

MongoDB

```
mongorestore --nsInclude='north0.*' ./dump/
```

```
use north0
```

produkty, kategorie, dostawcy

```
db.categories.find().limit(2);
```

• wynik

```
[
  {
    "_id": {"$oid": "67eb06a27b1ef941c950fb49"},
    "CategoryID": 1,
    "CategoryName": "Beverages",
    "Description": "Soft drinks, coffees, teas, beers, and ales"
  },
  {
    "_id": {"$oid": "67eb06a27b1ef941c950fb4a"},
    "CategoryID": 2,
    "CategoryName": "Condiments",
    "Description": "Sweet and savory sauces, relishes, spreads, and seasonings"
  }
]
```

```
db.products.find().limit(2);
```

• wynik

```
[
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f50"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 1,
    "ProductName": "Chai",
    "QuantityPerUnit": "10 boxes x 20 bags",
    "ReorderLevel": 10,
    "SupplierID": 1,
    "UnitPrice": 18,
    "UnitsInStock": 39,
    "UnitsOnOrder": 0
  },
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f51"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 2,
    "ProductName": "Chang",
    "QuantityPerUnit": "24 - 12 oz bottles",
    "ReorderLevel": 25,
    "SupplierID": 1,
    "UnitPrice": 19,
    "UnitsInStock": 17,
    "UnitsOnOrder": 40
  }
]
```

```
db.suppliers.find().limit(2);
```

• wynik

```
[
  {
    "_id": {"$oid": "63a05d3cbb3b972d6f4e09f7"},
    "Address": "49 Gilbert St.",
    "City": "London",
  }
]
```

```

    "CompanyName": "Exotic Liquids",
    "ContactName": "Charlotte Cooper",
    "ContactTitle": "Purchasing Manager",
    "Country": "UK",
    "Fax": null,
    "HomePage": null,
    "Phone": "(171) 555-2222",
    "PostalCode": "EC1 4SD",
    "Region": null,
    "SupplierID": 1
  },
  {
    "_id": {"$oid": "63a05d3cbb3b972d6f4e09f8"},
    "Address": "P.O. Box 78934",
    "City": "New Orleans",
    "CompanyName": "New Orleans Cajun Delights",
    "ContactName": "Shelley Burke",
    "ContactTitle": "Order Administrator",
    "Country": "USA",
    "Fax": null,
    "HomePage": "#CAJUN.HTM#",
    "Phone": "(100) 555-4822",
    "PostalCode": "70117",
    "Region": "LA",
    "SupplierID": 2
  }
]

```

Przykład 1

```

db.products.aggregate([
  {
    $match : { }
  },

  //suppliers
  {
    $lookup : {
      from: "suppliers",
      localField: "SupplierID",
      foreignField: "SupplierID",
      as: "Supplier"
    }
  },
  {
    $limit : 2
  }
])

```

- pole `Supplier` jest tablicą
 - zawiera 1 obiekt
- wynik

```

[
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f50"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 1,
    "ProductName": "Chai",
    "QuantityPerUnit": "10 boxes x 20 bags",
    "ReorderLevel": 10,
    "Supplier": [
      {
        "_id": {"$oid": "63a05d3cbb3b972d6f4e09f7"},
        "SupplierID": 1,
        "CompanyName": "Exotic Liquids",
        "ContactName": "Charlotte Cooper",
        "ContactTitle": "Purchasing Manager",
        "Address": "49 Gilbert St.",
        "City": "London",
        "Region": null,
        "PostalCode": "EC1 4SD",
        "Country": "UK",
        "Phone": "(171) 555-2222",
        "Fax": null,
        "HomePage": null
      }
    ],
    "SupplierID": 1,
    "UnitPrice": 18,

