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## Lab. Raporu – 4

### 1. Açıklama

#### 1.1 Laboratuvar Öncesi Ödev / Veri Tabanının Restore Edilmesi

Back-up'ı verilen veritabanını restore edilmesi ve istenen SQL sorgularının veritabanı üzerinde çalıştırılması.

```
create table tblCustomer (
  Id int identity,
  FirstName nvarchar(40) not null,
  LastName nvarchar(40) not null,
  City nvarchar(40) null,
  Country nvarchar(40) null,
  Phone nvarchar(20) null,
  primary key (Id)
)
create table tblOrder (
  Id int identity,
  OrderDate datetime not null default getdate(),
  OrderNumber nvarchar(10) null,
  CustomerId int not null,
  TotalAmount decimal(12,2) null default 0,
  primary key (Id),
  foreign key(CustomerId) references tblCustomer
)
create table tblOrderItem (
  Id int identity,
  OrderId int not null,
  ProductId int not null,
  UnitPrice decimal(12,2) not null default 0,
  Quantity int not null default 1,
  primary key (Id),
  foreign key(OrderId) references tblOrder,
  foreign key(ProductId) references tblProduct
)
create table tblProduct (
  Id int identity,
  ProductName nvarchar(50) not null,
  SupplierId int not null,
  UnitPrice decimal(12,2) null default 0,
  Package nvarchar(30) null,
  IsDiscontinued bit not null default 0,
  primary key (Id),
  foreign key(SupplierId) references tblSupplier
)
create table tblSupplier (
  Id int identity,
  CompanyName nvarchar(40) not null,
  ContactName nvarchar(50) null,
  ContactTitle nvarchar(40) null,
  City nvarchar(40) null,
  Country nvarchar(40) null,
  Phone nvarchar(30) null,
  Fax nvarchar(30) null,
  primary key (Id)
)
```

tblProduct tablosunun birincil anahtarının, tblOrderItem tablosunda ikincil anahtar olabilmesi için, tblProduct tablosunun tblOrderItem tablosundan önce yaratılması gerekir.

tblSupplier tablosunun birincil anahtarının, tblProduct tablosunda ikincil anahtar olabilmesi için, tblSupplier tablosunun tblProduct tablosundan önce yaratılması gerekir.

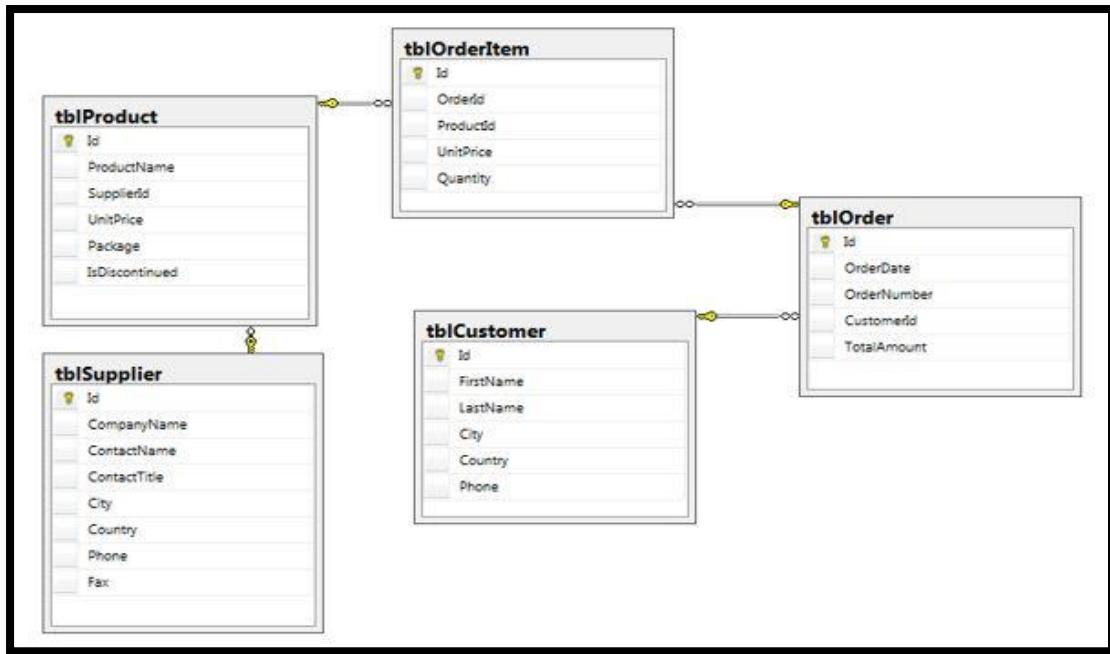
Msg 1767, Level 16, State 0, Line 19  
Foreign key 'FK\_\_tblOrderI\_\_Produ\_\_1A14E395' references invalid table 'tblProduct'.  
Msg 1750, Level 16, State 0, Line 19  
Could not create constraint or index. See previous errors.

