

Assignment B02

Date of Completion: 21/10/2020

Date of Submission:

Title: Design & develop MongoDB queries using CRUD operations.

Problem Statement

Design & Develop MongoDB queries using CRUD operations

Learning Objectives:

To understand & implement CRUD operations in MongoDB

Outcomes:

1. Implement the commands on 2 tier
2. Implement Database in MongoDB

H/W & S/W Req.

MongoDB version 4.4

Windows 10

8 GB RAM

i7 processor

Theory:

Collection:

It is a group of MongoDB documents
It exists within a single database &
doesn't enforce a schema

Document:

It is a set of key-value pairs. They
have dynamic schema, may not
necessarily have same set of fields
or structure

CRUD Operations: Create, Read, Update,
delete.

→ Create:

`db.Collection.insertOne()`

`db.Collection.insertMany()`

Example:

```
db.users.insertOne({  
  name: "Sunal"  ← field value  
  age: 25        ← field value  
  status: "paid" ← field value  
})
```


2) Read

db.Collection.find()

Example:

db.users.find(
 {age: { \$gt: 15 }}, ← Collection
 {name: 1, address: 1} ← query criteria
).limit(5) ← projection
 ← cursor modifier.

db.Collection.findOne() ← returns first document

3) Update:

db.Collection.updateOne()

db.Collection.updateMany()

db.Collection.replaceOne()

db.users.updateMany (← collection
 { age : { \$lt: 18 } }, ← update filter
 { \$ set : { status: "reject" } } ← update action
)

4) Delete

```
db.Collection.deleteOne()  
db.Collection.deleteMany()
```

```
db.users.deleteMany( ← Collection  
    {status: "reject"} ← filter  
)
```

• Optional Queries For Update:

1) Upsert :-

If no document matches then a new one is created {upsert: true}

2) multi :-

To update all documents matching the query
{multi: true}

• Comparison Operators:

- 1) \$eq : equals
- 2) \$gt : greater than
- 3) \$gte : greater than / equal to
- 4) \$in : matches values in it
- 5) \$lt : less than
- 6) \$lte : less than or equal to
- 7) \$ne : not equal to
- 8) \$nin : none of the values.

• Logical Operators

- 1) \$or
- 2) \$and
- 3) \$not
- 4) \$nor

• Conclusion:

