CS 1103 - FR02B

Assignment 3

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Review Questions:

Questions 1: Explain why it would be preferable to use a DATE data type to store date data instead of a character data type.

it would be preferable to use a DATE data type to store date data instead of a character data type because it will be not regconized as numberic value if character data type is given. Otherwise, it is impossible if we calculate the date arithmetic if the data type is character.

Question 7: Rewrite the following WHERE clause without the use of the IN special operator: WHERE V_STATE IN ('TN', 'FL', 'GA')

Where V_STATE = 'TN' or V_STATE = 'FL' or V_STATE = 'GA';

Question 9: Explain why the following two commands produce different results:

SELECT DISTINCT COUNT (V_CODE) FROM PRODUCT;
SELECT COUNT (DISTINCT V_CODE) FROM PRODUCT;

The first commands put the key word "DISTINCT" before COUNT(), so the key word is applied to COUNT. In this case, "DISTINCT" is useless.

The second command has "DISTINCT" inside COUNT(), so it applies that key word to the V_CODE. Therefore, only unique values are counted.

Question 11: In a SELECT query, what is the difference between a WHERE clause and a HAVING clause?

- The WHERE clause selects rows before grouping. The HAVING clause selects row after grouping.
- The WHERE clause cannot contain aggregate functions, while the HAVING clause can contain them.
- The WHERE clause can be used without the GROUP BY clause. The HAVING clause cannot be used without the GROUP BY clause.

Problems:

The structure and contents of the Ch07_SaleCo database are shown in Figure P7.9. Use this database to answer the following problems.

FIGURE P7.9 THE CH07_SALECO DATABASE

Relational diagram

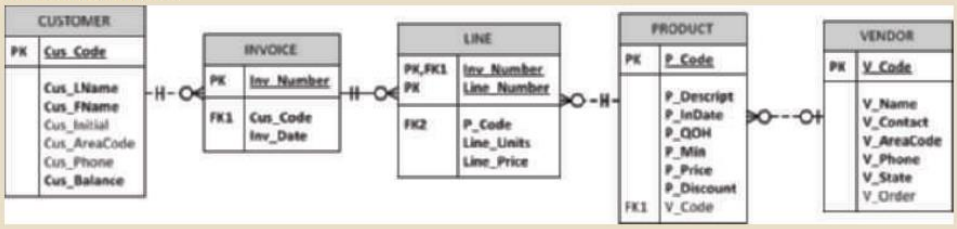


Table name: CUSTOMER

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_BALANCE
10010	Ramas	Alfred	A	615	844-2573	0.00
10011	Dunne	Leona	K	713	894-1238	0.00
10012	Smith	Kathy	W	615	894-2285	345.86
10013	Olowski	Paul	F	615	894-2180	536.75
10014	Orlando	Myron		615	222-1672	0.00
10015	O'Brian	Amy	B	713	442-3381	0.00
10016	Brown	James	G	615	297-1228	221.19
10017	Williams	George		615	290-2556	768.93
10018	Farriss	Anne	G	713	382-7185	216.55
10019	Smith	Olette	K	615	297-3809	0.00

Table name: VENDOR

V_CODE	V_NAME	V_CONTACT	V_AREACODE	V_PHONE	V_STATE	V_ORDER
21225	Bryson, Inc.	Smithson	615	223-3234	TN	Y
21226	SuperLoo, Inc.	Flushing	904	215-8995	FL	N
21231	D&E Supply	Singh	615	228-3245	TN	Y
21344	Gomez Bros.	Ortega	615	889-2546	KY	N
22567	Dome Supply	Smith	901	678-1419	GA	N
23119	Randsets Ltd	Anderson	901	678-3998	GA	Y
24004	Brackman Bros.	Browning	615	228-1410	TN	N
24288	ORDVA, Inc.	Hakford	615	898-1234	TN	Y
25443	BSK, Inc.	Smith	904	227-0093	FL	N
25501	Damal Supplies	Smythe	615	890-3529	TN	N
25595	Rubicon Systems	Orton	904	456-0092	FL	Y

