OPERATIONAL TASKS

CRUD Operations:

1. **Using database:**

```
test> use mongopractice
switched to db mongopractice
mongopractice> db.collection.insertOne({ field1: "value1", field2: "value2"
})
{
  acknowledged: true,
  insertedId: ObjectId('687fa65599991b1af4eec4aa')
}
```

2. **Inserting multiple documents:**

```
mongopractice> db.collection.insertMany([
... { field1: "value1", field2: "value2" },
... { field1: "value3", field2: "value4" }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('687fa65e99991b1af4eec4ab'),
    '1': ObjectId('687fa65e99991b1af4eec4ac')
  }
}
```

3. **Displaying all the documents:**

```
mongopractice> db.collection.find()
[
  {
    _id: ObjectId('687f17f8313500aed4eec4aa'),
    field1: 'value1',
    field2: 'new value'
  },
  {
    _id: ObjectId('687f17f8313500aed4eec4ab'),
    field1: 'value3',
    field2: 'value4',
    score: 15
  },
  {
    _id: ObjectId('687f26e7313500aed4eec4ac'),
    field1: 'new entry',
    field2: 'another value'
  },
  {
    _id: ObjectId('687fa65599991b1af4eec4aa'),
    field1: 'value1',
    field2: 'value2'
  },
  {
    _id: ObjectId('687fa65e99991b1af4eec4ab'),
    field1: 'value1',
    field2: 'value2'
  },
  {
    _id: ObjectId('687fa65e99991b1af4eec4ac'),
    field1: 'value3',
    field2: 'value4'
  }
]
```

4. **Updating the existing document**

```
mongopractice> db.collection.updateOne(
... { field1: "value1" },
... { $set: { field2: "new value" } } // Updates field2 to "new value"
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 0,
  upsertedCount: 0
}
mongopractice> db.collection.find()
[
  {
    _id: ObjectId('687f17f8313500aed4eec4aa'),
    field1: 'value1',
    field2: 'new value'
  },
  {
    _id: ObjectId('687f17f8313500aed4eec4ab'),
    field1: 'value3',
    field2: 'value4',
    score: 15
  },
  {
    _id: ObjectId('687f26e7313500aed4eec4ac'),
    field1: 'new entry',
    field2: 'another value'
  },
  {
    _id: ObjectId('687fa65599991b1af4eec4aa'),
    field1: 'value1',
    field2: 'value2'
  },
  {
    _id: ObjectId('687fa65e99991b1af4eec4ab'),
    field1: 'value1',
    field2: 'value2'
  },
  {
    _id: ObjectId('687fa65e99991b1af4eec4ac'),
    field1: 'value3',
    field2: 'value4'
  }
```

5. **Deleting document:**

```
mongopractice> db.collection.deleteOne({ field1: "value1" })
{ acknowledged: true, deletedCount: 1 }
```

Using MongoDB Projection and Query Documents:

```
GeeksforGeeks> db.employee.insertMany([
...     {
...       _id: new ObjectId("5e49177592e6dfa3fc48dd73"),
...       name: "Sonu",
...       age: 26,
...       branch: "CSE",
...       department: "HR",
...       salary: 44000,
...       joiningYear: 2018
...     },
...     {
...       _id: new ObjectId("5e539e0492e6dfa3fc48ddaa"),
...       name: "Amu",
...       age: 24,
...       branch: "ECE",
...       department: "HR",
...       salary: 25000,
...       joiningYear: 2017
...     },
...     {
...       _id: new ObjectId("5e539e0492e6dfa3fc48ddab"),
...       name: "Priya",
...       age: 24,
...       branch: "CSE",
...       department: "Development",
...       salary: 30000,
...       joiningYear: 2017
...     },
...     {
...       _id: new ObjectId("5e539e0492e6dfa3fc48ddac"),
...       name: "Mohit",
...       age: 26,
...       branch: "CSE",
...       department: "Development",
...       salary: 30000,
...       joiningYear: 2018
...     }
... ])
...
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('5e49177592e6dfa3fc48dd73'),
    '1': ObjectId('5e539e0492e6dfa3fc48ddaa'),
    '2': ObjectId('5e539e0492e6dfa3fc48ddab'),
    '3': ObjectId('5e539e0492e6dfa3fc48ddac')
  }
}
```