```

```

    "UnitsInStock": 39,
    "UnitsOnOrder": 0
  },
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f51"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 2,
    "ProductName": "Chang",
    "QuantityPerUnit": "24 - 12 oz bottles",
    "ReorderLevel": 25,
    "Supplier": [
      {
        "_id": {"$oid": "63a05d3cbb3b972d6f4e09f7"},
        "SupplierID": 1,
        "CompanyName": "Exotic Liquids",
        "ContactName": "Charlotte Cooper",
        "ContactTitle": "Purchasing Manager",
        "Address": "49 Gilbert St.",
        "City": "London",
        "Region": null,
        "PostalCode": "EC1 4SD",
        "Country": "UK",
        "Phone": "(171) 555-2222",
        "Fax": null,
        "HomePage": null
      }
    ],
    "SupplierID": 1,
    "UnitPrice": 19,
    "UnitsInStock": 17,
    "UnitsOnOrder": 40
  }
]

```

- \$unwind
 - pole Supplier jest obiektem/dokumentem

```

db.products.aggregate([
  {
    $match : { }
  },

  //suppliers
  {
    $lookup : {
      from: "suppliers",
      localField: "SupplierID",
      foreignField: "SupplierID",
      as: "Supplier"
    }
  },
  {
    $unwind : "$Supplier"
  },
  {
    $limit : 2
  }
])

```

- wynik

```

[
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f50"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 1,
    "ProductName": "Chai",
    "QuantityPerUnit": "10 boxes x 20 bags",
    "ReorderLevel": 10,
    "Supplier": {
      "_id": {"$oid": "63a05d3cbb3b972d6f4e09f7"},
      "SupplierID": 1,
      "CompanyName": "Exotic Liquids",
      "ContactName": "Charlotte Cooper",
      "ContactTitle": "Purchasing Manager",
      "Address": "49 Gilbert St.",
      "City": "London",
      "Region": null,
      "PostalCode": "EC1 4SD",
      "Country": "UK",
      "Phone": "(171) 555-2222",
      "Fax": null,
      "HomePage": null
    }
  }
]

```

```

    },
    "SupplierID": 1,
    "UnitPrice": 18,
    "UnitsInStock": 39,
    "UnitsOnOrder": 0
  },
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f51"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 2,
    "ProductName": "Chang",
    "QuantityPerUnit": "24 - 12 oz bottles",
    "ReorderLevel": 25,
    "Supplier": {
      "_id": {"$oid": "63a05d3cbb3b972d6f4e09f7"},
      "SupplierID": 1,
      "CompanyName": "Exotic Liquids",
      "ContactName": "Charlotte Cooper",
      "ContactTitle": "Purchasing Manager",
      "Address": "49 Gilbert St.",
      "City": "London",
      "Region": null,
      "PostalCode": "EC1 4SD",
      "Country": "UK",
      "Phone": "(171) 555-2222",
      "Fax": null,
      "HomePage": null
    },
    "SupplierID": 1,
    "UnitPrice": 19,
    "UnitsInStock": 17,
    "UnitsOnOrder": 40
  }
]

```

- projekcja
 - tylko wybrane pola z `Supplier`

```

db.products.aggregate([
  {
    $match : { }
  },
  //suppliers
  {
    $lookup : {
      from: "suppliers",
      localField: "SupplierID",
      foreignField: "SupplierID",
      as: "Supplier_tmp"
    }
  },
  {
    $unwind : "$Supplier_tmp"
  },
  {
    $addFields: {
      Supplier: {
        SupplierID: "$SupplierID",
        CompanyName: "$Supplier_tmp.CompanyName",
        Country: "$Supplier_tmp.Country"
      }
    }
  },
  {
    $project: {
      SupplierID: 0,
      Supplier_tmp: 0
    }
  },
  {
    $limit : 2
  }
])

```

- wynik

```

[
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f50"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 1,
    "ProductName": "Chai",

```

```

    "QuantityPerUnit": "10 boxes x 20 bags",
    "ReorderLevel": 10,
    "Supplier": {
      "SupplierID": 1,
      "CompanyName": "Exotic Liquids",
      "Country": "UK"
    },
    "UnitPrice": 18,
    "UnitsInStock": 39,
    "UnitsOnOrder": 0
  },
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f51"},
    "CategoryID": 1,
    "Discontinued": false,
    "ProductID": 2,
    "ProductName": "Chang",
    "QuantityPerUnit": "24 - 12 oz bottles",
    "ReorderLevel": 25,
    "Supplier": {
      "SupplierID": 1,
      "CompanyName": "Exotic Liquids",
      "Country": "UK"
    },
    "UnitPrice": 19,
    "UnitsInStock": 17,
    "UnitsOnOrder": 40
  }
]

