

CODING CHALLENGE

MONGODB

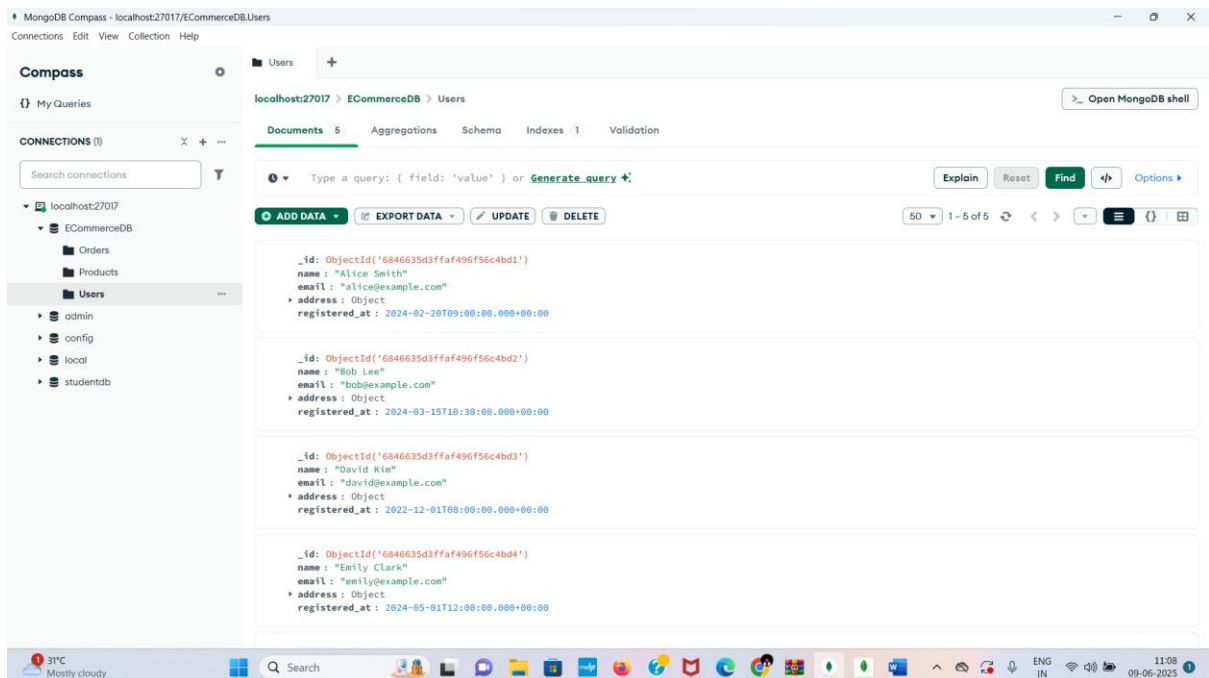
DAY 5:09/06/2025

SUBMITTED BY: YUVASHRI. S

QUESTIONS

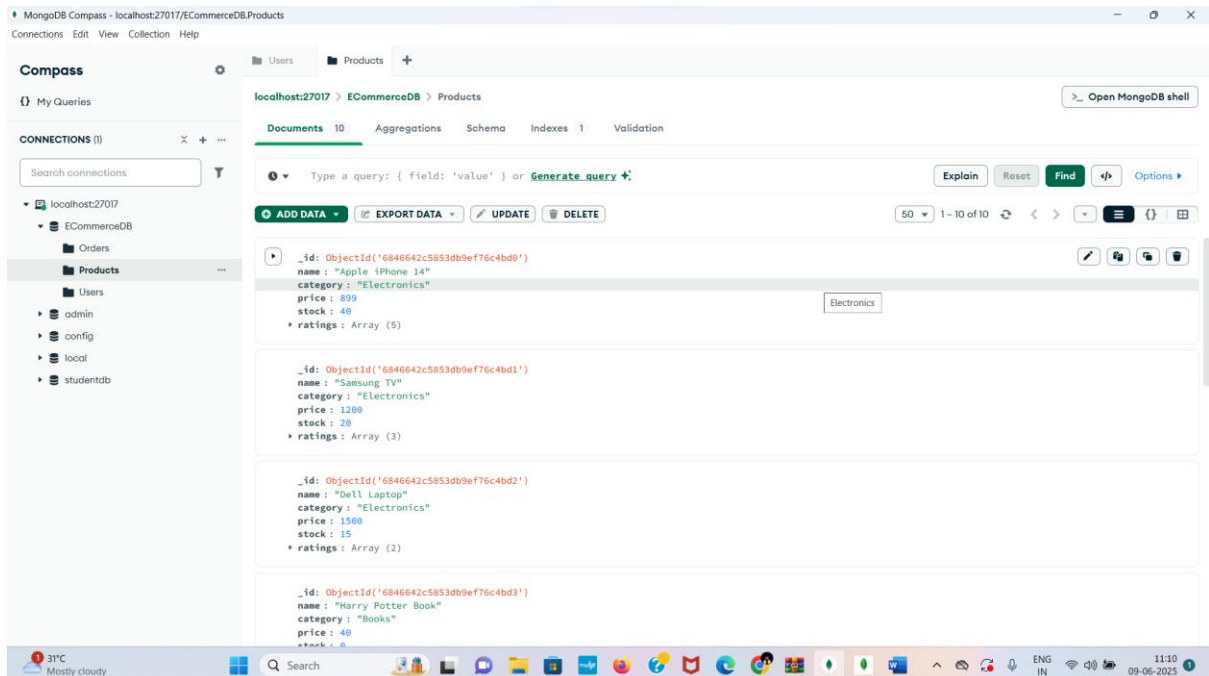
1.Insert at least 5 user.

