

A customer will look for different crops stored in the system

```
> db.crop.distinct("cropFeature.cropType")
< [ 'cereal', 'fruit', 'oil-bean', 'vegetable' ]
```

Now, he will only look for the durian (fruit) and related farmers (q2)

```
> db.crop.find(
  {"cropFeature.cropType":"fruit", cropName:"durian"}
)
< { _id: ObjectId("634c210418bb6edbca8211e5"),
  cropId: 93,
  cropName: 'durian',
  cropFeature: { cropType: 'fruit', cropQuantity: 495, priceperUnit: 41 },
  farmerInfo:
    { farmerName: 'Hewie',
      farmerPhone: '393-815-5525',
      farmerLocation: '9393 Anniversary Crossing',
      farmerRating: 4 } }
```

Now he will select the farmers with durian and farmers' rating >= 3 (q3)

```
> db.crop.find(
  {"cropFeature.cropType":"fruit",cropName:"durian", "farmerInfo.farmerRating":{$gt:3} }
)
< { _id: ObjectId("634c3c8518bb6edbca82132c"),
  cropId: 14,
  cropName: 'durian',
  cropFeature: { cropType: 'fruit', cropQuantity: 402, priceperUnit: 22 },
  farmerInfo:
    { farmerId: 65,
      farmerName: 'Annmaria',
      farmerPhone: '130-265-8249',
      farmerLocation: '31277 Evergreen Alley',
      farmerRating: 4 } }
```

Buy durian from farmer 65 to customer 10. 50 kg. right now farmer has 402 kg. (q4)

-- insert into salesData

```
> db.salesData.insertOne(
  {"salesId":102,"salesQuantity":50,"orderDate":"10/17/2022","deliveryDate":"11/17/2022","farmerInfo":{"farmerId":65},
  "customerInfo":{"customerId":10},"cropInfo":{"cropId":14},"paymentStatus":"confirmed","salesAmount":1100}
)
```

-- update the crop of farmerId 65, cropid 10. $402 - 50 = 352$ (q5)

```
> db.crop.updateOne(
  { _id: ObjectId("634c3c8518bb6edbca82132c") },
  { $set: { "cropFeature.cropQuantity": 352 } }
)
```

```
> db.crop.find(
  { "farmerInfo.farmerId": 65 }
)
< { _id: ObjectId("634c3c8518bb6edbca82132c"),
  cropId: 14,
  cropName: 'durian',
  cropFeature: { cropType: 'fruit', cropQuantity: 352, priceperUnit: 22 },
  farmerInfo:
    { farmerId: 65,
      farmerName: 'Annmaria',
      farmerPhone: '130-265-8249',
      farmerLocation: '31277 Evergreen Alley',
      farmerRating: 4 } }
```

Customer analysis

---- From which location we are getting more customers

```
db.customer.aggregate(
  [{
    $group: {
      _id: '$customerLocation',
      total: {
        $sum: 1
      }
    }
  }, {
    $sort: {
```

total: -1

}

}}

)

Output after [\\$sort](#) stage (Sample of 10 documents)

```
_id: "18 Forest Dale Crossing"
total: 1
```

```
_id: "3811 Fordem Road"
total: 1
```

--sort customers by gender

```
1 ▾ /**
2   * _id: The id of the group.
3   * fieldN: The first field name.
4   */
5 ▾ {
6   _id: '$customerGender',
7   Total: {
8     $sum: 1
9   }
10 }
```

```
_id: "Female"
Total: 57
```

```
_id: "Male"
Total: 43
```

--group by age

```
> db.customer.aggregate(
  [{
    $group: {
      _id: '$customerAge',
      total: {
        $sum: 1
      }
    }
  }, {
    $sort: {
      total: -1
    }
  }]
)
```

```

{ _id: 60, total: 6 }
{ _id: 43, total: 5 }
{ _id: 41, total: 5 }
{ _id: 52, total: 4 }
{ _id: 29, total: 4 }
{ _id: 44, total: 4 }
{ _id: 50, total: 4 }
{ _id: 49, total: 4 }
{ _id: 22, total: 3 }
{ _id: 38, total: 3 }
{ _id: 40, total: 3 }
{ _id: 55, total: 3 }
{ _id: 48, total: 3 }
{ _id: 18, total: 3 }
{ _id: 36, total: 3 }
{ _id: 57, total: 3 }
{ _id: 59, total: 3 }
{ _id: 24, total: 3 }
{ _id: 65, total: 2 }
{ _id: 62, total: 2 }