We were successfully able to learn
CRUD operations & implement them
in MongoDB

```
(base) pratt3000@pratts-laptop ► ~/Documents/College/PICT_TE-Labs/DBMSL ► 𐀀 master ►  
mongo
```

```
MongoDB shell version v4.4.1
```

```
connecting to: mongodb://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongodb
```

```
Implicit session: session { "id" : UUID("f216ea26-b34d-4bc9-a9f0-447e1ff1d76d") }
```

```
MongoDB server version: 4.4.1
```

```
---
```

```
The server generated these startup warnings when booting:
```

```
2020-10-21T09:09:54.450+05:30: ***** SERVER RESTARTED *****
```

```
2020-10-21T09:09:54.578+05:30: Using the XFS filesystem is strongly recommended with the  
WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
```

```
2020-10-21T09:09:55.419+05:30: Access control is not enabled for the database. Read and write  
access to data and configuration is unrestricted
```

```
---
```

```
---
```

```
Enable MongoDB's free cloud-based monitoring service, which will then receive and display  
metrics about your deployment (disk utilization, CPU, operation statistics, etc).
```

```
The monitoring data will be available on a MongoDB website with a unique URL accessible to  
you
```

```
and anyone you share the URL with. MongoDB may use this information to make product  
improvements and to suggest MongoDB products and deployment options to you.
```

```
To enable free monitoring, run the following command: db.enableFreeMonitoring()
```

```
To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
```

```
---
```

```
> show dbs
```

```
A10 0.000GB
```

```
admin 0.000GB
```

```
config 0.000GB
```

```
local 0.000GB
```

```
> use A10;
```

```
switched to db A10
```

```
> db.dropDatabase();
```

```
{ "dropped" : "A10", "ok" : 1 }
```

```
> use A10;
```

```
switched to db A10
```

```
>
```

```
> db.createCollection("Aadhar");
```

```
{ "ok" : 1 }
```

```
> show collections;
```

```
Aadhar
```

```
> db.Aadhar.insert({
```

```
... Aadharno : 123456,
```

```
... Name : "Prathamesh KS",
```

```
... MobileNo : 7755922895,
```

```
... Gender : "Male",
```

```
... Citizenship : "Indian",
```

```
... Age : 20,
```

```

...   Address : "Pune",
...   Voted : { "2020" : 1, "2019" : 0, "2018" : 0 }
... });
WriteResult({ "nInserted" : 1 })
>
> db.Aadhar.insert({
...   Aadharno : 123459,
...   Name : "Sooraj VS",
...   MobileNo : 7755922894,
...   Gender : "Male",
...   Citizenship : "Indian",
...   Age : 21,
...   Address : "Mumbai",
...   Voted : { "2020" : 1, "2019" : 0, "2018" : 1 }
... });
WriteResult({ "nInserted" : 1 })
> db.Aadhar.insert({
...   Aadharno : 133455,
...   Name : "Aditya Somani",
...   MobileNo : 7755922893,
...   Gender : "Male",
...   Citizenship : "Indian",
...   Age : 31,
...   Address : "Mumbai",
...   Voted : { "2020" : 1, "2019" : 1, "2018" : 1 }
... });
WriteResult({ "nInserted" : 1 })
> db.Aadhar.insert({
...   Aadharno : 125455,
...   Name : "Utkarsh Gurav",
...   MobileNo : 7755922892,
...   Gender : "Male",
...   Citizenship : "Indian",
...   Age : 98,
...   Address : "Nashik",
...   Voted : { "2020" : 0, "2019" : 0, "2018" : 0 }
... });
WriteResult({ "nInserted" : 1 })
> db.Aadhar.insert({
...   Aadharno : 126451,
...   Name : "Henry VS",
...   MobileNo : 7755922824,
...   Gender : "Male",
...   Citizenship : "US",
...   Age : 21,
...   Address : "Mumbai",
...   Voted : { "2020" : 1, "2019" : 0, "2018" : 1 }
... });
WriteResult({ "nInserted" : 1 })

```

```

> db.Aadhar.insert({
...   Aadharno : 123465,
...   Name : "Tanvi MD",
...   MobileNo : 7755922214,
...   Gender : "Female",
...   Citizenship : "US",
...   Age : 43,
...   Address : "Newyork",
...   Voted : { "2020" : 1, "2019" : 0, "2018" : 0 }
... });
WriteResult({ "nInserted" : 1 })
>
>
> db.Aadhar.find().pretty();
{
  "_id" : ObjectId("5f8fdbe7a5587d389b57b614"),
  "Aadharno" : 123456,
  "Name" : "Prathamesh KS",
  "MobileNo" : 7755922895,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 20,
  "Address" : "Pune",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdbe8a5587d389b57b615"),
  "Aadharno" : 123459,
  "Name" : "Sooraj VS",
  "MobileNo" : 7755922894,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 21,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdbe8a5587d389b57b616"),
  "Aadharno" : 133455,
  "Name" : "Aditya Somani",
  "MobileNo" : 7755922893,

