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CS143

1.
(a).
SELECT Distinct person-name
FROM Work
Where salary < 20000;

(b).
πperson-name(σsalary <20000 (Work))

(c).
They are the same, though the SQL query could return duplicated result,
we can avoid it by using Distinct() function.

2.
(a).
SELECT Distinct person-name
FROM Work
Group by person-name
Having SUM(salary) > ALL
(SELECT SUM(salary) FROM Work, Employee
WHERE Work.person-name = Employee.person-name
AND Employee.city ='Los Angeles'
Group by Work.person-name);

SELECT person-name FROM Employee
WHERE NOT EXISTS
(SELECT Work.person-name FROM Work,Employee
WHERE Work.person-name = Employee.person-name
AND Employee.city ='Los Angeles'
Group by Work.person-name
Having SUM(salary) > (SELECT SUM(salary) FROM Work WHERE
Work.person-name = Employee.person-name);
);

(b).
SELECT Distinct Manager-name
FROM Manage M1
WHERE (SELECT SUM(salary) FROM Work WHERE M1.Manager-name =
Work.person-name Group by Work.person-name)
> SOME (SELECT SUM(salary) FROM Work, Manage M2 WHERE M2.person-name
= Work.person-name AND
M2.Manager-name = M1.Manager-name Group by Work.person-name);

SELECT Distinct Manager-name FROM Manage M1
WHERE EXISTS
(SELECT person-name FROM Manage M2 WHERE M1.Manager-name =
M2.Manager-name
AND (SELECT SUM(salary) FROM Work WHERE Work.person-name =
M2.Manager-name Group by Work.person-name) <
(SELECT SUM(salary) FROM Work WHERE Work.person-name = M2.Manager-

name Group by Work.person-name))

3,
(a)
i.
```sql
SELECT name, address
FROM MovieStar
WHERE gender = 'F'
INTERSECT
SELECT name, address
FROM MovieExec
WHERE netWorth > 1000000;
```

ii.
```sql
SELECT name, address
FROM MovieStar
WHERE MovieStar.gender = 'F'
AND (name, address)
in (SELECT name,address FROM MovieExec WHERE netWorth > 1000000);
```

(b)
i.
```sql
SELECT name
FROM MovieStar
EXCEPT
SELECT name
FROM MovieExec;
```

ii.

```sql
SELECT name
FROM MovieStar
WHERE name NOT IN (SELECT name FROM MovieExec);
```

4.
(a).
```sql
SELECT AVG(speed)
FROM Desktop
```

(b).
```sql
SELECT AVG(price)
FROM ComputerProduct C, Laptop L
WHERE C.model = L.model AND L.weight < 2;
```

(c).
```sql
SELECT AVG(price)
FROM ComputerProduct
WHERE model = 'Dell';
```

(d).
```sql
SELECT speed, AVE(price)
FROM Laptop
Group by speed;
```

(e).
SELECT manufacturer
FROM ComputerProduct
Group by manufacturer
Having count(model)>=3;

5.
(a).
INSERT INTO ComputerProduct VALUES ('HP',1200,1000);
INSERT INTO Desktop VALUES(1200,'1.2GHz', '256MB' ,'80GB');

(b).
DELETE FROM Desktop
WHERE model IN (SELECT model From ComputerProduct WHERE model =
'IBM' AND price<1000);

DELETE FROM ComputerProduct
WHERE model = 'IBM' AND price < 1000 AND model NOT IN (SELECT model
FROM Laptop);

(c).
UPDATE Laptop
SET weight = weight+1
WHERE model IN (SELECT model FROM ComputerProduct WHERE manufacturer
= 'Gateway');

6.

(a).
SELECT Distinct name
FROM Student, Enroll
WHERE Student.sid = Enroll.sid;
EXCEPT
SELECT Distinct name
FROM Student, Enroll
WHERE Student.sid = Enroll.sid
AND Enroll.dept<>'CS';

(b).
SELECT name
FROM Student S
WHERE NOT EXISTS (
(SELECT cnum
FROM class
WHERE dept = 'CS')
EXCEPT
(SELECT cnum
FROM Enroll
WHERE S.sid = Enroll.sid
AND Enroll.dept='CS')
)

(c).

```
SELECT Distinct name
FROM Student, Enroll
WHERE Student.sid = Enroll.sid
AND dept = 'CS'
Group by Student.sid
HAVING COUNT(cnum)
= (SELECT COUNT(cnum)
FROM Enroll E
WHERE E.sid = Student.sid)


SELECT Distinct name
FROM Student ,Enroll E1
WHERE Student.sid = E1.sid
AND dept = 'CS'
Group by Student.sid
HAVING COUNT(cnum)
= (SELECT COUNT(cnum) FROM Class WHERE dept = 'CS');
```