

Practical-4

use Lab4

```
> use Lab4
switched to db Lab4
```

db.createCollection("Data")

```
> db.createCollection("Data")
{ "ok" : 1 }
```

mongoimport persons1.json -d Lab4 -c Data --jsonArray --drop

```
C:\Program Files\MongoDB\Server\4.4\bin>mongoimport persons1.json -d Lab4 -c Data --jsonArray --drop
2023-03-14T11:28:30.588+0530    connected to: mongod://localhost/
2023-03-14T11:28:30.596+0530    dropping: Lab4.Data
2023-03-14T11:28:31.312+0530    5000 document(s) imported successfully. 0 document(s) failed to import.
```

db.Data.find()

```
> use Lab4
switched to db Lab4
> db.Data.find()
{ "_id" : ObjectId("6410d06d0c4161cace192cc"), "gender" : "male", "name" : { "title" : "mr", "first" : "victor", "last" : "pedersen" }, "location" : { "street" : "2156 stenbergvej", "city" : "billum", "state" : "nordjylland", "postcode" : 56649, "coordinates" : { "latitude" : "-29.8113", "longitude" : "-31.0208" }, "timezone" : { "offset" : "+5:30", "description" : "Bombay, Calcutta, Madras, New Delhi" } }, "email" : "victor.pedersen@example.com", "login" : { "uuid" : "fbb3c298-2cea-4415-84d1-74233525c325", "username" : "smallbutterfly536", "password" : "down", "salt" : "iW5QrgwW", "md5" : "3cc8b8a4d69321a408cd46174e163594", "sha1" : "681c0353b34fae08422686ee190e1c09472fc1f", "sha256" : "eb5251e929c56dfd19fc597123ed6ec2d0130a2c31bf8fc9c2ff8f29830a3b7" }, "dob" : { "date" : "1959-02-19T23:56:23Z", "age" : 59 }, "registered" : { "date" : "2004-07-07T22:37:39Z", "age" : 14 }, "phone" : "23138213", "cell" : "30393606", "id" : { "name" : "CPR", "value" : "506102-2208" }, "picture" : { "large" : "https://randomuser.me/api/portraits/men/23.jpg", "medium" : "https://randomuser.me/api/portraits/med/men/23.jpg", "thumbnail" : "https://randomuser.me/api/portraits/thumb/men/23.jpg" }, "nat" : "DK" }
{ "_id" : ObjectId("6410d06d0c4161cace192cd"), "gender" : "male", "name" : { "title" : "mr", "first" : "carl", "last" : "jacobs" }, "location" : { "street" : "6948 springfield road", "city" : "arklow", "state" : "wicklow", "postcode" : 71309, "coordinates" : { "latitude" : "-29.6721", "longitude" : "-154.6037" }, "timezone" : { "offset" : "-11:00", "description" : "Midway Island, Samoa" } }, "email" : "carl.jacobs@example.com", "login" : { "uuid" : "4f591981-b214-4430-9902-70bc0faa7e81", "username" : "organicladybug144", "password" : "hank", "salt" : "PC6Ig6sD", "md5" : "d94aac977512cb2bb005dfa360b40018", "sha1" : "a5ffeb65557693e443e195bdf9c066dca33dc47d", "sha256" : "f9aa851b943d9a8a876062e48b91b9af190a37779df009a20bc268c25ce48a7f" }, "dob" : { "date" : "1984-09-30T01:20:26Z", "age" : 33 }, "registered" : { "date" : "2008-10-29T02:25:24Z", "age" : 9 }, "phone" : "031-501-5147", "cell" : "081-090-3541", "id" : { "name" : "PPS", "value" : "9806982T" }, "picture" : { "large" : "https://randomuser.me/api/portraits/men/44.jpg", "medium" : "https://randomuser.me/api/portraits/med/men/44.jpg", "thumbnail" : "https://randomuser.me/api/portraits/thumb/men/44.jpg" }, "nat" : "IE" }
{ "_id" : ObjectId("6410d06d0c4161cace192ce"), "gender" : "male", "name" : { "title" : "mr", "first" : "harvey", "last" : "chambers" }, "location" : { "street" : "3287 high street", "city" : "carlow", "state" : "wexford", "postcode" : 47671, "coordinates" : { "latitude" : "-22.5329", "longitude" : "168.9462" }, "timezone" : { "offset" : "+5:00", "description" : "Ekaterinburg, Islamabad, Karachi, Tashkent" } }, "email" : "harvey.chambers@example.com", "login" : { "uuid" : "8f583f57-c999-4a5d-a8c1-d913b574c082", "username" : "greenrabbit148", "password" : "june", "salt" : "dAsaXJgK", "md5" : "e3759db2391b798ffea2cc168e1280fd", "sha1" : "a3e77fd5fdd75e3b173ceec6c3c1bbe5e83540cc", "sha256" : "7564eac1899234d5902fadb995303a58370232f54bee6adb26e25394e2ffddd", "dob" : { "date" : "1988-05-27T00:14:03Z", "age" : 30 }, "registered" : { "date" : "2007-03-11T06:20:19Z", "age" : 11 }, "phone" : "061-265-5188", "cell" : "081-146-8382", "id" : { "name" : "PPS", "value" : "5608572T" }, "picture" : { "large" : "https://randomuser.me/api/portraits/men/82.jpg", "medium" : "https://randomuser.me/api/portraits/med/men/82.jpg", "thumbnail" : "https://randomuser.me/api/portraits/thumb/men/82.jpg" }, "nat" : "IE" }
{ "_id" : ObjectId("6410d06d0c4161cace192cf"), "gender" : "female", "name" : { "title" : "miss", "first" : "maeva", "last" : "wilson" }, "location" : { "street" : "4962 36th ave", "city" : "jasper", "state" : "northwest territories", "postcode" : "U0A 4J6", "coordinates" : { "latitude" : "-31.6359", "longitude" : "111.3806" }, "timezone" : { "offset" : "+9:00", "description" : "Tokyo, Seoul, Osaka, Sapporo, Yakutsk" } }, "email" : "maeva.wilson@example.com", "login" : { "uuid" : "8f2d499c-6a7e-4060-8c58-211fdb880c31", "username" : "smallgoose815", "password" : "weston"
```

