SQL Practice Assignments

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Practice environment: https://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all

Assignment 1 – Selecting Data

Objective: To utilize SQL statements to extract specific information from different tables within the provided example database and to hone my skills with the SELECT statement.

Write the following SQL queries:
Query 1: Retrieve all customers showing their CustomerName and City.
Query 2: List all products, including ProductName and Price ordered by price, increasingly.
Query 3: Find all orders made and return OrderID, CustomerID, and OrderDate. Sort them by order date.

Solution:
Query 1:

```
SELECT CustomerName, City FROM Customers
```

Number of Records: 91

CustomerName	City
Alfreds Futterkiste	Berlin
Ana Trujillo Emparedados y helados	México D.F.
Antonio Moreno Taquería	México D.F.
Around the Horn	London
Berglunds snabbköp	Luleå
Blauer See Delikatessen	Mannheim
Blondel père et fils	Strasbourg
Bólido Comidas preparadas	Madrid

Query 2:

```
SELECT ProductName, Price, Unit FROM Products
ORDER BY Price ASC
```

Number of Records: 77

ProductName	Price	Unit
Geitost	2.5	500 g
Guaraná Fantástica	4.5	12 - 355 ml cans
Konbu	6	2 kg box
Filo Mix	7	16 - 2 kg boxes
Tourtière	7.45	16 pies
Rhönbräu Klosterbier	7.75	24 - 0.5 l bottles
Tunnbröd	9	12 - 250 g pkgs.
Teatime Chocolate Biscuits	9.2	10 boxes x 12 pieces

Query 3:

```
SELECT OrderID, CustomerID, OrderDate FROM Orders
ORDER BY OrderDate ASC
```

Number of Records: 196

OrderID	CustomerID	OrderDate
10248	90	7/4/1996
10249	81	7/5/1996
10250	34	7/8/1996
10251	84	7/8/1996
10252	76	7/9/1996
10253	34	7/10/1996
10254	14	7/11/1996
10255	68	7/12/1996

Assignment 2 – Selecting Data

Objective: Write a SQL statement that selects particular information from the Products table of the example database.

Write the following SQL queries:

Query 1: Write a SQL statement that returns a list of products connected to the supplier “Leka Trading”. For every product return Product name, Price, and Unit. Order the data by Product name alphabetically.

Query 2: Write a SQL statement that returns a list of products with category “Beverages”. For every product, return Product name, Price, and Unit. Order the data by Product name alphabetically.

Query 3: Write a SQL statement that returns a list of products with category “Beverages” and price equal or higher than 10. For every product, return Product name, Price, and Unit. Order the data by Product name alphabetically.

Query 4: Write a SQL statement that returns a list of products in a price range 10-30. For every product, return Product name, Price, and Unit. Order the data by price, from the lowest price to the highest.

Solution:

Query 1:

```
SELECT Products.ProductName, Products.Price, Products.Unit
FROM Products
```

```
INNER JOIN Suppliers ON Products.SupplierID = Suppliers.SupplierID
WHERE Suppliers.SupplierName = 'Leka Trading'
ORDER BY ProductName ASC
```

Number of Records: 3

ProductName	Price	Unit
Gula Malacca	19.45	20 - 2 kg bags
Ipoh Coffee	46	16 - 500 g tins
Singaporean Hokkien Fried Mee	14	32 - 1 kg pkgs.

Query 2:

```
SELECT Products.ProductName, Products.Price, Products.Unit
FROM Products
INNER JOIN Categories ON Products.CategoryID = Categories.CategoryID
WHERE Categories.CategoryName = 'Beverages'
ORDER BY ProductName ASC
```

Number of Records: 12

ProductName	Price	Unit
Chais	18	10 boxes x 20 bags
Chang	19	24 - 12 oz bottles
Chartreuse verte	18	750 cc per bottle
Côte de Blaye	263.5	12 - 75 cl bottles
Guaraná Fantástica	4.5	12 - 355 ml cans
Ipoh Coffee	46	16 - 500 g tins
Lakkalikööri	18	500 ml
Laughing Lumberjack Lager	14	24 - 12 oz bottles

Query 3:

```
SELECT Products.ProductName, Products.Price, Products.Unit
FROM Products
INNER JOIN Categories ON Products.CategoryID = Categories.CategoryID
WHERE Categories.CategoryName = 'Beverages' AND Price>=10
ORDER BY ProductName ASC
```

Number of Records: 10

ProductName	Price	Unit
Chais	18	10 boxes x 20 bags
Chang	19	24 - 12 oz bottles
Chartreuse verte	18	750 cc per bottle
Côte de Blaye	263.5	12 - 75 cl bottles
Ipoh Coffee	46	16 - 500 g tins
Lakkalikööri	18	500 ml
Laughing Lumberjack Lager	14	24 - 12 oz bottles
Outback Lager	15	24 - 355 ml bottles

