Sales"

},

{

"v" :2,

"key":{

"item":1

},

"name":"item\_1",

"ns":"lib.Sales"

}

]

* db.Sales.ensureIndex({item:1,"price":-1})

{

"createdCollectionAutomatically" : false,"numIndexesBefore" : 2,"numIndexesAfter":3,

"ok":1

}

* db.Sales.getIndexes()[

{

"v" :2,

"key":{

"\_id":1

},

"name": "id",

"ns":"lib.Sales"

},

{

"v" :2,

"key":{

"item":1

},

"name":"item\_1",

"ns":"lib.Sales"

},

{

"v" :2,

"key":{

"item":1,

"price":-1

},

"name" : "item\_1\_price\_-1","ns" :"lib.Sales"

}

]

* db.Sales.ensureIndex({item:1,"price":1}){"createdCollectionAutomatically" : false,"numIndexesBefore" :3,

"numIndexesAfter":4,

"ok":1

}

* db.Sales.getIndexes()[

{

"v" :2,

"key":{

"\_id":1

},

"name": "id",

"ns":"lib.Sales"

},

{

"v" :2,

"key":{

"item":1

},

"name":"item\_1",

"ns":"lib.Sales"

},

{

"v" :2,

"key":{

"item":1,

"price":-1

},

"name" : "item\_1\_price\_-1","ns" :"lib.Sales"

},{

"v" :2,

"key":{

"item":1,

"price":1

},

"name" : "item\_1\_price\_1","ns" :"lib.Sales"

}

]

# DropIndex:

* db.Sales.dropIndex({item:1,"price":1})

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

* db.Sales.getIndexes()[

{

"v" :2,

"key":{

"\_id":1

},

"name": "id",

"ns":"lib.Sales"

},

{

"v" :2,

"key":{

"item":1

},

"name":"item\_1",

"ns":"lib.Sales"

},

{

"v" : 2,"key" : {"item" :1,

"price":-1

},

"name" : "item\_1\_price\_-1","ns" :"lib.Sales"

}

]