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Practical 2 : CRUD Operations

1. Start MongoDB server

Open **C:\Program Files\MongoDB\Server\5.0\bin** in cmd

```
C:\Program Files\MongoDB\Server\5.0\bin>mongo.exe
MongoDB shell version v5.0.23
connecting to: mongodb://127.0.0.1:27017/?compressors=disa
Implicit session: session { "id" : UUID("39eea9e6-9b26-419
MongoDB server version: 5.0.23
================
```

2. List all the databases in the MongoDB

```
> db
test
> |
```

3. Create database name alina

```
> use alina
switched to db alina
>
```

4. Create one document with the name courses having fields course name, details with duration and trainer name, course batch size with 3 sizes and quantity of 3 different type and course category

db.courses.insert(
{
name : "Android",
details: {
duration: "3 months",
trainer : "Kaif"
},
batch: [{size: "Small", qty: 10}],
category: "Web Development"
}

)

```
> db.courses.insert(
... {
... name : "Android",
... details: {
... duration: "3 months",
... trainer : "Kaif"
... },
... batch: [{size: "Small", qty: 10}],
... category: "Web Development"
... }
... )
WriteResult({ "nInserted" : 1 })
>
```

5. Display the details of above record inserted in horizontally and vertically

db.courses.find()

db.courses.find().pretty()

```
> db.courses.find()
{ "_id" : ObjectId("658ebd71e914d6949cdd8869"), "name" : "Android", "details" : { "duration" : "3 months", "trainer" : "Kaif" }, "batch" : [ { "size
" : "Small", "qty" : 10 } ], "category" : "Web Development" }
>
> db.courses.find().pretty()
{
        "_id" : ObjectId("658ebd71e914d6949cdd8869"),
        "name" : "Android",
        "details" : {
                "duration" : "3 months",
                "trainer" : "Kaif"
        },
        "batch" : [
                {
                        "size" : "Small",
                        "qty" : 10
                }
        ],
        "category" : "Web Development"
}
> |
```

6. Insert 4 more records

```
> db.courses.insertMany([
... {
... name : "Python",
... details: {
... duration: "2 months",
... trainer : "Aditya"
... },
... batch: [{size: "Medium", qty: 25}],
... category: "Programming Language"
... },
...
... {
... name : "INS",
... details: {
... duration: "4 months",
... trainer : "Karan"
... },
... batch: [{size: "Medium", qty: 25},{size: "Large", qty : 35}],
... category: "Cyber Security"
... },
...
... {
... name : "IOT",
... details: {
... duration: "2 months",
... trainer : "Arhaan"
... },
... batch: [{size: "Large", qty: 35}],
... category: "Hardware Programming"
... },
```

```
...
... {
... name : "Java",
... details: {
... duration: "3 months",
... trainer : "Aditi"
... },
... batch: [{size: "Small", qty: 10},{size: "Medium", qty: 25}],
... category: "Programming Language"
... }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("658ebde4e914d6949cdd886a"),
                ObjectId("658ebde4e914d6949cdd886b"),
                ObjectId("658ebde4e914d6949cdd886c"),
                ObjectId("658ebde4e914d6949cdd886d")
        ]
}
> |
```

7. Count the number of documents in above collection

db.courses.find().count()

```
>
> db.courses.find().count()
5
>
```

8. Display first 2 documents from the above collection

db.courses.find().limit(2).pretty()

```
> db.courses.find().limit(2).pretty()
{
        "_id" : ObjectId("658ebd71e914d6949cdd8869"),
        "name" : "Android",
        "details" : {
                "duration" : "3 months",
                "trainer" : "Kaif"
        },
        "batch" : [
                {
                        "size" : "Small",
                        "qty" : 10
                }
        ],
        "category" : "Web Development"
}
{
        "_id" : ObjectId("658ebde4e914d6949cdd886a"),
        "name" : "Python",
        "details" : {
                "duration" : "2 months",
                "trainer" : "Aditya"
        },
        "batch" : [
                {
                        "size" : "Medium",
                        "qty" : 25
                }
        ],
        "category" : "Programming Language"
}
>
```