Query 4:

```
SELECT ProductName, Price, Unit FROM Products
WHERE Price BETWEEN 10 AND 30
```

```
ORDER BY Price ASC
```

Number of Records: 42

ProductName	Price	Unit
Sir Rodney's Scones	10	24 pkgs. x 4 pieces
Longlife Tofu	10	5 kg pkg.
Aniseed Syrup	10	12 - 550 ml bottles
Spegesild	12	4 - 450 g glasses
Scottish Longbreads	12.5	10 boxes x 8 pieces
Gorgonzola Telino	12.5	12 - 100 g pkgs
Chocolade	12.75	10 pkgs.
Original Frankfurter grüne Soße	13	12 boxes

Assignment 3 – Operators

Objective: Explore the use of ORDER BY, AND, and OR operators in SQL to organize and filter database information effectively.

Write the following SQL queries:
Query 1: Identify suppliers located in either the USA or Germany. Sort the results by Country and then by CompanyName.
Query 2: Select products priced between 10 and 20 and within CategoryIDs 2 or 5, ordered by Price.

Solution:
Query 1:

```
SELECT * FROM Suppliers
WHERE Country = 'USA' OR Country = 'Germany'
ORDER BY Country,SupplierName
```

Number of Records: 7

SupplierID	SupplierName	ContactName	Address	City	PostalCode	Country	Phone
11	Heli Süßwaren GmbH & Co. KG	Petra Winkler	Tiergartenstraße 5	Berlin	10785	Germany	(010) 9984510
13	Nord-Ost-Fisch Handelsgesellschaft mbH	Sven Petersen	Frahmredder 112a	Cuxhaven	27478	Germany	(04721) 8713
12	Plutzer Lebensmittelgroßmärkte AG	Martin Bein	Bogenallee 51	Frankfurt	60439	Germany	(069) 992755
16	Bigfoot Breweries	Cheryl Saylor	3400 - 8th Avenue Suite 210	Bend	97101	USA	(503) 555-9931

Query 2:

```
SELECT * FROM Products
WHERE Price BETWEEN 10 AND 20
AND (CategoryID = 2 OR CategoryID = 5)
ORDER BY Price ASC
```

Number of Records: 7

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
77	Original Frankfurter grüne Soße	12	2	12 boxes	13
42	Singaporean Hokkien Fried Mee	20	5	32 - 1 kg pkgs.	14
15	Genen Shouyu	6	2	24 - 250 ml bottles	15.5
66	Louisiana Hot Spiced Okra	2	2	24 - 8 oz jars	17
44	Gula Malacca	20	2	20 - 2 kg bags	19.45
57	Ravioli Angelo	26	5	24 - 250 g pkgs.	19.5

Assignment 4 – Aggregate functions

Objective: Master the use of TOP/LIMIT clauses and aggregate functions to analyze data sets effectively.

Write the following SQL queries:
Query 1: Identify the top 5 most expensive products. Return ProductName and Price.
Query 2: Calculate the total number of customers for each country, showing Country and the count of customers in this country. Use the COUNT and GROUP BY functions.
Query 3: Determine the average price of products within each product category, returning the CategoryId and the average price for this category.

Solution:
Query 1:

```
SELECT TOP 5 ProductName, Price FROM Products
ORDER BY Price DESC;
```

Number of Records: 5

ProductName	Price
Côte de Blaye	263.5
Thüringer Rostbratwurst	123.79
Mishi Kobe Niku	97
Sir Rodney's Marmalade	81
Carnarvon Tigers	62.5

Query 2:

```
SELECT COUNT(CustomerID) AS [Number of Customers], Country
FROM Customers
GROUP BY Country;
```

Number of Records: 21

Number of Customers	Country
3	Argentina
2	Austria
2	Belgium
9	Brazil
3	Canada
2	Denmark
2	Finland
11	France

Query 3:

```
SELECT AVG(Price) AS AveragePrice, CategoryID
FROM Products
GROUP BY CategoryID;
```

Number of Records: 8

AveragePrice	CategoryID
37.9792	1
23.0625	2
25.16	3
28.73	4
20.25	5
54.0067	6
32.37	7
20.6825	8

Assignment 5 – Patterns

Objective: Practice using the LIKE operator in SQL for pattern matching, a powerful tool for querying complex string patterns.

Write the following SQL queries:

Query 1: Find products whose name starts with 'Ch'. Return the ProductName.

Query 2: Select customers with ‘la' in their name (doesn’t matter in the beginning, middle or end). Return CustomerName and City.

