

### Homework #3

#### EXERCISES

=====

Use single queries for these, meaning you may NOT execute one query and then execute a second, third, fourth, ....., n'th query to determine maximums, minimums or counts.

1. What are the different collections in the Northwind database?

```
> show collections
categories
customers
employee-territories
employees
order-details
orders
products
regions
shippers
suppliers
territories
```

2. How many documents are in the "categories" collection?

```
> db.categories.count()
8
```

3. How many documents are in the "orders" collection?

```
> db.orders.count()
830
```

4. How many orders were handled by the person with EmployeeID number 8?

```
> db.orders.count( {EmployeeID: 8} )
104
```

5. What is the last name of the employee who has the EmployeeID number 1?

```
> db.employees.find( { EmployeeID: 8 }, { LastName: 1 } )
{ "_id" : ObjectId("5bdbd9280ce61769267a36d7"), "LastName" : "Callahan" }
```

6. What are the EmployeeID numbers on orders which have an OrderID less than 10300?

```
> db.orders.distinct("EmployeeID", { "OrderID": { $lte: 10300 } })  
[ 6, 4, 5, 3, 1, 9, 8, 2, 7 ]
```

7. What are the Company Names of the suppliers?

```
> db.suppliers.distinct( "CompanyName" )  
[  
  "New Orleans Cajun Delights",  
  "Grandma Kelly's Homestead",  
  "Cooperativa de Quesos 'Las Cabras'",  
  "Exotic Liquids",  
  "Tokyo Traders",  
  "Pavlova",  
  "Specialty Biscuits",  
  "PB Knäckebröd AB",  
  "Refrescos Americanas LTDA",  
  "Mayumi's",  
  "Heli Süßwaren GmbH & Co. KG",  
  "Plutzer Lebensmittelgroßmärkte AG",  
  "Nord-Ost-Fisch Handelsgesellschaft mbH",  
  "Formaggi Fortini s.r.l.",  
  "Bigfoot Breweries",  
  "Norske Meierier",  
  "Svensk Sjöföda AB",  
  "Aux joyeux ecclésiastiques",  
  "New England Seafood Cannery",  
  "Leka Trading",  
  "Lyngbysild",  
  "Zaanse Snoepfabriek",  
  "Karkki Oy",  
  "Ma Maison",  
  "G'day",  
  "Pasta Buttini s.r.l.",  
  "Escargots Nouveaux",  
  "Gai pâturage",  
  "Forêts d'érables"  
]
```

8. How many suppliers are there?

```
> db.suppliers.count()  
29
```

9. What is the supplier ID and phone number for the supplier in Boston, Mass.?

Be sure NOT to include the ID of the document...

```
> db.suppliers.find({City: "Boston"}, {_id: 0, SupplierID: 1, Phone: 1})
{ "SupplierID" : 19, "Phone" : "(617) 555-3267" }
```

10. What employee is responsible for the largest number of orders, and for how many orders is that employee responsible?

```
> db.orders.aggregate([ { "$sortByCount": "$EmployeeID", { "$limit": 1 } } ] )
{ "_id" : 4, "count" : 156 }
```

11. How many territories have the RegionID value of "2"? What are their territory descriptions?

Be sure NOT to include the ID of the document, and ONLY show the territory descriptions.

```
> db.territories.aggregate([
  { $match : { "RegionID": 2 } },
  { $group :
    { _id : { "TerritoryDescription" : "$TerritoryDescription" } }
  },
  { $group :
    { _id: null, count : { $sum : 1 }, results : { $push : "$$ROOT" } }
  }
])
```