```

--No of orders based on Gender

```

1 ▾ /**
2   * _id: The id of the group.
3   * fieldN: The first field name.
4   */
5 ▾ {
6   _id: '$customerInfo.customerGender',
7   TotalOrder: {
8     $sum: 1
9   }
10 }

```

```

_id: "Female"
TotalOrder: 50

```

```

_id: "Male"
TotalOrder: 50

```

--top 5 customers who ordered the most

```
> db.salesData.aggregate(  
  [{  
    $match: {}  
  }, {  
    $group: {  
      _id: '$customerInfo.customerId',  
      Total: {  
        $sum: 1  
      }  
    }  
  }, {  
    $sort: {  
      Total: -1  
    }  
  }, {  
    $limit: 5  
  }, {  
    $lookup: {  
      from: 'customer',  
      localField: '_id',  
      foreignField: 'customerId',  
      as: 'result'  
    }  
  }, {
```

```

    $project: {
      Total: 1,
      'result.customerName': 1
    }
  ]]
)
< { _id: 58, Total: 4, result: [ { customerName: 'Donnajean' } ] }
  { _id: 18, Total: 4, result: [ { customerName: 'Edie' } ] }
  { _id: 71,
    Total: 3,
    result: [ { customerName: 'Christoforo' } ] }
  { _id: 86, Total: 3, result: [ { customerName: 'Esra' } ] }
  { _id: 10, Total: 3, result: [ { customerName: 'Hildy' } ] }
Atlas atlas-2wdp9f-shard-0 [primary] fff>

```

(in the output only 2 are shown)

Farmer Analysis

--farmer with specific crop

```

> db.crop.find(
  {cropName:"durian"},
  {"farmerInfo.farmerName":1, "farmerInfo.farmerPhone":1, cropName:1}
)
< { _id: ObjectId("634c3c8518bb6edbca82131f"),
  cropName: 'durian',
  farmerInfo: { farmerName: 'Mikael', farmerPhone: '178-120-2985' } }
  { _id: ObjectId("634c3c8518bb6edbca821323"),
  cropName: 'durian',
  farmerInfo: { farmerName: 'Yetty', farmerPhone: '298-727-2131' } }
  { _id: ObjectId("634c3c8518bb6edbca82132c"),
  cropName: 'durian',
  farmerInfo: { farmerName: 'Annmaria', farmerPhone: '130-265-8249' } }

```

--farmer with rating > 3

```
> db.farmer.aggregate([
  [{
    $match: {
      farmerRating: {
        $gt: 3
      }
    }
  }, {
    $sort: {
      farmerRating: -1
    }
  }]
])
```

```
< { _id: ObjectId("634c20e018bb6edbca8210b7"),
  farmerId: 1,
  farmerName: 'Adlai',
  farmerPhone: '386-226-4056',
  farmerLocation: '26 Mandrake Terrace',
  farmerGender: 'Male',
  farmerRating: 5 }
{ _id: ObjectId("634c20e018bb6edbca8210ba"),
  farmerId: 4,
  farmerName: 'Tim',
  farmerPhone: '976-782-4298',
  farmerLocation: '2 Butternut Place',
  farmerGender: 'Male',
  farmerRating: 5 }
```

--farmer with total sale in August

```

> db.salesData.aggregate(
  [{
    $match: {
      deliveryDate: {
        $gt: '7/31/2022',
        $lte: '8/30/2022'
      }
    }
  }, {
    $group: {
      _id: '$farmerInfo.farmerId',
      Total: {
        $sum: '$salesAmount'
      }
    }
  }, {
    $lookup: {
      from: 'farmer',
      localField: '_id',
      foreignField: 'farmerId',
      as: 'result'
    }
  }
])