Name: AMIT GOSWAMI
EnrollNo. : 21012021003
Class : CEIT-B(AB5)

Raw Shell Output Find Query (line 1) ×

50 Documents 1 to 50

Pin Result Table View

Data > gender

| _id | gender | name | location | email | login | dob | register |
|----------------------|--------|--------------|--------------|--------------------|--------------|--------------|--------------|
| [id]64100d06d0c41... | male | { 3 fields } | { 6 fields } | victor.pedersen... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | male | { 3 fields } | { 6 fields } | carl.jacobs@exa... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | male | { 3 fields } | { 6 fields } | harvey.chamber... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | maeva.wilson@... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | olav.oehme@ex... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | shona.kemperm... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | louise.graham@... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | male | { 3 fields } | { 6 fields } | zachary.lo@exa... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | male | { 3 fields } | { 6 fields } | isolino.viana@e... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | mestan.kaplangi... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | sandra.lorenzo... | { 7 fields } | { 2 fields } | { 2 fields } |
| [id]64100d06d0c41... | female | { 3 fields } | { 6 fields } | katie.welch@exa... | { 7 fields } | { 2 fields } | { 2 fields } |

```
1 db.getCollection("Data").find({}).count()
> Lab4
The find query will be run with Query Assist.
5000
```

db.Data.getIndexes()

```
> db.Data.getIndexes()
[ { "v" : 2, "key" : { "_id" : 1 }, "name" : "_id_" } ]
>
```

db.Data.createIndex({age:1})

```
> db.Data.createIndex({age:1})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 1,
  "numIndexesAfter" : 2,
  "ok" : 1
}
```

db.Data.createIndex({name:1})

```
> db.Data.createIndex({name:1})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 2,
  "numIndexesAfter" : 3,
  "ok" : 1
}
```

db.Data.createIndex({index:1},{unique:true})

```
> db.Data.createIndex({index:1},{unique:true})
{
  "ok" : 0,
  "errmsg" : "Index build failed: b39d5d7a-0187-4008-b524-da79d6d93e69: Collection Lab4.Data ( 65022cfe-1ac5-42e5-8937-9f55a063
8324 ) :: caused by :: E11000 duplicate key error collection: Lab4.Data index: index_1 dup key: { index: null }",
  "code" : 11000,
  "codeName" : "DuplicateKey",
  "keyPattern" : {
    "index" : 1
  },
  "keyValue" : {
    "index" : null
  }
}
```

db.Data.createIndex({name:1},{background:true})

```
> db.Data.createIndex({name:1},{background:true})
{
  "numIndexesBefore" : 3,
  "numIndexesAfter" : 3,
  "note" : "all indexes already exist",
  "ok" : 1
}
```

