

EXPERIMENT - 7

7. Install an Open Source NoSQL Data base MangoDB & perform basic CRUD(Create, Read, Update & Delete) operations. Execute MangoDB basic Queries using CRUD operations.

1. Installing Open Source NoSQL Data base MongoDB



2. Perform basic CRUD (Create, Read, Update & Delete) operations.

1. Start MongoDB.

```
sudo systemctl start mongod
```

2. Start the MongoDB Shell

```
mongosh
```

3. Switch to a Database (Optional):

```
test> use bookDB
switched to db bookDB
bookDB>
```

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4. Create the Programming Books Collection:

```
bookDB> db.createCollection("ProgrammingBooks")
```

5. INSERT operations

a. Insert 5 Documents into the Programming Books Collection :

```
bookDB> db.ProgrammingBooks.insertMany([
```

```
{
```

```
  title: "Clean Code: A Handbook of Agile Software Craftsmanship",
```

```
  author: "Robert C. Martin",
```

```
  category: "Software Development",
```

```
  year: 2008
```

```
},
```

```
{
```

```
  title: "JavaScript: The Good Parts",
```

```
  author: "Douglas Crockford",
```

```
  category: "JavaScript",
```

```
  year: 2008
```

```
},
```

```
{
```

```
  title: "Design Patterns: Elements of Reusable Object-Oriented Software",
```

```
  author: "Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides",
```

```
  category: "Software Design",
```

```
  year: 1994
```

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```
    },  
  
    {  
  
        title: "Introduction to Algorithms",  
  
        author: "Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein",  
  
        category: "Algorithms",  
  
        year: 1990  
  
    },  
  
    {  
  
        title: "Python Crash Course: A Hands-On, Project-Based Introduction to Programming",  
  
        author: "Eric Matthes",  
  
        category: "Python",  
  
        year: 2015  
  
    }  
]  
)
```

b. Insert a Single Document into ProgrammingBooks

```
bookDB> db.ProgrammingBooks.insertOne({  
    title: "The Pragmatic Programmer: Your Journey to Mastery",  
    author: "David Thomas, Andrew Hunt",  
    category: "Software Development",  
    year: 1999  
})
```

6. Read (Query) Operations

a. Find All Documents

```
bookDB> db.ProgrammingBooks.find().pretty()
```

```
[
```

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```
{  
  
  _id: ObjectId('663eaaebae582498972202df'),  
  
  title: 'Clean Code: A Handbook of Agile Software Craftsmanship',  
  
  author: 'Robert C. Martin',  
  
  category: 'Software Development',  
  
  year: 2008  
  
},  
  
{  
  
  _id: ObjectId('663eaaebae582498972202e0'),  
  
  title: 'JavaScript: The Good Parts',  
  
  author: 'Douglas Crockford',  
  
  category: 'JavaScript',  
  
  year: 2008  
  
},  
  
{  
  
  _id: ObjectId('663eaaebae582498972202e1'),  
  
  title: 'Design Patterns: Elements of Reusable Object-Oriented Software',  
  
  author: 'Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides',  
  
  category: 'Software Design',  
  
  year: 1994  
  
},  
  
{  
  
  _id: ObjectId('663eaaebae582498972202e2'),
```

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```
title: 'Introduction to Algorithms',
author: 'Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein',
category: 'Algorithms',
year: 1990
},
{
  _id: ObjectId('663eaaebae582498972202e3'),
  title: 'Python Crash Course: A Hands-On, Project-Based Introduction to Programming',
  author: 'Eric Matthes',
  category: 'Python',
  year: 2015
},
{
  _id: ObjectId('663eab05ae582498972202e4'),
  title: 'The Pragmatic Programmer: Your Journey to Mastery',
  author: 'David Thomas, Andrew Hunt',
  category: 'Software Development',
  year: 1999
}
]
```

b. Find Documents Matching a Condition