9. Display rest all documents by skipping first 3 documents

db.courses.find().skip(3).pretty()

```
>
> db.courses.find().skip(3).pretty()
{
        "_id" : ObjectId("658ebde4e914d6949cdd886c"),
        "name" : "IOT",
        "details" : {
                "duration" : "2 months",
                "trainer" : "Arhaan"
        },
        "batch" : [
                {
                        "size" : "Large",
                        "qty" : 35
                }
        ],
        "category" : "Hardware Programming"
}
{
        "_id" : ObjectId("658ebde4e914d6949cdd886d"),
        "name" : "Java",
        "details" : {
                "duration" : "3 months",
                "trainer" : "Aditi"
        },
        "batch" : [
                {
                        "size" : "Small",
                        "qty" : 10
                },
                {
                        "size" : "Medium",
                        "qty" : 25
                }
        ],
        "category" : "Programming Language"
}
```

10. Display second and third document from the set of first 3 documents

db.courses.find().skip(1).limit(2).pretty()

```
> db.courses.find().skip(1).limit(2).pretty()
{
        "_id" : ObjectId("658ebde4e914d6949cdd886a"),
        "name" : "Python",
        "details" : {
                "duration" : "2 months",
                "trainer" : "Aditya"
        },
        "batch" : [
                {
                        "size" : "Medium",
                        "qty" : 25
                }
        ],
        "category" : "Programming Language"
}
{
        "_id" : ObjectId("658ebde4e914d6949cdd886b"),
        "name" : "INS",
        "details" : {
                "duration" : "4 months",
                "trainer" : "Karan"
        },
        "batch" : [
                {
                        "size" : "Medium",
                        "qty" : 25
                },
                {
                        "size" : "Large",
                        "qty" : 35
                }
        ],
        "category" : "Cyber Security"
}
```

11. Display the set of documents having course name as "Java".

db.courses.find({"name": "Java"}).pretty()

```
> db.courses.find({"name": "Java"}).pretty()
{
        "_id" : ObjectId("658ebde4e914d6949cdd886d"),
        "name" : "Java",
        "details" : {
                "duration" : "3 months",
                "trainer" : "Aditi"
        },
        "batch" : [
                {
                        "size" : "Small",
                        "qty" : 10
                },
                {
                        "size" : "Medium",
                        "qty" : 25
                }
        ],
        "category" : "Programming Language"
}
```

12. Display course name and category name of all courses.

db.courses.find({},{name:1,category:1})

```
>
> db.courses.find({},{name:1,category:1})
{ "_id" : ObjectId("658ebd71e914d6949cdd8869"), "name" : "Android", "category" : "Web Development" }
{ "_id" : ObjectId("658ebde4e914d6949cdd886a"), "name" : "Python", "category" : "Programming Language" }
{ "_id" : ObjectId("658ebde4e914d6949cdd886b"), "name" : "INS", "category" : "Cyber Security" }
{ "_id" : ObjectId("658ebde4e914d6949cdd886c"), "name" : "IOT", "category" : "Hardware Programming" }
{ "_id" : ObjectId("658ebde4e914d6949cdd886d"), "name" : "Java", "category" : "Programming Language" }
> |
```

13. Display course name and category name of all courses except document id.

db.courses.find({},{name:1,category:1,_id:0})

```
>
> db.courses.find({},{name:1,category:1,_id:0})
{ "name" : "Android", "category" : "Web Development" }
{ "name" : "Python", "category" : "Programming Language" }
{ "name" : "INS", "category" : "Cyber Security" }
{ "name" : "IOT", "category" : "Hardware Programming" }
{ "name" : "Java", "category" : "Programming Language" }
>
```

14. Display all documents sorted based on course name.

db.courses.find().sort({name:1})

```
> db.courses.find({},{_id:0,name:1,category:1}).sort({name:1})
{ "name" : "Android", "category" : "Web Development" }
{ "name" : "INS", "category" : "Cyber Security" }
{ "name" : "IOT", "category" : "Hardware Programming" }
{ "name" : "Java", "category" : "Programming Language" }
{ "name" : "Python", "category" : "Programming Language" }
>
```

For descending order : db.courses.find().sort({name:-1})

```
> db.courses.find({},{_id:0,name:1,category:1}).sort({name:-1})
{ "name" : "Python", "category" : "Programming Language" }
{ "name" : "Java", "category" : "Programming Language" }
{ "name" : "IOT", "category" : "Hardware Programming" }
{ "name" : "INS", "category" : "Cyber Security" }
{ "name" : "Android", "category" : "Web Development" }
>
```