Resim 1: Veritabanına Ait DDL ( Data Definition Language )  
sorguları çalıştırıldığında karşılaştığım hata.

```
create table tblCustomer (
  Id int identity,
  FirstName nvarchar(40) not null,
  LastName nvarchar(40) not null,
  City nvarchar(40) null,
  Country nvarchar(40) null,
  Phone nvarchar(20) null,
  primary key (Id)
)
create table tblOrder (
  Id int identity,
  OrderDate datetime not null default getdate(),
  OrderNumber nvarchar(10) null,
  CustomerId int not null,
  TotalAmount decimal(12,2) null default 0,
  primary key (Id),
  foreign key(CustomerId) references tblCustomer
)
create table tblSupplier (
  Id int identity,
  CompanyName nvarchar(40) not null,
  ContactName nvarchar(50) null,
  ContactTitle nvarchar(40) null,
  City nvarchar(40) null,
  Country nvarchar(40) null,
  Phone nvarchar(30) null,
  Fax nvarchar(30) null,
  primary key (Id)
)
create table tblProduct (
  Id int identity,
  ProductName nvarchar(50) not null,
  SupplierId int not null,
  UnitPrice decimal(12,2) null default 0,
  Package nvarchar(30) null,
  IsDiscontinued bit not null default 0,
  primary key (Id),
  foreign key(SupplierId) references tblSupplier
)
create table tblOrderItem (
  Id int identity,
  OrderId int not null,
  ProductId int not null,
  UnitPrice decimal(12,2) not null default 0,
  Quantity int not null default 1,
  primary key (Id),
  foreign key(OrderId) references tblOrder,
  foreign key(ProductId) references tblProduct
)
```

Command(s) completed successfully.

Resim 2: Hatanın çözümü



Resim 3: Restore Edilen Veritabanına Ait ER Diyagramı

## 1.2 Laboratuvar Öncesi Ödev / SQL Sorgularının Veritabanı Üzerinde Çalıştırılması

```
--1)
IndexCustomerName on tblCustomer using LastName and FirstName attributes
IndexOrderCustomerId on tblOrder using CustomerId
IndexOrderOrderDate on tblOrder using OrderDate
IndexOrderItemOrderId on tblOrderItem using OrderId
IndexOrderItemOrderId on tblOrderItem using ProductId
IndexProductSupplierId on tblProduct using SupplierId
IndexProductName on tblProduct using ProductName
IndexSupplierName on tblSupplier using CompanyName
IndexSupplierCountry on tblSupplier using Country
```

```
CREATE INDEX INDEXCustomerName ON tblCustomer (
  LastName ASC,
  FirstName ASC)
GO
CREATE INDEX INDEXOrderCustomerId ON tblOrder (
  CustomerId ASC)
GO
CREATE INDEX INDEXOrderOrderDate ON tblOrder (
  OrderDate ASC)
GO
CREATE INDEX INDEXOrderItemOrderId ON tblOrderItem (
  OrderId ASC)
GO
CREATE INDEX INDEXOrderItemProductId ON tblOrderItem (
  ProductId ASC)
GO
CREATE INDEX INDEXProductSupplierId ON tblProduct (
  SupplierId ASC)
GO
CREATE INDEX INDEXProductName ON tblProduct (
  ProductName ASC)
GO
CREATE INDEX INDEXSupplierName ON tblSupplier (
  CompanyName ASC)
GO
CREATE INDEX INDEXSupplierCountry ON tblSupplier (
  Country ASC)
GO
```

Messages  
Command(s) completed successfully.