Table name: INVOICE

INV_NUMBER	CUS_CODE	INV_DATE
1001	10014	16-Jan-18
1002	10011	16-Jan-18
1003	10012	16-Jan-18
1004	10011	17-Jan-18
1005	10018	17-Jan-18
1006	10014	17-Jan-18
1007	10018	17-Jan-18
1008	10011	17-Jan-18

Table name: LINE

INV_NUMBER	LINE_NUMBER	P_CODE	LINE_UNITS	LINE_PRICE
1001	1	13-Q2/P2	1	14.99
1001	2	23109-HB	1	9.95
1002	1	54778-2T	2	4.99
1003	1	2238/QPD	1	38.95
1003	2	1546-QG2	1	39.95
1003	3	13-Q2/P2	5	14.99
1004	1	54778-2T	3	4.99
1004	2	23109-HB	2	9.95
1005	1	PVC23DRT	12	5.87
1006	1	SM-18277	3	6.99
1006	2	2232/QTY	1	109.92
1006	3	23109-HB	1	9.95
1006	4	89-WRE-Q	1	256.99
1007	1	13-Q2/P2	2	14.99
1007	2	54778-2T	1	4.99
1008	1	PVC23DRT	5	5.87
1008	2	WR3/TT3	3	119.95
1008	3	23109-HB	1	9.95

Table name: PRODUCT

P_CODE	P_DESCRIPT	P_INDATE	P_QOH	P_MIN	P_PRICE	P_DISCOUNT	V_CODE
11QER/31	Power painter, 15 psi., 3-nozzle	03-Nov-17	8	5	109.99	0.00	25595
13-Q2/P2	7.25-in. pwr. saw blade	13-Dec-17	32	15	14.99	0.05	21344
14-Q1/L3	8.00-in. pwr. saw blade	13-Nov-17	18	12	17.49	0.00	21344
1546-QG2	Hrd. cloth, 1/4-in., 2x50	15-Jan-18	15	8	39.95	0.00	23119
1558-QW1	Hrd. cloth, 1/2-in., 3x50	15-Jan-18	23	5	43.99	0.00	23119
2232/QTY	B&D jigsaw, 12-in. blade	30-Dec-17	8	5	109.92	0.05	24288
2232/QWE	B&D jigsaw, 8-in. blade	24-Dec-17	6	5	99.87	0.05	24288
2238/QPD	B&D cordless drill, 1/2-in.	20-Jan-18	12	5	38.95	0.05	25595
23109-HB	Claw hammer	20-Jan-18	23	10	9.95	0.10	21225
23114-AA	Sledge hammer, 12 lb.	02-Jan-18	8	5	14.40	0.05	
54778-2T	Rat-tail file, 1/8-in. fine	15-Dec-17	43	20	4.99	0.00	21344
89-WRE-Q	Hex chain saw, 16 in.	07-Feb-18	11	5	256.99	0.05	24288
PVC23DRT	PVC pipe, 3.5-in., 8-ft	20-Feb-18	188	75	5.87	0.00	
SM-18277	1.25-in. metal screw, 25	01-Mar-18	172	75	6.99	0.00	21225
SW-23116	2.5-in. wd. screw, 50	24-Feb-18	237	100	8.45	0.00	21231
WR3/TT3	Steel matting, 4'x8'x1/6", 5' mesh	17-Jan-18	18	5	119.95	0.10	25595

Figure P7.9 The Ch_07_SaleCo database

Problems 9: Write a query to count the number of invoices.

```
select count(INV_NUMBER) as NUMBER_OF_INVOICES from INVOICE;
```

#	NUMBER_OF_INVOICES
1	8

Figure 1: Output result of Query 9

Problem 10: Write a query to count the number of customers with a balance of more than $500.

```
select count(CUS_CODE) as NUMBER_OF CUSTIOMERS from CUSTOMER
where CUS_BALANCE >500;
```

#	NUMBER_OF_CUSTOMERS
1	2

Figure 2: Output result of Query 10

Problem 12: Using the output shown in Figure P7.12 as your guide, generate a list of customer purchases, including the subtotals for each of the invoice line numbers. The subtotal is a derived attribute calculated by multiplying LINE_UNITS by LINE_PRICE. Sort the output by customer code, invoice number, and product description. Be certain to use the column aliases as shown in the figure