(one query, with help of Alejandro)

```
{ "_id" : null, "count" : 15, "results" : [ { "_id" : { "TerritoryDescription" : "Seattle" } }, { "_id" : { "TerritoryDescription" : "SantaCruz" } }, { "_id" : { "TerritoryDescription" : "SantaClara" } }, { "_id" : { "TerritoryDescription" : "Bellevue" } }, { "_id" : { "TerritoryDescription" : "Campbell" } }, { "_id" : { "TerritoryDescription" : "HoffmanEstates" } }, { "_id" : { "TerritoryDescription" : "SanFrancisco" } }, { "_id" : { "TerritoryDescription" : "MenloPark" } }, { "_id" : { "TerritoryDescription" : "Scottsdale" } }, { "_id" : { "TerritoryDescription" : "SantaMonica" } }, { "_id" : { "TerritoryDescription" : "Phoenix" } }, { "_id" : { "TerritoryDescription" : "ColoradoSprings" } }, { "_id" : { "TerritoryDescription" : "Denver" } }, { "_id" : { "TerritoryDescription" : "Redmond" } }, { "_id" : { "TerritoryDescription" : "Chicago" } } ] }
```

```
> db.territories.count({ "RegionID": 2 })
```

```
15
```

```
> db.territories.distinct("TerritoryDescription", { "RegionID" : 2 })
```

```
[
  "Chicago",
  "Denver",
  "ColoradoSprings",
  "Scottsdale",
```

```
"Phoenix",
"SantaMonica",
"MenloPark",
"SanFrancisco",
"HoffmanEstates",
"Campbell",
"Bellevue",
"SantaClara",
"SantaCruz",
"Redmond",
"Seattle"
]
```

12. What is the phone number of the shipper with the company name "United Package"?  
Be sure NOT to include the ID of the document in the output, ONLY the phone number.

```
> db.shippers.find({CompanyName: "United Package"}, {Phone: 1, _id: 0})
{ "Phone" : "(503) 555-3199" }
```

BONUS:

13. How many documents are in the "order-details" collection? How many in the  
"employee-territories" collection?

```
> db['order-details'].count()
2155
```

```
> db.getCollection('employee-territories').count()
49
```

14. How many orders were shipped to Albuquerque, NM? What are the order numbers?  
Be sure NOT to include the ID of the document in the output, ONLY the Order ID numbers.

```
> db.orders.find({"ShipCity": "Albuquerque", "ShipRegion": "NM"}).count()
18
```

```
> db.orders.find({"ShipCity": "Albuquerque", "ShipRegion": "NM"}, {_id: 0, OrderID: 1})
{ "OrderID" : 10262 }
{ "OrderID" : 10272 }
{ "OrderID" : 10294 }
{ "OrderID" : 10314 }
{ "OrderID" : 10316 }
{ "OrderID" : 10346 }
```

```
{ "OrderID" : 10401 }
{ "OrderID" : 10479 }
{ "OrderID" : 10564 }
{ "OrderID" : 10569 }
{ "OrderID" : 10598 }
{ "OrderID" : 10761 }
{ "OrderID" : 10820 }
{ "OrderID" : 10852 }
{ "OrderID" : 10889 }
{ "OrderID" : 10988 }
{ "OrderID" : 11000 }
{ "OrderID" : 11077 }
```

#### EXERCISES

=====

Use single queries for these, meaning you may NOT execute one query and then execute

a second, third, fourth, ....., n'th query to determine maximums, minimums or counts.

1. What are the different collections in the Northwind database?

> **MATCH (n) RETURN distinct labels(n)**

labels(n)
["Customer"]
["Supplier"]
["Product"]
["Employee"]
["Order"]
["Category"]
["EmployeeTerritory"]
["OrderDetail"]
["Region"]

["Shipper"]
["Territory"]

2. How many documents are in the "categories" label set?

```
> MATCH (n:Category) RETURN DISTINCT count(labels(n));
```

count(labels(n))
8

3. How many documents are in the "orders" label set?

```
> MATCH (n:Order) RETURN DISTINCT count(labels(n));
```

count(labels(n))
830

4. How many orders were handled by the person with EmployeeID number 8?

```
> match (e:Employee {employeeID: '8'})-[:SOLD]->(o:Order) return count(o)
```

count(o)
104

5. What is the last name of the employee who has the EmployeeID number 1?

```
> match (e:Employee {employeeID: '1'}) return e.lastName
```

e.lastName
"Davolio"