```



```

    "Gender" : "Male",
    "Citizenship" : "Indian",
    "Age" : 31,
    "Address" : "Mumbai",
    "Voted" : {
        "2018" : 1,
        "2019" : 1,
        "2020" : 1
    }
}
({Address :}
"Pune"}).pretty();
db.Aadhar.find({Nam{
    "_id" : ObjectId("5f8fdb8e8a5587d389b57b617"),
    "AadharNo" : 125455,
    "Name" : "Utkarsh Gurav",
    "MobileNo" : 7755922892,
    "Gender" : "Male",
    "Citizenship" : "Indian",
    "Age" : 98,
    "Address" : "Nashik",
    "Voted" : {
        "2018" : 0,
        "2019" : 0,
        "2020" : 0
    }
}
}
{
    "_id" : ObjectId("5f8fdb8e8a5587d389b57b618"),
    "AadharNo" : 126451,
    "Name" : "Henry VS",
    "MobileNo" : 7755922824,
    "Gender" : "Male",
    "Citizenship" : "US",
    "Age" : 21,
    "Address" : "Mumbai",
    "Voted" : {
        "2018" : 1,
        "2019" : 0,
        "2020" : 1
    }
}
}
{
    "_id" : ObjectId("5f8fdb8e8a5587d389b57b619"),
    "AadharNo" : 123465,
    "Name" : "Tanvi MD",
    "MobileNo" : 7755922214,
    "Gender" : "Female",
    "Citizenship" : "US",
    "Age" : 43,

```

```

    "Address" : "Newyork",
    "Voted" : {
        "2018" : 0,
        "2019" : 0,
        "2020" : 1
    }
}
> db.Aadhar.find({ Address : "Pune"}).pretty();
{
  "_id" : ObjectId("5f8fdbe7a5587d389b57b614"),
  "Aadharno" : 123456,
  "Name" : "Prathamesh KS",
  "MobileNo" : 7755922895,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 20,
  "Address" : "Pune",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
> db.Aadhar.find({ Name:{$in:["Prathamesh KS","Tanvi MD"]}}).pretty();
{
  "_id" : ObjectId("5f8fdbe7a5587d389b57b614"),
  "Aadharno" : 123456,
  "Name" : "Prathamesh KS",
  "MobileNo" : 7755922895,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 20,
  "Address" : "Pune",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdbe8a5587d389b57b619"),
  "Aadharno" : 123465,
  "Name" : "Tanvi MD",
  "MobileNo" : 7755922214,
  "Gender" : "Female",
  "Citizenship" : "US",
  "Age" : 43,
  "Address" : "Newyork",
  "Voted" : {

```



```

        "2018" : 0,
        "2019" : 0,
        "2020" : 1
    }
}
> db.Aadhar.find({$and : [{ Address : "Mumbai" }, { Age : 21 } ] }).pretty();
{
  "_id" : ObjectId("5f8fdb8a5587d389b57b615"),
  "Aadharno" : 123459,
  "Name" : "Sooraj VS",
  "MobileNo" : 7755922894,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 21,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdb8a5587d389b57b618"),
  "Aadharno" : 126451,
  "Name" : "Henry VS",
  "MobileNo" : 7755922824,
  "Gender" : "Male",
  "Citizenship" : "US",
  "Age" : 21,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 0,
    "2020" : 1
  }
}
> db.Aadhar.find({"Voted.2018":{$lt:1}}).pretty();
{
  "_id" : ObjectId("5f8fdb7a5587d389b57b614"),
  "Aadharno" : 123456,
  "Name" : "Prathamesh KS",
  "MobileNo" : 7755922895,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 20,
  "Address" : "Pune",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,

```

```

        "2020" : 1
    }
}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b617"),
  "Aadharno" : 125455,
  "Name" : "Utkarsh Gurav",
  "MobileNo" : 7755922892,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 98,
  "Address" : "Nashik",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 0
  }
}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b619"),
  "Aadharno" : 123465,
  "Name" : "Tanvi MD",
  "MobileNo" : 7755922214,
  "Gender" : "Female",
  "Citizenship" : "US",
  "Age" : 43,
  "Address" : "Newyork",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
> db.Aadhar.find({Gender:{$all:["Female"]}}).pretty();
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b619"),
  "Aadharno" : 123465,
  "Name" : "Tanvi MD",
  "MobileNo" : 7755922214,
  "Gender" : "Female",
  "Citizenship" : "US",
  "Age" : 43,
  "Address" : "Newyork",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}

