

```

> db.persons.aggregate([
...     { $match: { gender: 'female' } },
...     { $group: { _id: { state: "$location.state" }, totalPersons: { $sum: 1 } } }
... ])
{ "_id" : { "state" : "tayside" }, "totalPersons" : 1 }
{ "_id" : { "state" : "berkshire" }, "totalPersons" : 1 }
{ "_id" : { "state" : "michigan" }, "totalPersons" : 1 }
{ "_id" : { "state" : "county down" }, "totalPersons" : 1 }
{ "_id" : { "state" : "cornwall" }, "totalPersons" : 2 }
{ "_id" : { "state" : "uşak" }, "totalPersons" : 1 }
{ "_id" : { "state" : "sinop" }, "totalPersons" : 3 }
{ "_id" : { "state" : "northumberland" }, "totalPersons" : 1 }
{ "_id" : { "state" : "côtes-d'armor" }, "totalPersons" : 1 }
{ "_id" : { "state" : "puy-de-dôme" }, "totalPersons" : 1 }
{ "_id" : { "state" : "pas-de-calais" }, "totalPersons" : 1 }
{ "_id" : { "state" : "dorset" }, "totalPersons" : 1 }
{ "_id" : { "state" : "یزد" }, "totalPersons" : 1 }
{ "_id" : { "state" : "loir-et-cher" }, "totalPersons" : 1 }
{ "_id" : { "state" : "meurthe-et-moselle" }, "totalPersons" : 1 }
{ "_id" : { "state" : "aksaray" }, "totalPersons" : 1 }
{ "_id" : { "state" : "lothian" }, "totalPersons" : 1 }
{ "_id" : { "state" : "minnesota" }, "totalPersons" : 2 }
{ "_id" : { "state" : "corrèze" }, "totalPersons" : 1 }
{ "_id" : { "state" : "south karelia" }, "totalPersons" : 3 }
Type "it" for more
> .pretty();

```

```
db.persons.aggregate([
  { $match: { gender: 'female' } },
  { $group: { _id: { state: "$location.state" }, totalPersons: { $sum: 1 } } },
  { $sort: { totalPersons: -1 } }
]).pretty();
```

```

> db.persons.aggregate([
...     { $match: { gender: 'female' } },
...     { $group: { _id: { state: "$location.state" }, totalPersons: { $sum: 1 } } },
...     { $sort: { totalPersons: -1 } }
... ]).pretty();
{ "_id" : { "state" : "midtjylland" }, "totalPersons" : 33 }
{ "_id" : { "state" : "nordjylland" }, "totalPersons" : 27 }
{
  "_id" : {
    "state" : "australian capital territory"
  },
  "totalPersons" : 24
}
{ "_id" : { "state" : "syddanmark" }, "totalPersons" : 24 }
{ "_id" : { "state" : "new south wales" }, "totalPersons" : 24 }
{ "_id" : { "state" : "south australia" }, "totalPersons" : 22 }
{ "_id" : { "state" : "danmark" }, "totalPersons" : 21 }
{ "_id" : { "state" : "hovedstaden" }, "totalPersons" : 21 }
{ "_id" : { "state" : "queensland" }, "totalPersons" : 20 }
{ "_id" : { "state" : "overijssel" }, "totalPersons" : 20 }
{ "_id" : { "state" : "sjælland" }, "totalPersons" : 19 }
{ "_id" : { "state" : "nova scotia" }, "totalPersons" : 17 }
{ "_id" : { "state" : "northwest territories" }, "totalPersons" : 16 }
{ "_id" : { "state" : "canterbury" }, "totalPersons" : 16 }
{ "_id" : { "state" : "yukon" }, "totalPersons" : 16 }

