DATE:

Experiment 4

Aim — To study CRUD operations in mongo DB

Problem Statement —

Perform the following operations on the mongo DB database on mongo Shell.

1. List the currently available databases.
2. Create a new database to store details of students of IT dept (name, Roll No., class name) and perform the following on the databases.-
   a. Insert one student details
   b. Insert multiple student details at once
   c. Display student of a particular class
   d. Display student of particular Roll No. in a class
   e. Change the Roll no. of the student
   f. Delete entries of particular student.

Theory —

1. What are Documents and collections in mongo DB?

→ a. A document is a data structure that stores data in a JSON like format, consisting of a key value pairs, where keys are strings and values can be of various types such as strings, numbers, arrays. etc.

Example -
```
{ "title" : "the catcher",
  "author" :  "J.D salinger",
  "ratings" :  {
       "Goodreads" : 3.8,
       "amazon" : 4.2
        }
}
```

2. A collection is a group of documents that share a common theme or purpose similar to a table in a relational data bases.

Example

```
{ name : "a1",
  age : 18,
  status : "D"
}.
```

Q-2. Describe some features of mongo DB?

→ a. Document-oriented NOSQL database
b. Uses dynamic schema for flexible data modeling
c. High availability and automatic shedding
d. Provides easy integration with languages and frameworks.
e. Offers enter enterprise-grade security features and role-based access control.

Q.3. When to use mongoDB?

→ 1. When dealing with large volumes of unstructured or semi-structured data.

2. When fast read/write operations are required particularly for real-time applications.

3. When there is need for real-time analytics and visualization of data using mongoDB Charts.

4. When there is a need for strong security features and role-based access control, particularly in enterprise applications.

Output:

1) List of available databases

```
test> show dbs
test>
admin                   40.00 KiB
bookstore               72.00 KiB
config                  36.00 KiB
it_dept                 72.00 KiB
local                   80.00 KiB
```

2) Insert one student details

```
it_dept> db.student.insertOne({roll_no:"1",firstname:"Saniya",lastname:"Inamdar",class:"D15A"})
{witched to db it_dept
  acknowledged: true,
  insertedId: ObjectId("642784b204723962301c48af")
}
```

3) Insert at once multiple student details

```
it_dept> db.student.insertMany([{roll_no:"2",firstname:"Manav",lastname:"Jawrani",class:"D15A"},{roll_no:"3",firstname:"
Sakshi",lastname:"Pawar",class:"D10A"}])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("6427884e04723962301c48b0"),
    '1': ObjectId("6427884e04723962301c48b1")
  }
}
```

4) Display student for a particular class

```
it_dept> db.student.find({class:"D15A"})
[
  {
    _id: ObjectId("642784b204723962301c48af"),
    roll_no: '1',
    firstname: 'Saniya',
    lastname: 'Inamdar',
    class: 'D15A'
  },
  {
    _id: ObjectId("6427884e04723962301c48b0"),
    roll_no: '2',
    firstname: 'Manav',
    lastname: 'Jawrani',
    class: 'D15A'
  }
]
it_dept>
```

5) Display students of specific roll no in a class

```
it_dept> db.student.find({class:"D15A",roll_no:"1"})
[
  {
    _id: ObjectId("642784b204723962301c48af"),
    roll_no: '1',
    firstname: 'Saniya',
    lastname: 'Inamdar',
    class: 'D15A'
  }
]
it_dept>
```

6) Change the roll no of a student

```
it_dept> db.student.updateOne({class:"D15A",roll_no:"1"},{$set:{roll_no:"18"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
it_dept> db.student.find({class:"D15A",roll_no:"18"})
[
  {
    _id: ObjectId("642784b204723962301c48af"),
    roll_no: '18',
    firstname: 'Saniya',
    lastname: 'Inamdar',
    class: 'D15A'
  }
]
it_dept>
```

7) Delete entries of particular student

```
it_dept> db.student.deleteOne({_id: ObjectId("6427884e04723962301c48b1")})
{ acknowledged: true, deletedCount: 1 }
it_dept> db.student.find()
[
  {
    _id: ObjectId("642784b204723962301c48af"),
    roll_no: '18',
    firstname: 'Saniya',
    lastname: 'Inamdar',
    class: 'D15A'
  },
  {
    _id: ObjectId("6427884e04723962301c48b0"),
    roll_no: '2',
    firstname: 'Manav',
    lastname: 'Jawrani',
    class: 'D15A'
  }
]
it_dept>
```