|  |  |
| --- | --- |
| **Big Data and Analytics - Practical 4** | |
| **Aim**: To demonstrate Aggregation Pipeline in MongoDB – I. | |
| Name: Shah Dhruv Kiran | Roll No: KCTBCS059 |
| Performance date: 15 – 12 – 2022 | Sign: |

**Create a mongodb schema with name inventory and contains the following attributes.**

1. Item name
2. Quantity
3. Size (height, width and unit of measure)
4. Quality (having grade from A – E)
5. Instock (warehouse [Eg: w1, w2], quantity)

**Insert queries:**

db.inventory.insert({iname:"Airbrush", quant:12, size:{height:12,width:12,unit:"cm"}, qual:"A",instock:[{whouse:"W1",quantity:8},{whouse:"W4",quantity:4}]});

db.inventory.insert({iname:"Ball", quant:30, size:{height:2,width:2,unit:"cm"}, qual:"D",instock:[{whouse:"W4",quantity:20},{whouse:"W2",quantity:10}]});

db.inventory.insertMany([{iname:"Chairs", quant:6, size:{height:0.5,width:0.5,unit:"m"}, qual:"C",instock:[{whouse:"W3",quantity:3},{whouse:"W7",quantity:2},{whouse: "W10",quantity:1}]} , {iname:"journal", quant:100, size:{height:24,width:16,unit:"cm"}, qual:"B",instock:[{whouse:"W1",quantity:10},{whouse:"W2",quantity:60},{whouse: "W5",quantity:10},{whouse: "W10",quantity:20}]} , {iname:"Erasers ", quant:500, size:{height:40,width:20,unit:"mm"}, qual:"D",instock:[{whouse:"W4",quantity:100},{whouse:"W3",quantity:100},{whouse: "W5",quantity:300}]}]);

db.inventory.insertMany([{iname:"Duster", quant:40, size:{height:0.2,width:0.1,unit:"m"}, qual:"E",instock:[{whouse:"W1",quantity:12},{whouse:"W2",quantity:12},{whouse: "W10",quantity:26}]} , {iname:"Papers", quant:1000, size:{height:24,width:16,unit:"cm"}, qual:"C",instock:[{whouse:"W4",quantity:500},{whouse:"W6",quantity:500}]} , {iname:"Mouse", quant:30, size:{height:10,width:5,unit:"cm"}, qual:"A",instock:[{whouse:"W10",quantity:10},{whouse:"W9",quantity:10},{whouse: "W8",quantity:10}]}]);

db.inventory.insertMany([{iname:"Keyboard", quant:42, size:{height:0.2,width:0.5,unit:"m"}, qual:"A",instock:[{whouse:"W8",quantity:12},{whouse:"W6",quantity:13},{whouse: "W3",quantity:17}]} , {iname:"Stand", quant:350, size:{height:24,width:30,unit:"cm"}, qual:"B",instock:[{whouse:"W4",quantity:250},{whouse:"W6",quantity:100}]}]);

**Questions:**

1. **Find all items having quantity less than or equal to 10**

inventory> db.inventory.find({quant:{$lte:10}});

[{

\_id: ObjectId("639ad50a60dc5989073cca6a"),iname: 'Chairs',quant: 6,

size: { height: 0.5, width: 0.5, unit: 'm' },qual: 'C',

instock: [{ whouse: 'W3', quantity: 3 },{ whouse: 'W7', quantity: 2 },{ whouse: 'W10', quantity:

1 }]}]

1. **Find all items having quality as A and display name and quality only**

inventory> db.inventory.find({qual:"A"},{iname:1,qual:1});

[{\_id: ObjectId("639ad32160dc5989073cca68"), iname: 'Airbrush',qual: 'A'},

{\_id: ObjectId("639ad5d660dc5989073cca6f"),iname: 'Mouse',qual: 'A'},

{\_id: ObjectId("639ad66e60dc5989073cca70"),iname: 'Keyboard',qual: 'A'}] OR

inventory> db.inventory.find({qual:"A"},{iname:1,qual:1,\_id:0});

[{ iname: 'Airbrush', qual: 'A' },{ iname: 'Mouse', qual: 'A' },{ iname: 'Keyboard', qual: 'A' }]

1. **Having instock warehouse as 1 and display names, instock warehouse and instock quantity**

inventory> db.inventory.find({"instock.whouse":{$eq:"W1"}},{iname:1,\_id:0, "instock.whouse":1})

[{

iname: 'Airbrush',instock: [ { whouse: 'W1' }, { whouse: 'W4' } ]},

{iname: 'journal',instock: [{ whouse: 'W1' },{ whouse: 'W2' },{ whouse: 'W5' },{ whouse: 'W10' } ]},{iname: 'Duster',instock: [ { whouse: 'W1' }, { whouse: 'W2' }, { whouse: 'W10' } ]

}]

1. **Having quality as B and E and display their names and quality**

inventory> db.inventory.find({$or:[{qual:"B"}, {qual:"E"}]},{iname:1,\_id:0, qual:1})

[{ iname: 'journal', qual: 'B' },{ iname: 'Duster', qual: 'E' },{ iname: 'Stand', qual: 'B' }]

1. **Having instock quantity between 20 and 40 and display names, quantity and instock data**

inventory> db.inventory.find({$and:[{"instock.quantity":{$lte:40}}, {"instock.quantity":{$gte:20}}]},{iname:1,\_id:0, qual:1, "instock":1})