```

```
db.persons.aggregate([
  { $project: { _id: 0, gender: 1, fullName: { $concat: ["$name.first", " ", "$name.last"] } } }
]).pretty();
```



```
> db.persons.aggregate([
...   { $project: { _id: 0, gender: 1, fullName: { $concat: ["$name.first", " ", "$name.last"] } } }
... ]).pretty();
{ "gender" : "male", "fullName" : "gideon van drongelen" }
{ "gender" : "female", "fullName" : "پریا پارسا" }
{ "gender" : "male", "fullName" : "carl jacobs" }
{ "gender" : "male", "fullName" : "harvey chambers" }
{ "gender" : "female", "fullName" : "maeva wilson" }
{ "gender" : "male", "fullName" : "victor pedersen" }
{ "gender" : "male", "fullName" : "zachary lo" }
{ "gender" : "female", "fullName" : "olav oehme" }
{ "gender" : "female", "fullName" : "madeleine till" }
{ "gender" : "female", "fullName" : "louise graham" }
{ "gender" : "female", "fullName" : "mestan kaplangı" }
{ "gender" : "female", "fullName" : "katie welch" }
{ "gender" : "female", "fullName" : "sandra lorenzo" }
{ "gender" : "female", "fullName" : "shona kemperman" }
{ "gender" : "male", "fullName" : "بنیامین سالاری" }
{ "gender" : "male", "fullName" : "isolino viana" }
{ "gender" : "female", "fullName" : "andreia arnaud" }
{ "gender" : "female", "fullName" : "anaëlle adam" }
{ "gender" : "female", "fullName" : "anne ruiz" }
{ "gender" : "male", "fullName" : "elijah lewis" }
Type "it" for more
```

```
> █
```

```
db.persons
  .aggregate([
    {
      $project: {
        _id: 0,
        gender: 1,
        fullName: {
          $concat: [
            { $toUpper: '$name.first' },
            ' ',
            { $toUpper: '$name.last' }
          ]
        }
      }
    }
  ])
  .pretty();
```

```
...    }
...  }).pretty();
{ "gender" : "male", "fullName" : "GIDEON VAN DRONGELEN" }
{ "gender" : "female", "fullName" : "پریا پارسا" }
{ "gender" : "male", "fullName" : "CARL JACOBS" }
{ "gender" : "male", "fullName" : "HARVEY CHAMBERS" }
{ "gender" : "female", "fullName" : "MAEVA WILSON" }
{ "gender" : "male", "fullName" : "VICTOR PEDERSEN" }
{ "gender" : "male", "fullName" : "ZACHARY LO" }
{ "gender" : "female", "fullName" : "OLAV OEHME" }
{ "gender" : "female", "fullName" : "MADELEINE TILL" }
{ "gender" : "female", "fullName" : "LOUISE GRAHAM" }
{ "gender" : "female", "fullName" : "MESTAN KAPLANGı" }
{ "gender" : "female", "fullName" : "KATIE WELCH" }
{ "gender" : "female", "fullName" : "SANDRA LORENZO" }
{ "gender" : "female", "fullName" : "SHONA KEMPERMAN" }
{ "gender" : "male", "fullName" : "بنیامین سالاری" }
{ "gender" : "male", "fullName" : "ISOLINO VIANA" }
{ "gender" : "female", "fullName" : "ANDREIA ARNAUD" }
{ "gender" : "female", "fullName" : "ANAËLLE ADAM" }
{ "gender" : "female", "fullName" : "ANNE RUIZ" }
{ "gender" : "male", "fullName" : "ELIJAH LEWIS" }
```

Type "it" for more

> █

```
db.persons.aggregate([
```

```
{
```

```
  $project: {
```

```
    _id: 0,
```

```
    gender: 1,
```

```
    fullName: {
```

```
      $concat: [
```

```
        { $toUpper: { $substrCP: ['$name.first', 0, 1] } },
```

```
        { $substrCP: ['$name.first', 1, { $subtract: [ { $strlenCP: "$name.first" }, 1] } ] },
```

```
        ' ',
```

```
        { $toUpper: '$name.last' } ]
```

```
      ]
```

```
    }
```

```
  }
```

```
}
```

```
]).pretty();
```



```

...    }
...    }
...    }).pretty();
{ "gender" : "male", "fullName" : "Gideon Van drongelen" }
{ "gender" : "female", "fullName" : "پریا پارسا" }
{ "gender" : "male", "fullName" : "Carl Jacobs" }
{ "gender" : "male", "fullName" : "Harvey Chambers" }
{ "gender" : "female", "fullName" : "Maeva Wilson" }
{ "gender" : "male", "fullName" : "Victor Pedersen" }
{ "gender" : "male", "fullName" : "Zachary Lo" }
{ "gender" : "female", "fullName" : "Olav Oehme" }
{ "gender" : "female", "fullName" : "Madeleine Till" }
{ "gender" : "female", "fullName" : "Louise Graham" }
{ "gender" : "female", "fullName" : "Mestan Kaplangı" }
{ "gender" : "female", "fullName" : "Katie Welch" }
{ "gender" : "female", "fullName" : "Sandra Lorenzo" }
{ "gender" : "female", "fullName" : "Shona Kemperman" }
{ "gender" : "male", "fullName" : "بنیامین سالاری" }
{ "gender" : "male", "fullName" : "Isolino Viana" }
{ "gender" : "female", "fullName" : "Andreia Arnaud" }
{ "gender" : "female", "fullName" : "Anaëlle Adam" }
{ "gender" : "female", "fullName" : "Anne Ruiz" }
{ "gender" : "male", "fullName" : "Elijah Lewis" }

