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QUERY-01: Write SQL code that will list all invoices billed to customers Elena Kurtis and Julia Samuels. Your query must account for combining the FNAME and LNAME attributes while creating and testing the predicate

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```
SELECT (FNAME || ' ' || LNAME) AS NAME,I.INV_NUM,I.C_CODE,I.INV_DATE
2  FROM INVOICE I JOIN CUSTOMER C ON I.C_CODE=C.C_CODE
3  WHERE (FNAME LIKE 'Julia' AND LNAME LIKE 'Samuels')
4  OR (FNAME LIKE 'Elena' AND LNAME LIKE 'Kurtis') ;
```

NAME	INV_NUM	C_CODE	INV_DATE
-----	-----	-----	-----
Elena Kurtis	1002	10011	16-JAN-12
Elena Kurtis	1005	10011	17-JAN-12
Julia Samuels	1007	10015	17-JAN-12
Elena Kurtis	1008	10011	17-JAN-12

4 rows selected.

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QUERY-02 Write a SQL code that will list all customers who have purchased products on credit sequenced on dates (chronologically backward). The output should include customer number, customer's phone, customer name, and billing date.

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```
SELECT C.C_CODE,(FNAME|| ' ' ||LNAME) AS NAME,C_PHONE,INV_DATE FROM CUSTOMER C JOIN
2  INVOICE I ON C.C_CODE=I.C_CODE
3  WHERE BALANCE>0
4  ORDER BY INV_DATE DESC ;
```

C_CODE	NAME	C_PHONE	INV_DATE
-----	-----	-----	-----
10020	Grace Dawson	3562098	22-JUN-13
10011	Elena Kurtis	2753455	17-JAN-12
10011	Elena Kurtis	2753455	17-JAN-12
10014	Bill Johnson	2455533	17-JAN-12

10018 Ming Lee	2323234 17-JAN-12
10015 Julia Samuels	2345432 17-JAN-12
10014 Bill Johnson	2455533 16-JAN-12
10011 Elena Kurtis	2753455 16-JAN-12
10012 Kathy Smith	2873453 16-JAN-12

9 rows selected.

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QUERY-03: Write SQL code that will remove the vendor 21344. Explain the problem(s) encountered (if any). Now, if the policy decision has been to allow such removals from vendor list without affecting the depending relation tuples, but maintaining them will NULLs; modify the constraints in PRODUCT table. On modifying the constraints, remove the said vendor and check the changes in database. Revert to the database state as before executing this query.

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**DELETE FROM VENDOR WHERE V\_CODE=21344 ;**

ERROR at line 1:

ORA-02292: integrity constraint (CS653.PRODUCT\_FK\_V\_CODE) violated - child record found

**ALTER TABLE PRODUCT DROP CONSTRAINT PRODUCT\_FK\_V\_CODE ;**

Table altered.

**ALTER TABLE PRODUCT**

**ADD CONSTRAINT PRODUCT\_FK\_V\_CODE FOREIGN KEY (V\_CODE) REFERENCES VENDOR(V\_CODE) ON DELETE SET NULL ;**

Table altered.

**SELECT P\_CODE,DESCRIPT,V\_CODE FROM PRODUCT WHERE V\_CODE=21344 ;**

P_CODE	DESCRIPT	V_CODE
SB725	7.25in Saw Blade	21344
SB900	9.00 in Saw Blade	21344
RF100	Rat Tail File	21344

3 rows selected.

**DELETE FROM VENDOR WHERE V\_CODE=21344 ;**

1 row deleted.

**SELECT P\_CODE,DESCRIPT,V\_CODE FROM PRODUCT WHERE V\_CODE IS NULL ;**

P_CODE	DESCRIPT	V_CODE
SB725	7.25in Saw Blade	
SB900	9.00 in Saw Blade	
RF100	Rat Tail File	

3 rows selected.

**ROLLBACK ;**

Rollback complete.

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QUERY-04: Write SQL code to list all referential constraints along with the information about the action to be taken if a tuple in parent table is removed. [Use DELETE\_RULE attribute of USER\_CONSTRAINTS relation]. Also observe for all constraints on each table of SalesCo database, their enforcement state. [Use DEFERRED and DEFERRABLE attributes of USER\_CONSTRAINTS relation]

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**SELECT CONSTRAINT\_NAME,DELETE\_RULE,DEFERRED,DEFERRABLE**

**2 FROM USER\_CONSTRAINTS**

**3 WHERE CONSTRAINT\_TYPE='R' ;**

CONSTRAINT_NAME	DELETE_RULE	DEFERRED	DEFERRABLE
LINE_FK_P_CODE	NO ACTION	IMMEDIATE	NOT DEFERRABLE
LINE_FK_INV_NUM	NO ACTION	IMMEDIATE	NOT DEFERRABLE
PRODUCT_FK_V_CODE	SET NULL	IMMEDIATE	NOT DEFERRABLE
INVOICE_FK_C_CODE	NO ACTION	IMMEDIATE	NOT DEFERRABLE

4 rows selected.