```

- dodaj do wyniku inf. o kategoriach

```

db.products.aggregate([
  {
    $match : { }
  },

  //suppliers
  {
    $lookup : {
      from: "suppliers",
      localField: "SupplierID",
      foreignField: "SupplierID",
      as: "Supplier_tmp"
    }
  },

  //categories
  {
    $lookup : {
      from: "categories",
      localField: "CategoryID",
      foreignField: "CategoryID",
      as: "Category_tmp"
    }
  },
  {
    $unwind : "$Supplier_tmp"
  },
  {
    $unwind : "$Category_tmp"
  },
  {
    $addFields: {
      Supplier: {
        SupplierID: "$SupplierID",
        CompanyName: "$Supplier_tmp.CompanyName",
        Country: "$Supplier_tmp.Country"
      },
      Category: {
        CategoryID: "$CategoryID",
        CategorynameName: "$Category_tmp.CategoryName",
      }
    }
  },
  {
    $project: {
      SupplierID: 0,
      Supplier_tmp: 0,
      CategoryID: 0,
      Category_tmp: 0
    }
  },
  {
    $limit : 2
  }
])

```

- wynik

```
[
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f50"},
    "Category": {
      "CategoryID": 1,
      "CategorynameName": "Beverages"
    },
    "Discontinued": false,
    "ProductID": 1,
    "ProductName": "Chai",
    "QuantityPerUnit": "10 boxes x 20 bags",
    "ReorderLevel": 10,
    "Supplier": {
      "SupplierID": 1,
      "CompanyName": "Exotic Liquids",
      "Country": "UK"
    },
    "UnitPrice": 18,
    "UnitsInStock": 39,
    "UnitsOnOrder": 0
  },
  {
    "_id": {"$oid": "63a0607abb3b972d6f4e1f51"},
    "Category": {
      "CategoryID": 1,
      "CategorynameName": "Beverages"
    },
    "Discontinued": false,
    "ProductID": 2,
    "ProductName": "Chang",
    "QuantityPerUnit": "24 - 12 oz bottles",
    "ReorderLevel": 25,
    "Supplier": {
      "SupplierID": 1,
      "CompanyName": "Exotic Liquids",
      "Country": "UK"
    },
    "UnitPrice": 19,
    "UnitsInStock": 17,
    "UnitsOnOrder": 40
  }
]
```

Przykład 2

- dostawcy i produkty

```
db.suppliers.aggregate([
  {
    $match : { }
  },
  //products
  {
    $lookup : {
      from: "products",
      localField: "SupplierID",
      foreignField: "SupplierID",
      as: "Products"
    }
  },
  {
    $addFields: {
      Products: {
        $map: {
          input: "$Products",
          as: "product",
          in: {
            ProductID: "$$product.ProductID",
            ProductName: "$$product.ProductName",
            UnitPrice: "$$product.UnitPrice",
            Discontinued: "$$product.Discontinued",
          }
        }
      }
    }
  },
  {
    $limit : 2
  }
])
```