6. What are the EmployeeID numbers on orders which have an OrderID less than 10300?

```
> match (o:Order) where o.orderID < '10300' return o
```

o

```
{  
  "shipName": "Vins et alcools Chevalier",  
  "orderID": "10248"  
}
```

```
{  
  "shipName": "Toms Spezialitäten",  
  "orderID": "10249"  
}
```

```
{  
  "shipName": "Hanari Carnes",  
  "orderID": "10250"  
}
```

```
{  
  "shipName": "Victuailles en stock",  
  "orderID": "10251"  
}
```

```
{  
  "shipName": "Suprêmes délices",  
  "orderID": "10252"  
}
```

```
{  
  "shipName": "Hanari Carnes",  
  "orderID": "10253"  
}
```

```
{  
  "shipName": "Chop-suey Chinese",  
  "orderID": "10254"  
}
```

```
{  
  "shipName": "Richter Supermarkt",  
  "orderID": "10255"  
}
```

```
{  
  "shipName": "Wellington Importadora",  
  "orderID": "10256"  
}
```



```
{  
  "shipName": "HILARION-Abastos",  
  "orderID": "10257"  
}
```

```
{  
  "shipName": "Ernst Handel",  
  "orderID": "10258"  
}
```

```
{  
  "shipName": "Centro comercial Moctezuma",  
  "orderID": "10259"  
}
```

```
{  
  "shipName": "Ottilies Käseladen",  
  "orderID": "10260"  
}
```

```
{  
  "shipName": "Que Delícia",  
  "orderID": "10261"  
}
```

```
{  
  "shipName": "Rattlesnake Canyon Grocery",  
  "orderID": "10262"  
}
```

```
{  
  "shipName": "Ernst Handel",  
  "orderID": "10263"  
}
```

```
{  
  "shipName": "Folk och fä HB",  
  "orderID": "10264"  
}
```

```
{  
  "shipName": "Blondel père et fils",  
  "orderID": "10265"  
}
```

```
{  
  "shipName": "Wartian Herkku",  
  "orderID": "10266"  
}
```

```
{  
  "shipName": "Frankenversand",  
  "orderID": "10267"  
}
```

```
{  
  "shipName": "GROSELLA-Restaurante",  
  "orderID": "10268"  
}
```

```
{  
  "shipName": "White Clover Markets",  
  "orderID": "10269"  
}
```

```
{  
  "shipName": "Wartian Herkku",  
  "orderID": "10270"  
}
```

```
{  
  "shipName": "Split Rail Beer & Ale",  
  "orderID": "10271"  
}
```

```
{  
  "shipName": "Rattlesnake Canyon Grocery",  
  "orderID": "10272"  
}
```

```
{  
  "shipName": "QUICK-Stop",  
  "orderID": "10273"  
}
```

```
{  
  "shipName": "Vins et alcools Chevalier",  
  "orderID": "10274"  
}
```

```
{  
  "shipName": "Magazzini Alimentari Riuniti",  
  "orderID": "10275"  
}
```

```
{  
  "shipName": "Tortuga Restaurante",  
  "orderID": "10276"  
}
```

```
{  
  "shipName": "Morgenstern Gesundkost",  
  "orderID": "10277"  
}
```

```
{  
  "shipName": "Berglunds snabbköp",  
  "orderID": "10278"  
}
```

```
{  
  "shipName": "Lehmanns Marktstand",  
  "orderID": "10279"  
}
```

```
{  
  "shipName": "Berglunds snabbköp",  
  "orderID": "10280"  
}
```

```
{  
  "shipName": "Romero y tomillo",  
  "orderID": "10281"  
}
```

```
{  
  "shipName": "Romero y tomillo",  
  "orderId": "10282"  
}
```

```
{  
  "shipName": "LILA-Supermercado",  
  "orderId": "10283"  
}
```

```
{  
  "shipName": "Lehmans Marktstand",  
  "orderId": "10284"  
}
```

```
{  
  "shipName": "QUICK-Stop",  
  "orderId": "10285"  
}
```

```
{  
  "shipName": "QUICK-Stop",  
  "orderId": "10286"  
}
```

```
{  
  "shipName": "Ricardo Adocicados",  
  "orderId": "10287"  
}
```

```
{  
  "shipName": "Reggiani Caseifici",  
  "orderId": "10288"  
}
```

```
{  
  "shipName": "B's Beverages",  
  "orderId": "10289"  
}
```

```
{  
  "shipName": "Comércio Mineiro",  
  "orderId": "10290"  
}
```

```
{  
  "shipName": "Que Delícia",  
  "orderId": "10291"  
}
```

```
{  
  "shipName": "Tradição Hipermercados",  
  "orderID": "10292"  
}
```

```
{  
  "shipName": "Tortuga Restaurante",  
  "orderID": "10293"  
}
```

```
{  
  "shipName": "Rattlesnake Canyon Grocery",  
  "orderID": "10294"  
}
```

```
{  
  "shipName": "Vins et alcools Chevalier",  
  "orderID": "10295"  
}
```

```
{  
  "shipName": "LILA-Supermercado",  
  "orderID": "10296"  
}
```



```
{  
  "shipName": "Blondel père et fils",  
  "orderID": "10297"  
}
```

```
{  
  "shipName": "Hungry Owl All-Night Grocers",  
  "orderID": "10298"  
}
```

```
{  
  "shipName": "Ricardo Adocicados",  
  "orderID": "10299"  
}
```