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
Warning: Found ~/.mongorc.js, but not ~/.mongoshrc.js. ~/.mongorc.js will not be loaded.
You may want to copy or rename ~/.mongorc.js to ~/.mongoshrc.js.
test> use ECommerceDB
switched to db ECommerceDB
ECommerceDB> db.Users.insertMany([
...   {
...     name: "John Doe",
...     email: "john@example.com",
...     address: { street: "123 Main St", city: "New York", zip: "10001" },
...     registered_at: ISODate("2023-01-10T10:00:00Z")
...   },
...   {
...     name: "Alice Smith",
...     email: "alice@example.com",
...     address: { street: "456 Elm St", city: "Los Angeles", zip: "90001" },
...     registered_at: ISODate("2024-02-20T09:00:00Z")
...   },
...   {
...     name: "Bob Lee",
...     email: "bob@example.com",
...     address: { street: "789 Maple Ave", city: "New York", zip: "10002" },
...     registered_at: ISODate("2024-03-15T18:30:00Z")
...   },
...   {
...     name: "David Kim",
...     email: "david@example.com",
...     address: { street: "321 Pine St", city: "Chicago", zip: "60601" },
...     registered_at: ISODate("2022-12-01T08:00:00Z")
...   },
...   {
...     name: "Emily Clark",
...     email: "emily@example.com",
...     address: { street: "654 Oak St", city: "New York", zip: "10003" },
...   },
... ], {
...   acknowledged: true,
...   insertedIds: {
...     '0': ObjectId('6846635d3ffa496f56c4bd0'),
...     '1': ObjectId('6846635d3ffa496f56c4bd1'),
...     '2': ObjectId('6846635d3ffa496f56c4bd2'),
...     '3': ObjectId('6846635d3ffa496f56c4bd3'),
...     '4': ObjectId('6846635d3ffa496f56c4bd4')
...   }
... })
ECommerceDB>
```



2.Insert 10 Products.

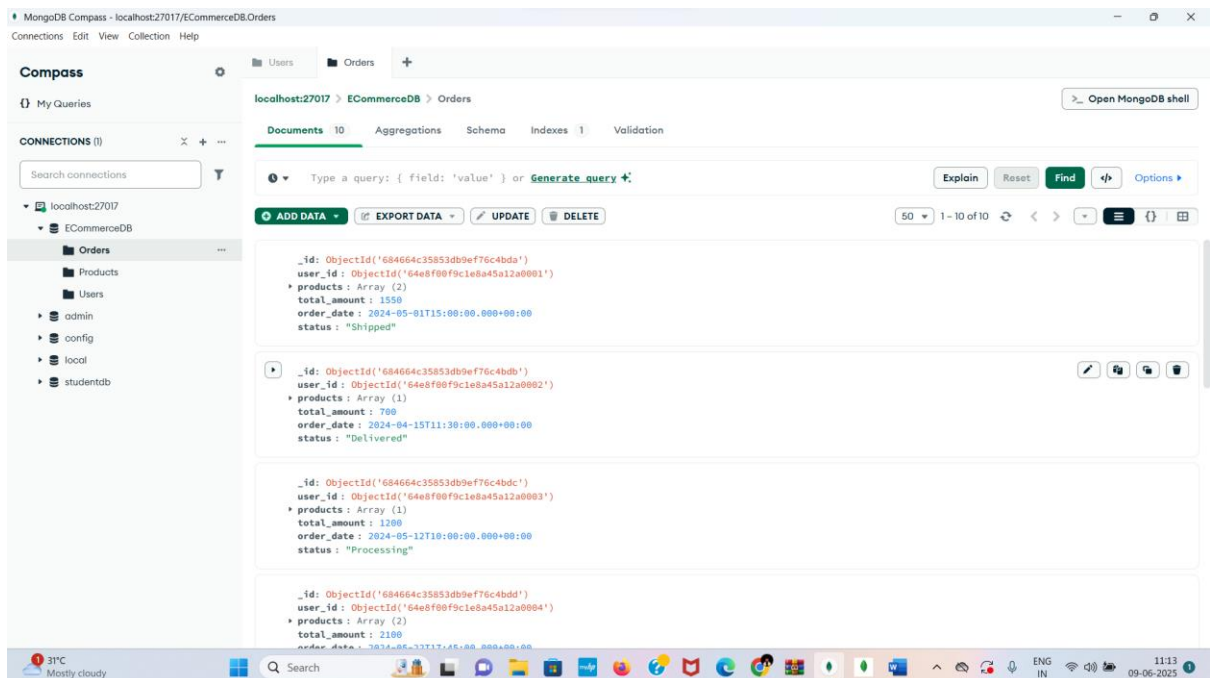
```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
ECommerceDB> db.Products.insertMany([
...   {
...     name: "Apple iPhone 14", category: "Electronics", price: 899, stock: 50, ratings: [4, 5, 3, 4]
...   },
...   {
...     name: "Samsung TV", category: "Electronics", price: 1200, stock: 20, ratings: [5, 4, 4] },
...   {
...     name: "Dell Laptop", category: "Electronics", price: 1500, stock: 15, ratings: [5, 5] },
...   {
...     name: "Harry Potter Book", category: "Books", price: 40, stock: 8, ratings: [4, 3, 2] },
...   {
...     name: "Sony Headphones", category: "Electronics", price: 200, stock: 10, ratings: [4, 4, 5] },
...   {
...     name: "Gaming Chair", category: "Furniture", price: 300, stock: 5, ratings: [3, 4] },
...   {
...     name: "Nike Shoes", category: "Fashion", price: 120, stock: 30, ratings: [5, 5, 4] },
...   {
...     name: "Xbox", category: "Electronics", price: 130, stock: 40, ratings: [4, 4] },
...   {
...     name: "Office Desk", category: "Furniture", price: 250, stock: 8, ratings: [4, 3] },
...   {
...     name: "The Alchemist", category: "Books", price: 35, stock: 25, ratings: [5, 5, 5] }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('6846642c5853db9ef76c4bd0'),
    '1': ObjectId('6846642c5853db9ef76c4bd1'),
    '2': ObjectId('6846642c5853db9ef76c4bd2'),
    '3': ObjectId('6846642c5853db9ef76c4bd3'),
    '4': ObjectId('6846642c5853db9ef76c4bd4'),
    '5': ObjectId('6846642c5853db9ef76c4bd5'),
    '6': ObjectId('6846642c5853db9ef76c4bd6'),
    '7': ObjectId('6846642c5853db9ef76c4bd7'),
    '8': ObjectId('6846642c5853db9ef76c4bd8'),
    '9': ObjectId('6846642c5853db9ef76c4bd9')
  }
}
ECommerceDB>
```



3.Insert 10 Orders.

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
{commerceDB> db.Orders.insertMany([
...   {
...     user_id: ObjectId("64e8f00f9c1e8a45a12a0001"),
...     products: [
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0011"), quantity: 1 },
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0012"), quantity: 2 }
...     ],
...     total_amount: 1550,
...     order_date: new Date("2024-05-01T15:00:00Z"),
...     status: "Shipped"
...   },
...   {
...     user_id: ObjectId("64e8f00f9c1e8a45a12a0002"),
...     products: [
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0013"), quantity: 1 }
...     ],
...     total_amount: 700,
...     order_date: new Date("2024-04-15T11:30:00Z"),
...     status: "Delivered"
...   },
...   {
...     user_id: ObjectId("64e8f00f9c1e8a45a12a0003"),
...     products: [
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0014"), quantity: 3 }
...     ],
...     total_amount: 1200,
...     order_date: new Date("2024-05-12T10:00:00Z"),
...     status: "Processing"
...   },
...   {
...     user_id: ObjectId("64e8f00f9c1e8a45a12a0004"),
...     products: [
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0015"), quantity: 1 },
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0016"), quantity: 2 }
...     ],
...     total_amount: 2100,
...     order_date: new Date("2024-05-22T17:45:00Z"),
...     status: "Cancelled"
...   },
...   {
...     user_id: ObjectId("64e8f00f9c1e8a45a12a0005"),
...     products: [
...       { product_id: ObjectId("64e8f1a09c1e8a45a12a0017"), quantity: 1 }
...     ],
...     total_amount: 900,
...     order_date: new Date("2024-03-18T14:30:00Z"),
...     status: "Shipped"
...   },
... ]
... }
```