1. **Displaying Only Specific Fields**

```
GeeksforGeeks> db.employee.find({}, {name: 1, age: 1})
[
  { _id: ObjectId('5e49177592e6dfa3fc48dd73'), name: 'Sonu', age: 26 },
  { _id: ObjectId('5e539e0492e6dfa3fc48ddaa'), name: 'Amu', age: 24 },
  { _id: ObjectId('5e539e0492e6dfa3fc48ddab'), name: 'Priya', age: 24 },
  { _id: ObjectId('5e539e0492e6dfa3fc48ddac'), name: 'Mohit', age: 26 }
]
```

2. **Displaying the names of the employees without the _id field**

```
GeeksforGeeks> db.employee.find({}, {name: 1, age: 1, _id: 0})
[
  { name: 'Sonu', age: 26 },
  { name: 'Amu', age: 24 },
  { name: 'Priya', age: 24 },
  { name: 'Mohit', age: 26 }
]
```

3. **Displaying the name and the department of the employees without the _id field and employees whose joining year is 2018**

```
GeeksforGeeks> db.employee.find({joiningYear: 2018}, {name: 1, department: 1, _id: 0})
[
  { name: 'Sonu', department: 'HR' },
  { name: 'Mohit', department: 'Development' }
]
```

4. **Select All Documents in inventory collection**

```
GeeksforGeeks> use mongopractice
switched to db mongopractice
mongopractice> db.inventory.find( {} )
[
  {
    _id: ObjectId('687e0967df1a992330eec4ae'),
    item: 'canvas',
    qty: 100,
    tags: [ 'cotton' ],
    size: { h: 28, w: 35.5, uom: 'cm' }
  },
  {
    _id: ObjectId('687e0979df1a992330eec4af'),
    item: 'journal',
    qty: 25,
    tags: [ 'blank', 'red' ],
    size: { h: 14, w: 21, uom: 'cm' }
  },
  {
    _id: ObjectId('687e0979df1a992330eec4b0'),
    item: 'mat',
    qty: 85,
    tags: [ 'gray' ],
    size: { h: 27.9, w: 35.5, uom: 'cm' }
  },
  {
    _id: ObjectId('687e0979df1a992330eec4b1'),
    item: 'mousepad',
    qty: 25,
    tags: [ 'gel', 'blue' ],
    size: { h: 19, w: 22.85, uom: 'cm' }
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ad'),
    item: 'journal',
    qty: 25,
    size: { h: 14, w: 21, uom: 'cm' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ae'),
    item: 'notebook',
    qty: 50,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'A'
  }
```

5. **Selects from the inventory collection all documents where the status equals "D":**

```
mongopractice> db.inventory.find( { status: "D" } )
[
  {
    _id: ObjectId('687f2c8f313500aed4eec4af'),
    item: 'paper',
    qty: 100,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'D'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4b0'),
    item: 'planner',
    qty: 75,
    size: { h: 22.85, w: 30, uom: 'cm' },
    status: 'D'
  }
]
```

6. **Retrieves all documents from the inventory collection where status equals either "A" or "D":**

```
mongopractice> db.inventory.find( { status: { $in: [ "A", "D" ] } } )
[
  {
    _id: ObjectId('687f2c8f313500aed4eec4ad'),
    item: 'journal',
    qty: 25,
    size: { h: 14, w: 21, uom: 'cm' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ae'),
    item: 'notebook',
    qty: 50,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4af'),
    item: 'paper',
    qty: 100,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'D'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4b0'),
    item: 'planner',
    qty: 75,
    size: { h: 22.85, w: 30, uom: 'cm' },
    status: 'D'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4b1'),
    item: 'postcard',
    qty: 45,
    size: { h: 10, w: 15.25, uom: 'cm' },
    status: 'A'
  }
]
```

