

AIM: AGGREGATION USING MONGODB

❖ Comparison Operators

Comparison operators are used to compare values in a query. Some common comparison operators include:

- a. `$eq`: Matches values that are equal to a specified value.
- b. `$gt`: Matches values that are greater than a specified value.
- c. `$lt`: Matches values that are less than a specified value.
- d. `$gte`: Matches values that are greater than or equal to a specified value.
- e. `$lte`: Matches values that are less than or equal to a specified value.
- f. `$ne`: Matches all values that are not equal to a specified value.
- g. `$in` : Matches any of the values specified in an array.

❖ Logical Operators

Logical operators are used to perform logical operations in a query. Some common logical operators include:

- a. `$and`: Joins query clauses with a logical AND and returns all documents that match the conditions of both clauses.
- b. `$or`: Joins query clauses with a logical OR and returns all documents that match the conditions of either clause.
- c. `$not`: Inverts the effect of a query expression and returns documents that do not match the query expression.
- d. `$nor`: Joins query clauses with a logical NOR and returns all documents that fail to match both clauses.

❖ Element Operators

Element operators are used to check for the existence of fields or values within documents. Some common element operators include:

- a. `$exists`: Matches documents that contain the specified field.
- b. `$type`: Matches documents based on the BSON type of the field.

❖ Array Operators

Array operators are used to query arrays within documents. Some common array operators include:

- a. `$elemMatch`: Matches documents that contain an array field with at least one element that matches all the specified query criteria.
- b. `$size`: Matches documents where the array field is a specific size.

Commands:

1. `db.avo.find({$and:[{geography:{ $nin:["boston"] }},{average_price:{ $gt:1.4 } }],{_id:1,geography:1,average_price:1})`

Practical no.04

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```
{
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293d0'),
    average_price: 1.63,
    geography: 'Indianapolis'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293d2'),
    average_price: 1.81,
    geography: 'Jacksonville'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293d4'),
    average_price: 1.5,
    geography: 'Las Vegas'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293d8'),
    average_price: 1.48,
    geography: 'Louisville'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293da'),
    average_price: 1.82,
    geography: 'Miami/Ft. Lauderdale'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293dc'),
    average_price: 1.56,
    geography: 'Midsouth'
  }
}
Type "it" for more
```

2. `db.avo.find({$or:[{geography:{$nin:["boston"]}},{average_price:{$gt:1.4}}]},{_id:1,geography:1,average_price:1})`

```
{
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293b7'),
    average_price: 1.19,
    geography: 'Charlotte'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293b8'),
    average_price: 2.13,
    geography: 'Charlotte'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293b9'),
    average_price: 1.11,
    geography: 'Chicago'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293ba'),
    average_price: 1.49,
    geography: 'Chicago'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293bb'),
    average_price: 0.88,
    geography: 'Cincinnati/Dayton'
  },
  {
    _id: ObjectId('65d9c3bdd8a07e135cb293bc'),
    average_price: 1.34,
    geography: 'Cincinnati/Dayton'
  }
}
Type "it" for more
```

3. `db.avro.find({geography:{$nin:["chicago"]} },{})`

```
'4046': 3274.3,
'4225': 168764.78,
'4770': 1447.06,
_id: ObjectId('65d9c3bdd8a07e135cb293bb'),
date: '2015-01-04',
average_price: 0.88,
total_volume: 228569.58,
total_bags: 55083.44,
small_bags: 17525.31,
large_bags: 37445.46,
xlarge_bags: 112.67,
type: 'conventional',
year: 2015,
geography: 'Cincinnati/Dayton'
},
{
'4046': 144.47,
'4225': 6921.75,
'4770': 0,
_id: ObjectId('65d9c3bdd8a07e135cb293bc'),
date: '2015-01-04',
average_price: 1.34,
total_volume: 8764.33,
total_bags: 1698.11,
small_bags: 585.96,
large_bags: 1112.15,
xlarge_bags: 0,
type: 'organic',
year: 2015,
geography: 'Cincinnati/Dayton'
}
]
Type "it" for more
```

4. `db.avro.find({average_price:{$gte: 1}},{_id:1, average_price:1})`