**SELECT CONSTRAINT\_NAME,DEFERRED,DEFERRABLE**

**2 FROM USER\_CONSTRAINTS ;**

CONSTRAINT_NAME	DEFERRED	DEFERRABLE
LINE_CK_L_PRICE	IMMEDIATE	NOT DEFERRABLE
LINE_CK_L_UNITS	IMMEDIATE	NOT DEFERRABLE
LINE_CK_L_NUM	IMMEDIATE	NOT DEFERRABLE
SYS_C0033095	IMMEDIATE	NOT DEFERRABLE
SYS_C0033094	IMMEDIATE	NOT DEFERRABLE
SYS_C0033093	IMMEDIATE	NOT DEFERRABLE

SYS_C0033092	IMMEDIATE NOT DEFERRABLE
SYS_C0033091	IMMEDIATE NOT DEFERRABLE
PRODUCT_CK_P_MIN	IMMEDIATE NOT DEFERRABLE
SYS_C0033086	IMMEDIATE NOT DEFERRABLE
SYS_C0033085	IMMEDIATE NOT DEFERRABLE

CONSTRAINT_NAME	DEFERRED	DEFERRABLE
-----	-----	-----
SYS_C0033084	IMMEDIATE	NOT DEFERRABLE
SYS_C0033083	IMMEDIATE	NOT DEFERRABLE
SYS_C0033082	IMMEDIATE	NOT DEFERRABLE
SYS_C0033081	IMMEDIATE	NOT DEFERRABLE
INVOICE_CK_INV_NUM	IMMEDIATE	NOT DEFERRABLE
SYS_C0033077	IMMEDIATE	NOT DEFERRABLE
SYS_C0033076	IMMEDIATE	NOT DEFERRABLE
SYS_C0033075	IMMEDIATE	NOT DEFERRABLE
VENDOR_CK_V_STATE	IMMEDIATE	NOT DEFERRABLE
VENDOR_CK_V_AREA	IMMEDIATE	NOT DEFERRABLE
VENDOR_CK_V_CODE	IMMEDIATE	NOT DEFERRABLE

CONSTRAINT_NAME	DEFERRED	DEFERRABLE
-----	-----	-----
SYS_C0033070	IMMEDIATE	NOT DEFERRABLE
SYS_C0033069	IMMEDIATE	NOT DEFERRABLE
SYS_C0033068	IMMEDIATE	NOT DEFERRABLE
SYS_C0033067	IMMEDIATE	NOT DEFERRABLE
SYS_C0033066	IMMEDIATE	NOT DEFERRABLE
SYS_C0033065	IMMEDIATE	NOT DEFERRABLE
CUSTOMER_CK_C_AREA	IMMEDIATE	NOT DEFERRABLE
CUSTOMER_CK_C_CODE	IMMEDIATE	NOT DEFERRABLE
SYS_C0033061	IMMEDIATE	NOT DEFERRABLE
SYS_C0033060	IMMEDIATE	NOT DEFERRABLE
SYS_C0033059	IMMEDIATE	NOT DEFERRABLE

CONSTRAINT_NAME	DEFERRED	DEFERRABLE
-----	-----	-----
SYS_C0033058	IMMEDIATE	NOT DEFERRABLE
SYS_C0033057	IMMEDIATE	NOT DEFERRABLE
SYS_C0012033	IMMEDIATE	NOT DEFERRABLE
LINE_FK_P_CODE	IMMEDIATE	NOT DEFERRABLE
LINE_FK_INV_NUM	IMMEDIATE	NOT DEFERRABLE
PRODUCT_FK_V_CODE	IMMEDIATE	NOT DEFERRABLE

INVOICE_FK_C_CODE	IMMEDIATE NOT DEFERRABLE
CUSTOMER_PK_C_CODE	IMMEDIATE NOT DEFERRABLE
VENDOR_PK_V_CODE	IMMEDIATE NOT DEFERRABLE
INVOICE_PK_INV_NUM	IMMEDIATE NOT DEFERRABLE
PRODUCT_PK_P_CODE	IMMEDIATE NOT DEFERRABLE

CONSTRAINT_NAME	DEFERRED DEFERRABLE
-----	-----
LINE_PK_INV_NUM_L_NUM	IMMEDIATE NOT DEFERRABLE

45 rows selected.