--2) Herbir şehirdeki müşterilerin sayısını listeleyin.

```
SELECT City, FirstName, LastName  
FROM tblCustomer  
GROUP BY City, Firstname, Lastname
```

	City	FirstName	LastName
1	Aachen	Sven	Ottlieb
2	Albuquerque	Paula	Wilson
3	Anchorage	Rene	Phillips
4	Århus	Palle	Ibsen
5	Barcelona	Eduardo	Saavedra
6	Barquisimeto	Carlos	González
7	Bergamo	Giovanni	Rovelli
8	Berlin	Maria	Anders
9	Bern	Yang	Wang
10	Boise	Jose	Pavarotti
11	Bräcke	Maria	Larsson
12	Brandenburg	Philip	Cramer
13	Bruxelles	Catherine	Dewey
14	Buenos Aires	Patricio	Simpson
15	Buenos Aires	Sergio	Gutiérrez

--3) Update 'Exotic Liquids' firma adına (company name) sahip tedarikçilerin (supplier) şehrini Sydney olarak değiştirin.

```
UPDATE tblSupplier SET City = 'Sydney' WHERE CompanyName = 'Exotic Liquids'
```

(1 row(s) affected)

--4) Delete Birim fiyatı \$50'dan fazla olan ürünleri silin.

```
DELETE FROM tblProduct WHERE UnitPrice > 50
```

--5) Tedarikçilerle aynı şehirde bulunan tüm müşterileri listeleyin.

```
SELECT City, FirstName, LastName
FROM tblCustomer
WHERE Country
IN (SELECT Country FROM tblSupplier)
ORDER BY City
```

	City	FirstName	LastName
1	Aachen	Sven	Ottlieb
2	Albuquerque	Paula	Wilson
3	Anchorage	Rene	Phillips
4	Arhus	Palle	Ibsen
5	Barcelona	Eduardo	Saavedra
6	Bergamo	Giovanni	Rovelli
7	Berlin	Maria	Anders
8	Boise	Jose	Pavarotti
9	Bräcke	Maria	Larsson
10	Brandenburg	Philip	Cramer
11	Butte	Liu	Wong
12	Campinas	André	Fonseca
13	Cowes	Helen	Bennett
14	Cunewalde	Horst	Kloss
15	Elgin	Yoshi	Latimer

--6) Herbir müşteri için sipariş edilen toplam tutarı listeleyin.

```
SELECT SUM(O.TotalAmount) TotalAmount, C.FirstName, C.LastName
FROM tblOrder O JOIN tblCustomer C
ON O.CustomerId = C.Id
GROUP BY C.FirstName, C.LastName
ORDER BY SUM(O.TotalAmount) ASC
```

	TotalAmount	FirstName	LastName
1	100.80	Francisco	Chang
2	357.00	John	Steel
3	522.50	Yoshi	Tannamuri
4	649.00	Simon	Crowther
5	836.70	Eduardo	Saavedra
6	1402.95	Ana	Trujillo
7	1467.29	Alejandra	Camino
8	1480.00	Paul	Henriot
9	1488.70	Manuel	Pereira
10	1545.70	Paolo	Accorti
11	1571.20	Helvetius	Nagy
12	1615.90	Janine	Labruno
13	1719.10	Elizabeth	Brown
14	1814.80	Patricio	Simpson
15	1947.24	Liu	Wong

--7) Her ülkedeki müşteri sayısını listeleyin.  
Yalnızca 10'dan fazla müşteriye sahip olan ülkeleri dahil edin.

```
SELECT COUNT(Id) CustomerCount, Country
FROM tblCustomer
GROUP BY Country
HAVING COUNT(Id) > 10
```