```
reshma> db.avro.find({average_price:{$gte: 1}},{_id:1, average_price:1})
[
  { _id: ObjectId('65d9c3bdd8a07e135cb293a9'), average_price: 1.22 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293aa'), average_price: 1.79 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ab'), average_price: 1 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ac'), average_price: 1.76 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ad'), average_price: 1.08 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ae'), average_price: 1.29 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293af'), average_price: 1.01 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b0'), average_price: 1.64 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b1'), average_price: 1.02 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b2'), average_price: 1.83 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b3'), average_price: 1.4 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b4'), average_price: 1.73 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b6'), average_price: 1.24 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b7'), average_price: 1.19 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b8'), average_price: 2.13 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b9'), average_price: 1.11 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ba'), average_price: 1.49 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293bc'), average_price: 1.34 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293be'), average_price: 1.44 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293c0'), average_price: 1.35 }
]
Type "it" for more
```

5. `db.avro.find({large_bags:{$lte: 112}},{_id:1, average_price:1,large_bags:1})`

```
{
  _id: ObjectId('65d9c3bdd8a07e135cb293d4'),
  average_price: 1.5,
  large_bags: 30.45
},
{
  _id: ObjectId('65d9c3bdd8a07e135cb293d6'),
  average_price: 1.25,
  large_bags: 0
},
{
  _id: ObjectId('65d9c3bdd8a07e135cb293d8'),
  average_price: 1.48,
  large_bags: 80.55
},
{
  _id: ObjectId('65d9c3bdd8a07e135cb293da'),
  average_price: 1.82,
  large_bags: 0
},
{
  _id: ObjectId('65d9c3bdd8a07e135cb293de'),
  average_price: 1.84,
  large_bags: 107.09
},
{
  _id: ObjectId('65d9c3bdd8a07e135cb293e0'),
  average_price: 1.41,
  large_bags: 0
}
]
Type "it" for more
```

6. `db.avro.find({large_bags:{$lte: 112}},{_id:1, average_price:1})`

```
reshma> db.avro.find({large_bags:{$lte: 112}},{_id:1, average_price:1})
[
  { _id: ObjectId('65d9c3bdd8a07e135cb293aa'), average_price: 1.79 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ae'), average_price: 1.29 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b2'), average_price: 1.83 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b3'), average_price: 1.4 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b4'), average_price: 1.73 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b6'), average_price: 1.24 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b8'), average_price: 2.13 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ba'), average_price: 1.49 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293c0'), average_price: 1.35 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293c6'), average_price: 1.6 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ca'), average_price: 1.68 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293cc'), average_price: 2.32 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ce'), average_price: 1.22 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d2'), average_price: 1.81 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d4'), average_price: 1.5 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d6'), average_price: 1.25 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d8'), average_price: 1.48 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293da'), average_price: 1.82 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293de'), average_price: 1.84 },
  { _id: ObjectId('65d9c3bdd8a07e135cb293e0'), average_price: 1.41 }
]
Type "it" for more
```

7. `db.avro.find({large_bags:{$lte: 112}},{_id:1, date:1})`

```
reshma> db.avro.find({large_bags:{$lte: 112}},{_id:1, date:1})
[
  { _id: ObjectId('65d9c3bdd8a07e135cb293aa'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ae'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b2'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b3'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b4'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b6'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293b8'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ba'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293c0'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293c6'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ca'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293cc'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293ce'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d2'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d4'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d6'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293d8'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293da'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293de'), date: '2015-01-04' },
  { _id: ObjectId('65d9c3bdd8a07e135cb293e0'), date: '2015-01-04' }
]
Type "it" for more
```

8. `db.avro.count({"Las Vegas":{$exists:false}})`

```
reshma> db.avro.count({"Las Vegas":{$exists:false}})
DeprecationWarning: Collection.count() is deprecated. Use countDocuments or estimatedDocumentCount.
33045
```

9. `db.avro.count({"Las Vegas":{$exists:true}})`

```
reshma> db.avro.count({"Las Vegas":{$exists:true}})
0
```

10. `db.avro.count({average_price:{$type:"string"}})`

```
reshma> db.avro.count({average_price:{$type:"string"}})
0
```

11. `db.avro.count({average_price:{$type:"int"}})`

```
reshma> db.avro.count({average_price:{$type:"int"}})
387
```