assignment 7 2K22/CO/427

Sandesh Shrestha

Date ....

1) employee (employee-name, street, city)

works (employee-name, company-name, salary)

company (company-name, city)

manages (employee-name, manager-name)

(a) soln,

```
SELECT employee.employee-name, employee.street,
       employee.city
  FROM employee INNER JOIN works ON
       employee.employee-name = works.employee-name
 WHERE works.company-name = 'First Bank Corporation'
       AND works.salary > 10000;
```

(b) soln,

```
SELECT employee.~~name~~ employee-name
 FROM employee
 INNER JOIN works ON employee.employee-name =
                     works.employee-name
INNER JOIN company ON works.company-name =
           company.company-name AND
         employee.city = company.city;
```

c)
```
SELECT ~~emp~~ E.employee-name
  FROM employee E
  NATURAL JOIN manages M
  INNER JOIN employee AS manager ON
                    m.manager-name = manager.employee-name
WHERE ~~em~~ E.city = Manager.city AND
                E.street =  manager.street;
```

d) sol^n,
```
  SELECT    E.employee-name
   FROM     Employee E
   INNER JOIN works W ON E.employee-name =
                              W.employee-name
  WHERE   W.company name <>'First Bank Corp';
```

e) sol^n:
```
  SELECT  E.employee-name
   FROM    employee E
   INNER JOIN works ON E.employee-name= W.employee-name
WHERE   W.salary > ALL ( SELECT  W.salary
                         FROM   works W
                         WHERE W.company-name
                                = 'Small Bank
                                   Corp');
```

we can also use max function

f) sol^n,
```
SELECT DISTINCT(C1.company-name)
 FROM  company C1
 WHERE  NOT IN (
```

Spiral

```
SELECT  C2.city
 FROM   company C2
  WHERE  C2.company_name='Small Bank Corp'
   AND  NOT IN (
                   SELECT *
                   FROM  company C3
                   WHERE C3.company_name=C2.company_
                                                   name
                   AND C3.city = C2.city
                   )
                 );
```

g) soln,

```
 SELECT   E.employee_name
  FROM    employee E
 NATURAL JOIN works W
 WHERE  W.salary>(
                         SELECT AVG(W.salary)
                          FROM  works W
                         WHERE W.company_name=
                                  E.company_name
                          );
```

h) soln,

```
SELECT C.company_name
 FROM company C
NATURAL JOIN works W
 GROUP BY C.company_name
 ORDER BY SUM(W.salary) ASC
   LIMIT 2;
```

→ could also use MIN

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2)

(a) $\{\langle a\rangle \mid \exists b(\langle a,b\rangle \in r \land b = 10)\}$

⇒ This query selects all ~~p~~values of a for which there exists a b in relation r such that it lies in <a,b> and b = 10.

```
SELECT DISTINCT a
 FROM r
WHERE b = 10;
```

(b) q − r

→ computes set difference of q − r.

```
SELECT *
 FROM q
 WHERE  NOT IN( SELECT *
                  FROM r
                WHERE q.primarykey = r.primarykey
                );
```

(c) $\{t \mid \exists p \in r\ \exists q \in s(t[A] = p[A] \land t[E] = q[E]$
$\land p[C] = q[D]\}$

→ selects, ~~all~~ tuples from relation t where there exists a tuple in r and tuple in s such that A is equal in t and p, E is equal in t and q

```
SELECT DISTINCT t.*
 FROM   t, r, s
WHERE  t.A = r.A AND t.E = s.E AND
                 r.C = s.C;
```

ⓓ $r \times s$

→ cartesian product of r and s

```
SELECT *
FROM r,s;
```