

This documentation guides you through inserting, querying, updating, aggregating, and deleting sample product data in MongoDB. Each section provides clear examples, making it ideal for both beginners and those refining their MongoDB skills.

1. Inserting Sample Documents

Begin by creating and populating the products collection:

```
hexaware> db.products.insertMany([
...   {
...     name: "Laptop Pro 15",
...     brand: "TechVision",
...     price: 1200,
...     stock: 38,
...     tags: ["electronics", "laptop", "pro"],
...     specs: {
...       cpu: "Intel i7",
...       ram: "16GB",
...       storage: "512GB SSD"
...     },
...     reviews: [
...       { user: "Alice", rating: 5, comment: "Super fast!" },
...       { user: "Bob", rating: 4, comment: "Great build quality." }
...     ]
...   },
...   {
...     name: "EcoSmart Bottle",
...     brand: "GreenWay",
...     price: 35,
...     stock: 120,
...     tags: ["kitchen", "bottle", "eco"],
...     specs: {
...       material: "Stainless Steel",
...       capacity: "750ml"
...     },
...     reviews: [
...       { user: "Charlie", rating: 5, comment: "Keeps water cold!" }
...     ]
...   },
...   {
...     name: "Wireless Mouse",
...     brand: "ClickIt",
...     price: 19,
...     stock: 245,
...     tags: ["electronics", "accessory"],
...     specs: {
...       dpi: 1600,
...       battery: "AA"
...     },
...     reviews: []
...   }
... ],
... {
...   acknowledged: true,
...   insertedIds: {
...     '0': ObjectId('6880690261c6ebd95eeec4a9'),
...     '1': ObjectId('6880690261c6ebd95eeec4aa'),
...     '2': ObjectId('6880690261c6ebd95eeec4ab'),
...     '3': ObjectId('6880690261c6ebd95eeec4ac')
...   }
... })
hexaware>
```

2. Reading and Querying Data

- All Products

db.products.find()

```
hexaware> db.products.find()
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4a9'),
    name: 'Laptop Pro 15',
    brand: 'TechVision',
    price: 1200,
    stock: 38,
    tags: [ 'electronics', 'laptop', 'pro' ],
    specs: { cpu: 'Intel i7', ram: '16GB', storage: '512GB SSD' },
    reviews: [
      { user: 'Alice', rating: 5, comment: 'Super fast!' },
      { user: 'Bob', rating: 4, comment: 'Great build quality.' }
    ]
  },
  {
    _id: ObjectId('6880690261c6ebd95eeec4aa'),
    name: 'EcoSmart Bottle',
    brand: 'GreenWay',
    price: 35,
    stock: 120,
    tags: [ 'kitchen', 'bottle', 'eco' ],
    specs: { material: 'Stainless Steel', capacity: '750ml' },
    reviews: [ { user: 'Charlie', rating: 5, comment: 'Keeps water cold!' } ]
  },
  {
    _id: ObjectId('6880690261c6ebd95eeec4ab'),
    name: 'Wireless Mouse',
    brand: 'ClickIt',
    price: 19,
    stock: 245,
    tags: [ 'electronics', 'accessory' ],
    specs: { dpi: 1600, battery: 'AA' },
    reviews: []
  },
  {
    _id: ObjectId('6880690261c6ebd95eeec4ac'),
    name: 'Yoga Mat Deluxe',
    brand: 'FitLine',
    price: 45,
    stock: 72,
    tags: [ 'fitness', 'yoga' ],
    specs: { length: '183cm', thickness: '10mm' },
    reviews: [ { user: 'Dana', rating: 5, comment: 'Perfect thickness!' } ]
  }
]
hexaware> |
```

- Project Name and Price

db.products.find({}, { name: 1, price: 1, _id: 0 })

```
hexaware> db.products.find({}, { name: 1, price: 1, _id: 0 })
[
  { name: 'Laptop Pro 15', price: 1200 },
  { name: 'EcoSmart Bottle', price: 35 },
  { name: 'Wireless Mouse', price: 19 },
  { name: 'Yoga Mat Deluxe', price: 45 }
]
hexaware> |
```