7. **Retrieves all documents in the inventory collection where the status equals "A" and qty is less than ($lt) 30:**

```
mongopractice> db.inventory.find( { status: "A", qty: { $lt: 30 } } )
[
  {
    _id: ObjectId('687f2c8f313500aed4eec4ad'),
    item: 'journal',
    qty: 25,
    size: { h: 14, w: 21, uom: 'cm' },
    status: 'A'
  }
]
```

8. **Retrieves all documents in the collection where the status equals "A" or qty is less than ($lt) 30:**

```
mongopractice> db.inventory.find( { $or: [ { status: "A" }, { qty: { $lt: 30 } } ] } )
[
  {
    _id: ObjectId('687e0979df1a992330eec4af'),
    item: 'journal',
    qty: 25,
    tags: [ 'blank', 'red' ],
    size: { h: 14, w: 21, uom: 'cm' }
  },
  {
    _id: ObjectId('687e0979df1a992330eec4b1'),
    item: 'mousepad',
    qty: 25,
    tags: [ 'gel', 'blue' ],
    size: { h: 19, w: 22.85, uom: 'cm' }
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ad'),
    item: 'journal',
    qty: 25,
    size: { h: 14, w: 21, uom: 'cm' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ae'),
    item: 'notebook',
    qty: 50,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4b1'),
    item: 'postcard',
    qty: 45,
    size: { h: 10, w: 15.25, uom: 'cm' },
    status: 'A'
  }
]
```

Query on Embedded/Nested Documents

1. **selects all documents where the field uom nested in the size field equals "in":**

```
mongopractice> db.inventory.find( { "size.uom": "in" } )
[
  {
    _id: ObjectId('687f2c8f313500aed4eec4ae'),
    item: 'notebook',
    qty: 50,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4af'),
    item: 'paper',
    qty: 100,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'D'
  }
]
```

2. **Query uses the less than operator (`$lt`) on the field `h` embedded in the `size` field:**

```
mongopractice> db.inventory.find( { "size.h": { $lt: 15 } } )
[
  {
    _id: ObjectId('687e0979df1a992330eec4af'),
    item: 'journal',
    qty: 25,
    tags: [ 'blank', 'red' ],
    size: { h: 14, w: 21, uom: 'cm' }
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ad'),
    item: 'journal',
    qty: 25,
    size: { h: 14, w: 21, uom: 'cm' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ae'),
    item: 'notebook',
    qty: 50,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'A'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4af'),
    item: 'paper',
    qty: 100,
    size: { h: 8.5, w: 11, uom: 'in' },
    status: 'D'
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4b1'),
    item: 'postcard',
    qty: 45,
    size: { h: 10, w: 15.25, uom: 'cm' },
    status: 'A'
  }
]
```

3. **Selects all documents where the field size equals the document { h: 14, w: 21, uom: "cm" }:**

```
mongopractice> db.inventory.find( { size: { h: 14, w: 21, uom: "cm" } } )
[
  {
    _id: ObjectId('687e0979df1a992330eec4af'),
    item: 'journal',
    qty: 25,
    tags: [ 'blank', 'red' ],
    size: { h: 14, w: 21, uom: 'cm' }
  },
  {
    _id: ObjectId('687f2c8f313500aed4eec4ad'),
    item: 'journal',
    qty: 25,
    size: { h: 14, w: 21, uom: 'cm' },
    status: 'A'
  }
]
```