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
...   },
...   total_amount: 1800,
...   order_date: new Date("2024-05-20T13:00:00Z"),
...   status: "Shipped"
... },
... {
...   user_id: ObjectId("64e8f00f9c1e8a45a12a0003"),
...   products: [
...     { product_id: ObjectId("64e8f1a09c1e8a45a12a0015"), quantity: 1 },
...     { product_id: ObjectId("64e8f1a09c1e8a45a12a0020"), quantity: 1 }
...   ],
...   total_amount: 1600,
...   order_date: new Date("2024-02-05T09:15:00Z"),
...   status: "Delivered"
... },
... {
...   user_id: ObjectId("64e8f00f9c1e8a45a12a0004"),
...   products: [
...     { product_id: ObjectId("64e8f1a09c1e8a45a12a0012"), quantity: 3 }
...   ],
...   total_amount: 1350,
...   order_date: new Date("2024-05-30T19:00:00Z"),
...   status: "Processing"
... },
... {
...   user_id: ObjectId("64e8f00f9c1e8a45a12a0005"),
...   products: [
...     { product_id: ObjectId("64e8f1a09c1e8a45a12a0015"), quantity: 2 }
...   ],
...   total_amount: 1000,
...   order_date: new Date("2024-04-20T12:30:00Z"),
...   status: "Shipped"
... }
... ]
... }
acknowledged: true,
insertedIds: {
  '0': ObjectId('684664c35853db9ef76c4bda'),
  '1': ObjectId('684664c35853db9ef76c4bdb'),
  '2': ObjectId('684664c35853db9ef76c4bdc'),
  '3': ObjectId('684664c35853db9ef76c4bdd'),
  '4': ObjectId('684664c35853db9ef76c4bde'),
  '5': ObjectId('684664c35853db9ef76c4bdf'),
  '6': ObjectId('684664c35853db9ef76c4be0'),
  '7': ObjectId('684664c35853db9ef76c4be1'),
  '8': ObjectId('684664c35853db9ef76c4be2'),
  '9': ObjectId('684664c35853db9ef76c4be3')
}
```



4. Insert a new user into the Users collection.

