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**Roll No:CO3B06**

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**ASSIGNMENT NO: 10**

**AIM: implement aggregation and indexing with suitable example using mongoDB**

(base) sspm@sspm:~$ sudo su [sudo] password for sspm:

root@sspm:/home/sspm# sudosystemctl start mongod.service sudosystemctl: command not found

root@sspm:/home/sspm# mongo MongoDB shell version v3.6.8

connecting to: mongodb://127.0.0.1:27017

Implicit session: session { "id" : UUID("69d3c32d-701c-4249-980f-845ef5f3d35c") } MongoDB server version: 3.6.8

> use ass11 switched to db ass11 **Create Collection:**

> db.createCollection("Tutorial")

{ "ok" : 1 }

**insert:**

> db.Tutorial1.insert({title:"mongodb overview",description:"mongodb is nosql database",by\_user:"tutorialpoint",url:"http://www.tuto.com",likes:"100"})

WriteResult({ "nInserted" : 1 })

> db.Tutorial1.insert({title:"NoSQloverview",description:"mongodb is nosql database",by\_user:"tutorialpoint",url:"http://www.tuto.com",likes:"100"})

WriteResult({ "nInserted" : 1 })

> db.Tutorial1.insert({title:"NoSQloverview",description:"NoSQL is very fast

",by\_user:"tutorialpoint",url:"http://www.tutrialpoint.com",likes:"100"})

WriteResult({ "nInserted" : 1 })

> db.Tutorial1.insert({title:"Neo-4j overview",description:"Neo-4j is SQL database

",by\_user:"Neo4j",url:"http://www.Neo-4j.com",likes:"750"})

WriteResult({ "nInserted" : 1 })

> db.Tutorial1.insert({title:"fboverview ",description:"fb is SQL database

",by\_user:"fb",url:"http://www.facebook.com",likes:"75"})

WriteResult({ "nInserted" : 1 }) **Read Operation:**

> db.Tutorial1.find().pretty()

{

"\_id" : ObjectId("670f6d19b7a151f16c290456"),

"title" : "mongodb overview",

"description" : "mongodb is nosql database",

"by\_user" : "tutorialpoint",

"url" : "http://www.tuto.com",

"likes" : "100"

}

{

"\_id" : ObjectId("670f6f30b7a151f16c290457"),

"title" : "NoSQloverview",

"description" : "mongodb is nosql database",

"by\_user" : "tutorialpoint",

"url" : "http://www.tuto.com",

"likes" : "100"

}

{

"\_id" : ObjectId("670f72a4b7a151f16c290458"),

"title" : "NoSQloverview",

"description" : "NoSQL is very fast ",

"by\_user" : "tutorialpoint",

"url" : "http://www.tutrialpoint.com",

"likes" : "100"

}

{

"\_id" : ObjectId("670f742cb7a151f16c290459"),

"title" : "Neo-4j overview",

"description" : "Neo-4j is SQL database ",

"by\_user" : "Neo-4j",

"url" : "http://www.Neo-4j.com",

"likes" : "750"

}

{

"\_id" : ObjectId("670f770bb7a151f16c29045a"),

"title" : "fboverview ",

"description" : "fb is SQL database ",

"by\_user" : "fb",

"url" : "http://www.facebook.com",

"likes" : "75"

}

**Aggregate Function: A.Group 1.sum:**

> db.Tutorial1.aggregate([{$group : {\_id:"$by\_user",num\_tutorial:{$sum:1}}}])

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

{ "\_id" : "Neo-4j", "num\_tutorial" : 1 }

{ "\_id" : "tutorialpoint", "num\_tutorial" : 3 }

> db.createCollection("sales")

{ "ok" : 1 }

> db.sales.insert({"\_id":1,"item":"abc","price":10,"quqntity":2})

WriteResult({ "nInserted" : 1 })

> db.sales.insert({"\_id":2,"item":"jkl","price":20,"quqntity":1})