```

Type "it" for more

>

```
db.persons.aggregate([
```

```
{
```

```
  $project: {
```

```
    _id: 0,
```

```
    name: 1,
```

```
    email: 1,
```

```
    location: {
```

```
      type: 'Point',
```

```
      coordinates: [
```

```
        {
```

```
          $convert: {
```

```
            input: '$location.coordinates.longitude',
```

```
            to: 'double',
```

```
            onError: 0.0,
```

```
            onNull: 0.0
```

```
          }
```

```
        },
```

```
        {
```

```
          $convert: {
```

```
            input: '$location.coordinates.latitude',
```

```
            to: 'double',
```

```
            onError: 0.0,
```

```
            onNull: 0.0
```

```
        }
```

```
{
  $project: {
    gender: 1,
    email: 1,
    location: 1,
    fullName: {
      $concat: [
        { $toUpper: { $substrCP: ['$name.first', 0, 1] } },
        {
          $substrCP: [
            '$name.first',
            1,
            { $subtract: [{ $strLenCP: '$name.first' }, 1] }
          ]
        },
        { $toUpper: { $substrCP: ['$name.last', 0, 1] } },
        {
          $substrCP: [
            '$name.last',
            1,
            { $subtract: [{ $strLenCP: '$name.last' }, 1] }
          ]
        }
      ]
    }
  }
}
```

```
}  
{
```

```
  "location" : {  
    "type" : "Point",  
    "coordinates" : [  
      78.0207,  
      -84.1572  
    ]  
  },  
  "email" : "anne.ruiz@example.com",  
  "fullName" : "Anne Ruiz"
```

```
}  
{
```

```
  "location" : {  
    "type" : "Point",  
    "coordinates" : [  
      -18.5996,  
      -42.6128  
    ]  
  },  
  "email" : "elijah.lewis@example.com",  
  "fullName" : "Elijah Lewis"
```

```
}
```

Type "it" for more

```
>
```

```
db.persons
```

```
.aggregate([
  {
    $project: {
      _id: 0,
      name: 1,
      email: 1,
      birthdate: { $convert: { input: '$dob.date', to: 'date' } },
      age: "$dob.age",
      location: {
        type: 'Point',
        coordinates: [
          {
            $convert: {
              input: '$location.coordinates.longitude',
              to: 'double',
              onError: 0.0,
              onNull: 0.0
            }
          },
          {
            $convert: {
              input: '$location.coordinates.latitude',
              to: 'double',
              onError: 0.0,
              onNull: 0.0
            }
          }
        ]
      }
    }
  }
])
```



```
},
{
  $project: {
    gender: 1,
    email: 1,
    location: 1,
    birthdate: 1,
    age: 1,
    fullName: {
      $concat: [
        { $toUpper: { $substrCP: ['$name.first', 0, 1] } },
        {
          $substrCP: [
            '$name.first',
            1,
            { $subtract: [{ $strLenCP: '$name.first' }, 1] }
          ]
        }
      ],
    },
  },
}
```

```
{
  "location" : {
    "type" : "Point",
    "coordinates" : [
      78.0207,
      -84.1572
    ]
  },
  "email" : "anne.ruiz@example.com",
  "birthdate" : ISODate("1982-10-09T12:10:42Z"),
  "age" : 35,
  "fullName" : "Anne Ruiz"
}
{
  "location" : {
    "type" : "Point",
    "coordinates" : [
      -18.5996,
      -42.6128
    ]
  },
  "email" : "elijah.lewis@example.com",
  "birthdate" : ISODate("1986-03-29T06:40:18Z"),
  "age" : 32,
  "fullName" : "Elijah Lewis"
}
```