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QUERY-05: Write a SQL code that lists all products that were supplied by vendors belonging to the state 'TN' arranged in increasing sequence of vendor code. The output should include product code, vendor code, vendor's name, product description, vendor's state, and inventory purchase date

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```

SELECT P_CODE,V.V_CODE,V.V_NAME,DESCRIPT,V_STATE,P_DATE
  2 FROM PRODUCT P JOIN VENDOR V ON P.V_CODE=V.V_CODE
  3 WHERE V_STATE='TN'
  4 ORDER BY V.V_CODE;

```

P_COD	V_CODE	V_NAME	DESCRIPT	V_STATE	P_DATE
-----	-----	-----	-----	-----	-----
CH10X	21225	Bryson, Inc.	Claw Hammer	TN	20-JAN-12
MC001	21225	Bryson, Inc.	Metal Screw	TN	01-MAR-12
SH100	21225	Bryson, Inc.	Sledge Hammer	TN	02-JAN-12
WC025	21231	GnB Supply	2.5in wide Screw	TN	24-FEB-12
HC100	24288	Justin Stores	Hicut Chain Saw	TN	07-FEB-12
JB008	24288	Justin Stores	Jigsaw 8in Blade	TN	24-DEC-11
PP101	24288	Justin Stores	PVC Pipe	TN	20-FEB-12
JB012	24288	Justin Stores	Jigsaw 12in Blade	TN	30-DEC-11

8 rows selected.

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QUERY-06: Write a SQL code that for each customer lists invoices in decreasing order. You must but keep ascending sequence for customers in the output. The output should show customer code, invoice number, invoice date, product description, line units and line price.

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```

SELECT I.C_CODE,I.INV_NUM,I.INV_DATE,DESCRIPT,L_UNITS,L_PRICE from INVOICE I join

```

```

2 (SELECT DESCRIPT,L_UNITS,L_PRICE,INV_NUM  from LINE L JOIN PRODUCT P
3 ON L.P_CODE=P.P_CODE ) T ON I.INV_NUM=T.INV_NUM
4 order by I.C_CODE,I.INV_NUM DESC ;

```

C_CODE	INV_NUM	INV_DATE	DESCRIPT	L_UNITS	L_PRICE
10011	1008	17-JAN-12	PVC Pipe	5	5.87
10011	1008	17-JAN-12	Steel Malting Mesh	3	119.95
10011	1008	17-JAN-12	Claw Hammer	1	9.95
10011	1005	17-JAN-12	PVC Pipe	12	5.87
10011	1002	16-JAN-12	Rat Tail File	2	4.99
10012	1003	16-JAN-12	Hrd. Cloth 1/4in	1	39.95
10012	1003	16-JAN-12	Cordless Drill	1	38.95
10012	1003	16-JAN-12	7.25in Saw Blade	5	14.99
10014	1006	17-JAN-12	Claw Hammer	1	9.95
10014	1006	17-JAN-12	Jigsaw 12in Blade	1	109.92
10014	1006	17-JAN-12	Metal Screw	3	6.99
10014	1006	17-JAN-12	Hicut Chain Saw	1	256.99
10014	1001	16-JAN-12	Claw Hammer	1	9.95
10014	1001	16-JAN-12	7.25in Saw Blade	1	14.99
10015	1007	17-JAN-12	7.25in Saw Blade	2	14.99
10015	1007	17-JAN-12	Rat Tail File	1	4.99
10018	1004	17-JAN-12	Claw Hammer	2	9.95
10018	1004	17-JAN-12	Rat Tail File	3	4.99
10020	1009	22-JUN-13	Hanging Hook 15in	20	5.5

19 rows selected.

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QUERY-07: Write a SQL code that will modify Query-06, to include the subtotals for each of the line invoice numbers, but excluding the invoice date. [You are required compute a derived column SUBTOTAL to compute line subtotals. Use expression L\_UNITS \* L\_PRICE to be referred by SUBTOTAL].