	CustomerCount	Country
1	11	France
2	11	Germany
3	13	USA

--8) Ortalama siparişleri 1000 ile 1200 dolar arasında olan tüm müşterileri listeleyin.

```
SELECT AVG(TotalAmount) TotalAmount, FirstName, LastName
FROM tblOrder O JOIN tblCustomer C ON O.CustomerId = C.Id
GROUP BY FirstName, LastName
HAVING AVG(TotalAmount) BETWEEN 1000 AND 1200
```

	TotalAmount	FirstName	LastName
1	1081.215000	Miguel	Angel Paolino
2	1063.420000	Isabel	de Castro
3	1008.440000	Alexander	Feuer
4	1062.038461	Thomas	Hardy
5	1107.806666	Pirkko	Koskitalo
6	1174.945454	Janete	Limeira
7	1073.621428	Antonio	Moreno
8	1065.385000	Rita	Müller
9	1183.010000	José	Pedro Freyre
10	1057.386666	Carine	Schmitt

--9) Tüm siparişleri müşteri bilgileriyle listeleyin.

```
SELECT OrderNumber, TotalAmount, FirstName, LastName, City, Country, Phone
FROM tblOrder JOIN tblCustomer
ON tblOrder.CustomerId = tblCustomer.Id
```

	OrderNumber	TotalAmount	FirstName	LastName	City	Country	Phone
1	542378	440.00	Paul	Henriot	Reims	France	26.47.15.10
2	542379	1863.40	Karin	Josephs	Münster	Germany	0251-031259
3	542380	1813.00	Mario	Pontes	Rio de Janeiro	Brazil	(21) 555-0091
4	542381	670.80	Mary	Saveley	Lyon	France	78.32.54.86
5	542382	3730.00	Pascale	Cartrain	Charleroi	Belgium	(071) 23 67 22 20
6	542383	1444.80	Mario	Pontes	Rio de Janeiro	Brazil	(21) 555-0091
7	542384	625.20	Yang	Wang	Bern	Switzerland	0452-076545
8	542385	2490.50	Michael	Holz	Genève	Switzerland	0897-034214
9	542386	517.80	Paula	Parente	Resende	Brazil	(14) 555-8122
10	542387	1119.90	Carlos	Hernández	San Cristóbal	Venezuela	(5) 555-1340
11	542388	2018.60	Roland	Mendel	Graz	Austria	7675-3425
12	542389	100.80	Francisco	Chang	México D.F.	Mexico	(5) 555-3392
13	542390	1746.20	Henriette	Pfalzheim	Köln	Germany	0221-0644327
14	542391	448.00	Bernardo	Batista	Rio de Janeiro	Brazil	(21) 555-4252
15	542392	624.80	Paula	Wilson	Albuquerque	USA	(505) 555-5939

--10) Tüm siparişleri (orders), ürün adları (product names), miktarları (quantities) ve fiyatları (prices) ile birlikte listeleyin.

```
SELECT o.OrderNumber, p.ProductName, i.Quantity, i.UnitPrice
FROM tblOrder o
JOIN tblOrderItem i ON O.Id = i.OrderId
JOIN tblProduct p ON P.Id = i.ProductId
ORDER BY o.OrderNumber
```

	OrderNumber	ProductName	Quantity	UnitPrice
1	542378	Queso Cabrales	12	14.00
2	542378	Singaporean Hokkien Fried Mee	10	9.80
3	542378	Mozzarella di Giovanni	5	34.80
4	542379	Tofu	9	18.60
5	542379	Manjimup Dried Apples	40	42.40
6	542380	Jack's New England Clam Chowder	10	7.70
7	542380	Manjimup Dried Apples	35	42.40
8	542380	Louisiana Fiery Hot Pepper Sauce	15	16.80
9	542381	Gustaf's Knäckebröd	6	16.80
10	542381	Ravioli Angelo	15	15.60
11	542381	Louisiana Fiery Hot Pepper Sauce	20	16.80
12	542382	Sir Rodney's Marmalade	40	64.80
13	542382	Geitost	25	2.00
14	542382	Camembert Pierrot	40	27.20
15	542383	Gorgonzola Telino	20	10.00