[

{ iname: 'Ball', qual: 'D', instock: [ { whouse: 'W4', quantity: 20 }, { whouse: 'W2', quantity: 10 } ] }, { iname: 'journal', qual: 'B', instock: [ { whouse: 'W1', quantity: 10 }, { whouse: 'W2', quantity: 60 }, { whouse: 'W5', quantity: 10 }, { whouse: 'W10', quantity: 20 } ] }, { iname: 'Duster', qual: 'E', instock: [ { whouse: 'W1', quantity: 12 }, { whouse: 'W2', quantity: 12 }, { whouse: 'W10', quantity: 26 } ] }

]

1. **Find all items starting with S.**

inventory> db.inventory.find({iname:{$regex:'S'}}, {iname:1, quant:1, \_id:0})

[ { iname: 'Stand', quant: 350 } ]

1. **Find all inventory item names having instock warehouse as w2 and w5 and w7, show name, warehouse number, except id**

inventory> db.inventory.find({"instock.whouse":{$in:["W2", "W5", "W7"]}},{iname:1,\_id:0, "instock.whouse":1})

[

{ iname: 'Ball', instock: [ { whouse: 'W4' }, { whouse: 'W2' } ] },

{

iname: 'Chairs',

instock: [ { whouse: 'W3' }, { whouse: 'W7' }, { whouse: 'W10' } ]

},

{

iname: 'journal',

instock: [

{ whouse: 'W1' },

{ whouse: 'W2' },

{ whouse: 'W5' },

{ whouse: 'W10' }

]

},

{

iname: 'Erasers ',

instock: [ { whouse: 'W4' }, { whouse: 'W3' }, { whouse: 'W5' } ]

},

{

iname: 'Duster',

instock: [ { whouse: 'W1' }, { whouse: 'W2' }, { whouse: 'W10' } ]

}

]

1. **Find all inventory item names having instock warehouse not as w2 and w5 and w7, show name, warehouse number, except id**

inventory> db.inventory.find({"instock.whouse":{$nin:["W2", "W5", "W7"]}},{iname:1,\_id:0, "instock.whouse":1})

[

{iname: 'Airbrush',instock: [ { whouse: 'W1' }, { whouse: 'W4' } ]},

{ iname: 'Papers', instock: [ { whouse: 'W4' }, { whouse: 'W6' } ] },

{iname: 'Mouse',instock: [ { whouse: 'W10' }, { whouse: 'W9' }, { whouse: 'W8' } ]},

{iname: 'Keyboard',instock: [ { whouse: 'W8' }, { whouse: 'W6' }, { whouse: 'W3' } ]},

{ iname: 'Stand', instock: [ { whouse: 'W4' }, { whouse: 'W6' } ] }

]

1. **Item names not having instock quantity greater than equal to 50**

db.inventory.find({"instock.quantity":{$not:{$gte:50}}},{iname:1,\_id:0, qual:1, "instock":1})

[

{ iname: 'Airbrush', qual: 'A', instock: [ { whouse: 'W1', quantity: 8 }, { whouse: 'W4', quantity: 4 } ] },

{ iname: 'Ball', qual: 'D', instock: [ { whouse: 'W4', quantity: 20 }, { whouse: 'W2', quantity: 10 } ] },

{ iname: 'Chairs', qual: 'C', instock: [ { whouse: 'W3', quantity: 3 }, { whouse: 'W7', quantity: 2 }, { whouse: 'W10', quantity: 1 } ] },

{ iname: 'Duster', qual: 'E', instock: [ { whouse: 'W1', quantity: 12 }, { whouse: 'W2', quantity: 12 }, { whouse: 'W10', quantity: 26 } ] },

{ iname: 'Mouse', qual: 'A', instock: [ { whouse: 'W10', quantity: 10 }, { whouse: 'W9', quantity: 10 }, { whouse: 'W8', quantity: 10 } ] },

{ iname: 'Keyboard', qual: 'A', instock: [ { whouse: 'W8', quantity: 12 }, { whouse: 'W6', quantity: 13 }, { whouse: 'W3', quantity: 17 } ] }

]

1. **Quality as E and quantity greater than equal to 50**

inventory> db.inventory.find({$and:[{qual:"E"}, {quant:{$gte:20}}]},{iname:1,\_id:0, qual:1, quant:1})

[ { iname: 'Duster', quant: 40, qual: 'E' } ]

1. **Count of inventory having unit of measure as metre**

inventory> db.inventory.find({"size.unit":"m"}).count()

3

1. **Display first 3 documents**

inventory> db.inventory.find().limit(3)

[

{ \_id: ObjectId("639ad32160dc5989073cca68"), iname: 'Airbrush', quant: 12, size: { height: 12, width: 12, unit: 'cm' }, qual: 'A', instock: [ { whouse: 'W1', quantity: 8 }, { whouse: 'W4', quantity: 4 } ] },

{ \_id: ObjectId("639ad50260dc5989073cca69"), iname: 'Ball', quant: 30, size: { height: 2, width: 2, unit: 'cm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 20 }, { whouse: 'W2', quantity: 10 } ] },

{ \_id: ObjectId("639ad50a60dc5989073cca6a"), iname: 'Chairs', quant: 6, size: { height: 0.5, width: 0.5, unit: 'm' }, qual: 'C', instock: [ { whouse: 'W3', quantity: 3 }, { whouse: 'W7', quantity: 2 }, { whouse: 'W10', quantity: 1 } ] }]

**Aggregation functions: match-> group-> project-> sort-> limit**

1. **Display the total quantity of all items.**

inventory> db.inventory.aggregate([{$group:{\_id:null, "Sum of quantity":{$sum:"$quant"}}}])

[ { \_id: null, 'Sum of quantity': 2110 } ]

1. **Display the average quantity of items present in each document within the collection.**

inventory> db.inventory.aggregate([{$group:{\_id:null, "Average of

quantity":{$avg:"$quant"}}}])

