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1. Buat database bernama toko

```
> use toko;
switched to db toko
```

2. Isikan data collection berikut :

```
> db.inventory.insertMany([
... {item:"journal", qty: 25, size: {h: 14, w: 21, oum: "cm"}, status: "A"},
... {item:"notebook", qty: 50, size: {h: 8.5, w: 11, oum: "in"}, status: "A"},
... {item:"paper", qty: 100, size: {h: 8.5, w: 11, oum: "in"}, status: "D"},
... {item:"planner", qty: 75, size: {h: 22.85, w: 30, oum: "cm"}, status: "D"},
... {item:"postcard", qty: 45, size: {h: 10, w: 15.25, oum: "cm"}, status: "A"}
... ]);
{
  "acknowledged" : true,
  "insertedIds" : [
    ObjectId("5e4cd7369346b9fd0d1b93b6"),
    ObjectId("5e4cd7369346b9fd0d1b93b7"),
    ObjectId("5e4cd7369346b9fd0d1b93b8"),
    ObjectId("5e4cd7369346b9fd0d1b93b9"),
    ObjectId("5e4cd7369346b9fd0d1b93ba")
  ]
}
```

3. Jalankan perintah Query: db.inventory.find({})

```
> db.inventory.find({})
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25, "size" : { "h" : 14, "w" : 21, "oum" : "cm" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b7"), "item" : "notebook", "qty" : 50, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b8"), "item" : "paper", "qty" : 100, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "D" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b9"), "item" : "planner", "qty" : 75, "size" : { "h" : 22.85, "w" : 30, "oum" : "cm" }, "status" : "D" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93ba"), "item" : "postcard", "qty" : 45, "size" : { "h" : 10, "w" : 15.25, "oum" : "cm" }, "status" : "A" }
```

4. Jalankan perintah query untuk menampilkan hanya _id, item dan qty:

```
> db.inventory.find({}, {item:1, qty:1})
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25 }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b7"), "item" : "notebook", "qty" : 50 }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b8"), "item" : "paper", "qty" : 100 }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b9"), "item" : "planner", "qty" : 75 }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93ba"), "item" : "postcard", "qty" : 45 }
```

5. Jalankan perintah query untuk menampilkan hanya item dan qty:

```
> db.inventory.find({}, {"_id":0, item:1, qty:1})
{ "item" : "journal", "qty" : 25 }
{ "item" : "notebook", "qty" : 50 }
{ "item" : "paper", "qty" : 100 }
{ "item" : "planner", "qty" : 75 }
{ "item" : "postcard", "qty" : 45 }
```

- 6.
7. Jalankan perintah Query dengan criteria berikut :

```
> db.inventory.find( { status: "D" } )
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b8"), "item" : "paper", "qty" : 100, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "D" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b9"), "item" : "planner", "qty" : 75, "size" : { "h" : 22.85, "w" : 30, "oum" : "cm" }, "status" : "D" }
```

8. Jalankan perintah query berikut ini yang menggunakan operator in untuk menampilkan status D atau A

```
> db.inventory.find( { status: { $in: [ "A", "D" ] } })
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25, "size" : { "h" : 14, "w" : 21, "oum" : "cm" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b7"), "item" : "notebook", "qty" : 50, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b8"), "item" : "paper", "qty" : 100, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "D" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b9"), "item" : "planner", "qty" : 75, "size" : { "h" : 22.85, "w" : 30, "oum" : "cm" }, "status" : "D" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93ba"), "item" : "postcard", "qty" : 45, "size" : { "h" : 10, "w" : 15.25, "oum" : "cm" }, "status" : "A" }
```

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- 9 Jalankan perintah query berikut ini yang menggunakan operator AND untuk menampilkan status = "A" dan QTY < 30

```
> db.inventory.find( { status: "A", qty: { $lt: 30 } } )
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25, "size" : { "h" : 14, "w" : 21, "oum" : "cm" }, "status" : "A" }
```

10. Jalankan perintah query berikut ini yang menggunakan operator OR untuk menampilkan status = "A" atau qty < 30

```
> db.inventory.find( { $or: [ { status: "A" }, { qty: {
... $lt: 30 } } ] } )
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25, "size" : { "h" : 14, "w" : 21, "oum" : "cm" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b7"), "item" : "notebook", "qty" : 50, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93ba"), "item" : "postcard", "qty" : 45, "size" : { "h" : 10, "w" : 15.25, "oum" : "cm" }, "status" : "A" }
```

11. Jalankan perintah query berikut ini untuk menampilkan data status = "A" dan qty < 30 atau item dimulai dengan karakter "P"

```
> db.inventory.find( {
... status: "A",
... $or: [ { qty: { $lt: 30 } }, { item: /^p/ } ]
... } )
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25, "size" : { "h" : 14, "w" : 21, "oum" : "cm" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93ba"), "item" : "postcard", "qty" : 45, "size" : { "h" : 10, "w" : 15.25, "oum" : "cm" }, "status" : "A" }
```

