SQL Practical Exercise

Exercise 1 – NorthWind Queries

1.1 Write a query that lists all Customers in either Paris or London. Include Customer ID, Company Name and all address fields.

```
SELECT CustomerID,CompanyName,Address,City,Region,PostalCode
    FROM Customers
    WHERE City IN ('London', 'Paris');
```

1.2 List all products stored in bottles.

```
SELECT  p.ProductName, p.QuantityPerUnit
    FROM Products p
    WHERE QuantityPerUnit LIKE '%bottle%'
```

1.3 Repeat question above but add in the Supplier Name and Country.

```
SELECT p.ProductName, p.QuantityPerUnit, s.CompanyName AS "Supplier Name" , s.Country AS "Supplier Country"
    FROM Products p
    INNER JOIN Suppliers s ON s.SupplierID = p.supplierID
    WHERE QuantityPerUnit LIKE '%bottle%'
```

1.4 Write an SQL Statement that shows how many products there are in each category. Include Category Name in result set and list the highest number first.

```
SELECT c.CategoryName, count(p.CategoryID)
    AS 'Number of Catergory Occurances' FROM Categories c
    INNER JOIN Products p ON p.CategoryID = c.CategoryID
    GROUP BY c.CategoryName
    ORDER BY 'Number of Catergory Occurances' DESC
```

1.5 List all UK employees using concatenation to join their title of courtesy, first name and last name together. Also include their city of residence.

```
SELECT CONCAT(TitleOfCourtesy,' ',FirstName,' ',LastName), City
    FROM Employees
    WHERE Country = 'UK'
```

1.6 List Sales Totals for all Sales Regions (via the Territories table using 4 joins) with a Sales Total greater than 1,000,000. Use rounding or FORMAT to present the numbers.

```
SELECT t.RegionID AS "Region",
    FORMAT(SUM(od.Quantity*od.UnitPrice*(1-od.Discount)),'########.##') AS "Total Sales"
    FROM [Order Details] od
    INNER JOIN  Orders o ON od.orderID = o.OrderID
    INNER JOIN  Employees e ON  o.EmployeeID = e.EmployeeID
    INNER JOIN  EmployeeTerritories et ON e.EmployeeID = et.EmployeeID
    INNER JOIN  Territories t ON et.TerritoryID = t.TerritoryID
    GROUP BY t.RegionID
    HAVING SUM(od.Quantity*od.UnitPrice*(1-od.Discount)) > 1000000
```

1.7 Count how many Orders have a Freight amount greater than 100.00 and either USA or UK as Ship Country.

```
SELECT COUNT(*) AS "Total orders from the US or UK with freight amount being over 100"
    FROM Orders
    WHERE ShipCountry IN ('USA', 'UK') AND Freight > 100.0000;
```

1.8 Write an SQL Statement to identify the Order Number of the Order with the highest amount(value) of discount applied to that order.

```
SELECT TOP 1 OrderID,SUM(Discount*UnitPrice*Quantity) AS "Highest Discount Value"
    FROM [Order Details]
    GROUP BY OrderID
    ORDER BY 'Highest Discount Value' DESC
```

Exercise 2 – Create Spartans Table

2.1 Write the correct SQL statement to create the following table:

Spartans Table – include details about all the Spartans on this course. Separate Title, First Name and Last Name into separate columns, and include University attended, course taken and mark achieved. Add any other columns you feel would be appropriate.

```
CREATE TABLE spartans
(
    spartanID INT IDENTITY(1,1) PRIMARY KEY,
    title VARCHAR(5),
    firstName  VARCHAR(20),
    lastName  VARCHAR(20),
    universityAttended  VARCHAR(30),
    courseTaken  VARCHAR(40),
    markAchieved  VARCHAR(5),

);
```

2.2 Write SQL statements to add the details of the Spartans in your course to the table you have created.

```
INSERT INTO spartans VALUES
(
    'Mr','Alex','Lynch','Univesity Anglia Ruskin','Waste Management','1'
),
(
    'Mr','Thomas','Canfield','Univesity of Sports','Jumping with an oversized pokey stick','1'
),
(
    'Mr','Adrian','Wong','Univesity of Hogwarts','History of Magic','1'
),
(
    'Mr','Sotiris','Loizou','Univesity of Birmingjam','Sightseeing','1'
),
(
    'Mr','Karim','Kholer','Univesity of Oxford Brookes','Ballooning','1'
);

SELECT * FROM spartans;
```