Type "it" for more

> █

```
db.persons.aggregate( [
```

```
{
```

```
  $project: {
```

```
    _id: 0,
```

```
    name: 1,
```

```
    email: 1,
```

```
    birthdate: { $toDate: '$dob.date' },
```

```
    age: "$dob.age",
```

```
    location: {
```

```
      type: 'Point',
```

```
      coordinates: [
```

```
        {
```

```
          $convert: {
```

```
...    },
...    { $group: { _id: { birthYear: { $isoWeekYear: "$birthdate" } }, numPersons: { $sum: 1 } } },
...    { $sort: { numPersons: -1 } }
...  ]).pretty();
{ "_id" : { "birthYear" : NumberLong(1955) }, "numPersons" : 113 }
{ "_id" : { "birthYear" : NumberLong(1961) }, "numPersons" : 111 }
{ "_id" : { "birthYear" : NumberLong(1993) }, "numPersons" : 110 }
{ "_id" : { "birthYear" : NumberLong(1960) }, "numPersons" : 110 }
{ "_id" : { "birthYear" : NumberLong(1975) }, "numPersons" : 107 }
{ "_id" : { "birthYear" : NumberLong(1945) }, "numPersons" : 106 }
{ "_id" : { "birthYear" : NumberLong(1976) }, "numPersons" : 105 }
{ "_id" : { "birthYear" : NumberLong(1967) }, "numPersons" : 104 }
{ "_id" : { "birthYear" : NumberLong(1990) }, "numPersons" : 103 }
{ "_id" : { "birthYear" : NumberLong(1981) }, "numPersons" : 102 }
{ "_id" : { "birthYear" : NumberLong(1994) }, "numPersons" : 102 }
{ "_id" : { "birthYear" : NumberLong(1958) }, "numPersons" : 101 }
{ "_id" : { "birthYear" : NumberLong(1995) }, "numPersons" : 101 }
{ "_id" : { "birthYear" : NumberLong(1946) }, "numPersons" : 100 }
{ "_id" : { "birthYear" : NumberLong(1948) }, "numPersons" : 100 }
{ "_id" : { "birthYear" : NumberLong(1950) }, "numPersons" : 99 }
{ "_id" : { "birthYear" : NumberLong(1970) }, "numPersons" : 99 }
{ "_id" : { "birthYear" : NumberLong(1983) }, "numPersons" : 99 }
{ "_id" : { "birthYear" : NumberLong(1963) }, "numPersons" : 98 }
{ "_id" : { "birthYear" : NumberLong(1965) }, "numPersons" : 98 }
```