WriteResult({ "nInserted" : 1 })

> db.sales.insert({"\_id":3,"item":"xyz","price":5,"quqntity":3})

WriteResult({ "nInserted" : 1 })

> db.sales.insert({"\_id":4,"item":"abc","price":10,"quqntity":10})

WriteResult({ "nInserted" : 1 })

> db.sales.insert({"\_id":5,"item":"xyz","price":5,"quqntity":5})

WriteResult({ "nInserted" : 1 })

> db.sales.find().pretty()

{ "\_id" : 1, "item" : "abc", "price" : 10, "quqntity" : 2 }

{ "\_id" : 2, "item" : "jkl", "price" : 20, "quqntity" : 1 }

{ "\_id" : 3, "item" : "xyz", "price" : 5, "quqntity" : 3 } { "\_id" : 4, "item" : "abc", "price" : 10, "quqntity" : 10 } { "\_id" : 5, "item" : "xyz", "price" : 5, "quqntity" : 5 } **1.sum:**

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

{ "\_id" : "xyz", "total" : 2 }

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

"\_id" : "abc", "total" : 2 }

**2.Minimun:**

> db.sales.aggregate([{$group:{\_id:"$item",minQuqntity:{$min:"$quqntity"}}}])

{ "\_id" : "xyz", "minQuqntity" : 3 }

{ "\_id" : "jkl", "minQuqntity" : 1 } {

"\_id" : "abc", "minQuqntity" : 2 } **3.maximum:**

> db.sales.aggregate([{$group:{\_id:"$item",maxQuqntity:{$max:"$quqntity"}}}])

{ "\_id" : "xyz", "maxQuqntity" : 5 }

{ "\_id" : "jkl", "maxQuqntity" : 1 } { "\_id" : "abc", "maxQuqntity" : 10 } **4.Average:**

> db.sales.aggregate([{$group:{\_id:"$item",avgQuqntity:{$avg:"$quqntity"}}}])

{ "\_id" : "xyz", "avgQuqntity" : 4 }

{ "\_id" : "jkl", "avgQuqntity" : 1 } { "\_id" : "abc", "avgQuqntity" : 6 } **5.First find:**

> db.sales.aggregate([{$group:{\_id:"$item",firstQuqntity:{$first:"$quqntity"}}}])

{ "\_id" : "xyz", "firstQuqntity" : 3 }

{ "\_id" : "jkl", "firstQuqntity" : 1 } { "\_id" : "abc", "firstQuqntity" : 2 } **6.last find:**

> db.sales.aggregate([{$group:{\_id:"$item",lastQuqntity:{$last:"$quqntity"}}}]) { "\_id" : "xyz", "lastQuqntity" : 5 }

{ "\_id" : "jkl", "lastQuqntity" : 1 } { "\_id" : "abc", "lastQuqntity" : 10 } **7.push:**

> db.sales.aggregate([{$group:{\_id:"$item",pushQuqntity:{$push:"$quqntity"}}}])

{ "\_id" : "xyz", "pushQuqntity" : [ 3, 5 ] }

{ "\_id" : "jkl", "pushQuqntity" : [ 1 ] } {

"\_id" : "abc", "pushQuqntity" : [ 2, 10 ] }

**B.sort:**

**1.sum:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",total:{$sum:1}}}]) { "\_id" : "xyz", "total" : 2 }

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

"\_id" : "abc", "total" : 2 } **2.sum:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",totalQuqntity:{$sum:"$quqntity"}}}]) { "\_id" : "xyz", "totalQuqntity" : 8 }

{ "\_id" : "jkl", "totalQuqntity" : 1 } { "\_id" : "abc", "totalQuqntity" : 12 }

**3.Minimun:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",minQuqntity:{$min:"$quqntity"}}}]) { "\_id" : "xyz", "minQuqntity" : 3 }