15. Display all courses having batch size as small.

db.courses.find({"batch.size": "Small"})

```
>
> db.courses.find({"batch.size": "Small"},{_id:0,name:1,"batch.size":1})
{ "name" : "Android", "batch" : [ { "size" : "Small" } ] }
{ "name" : "Java", "batch" : [ { "size" : "Small" }, { "size" : "Medium" } ] }
> |
```

16. Display the courses having course batch quantity less than or equal to 15.

db.courses.find({"batch.qty": {$lte:15}})

```
>
> db.courses.find({"batch.qty": {$lte:15}},{_id:0,name:1,"batch.qty":1})
{ "name" : "Android", "batch" : [ { "qty" : 10 } ] }
{ "name" : "Java", "batch" : [ { "qty" : 10 }, { "qty" : 25 } ] }
>
```

17. Display the courses having course batch quantity greater than or equal to 25.

db.courses.find({"batch.qty": {$gte:25}})

```
>
> db.courses.find({"batch.qty": {$gte:25}},{_id:0,name:1,"batch.qty":1})
{ "name" : "Python", "batch" : [ { "qty" : 25 } ] }
{ "name" : "INS", "batch" : [ { "qty" : 25 }, { "qty" : 35 } ] }
{ "name" : "IOT", "batch" : [ { "qty" : 35 } ] }
{ "name" : "Java", "batch" : [ { "qty" : 10 }, { "qty" : 25 } ] }
> |
```

Insert some records

```
> db.courses.insertMany([
... {
... name : "MongoDB",
... details: {
... duration: "2 months",
... trainer : "Abhay"
... },
... batch: [{size: "Medium", qty: 25}],
... category: "Backend Database"
... },
...
... {
... name : "MongoDB",
... details: {
... duration: "5 months",
... trainer : "Saikat"
... },
... batch: [{size: "Medium", qty: 25},{size: "Large", qty: 30}],
... category: "Backend Database"
... },
...
... {
... name : "MongoDB",
... details: {
... duration: "3 months",
... trainer : "Karan"
... },
... batch: [{size: "Small", qty: 5}],
... category: "Backend Database"
... }
... ])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("658ec000e914d6949cdd886e"),
                ObjectId("658ec000e914d6949cdd886f"),
                ObjectId("658ec000e914d6949cdd8870")
        ]
}
```

18. Display all courses having course name as MongoDB & Java.

db.courses.find({"name":{$in:["MongoDB","Java"]}})

```
> db.courses.find({"name":{$in:["MongoDB","Java"]}},{_id:0,name:1,category:1})
{ "name" : "Java", "category" : "Programming Language" }
{ "name" : "MongoDB", "category" : "Backend Database" }
{ "name" : "MongoDB", "category" : "Backend Database" }
{ "name" : "MongoDB", "category" : "Backend Database" }
>
```

19. Display all courses except courses having course name as MongoDB & Java.

db.courses.find({"name":{$nin:["MongoDB","Java"]}})

```
>
> db.courses.find({"name":{$nin:["MongoDB","Java"]}},{_id:0,name:1,category:1})
{ "name" : "Android", "category" : "Web Development" }
{ "name" : "Python", "category" : "Programming Language" }
{ "name" : "INS", "category" : "Cyber Security" }
{ "name" : "IOT", "category" : "Hardware Programming" }
>
```

20. Display all courses having course name as MongoDB and course batch qty equal to 5.

db.courses.find({$and:[{"name": "MongoDB"},{"batch.qty": 5}]})

```
>
> db.courses.find({$and:[{"name": "MongoDB"},{"batch.qty": 5}]},{_id:0,name:1,"batch.qty":1})
{ "name" : "MongoDB", "batch" : [ { "qty" : 5 } ] }
>
```

21. Display all courses having course name as MongoDB and course batch qty less than equal to 15.

db.courses.find({$and:[{"name": "MongoDB"},{"batch.qty":
{$lte:15}}]}).pretty()

```
>
> db.courses.find({$and:[{"name": "MongoDB"},{"batch.qty": {$lte:15}}]},{_id:0,name:1,"batch.qty":1,category:1})
{ "name" : "MongoDB", "batch" : [ { "qty" : 5 } ], "category" : "Backend Database" }
{ "name" : "MongoDB", "batch" : [ { "qty" : 5 } ], "category" : "Backend Database" }
>
```