FIGURE P7.12 SUMMARY OF CUSTOMER PURCHASES WITH SUBTOTALS

CUS_CODE	INV_NUMBER	P_DESCRIPT	Units Bought	Unit Price	Subtotal
10011	1002	Rat-tail file, 1/8-in. fine	2	4.99	9.98
10011	1004	Claw hammer	2	9.95	19.90
10011	1004	Rat-tail file, 1/8-in. fine	3	4.99	14.97
10011	1008	Claw hammer	1	9.95	9.95
10011	1008	PVC pipe, 3.5-in., 8-ft	5	5.87	29.35
10011	1008	Steel matting, 4'x8'x1/6", .5" mesh	3	119.95	359.85
10012	1003	7.25-in. pwr. saw blade	5	14.99	74.95
10012	1003	B&D cordless drill, 1/2-in.	1	38.95	38.95
10012	1003	Hrd. cloth, 1/4-in., 2x50	1	39.95	39.95
10014	1001	7.25-in. pwr. saw blade	1	14.99	14.99
10014	1001	Claw hammer	1	9.95	9.95
10014	1006	1.25-in. metal screw, 25	3	6.99	20.97
10014	1006	B&D jigsaw, 12-in. blade	1	109.92	109.92
10014	1006	Claw hammer	1	9.95	9.95
10014	1006	Hicut chain saw, 16 in.	1	256.99	256.99
10015	1007	7.25-in. pwr. saw blade	2	14.99	29.98
10015	1007	Rat-tail file, 1/8-in. fine	1	4.99	4.99
10018	1005	PVC pipe, 3.5-in., 8-ft	12	5.87	70.44

Figure P7.12: Summary of Customer Purchases with Subtotals

```
select C.CUS_CODE, I.INV_NUMBER,P.P_DESCRIPT, L.LINE_UNIT as
'Units Bought', L.LINE_PRICE,(L.LINE_UNIT*L.LINE_PRICE) as
'Subtotal'

from CUSTOMER as C, INVOICE as I, LINE as L, PRODUCT as P

where C.CUS_CODE = I.CUS_CODE and I.INV_NUMBER = L.INV_NUMBER
and L.P_CODE = P.P_CODE

order by C.CUS_CODE asc, I.INV_NUMBER asc, P.P_DESCRIPT asc;
```

#	CUS_CODE	INV_NUMBER	P_DESCRIPT	Units Bought	LINE_PRICE	Subtotal
1	10011	1002	Rat-tail file, 1/8-in. fine	2.00	4.99	9.9800
2	10011	1004	Claw hammer	2.00	9.95	19.9000
3	10011	1004	Rat-tail file, 1/8-in. fine	3.00	4.99	14.9700
4	10011	1008	Claw hammer	1.00	9.95	9.9500
5	10011	1008	PVC pipe, 3.5-in., 8-ft	5.00	5.87	29.3500
6	10011	1008	Steel matting, 4'x8'x1/6", .5" mesh	3.00	119.95	359.8500
7	10012	1003	7.25-in. pwr. saw blade	5.00	14.99	74.9500
8	10012	1003	B&D cordless drill, 1/2-in.	1.00	38.95	38.9500
9	10012	1003	Hrd. cloth, 1/4-in., 2x50	1.00	39.95	39.9500
10	10014	1001	7.25-in. pwr. saw blade	1.00	14.99	14.9900
11	10014	1001	Claw hammer	1.00	9.95	9.9500
12	10014	1006	1.25-in. metal screw, 25	3.00	6.99	20.9700
13	10014	1006	B&D jigsaw, 12-in. blade	1.00	109.92	109.9200
14	10014	1006	Claw hammer	1.00	9.95	9.9500
15	10014	1006	Hicut chain saw, 16 in.	1.00	256.99	256.9900
16	10015	1007	7.25-in. pwr. saw blade	2.00	14.99	29.9800
17	10015	1007	Rat-tail file, 1/8-in. fine	1.00	4.99	4.9900
18	10018	1005	PVC pipe, 3.5-in., 8-ft	12.00	5.87	70.4400

Figure 3: Output result of Query 12

Problem 15: Use a query to compute the total of all purchases, the number of purchases, and the average purchase amount made by each customer. Your output values must match those shown in Figure P7.15. Sort the results by customer code.

