

Assignment 5

Extensibility of code:

- I have deigned my queries and code in such a way that it is seamlessly extensible.
- I have made separate classes for customer, product and supplier information, so if any additional information is required for any one of the above, all I need to do is add the condition in query, create and add those elements in the already created document.
- If in case any of the three things i.e. customer, product or supplier information needs to be removed from the program than I just need to remove than classes function call.
- From the queries perspective, small additions will make the queries return the desired additional information.
- I have also made a separate class for Document generation, making the code more extensible with less cohesion.

The argument for deploying the code:

- The code is neatly divided into modules and classes focusing on specific functionalities to make it more readable, efficient and easier to follow.
- All modules have been tested thoroughly to eliminate any errors and exceptions faced.
- Three inputs are taken from the user; Start Date, End Date and Absolute File Path (XML file) to write the data retrieved.
- I have written the code that validates all the inputs taken from the user, making code more robust.
- The code needs to connect with Dal database, so all the connection related conditions are taken into consideration.
- Queries are used to retrieve the data from the database, so all the queries have been tested thoroughly on MySQL Workbench before being used in the code.
(I have attached below the screenshots of the step-by-step process that I followed to finalize the queries)
- The thoroughly tested queries are then being used in the code to retrieve data and storing it in a resultSet.
- Data is then parsed from the resultSet into various elements which eventually gets added to the main document.
- I have used Document Builder to store the data retrieved from running the queries in XML and then writing it to the user provided file.
- I have referred a code snippet from StackOverflow to write the XML to a file using Document Builder, where rather than creating my own nodes, I have used java inbuilt classes for formatting and generating the xml file.
- I have used the above approach in order to improve the extensibility of the code. If the query changes and we need to add one or more column in the resultSet, then not much changes are required. The entire code could be used by adding those new attributes, which additionally we are retrieving from the database and writing it to the file.
- I have documented the code very well so that anyone can understand the flow and what the code actually does.

NOTE:

I have made two driver files; one file “**Test.java**” accepting the inputs from the user through an IntelliJ and other file “**CommandLine.java**” accepting inputs through command line. So, either of the files could be used.

I have also attached the “**Assignment5.sql**” file containing all the required queries along with the steps that I used to reach the final queries.

Extracting Data using MySQL Queries:

1. Customer Information:

a. Getting the CustomerID, CompanyName, entire Address of CustomerID = "VINET"

```
4 # Query 1
5
6 • SELECT
7     CustomerID,
8     CompanyName,
9     Address,
10    City,
11    Region,
12    PostalCode,
13    Country
14 FROM
15     customers
16 WHERE
17     CustomerID = "VINET";
18
```

Result Grid

	CustomerID	CompanyName	Address	City	Region	PostalCode	Country
▶	VINET	Vins et alcools Chevalier	59 rue de l'Abbaye	Reims	NULL	51100	France
•	NULL	NULL	NULL	NULL	NULL	NULL	NULL

b. Getting the CustomerID, CompanyName, entire Address & also calculating the number of orders placed by CustomerID = "VINET" by joining tables customers and orders

```
19 • SELECT
20     c.CustomerID,
21     c.CompanyName,
22     c.Address,
23     c.City,
24     c.Region,
25     c.PostalCode,
26     c.Country,
27     COUNT(DISTINCT o.OrderID) AS NumOfOrders
28 FROM
29     customers AS c, orders AS o
30 WHERE
31     c.CustomerID = o.CustomerID AND
32     c.CustomerID = "VINET"
33 GROUP BY
34     o.CustomerID;
35
```

Result Grid

	CustomerID	CompanyName	Address	City	Region	PostalCode	Country	NumOfOrders
▶	VINET	Vins et alcools Chevalier	59 rue de l'Abbaye	Reims	NULL	51100	France	5

c. Getting the number of orders placed by CustomerID = "VINET" from orders table (Verifying the above query where I am aggregating the orders placed by "VINET" which totals to 5 orders)


```

19 • SELECT
20     p.ProductID,
21     p.ProductName,
22     c.CategoryID,
23     c.CategoryName
24 FROM
25     products AS p, categories AS c
26 Order BY
27     c.CategoryName;

```

	ProductID	ProductName	CategoryID	CategoryName
	63	Vegie-spread	1	Beverages
	40	Boston Crab Meat	1	Beverages
	2	Chang	1	Beverages
	48	Chocolate	1	Beverages
	71	Flotemysost	1	Beverages
	56	Gnocchi di nonna Alice	2	Condiments
	24	Guaran Fantstica	2	Condiments
	77	Guaran Fantstica	2	Condiments

- c. Fetching the category name, corresponding product name, supplier name & their respective quantities, unit price & discount in the placed orders by joining products, categories, suppliers & orderdetails tables

```

151 • SELECT
152     c.CategoryName,
153     p.ProductName,
154     s.CompanyName,
155     od.Quantity,
156     od.UnitPrice,
157     od.Discount
158 FROM
159     orderdetails AS od, products AS p, suppliers AS s, categories AS c, orders AS o
160 WHERE
161     od.ProductID = p.ProductID AND
162     p.SupplierID = s.SupplierID AND
163     p.CategoryID = c.CategoryID AND
164     o.OrderID = od.OrderID
165 ORDER BY
166     c.CategoryName, p.ProductName, s.CompanyName;
167