```
bookDB> db.ProgrammingBooks.find({ year: { $gt: 2000 } }).pretty()
```

```
[
```

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```
{  
  _id: ObjectId('663eaaebae582498972202df'),  
  title: 'Clean Code: A Handbook of Agile Software Craftsmanship',  
  author: 'Robert C. Martin',  
  category: 'Software Development',  
  year: 2008  
},  
  
{  
  _id: ObjectId('663eaaebae582498972202e0'),  
  title: 'JavaScript: The Good Parts',  
  author: 'Douglas Crockford',  
  category: 'JavaScript',  
  year: 2008  
},  
  
{  
  _id: ObjectId('663eaaebae582498972202e3'),  
  title: 'Python Crash Course: A Hands-On, Project-Based Introduction to Programming',  
  author: 'Eric Matthes',  
  category: 'Python',  
  year: 2015  
}  
]
```

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7. Update Operations

a. Update a Single Document

```
bookDB>db.ProgrammingBooks.updateOne(

  { title: "Clean Code: A Handbook of Agile Software Craftsmanship" },

  { $set: { author: "Robert C. Martin (Uncle Bob)" } }

)

//verify by displaying books published in year 2008

bookDB> db.ProgrammingBooks.find({ year: { $eq: 2008 } }).pretty()

[

  {

    _id: ObjectId('663eaaebae582498972202df'),

    title: 'Clean Code: A Handbook of Agile Software Craftsmanship',

    author: 'Robert C. Martin (Uncle Bob)',

    category: 'Software Development',

    year: 2008

  },

  {

    _id: ObjectId('663eaaebae582498972202e0'),

    title: 'JavaScript: The Good Parts',

    author: 'Douglas Crockford',

    category: 'JavaScript',

    year: 2008

  }

]
```

```
]

```

b. Update Multiple Documents

```
bookDB> db.ProgrammingBooks.updateMany(

```

```
  { year: { $lt: 2010 } },

```

```
  { $set: { category: "Classic Programming Books" } }

```

```
)

```

```
//verify the update operation by displaying books published before year 2010

```

```
bookDB> db.ProgrammingBooks.find({ year: { $lt: 2010 } }).pretty()

```

```
[

```

```
{

```

```
  _id: ObjectId('663eaaebae582498972202df'),

```

```
  title: 'Clean Code: A Handbook of Agile Software Craftsmanship',

```

```
  author: 'Robert C. Martin (Uncle Bob)',

```

```
  category: 'Classic Programming Books',

```

```
  year: 2008

```

```
},

```

```
{

```

```
  _id: ObjectId('663eaaebae582498972202e0'),

```

```
  title: 'JavaScript: The Good Parts',

```

```
  author: 'Douglas Crockford',

```

```
  category: 'Classic Programming Books',

```

```
  year: 2008

```

```
},

```


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```
{  
  
  _id: ObjectId('663eaaebae582498972202e1'),  
  
  title: 'Design Patterns: Elements of Reusable Object-Oriented Software',  
  
  author: 'Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides',  
  
  category: 'Classic Programming Books',  
  
  year: 1994  
  
},  
  
{  
  
  _id: ObjectId('663eaaebae582498972202e2'),  
  
  title: 'Introduction to Algorithms',  
  
  author: 'Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein',  
  
  category: 'Classic Programming Books',  
  
  year: 1990  
  
},  
  
{  
  
  _id: ObjectId('663eab05ae582498972202e4'),  
  
  title: 'The Pragmatic Programmer: Your Journey to Mastery',  
  
  author: 'David Thomas, Andrew Hunt',  
  
  category: 'Classic Programming Books',  
  
  year: 1999  
  
}  
  
]
```

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8. Delete Operations

a. Delete a Single Document

```
bookDB> db.ProgrammingBooks.deleteOne({ title: "JavaScript: The Good Parts" })
```

```
{ acknowledged: true, deletedCount: 1 }
```

b. Delete Multiple Documents

```
bookDB> db.ProgrammingBooks.deleteMany({ year: { $lt: 1995 } })
```

```
{ acknowledged: true, deletedCount: 2 }
```

c. Delete All Documents in the Collection:

```
//delete all documents in a collection
```

```
bookDB> db.ProgrammingBooks.deleteMany({ })
```

```
{ acknowledged: true, deletedCount: 3 }
```

```
//verify by displaying the collection
```

```
bookDB> db.ProgrammingBooks.find().pretty()
```

D. Delete the Collection Using drop():

```
bookDB> show collections
```

```
ProgrammingBooks
```

```
bookDB> db.ProgrammingBooks.drop()
```

```
true
```

```
bookDB> show collections
```

```
bookDB>
```