7. What are the Company Names of the suppliers?

```
> match (s:Supplier) return collect(distinct s.companyName)
```

```
collect(distinct s.companyName)
```

```
["Exotic Liquids", "New Orleans Cajun Delights", "Grandma Kelly's Homestead", "Tokyo Traders",  
"Cooperativa de Quesos 'Las Cabras'", "Mayumi's", "Pavlova", "Specialty Biscuits", "PB Knäckebröd  
AB", "Refrescos Americanas LTDA", "Heli Süßwaren GmbH & Co. KG", "Plutzer  
Lebensmittelgroßmärkte AG", "Nord-Ost-Fisch Handelsgesellschaft mbH", "Formaggi Fortini s.r.l.",  
"Norske Meierier", "Bigfoot Breweries", "Svensk Sjöföda AB", "Aux joyeux ecclésiastiques", "New  
England Seafood Cannery", "Leka Trading", "Lyngbysild", "Zaanse Snoepfabriek", "Karkki Oy",
```

```
"G'day", "Ma Maison", "Pasta Buttini s.r.l.", "Escargots Nouveaux", "Gai pâturage", "Forêts d'érables"]
```

8. How many suppliers are there?

```
> match (s:Supplier) return count(s)
```

```
count(s)
```

```
29
```

9. What is the supplier ID and phone number for the supplier in Boston, Mass.?

```
> match (s:Supplier {City: 'Boston'}) return s.supplierID, s.phone
```

```
s.supplierID
```

```
s.phone
```

```
"19"
```

```
"(617) 555-3267"
```

10. What employee is responsible for the largest number of orders, and for how many orders is that employee responsible?

```
> MATCH (e:Employee)-[SOLD]->(o:Order) return e.employeeID, COUNT(e) ORDER BY COUNT(e) DESC LIMIT 1
```

```
e.employeeID
```

```
COUNT(e)
```

```
"4"
```

```
156
```

11. How many territories have the RegionID value of "2"? What are their territory descriptions?

You can use two queries. Be sure to ONLY show the territory descriptions for that query.

```
> MATCH (t:Territory {regionID: '2'}) RETURN count(t)
```

```
count(t)
```

```
> MATCH (t:Territory {regionID: '2'}) RETURN t.territoryDescription
```

t.territoryDescription
"HoffmanEstates"
"Chicago"
"Denver"
"ColoradoSprings"
"Phoenix"
"Scottsdale"
"SantaMonica"
"MenloPark"
"SanFrancisco"
"Campbell"
"SantaClara"
"SantaCruz"
"Bellevue"
"Redmond"
"Seattle"

12. What is the phone number of the shipper with the company name "United Package"?

Be sure to ONLY include the phone number in the result.

```
> MATCH (s:Shippers {companyName: 'United Package'}) RETURN s.phone
```

**s.phone**

---

"(503) 555-3199"

---

BONUS:

13. How many relationships are in the "order-details" edges set? How many in the "employee-territories" edges set?

14. How many orders were shipped to Albuquerque, NM? What are the order numbers?

```
> MATCH (o:Order {shipCity: 'Albuquerque'}) RETURN count(o) as count,  
collect(o.orderID) as orderID
```

count	orderID
18	["10262", "10272", "10294", "10314", "10316", "10346", "10401", "10479", "10564", "10569", "10598", "10761", "10820", "10852", "10889", "10988", "11000", "11077"]