

Using Functions, Subqueries, and ROLAP in SQL Queries

Physical Table Design of Sale_Co_DW.db, QC_Checks.db, or Company.db

This physical table structure for the three SQLite databases may be obtained via DBBrowser for SQLite or via .schema dot command in sqlite3.exe.

Sale_Co_DW.db is more of a data warehouse design having fact tables and dimension tables.

QC_Checks.db contains quality check errors from the case study reviewed during Week 05.

Company.db contains company data used to illustrate subqueries in Classwork 6.2.

Exercise:

- 1) Use any of the three databases above to complete each subsection in step 2. Do not use any of the subqueries illustrated in Classwork 6.1 or Classwork 6.2.
- 2) Create five unique, executable queries (2 points), using a minimum of four functions on average (2 points), having multiple grouping indexes (2 points), and :
 - a. A Type I subquery (2 points) nested with two inner queries (2 points).
 - b. A Type II subquery (2 points) nested with two inner queries (2 points).
 - c. A Type III correlated subquery (2 points).
 - d. The SELECT projection from a table created by a SELECT statement (2 points) with 5 columns.
 - e. The SELECT projection from tables saved to a CSV file (2 points).
- 3) Submit to Canvas Assignment in one PDF document:
 - a. Your SQL scripts for each query.
 - b. Legible output projection from running each query.

Answers using Sale_Co_DW.db:

2a Type I subquery (2 points) nested with two inner queries (2 points).

```
SELECT V_STATE || '-' || TRIM(V_NAME) || '-' || TRIM(P_DESCRIPT) AS 'State-Vendor-Product',
       V_STATE, SUM(DWSALESFACT.SALE_UNITS), COUNT(DWSALESFACT.SALE_UNITS)
FROM DWVENDOR, DWPRODUCT, DWSALESFACT
WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND DWPRODUCT.P_CODE =
      DWSALESFACT.P_CODE AND DWVENDOR.V_CODE IN (SELECT V_CODE
FROM DWVENDOR WHERE V_STATE IN
      (SELECT V_STATE FROM DWREGION, DWCUSTOMER, DWVENDOR, DWPRODUCT,
      DWSALESFACT
      WHERE DWREGION.REG_NAME = 'SE' AND
      DWREGION.REG_ID = DWCUSTOMER.REG_ID AND
      DWCUSTOMER.CUS_CODE = DWSALESFACT.CUS_CODE AND
      DWSALESFACT.P_CODE = DWPRODUCT.P_CODE))
GROUP BY V_STATE, 'State-Vendor-Product'
ORDER BY V_STATE;
```

```
sqlite>
sqlite> SELECT V_STATE || '-' || TRIM(V_NAME) || '-' ||
...> TRIM(P_DESCRIPT) AS 'State-Vendor-Product', V_STATE, SUM(DWSALESFACT.SALE_UNITS), COUNT(DWSALESFACT.SALE_UNITS)
...> FROM DWVENDOR, DWPRODUCT, DWSALESFACT
...> WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND
...> DWPRODUCT.P_CODE = DWSALESFACT.P_CODE AND
...> DWVENDOR.V_CODE IN (SELECT V_CODE FROM DWVENDOR
...> WHERE V_STATE IN (SELECT V_STATE FROM DWREGION, DWCUSTOMER, DWVENDOR, DWPRODUCT, DWSALESFACT
...> WHERE DWREGION.REG_NAME = 'SE' AND DWREGION.REG_ID = DWCUSTOMER.REG_ID AND
...> DWCUSTOMER.CUS_CODE = DWSALESFACT.CUS_CODE AND DWSALESFACT.P_CODE = DWPRODUCT.P_CODE))
...> GROUP BY V_STATE, 'State-Vendor-Product'
...> ORDER BY V_STATE;
State-Vendor-Product | V_STATE | SUM(DWSALESFACT.SALE_UNITS) | COUNT(DWSALESFACT.SALE_UNITS)
FL--Rubicon Systems--B\&D cordless drill, 1/2-in. | FL | 8 | 4
GA--Randsets Ltd.--Hrd. cloth, 1/4-in., 2x50 | GA | 2 | 2
KY--Gomez Bros.--7.25-in. pwr. saw blade | KY | 28 | 12
TN--Bryson, Inc.--Claw hammer | TN | 54 | 18
sqlite>
sqlite>
```