[ { \_id: null, 'Average of quantity': 211 } ]

1. **Display which item has the lowest quantity within the collection.**

inventory> db.inventory.aggregate([{$group:{\_id:null, "Minimum quantity":{$min:"$quant"}}}])

[ { \_id: null, 'Minimum quantity': 6 } ]

1. **Display which item has the highest quantity within the collection.**

inventory> db.inventory.aggregate([{$group:{\_id:null, "Maximum quantity":{$max:"$quant"}}}])

[ { \_id: null, 'Minimum quantity': 6 } ]

1. **Display all the items having unit in cm using $match stage.**

inventory> db.inventory.aggregate([{$match:{"size.units":"cm"}}, {$project:{itemname:1, quantity:1}}])

{ "\_id" : ObjectId("63a01c2d8065354d1932e7d1"), "itemname" : "Stapler", "quantity" : 100 }

{ "\_id" : ObjectId("63a01c2d8065354d1932e7d2"), "itemname" : "Paper", "quantity" : 100 }

{ "\_id" : ObjectId("63a01c2d8065354d1932e7d3"), "itemname" : "Eraser", "quantity" : 30 }

{ "\_id" : ObjectId("63a01c2d8065354d1932e7d4"), "itemname" : "Calculator", "quantity" : 5 }

**Match items having quantity greater than equal to 40 quantity**

inventory> db.inventory.aggregate([{$match: {quant: {$gte:40}}}])

[

{

\_id: ObjectId("639ad50a60dc5989073cca6b"),

iname: 'journal',

quant: 100,

size: { height: 24, width: 16, unit: 'cm' },

qual: 'B',

instock: [

{ whouse: 'W1', quantity: 10 },

{ whouse: 'W2', quantity: 60 },

{ whouse: 'W5', quantity: 10 },

{ whouse: 'W10', quantity: 20 }

]

},

{

\_id: ObjectId("639ad50a60dc5989073cca6c"),

iname: 'Erasers ',

quant: 500,

size: { height: 40, width: 20, unit: 'mm' },

qual: 'D',

instock: [

{ whouse: 'W4', quantity: 100 },

{ whouse: 'W3', quantity: 100 },

{ whouse: 'W5', quantity: 300 }

]

},

{

\_id: ObjectId("639ad5d660dc5989073cca6d"),

iname: 'Duster',

quant: 40,

size: { height: 0.2, width: 0.1, unit: 'm' },

qual: 'E',

instock: [

{ whouse: 'W1', quantity: 12 },

{ whouse: 'W2', quantity: 12 },

{ whouse: 'W10', quantity: 26 }

]

},

{

\_id: ObjectId("639ad5d660dc5989073cca6e"),

iname: 'Papers',

quant: 1000,

size: { height: 24, width: 16, unit: 'cm' },

qual: 'C',

instock: [

{ whouse: 'W4', quantity: 500 },

{ whouse: 'W6', quantity: 500 }

]

},

{

\_id: ObjectId("639ad66e60dc5989073cca70"),

iname: 'Keyboard',

quant: 42,

size: { height: 0.2, width: 0.5, unit: 'm' },

qual: 'A',

instock: [

{ whouse: 'W8', quantity: 12 },

{ whouse: 'W6', quantity: 13 },

{ whouse: 'W3', quantity: 17 }

]

},

{

\_id: ObjectId("639ad66e60dc5989073cca71"),

iname: 'Stand',

quant: 350,

size: { height: 24, width: 30, unit: 'cm' },

qual: 'B',

instock: [

{ whouse: 'W4', quantity: 250 },

{ whouse: 'W6', quantity: 100 }

]

}

]

**Items having Unit of Measure as metre and display item name and size**

inventory> db.inventory.aggregate([{$match: {"size.unit":"m"}}, {$project: {iname:1,\_id:0, "size.unit":1}}])

[

{ iname: 'Chairs', size: { unit: 'm' } },

{ iname: 'Duster', size: { unit: 'm' } },

{ iname: 'Keyboard', size: { unit: 'm' } }

]

**Display all inventory items using $match in aggregation**

inventory> db.inventory.aggregate([{$match: {}}])

[

{ \_id: ObjectId("639ad32160dc5989073cca68"), iname: 'Airbrush', quant: 12, size: { height: 12, width: 12, unit: 'cm' }, qual: 'A', instock: [ { whouse: 'W1', quantity: 8 }, { whouse: 'W4', quantity: 4 } ] }, { \_id: ObjectId("639ad50260dc5989073cca69"), iname: 'Ball', quant: 30, size: { height: 2, width: 2, unit: 'cm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 20 }, { whouse: 'W2', quantity: 10 } ] }, { \_id: ObjectId("639ad50a60dc5989073cca6a"), iname: 'Chairs', quant: 6, size: { height: 0.5, width: 0.5, unit: 'm' }, qual: 'C', instock: [ { whouse: 'W3', quantity: 3 }, { whouse: 'W7', quantity: 2 }, { whouse: 'W10', quantity: 1 } ] }, { \_id: ObjectId("639ad50a60dc5989073cca6b"), iname: 'journal', quant: 100, size: { height: 24, width: 16, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W1', quantity: 10 }, { whouse: 'W2', quantity: 60 }, { whouse: 'W5', quantity: 10 }, { whouse: 'W10', quantity: 20 } ] }, { \_id: ObjectId("639ad50a60dc5989073cca6c"), iname: 'Erasers ', quant: 500, size: { height: 40, width: 20, unit: 'mm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 100 }, { whouse: 'W3', quantity: 100 }, { whouse: 'W5', quantity: 300 } ] }, { \_id: ObjectId("639ad5d660dc5989073cca6d"), iname: 'Duster', quant: 40, size: { height: 0.2, width: 0.1, unit: 'm' }, qual: 'E', instock: [ { whouse: 'W1', quantity: 12 }, { whouse: 'W2', quantity: 12 }, { whouse: 'W10', quantity: 26 } ] }, { \_id: ObjectId("639ad5d660dc5989073cca6e"), iname: 'Papers', quant: 1000, size: { height: 24, width: 16, unit: 'cm' }, qual: 'C', instock: [ { whouse: 'W4', quantity: 500 }, { whouse: 'W6', quantity: 500 } ] }, { \_id: ObjectId("639ad5d660dc5989073cca6f"), iname: 'Mouse', quant: 30, size: { height: 10, width: 5, unit: 'cm' }, qual: 'A', instock: [ { whouse: 'W10', quantity: 10 }, { whouse: 'W9', quantity: 10 }, { whouse: 'W8', quantity: 10 } ] }, { \_id: ObjectId("639ad66e60dc5989073cca70"), iname: 'Keyboard', quant: 42, size: { height: 0.2, width: 0.5, unit: 'm' }, qual: 'A', instock: [ { whouse: 'W8', quantity: 12 }, { whouse: 'W6', quantity: 13 }, { whouse: 'W3', quantity: 17 } ] }, { \_id: ObjectId("639ad66e60dc5989073cca71"), iname: 'Stand', quant: 350, size: { height: 24, width: 30, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W4', quantity: 250 }, { whouse: 'W6', quantity: 100 } ] } ]