--11) Herhangi bir sipariş verilsin ya da gönderilsin, tüm müşterileri listeleyin.

```
SELECT OrderNumber, TotalAmount, FirstName, LastName
FROM tblCustomer c LEFT JOIN tblOrder o
ON o.CustomerId = c.Id
ORDER BY TotalAmount
```

	OrderNumber	TotalAmount	FirstName	LastName
1	NULL	NULL	Diego	Roel
2	NULL	NULL	Marie	Bertrand
3	542912	12.50	Patricio	Simpson
4	542937	18.40	Paolo	Accorti
5	542897	28.00	Pascale	Cartrain
6	542716	28.00	Maurizio	Moroni
7	543028	30.00	Yvonne	Moncada
8	543013	36.00	Fran	Wilson
9	542945	40.00	Jose	Pavarotti
10	542804	45.00	Helen	Bennett
11	543030	45.00	Paula	Parente
12	543181	45.00	Annette	Roulet
13	543187	45.00	Simon	Crowther
14	542401	48.00	Art	Braunschweiger
15	542552	49.80	Paolo	Accorti

--12) Sipariş vermeyen müşterileri listeleyin.

```
SELECT TotalAmount, FirstName, LastName
FROM tblorder o RIGHT JOIN tblCustomer c
ON o.CustomerId = c.Id
WHERE TotalAmount IS NULL
```

	TotalAmount	FirstName	LastName
1	NULL	Diego	Roel
2	NULL	Marie	Bertrand

--13) Tüm müşterileri ve tedarikçileri ülkelerine göre eşleştirin.

```
SELECT c.FirstName, c.LastName, c.Country CustomerCountry, s.CompanyName, s.country
SupplierCountry
FROM tblcustomer c FULL JOIN tblsupplier s
ON c.country = s.country
ORDER BY c.country, s.country
```

	FirstName	LastName	CustomerCountry	CompanyName	SupplierCountry
1	NULL	NULL	NULL	Pavlova, Ltd.	Australia
2	NULL	NULL	NULL	G'day, Mate	Australia
3	NULL	NULL	NULL	Tokyo Traders	Japan
4	NULL	NULL	NULL	Mayumi's	Japan
5	NULL	NULL	NULL	Zaanse Snoepfabriek	Netherlands
6	NULL	NULL	NULL	Leka Trading	Singapore
7	Patricio	Simpson	Argentina	NULL	NULL
8	Yvonne	Moncada	Argentina	NULL	NULL
9	Sergio	Gutiérrez	Argentina	NULL	NULL
10	Georg	Pipps	Austria	NULL	NULL
11	Roland	Mendel	Austria	NULL	NULL
12	Pascale	Cartrain	Belgium	NULL	NULL
13	Catherine	Dewey	Belgium	NULL	NULL
14	Bernardo	Batista	Brazil	Refrescos Americanas LTDA	Brazil
15	Lúcia	Carvalho	Brazil	Refrescos Americanas LTDA	Brazil
16	Janete	Limeira	Brazil	Refrescos Americanas LTDA	Brazil
17	Aria	Cruz	Brazil	Refrescos Americanas LTDA	Brazil
18	André	Fonseca	Brazil	Refrescos Americanas LTDA	Brazil
19	Mario	Pontes	Brazil	Refrescos Americanas LTDA	Brazil
20	Pedro	Afonso	Brazil	Refrescos Americanas LTDA	Brazil

## 2. Sonuç

SQL Server 2014 Management Studio programına, daha önceden oluşturulmuş veri tabanının restore edilmesi gösterilmiştir. SQL sorgulama dili kullanılarak veri tabanı tablolarından istenen bilgiler çekilmiştir, sonuçlar ekran görüntüleriyle rapora eklenmiştir. SQL sorgularında JOIN kavramı pekiştirilmiştir, GROUP BY, ORDER BY, HAVING kavramları öğrenilmiştir.