2b: A Type II subquery (2 points) nested with two inner queries (2 points).

```
SELECT V_STATE || '--' || TRIM(V_NAME) || '--' ||  
       TRIM(P_DESCRIPT) AS 'State-Vendor-Product', V_STATE, SUM(DWSALESFACT.SALE_UNITS),  
       COUNT(DWSALESFACT.SALE_UNITS)  
FROM DWVENDOR, DWPRODUCT, DWSALESFACT  
WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND  
       DWPRODUCT.P_CODE = DWSALESFACT.P_CODE AND  
       DWVENDOR.V_CODE = (SELECT V_CODE FROM DWVENDOR  
                           WHERE V_STATE = (SELECT V_STATE FROM DWREGION, DWCUSTOMER,  
                                             DWVENDOR, DWPRODUCT, DWSALESFACT  
                                             WHERE DWREGION.REG_NAME = 'SE' AND  
                                                   DWREGION.REG_ID = DWCUSTOMER.REG_ID AND  
                                                   DWCUSTOMER.CUS_CODE = DWSALESFACT.CUS_CODE AND  
                                                   DWSALESFACT.P_CODE = DWPRODUCT.P_CODE))  
GROUP BY V_STATE, 'State-Vendor-Product'  
ORDER BY V_STATE;
```

```
sqlite>  
sqlite> SELECT V_STATE || '--' || TRIM(V_NAME) || '--' ||  
...>       TRIM(P_DESCRIPT) AS 'State-Vendor-Product', V_STATE, SUM(DWSALESFACT.SALE_UNITS), COUNT(DWSALESFACT.SALE_UNITS)  
...> FROM DWVENDOR, DWPRODUCT, DWSALESFACT  
...> WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND  
...>       DWPRODUCT.P_CODE = DWSALESFACT.P_CODE AND  
...>       DWVENDOR.V_CODE = (SELECT V_CODE FROM DWVENDOR  
...>                           WHERE V_STATE = (SELECT V_STATE FROM DWREGION, DWCUSTOMER, DWVENDOR, DWPRODUCT, DWSALESFACT  
...>                                             WHERE DWREGION.REG_NAME = 'SE' AND DWREGION.REG_ID = DWCUSTOMER.REG_ID AND  
...>                                                   DWCUSTOMER.CUS_CODE = DWSALESFACT.CUS_CODE AND DWSALESFACT.P_CODE = DWPRODUCT.P_CODE))  
...> GROUP BY V_STATE, 'State-Vendor-Product'  
...> ORDER BY V_STATE;  
State-Vendor-Product | V_STATE | SUM(DWSALESFACT.SALE_UNITS) | COUNT(DWSALESFACT.SALE_UNITS)  
TN--Bryson, Inc.--Claw hammer | TN | 50 | 14  
sqlite>
```

2c: A Type III correlated subquery (2 points).

```

SELECT DWVENDOR.V_STATE || '--' || TRIM(DWVENDOR.V_NAME) || '--' ||
    TRIM(P_DESCRIPT) AS StateVendorProduct, DWVENDOR.V_STATE,
    SUM(DWSALESFACT.SALE_UNITS), COUNT(DWSALESFACT.SALE_UNITS)
FROM DWVENDOR, DWPRODUCT, DWSALESFACT
    WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND
    DWPRODUCT.P_CODE = DWSALESFACT.P_CODE AND
    DWPRODUCT.V_CODE IN
        ( SELECT DWPRODUCT.V_CODE FROM DWREGION, DWVENDOR,
            DWCUSTOMER, DWVENDOR, DWPRODUCT, DWSALESFACT
            WHERE DWREGION.REG_NAME = 'SE' AND
            DWREGION.REG_ID = DWCUSTOMER.REG_ID AND
            DWCUSTOMER.CUS_CODE = DWSALESFACT.CUS_CODE AND
            DWSALESFACT.P_CODE = DWPRODUCT.P_CODE)
GROUP BY V_STATE, StateVendorProduct
ORDER BY V_STATE;

