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 Suppiers 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
)
```