**Item having names: Chairs, journal, duster and display its: Name quantity unit**

inventory> db.inventory.aggregate([{$match: {iname: {$in: ["Chairs","journal","Duster"]}}}, {$project: {iname:1,\_id:0, quant:1, "size.unit":1}}])

[

{ iname: 'Chairs', quant: 6, size: { unit: 'm' } },

{ iname: 'journal', quant: 100, size: { unit: 'cm' } },

{ iname: 'Duster', quant: 40, size: { unit: 'm' } }

]

**Item names not having: Chairs, journal, duster and display its: Name quantity unit**

inventory> db.inventory.aggregate([{$match: {iname: {$nin: ["Chairs","journal","Duster"]}}}, {$project: {iname:1,\_id:0, quant:1, "size.unit":1}}])

[

{ iname: 'Airbrush', quant: 12, size: { unit: 'cm' } },

{ iname: 'Ball', quant: 30, size: { unit: 'cm' } },

{ iname: 'Erasers ', quant: 500, size: { unit: 'mm' } },

{ iname: 'Papers', quant: 1000, size: { unit: 'cm' } },

{ iname: 'Mouse', quant: 30, size: { unit: 'cm' } },

{ iname: 'Keyboard', quant: 42, size: { unit: 'm' } },

{ iname: 'Stand', quant: 350, size: { unit: 'cm' } }

]

**Display all items having instock quantity between 50 and 100, display item name, unit of measure and instock details.**

inventory> db.inventory.aggregate([{$match: {$and:[{"instock.quantity":{$lte:100}}, {"instock.quantity":{$gte:50}}]}}, {$project: {iname:1,\_id:0,"size.unit":1,"instock":1}}])

[

{ iname: 'journal', size: { unit: 'cm' }, instock: [ { whouse: 'W1', quantity: 10 }, { whouse: 'W2', quantity: 60 }, { whouse: 'W5', quantity: 10 }, { whouse: 'W10', quantity: 20 } ] },

{ iname: 'Erasers ', size: { unit: 'mm' }, instock: [ { whouse: 'W4', quantity: 100 }, { whouse: 'W3', quantity: 100 }, { whouse: 'W5', quantity: 300 } ] },

{ iname: 'Stand', size: { unit: 'cm' }, instock: [ { whouse: 'W4', quantity: 250 }, { whouse: 'W6', quantity: 100 } ] }

]

**Display all items sorted on item names**

inventory> db.inventory.aggregate([{$match: {}}, {$sort: {iname:1}}])

[

{ \_id: ObjectId("639ad32160dc5989073cca68"), iname: 'Airbrush', quant: 12, size: { height: 12, width: 12, unit: 'cm' }, qual: 'A', instock: [ { whouse: 'W1', quantity: 8 }, { whouse: 'W4', quantity: 4 } ] }, { \_id: ObjectId("639ad50260dc5989073cca69"), iname: 'Ball', quant: 30, size: { height: 2, width: 2, unit: 'cm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 20 }, { whouse: 'W2', quantity: 10 } ] }, { \_id: ObjectId("639ad50a60dc5989073cca6a"), iname: 'Chairs', quant: 6, size: { height: 0.5, width: 0.5, unit: 'm' }, qual: 'C', instock: [ { whouse: 'W3', quantity: 3 }, { whouse: 'W7', quantity: 2 }, { whouse: 'W10', quantity: 1 } ] }, { \_id: ObjectId("639ad5d660dc5989073cca6d"), iname: 'Duster', quant: 40, size: { height: 0.2, width: 0.1, unit: 'm' }, qual: 'E', instock: [ { whouse: 'W1', quantity: 12 }, { whouse: 'W2', quantity: 12 }, { whouse: 'W10', quantity: 26 } ] }, { \_id: ObjectId("639ad50a60dc5989073cca6c"), iname: 'Erasers ', quant: 500, size: { height: 40, width: 20, unit: 'mm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 100 }, { whouse: 'W3', quantity: 100 }, { whouse: 'W5', quantity: 300 } ] }, { \_id: ObjectId("639ad66e60dc5989073cca70"), iname: 'Keyboard', quant: 42, size: { height: 0.2, width: 0.5, unit: 'm' }, qual: 'A', instock: [ { whouse: 'W8', quantity: 12 }, { whouse: 'W6', quantity: 13 }, { whouse: 'W3', quantity: 17 } ] }, { \_id: ObjectId("639ad5d660dc5989073cca6f"), iname: 'Mouse', quant: 30, size: { height: 10, width: 5, unit: 'cm' }, qual: 'A', instock: [ { whouse: 'W10', quantity: 10 }, { whouse: 'W9', quantity: 10 }, { whouse: 'W8', quantity: 10 } ] }, { \_id: ObjectId("639ad5d660dc5989073cca6e"), iname: 'Papers', quant: 1000, size: { height: 24, width: 16, unit: 'cm' }, qual: 'C', instock: [ { whouse: 'W4', quantity: 500 }, { whouse: 'W6', quantity: 500 } ] }, { \_id: ObjectId("639ad66e60dc5989073cca71"), iname: 'Stand', quant: 350, size: { height: 24, width: 30, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W4', quantity: 250 }, { whouse: 'W6', quantity: 100 } ] }, { \_id: ObjectId("639ad50a60dc5989073cca6b"), iname: 'journal', quant: 100, size: { height: 24, width: 16, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W1', quantity: 10 }, { whouse: 'W2', quantity: 60 }, { whouse: 'W5', quantity: 10 }, { whouse: 'W10', quantity: 20 } ] }]

