

## Assignment 1 – Databases.

### Question 1 -

```
SELECT CompanyName, City
FROM Suppliers
WHERE SupplierID IN (SELECT SupplierID
FROM Products
WHERE CategoryID = (SELECT CategoryID
FROM Categories
WHERE CategoryName = 'Confections'
))
```

The meaning of this query :

```
SELECT CompanyName, City
FROM Suppliers
```

- We're asking for two columns "CompanyName" and "City" which are found in the "Suppliers" table. From this two columns, we want to do a selection of lines (i.e : we only want some lines between all the lines that the rows contain), such that :

```
WHERE SupplierID IN (
```

- We are looking the row "SupplierID" (which is in the "Suppliers" table), and by the IN operator, we mean that we only want all the lines where the "SupplierID" case corresponds to the following :

```
SELECT SupplierID
FROM Products
```

- In the table "Products" we're looking to the column "SupplierID" (Attention, this column "SupplierID" is not the same that the column "SupplierID" we saw above because both do not belong to the same table). From this column, we're doing a new selection which is to only worried about the following lines :

```
WHERE CategoryID = (
```

- In the same table as above (Products) we're looking about the column "CategoryID". From that column, we want the union with the following lines :

```
SELECT CategoryID
FROM Categories
WHERE CategoryName = 'Confections'
))
```

- In the table "Categories" and in the column "CategoryID" we want the lines where the column "CategoryName" (which is in the same table ("Category")) is equal to 'Confections'.

- If any line is matching with all the condition of the query, this line will be return.

Here are screen-shot of the result of the query in mySql :

The screenshot displays the MySQL Workbench interface. The top toolbar includes icons for File, Edit, View, Query, Database, Server, Tools, Scripting, and Help. The left sidebar contains a 'MANAGEMENT' section with options like Server Status, Client Connections, Users and Privileges, Status and System Variables, Data Export, Data Import/Restore, and an 'INSTANCE' section with Startup/Shutdown, Server Logs, and Options File. Below these are 'PERFORMANCE' options: Dashboard, Performance Reports, and Performance Schema Setup. The 'SCHEMAS' section on the left shows a tree view of the 'northwind' database, including tables like Categories, CustomerCustord, CustomerDemo, Customers, Employees, EmployeeTerrit, Order Details, Orders, Products, Region, Shippers, Suppliers, Territories, and Views. The 'Query Editor' in the center contains the following SQL query:

```
1 SELECT CompanyName, City
2 FROM Suppliers
3 WHERE SupplierID IN (SELECT SupplierID
4 FROM Products
5 WHERE CategoryID = (SELECT CategoryID
6 FROM Categories
7 WHERE CategoryName = 'Confections'
8 ))
```

The 'Result Grid' at the bottom shows the query results in a table with two columns: 'CompanyName' and 'City'. The results are as follows:

#	CompanyName	City
1	Pavlova, Ltd.	Melbourne
2	Specialty Biscuits, Ltd.	Manchester
3	Heil Swaren GmbH & Co. KG	Berlin
4	Zaanse Snoepfabriek	Zaandam
5	Karkki Oy	Lappeenranta
6	Forts d'rables	Ste-Hyacinthe

The bottom status bar shows the 'Suppliers 1' table selected. The 'Action Output' tab displays the execution details of the query:

Action	Time	Action	Message	Duration / Fetch
2	11:28:47	SELECT * FROM northwind.Products LIMIT 0, 50000	77 row(s) returned	0.00037 sec / 0.000...
3	11:32:47	SELECT CompanyName, City FROM Suppliers WHERE SupplierID IN (SELECT SupplierID FROM Products WHERE CategoryID = (SELECT CategoryID FROM Categories WHERE CategoryName = 'Confections'))	6 row(s) returned	0.0011 sec / 0.0000...

The status bar at the bottom indicates 'Query Completed'.

## Question 2 -

```
SELECT productName, SupplierID
FROM Products
WHERE SupplierID IN (SELECT SupplierID
FROM Suppliers
WHERE CompanyName IN ('Exotic Liquids', 'Grandma Kelly's Homestead')
)
```

Here are screen-shot of the result of the query in mySql :

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL query:

```
1 SELECT productName, SupplierID
2 FROM Products
3 WHERE SupplierID IN (SELECT SupplierID
4 FROM Suppliers
5 WHERE CompanyName IN ('Exotic Liquids', 'Grandma Kelly's Homestead')
6 )
```

The Results tab displays the following data:

#	productName	SupplierID
1	Chai	1
2	Chang	1
3	Aniseed Syrup	1
4	Grandma's Boysenberry Spread	3
5	Uncle Bob's Organic Dried Pears	3
6	Northwoods Cranberry Sauce	3

The Action Output tab shows the following message:

Action	Time	Action	Message	Duration / Fetch
1	12:21:14	SELECT productName, SupplierID FROM Products WHERE Sup...	6 row(s) returned	0.00039 sec / 0.000...