{ "\_id" : "jkl", "minQuqntity" : 1 } {

"\_id" : "abc", "minQuqntity" : 2 } **4.maximum:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",maxQuqntity:{$max:"$quqntity"}}}]) { "\_id" : "xyz", "maxQuqntity" : 5 }

{ "\_id" : "jkl", "maxQuqntity" : 1 } { "\_id" : "abc", "maxQuqntity" : 10 } **5.Average:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",avgQuqntity:{$avg:"$quqntity"}}}]) { "\_id" : "xyz", "avgQuqntity" : 4 }

{ "\_id" : "jkl", "avgQuqntity" : 1 } { "\_id" : "abc", "avgQuqntity" : 6 } **6.First find:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",firstQuqntity:{$first:"$quqntity"}}}]) { "\_id" : "xyz", "firstQuqntity" : 3 }

{ "\_id" : "jkl", "firstQuqntity" : 1 } { "\_id" : "abc", "firstQuqntity" : 2 } **7.last find:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",lastQuqntity:{$last:"$quqntity"}}}]) { "\_id" : "xyz", "lastQuqntity" : 5 }

{ "\_id" : "jkl", "lastQuqntity" : 1 } { "\_id" : "abc", "lastQuqntity" : 10 } **8.push:**

> db.sales.aggregate([{$sort:{'\_id':1}},{$group:{\_id:"$item",pushQuqntity:

{$push:"$quqntity"}}}])

{ "\_id" : "xyz", "pushQuqntity" : [ 3, 5 ] }

{ "\_id" : "jkl", "pushQuqntity" : [ 1 ] } { "\_id" : "abc", "pushQuqntity" : [ 2, 10 ] } **c.skip**

**1.sum:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",totalQuqntity:{$sum:"$quqntity"}}}]) { "\_id" : "abc", "totalQuqntity" : 10 }

{ "\_id" : "xyz", "totalQuqntity" : 8 }

{ "\_id" : "jkl", "totalQuqntity" : 1 }

**2.Minimun:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",minQuqntity:{$min:"$quqntity"}}}])

{ "\_id" : "abc", "minQuqntity" : 10 }

{ "\_id" : "xyz", "minQuqntity" : 3 }

{ "\_id" : "jkl", "minQuqntity" : 1 }

**3.maximum:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",maxQuqntity:{$max:"$quqntity"}}}])

{ "\_id" : "abc", "maxQuqntity" : 10 }

{ "\_id" : "xyz", "maxQuqntity" : 5 } { "\_id" : "jkl", "maxQuqntity" : 1 } **4.First find:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",firstQuqntity:{$first:"$quqntity"}}}]) { "\_id" : "abc", "firstQuqntity" : 10 }

{ "\_id" : "xyz", "firstQuqntity" : 3 } { "\_id" : "jkl", "firstQuqntity" : 1 } **5.last find:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",lastQuqntity:{$last:"$quqntity"}}}]) { "\_id" : "abc", "lastQuqntity" : 10 }

{ "\_id" : "xyz", "lastQuqntity" : 5 }

{ "\_id" : "jkl", "lastQuqntity" : 1 } **6.Average:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",avgQuqntity:{$avg:"$quqntity"}}}])

{ "\_id" : "abc", "avgQuqntity" : 10 }

{ "\_id" : "xyz", "avgQuqntity" : 4 }

{ "\_id" : "jkl", "avgQuqntity" : 1 }

> db.sales.aggregate([{$skip:2},{$group:{\_id:"$item",avgQuqntity:{$avg:"$quqntity"}}}])

{ "\_id" : "abc", "avgQuqntity" : 10 }

{ "\_id" : "xyz", "avgQuqntity" : 4 }

> db.sales.aggregate([{$skip:3},{$group:{\_id:"$item",avgQuqntity:{$avg:"$quqntity"}}}])

{ "\_id" : "xyz", "avgQuqntity" : 5 } { "\_id" : "abc", "avgQuqntity" : 10 } **7.push:**