- wynik

```
[
  {
    "_id": {"$oid": "63a05d3cbb3b972d6f4e09f7"},
    "Address": "49 Gilbert St.",
    "City": "London",
    "CompanyName": "Exotic Liquids",
    "ContactName": "Charlotte Cooper",
    "ContactTitle": "Purchasing Manager",
    "Country": "UK",
    "Fax": null,
    "HomePage": null,
    "Phone": "(171) 555-2222",
    "PostalCode": "EC1 4SD",
    "Products": [
      {
        "ProductID": 1,
        "ProductName": "Chai",
        "UnitPrice": 18,
        "Discontinued": false
      },
      {
        "ProductID": 2,
        "ProductName": "Chang",
        "UnitPrice": 19,
        "Discontinued": false
      },
      {
        "ProductID": 3,
        "ProductName": "Aniseed Syrup",
        "UnitPrice": 10,
        "Discontinued": false
      }
    ],
    "Region": null,
    "SupplierID": 1
  },
  {
    "_id": {"$oid": "63a05d3cbb3b972d6f4e09f8"},
    "Address": "P.O. Box 78934",
    "City": "New Orleans",
    "CompanyName": "New Orleans Cajun Delights",
    "ContactName": "Shelley Burke",
    "ContactTitle": "Order Administrator",
    "Country": "USA",
    "Fax": null,
    "HomePage": "#CAJUN.HTM#",
    "Phone": "(100) 555-4822",
    "PostalCode": "70117",
    "Products": [
      {
        "ProductID": 4,
        "ProductName": "Chef Anton's Cajun Seasoning",
        "UnitPrice": 22,
        "Discontinued": false
      },
      {
        "ProductID": 5,
        "ProductName": "Chef Anton's Gumbo Mix",
        "UnitPrice": 21.35,
        "Discontinued": true
      },
      {
        "ProductID": 65,
        "ProductName": "Louisiana Fiery Hot Pepper Sauce",
        "UnitPrice": 21.05,
        "Discontinued": false
      },
      {
        "ProductID": 66,
        "ProductName": "Louisiana Hot Spiced Okra",
        "UnitPrice": 17,
        "Discontinued": false
      }
    ],
    "Region": "LA",
    "SupplierID": 2
  }
]
```

Przykład 3

- zamówienia

```

db.orders.aggregate(
{
  $match : { }
},
//customers
{
  $lookup : {
    from: "customers",
    localField: "CustomerID",
    foreignField: "CustomerID",
    as: "Customer"
  }
},
{
  $unwind : "$Customer"
},
{
  $project : {
    "Customer._id": 0,
    "Customer.ContactName": 0,
    "Customer.ContactTitle": 0,
    "Customer.City": 0,
    // "Customer.Country": 0,
    "Customer.Address": 0,
    "Customer.PostalCode": 0,
    "Customer.Region": 0,
    "Customer.Phone": 0,
    "Customer.Fax": 0
  }
},
//employees
{
  $lookup : {
    from: "employees",
    localField: "EmployeeID",
    foreignField: "EmployeeID",
    as: "Employee"
  }
},
{
  $unwind : "$Employee"
},
{
  $project : {
    "Employee._id": 0,
    "Employee.Title": 0,
    "Employee.TitleOfCourtesy": 0,
    "Employee.BirthDate": 0,
    "Employee.HireDate": 0,
    "Employee.Address": 0,
    "Employee.PostalCode": 0,
    "Employee.City": 0,
    "Employee.Region": 0,
    "Employee.Country": 0,
    "Employee.HomePhone": 0,
    "Employee.Extension": 0,
    "Employee.Photo": 0,
    "Employee.Notes": 0,
    "Employee.ReportsTo": 0,
    "Employee.PhotoPath": 0
  }
},
//shippers
{
  $lookup : {
    from: "shippers",
    localField: "ShipVia",
    foreignField: "ShipperID",
    as: "Shipper"
  }
},
{
  $unwind : "$Shipper"
},
{
  $project : {
    "Shipper._id": 0,
    "Shipper.Phone": 0
  }
},
//orderdetails
{
  $lookup : {
    from: "orderdetails_tmp",

```



```

        localField: "OrderID",
        foreignField: "OrderID",
        as: "Orderdetails"
    }
},
{
    $project : {
        "Orderdetails._id": 0,
        "Orderdetails.OrderID": 0
    }
},
{
    $project : {
        "CustomerID": 0,
        "EmployeeID": 0,
        "ShipVia": 0
    }
},
{
    $out : "orders_tmp"
}
)