```
ECommerceDB> /insert a new user/

ECommerceDB> db.Users.insertOne({
...   name: "Tom Hardy",
...   email: "tom@example.com",
...   address: { street: "987 Cedar St", city: "Houston", zip: "77001" },
...   registered_at: new Date()
... })
{
  acknowledged: true,
  insertedId: ObjectId('684665135853db9ef76c4be4')
}
ECommerceDB>
```

5. Find all users who live in "New York".

```
ECommerceDB> /find all users in newyork/
/find all users in newyork/
ECommerceDB> db.Users.find({ "address.city": "New York" })
[
  {
    _id: ObjectId('6846635d3ffaf496f56c4bd0'),
    name: 'John Doe',
    email: 'john@example.com',
    address: { street: '123 Main St', city: 'New York', zip: '10001' },
    registered_at: ISODate('2023-01-10T10:00:00.000Z')
  },
  {
    _id: ObjectId('6846635d3ffaf496f56c4bd2'),
    name: 'Bob Lee',
    email: 'bob@example.com',
    address: { street: '789 Maple Ave', city: 'New York', zip: '10002' },
    registered_at: ISODate('2024-03-15T10:30:00.000Z')
  },
  {
    _id: ObjectId('6846635d3ffaf496f56c4bd4'),
    name: 'Emily Clark',
    email: 'emily@example.com',
    address: { street: '654 Oak St', city: 'New York', zip: '10003' },
    registered_at: ISODate('2024-05-01T12:00:00.000Z')
  }
]
ECommerceDB> ▀
```

6. Update the stock of "Apple iPhone 14" to 40.

```
ECommerceDB> /*Update stock of "Apple iPhone 14" to 40*/

ECommerceDB> db.Products.updateOne({ name: "Apple iPhone 14" }, { $set: { stock: 40 } })
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
ECommerceDB> ▀
```

7. Delete user with email 'john@example.com'

```
ECommerceDB> /*Delete user with email 'john@example.com'*/  
  
ECommerceDB> db.Users.deleteOne({ email: "john@example.com" })  
{ acknowledged: true, deletedCount: 1 }  
ECommerceDB>
```

8. Add a new rating (5) to the product "Apple iPhone 14".

```
ECommerceDB> /*Add rating 5 to "Apple iPhone 14"*/  
  
ECommerceDB> db.Products.updateOne({ name: "Apple iPhone 14" }, { $push: { ratings: 5 } })  
{  
  acknowledged: true,  
  insertedId: null,  
  matchedCount: 1,  
  modifiedCount: 1,  
  upsertedCount: 0  
}  
ECommerceDB> /*Find products with price > 500*/
```

9. Find products with price > 500

```
ECommerceDB> /*Find products with price > 500*/  
  
ECommerceDB> db.Products.find({ price: { $gt: 500 } })  
[  
  {  
    _id: ObjectId('6846642c5853db9ef76c4bd0'),  
    name: 'Apple iPhone 14',  
    category: 'Electronics',  
    price: 899,  
    stock: 40,  
    ratings: [ 4, 5, 3, 4, 5 ]  
  },  
  {  
    _id: ObjectId('6846642c5853db9ef76c4bd1'),  
    name: 'Samsung TV',  
    category: 'Electronics',  
    price: 1200,  
    stock: 20,  
    ratings: [ 5, 4, 4 ]  
  },  
  {  
    _id: ObjectId('6846642c5853db9ef76c4bd2'),  
    name: 'Dell Laptop',  
    category: 'Electronics',  
    price: 1500,  
    stock: 15,  
    ratings: [ 5, 5 ]  
  }  
]  
ECommerceDB>
```

10. Find users registered after Jan 1, 2024.