> db.sales.aggregate([{$skip:1},{$group:{\_id:"$item",pushQuqntity:{$push:"$quqntity"}}}]) { "\_id" : "abc", "pushQuqntity" : [ 10 ] }

{ "\_id" : "xyz", "pushQuqntity" : [ 3, 5 ] } { "\_id" : "jkl", "pushQuqntity" : [ 1 ] } **D.limit:**

**1.sum:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",totalQuqntity:{$sum:"$quqntity"}}}]) { "\_id" : "jkl", "totalQuqntity" : 1 } { "\_id" : "abc", "totalQuqntity" : 2 } **2.max:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",maxQuqntity:{$max:"$quqntity"}}}])

{ "\_id" : "jkl", "maxQuqntity" : 1 } { "\_id" : "abc", "maxQuqntity" : 2 } **3.min:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",minQuqntity:{$min:"$quqntity"}}}])

{ "\_id" : "jkl", "minQuqntity" : 1 } { "\_id" : "abc", "minQuqntity" : 2 } **4.Average:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",avgQuqntity:{$avg:"$quqntity"}}}])

{ "\_id" : "jkl", "avgQuqntity" : 1 } { "\_id" : "abc", "avgQuqntity" : 2 } **5.First find:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",firstQuqntity:{$first:"$quqntity"}}}]) { "\_id" : "jkl", "firstQuqntity" : 1 } { "\_id" : "abc", "firstQuqntity" : 2 } **6.last find:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",lastQuqntity:{$last:"$quqntity"}}}]) { "\_id" : "jkl", "lastQuqntity" : 1 } { "\_id" : "abc", "lastQuqntity" : 2 } **7.push:**

> db.sales.aggregate([{$limit:2},{$group:{\_id:"$item",pushQuqntity:{$push:"$quqntity"}}}])

{ "\_id" : "jkl", "pushQuqntity" : [ 1 ] } {

"\_id" : "abc", "pushQuqntity" : [ 2 ] }

**INDEX:**

**1.create index:**

> db.sales.ensureIndex({item:1})

{

"createdCollectionAutomatically" : false,

"numIndexesBefore" : 1,

"numIndexesAfter" : 2,

"ok" : 1

}

**2.Display indexes:**

> db.sales.getIndexes()

[

{

"v" : 2,

"key" : {

"\_id" : 1

},

"name" : "\_id\_",

"ns" : "ass11.sales"

},

{

"v" : 2,

"key" : {

"item" : 1

},

"name" : "item\_1",

"ns" : "ass11.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" : "ass11.sales"

},

{

"v" : 2,

"key" : {

"item" : 1

},

"name" : "item\_1",

"ns" : "ass11.sales"

},

{

"v" : 2,

"key" : {

"item" : 1,

"price" : -1

},

"name" : "item\_1\_price\_-1",

"ns" : "ass11.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" : "ass11.sales"

},

{

"v" : 2,

"key" : {

"item" : 1

},

"name" : "item\_1",

"ns" : "ass11.sales"

},

{

"v" : 2,

"key" : {

"item" : 1,

"price" : -1

},

"name" : "item\_1\_price\_-1",

"ns" : "ass11.sales"

},

{

"v" : 2,

"key" : {

"item" : 1,

"price" : 1

},

"name" : "item\_1\_price\_1",

"ns" : "ass11.sales"

}

]

**3.Drop Index:**

> db.sales.dropIndex({item:1,"price":1})

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

> db.sales.getIndexes()

[

{

"v" : 2,

"key" : {

"\_id" : 1

},

"name" : "\_id\_",

"ns" : "ass11.sales"

}, {

"v" : 2,

"key" : {

"item" : 1

},

"name" : "item\_1",

"ns" : "ass11.sales"

}, {

"v" : 2,

"key" : {

"item" : 1,

"price" : -1

},

"name" : "item\_1\_price\_-1",

"ns" : "ass11.sales"

}

]

>