```

```

  _id: 61
  Total: 267
  result: Array
    0: Object
      _id: ObjectId('634c20e018bb6edbca8210f3')
      farmerId: 61
      farmerName: "Irma"
      farmerPhone: "289-616-8536"
      farmerLocation: "5480 Glendale Street"

```

```

  _id: 64
  Total: 128
  result: Array
    0: Object
      _id: ObjectId('634c20e018bb6edbca8210f')
      farmerId: 64
      farmerName: "Gleda"
      farmerPhone: "245-488-0638"
      farmerLocation: "6 Forster Lane"

```

--Top 5 farmers with most sale in the August 2022


```

> db.salesData.aggregate(
  [{
    $match: {
      deliveryDate: {
        $gt: '7/31/2022',
        $lte: '8/30/2022'
      }
    }
  }, {
    $group: {
      _id: '$farmerInfo.farmerId',
      Total: {
        $sum: '$salesAmount'
      }
    }
  }, {
    $lookup: {
      from: 'farmer',
      localField: '_id',
      foreignField: 'farmerId',
      as: 'result'
    }
  }, {
    $sort: {
      Total: -1
    }
  }

```

```

  }, {
    $limit: 5
  }, {
    $project: {
      Total: 1,
      'result.farmerName': 1
    }
  }]
)

```

```
< { _id: 61, Total: 267, result: [ { farmerName: 'Irma' } ] }
  { _id: 64, Total: 128, result: [ { farmerName: 'Gleda' } ] }
  { _id: 20, Total: 72, result: [ { farmerName: 'Camel' } ] }
  { _id: 91, Total: 44, result: [ { farmerName: 'Jamison' } ] }
  { _id: 24, Total: 9, result: [ { farmerName: 'Maxy' } ] }
```

--male, female who is having rating >3

```
> db.farmer.aggregate(
  [{
    $match: {
      farmerRating: {
        $gt: 3
      }
    }
  }, {
    $group: {
      _id: '$farmerGender',
      Total: {
        $sum: 1
      }
    }
  }]
)
< { _id: 'Female', Total: 22 }
  { _id: 'Male', Total: 17 }
```

Crop Analysis

--available crop type and crops

```
> db.crop.distinct("cropFeature.cropType")
< [ 'cereal', 'fruit', 'oil-bean', 'vegetable' ]
```

```
> db.crop.distinct("cropName")
< [
  'barley',    'corn',
  'durian',    'mango',
  'mangosteen', 'oat',
  'papaya',    'peanut',
  'potato',    'rambutan',
  'soyabean',  'tomato',
  'wheat'
]
```

--average prices of different types of fruits

```
> db.crop.aggregate(
  [{
    $group: {
      _id: '$cropName',
      AvgPrice: {
        $avg: '$cropFeature.priceperUnit'
      }
    }
  }]
)
```

```
< { _id: 'durian', AvgPrice: 31.375 }
  { _id: 'soyabean', AvgPrice: 27.875 }
  { _id: 'corn', AvgPrice: 31.09090909090909 }
  { _id: 'rambutan', AvgPrice: 33.3 }
  { _id: 'mango', AvgPrice: 29.636363636363637 }
  { _id: 'mangosteen', AvgPrice: 31.142857142857142 }
  { _id: 'potato', AvgPrice: 34.333333333333336 }
  { _id: 'tomato', AvgPrice: 37.8 }
  { _id: 'oat', AvgPrice: 32.5 }
  { _id: 'papaya', AvgPrice: 27.727272727272727 }
  { _id: 'wheat', AvgPrice: 35.083333333333336 }
  { _id: 'barley', AvgPrice: 31.25 }
  { _id: 'peanut', AvgPrice: 34.375 }
```

---- average prices of different cereal type crops

```

> db.crop.aggregate(
  [{
    $match: {
      'cropFeature.cropType': 'cereal'
    }
  }, {
    $group: {
      _id: '$cropName',
      AvgPrice: {
        $avg: '$cropFeature.priceperUnit'
      }
    }
  }, {
    $sort: {
      AvgPrice: -1
    }
  }]
)

< { _id: 'wheat', AvgPrice: 35.083333333333336 }
  { _id: 'oat', AvgPrice: 32.5 }
  { _id: 'barley', AvgPrice: 31.25 }
  { _id: 'corn', AvgPrice: 31.09090909090909 }