```
ECommerceDB> /*Find users registered after Jan 1, 2024*/
ECommerceDB> db.Users.find({ registered_at: { $gt: ISODate("2024-01-01T00:00:00Z") } })
[
  {
    _id: ObjectId('6846635d3ffaf496f56c4bd1'),
    name: 'Alice Smith',
    email: 'alice@example.com',
    address: { street: '456 Elm St', city: 'Los Angeles', zip: '90001' },
    registered_at: ISODate('2024-02-20T09:00:00.000Z')
  },
  {
    _id: ObjectId('6846635d3ffaf496f56c4bd2'),
    name: 'Bob Lee',
    email: 'bob@example.com',
    address: { street: '789 Maple Ave', city: 'New York', zip: '10002' },
    registered_at: ISODate('2024-03-15T10:30:00.000Z')
  },
  {
    _id: ObjectId('6846635d3ffaf496f56c4bd4'),
    name: 'Emily Clark',
    email: 'emily@example.com',
    address: { street: '654 Oak St', city: 'New York', zip: '10003' },
    registered_at: ISODate('2024-05-01T12:00:00.000Z')
  },
  {
    _id: ObjectId('684665135853db9ef76c4be4'),
    name: 'Tom Hardy',
    email: 'tom@example.com',
    address: { street: '987 Cedar St', city: 'Houston', zip: '77001' },
    registered_at: ISODate('2025-06-09T04:37:39.234Z')
  }
]
ECommerceDB>
```

11. Find orders with total_amount between 1000 and 2000.

```
ECommerceDB> /*Find orders with total_amount between 1000 and 2000*/
ECommerceDB> db.Orders.find({ total_amount: { $gte: 1000, $lte: 2000 } })
[
  {
    _id: ObjectId('684664c35853db9ef76c4bda'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0001'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 1 },
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0012'), quantity: 2 }
    ],
    total_amount: 1550,
    order_date: ISODate('2024-05-01T15:00:00.000Z'),
    status: 'Shipped'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4bdc'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0003'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0014'), quantity: 3 }
    ],
    total_amount: 1200,
    order_date: ISODate('2024-05-12T10:00:00.000Z'),
    status: 'Processing'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be0'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0002'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 2 }
    ],
    total_amount: 1800,
    order_date: ISODate('2024-05-28T13:00:00.000Z'),
    status: 'Shipped'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be1'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0003'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0019'), quantity: 1 },
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0020'), quantity: 1 }
    ],
    total_amount: 1600,
    order_date: ISODate('2024-02-05T09:15:00.000Z'),
    status: 'Delivered'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be2'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0004'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0015'), quantity: 2 }
    ],
    total_amount: 1000,
    order_date: ISODate('2024-04-20T12:30:00.000Z'),
    status: 'Shipped'
  }
]
ECommerceDB>
```

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
{
  _id: ObjectId('684664c35853db9ef76c4bda'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0001'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 1 },
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0012'), quantity: 2 }
  ],
  total_amount: 1550,
  order_date: ISODate('2024-05-01T15:00:00.000Z'),
  status: 'Shipped'
},
{
  _id: ObjectId('684664c35853db9ef76c4bdc'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0003'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0014'), quantity: 3 }
  ],
  total_amount: 1200,
  order_date: ISODate('2024-05-12T10:00:00.000Z'),
  status: 'Processing'
},
{
  _id: ObjectId('684664c35853db9ef76c4be0'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0002'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 2 }
  ],
  total_amount: 1800,
  order_date: ISODate('2024-05-28T13:00:00.000Z'),
  status: 'Shipped'
},
{
  _id: ObjectId('684664c35853db9ef76c4be1'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0003'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0019'), quantity: 1 },
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0020'), quantity: 1 }
  ],
  total_amount: 1600,
  order_date: ISODate('2024-02-05T09:15:00.000Z'),
  status: 'Delivered'
},
{
  _id: ObjectId('684664c35853db9ef76c4be2'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0004'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0015'), quantity: 2 }
  ],
  total_amount: 1000,
  order_date: ISODate('2024-04-20T12:30:00.000Z'),
  status: 'Shipped'
}
ECommerceDB>
```

12. List products in 'Electronics' or 'Books' category.

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
ECommerceDB> /*List products in 'Electronics' or 'Books'
... */
ECommerceDB> db.Products.find({ category: { $in: ["Electronics", "Books"] } })
[
  {
    _id: ObjectId('6846642c5853db9ef76c4bd0'),
    name: 'Apple iPhone 14',
    category: 'Electronics',
    price: 899,
    stock: 40,
    ratings: [ 4, 5, 3, 4, 5 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd1'),
    name: 'Samsung TV',
    category: 'Electronics',
    price: 1200,
    stock: 20,
    ratings: [ 5, 4, 4 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd2'),
    name: 'Dell Laptop',
    category: 'Electronics',
    price: 1500,
    stock: 15,
    ratings: [ 5, 5 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd3'),
    name: 'Harry Potter Book',
    category: 'Books',
    price: 40,
    stock: 0,
    ratings: [ 4, 3, 2 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd4'),
    name: 'Sony Headphones',
    category: 'Electronics',
    price: 200,
    stock: 10,
    ratings: [ 4, 4, 5 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd7'),
    name: 'Kindle',
    category: 'Electronics',
    price: 130,
    stock: 40,
    ratings: [ 4, 4 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd9'),
    name: 'The Alchemist',
    category: 'Books',
    price: 35,
    stock: 25,
    ratings: [ 5, 5, 5 ]
  }
]
ECommerceDB>
```

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
price: 40,
stock: 0,
ratings: [ 4, 3, 2 ]
},
{
  _id: ObjectId('6846642c5853db9ef76c4bd4'),
  name: 'Sony Headphones',
  category: 'Electronics',
  price: 200,
  stock: 10,
  ratings: [ 4, 4, 5 ]
},
{
  _id: ObjectId('6846642c5853db9ef76c4bd7'),
  name: 'Kindle',
  category: 'Electronics',
  price: 130,
  stock: 40,
  ratings: [ 4, 4 ]
},
{
  _id: ObjectId('6846642c5853db9ef76c4bd9'),
  name: 'The Alchemist',
  category: 'Books',
  price: 35,
  stock: 25,
  ratings: [ 5, 5, 5 ]
}
]
ECommerceDB>
```