Type "it" for more

>

```
db.friends.aggregate([
  { $project: { _id: 0, examScore: { $slice: ["$examScores", 1] } } }
]).pretty();
```



```
db.friends.aggregate([
  { $project: { _id: 0, examScore: { $slice: ["$examScores", 1] } } }
]).pretty();
"examScore" : [ { "difficulty" : 4, "score" : 57.9 } ] }
"examScore" : [ { "difficulty" : 7, "score" : 52.1 } ] }
"examScore" : [ { "difficulty" : 3, "score" : 75.1 } ] }
```

```
db.friends.aggregate([  
  ? { $project: { _id: 0, numScores: { $size: "$examScores" } }  
  ]).pretty();
```

```
>
> db.friends.aggregate([
...     { $project: { _id: 0, numScores: { $size: "$examScores" } } }
...     ]).pretty();
{ "numScores" : 3 }
{ "numScores" : 3 }
{ "numScores" : 3 }
> █
```

```
db.friends.aggregate([
  {
    $project: {
      _id: 0,
      scores: { $filter: { input: '$examScores', as: 'sc', cond: { $gt: ["$$sc.score", 60] } } }
    }
  }
]).pretty();
```

```
}  
]).pretty();
```

```
"scores" : [  
  {  
    "difficulty" : 6,  
    "score" : 62.1  
  },  
  {  
    "difficulty" : 3,  
    "score" : 88.5  
  }  
]
```

```
scores" : [ { "difficulty" : 2, "score" : 74.3 } ] }
```

```
"scores" : [  
  {  
    "difficulty" : 3,  
    "score" : 75.1  
  },  
  {  
    "difficulty" : 6,  
    "score" : 61.5  
  }  
]
```



```
db.friends.aggregate([  
  💡 { $unwind: "$examScores" },  
    { $sort: { examScores: -1 } }  
]).pretty();
```

```
> db.friends.aggregate([
...     { $unwind: "$examScores" },
...     { $sort: { examScores: -1 } }
... ]).pretty();
{
  "_id" : ObjectId("5b9dffe7065cab29caa3e426"),
  "name" : "Maria",
  "hobbies" : [
    "Cooking",
    "Skiing"
  ],
  "age" : 29,
  "examScores" : {
    "difficulty" : 8,
    "score" : 44.2
  }
}
{
  "_id" : ObjectId("5b9dffe7065cab29caa3e425"),
  "name" : "Manu",
  "hobbies" : [
    "Eating",
```

```
db.friends.aggregate([
  { $unwind: "$examScores" },
  💡 { $project: { _id: 0, name: 1, age: 1, score: "$examScores.score" } },
  { $sort: { examScores: -1 } }
]).pretty();
```

```
> db.friends.aggregate([
...     { $unwind: "$examScores" },
...     { $project: { _id: 0, name: 1, age: 1, score: "$examScores.score" } },
...     { $sort: { score: -1 } }
... ]).pretty();
{ "name" : "Max", "age" : 29, "score" : 88.5 }
{ "name" : "Maria", "age" : 29, "score" : 75.1 }
{ "name" : "Manu", "age" : 30, "score" : 74.3 }
{ "name" : "Max", "age" : 29, "score" : 62.1 }
{ "name" : "Maria", "age" : 29, "score" : 61.5 }
{ "name" : "Max", "age" : 29, "score" : 57.9 }
{ "name" : "Manu", "age" : 30, "score" : 53.1 }
{ "name" : "Manu", "age" : 30, "score" : 52.1 }
{ "name" : "Maria", "age" : 29, "score" : 44.2 }
>
```

```
db.friends.aggregate([
  { $unwind: "$examScores" },
  { $project: { _id: 1, name: 1, age: 1, score: "$examScores.score" } },
  { $sort: { score: -1 } },
  { $group: { _id: "$_id", maxScore: { $max: "$score" } } }
]).pretty();
```



```
> db.friends.aggregate([
...     { $unwind: "$examScores" },
...     { $project: { _id: 1, name: 1, age: 1, score: "$examScores.score" } },
...     { $sort: { score: -1 } },
...     { $group: { _id: "$_id", maxScore: { $max: "$score" } } }
... ]).pretty();
{ "_id" : ObjectId("5b9df7fe7065cab29caa3e425"), "maxScore" : 74.3 }
{ "_id" : ObjectId("5b9df7fe7065cab29caa3e426"), "maxScore" : 75.1 }
{ "_id" : ObjectId("5b9df7fe7065cab29caa3e424"), "maxScore" : 88.5 }
```

```
db.friends.aggregate([
  💡 { $unwind: "$examScores" },
  { $project: { _id: 1, name: 1, age: 1, score: "$examScores.score" } },
  { $sort: { score: -1 } },
  { $group: { _id: "$_id", name: { $first: "$name" }, maxScore: { $max: "$score" } } },
  { $sort: { maxScore: -1 } }
]).pretty();
```

```
> db.friends.aggregate([
...   { $unwind: "$examScores" },
...   { $project: { _id: 1, name: 1, age: 1, score: "$examScores.score" } },
...   { $sort: { score: -1 } },
...   { $group: { _id: "$_id", name: { $first: "$name" }, maxScore: { $max: "$score" } } },
...   { $sort: { maxScore: -1 } }
... ]).pretty();
{
  "_id" : ObjectId("5b9dffe7065cab29caa3e424"),
  "name" : "Max",
  "maxScore" : 88.5
}
{
  "_id" : ObjectId("5b9dffe7065cab29caa3e426"),
  "name" : "Maria",
  "maxScore" : 75.1
}
{
  "_id" : ObjectId("5b9dffe7065cab29caa3e425"),
  "name" : "Manu",
  "maxScore" : 74.3
}
>
```

```
db.persons.aggregate( [
```

```
{
```

```
  $bucket: {
```

```
    groupBy: '$dob.age',
```

```
    boundaries: [0, 18, 30, 50, 80, 120],
```

```
    output: {
```

```