```

--Top 10 crop with best sales in 2022

```

db.salesData.aggregate(
  [{
    $match: {
      deliveryDate: {
        $gt: '12-31-2021'
      }
    }
  }, {
    $group: {
      _id: '$cropInfo.cropId',
      Total: {
        $sum: '$salesAmount'
      }
    }
  }, {
    $lookup: {
      from: 'crop',
      localField: '_id',
      foreignField: 'cropId',
      as: 'result'
    }, {
      $project: {
        'result.cropName': 1,
        Total: 1
      }
    }, {
      $sort: {
        Total: -1
      }
    }, {
      $limit: 10
    }
  })

```

```

{ _id: 67, Total: 588, result: [ { cropName: 'mango' } ] }
{ _id: 16, Total: 587, result: [ { cropName: 'mango' } ] }
{ _id: 45, Total: 532, result: [ { cropName: 'papaya' } ] }
{ _id: 60, Total: 499, result: [ { cropName: 'papaya' } ] }
{ _id: 59, Total: 482, result: [ { cropName: 'tomato' } ] }
{ _id: 13, Total: 456, result: [ { cropName: 'wheat' } ] }
{ _id: 80, Total: 443, result: [ { cropName: 'oat' } ] }
{ _id: 57, Total: 427, result: [ { cropName: 'wheat' } ] }
{ _id: 17, Total: 419, result: [ { cropName: 'peanut' } ] }
{ _id: 94, Total: 314, result: [ { cropName: 'mango' } ] }

```

+lag_atlag_2yds95 shard 0 [primary] 555\

--Top sales in crop types in 2022

```
db.salesData.aggregate(  
  [{  
    $match: {  
      deliveryDate: {  
        $gt: '12-31-2021'  
      }  
    }  
  }, {  
    $group: {  
      _id: '$cropInfo.cropType',  
      Total: {  
        $sum: '$salesAmount'  
      }  
    }  
  }, {  
    $sort: {  
      Total: -1  
    }  
  }  
])  
)
```

```
< { _id: 'cereal', Total: 3563 }  
  { _id: 'fruit', Total: 3029 }  
  { _id: 'vegetable', Total: 2332 }  
  { _id: 'oil-bean', Total: 1980 }
```

--crop sell in summer season (March -May)

```

> db.salesData.aggregate (
  [{
    $match: {
      deliveryDate: {
        $gt: '3-1-2022',
        $lt: '5-31-2022'
      }
    }
  }, {
    $group: {
      _id: '$cropInfo.cropType',
      Total: {
        $sum: '$salesAmount'
      }
    }
  }, {
    $sort: {
      Total: -1
    }
  }]
)

```

```

{ _id: 'fruit', Total: 762 }
{ _id: 'vegetable', Total: 374 }
{ _id: 'cereal', Total: 339 }
{ _id: 'oil-bean', Total: 52 }

```

--sell in winter

```

> db.salesData.aggregate(
  [{
    $match: {
      deliveryDate: {
        $gt: '11-1-2021',
        $lt: '12-31-2021'
      }
    }
  }, {
    $group: {
      _id: '$cropInfo.cropType',
      Total: {
        $sum: '$salesAmount'
      }
    }
  }, {
    $sort: {
      Total: -1
    }
  }]
)

```

```

{ _id: 'fruit', Total: 709 }
{ _id: 'cereal', Total: 601 }
{ _id: 'oil-bean', Total: 481 }
{ _id: 'vegetable', Total: 97 }

```

Sales Data Analysis

--sales data for the last 3 months


```

> db.salesData.aggregate(
  [{
    $match: {
      deliveryDate: {
        $gt: '7-1-2022',
        $lt: '9-31-2022'
      }
    }
  }, {
    $project: {
      salesQuantity: 1,
      salesAmount: 1,
      'cropInfo.cropType': 1
    }
  }]
)