```

```
db.orders_tmp.find().limit(2);
```

- wynik

```

[
  {
    "_id": {"$oid": "63a060b9bb3b972d6f4e1fc6"},
    "Customer": {
      "CustomerID": "VINET",
      "CompanyName": "Vins et alcools Chevalier",
      "Country": "France"
    },
    "Employee": {
      "EmployeeID": 5,
      "LastName": "Buchanan",
      "FirstName": "Steven"
    },
    "Freight": 32.38,
    "OrderDate": {"$date": "1996-07-04T00:00:00.000Z"},
    "OrderID": 10248,
    "Orderdetails": [
      {
        "UnitPrice": 14,
        "Quantity": 12,
        "Discount": 0,
        "product": {
          "ProductID": 11,
          "ProductName": "Queso Cabrales",
          "QuantityPerUnit": "1 kg pkg."
        },
        "TotalValue": 168
      },
      {
        "UnitPrice": 9.8,
        "Quantity": 10,
        "Discount": 0,
        "product": {
          "ProductID": 42,
          "ProductName": "Singaporean Hokkien Fried Mee",
          "QuantityPerUnit": "32 - 1 kg pkgs."
        },
        "TotalValue": 98
      },
      {
        "UnitPrice": 34.8,
        "Quantity": 5,
        "Discount": 0,
        "product": {
          "ProductID": 72,
          "ProductName": "Mozzarella di Giovanni",
          "QuantityPerUnit": "24 - 200 g pkgs."
        },
        "TotalValue": 174
      }
    ],
    "RequiredDate": {"$date": "1996-08-01T00:00:00.000Z"},
    "ShipAddress": "59 rue de l'Abbaye",
    "ShipCity": "Reims",
    "ShipCountry": "France",
    "ShipName": "Vins et alcools Chevalier",
  }
]

```

```

    "ShipPostalCode": "51100",
    "ShipRegion": null,
    "ShippedDate": {"$date": "1996-07-16T00:00:00.000Z"},
    "Shipper": {
      "ShipperID": 3,
      "CompanyName": "Federal Shipping"
    }
  },
  {
    "_id": {"$oid": "63a060b9bb3b972d6f4e1fc7"},
    "Customer": {
      "CustomerID": "TOMSP",
      "CompanyName": "Toms Spezialitäten",
      "Country": "Germany"
    },
    "Employee": {
      "EmployeeID": 6,
      "LastName": "Suyama",
      "FirstName": "Michael"
    },
    "Freight": 11.61,
    "OrderDate": {"$date": "1996-07-05T00:00:00.000Z"},
    "OrderID": 10249,
    "Orderdetails": [
      {
        "UnitPrice": 18.6,
        "Quantity": 9,
        "Discount": 0,
        "product": {
          "ProductID": 14,
          "ProductName": "Tofu",
          "QuantityPerUnit": "40 - 100 g pkgs."
        },
        "TotalValue": 167.4
      },
      {
        "UnitPrice": 42.4,
        "Quantity": 40,
        "Discount": 0,
        "product": {
          "ProductID": 51,
          "ProductName": "Manjimup Dried Apples",
          "QuantityPerUnit": "50 - 300 g pkgs."
        },
        "TotalValue": 1696
      }
    ],
    "RequiredDate": {"$date": "1996-08-16T00:00:00.000Z"},
    "ShipAddress": "Luisenstr. 48",
    "ShipCity": "Münster",
    "ShipCountry": "Germany",
    "ShipName": "Toms Spezialitäten",
    "ShipPostalCode": "44087",
    "ShipRegion": null,
    "ShippedDate": {"$date": "1996-07-10T00:00:00.000Z"},
    "Shipper": {
      "ShipperID": 1,
      "CompanyName": "Speedy Express"
    }
  }
]

```

Zadanie 1

- zmień (popraw) strukturę dokumentu w kolekcji `orders_tmp`
- stwórz obiekt/dokument grupujący inf. o adresie wysyłki
 - np.

```

Shipment : {
  "ShipAddress": "Luisenstr. 48",
  "ShipCity": "Münster",
  "ShipCountry": "Germany",
  "ShipName": "Toms Spezialitäten",
  "ShipPostalCode": "44087",
  "ShipRegion": null,
}

```

- stwórz obiekt/dokument grupujący inf. o datach (zamówienia, wysyłki ...)
 - np.

```
Dates : {  
  "OrderDate": {"$date": "1996-07-04T00:00:00.000Z"  
    "RequiredDate": {"$date": "1996-08-01T00:00:00.000Z"},  
    "ShippedDate": {"$date": "1996-07-16T00:00:00.000Z"},  
  }  
}
```

- Dodaj inf. o pełnej wartości całego zamówienia

TotalOrderValue : ...