FIGURE P7.15 AVERAGE PURCHASE AMOUNT BY CUSTOMER

CUS_CODE	CUS_BALANCE	Total Purchases	Number of Purchases	Average Purchase Amount
10011	0.00	444.00	6	74.00
10012	345.86	153.85	3	51.28
10014	0.00	422.77	6	70.46
10015	0.00	34.97	2	17.48
10018	216.55	70.44	1	70.44

Figure P7.15: Average Purchase Amount by Customer

```
select CUS_CODE, CUS_BALANCE, sum(LINE_PRICE*LINE_UNIT) as
'Total Purchases', count(LINE_UNIT) as 'Number of Purchases',
avg(LINE_PRICE*LINE_UNIT) as 'Average Purchase Amount'
from INVOICE natural join LINE natural join CUSTOMER
group by CUS_CODE;
```

#	CUS_CODE	CUS_BALANCE	Total Purchases	Number of Purchases	Average Purchase Amount
1	10011	0.00	444.0000	6	74.00000000
2	10012	345.86	153.8500	3	51.28333333
3	10014	0.00	422.7700	6	70.46166667
4	10015	0.00	34.9700	2	17.48500000
5	10018	216.55	70.4400	1	70.44000000

Figure 4: Output result of Query 15

Problem 23: Find the listing of customers who did not make purchases during the invoicing period. Sort the results by customer code. Your output must match the output shown in Figure P7.23.