13. Get products that are out of stock.

```
ECommerceDB> /* get out-of-stock products*/
ECommerceDB> db.Products.find({ stock: { $eq: 0 } })
[
  {
    _id: ObjectId('6846642c5853db9ef76c4bd3'),
    name: 'Harry Potter Book',
    category: 'Books',
    price: 40,
    stock: 0,
    ratings: [ 4, 3, 2 ]
  }
]
ECommerceDB>
```

14. Find total number of users.

```
ECommerceDB> /*find toatl no.of users*?
... */
ECommerceDB> db.Users.countDocuments()
5
```

15. Calculate average rating for "Apple iPhone 14".

```
ECommerceDB> /*Calculate average rating for "Apple iPhone 14"*/  
  
ECommerceDB> db.Products.aggregate([  
...   { $match: { name: "Apple iPhone 14" } },  
...   { $project: { avgRating: { $avg: "$ratings" } } }  
... ])  
[ { _id: ObjectId('6846642c5853db9ef76c4bd0'), avgRating: 4.2 } ]  
ECommerceDB>
```

16. Find total sales (sum of total_amount) across all orders.

```
ECommerceDB> /*Find total sales across all orders*/  
  
ECommerceDB> db.Orders.aggregate([  
...   { $group: { _id: null, totalSales: { $sum: "$total_amount" } } }  
... ])  
[ { _id: null, totalSales: 12750 } ]  
ECommerceDB>
```

17. Find top 3 most expensive products.

```
ECommerceDB> /*Top 3 most expensive products*/  
  
ECommerceDB> db.Products.find().sort({ price: -1 }).limit(3)  
[  
  {  
    _id: ObjectId('6846642c5853db9ef76c4bd2'),  
    name: 'Dell Laptop',  
    category: 'Electronics',  
    price: 1500,  
    stock: 15,  
    ratings: [ 5, 5 ]  
  },  
  {  
    _id: ObjectId('6846642c5853db9ef76c4bd1'),  
    name: 'Samsung TV',  
    category: 'Electronics',  
    price: 1200,  
    stock: 20,  
    ratings: [ 5, 4, 4 ]  
  },  
  {  
    _id: ObjectId('6846642c5853db9ef76c4bd0'),  
    name: 'Apple iPhone 14',  
    category: 'Electronics',  
    price: 899,  
    stock: 40,  
    ratings: [ 4, 5, 3, 4, 5 ]  
  }  
]  
ECommerceDB> _
```


18. List how many orders were placed by each user.

```
ECommerceDB> /*How many orders were placed by each user*/

ECommerceDB> db.Orders.aggregate([
... { $group: { _id: "$user_id", ordersCount: { $sum: 1 } } } ])

[
  { _id: ObjectId('64e8f00f9c1e8a45a12a0004'), ordersCount: 2 },
  { _id: ObjectId('64e8f00f9c1e8a45a12a0001'), ordersCount: 2 },
  { _id: ObjectId('64e8f00f9c1e8a45a12a0005'), ordersCount: 2 },
  { _id: ObjectId('64e8f00f9c1e8a45a12a0002'), ordersCount: 2 },
  { _id: ObjectId('64e8f00f9c1e8a45a12a0003'), ordersCount: 2 }
]
ECommerceDB>
```

19. Get all orders containing a product with quantity > 1.

mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000

```
ECommerceDB> /*Orders with any product quantity > 1*/
```

```
ECommerceDB> db.Orders.find({ "products.quantity": { $gt: 1 } })
```

```
[
  {
    _id: ObjectId('684664c35853db9ef76c4bda'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0001'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 1 },
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0012'), quantity: 2 }
    ],
    total_amount: 1550,
    order_date: ISODate('2024-05-01T15:00:00.000Z'),
    status: 'Shipped'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4bdc'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0003'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0014'), quantity: 3 }
    ],
    total_amount: 1200,
    order_date: ISODate('2024-05-12T10:00:00.000Z'),
    status: 'Processing'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4bdd'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0004'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0015'), quantity: 1 },
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0016'), quantity: 2 }
    ],
    total_amount: 2100,
    order_date: ISODate('2024-05-22T17:45:00.000Z'),
    status: 'Cancelled'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be0'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0002'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 2 }
    ],
    total_amount: 1800,
    order_date: ISODate('2024-05-28T13:00:00.000Z'),
    status: 'Shipped'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be2'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0005'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0015'), quantity: 2 }
    ],
    total_amount: 1000,
    order_date: ISODate('2024-04-20T12:30:00.000Z'),
    status: 'Shipped'
  }
]
```

```
status: 'Cancelled'
},
{
  _id: ObjectId('684664c35853db9ef76c4be0'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0002'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 2 }
  ],
  total_amount: 1800,
  order_date: ISODate('2024-05-28T13:00:00.000Z'),
  status: 'Shipped'
},
{
  _id: ObjectId('684664c35853db9ef76c4be2'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0004'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0012'), quantity: 3 }
  ],
  total_amount: 1350,
  order_date: ISODate('2024-05-30T19:00:00.000Z'),
  status: 'Processing'
},
{
  _id: ObjectId('684664c35853db9ef76c4be3'),
  user_id: ObjectId('64e8f00f9c1e8a45a12a0005'),
  products: [
    { product_id: ObjectId('64e8f1a09c1e8a45a12a0015'), quantity: 2 }
  ],
  total_amount: 1000,
  order_date: ISODate('2024-04-20T12:30:00.000Z'),
  status: 'Shipped'
}
```

