Database and Information Systems

Homework 2 Solutions

Problem 1:

1. SELECT P.pname
   FROM Parts P, Catalog C
   WHERE P.pid = C.pid

2. SELECT S.sname
   FROM Suppliers S
   WHERE NOT EXISTS
       ( SELECT *
         FROM Parts P
         WHERE P.color = 'red' )
   EXCEPT
       ( SELECT C.pid
         FROM Catalog C, Parts P
         WHERE C.sid = S.sid AND
         C.pid = P.pid AND P.color = 'red' )

3. SELECT P.pname
   FROM Parts P, Catalog C, Suppliers S
   WHERE P.pid = C.pid AND C.sid = S.sid
   AND S1.sname = 'Acme Widget Suppliers'
   AND NOT EXISTS ( SELECT *
                  FROM Catalog C1, Suppliers S1
                  WHERE P.pid = C1.pid AND C1.sid = S1.sid AND
                  S1.sname <> 'Acme Widget Suppliers' )

4. SELECT DISTINCT C.sid
   FROM Catalog C
   WHERE C.cost > ( SELECT AVG (C1.cost)
                    FROM Catalog C1 )
   WHERE C1.pid = C.pid
5. SELECT DISTINCT C.sid
   FROM Catalog C
   WHERE NOT EXISTS ( SELECT *
   FROM Parts P
   WHERE P.pid = C.pid AND P.color <> 'red' )

6. SELECT DISTINCT C.sid
   FROM Catalog C, Parts P
   WHERE C.pid = P.pid AND P.color = 'red'
   UNION
   SELECT DISTINCT C1.sid
   FROM Catalog C1, Parts P1
   WHERE C1.pid = P1.pid AND P1.color = 'green'

7. SELECT S.sname, MAX(C.cost) as MaxCost
   FROM Suppliers S, Parts P, Catalog C
   WHERE P.pid = C.pid AND C.sid = S.sid
   GROUP BY S.sid
   HAVING ANY(P.color='green') AND ANY(P.color='red')

Problem 2:

1. SELECT W.did, count(W.eid)
   FROM Works W
   GROUP BY W.did
   HAVING 20¡(SELECT sum(W1.pct_time)
   FROM Works W1
   HAVING W1.did=W.did)

2. SELECT E.ename
   FROM Empy E, Dept D
   WHERE E.eid = D.managerid
   GROUP BY E.eid,E.ename
   HAVING EVERY(D.budget > 1000000) AND ANY(D.budget<5000000)

Problem 3:
CREATE TABLE Student
(
  snum INTEGER,
  sname VARCHAR(30),
  major VARCHAR(30),
  lvl VARCHAR(15),
  age INTEGER,
  PRIMARY KEY (snum)
CREATE TABLE Faculty
(
  fid INTEGER,
  fname VARCHAR(30),
  deptid INTEGER,
  PRIMARY KEY (fid)
)
CREATE TABLE Class
(
  name VARCHAR(30),
  meets_at char(5),
  room char(10),
  fid INTEGER,
  PRIMARY KEY (name),
  FOREIGN KEY (fid) REFERENCES Faculty
)
CREATE TABLE Enrolled
(
  snum INTEGER,
  cname VARCHAR(30),
  PRIMARY KEY(snum,cname),
  FOREIGN KEY (snum) REFERENCES Student,
  FOREIGN KEY (cname) REFERENCES Class
)