```

	CategoryName	ProductName	CompanyName	Quantity	UnitPrice	Discount
▶	Beverages	Chai	Exotic Liquids	45	14.4000	0
	Beverages	Chai	Exotic Liquids	8	18.0000	0
	Beverages	Chai	Exotic Liquids	25	18.0000	0
	Beverages	Chai	Exotic Liquids	4	18.0000	0
	Beverages	Chai	Exotic Liquids	3	18.0000	0
	Beverages	Chai	Exotic Liquids	60	18.0000	0
	Beverages	Chai	Exotic Liquids	10	18.0000	0

- d. Now fetching the sum of the quantities for the above query & grouping it by ProductID (Basically, fetching the UnitsSold for each product under each category)

```

135 • SELECT
136     c.CategoryName,
137     p.ProductName,
138     s.CompanyName,
139     SUM(od.Quantity) AS UnitsSold
140 FROM
141     orderdetails AS od, products AS p, suppliers AS s, categories AS c
142 WHERE
143     od.ProductID = p.ProductID AND
144     p.SupplierID = s.SupplierID AND
145     p.CategoryID = c.CategoryID
146 GROUP BY
147     od.ProductID
148 ORDER BY
149     c.CategoryName, p.ProductName, s.CompanyName;

```

	CategoryName	ProductName	CompanyName	UnitsSold
▶	Beverages	Chai	Exotic Liquids	828
	Beverages	Chang	Exotic Liquids	1057
	Beverages	Chartreuse verte	Aux joyeux ecclsiastiques	793
	Beverages	Cte de Blaye	Aux joyeux ecclsiastiques	623
	Beverages	Guaran Fantstica	Refrescos Americanas LTDA	1125
	Beverages	Ipoh Coffee	Leka Trading	580
	Beverages	Lakkalikri	Karkki Oy	981
	Beverages	Lakkalikri	Karkki Oy	194

Note:

I calculated in excel the UnitsSold for each product & it matches with the above query's result.

e. Fetching the units sold & sale value for each products without the period constraint

```
169
170 • SELECT
171     c.CategoryName,
172     p.ProductName,
173     s.CompanyName,
174     SUM(od.Quantity) AS UnitsSold,
175     SUM(od.Quantity * od.UnitPrice - od.Discount) as SaleValue
176 FROM
177     orderdetails AS od, products AS p, suppliers AS s, categories AS c, orders AS o
178 WHERE
179     od.ProductID = p.ProductID AND
180     p.SupplierID = s.SupplierID AND
181     p.CategoryID = c.CategoryID AND
182     o.OrderID = od.OrderID
183 GROUP BY
184     od.ProductID
185 ORDER BY
186     c.CategoryName, p.ProductName, s.CompanyName;
187
```

Result Grid

	CategoryName	ProductName	CompanyName	UnitsSold	SaleValue
▶	Beverages	Chai	Exotic Liquids	828	14277.6000
	Beverages	Chang	Exotic Liquids	1057	18559.2000
	Beverages	Chartreuse verte	Aux joyeux ecclsiastiques	793	13150.8000
	Beverages	Cte de Blaye	Aux joyeux ecclsiastiques	623	149984.2000
	Beverages	Guaran Fantstica	Refrescos Americanas LTDA	1125	4782.6000
	Beverages	Ipoh Coffee	Leka Trading	580	25079.2000
	Beverages	Lakkalikri	Karkki Oy	981	16794.0000

f. The final query for fetching the Product Information for the given period

```
188 • SELECT
189     c.CategoryName,
190     p.ProductName,
191     s.CompanyName,
192     SUM(od.Quantity) AS UnitsSold,
193     SUM(od.Quantity * od.UnitPrice - od.Discount) as SaleValue
194 FROM
195     orderdetails AS od, products AS p, suppliers AS s, categories AS c, orders AS o
196 WHERE
197     od.ProductID = p.ProductID AND
198     p.SupplierID = s.SupplierID AND
199     p.CategoryID = c.CategoryID AND
200     o.OrderID = od.OrderID AND
201     o.OrderDate BETWEEN "1997-01-07" AND "1997-01-10"
202 GROUP BY
203     od.ProductID
204 ORDER BY
205     c.CategoryName;
206
```

Result Grid

	CategoryName	ProductName	CompanyName	UnitsSold	SaleValue
▶	Beverages	Chai	Exotic Liquids	10	144.0000
	Condiments	Gula Malacca	Leka Trading	40	620.0000
	Confections	Tarte au sucre	Forts d'rables	35	1379.0000
	Confections	Sir Rodney's Scones	Specialty Biscuits, Ltd.	42	336.0000
	Dairy Products	Gudbrandsdalsost	Norske Meierier	15	432.0000
	Dairy Products	Geitost	Norske Meierier	49	98.0000
	Dairy Products	Queso Cabrales	Cooperativa de Quesos 'Las Cabras'	30	504.0000
	Dairy Products	Flotemysost	Norske Meierier	15	258.0000
	Dairy Products	Radlette Courdavault	Gai pturage	25	1100.0000
	Meat/Poultry	Tourtire	Ma Maison	6	35.4000
	Produce	Rssle Sauerkraut	Plutzer Lebensmittelgromrkte AG	42	1528.8000

Note:

I calculated in excel the SaleValue for ProductName = "Chai" & for ProductName = "Chang", it matches with the above query's result.