```

The correlated subquery above is an example of not using EXISTS.

```

sqlite>
sqlite> SELECT DWVENDOR.V_STATE || '--' || TRIM(DWVENDOR.V_NAME) || '--' ||
...>     TRIM(P_DESCRIPT) AS StateVendorProduct, DWVENDOR.V_STATE,
...>     SUM(DWSALESFACT.SALE_UNITS), COUNT(DWSALESFACT.SALE_UNITS)
...>     FROM DWVENDOR, DWPRODUCT, DWSALESFACT
...>         WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND
...>         DWPRODUCT.P_CODE = DWSALESFACT.P_CODE AND
...>         DWPRODUCT.V_CODE IN( SELECT DWPRODUCT.V_CODE FROM DWREGION, DWVENDOR, DWCUSTOMER, DWVENDOR, DWPRODUCT, DWSALESFACT
...>             WHERE DWREGION.REG_NAME = 'SE' AND
...>             DWREGION.REG_ID = DWCUSTOMER.REG_ID AND
...>             DWCUSTOMER.CUS_CODE = DWSALESFACT.CUS_CODE AND
...>             DWSALESFACT.P_CODE = DWPRODUCT.P_CODE)
...> GROUP BY DWVendor.V_STATE, StateVendorProduct
...> ORDER BY DWVendor.V_STATE;
StateVendorProduct | V_STATE | SUM(DWSALESFACT.SALE_UNITS) | COUNT(DWSALESFACT.SALE_UNITS)
FL--Rubicon Systems--B\&D cordless drill, 1/2-in. | FL | 2 | 2
FL--Rubicon Systems--Steel matting, 4'x8'x1/6", .5" mesh | FL | 6 | 2
GA--Randsets Ltd.--Hrd. cloth, 1/4-in., 2x50 | GA | 2 | 2
KY--Gomez Bros.--7.25-in. pwr. saw blade | KY | 16 | 6
KY--Gomez Bros.--Rat-tail file, 1/8-in. fine | KY | 12 | 6
TN--Bryson, Inc.--1.25-in. metal screw, 25 | TN | 6 | 2
TN--Bryson, Inc.--Claw hammer | TN | 10 | 8
TN--Bryson, Inc.--PVC pipe, 3.5-in., 8-ft | TN | 34 | 4
TN--ORDVA, Inc.--B\&D jigsaw, 12-in. blade | TN | 2 | 2
TN--ORDVA, Inc.--Hicut chain saw, 16 in. | TN | 2 | 2
sqlite>

```

2d: A SELECT projection from a table created by a SELECT statement (2 points) with 5 columns.

```

CREATE TABLE DWPRODUCT_Detail AS
SELECT DISTINCT DWPRODUCT.P_CODE AS P_CODE, DWPRODUCT.P_DESCRPT AS P_DESC,
DWPRODUCT.P_CATEGORY AS P_CAT, DWPRODUCT.V_CODE AS V_CODE,
        DWVENDOR.V_Name AS P_Vendor, DWSALESFACT.SALE_UNITS AS UNITS,
DWSALESFACT.SALE_PRICE AS PRICE
        FROM DWVENDOR, DWPRODUCT, DWSALESFACT
        WHERE DWVENDOR.V_CODE = DWPRODUCT.V_CODE AND
        DWPRODUCT.P_CODE = DWSALESFACT.P_CODE;

SELECT * FROM DWPRODUCT_Detail
        LIMIT 15;