db.Data.createIndex({age:1},{name:"customAgeIndex"})

```
> db.Data.createIndex({age:1},{name:"customAgeIndex"})
{
  "ok" : 0,
  "errmsg" : "Index with name: customAgeIndex already exists with a different name",
  "code" : 85,
  "codeName" : "IndexOptionsConflict"
}
```

db.Data.explain().find({"Age":{"\$gt:25}})

```

> db.Data.explain().find({"Age":{"$gt:25}})
{
  "queryPlanner" : {
    "plannerVersion" : 1,
    "namespace" : "Lab4.Data",
    "indexFilterSet" : false,
    "parsedQuery" : {
      "Age" : {
        "$gt" : 25
      }
    },
    "queryHash" : "8BC751EF",
    "planCacheKey" : "8BC751EF",
    "winningPlan" : {
      "stage" : "COLLSCAN",
      "filter" : {
        "Age" : {
          "$gt" : 25
        }
      }
    },
    "direction" : "forward"
  },
  "rejectedPlans" : [ ]
},
"serverInfo" : {
  "host" : "DESKTOP-IMLH0SH",
  "port" : 27017,
  "version" : "4.4.2",
  "gitVersion" : "15e73dc5738d2278b688f8929aee605fe4279b0e"
},
"ok" : 1
}

```

db.Data.explain("executionStats").find({"Age":{"\$lt:25}})

```

> db.Data.explain("executionStats").find({"Age":{"$lt:25}})
{
  "queryPlanner" : {
    "plannerVersion" : 1,
    "namespace" : "Lab4.Data",
    "indexFilterSet" : false,
    "parsedQuery" : {
      "Age" : {
        "$lt" : 25
      }
    },
    "winningPlan" : {
      "stage" : "COLLSCAN",
      "filter" : {
        "Age" : {
          "$lt" : 25
        }
      },
      "direction" : "forward"
    },
    "rejectedPlans" : [ ]
  },
  "executionStats" : {
    "executionSuccess" : true,
    "nReturned" : 0,
    "executionTimeMillis" : 6,
    "totalKeysExamined" : 0,
    "totalDocsExamined" : 5000,
    "executionStages" : {
      "stage" : "COLLSCAN",
      "filter" : {
        "Age" : {
          "$lt" : 25
        }
      },
      "nReturned" : 0,
      "executionTimeMillisEstimate" : 0,
      "works" : 5002,
      "advanced" : 0,
      "needTime" : 5001,
      "needYield" : 0,
      "saveState" : 5,
      "restoreState" : 5,
      "isEOF" : 1,
      "direction" : "forward",
      "docsExamined" : 5000
    }
  },
  "serverInfo" : {
    "host" : "DESKTOP-IMLH0SH",
    "port" : 27017,
    "version" : "4.4.2",
    "gitVersion" : "15e73dc5738d2278b688f8929aee605fe4279b0e"
  },
  "ok" : 1
}

```

db.Data.explain().find({"gender":"female"})

```

> db.Data.explain().find({"gender":"female"})
{
  "queryPlanner" : {
    "plannerVersion" : 1,
    "namespace" : "Lab4.Data",
    "indexFilterSet" : false,
    "parsedQuery" : {
      "gender" : {
        "$eq" : "female"
      }
    },
    "queryHash" : "1F945B0D",
    "planCacheKey" : "1F945B0D",
    "winningPlan" : {
      "stage" : "COLLSCAN",
      "filter" : {
        "gender" : {
          "$eq" : "female"
        }
      }
    },
    "direction" : "forward"
  },
  "rejectedPlans" : [ ]
},
"serverInfo" : {
  "host" : "DESKTOP-IMLH0SH",
  "port" : 27017,
  "version" : "4.4.2",
  "gitVersion" : "15e73dc5738d2278b688f8929aee605fe4279b0e"
},
"ok" : 1
}