**Display all items having quantity greater than equal to 70 sorted by their quantity in descending order and display their iname and quantity**

inventory> db.inventory.aggregate([{$match: {quant:{$gte:70}}}, {$sort: {quant:-1}}, {$project:{iname:1, quant:1, \_id:0}}])

[

{ iname: 'Papers', quant: 1000 },

{ iname: 'Erasers ', quant: 500 },

{ iname: 'Stand', quant: 350 },

{ iname: 'journal', quant: 100 }

]

**Adding additional records to perform group aggregation on:**

db.inventory.insertMany([

{ iname: 'Airbrush', quant: 55, size: { height: 52, width: 26, unit: 'm' }, qual: 'D', instock: [ { whouse: 'W2', quantity: 65 }, { whouse: 'W4', quantity: 8 } ] }, { iname: 'Ball', quant: 39, size: { height: 7, width: 5, unit: 'cm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 82 }, { whouse: 'W2', quantity: 12 } ] }, { iname: 'Chairs', quant: 47, size: { height: 48, width: 20, unit: 'm' }, qual: 'C', instock: [ { whouse: 'W3', quantity: 25 }, { whouse: 'W7', quantity: 3 }, { whouse: 'W10', quantity: 8 } ] }, { iname: 'journal', quant: 120, size: { height: 24, width: 16, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W1', quantity: 85 }, { whouse: 'W2', quantity: 20 }, { whouse: 'W5', quantity: 18 }, { whouse: 'W10', quantity: 23 } ] }, { iname: 'Erasers ', quant: 58, size: { height: 45, width: 70, unit: 'mm' }, qual: 'D', instock: [ { whouse: 'W4', quantity: 550 }, { whouse: 'W3', quantity: 140 }, { whouse: 'W5', quantity: 340 } ] }, { iname: 'Duster', quant: 40, size: { height: 0.2, width: 0.1, unit: 'm' }, qual: 'E', instock: [ { whouse: 'W1', quantity: 12 }, { whouse: 'W2', quantity: 12 }, { whouse: 'W10', quantity: 26 } ] }, { iname: 'Papers', quant: 1250, size: { height: 24, width: 16, unit: 'cm' }, qual: 'C', instock: [ { whouse: 'W4', quantity: 700 }, { whouse: 'W6', quantity: 570 } ] }, { iname: 'Mouse', quant: 30, size: { height: 10, width: 5, unit: 'cm' }, qual: 'A', instock: [ { whouse: 'W10', quantity: 10 }, { whouse: 'W9', quantity: 10 }, { whouse: 'W8', quantity: 10 } ] }, { iname: 'Keyboard', quant: 42, size: { height: 0.2, width: 0.5, unit: 'm' }, qual: 'A', instock: [ { whouse: 'W8', quantity: 12 }, { whouse: 'W6', quantity: 13 }, { whouse: 'W3', quantity: 17 } ] }, { iname: 'Stand', quant: 350, size: { height: 24, width: 30, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W4', quantity: 250 }, { whouse: 'W6', quantity: 100 } ] } ])

**Display all items with name journals**

inventory> db.inventory.aggregate([{$match: {iname:"journal"}}])

[

{ \_id: ObjectId("639ad50a60dc5989073cca6b"), iname: 'journal', quant: 100, size: { height: 24, width: 16, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W1', quantity: 10 }, { whouse: 'W2', quantity: 60 }, { whouse: 'W5', quantity: 10 }, { whouse: 'W10', quantity: 20 } ] },

{ \_id: ObjectId("63a018397235907b7ffe3859"), iname: 'journal', quant: 120, size: { height: 24, width: 16, unit: 'cm' }, qual: 'B', instock: [ { whouse: 'W1', quantity: 85 }, { whouse: 'W2', quantity: 20 }, { whouse: 'W5', quantity: 18 }, { whouse: 'W10', quantity: 23 } ] }

]

**Display all inventory item names grouped by their name**

inventory> db.inventory.aggregate([{$group:{\_id:"$iname"}}])

[

{ \_id: 'Ball' },

{ \_id: 'Duster' },

{ \_id: 'Chairs' },

{ \_id: 'Airbrush' },

{ \_id: 'Erasers ' },

{ \_id: 'Mouse' },

{ \_id: 'Papers' },

{ \_id: 'journal' },

{ \_id: 'Keyboard' },

{ \_id: 'Stand' }

]

