



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Experiment -10

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Branch: BE-CSE

Section/Group: KRG_2B

Semester: 5th

Date of Performance: 27/10/25

Subject Name: Advanced Database and Management System

SubjectCode: 23CSP-333

1. Problem Description/Aim:

To perform and understand fundamental MongoDB operations — including insertion, reading, updating, deletion, and aggregation — for efficient data handling and management in a NoSQL database environment.

2. Objective:

1. To learn how to insert single and multiple documents using insertOne() and insertMany().
2. To apply various find() queries for data retrieval, including conditional and projectionbased queries.
3. To practice updating records using updateOne(), updateMany(), \$push, \$pull, \$unset, and \$upsert.
4. To execute deletion commands (deleteOne(), deleteMany()) and aggregation using \$group and \$sum for data analysis.

3. MONGODB OPERATION AND OUTPUTS -

```
test> use bookstore_db
switched to db bookstore_db
bookstore_db> db.books.insertOne({
...   title: "The Alchemist",
...   author: "Paulo Coelho",
...   genre: "Fiction",
...   price: 450,
...   pages: 208,
...   publisher: "HarperCollins",
...   fuel_type: "N/A",
...   features: ["Inspirational", "Adventure"],
...   available: true
... })
{
  acknowledged: true,
  insertedId: ObjectId('6904922c66c37ffc0663b112')
}
bookstore_db>
```



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```
bookstore_db> db.books.insertMany([
...   {
...     title: "Atomic Habits",
...     author: "James Clear",
...     genre: "Self-Help",
...     price: 550,
...     pages: 320,
...     publisher: "Penguin",
...     fuel_type: "N/A",
...     features: ["Productivity", "Motivation"],
...     available: true
...   },
...   {
...     title: "Wings of Fire",
...     author: "A.P.J. Abdul Kalam",
...     genre: "Autobiography",
...     price: 400,
...     pages: 180,
...     publisher: "Universities Press",
...     fuel_type: "N/A",
...     features: ["Inspiration", "Biography"],
...     available: false
...   },
...   {
...     title: "Deep Work",
...     author: "Cal Newport",
...     genre: "Self-Help",
...     price: 600,
...     pages: 304,
...     publisher: "Grand Central",
...     fuel_type: "N/A",
...     features: ["Focus", "Discipline"],
...     available: true
...   }
])
```



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```
bookstore_db> db.books.find()
[
  {
    _id: ObjectId('6904922c66c37ffc0663b112'),
    title: 'The Alchemist',
    author: 'Paulo Coelho',
    genre: 'Fiction',
    price: 450,
    pages: 208,
    publisher: 'HarperCollins',
    fuel_type: 'N/A',
    features: [ 'Inspirational', 'Adventure' ],
    available: true
  },
  {
    _id: ObjectId('6904926266c37ffc0663b113'),
    title: 'Atomic Habits',
    author: 'James Clear',
    genre: 'Self-Help',
    price: 550,
    pages: 320,
    publisher: 'Penguin',
    fuel_type: 'N/A',
    features: [ 'Productivity', 'Motivation' ],
    available: true
  },
  {
    _id: ObjectId('6904926266c37ffc0663b114'),
    title: 'Wings of Fire',
    author: 'A.P.J. Abdul Kalam',
  }
]
```

```
bookstore_db> db.books.findOne()
{
  _id: ObjectId('6904922c66c37ffc0663b112'),
  title: 'The Alchemist',
  author: 'Paulo Coelho',
  genre: 'Fiction',
  price: 450,
  pages: 208,
  publisher: 'HarperCollins',
  fuel_type: 'N/A',
  features: [ 'Inspirational', 'Adventure' ],
  available: true
}
bookstore_db> |
```



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```
bookstore_db> db.books.find({}, {_id:0,title: 1,price: 1})
[
  { title: 'The Alchemist', price: 450 },
  { title: 'Atomic Habits', price: 550 },
  { title: 'Wings of Fire', price: 400 },
  { title: 'Deep Work', price: 600 }
]
bookstore_db>
```

