



Worksheet 10

Student Name: Avreet Kaur

UID: 23BCS12246

Branch: CSE

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Subject Name: ADBMS

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1. Aim: Perform CRUD Operations using No-SQL Database:MongoDB

2. Objective:

- Create and manage databases and collections.
- Perform **CRUD operations** — Create, Read, Update, and Delete documents.
- Use **aggregation** for grouping and summarizing data.
- Understand how to modify, query, and manage collections efficiently in MongoDB.
- Gain practical experience with real-world data handling through command-line operations.

3. Code:

```
// 1. Show all databases
```

```
show dbs
```

```
// 2. Create or switch to your database
```

```
use db_shivanshu
```

```
// 3. Check current database
```

```
db
```

```
// 4. Create a collection (optional)
```

```
db.createCollection("movies")
```

```
// 5. Insert Operations
```

```
db.movies.insertOne({
```

```
    title: "Inception",
```

```
    director: "Christopher Nolan",
```

```
    year: 2010,
```

```
    rating: 8.8,
```



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```
genre: "Sci-Fi",  
features: ["Mind-bending", "Action"],  
added_by: "Shivanshu"  
})  
  
db.movies.insertMany([  
  {  
    title: "Interstellar",  
    director: "Christopher Nolan",  
    year: 2014,  
    rating: 8.6,  
    genre: "Sci-Fi",  
    features: ["Space", "Drama"],  
    added_by: "Shivanshu"  
  },  
  {  
    title: "Avatar",  
    director: "James Cameron",  
    year: 2009,  
    rating: 7.8,  
    genre: "Adventure",  
    features: ["3D", "Action"],  
    added_by: "Shivanshu"  
  },  
  {  
    title: "The Dark Knight",  
    director: "Christopher Nolan",  
    year: 2008,  
    rating: 8.9,  
    genre: "Action",  
    features: ["3D", "Action"],  
    added_by: "Shivanshu"  
  }])
```



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director: "Christopher Nolan",

year: 2008,

rating: 9.0,

genre: "Action",

features: ["Batman", "Crime"],

added_by: "Shivanshu"

}

)

// 6. Show all collections

show collections

// 7. Read Operations

db.movies.find().pretty()

db.movies.findOne()

db.movies.find({}, { title: 1, year: 1, _id: 0 })

db.movies.find({ genre: "Action" })

db.movies.find({ "details.language": "English" })

// 8. Update Operations

db.movies.updateOne(

 { title: "Avatar" },

 { \$set: { rating: 8.1, genre: "Sci-Fi Adventure" } }

)

db.movies.updateOne(

 { title: "Inception" },

 { \$push: { features: "Thriller" } }

)



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```
db.movies.updateOne(  
  { title: "Inception" },  
  { $pull: { features: "Action" } }  
)  
  
db.movies.updateMany(  
  { director: "Christopher Nolan" },  
  { $set: { language: "English" } }  
)  
  
db.movies.updateMany( {}, { $unset: { added_by: "" } })  
db.movies.updateMany( {}, { $set: { color: "Full HD" } })  
  
db.movies.updateOne(  
  { title: "Tenet" },  
  { $set: { director: "Christopher Nolan", year: 2020, rating: 7.5 } },  
  { upsert: true }  
)  
  
// 9. Delete Operations  
  
db.movies.deleteOne({ title: "Avatar" })  
db.movies.deleteMany({ director: "Christopher Nolan" })  
db.movies.deleteMany({ })  
  
// 10. Grouping (Aggregation)  
  
db.movies.aggregate([  
  { $group: { _id: "$director", total_movies: { $sum: 1 } } }  
)  
  
db.movies.aggregate([
```



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```
{ $group: { _id: "$genre", total_movies: { $sum: 1 } } }
```

)

// 11. Drop collection

```
db.movies.drop()
```

// 12. Drop database

```
db.dropDatabase()
```

4. Output:

```
shivanshu@shivanshu-MacBook ~ % mongosh
Current Mongosh Log ID: 698399f655d128fad2128e1b
Connecting to: mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.0.8
Using Mongosh: 2.0.8
Using Mongosh: 2.0.8

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

The server generated these startup warnings when booting
2025-10-30T22:06:00.669+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted

test> show dbs
|
admin          48.00 KiB
config        188.00 KiB
db_shivanshu  68.00 KiB
local          72.00 KiB
test> use db_shivanshu
switched to db db_shivanshu
db_shivanshu> db.createCollection("movies")
{
  "ok": 1
}
db_shivanshu> 
```

```
db_shivanshu> db.movies.insertOne({
    title: "Inception",
    director: "Christopher Nolan",
    year: 2010,
    rating: 8.8,
    genre: "Sci-Fi",
    features: ["Mind-bending", "Action"],
    added_by: "Shivanshu"
})