```

```

{ _id: ObjectId("634c411f18bb6edbca8213f4"),
  salesQuantity: 17,
  cropInfo: { cropType: 'vegetable' },
  salesAmount: 72 }
{ _id: ObjectId("634c411f18bb6edbca821407"),
  salesQuantity: 119,
  cropInfo: { cropType: 'oil-bean' },
  salesAmount: 44 }
{ _id: ObjectId("634c411f18bb6edbca821409"),
  salesQuantity: 324,
  cropInfo: { cropType: 'cereal' },
  salesAmount: 9 }
{ _id: ObjectId("634c411f18bb6edbca82140a"),
  salesQuantity: 138,
  cropInfo: { cropType: 'cereal' },
  salesAmount: 159 }

```

--most sold crop types in the last 6 months

```

> db.salesData.aggregate(
  [{
    $match: {
      deliveryDate: {
        $gt: '4-1-2022',
        $lt: '9-31-2022'
      }
    }
  }, {
    $group: {
      _id: '$cropInfo.cropType',
      Total: {
        $sum: '$salesQuantity'
      }
    }
  }, {
    $sort: {
      Total: -1
    }
  }]
)

```

```

{
  "_id": "cereal", "Total": 3274 }
{
  "_id": "fruit", "Total": 2094 }
{
  "_id": "vegetable", "Total": 1636 }
{
  "_id": "oil-bean", "Total": 1376 }

```

--crops with least sales

```
db.salesData.aggregate(  
  [{  
    $match: {  
      deliveryDate: {  
        $gt: '4-1-2022',  
        $lt: '9-31-2022'  
      }  
    }  
  }, {  
    $group: {  
      _id: '$cropInfo.cropId',  
      Total: {  
        $sum: '$salesQuantity'  
      }  
    }  
  }, {  
    $sort: {  
      Total: -1  
    }  
  }, {  
    $lookup: {  
      from: 'crop',  
      localField: '_id',  
      foreignField: 'cropId',  
      as: 'result'  
    }  
  }  
])
```

```

    }, {
      $group: {
        _id: '$result.cropName',
        Total: {
          $sum: '$Total'
        }
      }
    }
  }, {
    $sort: {
      Total: 1
    }
  }
}]
)

```

```

< { _id: [ 'potato' ], Total: 226 }
{ _id: [ 'barley' ], Total: 297 }
{ _id: [ 'mango' ], Total: 321 }
{ _id: [ 'rambutan' ], Total: 381 }
{ _id: [ 'durian' ], Total: 456 }
{ _id: [ 'corn' ], Total: 494 }
{ _id: [ 'papaya' ], Total: 873 }
{ _id: [ 'tomato' ], Total: 914 }
{ _id: [ 'wheat' ], Total: 916 }
{ _id: [ 'soyabean' ], Total: 947 }
{ _id: [ 'peanut' ], Total: 1073 }
{ _id: [ 'mangosteen' ], Total: 1482 }

```

--which farmer sold fruit most

```

> db.salesData.aggregate(
  [{
    $match: {
      'cropInfo.cropType': 'fruit'
    }
  }, {
    $group: {
      _id: '$farmerInfo.farmerName',
      Total: {
        $sum: '$salesQuantity'
      }
    }
  }, {
    $sort: {
      Total: -1
    }
  }, {
    $limit: 5
  }]
)

```

```

< { _id: 'Gaspard', Total: 397 }
  { _id: 'Marina', Total: 396 }
  { _id: 'Bat', Total: 392 }
  { _id: 'Jorrie', Total: 382 }
  { _id: 'Raoul', Total: 367 }

```

--pending payment in September

```
> db.salesData.aggregate(  
  [{  
    $match: {  
      deliveryDate: {  
        $gt: '9-30-2022'  
      },  
      paymentStatus: 'pending'  
    }  
  }]  
)
```

```
< { _id: ObjectId("634c411f18bb6edbca821415"),  
  salesId: 35,  
  salesQuantity: 153,  
  orderDate: '5/22/2022',  
  deliveryDate: '9/7/2022',  
  farmerInfo:  
    { farmerId: 58,  
      farmerName: 'Lia',  
      farmerPhone: '852-855-8766',  
      farmerLocation: '27103 Lakewood Junction',  
      farmerRating: 1 },  
  customerInfo:  
    { customerId: 2,  
      customerName: 'Cassey',  
      customerLocation: '84595 McCormick Way',  
      customerAge: 61,  
      customerGender: 'Female' },
```