20. List all products that have at least one rating less than 4.

```
ECommerceDB> /* products with atleast one ratings < 4 */
ECommerceDB> db.Products.find({ ratings: { $elemMatch: { $lt: 4 } } })
[
  {
    _id: ObjectId('6846642c5853db9ef76c4bd0'),
    name: 'Apple iPhone 14',
    category: 'Electronics',
    price: 899,
    stock: 40,
    ratings: [ 4, 5, 3, 4, 5 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd3'),
    name: 'Harry Potter Book',
    category: 'Books',
    price: 40,
    stock: 0,
    ratings: [ 4, 3, 2 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd5'),
    name: 'Gaming Chair',
    category: 'Furniture',
    price: 300,
    stock: 5,
    ratings: [ 3, 4 ]
  },
  {
    _id: ObjectId('6846642c5853db9ef76c4bd8'),
    name: 'Office Desk',
    category: 'Furniture',
    price: 250,
    stock: 8,
    ratings: [ 4, 3 ]
  }
]
ECommerceDB>
```

21. Get all users and only show name and city.

```
ECommerceDB> /*Get all users (only name and city)*/
ECommerceDB> db.Users.find({}, { name: 1, "address.city": 1, _id: 0 })
[
  { name: 'Alice Smith', address: { city: 'Los Angeles' } },
  { name: 'Bob Lee', address: { city: 'New York' } },
  { name: 'David Kim', address: { city: 'Chicago' } },
  { name: 'Emily Clark', address: { city: 'New York' } },
  { name: 'Tom Hardy', address: { city: 'Houston' } }
]
ECommerceDB>
```

22. Project only product name and stock.

```
ECommerceDB> /*project product name and stock*/
ECommerceDB> db.Products.find({}, { name: 1, stock: 1, _id: 0 })
[
  { name: 'Apple iPhone 14', stock: 40 },
  { name: 'Samsung TV', stock: 20 },
  { name: 'Dell Laptop', stock: 15 },
  { name: 'Harry Potter Book', stock: 0 },
  { name: 'Sony Headphones', stock: 10 },
  { name: 'Gaming Chair', stock: 5 },
  { name: 'Nike Shoes', stock: 30 },
  { name: 'Kindle', stock: 40 },
  { name: 'Office Desk', stock: 8 },
  { name: 'The Alchemist', stock: 25 }
]
ECommerceDB>
```

23. Get orders placed in May 2024.

```
ECommerceDB> /*Orders placed in May 2024*/

ECommerceDB> db.Orders.find({
...   order_date: {
...     $gte: ISODate("2024-05-01T00:00:00Z"),
...     $lt: ISODate("2024-06-01T00:00:00Z")
...   }
... })
[
  {
    _id: ObjectId('684664c35853db9ef76c4bda'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0001'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 1 },
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0012'), quantity: 2 }
    ],
    total_amount: 1550,
    order_date: ISODate('2024-05-01T15:00:00.000Z'),
    status: 'Shipped'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4bdc'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0003'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0014'), quantity: 3 }
    ],
    total_amount: 1200,
    order_date: ISODate('2024-05-12T10:00:00.000Z'),
    status: 'Processing'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4bdd'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0004'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0015'), quantity: 1 },
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0016'), quantity: 2 }
    ],
    total_amount: 2100,
    order_date: ISODate('2024-05-22T17:45:00.000Z'),
    status: 'Cancelled'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be0'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0002'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 2 }
    ],
    total_amount: 1800,
    order_date: ISODate('2024-05-28T13:00:00.000Z'),

```

```
    status: 'Cancelled'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be0'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0002'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0011'), quantity: 2 }
    ],
    total_amount: 1800,
    order_date: ISODate('2024-05-28T13:00:00.000Z'),
    status: 'Shipped'
  },
  {
    _id: ObjectId('684664c35853db9ef76c4be2'),
    user_id: ObjectId('64e8f00f9c1e8a45a12a0004'),
    products: [
      { product_id: ObjectId('64e8f1a09c1e8a45a12a0012'), quantity: 3 }
    ],
    total_amount: 1350,
    order_date: ISODate('2024-05-30T19:00:00.000Z'),
    status: 'Processing'
  }
]
ECommerceDB> █
```