- Price Greater Than \$50

db.products.find({ price: { \$gt: 50 } })

```
hexaware> db.products.find({ price: { $gt: 50 } })
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4a9'),
    name: 'Laptop Pro 15',
    brand: 'TechVision',
    price: 1200,
    stock: 38,
    tags: [ 'electronics', 'laptop', 'pro' ],
    specs: { cpu: 'Intel i7', ram: '16GB', storage: '512GB SSD' },
    reviews: [
      { user: 'Alice', rating: 5, comment: 'Super fast!' },
      { user: 'Bob', rating: 4, comment: 'Great build quality.' }
    ]
  }
]
hexaware> |
```

- Products Tagged with "electronics"

db.products.find({ tags: "electronics" })

```
hexaware> db.products.find({ price: { $gt: 50 } })
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4a9'),
    name: 'Laptop Pro 15',
    brand: 'TechVision',
    price: 1200,
    stock: 38,
    tags: [ 'electronics', 'laptop', 'pro' ],
    specs: { cpu: 'Intel i7', ram: '16GB', storage: '512GB SSD' },
    reviews: [
      { user: 'Alice', rating: 5, comment: 'Super fast!' },
      { user: 'Bob', rating: 4, comment: 'Great build quality.' }
    ]
  }
]
hexaware> db.products.find({ tags: "electronics" })
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4a9'),
    name: 'Laptop Pro 15',
    brand: 'TechVision',
    price: 1200,
    stock: 38,
    tags: [ 'electronics', 'laptop', 'pro' ],
    specs: { cpu: 'Intel i7', ram: '16GB', storage: '512GB SSD' },
    reviews: [
      { user: 'Alice', rating: 5, comment: 'Super fast!' },
      { user: 'Bob', rating: 4, comment: 'Great build quality.' }
    ]
  },
  {
    _id: ObjectId('6880690261c6ebd95eeec4ab'),
    name: 'Wireless Mouse',
    brand: 'ClickIt',
    price: 19,
    stock: 245,
    tags: [ 'electronics', 'accessory' ],
    specs: { dpi: 1600, battery: 'AA' },
    reviews: []
  }
]
hexaware> |
```

- Reviewed by "Alice"

```
db.products.find({ "reviews.user": "Alice" })
```

```
hexaware> db.products.find({ "reviews.user": "Alice" })
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4a9'),
    name: 'Laptop Pro 15',
    brand: 'TechVision',
    price: 1200,
    stock: 38,
    tags: [ 'electronics', 'laptop', 'pro' ],
    specs: { cpu: 'Intel i7', ram: '16GB', storage: '512GB SSD' },
    reviews: [
      { user: 'Alice', rating: 5, comment: 'Super fast!' },
      { user: 'Bob', rating: 4, comment: 'Great build quality.' }
    ]
  }
]
hexaware> |
```

- Name Starts with "Yoga"

```
db.products.find({ name: { $regex: "^Yoga" } })
```

```
hexaware> db.products.find({ name: { $regex: "^Yoga" } })
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4ac'),
    name: 'Yoga Mat Deluxe',
    brand: 'FitLine',
    price: 45,
    stock: 72,
    tags: [ 'fitness', 'yoga' ],
    specs: { length: '183cm', thickness: '10mm' },
    reviews: [ { user: 'Dana', rating: 5, comment: 'Perfect thickness!' } ]
  }
]
hexaware> |
```

- Has CPU Spec

```
db.products.find({ "specs.cpu": { $exists: true } })
```

```
hexaware> db.products.find({ "specs.cpu": { $exists: true } })
[
  {
    _id: ObjectId('6880690261c6ebd95eeec4a9'),
    name: 'Laptop Pro 15',
    brand: 'TechVision',
    price: 1200,
    stock: 38,
    tags: [ 'electronics', 'laptop', 'pro' ],
    specs: { cpu: 'Intel i7', ram: '16GB', storage: '512GB SSD' },
    reviews: [
      { user: 'Alice', rating: 5, comment: 'Super fast!' },
      { user: 'Bob', rating: 4, comment: 'Great build quality.' }
    ]
  }
]
hexaware> |
```