```



```

> db.Aadhar.find({$and:[{Age:{$gt:25}},{Aadharno:{$gt:123456}}]}).pretty();
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b616"),
  "Aadharno" : 133455,
  "Name" : "Aditya Somani",
  "MobileNo" : 7755922893,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 31,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 1,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b617"),
  "Aadharno" : 125455,
  "Name" : "Utkarsh Gurav",
  "MobileNo" : 7755922892,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 98,
  "Address" : "Nashik",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 0
  }
}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b619"),
  "Aadharno" : 123465,
  "Name" : "Tanvi MD",
  "MobileNo" : 7755922214,
  "Gender" : "Female",
  "Citizenship" : "US",
  "Age" : 43,
  "Address" : "Newyork",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
>
> db.Aadhar.find({Name : "Prathamesh KS"}).pretty();
{

```

```

    "_id" : ObjectId("5f8fdb7e7a5587d389b57b614"),
    "Aadharno" : 123456,
    "Name" : "Prathamesh KS",
    "MobileNo" : 7755922895,
    "Gender" : "Male",
    "Citizenship" : "Indian",
    "Age" : 20,
    "Address" : "Pune",
    "Voted" : {
      "2018" : 0,
      "2019" : 0,
      "2020" : 1
    }
  }
}
> db.Aadhar.updateOne({Name:"Prathamesh KS"},{$set:{Age:21}});
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
> db.Aadhar.find({Name : "Prathamesh KS"}).pretty();
{
  "_id" : ObjectId("5f8fdb7e7a5587d389b57b614"),
  "Aadharno" : 123456,
  "Name" : "Prathamesh KS",
  "MobileNo" : 7755922895,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 21,
  "Address" : "Pune",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
}
>
> db.Aadhar.update(
...   {
...     Aadharno : 123459,
...     Name : "Ram VS",
...     MobileNo : 7755922894,
...     Gender : "Male",
...     Citizenship : "Indian",
...     Address : "Pune",
...     Voted : { "2020" : 1, "2019" : 1, "2018" : 1 }
...   },
...   {$set:{Age:23}},
...   {upsert:true}
... );
WriteResult({
  "nMatched" : 0,
  "nUpserted" : 1,

```



```

        "nModified" : 0,
        "_id" : ObjectId("5f8fdbbe892b2bdeb1d652983")
    })
    >
    > db.Aadhar.find().pretty();
    {
      "_id" : ObjectId("5f8fdbbe7a5587d389b57b614"),
      "Aadharno" : 123456,
      "Name" : "Prathamesh KS",
      "MobileNo" : 7755922895,
      "Gender" : "Male",
      "Citizenship" : "Indian",
      "Age" : 21,
      "Address" : "Pune",
      "Voted" : {
        "2018" : 0,
        "2019" : 0,
        "2020" : 1
      }
    }
    {
      "_id" : ObjectId("5f8fdbbe8a5587d389b57b615"),
      "Aadharno" : 123459,
      "Name" : "Sooraj VS",
      "MobileNo" : 7755922894,
      "Gender" : "Male",
      "Citizenship" : "Indian",
      "Age" : 21,
      "Address" : "Mumbai",
      "Voted" : {
        "2018" : 1,
        "2019" : 0,
        "2020" : 1
      }
    }
    {
      "_id" : ObjectId("5f8fdbbe8a5587d389b57b616"),
      "Aadharno" : 133455,
      "Name" : "Aditya Somani",
      "MobileNo" : 7755922893,
      "Gender" : "Male",
      "Citizenship" : "Indian",
      "Age" : 31,
      "Address" : "Mumbai",
      "Voted" : {
        "2018" : 1,
        "2019" : 1,
        "2020" : 1
      }
    }
  }