```

db.Data.explain("executionStats").find({"gender":"male"})

```

> db.Data.explain("executionStats").find({"gender":"male"})
{
  "queryPlanner" : {
    "plannerVersion" : 1,
    "namespace" : "Lab4.Data",
    "indexFilterSet" : false,
    "parsedQuery" : {
      "gender" : {
        "$eq" : "male"
      }
    },
    "winningPlan" : {
      "stage" : "COLLSCAN",
      "filter" : {
        "gender" : {
          "$eq" : "male"
        }
      },
      "direction" : "forward"
    },
    "rejectedPlans" : [ ]
  },
  "executionStats" : {
    "executionSuccess" : true,
    "nReturned" : 2435,
    "executionTimeMillis" : 5,
    "totalKeysExamined" : 0,
    "totalDocsExamined" : 5000,
    "executionStages" : {
      "stage" : "COLLSCAN",
      "filter" : {
        "gender" : {
          "$eq" : "male"
        }
      },
      "nReturned" : 2435,
      "executionTimeMillisEstimate" : 0,
      "works" : 5002,
      "advanced" : 2435,
      "needTime" : 2566,
      "needYield" : 0,
      "saveState" : 5,
      "restoreState" : 5,
      "isEOF" : 1,
      "direction" : "forward",
      "docsExamined" : 5000
    }
  },
  "serverInfo" : {
    "host" : "DESKTOP-IMLH0SH",
    "port" : 27017,
    "version" : "4.4.2",
    "gitVersion" : "15e73dc5738d2278b688f8929aee605fe4279b0e"
  },
  "ok" : 1
}

```

db.Data.explain("executionStats").find({"name":"/el/i})

```

> db.Data.explain("executionStats").find({"name":/el/i})
{
  "queryPlanner" : {
    "plannerVersion" : 1,
    "namespace" : "Lab4.Data",
    "indexFilterSet" : false,
    "parsedQuery" : {
      "name" : {
        "$regex" : "el",
        "$options" : "i"
      }
    },
    "winningPlan" : {
      "stage" : "FETCH",
      "inputStage" : {
        "stage" : "IXSCAN",
        "filter" : {
          "name" : {
            "$regex" : "el",
            "$options" : "i"
          }
        },
        "keyPattern" : {
          "name" : 1
        },
        "indexName" : "name_1",
        "isMultiKey" : false,
        "multiKeyPaths" : {
          "name" : [ ]
        },
        "isUnique" : false,
        "isSparse" : false,
        "isPartial" : false,
        "indexVersion" : 2,
        "direction" : "forward",
        "indexBounds" : {
          "name" : [
            "[\"\\", {}]",
            "[/el/i, /el/i]"
          ]
        }
      }
    },
    "rejectedPlans" : [ ]
  },
}

```



```

"executionStats" : {
  "executionSuccess" : true,
  "nReturned" : 0,
  "executionTimeMillis" : 6,
  "totalKeysExamined" : 1,
  "totalDocsExamined" : 0,
  "executionStages" : {
    "stage" : "FETCH",
    "nReturned" : 0,
    "executionTimeMillisEstimate" : 0,
    "works" : 2,
    "advanced" : 0,
    "needTime" : 1,
    "needYield" : 0,
    "saveState" : 0,
    "restoreState" : 0,
    "isEOF" : 1,
    "docsExamined" : 0,
    "alreadyHasObj" : 0,
    "inputStage" : {
      "stage" : "IXSCAN",
      "filter" : {
        "name" : {
          "$regex" : "el",
          "$options" : "i"
        }
      },
      "nReturned" : 0,
      "executionTimeMillisEstimate" : 0,
      "works" : 2,
      "advanced" : 0,
      "needTime" : 1,
      "needYield" : 0,
      "saveState" : 0,
      "restoreState" : 0,
      "isEOF" : 1,
      "keyPattern" : {
        "name" : 1
      },
      "indexName" : "name_1",
      "isMultiKey" : false,
      "multiKeyPaths" : {
        "name" : [ ]
      },
      "isUnique" : false,
      "isSparse" : false,
      "isPartial" : false,
      "indexVersion" : 2,
      "direction" : "forward",
      "indexBounds" : {
        "name" : [
          "[\"\\", {}]",
          "[/el/i, /el/i]"
        ]
      },
      "keysExamined" : 1,
      "seeks" : 2,
      "dupsTested" : 0,
      "dupsDropped" : 0
    }
  }
},
"serverInfo" : {
  "host" : "DESKTOP-IMLH0SH",
  "port" : 27017,
  "version" : "4.4.2",
  "gitVersion" : "15e73dc5738d2278b688f8929aee605fe4279b0e"
},
"ok" : 1
}

