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ICT 11 – C

Computer Programming – SQL

Learning Activity 9 – Inner , Left, Right , Full Joins

SQL Statement:

```sql
SELECT ProductID, ProductName, CategoryName
FROM Products
INNER JOIN Categories ON Products.CategoryID = Categories.CategoryID;
```

Result:

Number of Records: 77

ProductID	ProductName	CategoryName
39	Chartreuse verte	Beverages
2	Chang	Beverages
24	Guaraná Fantástica	Beverages
34	Sasquatch Ale	Beverages
35	Steeleye Stout	Beverages
1	Chais	Beverages
38	Côte de Blaye	Beverages
43	Ipoh Coffee	Beverages

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SQL Statement:

```
SELECT Products.ProductID, Products.ProductName, Categories.CategoryName
FROM Products
JOIN Categories ON Products.CategoryID = Categories.CategoryID;
```

Result:

Number of Records: 77

ProductID	ProductName	CategoryName
1	Chais	Beverages
2	Chang	Beverages
3	Aniseed Syrup	Condiments
4	Chef Anton's Cajun Seasoning	Condiments
5	Chef Anton's Gumbo Mix	Condiments
6	Grandma's Boysenberry Spread	Condiments
7	Uncle Bob's Organic Dried Pears	Produce
8	Northwoods Cranberry Sauce	Condiments

Left Join

SQL Statement:

```
SELECT Customers.CustomerName, Orders.OrderID
FROM Customers
LEFT JOIN Orders
ON Customers.CustomerID=Orders.CustomerID
ORDER BY Customers.CustomerName;
```

Result:

Number of Records: 213

CustomerName	OrderID
Alfreds Futterkiste	
Ana Trujillo Emparedados y helados	10308
Antonio Moreno Taquería	10365
Around the Horn	10383
Around the Horn	10355
Berglunds snabbköp	10278
Berglunds snabbköp	10280
Berglunds snabbköp	10384

Right Join

SQL Statement:

```
SELECT Orders.OrderID, Employees.LastName, Employees.FirstName
FROM Orders
RIGHT JOIN Employees
ON Orders.EmployeeID = Employees.EmployeeID
ORDER BY Orders.OrderID;
```

Result:

Number of Records: 197

OrderID	LastName	FirstName
	West	Adam
10248	Buchanan	Steven
10249	Suyama	Michael
10250	Peacock	Margaret
10251	Leverling	Janet
10252	Peacock	Margaret
10253	Leverling	Janet
10254	Buchanan	Steven

Learning Activity 10 – SQL Union, Group By, Having, Exists

SQL Statement:

```
SELECT City FROM Customers
UNION
SELECT City FROM Suppliers
ORDER BY City;
```

Result:

Number of Records: 94

City
Aachen
Albuquerque
Anchorage
Ann Arbor
Annecy
Århus
Barcelona
Barquisimeto

SQL Statement:

```
SELECT City FROM Customers
UNION ALL
SELECT City FROM Suppliers
ORDER BY City;
```

Result:

Number of Records: 120

City
Aachen
Albuquerque
Anchorage
Ann Arbor
Annecy
Århus
Barcelona
Barquisimeto

SQL Statement:

```sql
SELECT City, Country FROM Customers
WHERE Country='Germany'
UNION
SELECT City, Country FROM Suppliers
WHERE Country='Germany'
ORDER BY City;
```

Result:

Number of Records: 13

City	Country
Aachen	Germany
Berlin	Germany
Brandenburg	Germany
Cunewalde	Germany
Cuxhaven	Germany
Frankfurt	Germany
Frankfurt a.M.	Germany
Köln	Germany

SQL Statement:

```sql
SELECT City, Country FROM Customers
WHERE Country='Germany'
UNION ALL
SELECT City, Country FROM Suppliers
WHERE Country='Germany'
ORDER BY City;
```

Result:

Number of Records: 14

City	Country
Aachen	Germany
Berlin	Germany
Berlin	Germany
Brandenburg	Germany
Cunewalde	Germany
Cuxhaven	Germany
Frankfurt	Germany
Frankfurt a.M.	Germany

SQL Statement:

```sql
SELECT 'Customer' AS Type, ContactName, City, Country
FROM Customers
UNION
SELECT 'Supplier', ContactName, City, Country
FROM Suppliers
```

Result:

Number of Records: 120

Type	ContactName	City	Country
Customer	Alejandra Camino	Madrid	Spain
Customer	Alexander Feuer	Leipzig	Germany
Customer	Ana Trujillo	México D.F.	Mexico
Customer	Anabela Domingues	São Paulo	Brazil
Customer	André Fonseca	Campinas	Brazil
Customer	Ann Devon	London	UK
Customer	Annette Roulet	Toulouse	France
Customer	Antonio Moreno	México D.F.	Mexico

Group By

SQL Statement:

```
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country;
```

SQL Statement:

```
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country
ORDER BY COUNT(CustomerID) DESC;
```

Result:

Number of Records: 21

Expr1000	Country
3	Argentina
2	Austria
2	Belgium
9	Brazil
3	Canada
2	Denmark
2	Finland
11	France

Result:

Number of Records: 21

Expr1000	Country
13	USA
11	France
11	Germany
9	Brazil
7	UK
5	Mexico
5	Spain
4	Venezuela

SQL Having

SQL Statement:

```
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country
HAVING COUNT(CustomerID) > 5;
```

Result:

Number of Records: 5

Expr1000	Country
9	Brazil
11	France
11	Germany
7	UK
13	USA

SQL Statement:

```
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country
HAVING COUNT(CustomerID) > 5
ORDER BY COUNT(CustomerID) DESC;
```