The Object Info tab shows the following information:

Table: Categories  
Columns:  
CategoryID int(11) AI PK  
CategoryName varchar(15)  
Description mediumtext  
Picture longblob

### Question 3 -

We're giving two answers since there numerous ways to get the data of the picture.

The first answer is to create a new column and to select it. Attention, here the column is really created, not only shown.

The query we should ask to get this result is :

```
ALTER TABLE Products ADD COLUMN shortPrice CHAR(6) AS (CONCAT('$', UnitPrice));  
SELECT ProductID, ProductName, UnitPrice, shortPrice  
FROM Products;
```

Here are screen-shot of the result of the query in mySql :

The screenshot shows the MySQL Workbench interface. The top toolbar includes icons for File, Edit, View, Query, Database, Server, Tools, Scripting, and Help. The left sidebar contains a 'MANAGEMENT' section with links to Server Status, Client Connections, Users and Privileges, Status and System Variables, Data Export, and Data Import/Restore. Below this is the 'SCHEMAS' section, which shows a tree view of the 'northwind' database. The 'Products' table is selected, and its structure is displayed in the 'Object Info' pane at the bottom left. The main window shows a SQL query editor with the following queries:

```
1 ALTER TABLE Products ADD COLUMN shortPrice CHAR(6) AS (CONCAT('$', UnitPrice));  
2 SELECT ProductID, ProductName, UnitPrice, shortPrice  
3 FROM Products;
```

The 'Result Grid' shows the results of the queries. The first query (ALTER TABLE) shows the table structure after the column was added. The second query (SELECT) shows the data for the 'Products' table, including the new 'shortPrice' column.

#	ProductID	ProductName	UnitPrice	shortPrice
1	1	Chai	18.0000	\$18.00
2	2	Chang	19.0000	\$19.00
3	3	Aniseed Syrup	10.0000	\$10.00
4	4	Chef Anton's Cajun Seasoning	22.0000	\$22.00
5	5	Chef Anton's Gumbo Mix	21.3500	\$21.35
6	6	Grandma's Boysenberry Spread	25.0000	\$25.00
7	7	Uncle Bob's Organic Dried Pears	30.0000	\$30.00
8	8	Northwoods Cranberry Sauce	40.0000	\$40.00
9	9	Mishi Kobe Niku	97.0000	\$97.00
10	10	Ikura	31.0000	\$31.00

The 'Action Output' pane at the bottom shows the execution of the queries. The first query (ALTER TABLE) was executed successfully, and the second query (SELECT) returned 77 rows.

The second answer shall only shown the column without create it for real.

The query we should ask to get this result is :

```
SELECT ProductID, ProductName, UnitPrice, CAST((CONCAT('$', UnitPrice)) AS CHAR(6)) AS  
'shortPrice'  
FROM Products;
```

Here are screen-shot of the result of the query in mySql :

The screenshot displays the MySQL Workbench interface. The central pane shows the 'Query#3' editor with the following SQL query:

```
1 SELECT ProductID, ProductName, UnitPrice, CAST((CONCAT('$', UnitPrice)) AS CHAR(6)) AS 'shortPrice'
2 FROM Products;
```

Below the editor, the 'Result Grid' displays 11 rows of data. The columns are ProductID, ProductName, UnitPrice, and shortPrice. The data is as follows:

#	ProductID	ProductName	UnitPrice	shortPrice
1	1	Chai	18.0000	\$18.00
2	2	Chang	19.0000	\$19.00
3	3	Aniseed Syrup	10.0000	\$10.00
4	4	Chef Anton's Cajun Seasoning	22.0000	\$22.00
5	5	Chef Anton's Gumbo Mix	21.3500	\$21.35
6	6	Grandma's Boysenberry Spread	25.0000	\$25.00
7	7	Uncle Bob's Organic Dried Pears	30.0000	\$30.00
8	8	Northwoods Cranberry Sauce	40.0000	\$40.00
9	9	Mishi Kobe Niku	97.0000	\$97.00
10	10	Ikura	31.0000	\$31.00
11	11	Queso Cabrales	21.0000	\$21.00

At the bottom, the 'Action Output' pane shows the execution details:

	Time	Action	Message	Duration / Fetch
1	01:21:59	SELECT ProductID, ProductName, UnitPrice, CAST((CONCAT('\$', UnitPrice)) AS CHAR(6)) AS 'shortPrice' FROM Products;	77 row(s) returned	0.00088 sec / 0.000...

The status bar at the bottom indicates 'Query Completed'.