```

```


sqlite>
sqlite> SELECT * FROM DWPRODUCT_Detail
...>          LIMIT 15;
P_CODE | P_DESC | P_CAT | V_CODE | P_Vendor | UNITS | PRICE
13-Q2/P2 | 7.25-in. pwr. saw blade | CAT1 | 21344 | Gomez Bros. | 1 | 14.99
23109-HB | Claw hammer | CAT4 | 21225 | Bryson, Inc. | 1 | 9.95
54778-2T | Rat-tail file, 1/8-in. fine | CAT1 | 21344 | Gomez Bros. | 2 | 4.99
2238/QPD | B\&D cordless drill, 1/2-in. | CAT3 | 25595 | Rubicon Systems | 1 | 38.95
1546-QQ2 | Hrd. cloth, 1/4-in., 2x50 | CAT2 | 23119 | Randsets Ltd. | 1 | 39.95
13-Q2/P2 | 7.25-in. pwr. saw blade | CAT1 | 21344 | Gomez Bros. | 5 | 14.99
54778-2T | Rat-tail file, 1/8-in. fine | CAT1 | 21344 | Gomez Bros. | 3 | 4.99
23109-HB | Claw hammer | CAT4 | 21225 | Bryson, Inc. | 2 | 9.95
PVC23DRT | PVC pipe, 3.5-in., 8-ft | CAT3 | 21225 | Bryson, Inc. | 12 | 5.87
SM-18277 | 1.25-in. metal screw, 25 | CAT4 | 21225 | Bryson, Inc. | 3 | 6.99
2232/QTY | B\&D jigsaw, 12-in. blade | CAT2 | 24288 | ORDVA, Inc. | 1 | 109.92
89-WRE-Q | Hicut chain saw, 16 in. | CAT2 | 24288 | ORDVA, Inc. | 1 | 256.99
13-Q2/P2 | 7.25-in. pwr. saw blade | CAT1 | 21344 | Gomez Bros. | 2 | 14.99
54778-2T | Rat-tail file, 1/8-in. fine | CAT1 | 21344 | Gomez Bros. | 1 | 4.99
PVC23DRT | PVC pipe, 3.5-in., 8-ft | CAT3 | 21225 | Bryson, Inc. | 5 | 5.87
sqlite>

```

2e: The SELECT projection from tables saved to a CSV file (2 points).

```
.headers on
.mode csv
.output tut_four.csv
SELECT *
    FROM DWPRODUCT
    ORDER BY DWPRODUCT.P_CODE, DWPRODUCT.P_DESCRIPT;
```

```
sqlite>
sqlite> .headers on
sqlite> .mode csv
sqlite> .output tut_four.csv
sqlite> SELECT *
...>          FROM DWPRODUCT
...>          ORDER BY DWPRODUCT.P_CODE, DWPRODUCT.P_DESCRIPT;
sqlite>
```

 tut_four - Notepad

File Edit Format View Help

```
P_CODE,P_DESCRIPT,P_CATEGORY,V_CODE
11QER/31,"Power painter, 15 psi., 3-nozzle",CAT1,25595
13-Q2/P2,"7.25-in. pwr. saw blade",CAT1,21344
14-Q1/L3,"9.00-in. pwr. saw blade",CAT1,21344
1546-QQ2,"Hrd. cloth, 1/4-in., 2x50",CAT2,23119
1558-QW1,"Hrd. cloth, 1/2-in., 3x50",CAT2,23119
2232/QTY,"B\&D jigsaw, 12-in. blade",CAT2,24288
2232/QWE,"B\&D jigsaw, 8-in. blade",CAT3,24288
2238/QPD,"B\&D cordless drill, 1/2-in.",CAT3,25595
23109-HB,"Claw hammer",CAT4,21225
23114-AA,"Sledge hammer, 12 lb.",CAT4,21225
54778-2T,"Rat-tail file, 1/8-in. fine",CAT1,21344
89-WRE-Q,"Hicut chain saw, 16 in.",CAT2,24288
PVC23DRT,"PVC pipe, 3.5-in., 8-ft",CAT3,21225
SM-18277,"1.25-in. metal screw, 25",CAT4,21225
SW-23116,"2.5-in. wd. screw, 50",CAT2,21231
WR3/TT3,"Steel matting, 4'x8'x1/6'",.5"" mesh",CAT3,25595
```