4. **Projecting only the name and age fields and (_id by default).**

```
mongopractice> db.inventory.find({}, { name: 1, age: 1 })
[
  { _id: ObjectId('687e0967df1a992330eec4ae') },
  { _id: ObjectId('687e0979df1a992330eec4af') },
  { _id: ObjectId('687e0979df1a992330eec4b0') },
  { _id: ObjectId('687e0979df1a992330eec4b1') },
  { _id: ObjectId('687f2c8f313500aed4eec4ad') },
  { _id: ObjectId('687f2c8f313500aed4eec4ae') },
  { _id: ObjectId('687f2c8f313500aed4eec4af') },
  { _id: ObjectId('687f2c8f313500aed4eec4b0') },
  { _id: ObjectId('687f2c8f313500aed4eec4b1') },
  { _id: ObjectId('5234cc89687ea597eabee675') },
  { _id: ObjectId('5234cc8a687ea597eabee676') },
  { _id: ObjectId('5234ccb7687ea597eabee677') },
  { _id: ObjectId('52350353b2eff1353b349de9') }
]
```

5. **To remove _id from projection:**

```
mongopractice> db.inventory.find({}, { item: 1, qty: 1, _id: 0 })
[
  { item: 'canvas', qty: 100 },
  { item: 'journal', qty: 25 },
  { item: 'mat', qty: 85 },
  { item: 'mousepad', qty: 25 },
  { item: 'journal', qty: 25 },
  { item: 'notebook', qty: 50 },
  { item: 'paper', qty: 100 },
  { item: 'planner', qty: 75 },
  { item: 'postcard', qty: 45 },
  {
    qty: [
      { size: 'S', num: 10, color: 'blue' },
      { size: 'M', num: 45, color: 'blue' },
      { size: 'L', num: 100, color: 'green' }
    ]
  },
  {
    qty: [
      { size: '6', num: 100, color: 'green' },
      { size: '6', num: 50, color: 'blue' },
      { size: '8', num: 100, color: 'brown' }
    ]
  },
  {
    qty: [
      { size: 'S', num: 10, color: 'blue' },
      { size: 'M', num: 100, color: 'blue' },
      { size: 'L', num: 100, color: 'green' }
    ]
  },
  { qty: [ { size: 'M', num: 100, color: 'green' } ] }
]
```

6. **To access nested field size.h,item,qty:**

```
mongopractice> db.inventory.find({}, { item: 1, qty: 1, "size.h": 1, _id: 0 })
[
  { item: 'canvas', qty: 100, size: { h: 28 } },
  { item: 'journal', qty: 25, size: { h: 14 } },
  { item: 'mat', qty: 85, size: { h: 27.9 } },
  { item: 'mousepad', qty: 25, size: { h: 19 } },
  { item: 'journal', qty: 25, size: { h: 14 } },
  { item: 'notebook', qty: 50, size: { h: 8.5 } },
  { item: 'paper', qty: 100, size: { h: 8.5 } },
  { item: 'planner', qty: 75, size: { h: 22.85 } },
  { item: 'postcard', qty: 45, size: { h: 10 } },
  {
    qty: [
      { size: 'S', num: 10, color: 'blue' },
      { size: 'M', num: 45, color: 'blue' },
      { size: 'L', num: 100, color: 'green' }
    ]
  },
  {
    qty: [
      { size: '6', num: 100, color: 'green' },
      { size: '6', num: 50, color: 'blue' },
      { size: '8', num: 100, color: 'brown' }
    ]
  },
  {
    qty: [
      { size: 'S', num: 10, color: 'blue' },
      { size: 'M', num: 100, color: 'blue' },
      { size: 'L', num: 100, color: 'green' }
    ]
  },
  { qty: [ { size: 'M', num: 100, color: 'green' } ] }
]
```

7. **To get all documents with height = 10:**

```
mongopractice> db.inventory.find({ "size.h": 10 })
[
  {
    _id: ObjectId('687f2c8f313500aed4eec4b1'),
    item: 'postcard',
    qty: 45,
    size: { h: 10, w: 15.25, uom: 'cm' },
    status: 'A'
  }
]
mongopractice> db.inventory.find({ "size.h": 10 }, { item: 1, qty: 1, _id: 0 })
[ { item: 'postcard', qty: 45 } ]
mongopractice>
```