3.1 List all Employees from the Employees table and who they report to. No Excel required. Please mention the Employee Names and the ReportTo names.

```
SELECT ee.employeeID,CONCAT(ee.FirstName,' ',ee.LastName) AS "Employee Name",
    CONCAT(e.FirstName,' ',e.LastName) AS "Reports to"
    FROM Employees ee
    LEFT JOIN Employees e ON ee.reportsTO = e.employeeID
```

3.2 List all Suppliers with total sales over $10,000 in the Order Details table. Include the Company Name from the Suppliers Table and present as a bar chart as below:

```
SELECT s.CompanyName, SUM(od.Quantity*od.UnitPrice*(1-od.Discount)) AS "Supplier Total"
    FROM Suppliers s
    INNER JOIN Products p ON p.SupplierID = s.SupplierID
    INNER JOIN [Order Details] od ON od.ProductID = p.ProductID
    GROUP BY s.CompanyName
    HAVING (SUM(od.Quantity*od.UnitPrice*(1-od.Discount))) > 10000
    ORDER BY 'Supplier Total' DESC
```


Supplier Total
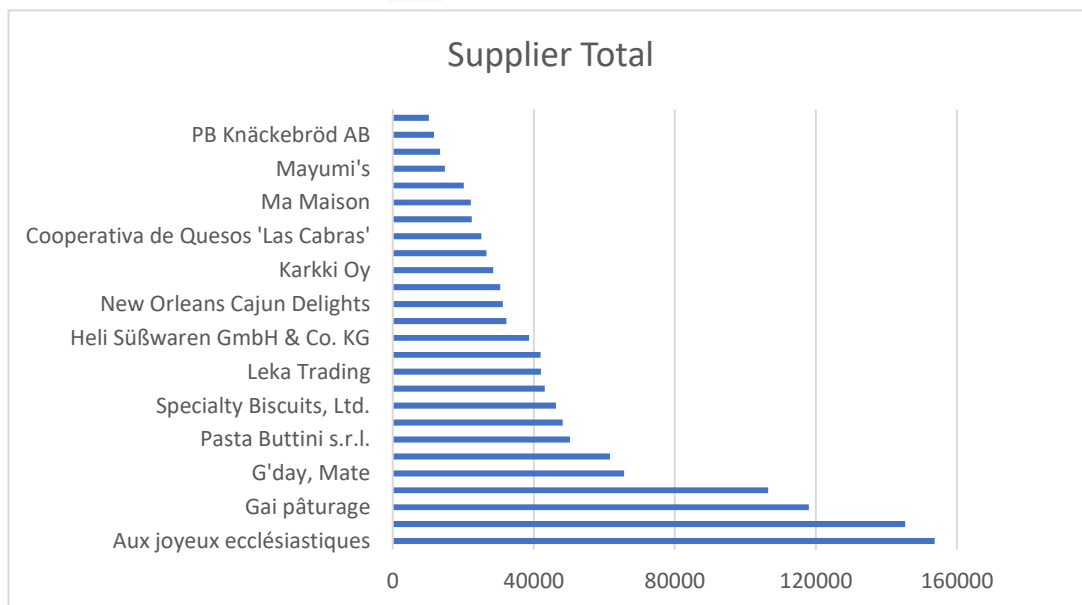
3.3 List the Top 10 Customers YTD for the latest year in the Orders file. Based on total value of orders shipped. No Excel required.

```
SELECT TOP 10 c.CompanyName, ROUND(SUM(od.UnitPrice*od.Quantity*(1-od.Discount)),2) AS "Total Spent"
    FROM Orders o
    INNER JOIN Customers c ON c.CustomerID = o.CustomerID
    INNER JOIN [Order Details] od ON od.OrderID = o.OrderID
    WHERE YEAR(o.ShippedDate) = (SELECT MAX(YEAR(o.ShippedDate)) FROM Orders o)
    GROUP BY c.CompanyName
    ORDER BY 'Total Spent' DESC
```

3.4 Plot the Average Ship Time by month for all data in the Orders Table using a line chart as below.

```sql
SELECT CONCAT(LEFT(DATENAME(MONTH,DATEADD( month, MONTH(OrderDate),-1)),3),'-',YEAR(OrderDate)) AS "Date",
    AVG(CAST(DATEDIFF(dd,OrderDate,ShippedDate)AS decimal(4,2)) ) AS "Average Ship Time By Month"
FROM Orders
GROUP BY  YEAR(OrderDate), MONTH(OrderDate)
ORDER BY  YEAR(OrderDate), MONTH(OrderDate)
```


Average Ship Time By Month