22. Display all documents having course name as MongoDB with batch size small and quantity of the batch should be less than or equal to 15.

db.courses.find({$and:[{"name": "MongoDB"},{"batch.size":
"Small"},{"batch.qty": {$lte:15}}]}).pretty()

```
>
> db.courses.find({$and:[{"name": "MongoDB"},{"batch.size": "Small"},{"batch.qty": {$lte:15}}]}).pretty()
{
        "_id" : ObjectId("658ec000e914d6949cdd8870"),
        "name" : "MongoDB",
        "details" : {
                "duration" : "3 months",
                "trainer" : "Karan"
        },
        "batch" : [
                {
                        "size" : "Small",
                        "qty" : 5
                }
        ],
        "category" : "Backend Database"
}
{
        "_id" : ObjectId("658ec120e914d6949cdd8871"),
        "name" : "MongoDB",
        "details" : {
                "duration" : "3 months",
                "trainer" : "Karan"
        },
        "batch" : [
                {
                        "size" : "Small",
                        "qty" : 5
                }
        ],
        "category" : "Backend Database"
}
>
```

23. Display a set of documents having course name as MongoDB or course batch quantity greater than equal to 25.

db.courses.find({$or:[{"name": "MongoDB"},{"batch.qty": {$gte:25}}]}).pretty()

```
>
> db.courses.find({$or:[{"name": "MongoDB"},{"batch.qty": {$gte:25}}]},{_id:0,name:1,"batch.qty":1,"details.trainer":1})
{ "name" : "Python", "details" : { "trainer" : "Aditya" }, "batch" : [ { "qty" : 25 } ] }
{ "name" : "INS", "details" : { "trainer" : "Karan" }, "batch" : [ { "qty" : 25 }, { "qty" : 35 } ] }
{ "name" : "IOT", "details" : { "trainer" : "Arhaan" }, "batch" : [ { "qty" : 35 } ] }
{ "name" : "Java", "details" : { "trainer" : "Aditi" }, "batch" : [ { "qty" : 10 }, { "qty" : 25 } ] }
{ "name" : "MongoDB", "details" : { "trainer" : "Abhay" }, "batch" : [ { "qty" : 25 } ] }
{ "name" : "MongoDB", "details" : { "trainer" : "Saikat" }, "batch" : [ { "qty" : 25 }, { "qty" : 30 } ] }
{ "name" : "MongoDB", "details" : { "trainer" : "Karan" }, "batch" : [ { "qty" : 5 } ] }
{ "name" : "MongoDB", "details" : { "trainer" : "Karan" }, "batch" : [ { "qty" : 5 } ] }
>
```

24. Display all courses not having course batch quantity greater than equal to 30.

db.courses.find({"batch.qty": {$not:{$gte:30}}})

```
>
> db.courses.find({"batch.qty": {$not:{$gte:30}}},{_id:0,name:1,"batch.qty":1})
{ "name" : "Android", "batch" : [ { "qty" : 10 } ] }
{ "name" : "Python", "batch" : [ { "qty" : 25 } ] }
{ "name" : "Java", "batch" : [ { "qty" : 10 }, { "qty" : 25 } ] }
{ "name" : "MongoDB", "batch" : [ { "qty" : 25 } ] }
{ "name" : "MongoDB", "batch" : [ { "qty" : 5 } ] }
{ "name" : "MongoDB", "batch" : [ { "qty" : 5 } ] }
> |
```

25. Display all courses not having course name as MongoDB.

db.courses.find({"name":{$not:{$eq: "MongoDB"}}})

```
>
> db.courses.find({"name":{$not:{$eq: "MongoDB"}}},{_id:0,name:1,category:1})
{ "name" : "Android", "category" : "Web Development" }
{ "name" : "Python", "category" : "Programming Language" }
{ "name" : "INS", "category" : "Cyber Security" }
{ "name" : "IOT", "category" : "Hardware Programming" }
{ "name" : "Java", "category" : "Programming Language" }
> |
```