EPL 342 AS3 NIKOLAOS THEODOROU 1030496

Άσκηση 1
Δώστε τις εκφράσεις SQL για τις ακόλουθες ερωτήσεις βάσει του σχήματος:
CLIENT *(cid, cname, rating, age)* **PRODUCT** *(pid, pname, color)* **BUYS** *(cid, pid, date)*

1. Βρες τα ονόματα όσων έχουν αγοράσει τουλάχιστον 2 προϊόντα χωρίς τη χρήση συναθροιστικού τελεστή (τελεστής ομαδοποίησης).
2. Βρες τα ονόματα όσων έχουν αγοράσει όλα τα προϊόντα
3. Βρες τα id πελατών που έχουν καλύτερη αξιολόγηση (rating) από κάποιο πελάτη με το όνομα Τάκης.
4. Βρες τα id πελατών που έχουν καλύτερη αξιολόγηση (rating) από όλους τους πελάτες με το όνομα Παναγιώτης.

```sql
-- EX1 A
SELECT DISTINCT cname
FROM  CLIENT AS cl
JOIN BUYS AS buy ON cl.cid = buy.cid
WHERE cl.cid IN
(
SELECT buy.cid
FROM BUYS AS buy, BUYS AS buy2
WHERE buy.cid = buy2.cid AND buy.pid != buy2.pid
)

-- EX1 B
SELECT cname
FROM CLIENT AS cl
WHERE cl.cid IN
(
   SELECT cid
   FROM BUYS
   GROUP BY cid
   HAVING COUNT(*) = (
      SELECT COUNT(*)
      FROM PRODUCT
   )
)

-- EX1 C
SELECT cname, rating
FROM CLIENT AS cl
WHERE cl.rating > ANY (
   SELECT rating
   FROM CLIENT AS cl2
   WHERE cl2.cname = 'Takis'
)

-- EX1 D
SELECT cname, rating
FROM CLIENT AS cl
WHERE cl.rating > ALL (
   SELECT rating
   FROM CLIENT AS cl2
   WHERE cl2.cname = 'Panagiotis'
)
```

Άσκηση 2

Δώστε τις εκφράσεις SQL για τις ακόλουθες ερωτήσεις βάσει του σχήματος:

BOOK (*BookID, Title, PublisherName*)
PUBLISHER (*Name, Address, Phone*)
BOOK_AUTHORS (*BookID, AuthorName*)
BOOK_COPIES (*BookID, BranchID, NoOfCopies*)
BOOK_LOANS (*BookID, BranchID, CardNo, DateOut, DateDue*)
LIBRARY_BRANCH (*BranchID, BranchName, Address*)
BORROWER (*CardNo, Name, Address, Phone*)

```
-- EX2 A
SELECT NoOfCopies
FROM BOOK_COPIES AS cp
   JOIN BOOK AS bk
      ON cp.BookID = bk.BookID
         JOIN LIBRARY_BRANCH AS lib
            ON cp.BranchID = lib.BranchID
WHERE BranchName LIKE 'North'  AND Title LIKE 'Databases'

-- EX2 B
SELECT result.BranchID, COUNT(*) AS NoOfUniqueTitles
FROM
   (SELECT DISTINCT lib.BranchID, Title
   FROM BOOK_COPIES AS cp
      JOIN BOOK AS bk
         ON cp.BookID = bk.BookID
            JOIN LIBRARY_BRANCH AS lib
               ON cp.BranchID = lib.BranchID
   GROUP BY lib.BranchID, bk.Title)
               AS result
GROUP BY result.BranchID

-- EX2 C
SELECT br.Name
FROM BORROWER AS br
   LEFT OUTER JOIN BOOK_LOANS AS bl ON br.CardNo = bl.CardNo
WHERE bl.BookID IS NULL

-- EX2 D
SELECT bk.Title, br.Name, br.Address
   FROM BOOK_LOANS AS bl
      JOIN BOOK AS bk
         ON bl.BookID = bk.BookID
            JOIN LIBRARY_BRANCH AS lib
               ON bl.BranchID = lib.BranchID
                  JOIN BORROWER AS br ON bl.CardNo = br.CardNo
 WHERE BranchName LIKE 'South' AND DateDue=GETDATE()
```

```
-- EX2 E
```

```sql
SELECT lib2.BranchName, ISNULL(result.NoOfBorrowedBooks,0)
FROM (SELECT loans.BranchID, COUNT(*) AS NoOfBorrowedBooks
   FROM (SELECT lib.BranchID
      FROM LIBRARY_BRANCH AS lib
         JOIN BOOK_LOANS AS bl ON lib.BranchID = bl.BranchID
      WHERE DateDue > GETDATE()
     ) AS loans
   GROUP BY loans.BranchID
) AS result
RIGHT OUTER JOIN LIBRARY_BRANCH AS lib2 ON result.BranchID = lib2.BranchID

-- EX2 F
SELECT Name, Address, NoOfBorrowedBooks
FROM
   (SELECT CardNo, COUNT(*) AS NoOfBorrowedBooks
   FROM BOOK_LOANS
   WHERE DateDue > GETDATE()
   GROUP BY CardNo
   ) AS brb
   JOIN BORROWER AS br ON brb.CardNo = br.CardNo
WHERE NoOfBorrowedBooks > 5

-- EX2 G
SELECT b.Title, bc.NoOfCopies
FROM BOOK_AUTHORS ba
   JOIN BOOK b ON ba.BookID=b.BookID
   JOIN BOOK_COPIES bc ON b.BookID=bc.BookID
   JOIN LIBRARY_BRANCH lb ON bc.BranchID=lb.BranchID
WHERE ba.AuthorName LIKE 'Jules King' AND lb.BranchName LIKE 'Central'
```