{
  acknowledged: true,
  insertedId: ObjectId('698399f655d128fad2128e1c')
}
db_shivanshu> db.movies.insertMany([
    {
      title: "Interstellar",
      director: "Christopher Nolan",
      year: 2014,
      rating: 8.6,
      genre: "Sci-Fi",
      features: ["Space", "Drama"],
      added_by: "Shivanshu"
    },
    {
      title: "Avatar",
      director: "James Cameron",
      year: 2009,
      rating: 7.8,
      genre: "Adventure",
      features: ["3D", "Action"],
      added_by: "Shivanshu"
    },
    {
      title: "The Dark Knight",
      director: "Christopher Nolan",
      year: 2008,
      rating: 9.0,
      genre: "Action",
      features: ["Batman", "Crime"],
      added_by: "Shivanshu"
    }
])

{
  acknowledged: true,
  insertedIds: [
    "_id: ObjectId('698399f655d128fad2128e1d')",
    "_id: ObjectId('698399f655d128fad2128e1e')",
    "_id: ObjectId('698399f655d128fad2128e1f')"
  ]
}
db_shivanshu> db.movies.findOne()
{
  _id: ObjectId('698399f655d128fad2128e1c'),
  title: "Inception",
  director: "Christopher Nolan",
  year: 2010,
  rating: 8.8,
  genre: "Sci-Fi",
  features: ["Mind-bending", "Action"],
  added_by: "Shivanshu"
}
```



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```
db_shivanshu> db.movies.find({}, { title: 1, year: 1, _id: 0 })
| [
|   { title: 'Inception', year: 2010 },
|   { title: 'Interstellar', year: 2014 },
|   { title: 'Avatar', year: 2009 },
|   { title: 'The Dark Knight', year: 2008 }
| ]
db_shivanshu> db.movies.find({ genre: "Action" })
| [
|   {
|     _id: ObjectId("690399fe55d128fad2120e1f"),
|     title: 'The Dark Knight',
|     director: 'Christopher Nolan',
|     year: 2008,
|     rating: 9,
|     genre: "Action",
|     features: [ 'Batman', 'Crime' ],
|     added_by: 'Shivanshu'
|   }
| ]
db_shivanshu> db.movies.find({ "details.language": "English" })
| []
db_shivanshu> ■
```

```
db_shivanshu> db.movies.updateOne(
|   { title: "Avatar" },
|   { $set: { rating: 8.1, genre: "Sci-Fi Adventure" } }
| )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
db_shivanshu> db.movies.updateOne(
|   { title: "Inception" },
|   { $push: { features: "Thriller" } }
| )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
db_shivanshu> db.movies.updateOne(
|   { title: "Inception" },
|   { $pull: { features: "Action" } }
| )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
db_shivanshu> db.movies.updateMany(
|   { director: "Christopher Nolan" },
|   { $set: { language: "English" } }
| )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 3,
  modifiedCount: 3,
  upsertedCount: 0
}
```

```
db_shivanshu> db.movies.updateMany({}, { $unset: { added_by: "" } })
| {
  acknowledged: true,
  insertedId: null,
  matchedCount: 4,
  modifiedCount: 4,
  upsertedCount: 0
}
db_shivanshu> db.movies.updateMany({}, { $set: { color: "Full HD" } })
| {
  acknowledged: true,
  insertedId: null,
  matchedCount: 4,
  modifiedCount: 4,
  upsertedCount: 0
}
db_shivanshu> db.movies.updateOne(
|   { title: "Tennet" },
|   { $set: { director: "Christopher Nolan", year: 2020, rating: 7.6 } },
|   { upsert: true }
| )
{
  acknowledged: true,
  insertedId: ObjectId("69039ac9ec8e8bb5a7e32c6"),
  matchedCount: 0,
  modifiedCount: 0,
  upsertedCount: 1
}
db_shivanshu> ■
```



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```
db_shivanshu> db.movies.deleteOne({ title: "Avatar" })
[]
{ acknowledged: true, deletedCount: 1 }
db_shivanshu> db.movies.deleteMany({ director: "Christopher Nolan" })
[]
{ acknowledged: true, deletedCount: 4 }
db_shivanshu> db.movies.deleteMany({})
[]
{ acknowledged: true, deletedCount: 0 }
db_shivanshu> ■
```

```
db_shivanshu> db.movies.aggregate([
|   { $group: { _id: "$director", total_movies: { $sum: 1 } } }
| ])
[]

db_shivanshu> db.movies.aggregate([
|   { $group: { _id: "$genre", total_movies: { $sum: 1 } } }
| ])
[]

db_shivanshu> ■
```

```
db_shivanshu> db.movies.drop()
[]
true
db_shivanshu> db.dropDatabase()
[]
{ ok: 1, dropped: 'db_shivanshu' }
db_shivanshu> ■
```

5. Learning Outcomes:

- Understand the structure and working of MongoDB as a NoSQL database.
- Create and manage databases and collections using MongoDB commands.
- Perform CRUD (Create, Read, Update, Delete) operations on documents.
- Apply aggregation operations for data grouping and analysis.
- Gain practical skills in handling and modifying data using MongoDB shell.