**Count the number of items in a particular group, by item name**

inventory> db.inventory.aggregate([{$group:{\_id: "$iname", "Total number of items are: ": {$sum:1}}}])

[

{ \_id: 'Chairs', 'Total number of items are: ': 2 },

{ \_id: 'Stand', 'Total number of items are: ': 2 },

{ \_id: 'Ball', 'Total number of items are: ': 2 },

{ \_id: 'Mouse', 'Total number of items are: ': 2 },

{ \_id: 'Duster', 'Total number of items are: ': 2 },

{ \_id: 'Papers', 'Total number of items are: ': 2 },

{ \_id: 'Erasers ', 'Total number of items are: ': 2 },

{ \_id: 'journal', 'Total number of items are: ': 2 },

{ \_id: 'Airbrush', 'Total number of items are: ': 2 },

{ \_id: 'Keyboard', 'Total number of items are: ': 2 }

]

**Count the number of items in a particular group, by item name and sort them in ascending order**

inventory> db.inventory.aggregate([{$group:{\_id: "$iname", count: {$sum:1}}}, {$sort: {\_id:1}}])

[

{ \_id: 'Airbrush', count: 2 },

{ \_id: 'Ball', count: 2 },

{ \_id: 'Chairs', count: 2 },

{ \_id: 'Duster', count: 2 },

{ \_id: 'Erasers ', count: 2 },

{ \_id: 'Keyboard', count: 2 },

{ \_id: 'Mouse', count: 2 },

{ \_id: 'Papers', count: 2 },

{ \_id: 'Stand', count: 2 },

{ \_id: 'journal', count: 2 }

]

**Descending**

inventory> db.inventory.aggregate([{$group:{\_id: "$iname", count: {$sum:1}}}, {$sort: {\_id:-1}}])

[

{ \_id: 'journal', count: 2 },

{ \_id: 'Stand', count: 2 },

{ \_id: 'Papers', count: 2 },

{ \_id: 'Mouse', count: 2 },

{ \_id: 'Keyboard', count: 2 },

{ \_id: 'Erasers ', count: 2 },

{ \_id: 'Duster', count: 2 },

{ \_id: 'Chairs', count: 2 },

{ \_id: 'Ball', count: 2 },

{ \_id: 'Airbrush', count: 2 }

]

**Display total quantities of all items grouped by item name and sort ascendingly**

inventory> db.inventory.aggregate([{$group:{\_id: "$iname", count: {$sum:"$quant"}}}, {$sort: {\_id:1}}])

[

{ \_id: 'Airbrush', count: 67 },

{ \_id: 'Ball', count: 69 },

{ \_id: 'Chairs', count: 53 },

{ \_id: 'Duster', count: 80 },

{ \_id: 'Erasers ', count: 558 },

{ \_id: 'Keyboard', count: 84 },

{ \_id: 'Mouse', count: 60 },

{ \_id: 'Papers', count: 2250 },

{ \_id: 'Stand', count: 700 },

{ \_id: 'journal', count: 220 }

]

**Display total quantities of all items grouped by item name and sort ascendingly having count gte 80**

inventory> db.inventory.aggregate([{$group:{\_id: "$iname", count: {$sum:"$quant"}}}, {$sort: {\_id:1}}, {$match: {count:{$gte:80}}}])

[

{ \_id: 'Duster', count: 80 },

{ \_id: 'Erasers ', count: 558 },

{ \_id: 'Keyboard', count: 84 },

{ \_id: 'Papers', count: 2250 },

{ \_id: 'Stand', count: 700 },

{ \_id: 'journal', count: 220 }

]

**Display all names with their quantity, using project first and then match gte 50**

inventory> db.inventory.aggregate([{$project: {\_id:0, iname:1, quant:1}}, {$match: {quant:{$gte:50}}}])

[

{ iname: 'journal', quant: 100 },

{ iname: 'Erasers ', quant: 500 },

{ iname: 'Papers', quant: 1000 },

{ iname: 'Stand', quant: 350 },

{ iname: 'Airbrush', quant: 55 },

{ iname: 'journal', quant: 120 },

{ iname: 'Erasers ', quant: 58 },

{ iname: 'Papers', quant: 1250 },

{ iname: 'Stand', quant: 350 }

]

**Display all names with their quantity, using project first and then match gte 50, group and count the number of items by item name sorted on their total count**

inventory> db.inventory.aggregate([{$project: {\_id:0, iname:1, quant:1}}, {$match: {quant:{$gte:50}}}, {$group:{\_id: "$iname", count: {$sum:1}}}, {$sort:{count:1}}])

[

{ \_id: 'Airbrush', count: 1 },

{ \_id: 'journal', count: 2 },

{ \_id: 'Erasers ', count: 2 },

{ \_id: 'Papers', count: 2 },

{ \_id: 'Stand', count: 2 }

]

**Display all names with their quantity, using project first and then match gte 50, group and calculate the number of items by item name sorted on their total quantity**

inventory> db.inventory.aggregate([{$project: {\_id:0, iname:1, quant:1}}, {$match: {quant:{$gte:50}}}, {$group:{\_id: "$iname", count: {$sum:"$quant"}}}, {$sort:{count:1}}])

[

{ \_id: 'Airbrush', count: 55 },

{ \_id: 'journal', count: 220 },

{ \_id: 'Erasers ', count: 558 },

{ \_id: 'Stand', count: 700 },

{ \_id: 'Papers', count: 2250 }

]

**Group by name as well as quantity**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname", Quantity:"$quant"},totalcount:{$sum:1}}}])