      numPersons: { $sum: 1 },
```

```
      averageAge: { $avg: "$dob.age" }
```

```
    }
```

```
  }
```

```
}]
```

```
]).pretty();
```

```
> db.persons.aggregate([
...   {
...     $bucket: {
...       groupBy: '$dob.age',
...       boundaries: [0, 18, 30, 50, 80, 120],
...       output: {
...         numPersons: { $sum: 1 },
...         averageAge: { $avg: "$dob.age" }
...       }
...     }
...   }
... ]).pretty();
{ "_id" : 18, "numPersons" : 868, "averageAge" : 25.101382488479263 }
{ "_id" : 30, "numPersons" : 1828, "averageAge" : 39.4917943107221 }
{ "_id" : 50, "numPersons" : 2304, "averageAge" : 61.46440972222222 }
>
```

```
db.persons
  .aggregate([
    {
      $bucketAuto: {
        groupBy: '$dob.age',
        buckets: 5,
        output: {
          numPersons: { $sum: 1 },
          averageAge: { $avg: '$dob.age' }
        }
      }
    }
  ])
  .pretty();
```

```
...    }
...  }
... }
... ]).pretty();
{
  "_id" : {
    "min" : 21,
    "max" : 32
  },
  "numPersons" : 1042,
  "averageAge" : 25.99616122840691
}
{
  "_id" : {
    "min" : 32,
    "max" : 43
  },
  "numPersons" : 1010,
  "averageAge" : 36.97722772277228
}
{
  "_id" : {
    "min" : 43,
    "max" : 54
  },
  "numPersons" : 1033,
  "averageAge" : 47.98838334946757
}
```



```
db.persons.aggregate([
  💡 { $project: { _id: 0, name: 1, birthdate: { $toDate: "$dob.date" } } },
    { $sort: { birthdate: 1 } }
]).pretty();
```

```
> db.persons.aggregate([
...   { $project: { _id: 0, name: 1, birthdate: { $toDate: "$dob.date" } } },
...   { $sort: { birthdate: 1 } }
... ]).pretty();
{
  "name" : {
    "title" : "mrs",
    "first" : "victoria",
    "last" : "hale"
  },
  "birthdate" : ISODate("1944-09-07T15:52:50Z")
}
{
  "name" : {
    "title" : "mr",
    "first" : "عباس",
    "last" : "ياسمى"
  },
  "birthdate" : ISODate("1944-09-12T07:49:20Z")
}
{
  "name" : {
    "title" : "miss",
    "first" : "erundina",
    "last" : "porto"
  },
  "birthdate" : ISODate("1944-09-13T14:58:41Z")
}
```

```
db.persons.aggregate([
  ? { $project: { _id: 0, name: { $concat: ["$name.first", " ", "$name.last"] }, birthdate: { $toDate: "$birthdate" },
    { $sort: { birthdate: 1 } },
    { $limit: 10 }
  ]).pretty();
```

```
> db.persons.aggregate([
...   { $project: { _id: 0, name: { $concat: ["$name.first", " ", "$name.last"] }, birthdate: { $toDate: "$dob.date" } } },
...   { $sort: { birthdate: 1 } },
...   { $limit: 10 }
... ]).pretty();
{ "name" : "victoria hale", "birthdate" : ISODate("1944-09-07T15:52:50Z") }
{ "name" : "عباس ياسمى", "birthdate" : ISODate("1944-09-12T07:49:20Z") }
{ "name" : "erundina porto", "birthdate" : ISODate("1944-09-13T14:58:41Z") }
{ "name" : "پرهام جعفرى", "birthdate" : ISODate("1944-09-16T16:03:28Z") }
{ "name" : "eli henry", "birthdate" : ISODate("1944-09-17T15:04:13Z") }
{ "name" : "kirk brown", "birthdate" : ISODate("1944-09-18T11:03:05Z") }
{ "name" : "alexis bélanger", "birthdate" : ISODate("1944-10-02T22:56:32Z") }
{ "name" : "gina beck", "birthdate" : ISODate("1944-10-04T07:41:31Z") }
{ "name" : "sebastian olsen", "birthdate" : ISODate("1944-10-13T15:29:05Z") }
{ "name" : "lucy wilson", "birthdate" : ISODate("1944-10-25T16:27:56Z") }
```

```
db.persons.aggregate([
  { $project: { _id: 0, name: { $concat: ["$name.first", " ", "$name.last"] }, birthdate: { $toDate: "$birthdate" } },
  { $sort: { birthdate: 1 } },
  { $skip: 10 },
  { $limit: 10 }
]).pretty();
```

```

...   { $project: { _id: 0, name: { $concat: ["$name.first", " ", "$name.last"] }, birthdate: { $toDate: "$dob.date" } } },
...   { $sort: { birthdate: 1 } },
...   { $skip: 10 },
...   { $limit: 10 }
... ]).pretty();
{ "name" : "eva murray", "birthdate" : ISODate("1944-10-29T02:05:56Z") }
{ "name" : "elena chevalier", "birthdate" : ISODate("1944-10-31T02:56:40Z") }
{
  "name" : "gretchen schmidtke",
  "birthdate" : ISODate("1944-11-01T20:49:03Z")
}
{ "name" : "joseph thomas", "birthdate" : ISODate("1944-11-06T11:08:45Z") }
{ "name" : "sarah lee", "birthdate" : ISODate("1944-11-07T07:53:47Z") }
{
  "name" : "conrad scheepbouwer",
  "birthdate" : ISODate("1944-11-08T02:15:17Z")
}
{ "name" : "martina charles", "birthdate" : ISODate("1944-11-08T07:38:49Z") }
{ "name" : "olga blanco", "birthdate" : ISODate("1944-11-17T09:16:50Z") }
{ "name" : "elisa morales", "birthdate" : ISODate("1944-11-22T22:51:47Z") }
{ "name" : "rafael velasco", "birthdate" : ISODate("1944-11-27T07:12:20Z") }
>