3. Supplier Information:

- a. Fetching the supplier name and the entire address
(There are a total of 29 suppliers)

```
1  SELECT
2      s.SupplierID,
3      s.CompanyName,
4      s.Address,
5      s.City,
6      s.Region,
7      s.PostalCode,
8      s.Country
9  FROM
10     suppliers AS s;
```

SupplierID	CompanyName	Address	City	Region	PostalCode	Country
1	Exotic Liquids	49 Gilbert St.	London		EC1 4SD	UK
2	New Orleans Cajun Delights	P.O. Box 78934	New Orleans	LA	70117	USA
3	Grandma Kelly's Homestead	707 Oxford Rd.	Ann Arbor	MI	48104	USA
4	Tokyo Traders	9-8 Sekimai Musashino-shi	Tokyo		100	Japan
5	Cooperativa de Quesos 'Las Cabras'	Calle del Rosal 4	Oviedo	Asturias	33007	Spain
6	Mayumi's	92 Setsuko Chuo-ku	Osaka		545	Japan
7	Pavlova, Ltd.	74 Rose St. Moonie Ponds	Melbourne	Victoria	3058	Australia
8	Specialty Biscuits, Ltd.	29 King's Way	Manchester		M14 6SD	UK
9	PB Knckebird AB	Kaloadagatan 13	Gteborg		S-345 67	Sweden
10	Refrescos Americanas LTDA	Av. das Americanas 12.890	So Paulo		5442	Brazil
11	Heli Swaren GmbH & Co. KG	Tiergartenstrae 5	Berlin		10785	Germany

- b. Each supplier supplies more than one product

```
221  SELECT
222      p.ProductID,
223      p.SupplierID,
224      s.CompanyName,
225      s.SupplierID
226  FROM
227      products AS p, suppliers AS s
228  WHERE
229      p.SupplierID = s.SupplierID
230  ORDER BY
231      p.ProductID;
```

ProductID	SupplierID	CompanyName	SupplierID
1	1	Exotic Liquids	1
2	1	Exotic Liquids	1
3	1	Exotic Liquids	1
4	2	New Orleans Cajun Delights	2
5	2	New Orleans Cajun Delights	2
6	3	Grandma Kelly's Homestead	3
7	3	Grandma Kelly's Homestead	3
8	3	Grandma Kelly's Homestead	3
9	4	Tokyo Traders	4
10	4	Tokyo Traders	4
11	5	Cooperativa de Quesos 'La...	5

e. The final query to fetch the Supplier Information for the given period

```

252 • SELECT
253     s.CompanyName,
254     s.Address,
255     s.City,
256     s.Region,
257     s.PostalCode,
258     s.Country,
259     SUM(od.Quantity) AS ProductsSold,
260     SUM(od.UnitPrice * od.Quantity - od.Discount) AS TotalDollarValue
261 FROM
262     suppliers AS s, products AS p, orderdetails AS od, orders AS o
263 WHERE
264     s.SupplierID = p.SupplierID AND
265     p.ProductID = od.ProductID AND
266     o.OrderID = od.OrderID AND
267     o.OrderDate BETWEEN "1997-01-07" AND "1997-01-10"
268 GROUP BY
269     s.SupplierID
270 ORDER BY
271     s.CompanyName;

```

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

CompanyName	Address	City	Region	PostalCode	Country	ProductsSold	TotalDollarValue
Cooperativa de Quesos 'Las Cabras'	Calle del Rosal 4	Oviedo	Asturias	33007	Spain	30	504.0000
Exotic Liquids	49 Gilbert St.	London	NULL	EC1 4SD	UK	10	144.0000
Forts d'rables	148 rue Chasseur	Ste-Hyacinthe	Qubec	J2S 7S8	Canada	35	1379.0000
Gai pturage	Bat. B 3, rue des Alpes	Annecy	NULL	74000	France	25	1100.0000
Leka Trading	471 Serangoon Loop, Suite #402	Singapore	NULL	0512	Singapore	40	620.0000
Ma Maison	2960 Rue St. Laurent	Montral	Qubec	H1J 1C3	Canada	6	35.4000
Mayumi's	92 Setsuko Chuo-ku	Osaka	NULL	545	Japan	12	223.2000
New England Seafood Cannery	Order Processing Dept. 2100 Pa...	Boston	MA	02134	USA	27	221.9000
Norske Meierier	Hatlevegen 5	Sandvika	NULL	1320	Norway	79	788.0000

Note:

I calculated in excel the ProductsSold & TotalDollarValue for Supplier “Cooperativa de Quesos 'Las Cabras'” and “Gai pturage”, it matches with the above query’s result.