Solution:

Query 1:

```
SELECT ProductName FROM Products
WHERE ProductName LIKE 'Ch%'
```

Number of Records: 6

ProductName
Chais
Chang
Chef Anton's Cajun Seasoning
Chef Anton's Gumbo Mix
Chartreuse verte
Chocolade

Query 2:

```
SELECT CustomerName, City FROM Customers
WHERE CustomerName LIKE '%la%'
```

Number of Records: 16

CustomerName	City
Ana Trujillo Emparedados y helados	México D.F.
Blauer See Delikatessen	Mannheim
Bottom-Dollar Marketse	Tsawassen
Gourmet Lanchonetes	Campinas
Great Lakes Food Market	Eugene
GROSELLA-Restaurante	Caracas
HILARIÓN-Abastos	San Cristóbal
Island Trading	Cowes

Assignment 6 – IN Operator

Objective: Delve into the utilization of the IN operator in SQL, a key tool for querying data that matches any in a list of specified values.

Write the following SQL queries:
Query 1: Select all products belonging to CategoryIDs 1, 4, and 7. Show ProductName and CategoryID and order results by CategoryId.
Query 2: List customers living in London, Berlin and Madrid.

Solution:
Query 1:

```
SELECT ProductName, CategoryID FROM Products
WHERE CategoryID IN (1, 4, 7)
ORDER BY CategoryID
```

Number of Records: 27

ProductName	CategoryID
Chartreuse verte	1
Chang	1
Guaraná Fantástica	1
Sasquatch Ale	1
Chais	1
Côte de Blaye	1
Lakkalikööri	1
Ipoh Coffee	1

Query 2:

```
SELECT * FROM Customers
WHERE City IN ('London', 'Berlin', 'Madrid')
```

Number of Records: 10

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
8	Bólido Comidas preparadas	Martín Sommer	C/ Araquil, 67	Madrid	28023	Spain
11	B's Beverages	Victoria Ashworth	Fauntleroy Circus	London	EC2 5NT	UK
16	Consolidated Holdings	Elizabeth Brown	Berkeley Gardens 12 Brewery	London	WX1 6LT	UK
19	Eastern Connection	Ann Devon	35 King George	London	WX3 6FW	UK

Assignment 7 – Combining Data

Objective: Advance your SQL skills by mastering INNER JOINs, crucial for querying data from multiple related tables.

Write the following SQL queries:
Query 1: Combine Products and Categories tables to display ProductName alongside its CategoryName.

Query 2: Combine Products and Categories tables to display ProductName alongside its CategoryName. Return products belonging only to CategoryIDs 1, 4, and 7.
Query 3: Link Orders and Customers tables to show OrderID and CustomerName for each order.
Query 4: Create a query that joins Orders, OrderDetails, Products, and Categories to list all orders searching 'Beverages' by string “Bever”. Return OrderId, ProductName and CategoryName.

Solution:
Query 1:

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

Number of Records: 77

ProductName	CategoryName
Chartreuse verte	Beverages
Chang	Beverages
Guaraná Fantástica	Beverages
Sasquatch Ale	Beverages
Steeleye Stout	Beverages
Chais	Beverages
Côte de Blaye	Beverages
Ipoh Coffee	Beverages

Query 2:

```
SELECT ProductName, CategoryName
FROM Products
INNER JOIN Categories ON Products.CategoryID = Categories.CategoryID
WHERE Categories.CategoryID IN (1, 4, 7)
```

Number of Records: 27

ProductName	CategoryName
Chartreuse verte	Beverages
Chang	Beverages
Guaraná Fantástica	Beverages
Sasquatch Ale	Beverages
Steeleye Stout	Beverages
Chais	Beverages
Côte de Blaye	Beverages
Ipoh Coffee	Beverages

Query 3:

```
SELECT OrderID, CustomerName FROM Orders
INNER JOIN Customers ON Orders.CustomerID = Customers.CustomerID
```

Number of Records: 196

OrderID	CustomerName
10308	Ana Trujillo Emparedados y helados
10365	Antonio Moreno Taquería
10383	Around the Horn
10355	Around the Horn
10278	Berglunds snabbköp
10280	Berglunds snabbköp
10384	Berglunds snabbköp
10436	Blondel père et fils

Query 4:

```
SELECT Orders.OrderID, ProductName, CategoryName
FROM Orders, OrderDetails, Products, Categories
WHERE Orders.OrderID = OrderDetails.OrderID
AND OrderDetails.ProductID = Products.ProductID
AND Products.CategoryID = Categories.CategoryID
AND CategoryName LIKE 'Bever%'
```

Number of Records: 93

OrderID	ProductName	CategoryName
10377	Chartreuse verte	Beverages
10297	Chartreuse verte	Beverages
10257	Chartreuse verte	Beverages
10347	Chartreuse verte	Beverages
10361	Chartreuse verte	Beverages
10305	Chartreuse verte	Beverages
10323	Chartreuse verte	Beverages
10253	Chartreuse verte	Beverages