[

{ \_id: { Name: 'Chairs', Quantity: 6 }, totalcount: 1 },

{ \_id: { Name: 'Stand', Quantity: 350 }, totalcount: 3 },

{ \_id: { Name: 'journal', Quantity: 120 }, totalcount: 2 },

{ \_id: { Name: 'Erasers ', Quantity: 500 }, totalcount: 1 },

{ \_id: { Name: 'Duster', Quantity: 40 }, totalcount: 3 },

{ \_id: { Name: 'Airbrush', Quantity: 55 }, totalcount: 2 },

{ \_id: { Name: 'journal', Quantity: 100 }, totalcount: 1 },

{ \_id: { Name: 'Ball', Quantity: 30 }, totalcount: 1 },

{ \_id: { Name: 'Papers', Quantity: 1250 }, totalcount: 2 },

{ \_id: { Name: 'Erasers ', Quantity: 58 }, totalcount: 2 },

{ \_id: { Name: 'Papers', Quantity: 1000 }, totalcount: 1 },

{ \_id: { Name: 'Mouse', Quantity: 30 }, totalcount: 3 },

{ \_id: { Name: 'Keyboard', Quantity: 42 }, totalcount: 3 },

{ \_id: { Name: 'Airbrush', Quantity: 12 }, totalcount: 1 },

{ \_id: { Name: 'Ball', Quantity: 39 }, totalcount: 2 },

{ \_id: { Name: 'Chairs', Quantity: 47 }, totalcount: 2 }

]

**Calculate total quantity of items grouped by item name and quantity**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname", Quantity:"$quant"}, count:{$sum:1},totalquantity:{$sum:"$quant"}}}])

[

{ \_id: { Name: 'Chairs', Quantity: 6 }, count: 1, totalquantity: 6 },

{ \_id: { Name: 'Stand', Quantity: 350 },count: 3,totalquantity: 1050},

{\_id: { Name: 'journal', Quantity: 120 },count: 2,totalquantity: 240 },

{\_id: { Name: 'Erasers ', Quantity: 500 },count: 1,totalquantity: 500},

{\_id: { Name: 'Duster', Quantity: 40 },count: 3,totalquantity: 120},

{\_id: { Name: 'Airbrush', Quantity: 55 },count: 2,totalquantity: 110},

{\_id: { Name: 'journal', Quantity: 100 },count: 1,totalquantity: 100},

{ \_id: { Name: 'Ball', Quantity: 30 }, count: 1, totalquantity: 30 },

{\_id: { Name: 'Papers', Quantity: 1250 }, count: 2,totalquantity: 2500},

{\_id: { Name: 'Erasers ', Quantity: 58 },count: 2,totalquantity: 116},

{\_id: { Name: 'Papers', Quantity: 1000 },count: 1,totalquantity: 1000},

{ \_id: { Name: 'Mouse', Quantity: 30 }, count: 3, totalquantity: 90 },

{\_id: { Name: 'Keyboard', Quantity: 42 },count: 3,totalquantity: 126},

{\_id: { Name: 'Airbrush', Quantity: 12 },count: 1, totalquantity: 12},

{ \_id: { Name: 'Ball', Quantity: 39 }, count: 2, totalquantity: 78 },

{\_id: { Name: 'Chairs', Quantity: 47 },count: 2,totalquantity: 94}]

**Calculate total quantity of items grouped by item name and quantity and sort by iname**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname", Quantity:"$quant"},totalquantity:{$sum:"$quant"}}}, {$sort:{"\_id.Name":1}}])

[

{ \_id: { Name: 'Airbrush', Quantity: 12 }, totalquantity: 12 },

{ \_id: { Name: 'Airbrush', Quantity: 55 }, totalquantity: 110 },

{ \_id: { Name: 'Ball', Quantity: 39 }, totalquantity: 78 },

{ \_id: { Name: 'Ball', Quantity: 30 }, totalquantity: 30 },

{ \_id: { Name: 'Chairs', Quantity: 6 }, totalquantity: 6 },

{ \_id: { Name: 'Chairs', Quantity: 47 }, totalquantity: 94 },

{ \_id: { Name: 'Duster', Quantity: 40 }, totalquantity: 120 },

{ \_id: { Name: 'Erasers ', Quantity: 58 }, totalquantity: 116 },

{ \_id: { Name: 'Erasers ', Quantity: 500 }, totalquantity: 500 },

{ \_id: { Name: 'Keyboard', Quantity: 42 }, totalquantity: 126 },

{ \_id: { Name: 'Mouse', Quantity: 30 }, totalquantity: 90 },

{ \_id: { Name: 'Papers', Quantity: 1000 }, totalquantity: 1000 },

{ \_id: { Name: 'Papers', Quantity: 1250 }, totalquantity: 2500 },

{ \_id: { Name: 'Stand', Quantity: 350 }, totalquantity: 1050 },

{ \_id: { Name: 'journal', Quantity: 120 }, totalquantity: 240 },

{ \_id: { Name: 'journal', Quantity: 100 }, totalquantity: 100 }

]

**Calculate total quantity of items grouped by item name and quantity and sort by iname**, **display all records except first 2 records.**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname", Quantity:"$quant"},totalquantity:{$sum:"$quant"}}}, {$sort:{"\_id.Name":1}}, {$skip:2}])