Query pada Embedded Document

1. Query pada Embedded document harus sama persis urutannya dengan data yang ada, coba jalankan 2 perintah query berikut ini :

```
> db.inventory.find( { size: { h: 14, w: 21, uom: "cm" }
... } )
```

```
> db.inventory.find( { size: { w: 21, h: 14, uom: "cm"
... } } )
```

2. Untuk melakukan query di dalam field nested/embedded seperti contoh data yang ada, maka digunakan dot notation. Dengan format : field.nestedField 4 Misalnya diinginkan untuk menampilkan data yang field uom yang terdapat di dalam field size sama dengan "in", maka digunakan perintah berikut :

```
> db.inventory.find( { "size.uom": "in" } )
```

3. Penggunaan operator untuk kasus embedded document, misalnya menampilkan data yang field h didalam field size lebih kecil dari 15

```
> db.inventory.find( { "size.h": { $lt: 15 } } )
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b6"), "item" : "journal", "qty" : 25, "size" : { "h" : 14, "w" : 21, "oum" : "cm" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b7"), "item" : "notebook", "qty" : 50, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "A" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93b8"), "item" : "paper", "qty" : 100, "size" : { "h" : 8.5, "w" : 11, "oum" : "in" }, "status" : "D" }
{ "_id" : ObjectId("5e4cd7369346b9fd0d1b93ba"), "item" : "postcard", "qty" : 45, "size" : { "h" : 10, "w" : 15.25, "oum" : "cm" }, "status" : "A" }
```

4. Untuk kriteria kompleks, misalnya perintah untuk menampilkan data field h kurang dari 15, field uom sama dengan "in" dan status = "D"

```
> db.inventory.find( { "size.h": { $lt: 15 },
... "size.uom": "in", status: "D" } )
```

Aggregate

1. Untuk mengelompokkan data berdasar status dan ditampilkan total QTY per status, digunakan perintah :

```
> db.inventory.aggregate( [
... {$group : { _id: "$status", total: {$sum: "$qty"} }}
... ] )
{ "_id" : "D", "total" : 175 }
{ "_id" : "A", "total" : 120 }
```

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- Untuk melihat rata-rata tinggi (h) dan lebar (w) dikelompokkan berdasar status, digunakan perintah berikut :

```
> db.inventory.aggregate( [
...   {$group : {_id:"$status",
...   rerata_tinggi: {$avg: "$size.h"},
...   rerata_lebar: {$avg:"$size.w"}}}
... ])
{ "_id" : "D", "rerata_tinggi" : 15.675, "rerata_lebar" : 20.5 }
{ "_id" : "A", "rerata_tinggi" : 10.833333333333334, "rerata_lebar" : 15.75 }
```

Query array dan nested document

- Copy dan jalankan di shell mongoDB untuk perintah berikut :

```
> db.inventory.insertMany([
...   { item: "journal", qty: 25, tags: ["blank", "red"], dim_cm: [ 14, 21 ] },
...   { item: "notebook", qty: 50, tags: ["red", "blank"], dim_cm: [ 14, 21 ] },
...   { item: "paper", qty: 100, tags: ["red", "blank", "plain"], dim_cm: [ 14, 21 ] },
...   { item: "planner", qty: 75, tags: ["blank", "red"], dim_cm: [ 22.85, 30 ] },
...   { item: "postcard", qty: 45, tags: ["blue"], dim_cm: [ 10, 15.25 ] }
... ]);
{
  "acknowledged" : true,
  "insertedIds" : [
    ObjectId("5e4ce17e9346b9fd0d1b93bb"),
    ObjectId("5e4ce17e9346b9fd0d1b93bc"),
    ObjectId("5e4ce17e9346b9fd0d1b93bd"),
    ObjectId("5e4ce17e9346b9fd0d1b93be"),
    ObjectId("5e4ce17e9346b9fd0d1b93bf")
  ]
}
```

- Meng-query semua document yang field tag nya hanya berisi 2 buah elemen yaitu “red” dan “blank” dengan urutan yang pas

```
> db.inventory.find( { tags: ["red", "blank"] } )
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93bc"), "item" : "notebook", "qty" : 50, "tags" : [ "red", "blank" ], "dim_cm" : [ 14, 21 ] }
```

