DBMS Laboratory

UE19CS304

5th Semester, Academic Year 2021-22

Week #: 1 - CRUD Operations on MongoDB

Date: 15/9/2021

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I. CREATE:

1. Insert a record into the database using insert(record). As the database doesn't exist, it create a db named "students" and inserts the record

```
> db.students.insertOne({name: "ABC", marks:{"A1":12, "A2":85}, subjects:["A1","A2"], srn:123})
{
        "acknowledged" : true,
        "insertedId" : ObjectId("6141b9b7863794a20bd780a4")
}
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
>
```

2. Insert 3 records in the db using insertMany([records])

```
> db.students.insertMany([{name: "ABC", marks:{"A1":12, "A2":85}, subjects:["A1","A2"], srn:123}, {name: "TYU", marks:{"A2":96}, subjects:["A2"], srn:893}, {name: "XYZ", marks:{"A1":56}, subjects:["A1"],
srn:512}])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("6141baa1863794a20bd780a5"),
                ObjectId("6141baa1863794a20bd780a6"),
                ObjectId("6141baa1863794a20bd780a7")
        ]
}
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
```

II. READ:

3. Display the records in the database using find() method

- find() gives us all the records and find(filter) gives us all the records matching the filter and findOne(filter) gives us just one record matching the filter.

```
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
> db.students.find({subjects: ["A1","A2"]})
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
> db.students.findOne({subjects: ["A1","A2"]})
{
        "_id" : ObjectId("6141b9b7863794a20bd780a4"),
        "name" : "ABC",
        "marks" : {
                "A1" : 12,
                "A2" : 85
        },
        "subjects" : [
                "A1",
                "A2"
        ],
        "srn" : 123
}
> db.students.findOne({marks: {"A1": {$gt: 50}}})
null
> db.students.findOne({"srn": {$gt: 500}})
{
        "_id" : ObjectId("6141baa1863794a20bd780a6"),
        "name" : "TYU",
        "marks" : {
                "A2" : 96
        },
        "subjects" : [
                "A2"
        ],
        "srn" : 893
}
>
```

4. Using special operators in the filter. Eg: $gt matches all all the entries with value greater than specified value

```
null
> db.students.findOne({"srn": {$gt: 500}})
{
        "_id" : ObjectId("6141baa1863794a20bd780a6"),
        "name" : "TYU",
        "marks" : {
                "A2" : 96
        },
        "subjects" : [
                "A2"
        ],
        "srn" : 893
}
>
```

III. **UPDATE:**

5. Update an entry using update(filter, update_value)/updateOne(filter, update_value)

```
@(shell):1:1
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
> db.students.update({_id: ObjectId("6141b9b7863794a20bd780a4")}, {name: "JHD", marks: {"A1": 12, "A2": 85}, subjects: ["A1", "A2"], "srn": 492})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "JHD", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 492 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
>
```

6. Update with upsert flag, which inserts a new record if no existing record matches the filter specified

```
WriteResult({ "nMatched" : 0, "nUpserted" : 0, "nModified" : 0 })
> db.students.update({name:"UIA"}, {name: "UIA", marks: {"A3": 87}, subjects: ["A3"], "srn": 276}, {upsert:true})
WriteResult({
        "nMatched" : 0,
        "nUpserted" : 1,
        "nModified" : 0,
        "_id" : ObjectId("6141e656052758da544d6317")
})
> db.find()
uncaught exception: TypeError: db.find is not a function :
@(shell):1:1
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "JHD", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 492 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
{ "_id" : ObjectId("6141e656052758da544d6317"), "name" : "UIA", "marks" : { "A3" : 87 }, "subjects" : [ "A3" ], "srn" : 276 }
>
```

7. Update multiple records using updateMany(filter, update_value) and $set operator

```
@(shell):1:1
> db.students.updateMany({name: "UIA"}, {$set: {name: "UIA", marks: {"A3": 89}, subjects: ["A3"], "srn": 276}})
{ "acknowledged" : true, "matchedCount" : 2, "modifiedCount" : 2 }
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "JHD", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 492 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
{ "_id" : ObjectId("6141e656052758da544d6317"), "name" : "UIA", "marks" : { "A3" : 89 }, "subjects" : [ "A3" ], "srn" : 276 }
{ "_id" : ObjectId("6141e6892b00b58683d8ec20"), "name" : "UIA", "marks" : { "A3" : 89 }, "subjects" : [ "A3" ], "srn" : 276 }
>
```

8. Replace a record in the db with a new record using replaceOne(filter, replace_value)

```
> db.students.replaceOne({name: "UIA"}, {name :"UIA", marks: {"A3": 89}, subjects: ["A3"], srn: 277})
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
> db.students.find()
{ "_id" : ObjectId("6141b9b7863794a20bd780a4"), "name" : "JHD", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 492 }
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
{ "_id" : ObjectId("6141e656052758da544d6317"), "name" : "UIA", "marks" : { "A3" : 89 }, "subjects" : [ "A3" ], "srn" : 277 }
{ "_id" : ObjectId("6141e6892b00b58683d8ec20"), "name" : "UIA", "marks" : { "A3" : 89 }, "subjects" : [ "A3" ], "srn" : 276 }
>
```

IV. **DELETE:**

9. Delete a record from the db using deleteOne(filter)

```
> db.students.deleteOne({name: "JHD"})
{ "acknowledged" : true, "deletedCount" : 1 }
```

10. Delete multiple records using deleteMany(filter)

```
}
> db.students.find()
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
{ "_id" : ObjectId("6141e656052758da544d6317"), "name" : "UIA", "marks" : { "A3" : 89 }, "subjects" : [ "A3" ], "srn" : 277 }
{ "_id" : ObjectId("6141e6892b00b58683d8ec20"), "name" : "UIA", "marks" : { "A3" : 89 }, "subjects" : [ "A3" ], "srn" : 276 }
> db.students.deleteMany({subjects: ["A3"]})
{ "acknowledged" : true, "deletedCount" : 2 }
> db.students.find()
{ "_id" : ObjectId("6141baa1863794a20bd780a5"), "name" : "ABC", "marks" : { "A1" : 12, "A2" : 85 }, "subjects" : [ "A1", "A2" ], "srn" : 123 }
{ "_id" : ObjectId("6141baa1863794a20bd780a6"), "name" : "TYU", "marks" : { "A2" : 96 }, "subjects" : [ "A2" ], "srn" : 893 }
{ "_id" : ObjectId("6141baa1863794a20bd780a7"), "name" : "XYZ", "marks" : { "A1" : 56 }, "subjects" : [ "A1" ], "srn" : 512 }
>
```