```



```
> db.persons.aggregate([
...   { $project: { _id: 0, name: { $concat: ["$name.first", " ", "$name.last"] }, birthdate: { $toDate: "$dob.date" } } },
...   { $skip: 10 },
...   { $limit: 10 },
...   { $sort: { birthdate: 1 } } ],
... ).pretty();
{ "name" : "shona kemperman", "birthdate" : ISODate("1948-04-23T03:40:22Z") }
{ "name" : "mestan kaplangı", "birthdate" : ISODate("1951-12-17T20:03:33Z") }
{ "name" : "isolino viana", "birthdate" : ISODate("1959-03-22T14:53:41Z") }
{ "name" : "andreia arnaud", "birthdate" : ISODate("1960-01-31T05:16:10Z") }
{ "name" : "sandra lorenzo", "birthdate" : ISODate("1975-03-23T17:01:45Z") }
{ "name" : "anne ruiz", "birthdate" : ISODate("1982-10-09T12:10:42Z") }
{ "name" : "بنيامين سالاری", "birthdate" : ISODate("1984-03-10T22:12:43Z") }
{ "name" : "elijah lewis", "birthdate" : ISODate("1986-03-29T06:40:18Z") }
{ "name" : "anaëlle adam", "birthdate" : ISODate("1987-10-20T11:33:44Z") }
{ "name" : "katie welch", "birthdate" : ISODate("1990-10-14T05:02:12Z") }
>
```



```
        '$name.last',  
        1,  
        { $subtract: [{ $strLenCP: '$name.last' }, 1] }  
      ]  
    }  
  ]  
}  
}  
},  
{ $out: "transformedPersons" }  
]).pretty();
```

```

...     { $toUpper: { $substrCP: [ $name.first , 0, 1] } } },
...     {
...         $substrCP: [
...             '$name.first',
...             1,
...             { $subtract: [{ $strLenCP: '$name.first' }, 1] }
...         ]
...     },
...     ' ',
...     { $toUpper: { $substrCP: ['$name.last', 0, 1] } } },
...     {
...         $substrCP: [
...             '$name.last',
...             1,
...             { $subtract: [{ $strLenCP: '$name.last' }, 1] }
...         ]
...     }
... ]
... }
... }
... },
... { $out: "transformedPersons" }
... ]).pretty();
> show collections
friends
persons
transformedPersons
> db.transformedPersons.find().

```