FIGURE P7.23 BALANCES OF CUSTOMERS WHO DID NOT MAKE PURCHASES

CUS_CODE	CUS_BALANCE
10010	0.00
10013	536.75
10016	221.19
10017	768.93
10019	0.00

Figure P7.23: Balances Of Customers Who Did Not Make Purchases

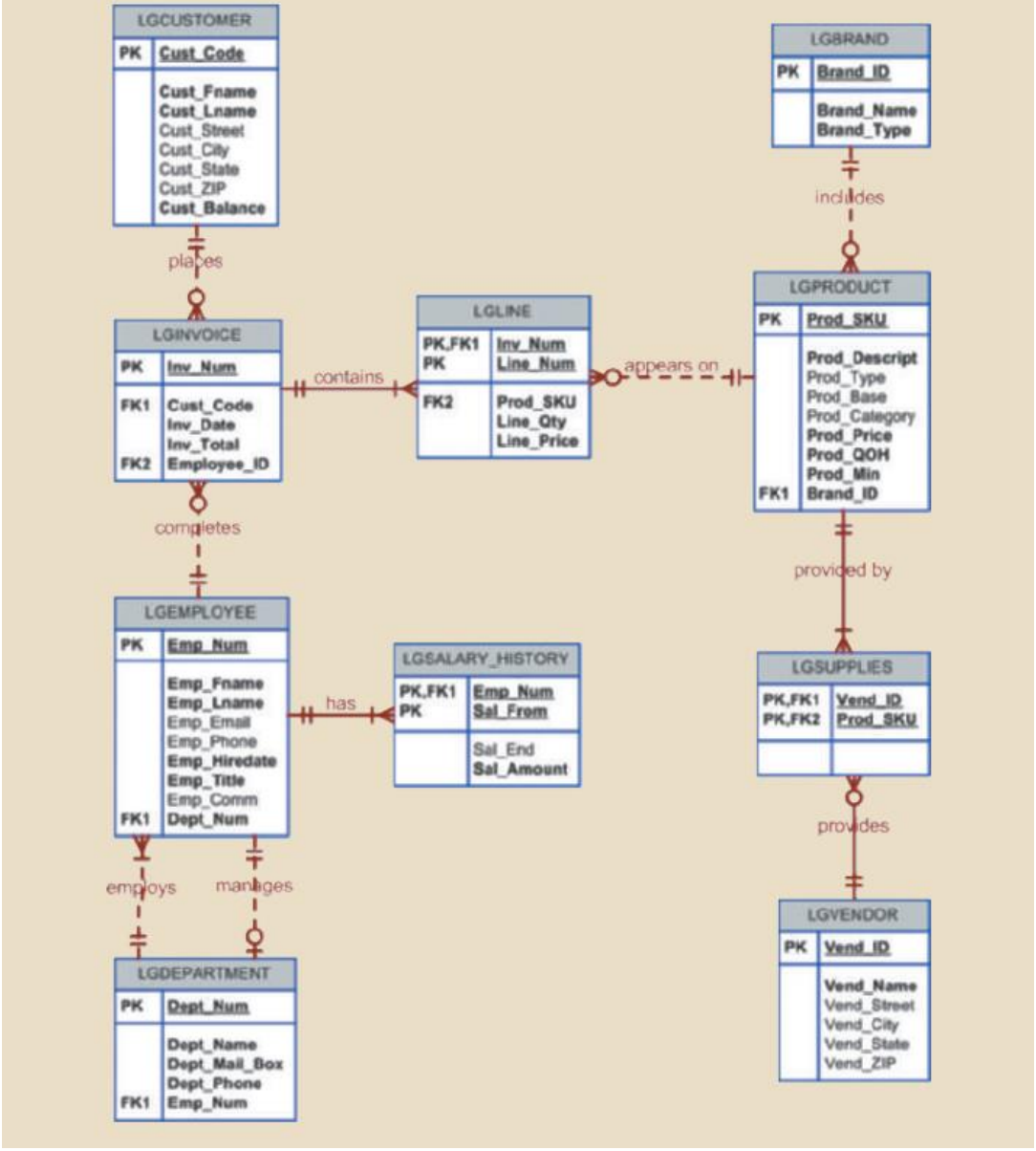
```
select CUS_CODE, CUS_BALANCE
from CUSTOMER natural left join INVOICE
where INV_NUMBER is null
order by CUS_CODE;
```

#	CUS_CODE	CUS_BALANCE
1	10010	0.00
2	10013	536.75
3	10016	221.19
4	10017	768.93
5	10019	0.00

Figure 5: Output result of Query 23

The Ch07_LargeCo database (see Figure P7.27) stores data for a company that sells paint products. The company tracks the sale of products to customers. The database keeps data on customers (LGCUSTOMER), sales (LGINVOICE), products (LGPRODUCT), which products are on which invoices (LGLINE), employees (LGEMPLOYEE), the salary history of each employee (LGSALARY_HISTORY), departments (LGDEPARTMENT), product brands (LGBRAND), vendors (LGVENDOR), and which vendors supply each product (LGSUPPLIES). Some of the tables contain only a few rows of data, while other tables are quite large; for example, there are only eight departments, but more than 3,300 invoices containing over 11,000 invoice lines. For Problems 28–55, a figure of the correct output for each problem is provided. If the output of the query is very large, only the first several rows of the output are shown.

FIGURE P7.27 THE CH07_LARGECO ERD



P7.27: The Ch07_LargeCo ERD

Problem 27: Write a query to display the eight departments in the LGDEPARTMENT table sorted by department name.

```
select * from LGDEPARTMENT
ORDER BY DEPT_NAME;
```

#	DEPT_NUM	DEPT_NAME	DEPT_MAIL_BOX	DEPT_PHONE	EMP_NUM
1	600	ACCOUNTING	957	555-2333	84583
2	250	CUSTOMER SERVICE	100	555-5555	84001
3	500	DISTRIBUTION	348	555-3624	84052
4	280	MARKETING	848	555-8500	84042
5	300	PURCHASING	222	555-4873	83746
6	200	SALES	475	555-2824	83509
7	550	TRUCKING	842	555-0057	83683
8	400	WAREHOUSE	789	555-1003	83759
*	NULL	NULL	NULL	NULL	NULL

Figure 6: Output result of Query 27

Problem 28: Write a query to display the SKU (stock keeping unit), description, type, base, category, and price for all products that have a PROD_BASE of Water and a PROD_ CATEGORY of Sealer (Figure P7.28).