```

```

}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b617"),
  "Aadharno" : 125455,
  "Name" : "Utkarsh Gurav",
  "MobileNo" : 7755922892,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 98,
  "Address" : "Nashik",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 0
  }
}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b618"),
  "Aadharno" : 126451,
  "Name" : "Henry VS",
  "MobileNo" : 7755922824,
  "Gender" : "Male",
  "Citizenship" : "US",
  "Age" : 21,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdb8e8a5587d389b57b619"),
  "Aadharno" : 123465,
  "Name" : "Tanvi MD",
  "MobileNo" : 7755922214,
  "Gender" : "Female",
  "Citizenship" : "US",
  "Age" : 43,
  "Address" : "Newyork",
  "Voted" : {
    "2018" : 0,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdb8e892b2bdeb1d652983"),
  "Aadharno" : 123459,

```

```

    "Address" : "Pune",
    "Citizenship" : "Indian",
    "Gender" : "Male",
    "MobileNo" : 7755922894,
    "Name" : "Ram VS",
    "Voted" : {
        "2018" : 1,
        "2019" : 1,
        "2020" : 1
    },
    "Age" : 23
}
>
> db.Aadhar.deleteMany({"Voted.2018":0});
{ "acknowledged" : true, "deletedCount" : 3 }
> db.Aadhar.find().pretty();
{
  "_id" : ObjectId("5f8fdbe8a5587d389b57b615"),
  "Aadharno" : 123459,
  "Name" : "Sooraj VS",
  "MobileNo" : 7755922894,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 21,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 0,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdbe8a5587d389b57b616"),
  "Aadharno" : 133455,
  "Name" : "Aditya Somani",
  "MobileNo" : 7755922893,
  "Gender" : "Male",
  "Citizenship" : "Indian",
  "Age" : 31,
  "Address" : "Mumbai",
  "Voted" : {
    "2018" : 1,
    "2019" : 1,
    "2020" : 1
  }
}
{
  "_id" : ObjectId("5f8fdbe8a5587d389b57b618"),
  "Aadharno" : 126451,

```

```

    "Name" : "Henry VS",
    "MobileNo" : 7755922824,
    "Gender" : "Male",
    "Citizenship" : "US",
    "Age" : 21,
    "Address" : "Mumbai",
    "Voted" : {
        "2018" : 1,
        "2019" : 0,
        "2020" : 1
    }
}
{
    "_id" : ObjectId("5f8fdb892b2bdeb1d652983"),
    "Aadharno" : 123459,
    "Address" : "Pune",
    "Citizenship" : "Indian",
    "Gender" : "Male",
    "MobileNo" : 7755922894,
    "Name" : "Ram VS",
    "Voted" : {
        "2018" : 1,
        "2019" : 1,
        "2020" : 1
    },
    "Age" : 23
}
>
> db.Aadhar.remove({"Voted.2018":1},{justOne:true});
WriteResult({ "nRemoved" : 1 })
> db.Aadhar.find().pretty();
{
    "_id" : ObjectId("5f8fdb892b2bdeb1d652983"),
    "Aadharno" : 133455,
    "Name" : "Aditya Somani",
    "MobileNo" : 7755922893,
    "Gender" : "Male",
    "Citizenship" : "Indian",
    "Age" : 31,
    "Address" : "Mumbai",
    "Voted" : {
        "2018" : 1,
        "2019" : 1,
        "2020" : 1
    }
}
{
    "_id" : ObjectId("5f8fdb892b2bdeb1d652983"),
    "Aadharno" : 126451,

```



```
"Name" : "Henry VS",
"MobileNo" : 7755922824,
"Gender" : "Male",
"Citizenship" : "US",
"Age" : 21,
"Address" : "Mumbai",
"Voted" : {
    "2018" : 1,
    "2019" : 0,
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}
}
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    "Aadharno" : 123459,
    "Address" : "Pune",
    "Citizenship" : "Indian",
    "Gender" : "Male",
    "MobileNo" : 7755922894,
    "Name" : "Ram VS",
    "Voted" : {
        "2018" : 1,
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