24. Create an index on user email.

```
ECommerceDB> /*Create index on user email*/  
  
ECommerceDB> db.Users.createIndex({ email: 1 })  
email_1  
ECommerceDB> █
```

25. Create a compound index on product category and price.

```
ECommerceDB> /*Create compound index on category and price*/  
  
ECommerceDB> db.Products.createIndex({ category: 1, price: -1 })  
category_1_price_-1  
ECommerceDB> █
```

26. Use \$lookup to join Orders with Users and show user name in order.

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000  
ECommerceDB> /*$lookup: Join Orders with Users*/  
  
ECommerceDB> db.Orders.aggregate([  
... {  
...   $lookup: {  
...     from: "Users",  
...     localField: "user_id",  
...     foreignField: "_id",  
...     as: "user_info"  
...   },  
... },  
... {  
...   $project: {  
...     _id: 0,  
...     order_date: 1,  
...     total_amount: 1,  
...     "user_info.name": 1  
...   }  
... },  
... ])  
[  
  {  
    total_amount: 1550,  
    order_date: ISODate('2024-05-01T15:00:00.000Z'),  
    user_info: []  
  },  
  {  
    total_amount: 700,  
    order_date: ISODate('2024-04-15T11:30:00.000Z'),  
    user_info: []  
  },  
  {  
    total_amount: 1200,  
    order_date: ISODate('2024-05-12T10:00:00.000Z'),  
    user_info: []  
  },  
  {  
    total_amount: 2100,  
    order_date: ISODate('2024-05-22T17:45:00.000Z'),  
    user_info: []  
  },  
  {  
    total_amount: 900,  
    order_date: ISODate('2024-03-18T14:30:00.000Z'),  
    user_info: []  
  },  
  {  
    total_amount: 550,  
    order_date: ISODate('2024-01-10T10:00:00.000Z'),  
    user_info: []  
  }  
]
```

```
{  
  total_amount: 900,  
  order_date: ISODate('2024-03-18T14:30:00.000Z'),  
  user_info: []  
},  
{  
  total_amount: 550,  
  order_date: ISODate('2024-01-10T10:00:00.000Z'),  
  user_info: []  
},  
{  
  total_amount: 1800,  
  order_date: ISODate('2024-05-28T13:00:00.000Z'),  
  user_info: []  
},  
{  
  total_amount: 1600,  
  order_date: ISODate('2024-02-05T09:15:00.000Z'),  
  user_info: []  
},  
{  
  total_amount: 1350,  
  order_date: ISODate('2024-05-30T19:00:00.000Z'),  
  user_info: []  
},  
{  
  total_amount: 1000,  
  order_date: ISODate('2024-04-20T12:30:00.000Z'),  
  user_info: []  
}  
CommerceDB> █
```

27. Use \$lookup to show product names in each order.

```
ECommerceDB> /*$lookup: Show product names in each order*/
ECommerceDB> db.Orders.aggregate([
...   {
...     $unwind: "$products"
...   },
...   {
...     $lookup: {
...       from: "Products",
...       localField: "products.product_id",
...       foreignField: "_id",
...       as: "product_info"
...     }
...   },
...   {
...     $project: {
...       _id: 0,
...       order_date: 1,
...       quantity: "$products.quantity",
...       product_name: { $arrayElemAt: ["$product_info.name", 0] }
...     }
...   }
... ])
[
  { order_date: ISODate('2024-05-01T15:00:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-05-01T15:00:00.000Z'), quantity: 2 },
  { order_date: ISODate('2024-04-15T11:30:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-05-12T10:00:00.000Z'), quantity: 3 },
  { order_date: ISODate('2024-05-22T17:45:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-05-22T17:45:00.000Z'), quantity: 2 },
  { order_date: ISODate('2024-03-18T14:30:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-01-10T10:00:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-05-28T13:00:00.000Z'), quantity: 2 },
  { order_date: ISODate('2024-02-05T09:15:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-02-05T09:15:00.000Z'), quantity: 1 },
  { order_date: ISODate('2024-05-30T19:00:00.000Z'), quantity: 3 },
  { order_date: ISODate('2024-04-20T12:30:00.000Z'), quantity: 2 }
]
ECommerceDB>
```

28. Write a query to find top 2 users who placed the highest total order amounts.

```
ECommerceDB> /*Top 2 users who spent the most (total order amount)*/
ECommerceDB> db.Orders.aggregate([
...   {
...     $group: {
...       _id: "$user_id",
...       totalSpent: { $sum: "$total_amount" }
...     }
...   },
...   { $sort: { totalSpent: -1 } },
...   { $limit: 2 },
...   {
...     $lookup: {
...       from: "Users",
...       localField: "_id",
...       foreignField: "_id",
...       as: "user_info"
...     }
...   },
...   {
...     $project: {
...       totalSpent: 1,
...       user: { $arrayElemAt: ["$user_info.name", 0] }
...     }
...   }
... ])
[
  { _id: ObjectId('64e8f00f9c1e8a45a12a0004'), totalSpent: 3450 },
  { _id: ObjectId('64e8f00f9c1e8a45a12a0003'), totalSpent: 2800 }
]
ECommerceDB>
```