FIGURE P7.28 WATER-BASED SEALERS

PROD_SKU	PROD_DESCRIPT	PROD_TYPE	PROD_BASE	PROD_CATEGORY	PROD_PRICE
1403-TUY	Sealer, Water Based, for Concrete Floors	Interior	Water	Sealer	42.99

Figure P7.28 Water-Based Sealers

```
select PROD_SKU as 'SKU', PROD_DESCRIPT as 'Description',
PROD_TYPE as 'Type', PROD_BASE as 'Base', PROD_CATEGORY as
'Category', PROD_PRICE as 'Price'
from LGPRODUCT
where PROD_BASE = 'Water' and PROD_CATEGORY = 'Sealer';
```

#	SKU	Description	Type	Base	Category	Price
1	1403-TUY	Sealer, Water Based, for Concrete …	Interior	Water	Sealer	42.99

Figure 7: Output result of Query 28

Problem 32: Write a query to display the first name, last name, street, city, state, and zip code of any customer who purchased a Foresters Best brand top coat between July 15, 2015, and July 31, 2015. If a customer purchased more than one such product, display the customer's information only once in the output. Sort the output by state, last name, and then first name (Figure P7.32).

FIGURE P7.32 CUSTOMERS WHO PURCHASED FORESTERS BEST TOP COAT

CUST_FNAME	CUST_LNAME	CUST_STREET	CUST_CITY	CUST_STATE	CUST_ZIP
LUPE	SANTANA	1292 WEST 70TH PLACE	Phenix City	AL	36867
HOLLIS	STILES	1493 DOLLY MADISON CIRCLE	Snow Hill	AL	36778
LISETTE	WHITTAKER	399 NORTHPARK DRIVE	Montgomery	AL	36197
DEANDRE	JAMISON	1571 HANES STREET	Miami	FL	33169
CATHLEEN	WHITMAN	1712 NORTHFIELD DRIVE	Marshallville	GA	31057
SHERIE	STOVER	640 MOUNTAIN VIEW DRIVE	Parksville	KY	40464
BRYCE	HOGAN	1860 IMLACH DRIVE	Newbury	MA	01951
SHELBY	SALAS	486 SUSITNA VIEW COURT	North Tisbury	MA	02568
JERMAINE	HANCOCK	1627 SAUNDERS ROAD	Ellicott City	MD	21041
WHITNEY	WHITFIELD	1259 RHONE STREET	Phippsburg	ME	04567
MONROE	ALLISON	272 SCHODDE STREET	Kalamazoo	MI	49002
DARLEEN	PARRA	561 COLLIE HILL WAY	Madison	MS	39130
CLINTON	AGUIRRE	1651 VANGUARD DRIVE	Franklinville	NC	27248
TOMMIE	PALMER	933 ELCADORE CIRCLE	Arapahoe	NC	28510
JEFFEREY	MCBRIDE	1043 ROCKRIDGE DRIVE	Glenwood	NJ	07418
SIDNEY	GARZA	772 SHEPPARD DRIVE	Fair Harbor	NY	11706
TAMELA	GUIDRY	1873 BAXTER ROAD	Brooklyn	NY	11252
KAREN	LEVINE	1534 PALMER COURT	Cincinnati	OH	45218
STEPHENIE	MCKENZIE	1039 DELAWARE PLACE	Wilkes Barre	PA	18763
LAN	NICHOLS	367 LAKEVIEW DRIVE	Pittsburgh	PA	15262
KASEY	SOSA	975 WEST 96TH AVENUE	Kinzers	PA	17535
SHELBY	THAYER	1634 RUANE ROAD	Bordeaux	SC	29835
WILSON	BELL	1127 CUNNINGHAM STREET	Louisville	TN	37777
RENATE	LADD	652 LEWIS STREET	Crystal City	VA	22202
MELONIE	JIMENEZ	848 DOWNEY FINCH LANE	East Monkton	VT	05443