```

Aggregation

Complete Aggregation Pipeline Examples.

```
> use shop
switched to db shop
> db.createCollection("orders")
{ "ok" : 1 }
> db.orders.insertMany( [
...   { _id: 0, name: "Pepperoni", size: "small", price: 19,
...     quantity: 10, date: ISODate( "2021-03-13T08:14:30Z" ) },
...   { _id: 1, name: "Pepperoni", size: "medium", price: 20,
...     quantity: 20, date : ISODate( "2021-03-13T09:13:24Z" ) },
...   { _id: 2, name: "Pepperoni", size: "large", price: 21,
...     quantity: 30, date : ISODate( "2021-03-17T09:22:12Z" ) },
...   { _id: 3, name: "Cheese", size: "small", price: 12,
...     quantity: 15, date : ISODate( "2021-03-13T11:21:39.736Z" ) },
...   { _id: 4, name: "Cheese", size: "medium", price: 13,
...     quantity: 50, date : ISODate( "2022-01-12T21:23:13.331Z" ) },
...   { _id: 5, name: "Cheese", size: "large", price: 14,
...     quantity: 10, date : ISODate( "2022-01-12T05:08:13Z" ) },
...   { _id: 6, name: "Vegan", size: "small", price: 17,
...     quantity: 10, date : ISODate( "2021-01-13T05:08:13Z" ) },
...   { _id: 7, name: "Vegan", size: "medium", price: 18,
...     quantity: 10, date : ISODate( "2021-01-13T05:10:13Z" ) }
... ] )
{
  "acknowledged" : true,
  "insertedIds" : [
    0,
    1,
    2,
    3,
    4,
    5,
    6,
    7
  ]
}
```

```
> db.orders.find()
{ "_id" : 0, "name" : "Pepperoni", "size" : "small", "price" : 19, "quantity" : 10, "date" : ISODate("2021-03-13T08:14:30Z") }
{ "_id" : 1, "name" : "Pepperoni", "size" : "medium", "price" : 20, "quantity" : 20, "date" : ISODate("2021-03-13T09:13:24Z") }
{ "_id" : 2, "name" : "Pepperoni", "size" : "large", "price" : 21, "quantity" : 30, "date" : ISODate("2021-03-17T09:22:12Z") }
{ "_id" : 3, "name" : "Cheese", "size" : "small", "price" : 12, "quantity" : 15, "date" : ISODate("2021-03-13T11:21:39.736Z") }
{ "_id" : 4, "name" : "Cheese", "size" : "medium", "price" : 13, "quantity" : 50, "date" : ISODate("2022-01-12T21:23:13.331Z") }
{ "_id" : 5, "name" : "Cheese", "size" : "large", "price" : 14, "quantity" : 10, "date" : ISODate("2022-01-12T05:08:13Z") }
{ "_id" : 6, "name" : "Vegan", "size" : "small", "price" : 17, "quantity" : 10, "date" : ISODate("2021-01-13T05:08:13Z") }
{ "_id" : 7, "name" : "Vegan", "size" : "medium", "price" : 18, "quantity" : 10, "date" : ISODate("2021-01-13T05:10:13Z") }
```

Calculate Total Order Quantity.

```
> db.orders.aggregate( [
...   // Stage 1: Filter pizza order documents by pizza size
...   {
...     $match: { size: "medium" }
...   },
...   // Stage 2: Group remaining documents by pizza name and calculate total quantity
...   {
...     $group: { _id: "$name", totalQuantity: { $sum: "$quantity" } }
...   }
... ] )
{ "_id" : "Vegan", "totalQuantity" : 10 }
{ "_id" : "Cheese", "totalQuantity" : 50 }
{ "_id" : "Pepperoni", "totalQuantity" : 20 }
```

Calculate Total Order Value and Average Order Quantity.

```
> db.orders.aggregate( [
...
...   // Stage 1: Filter pizza order documents by date range
...   {
...     $match:
...     {
...       "date": { $gte: new ISODate( "2020-01-30" ), $lt: new ISODate( "2022-01-30" ) }
...     }
...   },
...
...   // Stage 2: Group remaining documents by date and calculate results
...   {
...     $group:
...     {
...       _id: { $dateToString: { format: "%Y-%m-%d", date: "$date" } },
...       totalOrderValue: { $sum: { $multiply: [ "$price", "$quantity" ] } },
...       averageOrderQuantity: { $avg: "$quantity" }
...     }
...   },
...
...   // Stage 3: Sort documents by totalOrderValue in descending order
...   {
...     $sort: { totalOrderValue: -1 }
...   }
... ] )
{ "_id" : "2022-01-12", "totalOrderValue" : 790, "averageOrderQuantity" : 30 }
{ "_id" : "2021-03-13", "totalOrderValue" : 770, "averageOrderQuantity" : 15 }
{ "_id" : "2021-03-17", "totalOrderValue" : 630, "averageOrderQuantity" : 30 }
{ "_id" : "2021-01-13", "totalOrderValue" : 350, "averageOrderQuantity" : 10 }
```