EXPERIMENT- 10

Student Name: Amit Kumar **UID: 23BCS12430**
Branch: BE-CSE **Section/Group: KRG_1-A**
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1. Aim:
To perform CRUD operations and aggregation using **MongoDB**, a NoSQL documentbased database.

2. Objective:
- Learn creation of databases and collections in MongoDB.
- Execute Insert, Read, Update, and Delete operations.

3. Tools / Software
- MongoDB
- Mongo Shell
- Sample Dataset: Car Dealership Data

4. Program:

```
PS C:\Users\ruchi> mongosh
Current Mongosh Log ID: 6901eb68e8ffe9c747cebea3
Connecting to:          mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2
.5.8
Using MongoDB:          8.2.1
Using Mongosh:          2.5.8

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

------
   The server generated these startup warnings when booting
   2025-10-28T10:47:21.504+05:30: Access control is not enabled for the database. Read and write access to data and conf
iguration is unrestricted
------
```

-- show dbs

```
test> show dbs
admin          40.00 KiB
carDealership   8.00 KiB
config         96.00 KiB
local          40.00 KiB
```

-- use car_dealership

```
test> use car_dealership
switched to db car_dealership
car_dealership>
```

INSERTION OPERATION:

```
db.createCollection("cars")
db.cars.insertMany([
  { maker: "Hyundai", model: "i20", fuel_type: "Petrol" },
  { maker: "Tata", model: "Nexon", fuel_type: "Diesel" },
  { maker: "Kia", model: "Seltos", fuel_type: "Petrol" },
  { maker: "Maruti", model: "Swift", fuel_type: "CNG" }
])
```

```
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('6901ec50e8ffe9c747cebea4'),
    '1': ObjectId('6901ec50e8ffe9c747cebea5'),
    '2': ObjectId('6901ec50e8ffe9c747cebea6'),
    '3': ObjectId('6901ec50e8ffe9c747cebea7')
  }
}
```

READ OPERATION:

```
db.cars.find()      db.cars.find({      fuel_type:
"Petrol" })
db.cars.find({}, { model: 1, _id: 0 })
```

```
[
  { model: 'i20' },
  { model: 'Nexon' },
  { model: 'Seltos' },
  { model: 'Swift' }
]
```

UPDATE OPERATION:

db.cars.updateOne({ model: "i20" }, { $set: { fuel_type: "Hybrid" } })
db.cars.updateMany({}, { $set: { color: "White" } }) db.cars.updateOne({
model: "Nexon" }, { $push: { features: "Sunroof" } })

```
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

DELETE OPERATION:

db.cars.deleteOne({ model: "Swift" })

```
car_dealership> db.cars.deleteOne({ model: "Swift" })
{ acknowledged: true, deletedCount: 1 }
```

AGGREGATION:

db.cars.aggregate([{ $group: { _id: "$maker", totalCars: { $sum: 1 } } }])

```
[
  { _id: 'Kia', totalCars: 1 },
  { _id: 'Hyundai', totalCars: 1 },
  { _id: 'Tata', totalCars: 1 }
]
```

5. Learning Outcomes:

1. Understand the fundamental concepts of NoSQL databases and the document-based structure of MongoDB.
2. Demonstrate proficiency in performing CRUD (Create, Read, Update, Delete) operations on MongoDB collections.

3. Apply aggregation functions to analyze and summarize data effectively using MongoDB pipelines.

4. Gain hands-on experience with Mongo Shell commands for database management and query execution.