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```

SELECT I.C_CODE,I.INV_NUM,DESCRIPT,(L_UNITS*L_PRICE) AS SUBTOTAL FROM INVOICE I
JOIN

```

```

2 (SELECT DESCRIPT,L_UNITS,L_PRICE,INV_NUM  from LINE L JOIN PRODUCT P
3 ON L.P_CODE=P.P_CODE ) T ON I.INV_NUM=T.INV_NUM
4 order by I.C_CODE,I.INV_NUM DESC ;

```

C_CODE	INV_NUM	DESCRIPT	SUBTOTAL
-----	-----	-----	-----

10011	1008 PVC Pipe	29.35
10011	1008 Steel Malting Mesh	359.85
10011	1008 Claw Hammer	9.95
10011	1005 PVC Pipe	70.44
10011	1002 Rat Tail File	9.98
10012	1003 Hrd. Cloth 1/4in	39.95
10012	1003 Cordless Drill	38.95
10012	1003 7.25in Saw Blade	74.95
10014	1006 Claw Hammer	9.95
10014	1006 Jigsaw 12in Blade	109.92
10014	1006 Metal Screw	20.97
10014	1006 Hicut Chain Saw	256.99
10014	1001 Claw Hammer	9.95
10014	1001 7.25in Saw Blade	14.99
10015	1007 7.25in Saw Blade	29.98
10015	1007 Rat Tail File	4.99
10018	1004 Claw Hammer	19.9
10018	1004 Rat Tail File	14.97
10020	1009 Hanging Hook 15in	110.0

19 rows selected.

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QUERY-08: Write a SQL code that will list all LINE entries for which to replenish the inventory, the additional quantity of the billed products was added after the invoice date.

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```

SELECT T.INV_NUM,L_NUM,P_CODE,L_UNITS,L_PRICE FROM INVOICE I
2 JOIN (SELECT L.INV_NUM,L_NUM,L.P_CODE,L_UNITS,L_PRICE,P_DATE FROM
3 LINE L JOIN PRODUCT P
4 ON L.P_CODE=P.P_CODE) T
5 ON T.INV_NUM=I.INV_NUM
6 WHERE INV_DATE<P_DATE ;

```

INV_NUM	L_NUM	P_COD	L_UNITS	L_PRICE
1003	1	CD00X	1	38.95
1008	3	CH10X	1	9.95
1006	3	CH10X	1	9.95
1004	3	CH10X	2	9.95
1001	2	CH10X	1	9.95
1006	4	HC100	1	256.99
1008	1	PP101	5	5.87
1005	1	PP101	12	5.87

9 rows selected.

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QUERY-09: Write a SQL code that will list the names of all customers and vendors who belong to same area. Your output should also include customer code and vendor code along with the area to which they belong..

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**SELECT C\_CODE,V\_CODE,V\_AREA AS AREA**

**2 FROM CUSTOMER CROSS JOIN VENDOR WHERE**

**3 C\_AREA=V\_AREA ;**

C_CODE	V_CODE	AREA
10019	21225	615
10017	21225	615
10016	21225	615
10014	21225	615
10013	21225	615
10012	21225	615
10010	21225	615
10020	21226	904
10019	21231	615
10017	21231	615
10016	21231	615
10014	21231	615
10013	21231	615
10012	21231	615
10010	21231	615
10019	21344	615
10017	21344	615
10016	21344	615
10014	21344	615
10013	21344	615
10012	21344	615
10010	21344	615
10019	24004	615
10017	24004	615
10016	24004	615
10014	24004	615
10013	24004	615
10012	24004	615
10010	24004	615
10019	24288	615



10017	24288	615
10016	24288	615
10014	24288	615
10013	24288	615

C_CODE	V_CODE	AREA
10012	24288	615
10010	24288	615
10020	25443	904
10019	25501	615
10017	25501	615
10016	25501	615
10014	25501	615
10013	25501	615
10012	25501	615
10010	25501	615
10020	25595	904
10020	24992	904

46 rows selected.

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QUERY-10: Write a SQL code that will modify Query-09, to show all products bought by customers which were supplied by vendors in their area.

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```

SELECT DISTINCT DESCRPT,R.P-CODE FROM
  2 (SELECT L.INV_NUM,P_CODE,V_CODE FROM LINE L JOIN
  3 (SELECT I.C_CODE,V_CODE,INV_NUM FROM INVOICE I JOIN
  4 (SELECT C_CODE,V_CODE,V_AREA AS AREA
  5 FROM CUSTOMER CROSS JOIN VENDOR WHERE
  6 C_AREA=V_AREA) T
  7 ON I.C_CODE=T.C_CODE) P
  8 ON L.INV_NUM=P.INV_NUM) S
  9 CROSS JOIN (SELECT P_CODE,W.V_CODE,DESCRPT FROM PRODUCT W JOIN
  10 (SELECT C_CODE,V_CODE,V_AREA AS AREA
  11 FROM CUSTOMER CROSS JOIN VENDOR WHERE
  12 C_AREA=V_AREA) D
  13 ON D.V_CODE=W.V_CODE) R
  14 WHERE S.V_CODE=R.V_CODE AND S.P_CODE=R.P_CODE ;

```

DESCRIPT	P_CODE
-----	-----
Hicut Chain Saw	HC100
Metal Screw	MC001
Jigsaw 12in Blade	JB012
Claw Hammer	CH10X
Hanging Hook 15in	HH15X
7.25in Saw Blade	SB725

6 rows selected.