Result:

Number of Records: 5

Expr1000	Country
13	USA
11	Germany
11	France
9	Brazil
7	UK

SQL Statement:

```sql
SELECT Employees.LastName, COUNT(Orders.OrderID) AS NumberOfOrders
FROM (Orders
INNER JOIN Employees ON Orders.EmployeeID = Employees.EmployeeID)
GROUP BY LastName
HAVING COUNT(Orders.OrderID) > 10;
```

Result:

Number of Records: 8

LastName	NumberOfOrders
Buchanan	11
Callahan	27
Davolio	29
Fuller	20
King	14
Leverling	31
Peacock	40
Suyama	18

SQL Statement:

```sql
SELECT Employees.LastName, COUNT(Orders.OrderID) AS NumberOfOrders
FROM Orders
INNER JOIN Employees ON Orders.EmployeeID = Employees.EmployeeID
WHERE LastName = 'Davolio' OR LastName = 'Fuller'
GROUP BY LastName
HAVING COUNT(Orders.OrderID) > 25;
```

Result:

Number of Records: 1

LastName	NumberOfOrders
Davolio	29

SQL Exists

SQL Statement:

```
SELECT SupplierName
FROM Suppliers
WHERE EXISTS (SELECT ProductName
FROM Products WHERE Products.SupplierID = Suppliers.supplierID AND Price < 20);
```

Result:

Number of Records: 24

SupplierName
Exotic Liquid
New Orleans Cajun Delights
Tokyo Traders
Mayumi's
Pavlova, Ltd.
Specialty Biscuits, Ltd.
PB Knäckebröd AB
Refrescos Americanas LTDA

SQL Statement:

```
SELECT SupplierName
FROM Suppliers
WHERE EXISTS (SELECT ProductName FROM Products WHERE
Products.SupplierID = Suppliers.supplierID AND Price = 22);
```

Result:

Number of Records: 1

SupplierName
New Orleans Cajun Delights

SQL Statement:

```
SELECT ProductName
FROM Products
WHERE ProductID = ANY (SELECT ProductID FROM OrderDetails WHERE Quantity = 10);
```

Result:

Number of Records: 31

ProductName
Chais
Chang
Chef Anton's Cajun Seasoning
Uncle Bob's Organic Dried Pears
Konbu
Tofu
Pavlova
Teatime Chocolate Biscuits

SQL Statement:

```
SELECT ALL ProductName
FROM Products
WHERE TRUE;
```

Result:

Number of Records: 77

ProductName
Chais
Chang
Aniseed Syrup
Chef Anton's Cajun Seasoning
Chef Anton's Gumbo Mix
Grandma's Boysenberry Spread
Uncle Bob's Organic Dried Pears
Northwoods Cranberry Sauce

SQL Statement:

```
SELECT ProductName
FROM Products
WHERE ProductID = ALL (SELECT ProductID FROM OrderDetails WHERE Quantity = 10);
```

Result:

Number of Records: 0

ProductName

SQL Statement:

```sql
SELECT OrderID, Quantity,
CASE WHEN Quantity > 30 THEN 'The quantity is greater than 30'
WHEN Quantity = 30 THEN 'The quantity is 30'
ELSE 'The quantity is under 30'
END AS QuantityText
FROM OrderDetails;
```

Result:

Number of Records: 2155

OrderID	Quantity	QuantityText
10248	12	The quantity is under 30
10248	10	The quantity is under 30
10248	5	The quantity is under 30
10249	9	The quantity is under 30
10249	40	The quantity is greater than 30
10250	10	The quantity is under 30
10250	35	The quantity is greater than 30
10250	15	The quantity is under 30

SQL Statement:

```sql
SELECT CustomerName, City, Country FROM Customers
ORDER BY (CASE
WHEN City IS NULL THEN Country
ELSE City
END);
```

Result:

Number of Records: 91

CustomerName	City	Country
Drachenblut Delikatessend	Aachen	Germany
Rattlesnake Canyon Grocery	Albuquerque	USA
Old World Delicatessen	Anchorage	USA
Vaffeljernet	Århus	Denmark
Galería del gastrónomo	Barcelona	Spain
LILA-Supermercado	Barquisimeto	Venezuela
Magazzini Alimentari Riuniti	Bergamo	Italy
Alfreds Futterkiste	Berlin	Germany

Learning Activity 12 – Null Functions, Stored Procedures, Comments, Operators

```sql
SELECT ProductName, UnitPrice * (UnitsInStock + UnitsOnOrder)
FROM Products;
```

```sql
SELECT ProductName, UnitPrice * (UnitsInStock + IFNULL(UnitsOnOrder, 0))
FROM Products;
```

```sql
SELECT ProductName, UnitPrice * (UnitsInStock + COALESCE(UnitsOnOrder, 0))
FROM Products;
```

```sql
SELECT ProductName, UnitPrice * (UnitsInStock + ISNULL(UnitsOnOrder, 0))
FROM Products;
```

```sql
SELECT ProductName, UnitPrice * (UnitsInStock + COALESCE(UnitsOnOrder, 0))
FROM Products;
```

Result:

Number of Records: 0

ProductName

Stored Procedures

```sql
CREATE PROCEDURE SelectAllCustomers
AS
SELECT * FROM Customers
GO;
```

```sql
CREATE PROCEDURE SelectAllCustomers @City nvarchar(30)
AS
SELECT * FROM Customers WHERE City = @City
GO;
```

```sql
CREATE PROCEDURE SelectAllCustomers @City nvarchar(30), @PostalCode nvarchar(10)
AS
SELECT * FROM Customers WHERE City = @City AND PostalCode = @PostalCode
GO;
```