```
bookstore_db> db.books.find({price: {$gt: 500}})
[
  {
    _id: ObjectId('6904926266c37ffc0663b113'),
    title: 'Atomic Habits',
    author: 'James Clear',
    genre: 'Self-Help',
    price: 550,
    pages: 320,
    publisher: 'Penguin',
    fuel_type: 'N/A',
    features: [ 'Productivity', 'Motivation' ],
    available: true
  },
  {
    _id: ObjectId('6904926266c37ffc0663b115'),
    title: 'Deep Work',
    author: 'Cal Newport',
    genre: 'Self-Help',
    price: 600,
    pages: 304,
    publisher: 'Grand Central',
    fuel_type: 'N/A',
    features: [ 'Focus', 'Discipline' ],
    available: true
  }
]
bookstore_db>
```



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```
bookstore_db> db.books.updateOne(  
...   { title: "The Alchemist" },  
...   { $set: { publication: { year: 1988, country: "Brazil" } } }  
... )  
...  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 1,  
  modifiedCount: 1,  
  upsertedCount: 0  
}  
bookstore_db> |
```

```
bookstore_db> db.books.updateOne(  
...   { title: "The Alchemist" },  
...   { $set: { price: 500 } }  
... )  
...  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 1,  
  modifiedCount: 1,  
  upsertedCount: 0  
}  
bookstore_db>
```

```
bookstore_db> db.books.updateOne(  
...   { title: "Atomic Habits" },  
...   { $push: { features: "Habit Tracking" } }  
... )  
...  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 1,  
  modifiedCount: 1,  
  upsertedCount: 0  
}  
bookstore_db>
```



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```
bookstore_db> db.books.updateOne(  
...   { title: "Atomic Habits" },  
...   { $pull: { features: "Motivation" } }  
... )  
...  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 1,  
  modifiedCount: 1,  
  upsertedCount: 0  
}  
bookstore_db>
```

```
bookstore_db> db.books.updateMany({}, { $set: { language: "English" } })  
  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 4,  
  modifiedCount: 4,  
  upsertedCount: 0  
}  
bookstore_db>
```

```
bookstore_db> db.books.updateMany({}, { $push: { features: "Reader Favorite" } })  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 4,  
  modifiedCount: 4,  
  upsertedCount: 0  
}  
bookstore_db>
```

```
bookstore_db> db.books.updateOne(  
...   { title: "Deep Work" },  
...   { $unset: { publisher: "" } }  
... )  
...  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 1,  
  modifiedCount: 1,  
  upsertedCount: 0  
}  
bookstore_db>
```



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```
bookstore_db> db.books.deleteOne({ title: "Deep Work" })
{ acknowledged: true, deletedCount: 1 }
bookstore_db>
```

```
bookstore_db> db.books.deleteMany({ price: { $lt: 500 } })
{ acknowledged: true, deletedCount: 1 }
bookstore_db>
```

```
bookstore_db> db.books.aggregate([
...   {
...     $group: {
...       _id: "$author",
...       total_books: { $sum: 1 }
...     }
...   }
... ])
[{
  _id: 'James Clear', total_books: 1 },
  { _id: 'Paulo Coelho', total_books: 1 }
]
bookstore_db> |
```

```
bookstore_db> db.books.aggregate([
...   {
...     $group: {
...       _id: "$genre",
...       avg_price: { $avg: "$price" }
...     }
...   }
... ])
[{
  _id: 'Fiction', avg_price: 500 },
  { _id: 'Self-Help', avg_price: 550 }
]
bookstore_db> |
```



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```
bookstore_db> db.books.aggregate([
...   {
...     $group: {
...       _id: "$available",
...       count: { $sum: 1 }
...     }
...   }
... ])
...
[ { _id: true, count: 2 } ]
bookstore_db> db.books.aggregate([
...   {
...     $group: {
...       _id: "$genre",
...       TotalBooks: { $sum: 1 }
...     }
...   }
... ])
...
[
  { _id: 'Fiction', TotalBooks: 1 },
  { _id: 'Self-Help', TotalBooks: 1 }
]
bookstore_db> |
```