[

{ \_id: { Name: 'Ball', Quantity: 30 }, totalquantity: 30 },

{ \_id: { Name: 'Ball', Quantity: 39 }, totalquantity: 78 },

{ \_id: { Name: 'Chairs', Quantity: 6 }, totalquantity: 6 },

{ \_id: { Name: 'Chairs', Quantity: 47 }, totalquantity: 94 },

{ \_id: { Name: 'Duster', Quantity: 40 }, totalquantity: 120 },

{ \_id: { Name: 'Erasers ', Quantity: 500 }, totalquantity: 500 },

{ \_id: { Name: 'Erasers ', Quantity: 58 }, totalquantity: 116 },

{ \_id: { Name: 'Keyboard', Quantity: 42 }, totalquantity: 126 },

{ \_id: { Name: 'Mouse', Quantity: 30 }, totalquantity: 90 },

{ \_id: { Name: 'Papers', Quantity: 1250 }, totalquantity: 2500 },

{ \_id: { Name: 'Papers', Quantity: 1000 }, totalquantity: 1000 },

{ \_id: { Name: 'Stand', Quantity: 350 }, totalquantity: 1050 },

{ \_id: { Name: 'journal', Quantity: 120 }, totalquantity: 240 },

{ \_id: { Name: 'journal', Quantity: 100 }, totalquantity: 100 }

]

**Calculate total quantity of items grouped by item name and quantity and sort by iname**, **display all records except first 2 records and limit upto 3.**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname", Quantity:"$quant"},totalquantity:{$sum:"$quant"}}}, {$sort:{"\_id.Name":1}}, {$skip:2}, {$limit:3}])

[

{ \_id: { Name: 'Ball', Quantity: 30 }, totalquantity: 30 },

{ \_id: { Name: 'Ball', Quantity: 39 }, totalquantity: 78 },

{ \_id: { Name: 'Chairs', Quantity: 47 }, totalquantity: 94 }

]

**Average:**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname", Quantity:"$quant"}, count: {$sum:1},totalquantity:{$avg:"$quant"}}}])

[

{ \_id: { Name: 'Chairs', Quantity: 6 }, count: 1, totalquantity: 6 },

{ \_id: { Name: 'journal', Quantity: 120 }, count: 2, totalquantity: 120 },

{ \_id: { Name: 'Airbrush', Quantity: 12 }, count: 1, totalquantity: 12 },

{ \_id: { Name: 'Mouse', Quantity: 30 }, count: 3, totalquantity: 30 },

{ \_id: { Name: 'Keyboard', Quantity: 42 }, count: 3, totalquantity: 42 },

{ \_id: { Name: 'Papers', Quantity: 1000 }, count: 1, totalquantity: 1000 },

{ \_id: { Name: 'Ball', Quantity: 39 }, count: 2, totalquantity: 39 },

{ \_id: { Name: 'Chairs', Quantity: 47 }, count: 2, totalquantity: 47 },

{ \_id: { Name: 'Erasers ', Quantity: 58 }, count: 2, totalquantity: 58 },

{ \_id: { Name: 'Papers', Quantity: 1250 }, count: 2, totalquantity: 1250 },

{ \_id: { Name: 'Ball', Quantity: 30 }, count: 1, totalquantity: 30 },

{ \_id: { Name: 'journal', Quantity: 100 }, count: 1, totalquantity: 100 },

{ \_id: { Name: 'Erasers ', Quantity: 500 }, count: 1, totalquantity: 500 },

{ \_id: { Name: 'Duster', Quantity: 40 }, count: 3, totalquantity: 40 },

{ \_id: { Name: 'Airbrush', Quantity: 55 }, count: 2, totalquantity: 55 },

{ \_id: { Name: 'Stand', Quantity: 350 }, count: 3, totalquantity: 350 }]

**Grouped by name and average**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname"}, count: {$sum:1}, Average:{$avg:"$quant"}}}])

[

{ \_id: { Name: 'Ball' }, count: 3, Average: 36 },

{ \_id: { Name: 'Mouse' }, count: 3, Average: 30 },

{ \_id: { Name: 'Stand' }, count: 3, Average: 350 },

{ \_id: { Name: 'Duster' }, count: 3, Average: 40 },

{ \_id: { Name: 'Keyboard' }, count: 3, Average: 42 },

{ \_id: { Name: 'Chairs' }, count: 3, Average: 33.333333333333336 },

{ \_id: { Name: 'Papers' }, count: 3, Average: 1166.6666666666667 },

{ \_id: { Name: 'journal' }, count: 3, Average: 113.33333333333333 },

{ \_id: { Name: 'Erasers ' }, count: 3, Average: 205.33333333333334 },

{ \_id: { Name: 'Airbrush' }, count: 3, Average: 40.666666666666664 }]

**OR**

inventory> db.inventory.aggregate([{$group:{\_id: {Name:"$iname"}, count: {$sum:1}, TotalQuantity: {$sum:"$quant"}, Average:{$avg:"$quant"}}}])

[

{ \_id: { Name: 'Ball' }, count: 3, TotalQuantity: 108, Average: 36 },

{

\_id: { Name: 'Stand' },

count: 3,

TotalQuantity: 1050,

Average: 350

},

{

\_id: { Name: 'Airbrush' },

count: 3,

TotalQuantity: 122,

Average: 40.666666666666664

},

{

\_id: { Name: 'journal' },

count: 3,

TotalQuantity: 340,

Average: 113.33333333333333

},

{

\_id: { Name: 'Erasers ' },

count: 3,

TotalQuantity: 616,

Average: 205.33333333333334

},

{

\_id: { Name: 'Papers' },

count: 3,

TotalQuantity: 3500,

Average: 1166.6666666666667

},

{

\_id: { Name: 'Chairs' },

count: 3,

TotalQuantity: 100,

Average: 33.333333333333336

},

{

\_id: { Name: 'Keyboard' },

count: 3,

TotalQuantity: 126,

Average: 42

},

{

\_id: { Name: 'Duster' },

count: 3,

TotalQuantity: 120,

Average: 40

},

{ \_id: { Name: 'Mouse' }, count: 3, TotalQuantity: 90, Average: 30 }

]