#### Question 4 -

# The return must be the name of the client.

# For each of them, employee (which handle the command) and the shipper have 's' as first letter of their name.

# We also need to add the sum of the command.

```
SELECT Cust.ContactName, SUM(OrdDet.Quantity * OrdDet.UnitPrice - OrdDet.Discount *  
(OrdDet.UnitPrice * OrdDet.Quantity)) AS total  
FROM Orders Ord
```

```
INNER JOIN `Order Details` OrdDet  
ON Ord.OrderID = OrdDet.OrderId
```

```
INNER JOIN Customers Cust  
ON Ord.CustomerID = Cust.CustomerID
```

```
LEFT OUTER JOIN Shippers Ship  
ON Ord.ShipVia = Ship.ShipperID
```

WHERE

```
Ord.EmployeeID IN (  
SELECT EmployeeID  
FROM Employees  
WHERE FirstName  
LIKE 's%')
```

AND

```
Ord.ShipVia IN (  
SELECT ShipperID  
FROM Shippers  
WHERE CompanyName  
LIKE 's%')  
group by ContactName;
```

Here are screen-shot of the result of the query in mySql :

The screenshot displays the MySQL Workbench interface. The SQL editor contains the following query:

```
# We also need to add the sum of the command.
SELECT Cust.ContactName, SUM(OrdDet.Quantity * OrdDet.UnitPrice - OrdDet.Discount * (OrdDet.UnitPrice * OrdDet.Quantity)) AS total
FROM Orders Ord
INNER JOIN `Order Details` OrdDet
ON Ord.OrderID = OrdDet.OrderID
INNER JOIN Customers Cust
ON Ord.CustomerID = Cust.CustomerID
LEFT OUTER JOIN Shippers Ship
ON Ord.ShipVia = Ship.ShipperID
```

The Results grid shows the following data:

#	ContactName	total
1	Alexander Feuer	2147.4000
2	Annette Roulet	452.0000
3	Christina Berglund	2130.3000
4	Felipe Izquierdo	1902.1000
5	Hari Kumar	1630.0000
6	Horst Kloss	4181.5000
7	Isabel de Castro	843.2000
8	Janele Limeira	2740.0000

The Action Output pane shows the execution details:

Action	Time	Message	Duration / Fetch
1	17:42:32	SELECT Cust.ContactName, SUM(OrdDet.Quantity * OrdDet.U... 13 row(s) returned	0.0011 sec / 0.0000...

The Object Info pane shows the structure of the Shippers table:

Table: Shippers  
Columns:  
ShipperID int(11) AI PK  
CompanyName varchar(40)  
Phone varchar(24)

### Question 5 -

# This query subscribe for all suppliers the product which have been buy the most number of time by the client in the month 07.1996

# And who much money client buy it.

SELECT

ContactName,  
ProductName,  
MAX(orderedCount) as `Ordered count`,  
SUM(UnitPrice \* Quantity) as `Total price`

FROM (

SELECT

sup.ContactName,  
pro.ProductName,  
COUNT(ord.CustomerID) as orderedCount,  
ordDet.Quantity,  
ordDet.UnitPrice

FROM

Products AS pro

INNER JOIN `Order Details` AS ordDet ON pro.ProductID = ordDet.ProductID

INNER JOIN Orders AS ord ON ordDet.OrderID = ord.OrderID

INNER JOIN Suppliers AS sup ON sup.SupplierID = pro.SupplierID

WHERE

ord.OrderDate BETWEEN '1996-07-00' AND '1996-07-31'

GROUP BY ordDet.ProductID

) AS subQuery

GROUP BY ContactName



Here are screen-shot of the result of the query in mySql :

MySQL Workbench

Local instance 3306 (northwind) | Local instance 3306 (northwind)

File Edit View Query Database Server Tools Scripting Help

MANAGEMENT

- Server Status
- Client Connections
- Users and Privileges
- Status and System Variables
- Data Export
- Data Import/Restore

INSTANCE

- Startup / Shutdown
- Server Logs
- Options File

PERFORMANCE

- Dashboard
- Performance Reports
- Performance Schema Setup

SCHEMAS

- Filter objects
- northwind
  - Tables
  - Views
  - Stored Procedures
  - Functions
  - northwind
  - sys

Query#5

```
1 # This query suscribe for all suppliers the product which have been buy the most number of time by the client in the month 07.1996
2 # And who much money client buy it.
3
4 SELECT
5
6 ContactName,
7 ProductName,
8 MAX(orderedCount) as 'Ordered count',
9 SUM(UnitPrice * Quantity) as 'Total price'
10
11 FROM (
12
13 SELECT
14 sup.ContactName,
15 pro.ProductName,
16 COUNT(ord.CustomerID) as orderedCount,
17 ord.TotalQuantity
18
```

Result Grid

#	ContactName	ProductName	Ordered cou	Total price
13	Beate Vileid	Gelbst	2	50.0000
14	Carlos Diaz	Guaran Fantstica	2	54.0000
15	Eliane Noz	Radlette Courdavault	2	2408.0000
16	Giovanni Giudici	Gnocchi di nonna Alice	2	294.8000
17	Guyline Nodier	Chartreuse verte	2	604.8000

Action Output

	Time	Action	Message	Duration / Fetch
1	21:00:23	select max(orderedProductCount) as MaxOrderedProductCou...	26 row(s) returned	0.0018 sec / 0.0000...

Object Info

Session

No object selected

Query Completed