Άσκηση 3

Δώστε τις εκφράσεις SQL για τις ακόλουθες ερωτήσεις βάσει του σχήματος:

PATIENT (SSN, FirstName, LastName, Address, DateOfBirth, DoctorLicenceNo)
DOCTOR (DoctorLicenceNo, FirstName, LastName, Specialty, YearOfExperience)
MANUFACTURER (MRegistration, Name, Phone)
DRUG (DName, Formula, MRegistration, DrugRegistrationDate)
PHARMACY (PName, Address, Phone)
PRESCRIPTION (DoctorLicNo, DoctorLicState, Patient, Drug, Quantity, Date)
SELL (PName, DName, Price)
CONTRACT (Pharmacy, Manufacturer, StartDate, EndDate)

```sql
-- EX3 A
SELECT s.Dname,min(Price) AS LowestPrice
FROM SELL AS s
JOIN DRUG AS d ON s.Dname = d.Dname
JOIN CONTRACT AS c ON c.Pharmacy = s.Pname
JOIN MANUFACTURER AS m ON m.MRegistration = c.Manufacturer
WHERE m.Name LIKE 'Johnson & Johnson'
GROUP BY s.Dname

-- EX3 B
SELECT m.Name AS "Manufacturer Name", p.PName AS "Pharmacy Name", p.Address AS "Pharmacy Address"
FROM MANUFACTURER AS m
JOIN CONTRACT AS c ON m.MRegistration = c.Manufacturer
```

```
JOIN PHARMACY AS p ON c.Pharmacy = p.PName
WHERE c.EndDate = (
SELECT MIN(c1.EndDate)
FROM CONTRACT AS c1
WHERE c1.Manufacturer = m.MRegistration)

-- EX3 C
SELECT pt.LastName, pt.FirstName
FROM PATIENT AS pt
JOIN PRESCRIPTION AS pr ON pt.SSN=pr.Patient
JOIN DOCTOR AS dr ON dr.DoctorLicenceNo=pr.DoctorLicNo
WHERE dr.DoctorLicenceNo = (SELECT TOP 1 dr2.DoctorLicenceNo
FROM PATIENT AS pt2
JOIN DOCTOR AS dr2 ON dr2.DoctorLicenceNo=pt2.DoctorLicenceNo
GROUP BY dr2.DoctorLicenceNo
ORDER BY COUNT(*) DESC)

-- EX3 D
SELECT res2.DName, res2.MName, res2.Formula
FROM (
SELECT d1.DName,d1.Formula, d1.DrugRegistrationDate, m1.Name AS MName
FROM DRUG d1 JOIN MANUFACTURER AS m1 ON d1.MRegistration = m1.MRegistration) AS res1,
(
SELECT d2.DName,d2.Formula, d2.DrugRegistrationDate, m2.Name AS MName
FROM DRUG d2 JOIN MANUFACTURER AS m2 ON d2.MRegistration = m2.MRegistration
) AS res2
WHERE res1.Formula = res2.Formula AND res1.MName LIKE 'Bayer' AND res2.MName NOT LIKE 'Bayer'
AND res2.DrugRegistrationDate > res1.DrugRegistrationDate
AND res1.DrugRegistrationDate = (SELECT MIN(DrugRegistrationDate)
FROM DRUG d3
WHERE d3.Formula = res1.Formula)
```

Άσκηση 4

Δώστε τις εκφράσεις SQL για τις ακόλουθες ερωτήσεις βάσει του σχήματος:
FLIGHTS (fid, monthId, dayOfMonth, dayOfWeekId, carrierId, flightNum, originCity, destCity, duration)
MONTHS (mid, month) -- (1: Ιανουάριος, 2: Φεβρουάριος ... 12: Δεκέμβριος)
WEEKDAYS (did, dayOfWeek) -- (1: Δευτέρα, 2: Τρίτη ... 7: Κυριακή)
CARRIERS (cid, name)

```
-- EX4 A
SELECT [all].originCity, ISNULL(CAST(under3 AS FLOAT), 0) /allFlights * 100 AS shortFlightsPercenteage
FROM
(SELECT originCity, COUNT(*) AS under3
FROM FLIGHTS
WHERE duration < 180
GROUP BY originCity) AS short
RIGHT OUTER JOIN
(SELECT originCity, COUNT(*) AS [allFlights]
FROM FLIGHTS
GROUP BY originCity) as [all]
ON short.originCity = [all].originCity

- EX4 B
SELECT F2.destCity AS City
FROM FLIGHTS AS F1, FLIGHTS AS F2
WHERE F1.destCity = F2.originCity AND F1.originCity = 'LCA' AND F2.destCity != 'LCA'
EXCEPT (SELECT destCity AS City
FROM FLIGHTS
WHERE originCity = 'LCA')
ORDER BY City
```