- Meng-Query semua data yang memiliki tag mengandung “red” dan “blank”.

```
> db.inventory.find( { tags: { $all: ["red", "blank"] } } )
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93bb"), "item" : "journal", "qty" : 25, "tags" : [ "blank", "red" ], "dim_cm" : [ 14, 21 ] }
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93bc"), "item" : "notebook", "qty" : 50, "tags" : [ "red", "blank" ], "dim_cm" : [ 14, 21 ] }
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93bd"), "item" : "paper", "qty" : 100, "tags" : [ "red", "blank", "plain" ], "dim_cm" : [ 14, 21 ] }
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93be"), "item" : "planner", "qty" : 75, "tags" : [ "blank", "red" ], "dim_cm" : [ 22.85, 30 ] }
```

- Meng-Query semua data yang diantara nilai dim_cm nya terdapat yang lebih dari 25

```
> db.inventory.find( { dim_cm: { $gt: 25 } } )
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93be"), "item" : "planner", "qty" : 75, "tags" : [ "blank", "red" ], "dim_cm" : [ 22.85, 30 ] }
```

- Meng-Query data yang memenuhi beberapa nilai tertentu menggunakan operator \$elemMatch, misalnya data yang diantara nilai dim_cm nya lebih besar dari 22 dan kurang dari 30

```
> db.inventory.find( { dim_cm: { $elemMatch: { $gt: 22,
... $lt: 30 } } } )
{ "_id" : ObjectId("5e4ce17e9346b9fd0d1b93be"), "item" : "planner", "qty" : 75, "tags" : [ "blank", "red" ], "dim_cm" : [ 22.85, 30 ] }
```

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Query Array dalam Dokumen

1. Copy dan jalankan perintah berikut :

```
> db.inventory.insertMany( [
... { item: "journal", instock: [ { warehouse: "A", qty: 5 }, { warehouse: "C", qty: 15 } ] },
... { item: "notebook", instock: [ { warehouse: "C", qty: 5 } ] },
... { item: "paper", instock: [ { warehouse: "A", qty: 60 }, { warehouse: "B", qty: 15 } ] },
... { item: "planner", instock: [ { warehouse: "A", qty: 40 }, { warehouse: "B", qty: 5 } ] },
... { item: "postcard", instock: [ { warehouse: "B", qty: 15 }, { warehouse: "C", qty: 35 } ] }
... ] );
{
  "acknowledged" : true,
  "insertedIds" : [
    ObjectId("5e4ce2189346b9fd0d1b93c0"),
    ObjectId("5e4ce2189346b9fd0d1b93c1"),
    ObjectId("5e4ce2189346b9fd0d1b93c2"),
    ObjectId("5e4ce2189346b9fd0d1b93c3"),
    ObjectId("5e4ce2189346b9fd0d1b93c4")
  ]
}
```

2. Meng-Query data instock yang sesuai dengan aturan nilai tertentu :

```
> db.inventory.find( { "instock": { warehouse: "A", qty:
... 5 } } )
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c0"), "item" : "journal", "instock" : [ { "warehouse" : "A", "qty" : 5 }, { "warehouse" : "C", "qty" : 15 } ] }
```

```
> db.inventory.find( { "instock": { qty: 5, warehouse: "A" } } )
```

3. Meng-Query data qty dalam instock yang memiliki nilai kurang dari 20

```
> db.inventory.find( { 'instock.qty': { $lte: 20 } } )
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c0"), "item" : "journal", "instock" : [ { "warehouse" : "A", "qty" : 5 }, { "warehouse" : "C", "qty" : 15 } ] }
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c1"), "item" : "notebook", "instock" : [ { "warehouse" : "C", "qty" : 5 } ] }
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c2"), "item" : "paper", "instock" : [ { "warehouse" : "A", "qty" : 60 }, { "warehouse" : "B", "qty" : 15 } ] }
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c3"), "item" : "planner", "instock" : [ { "warehouse" : "A", "qty" : 40 }, { "warehouse" : "B", "qty" : 5 } ] }
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c4"), "item" : "postcard", "instock" : [ { "warehouse" : "B", "qty" : 15 }, { "warehouse" : "C", "qty" : 35 } ] }
```

4. Meng-Query data qty di instock yang lebih besar dari 10 dan kurang dari 20

```
> db.inventory.find( { "instock": { $elemMatch: { qty: {
... $gt: 10, $lte: 20 } } } } )
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c0"), "item" : "journal", "instock" : [ { "warehouse" : "A", "qty" : 5 }, { "warehouse" : "C", "qty" : 15 } ] }
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c2"), "item" : "paper", "instock" : [ { "warehouse" : "A", "qty" : 60 }, { "warehouse" : "B", "qty" : 15 } ] }
{ "_id" : ObjectId("5e4ce2189346b9fd0d1b93c4"), "item" : "postcard", "instock" : [ { "warehouse" : "B", "qty" : 15 }, { "warehouse" : "C", "qty" : 35 } ] }
```