Roll no : Te31413

Assignment no : 10

Aim : MongoDB Aggregation and Indexing: Design and Develop MongoDB Queries using aggregation and indexing with suitable example using MongoDB

Aggregation :

```
db.sales.insert([
  {

    product: "Widget A",
    category: "Gadgets",
    sales: 150,
    price: 30,
    status: "active"
  },
  {

    product: "Widget B",
    category: "Gadgets",
    sales: 100,
    price: 20,
    status: "inactive"
  },
  {

   product: "Gadget X",
   category: "Accessories",
    sales: 300,
    price: 15,
    status: "active"
  },
  {

   product: "Gadget Y",
    category: "Accessories",
    sales: 250,
    price: 25,
    status: "inactive"
  }
]
)
```

```
ownDB> db.sales.find().pretty()
[
  {
    _id: ObjectId('66f0e61f9b805dfb9a964033'),
    product: 'Widget A',
    category: 'Gadgets',
    sales: 150,
    price: 30,
    status: 'active'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964034'),
    product: 'Widget B',
    category: 'Gadgets',
    sales: 100,
    price: 20,
    status: 'inactive'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964035'),
    product: 'Gadget X',
    category: 'Accessories',
    sales: 300,
    price: 15,
    status: 'active'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964036'),
    product: 'Gadget Y',
    category: 'Accessories',
    sales: 250,
    price: 25,
    status: 'inactive'
  }
]
```

```
db.sales.aggregate([
  {
    $match: {
      status: "active"
    }
  },
  {
    $group: {
      _id: "$category",
      totalSales: { $sum: "$sales" },
      averagePrice: { $avg: "$price" }
    }
  }
]);
```


```
db.sales.aggregate([
  {
    $match: {
      status: "inactive"
    }
  },
  {
    $group: {
      _id: "$product",
      totalSales: { $sum: "$sales" },
      averagePrice: { $avg: "$price" }
    }
  }
]);
```

```
ownDB> db.sales.aggregate([
...   {
...     $match: {
...       status: "inactive"
...     }
...   },
...   {
...     $group: {
...       _id: "$product",
...       totalSales: { $sum: "$sales" },
...       averagePrice: { $avg: "$price" }
...     }
...   }
... ]);
[
  { _id: 'Gadget Y', totalSales: 250, averagePrice: 25 },
  { _id: 'Widget B', totalSales: 100, averagePrice: 20 }
]
ownDB>
```

sort:

```
ownDB> db.sales.aggregate([{$sort:{sales:1}}])
[
  {
    _id: ObjectId('66f0e61f9b805dfb9a964034'),
    product: 'Widget B',
    category: 'Gadgets',
    sales: 100,
    price: 20,
    status: 'inactive'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964033'),
    product: 'Widget A',
    category: 'Gadgets',
    sales: 150,
    price: 30,
    status: 'active'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964036'),
    product: 'Gadget Y',
    category: 'Accessories',
    sales: 250,
    price: 25,
    status: 'inactive'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964035'),
    product: 'Gadget X',
    category: 'Accessories',
    sales: 300,
    price: 15,
    status: 'active'
  }
]
```

limit:

```
ownDB> db.sales.aggregate([{$limit:2}])
[
  {
    _id: ObjectId('66f0e61f9b805dfb9a964033'),
    product: 'Widget A',
    category: 'Gadgets',
    sales: 150,
    price: 30,
    status: 'active'
  },
  {
    _id: ObjectId('66f0e61f9b805dfb9a964034'),
    product: 'Widget B',
    category: 'Gadgets',
    sales: 100,
    price: 20,
    status: 'inactive'
  }
]
ownDB>
```

project :

```
db.MyCollection.aggregate([
   {
      $project: {
         _id: 0,
         name: 1,
         age: 1,
         "Rest stops": {
            $range: [0, { $add: ["$age", 1] }] // Generate array from 0 to age
         }
      }
   }
]);
```

```
...     {
...         $project: {
...             _id: 0,
...             name: 1,
...             age: 1,
...             "Rest stops": {
...                 $range: [0, { $add: ["$age", 1] }] // Generate array from 0 to age
...             }
...         }
...     }
... ]);
[
  {
    name: 'Siddhi',
    age: 21,
    'Rest stops': [
       0,  1,  2,  3,  4,  5,  6,
       7,  8,  9, 10, 11, 12, 13,
      14, 15, 16, 17, 18, 19, 20,
      21
    ]
  },
  {
    name: 'Anushree',
    age: 21,
    'Rest stops': [
       0,  1,  2,  3,  4,  5,  6,
       7,  8,  9, 10, 11, 12, 13,
      14, 15, 16, 17, 18, 19, 20,
      21
    ]
  },
  {
    name: 'Sakshi',
    age: 20,
    'Rest stops': [
       0,  1,  2,  3,  4,  5,  6,
       7,  8,  9, 10, 11, 12, 13,
      14, 15, 16, 17, 18, 19, 20
    ]
  },
  {
    name: 'Dhanashree',
    age: 22,
```

set:

```
db.MyCollection.aggregate([
   {
      $set: {
         "Rest stops": {
            $range: [0, { $add: ["$age", 1] }] // Generate array from 0 to age
         }
      }
   }
]);
```

```
]
ownDB> db.MyCollection.aggregate([
...     {
...         $set: {
...             "Rest stops": {
...                 $range: [0, { $add: ["$age", 1] }] // Generate array from 0 to age
...             }
...         }
...     }
... ]);
[
  {
    _id: ObjectId('66ee3e75c5235aa1a9964033'),
    name: 'Siddhi',
    age: 21,
    'Rest stops': [
       0,  1,  2,  3,  4,  5,  6,
       7,  8,  9, 10, 11, 12, 13,
      14, 15, 16, 17, 18, 19, 20,
      21
    ]
  },
  {
    _id: ObjectId('66ee4486cd7bc7ece3964034'),
    name: 'Anushree',
    age: 21,
    'Rest stops': [
       0,  1,  2,  3,  4,  5,  6,
       7,  8,  9, 10, 11, 12, 13,
      14, 15, 16, 17, 18, 19, 20,
      21
    ]
  },
  {
    _id: ObjectId('66ee4823cd7bc7ece3964037'),
    name: 'Sakshi',
    age: 20,
    'Rest stops': [
       0,  1,  2,  3,  4,  5,  6,
       7,  8,  9, 10, 11, 12, 13,
      14, 15, 16, 17, 18, 19, 20
    ]
  },
```

Index :
createIndex :

```
ownDB> db.sales.createIndex({ category: 1 });
category_1
ownDB> db.sales.getIndexes();
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { category: 1 }, name: 'category_1' }
]
```

dropIndex :

```
ownDB> db.sales.dropIndex("category_1");
{ nIndexesWas: 2, ok: 1 }
ownDB>
```