3. Updating Documents

updateOne

- Update Price

```
hexaware> db.products.updateOne(
...   { name: "Laptop Pro 15" },
...   { $set: { price: 1125 } }
... )
...
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
hexaware> |
```

- Add Review

```
hexaware> db.products.updateOne(
...   { name: "EcoSmart Bottle" },
...   { $push: { reviews: { user: "Eve", rating: 4, comment: "Pretty good." } } }
... )
...
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
hexaware> |
```

updateMany

- Increment Stock for All "electronics"

```
hexaware> db.products.updateMany(
...   { tags: "electronics" },
...   { $inc: { stock: 10 } }
... )
...
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 2,
  modifiedCount: 2,
  upsertedCount: 0
}
hexaware> |
```

- Set Warranty for Products Below \$50

```
hexaware> db.products.updateMany(
...   { price: { $lt: 50 } },
...   { $set: { warranty: "6 months" } }
... )
...
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 3,
  modifiedCount: 3,
  upsertedCount: 0
}
hexaware> |
```

- Remove warranty Field

```
hexaware> db.products.updateMany(
...   {},
...   { $unset: { warranty: "" } }
... )
...
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 4,
  modifiedCount: 3,
  upsertedCount: 0
}
hexaware> |
```

4. Deleting Documents

deleteOne

- Delete "Yoga Mat Deluxe"

```
db.products.deleteOne({ name: "Yoga Mat Deluxe" })
```

```
hexaware> db.products.deleteOne({ name: "Yoga Mat Deluxe" })
{ acknowledged: true, deletedCount: 1 }
hexaware> |
```

deleteMany

- Delete Stockless Products

```
db.products.deleteMany({ stock: { $lte: 0 } })
```

```
hexaware> db.products.deleteMany({ stock: { $lte: 0 } })
{ acknowledged: true, deletedCount: 0 }
hexaware> |
```

- Delete All "fitness" Products

```
db.products.deleteMany({ tags: "fitness" })
```

```
hexaware> db.products.deleteMany({ tags: "fitness" })
{ acknowledged: true, deletedCount: 0 }
hexaware> |
```

5. Aggregation Operations

- Average Price per Brand

```
hexaware> db.products.aggregate([
...   { $group: { _id: "$brand", averagePrice: { $avg: "$price" } } }
... ])
...
[
  { _id: 'ClickIt', averagePrice: 19 },
  { _id: 'TechVision', averagePrice: 1125 },
  { _id: 'GreenWay', averagePrice: 35 }
]
hexaware> |
```

- **Product Count per Tag**

```
hexaware> db.products.aggregate([
...   { $unwind: "$tags" },
...   { $group: { _id: "$tags", count: { $sum: 1 } } }
... ])
...
[
  { _id: 'laptop', count: 1 },
  { _id: 'pro', count: 1 },
  { _id: 'electronics', count: 2 },
  { _id: 'accessory', count: 1 },
  { _id: 'bottle', count: 1 },
  { _id: 'kitchen', count: 1 },
  { _id: 'eco', count: 1 }
]
hexaware> |
```

6. Indexing for Performance

- **Index on Brand**

```
db.products.createIndex({ brand: 1 })
```

```
hexaware> db.products.createIndex({ brand: 1 })
brand_1
hexaware> |
```

- **Compound Index (Name, Price)**

```
db.products.createIndex({ name: 1, price: -1 })
```

```
hexaware> db.products.createIndex({ name: 1, price: -1 })
name_1_price_-1
hexaware> |
```

7. MongoDB Compass Guidance

- **Insert:** Use "Add Data" or import JSON from GUI.
- **Find/Filter:** Same JSON filter syntax as above.
- **Edit:** Double-click or use edit buttons for documents and arrays.
- **Bulk Delete:** Select and remove multiple documents visually.
- **Index Management:** Use the Indexes tab for creation and review.
- **Aggregations:** Use Aggregation tab with sample pipelines for instant previews.