HOMEWORK THREE - SQL QUERIES

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Homework Three – SQL Queries

1. Ramakrishnan 5.1

1. SELECT DISTINCT S.Sname
   FROM Student S, Class C, Enrolled E, Faculty F
   WHERE S.snum=E.snum AND E.cname = C.name AND C.fid = F.fid AND F.fname = 'I.Teach' AND S.level = 'JR'

2. SELECT MAX(S.age)
   FROM Student S
   WHERE (S.major = 'History')
   OR S.num IN (SELECT E.sum
   FROM Class C, Enrolled E, Faculty F
   WHERE E.cname = C.name AND C.fid = F.fid AND f.fname = 'I.Teach')

3. SELECT C.name
   FROM Class C
   WHERE C.room = 'R128'
   OR C.name IN (SELECT E.cname
   FROM Enrolled E
   GROUP BY E.cname
   HAVING COUNT (*)>=5)

4. SELECT DISTINCT S.sname
   FROM Student S
   WHERE S.snum IN (SELECT E1.snum
   FROM Enrolled E1, Enrolled E2, Class C1, Class C2
   WHERE E1.snum = E2.snum AND E1.cname <> E2.cname
   AND E1.cname = C1.name
   AND E2.cname = C2.name AND C1.time = C2.time

5. SELECT DISTINCT F.fname
   FROM Faculty F
   WHERE NOT EXISTS ((SELECT *
   FROM Class C)
   EXCEPT
   (SELECT C1.room
   FROM Class C1

```
                                WHERE       C1.fid = F.fid))
6.  SELECT      DISTINCT F.fname
    FROM        Faculty F
    WHERE       5 > (SELECT     E.snum
                     FROM       Class C, Enrolled E
                     WHERE      C.name = E.cname
                      AND       C.fid = F.fid)

7.  SELECT      S.level, AVG(S.age)
    FROM        Student S
    WHERE       S.level

8.  SELECT      S.level, AVG(S.age)
    FROM        Student S
    WHERE       S.level <> 'JR'
    GROUP BY    S.level

9.  SELECT      DISTINCT S.sname
    FROM        Student S
    WHERE       S.snum IN (SELECT     E.snum
                           FROM       Enrolled E
                           GROUP BY E.snum
                           HAVING     COUNT (*) >= ALL (SELECT     COUNT (*)
                                                        FROM      Enrolled E2
                                                        GROUP BY E2.snum))
10. SELECT      DISTINCT S.sname
    FROM        Student S
    WHERE       S.snum NOT IN (SELECT       E.snum
                               FROM         Enrolled E)
```

2. Ramakrishnan 5.3

```
1.  SELECT      DISTINCT A.aname
    FROM        Aircraft A
    WHERE       A.Aid IN (SELECT      C.aid
                          FROM        Certified C, Employees E
                          WHERE       C.eid = E.eid AND
                          NOT EXISTS ( SELECT         *
                                       FROM           Employees E1
```

```
                                    WHERE       E1.eid = E.eid AND E1.salary
<80000))
```

2.
```
SELECT      C.eid, MAX (A.crusingrange)
FROM        Aircraft A, Certified C
WHERE       C.aid = A.aid
GROUP BY    C.eid
HAVING      COUNT (*) >3
```

3.
```
SELECT      DISTINCT E.aname
FROM        Employee E
WHERE       E.salary < (SELECT MIN (F.price))
FROM        Flights F
WHERE       F.from = "LA" AND F.to = "Honolulu"
```

4.
```
SELECT      Temp.name, Temp.AvgSalary
FROM  (SELECT       A.aid,A.aname AS name
                    AVG (E.salary) AS AVGSalary

      FROM          Aircraft A, Certified C, Employees E

      WHERE         A.aid =C.aid AND

                    C.eid = E.eid AND A.crusingrange > 1000
```

5.
```
SELECT      DISTINCT E.ename
FROM        Employees E, Certified C, Aircraft A
WHERE       E.eid = C.eid AND
            C.aid = A.aid AND
            A.aname = "Boeing"
```

6.
```
SELECT      A.aid
FROM        Aircraft A
WHERE       A.crusingrange > ( SELECT     MIN (F.distance)
                               FROM       Flights F
                               WHERE      F.from = "L.A" AND F.to = "Chicago")
```

7.
```
SELECT      DISTINCT F.from, F.to
FROM        FLIGHTS F
WHERE       NOT EXISTS ( SELECT *
                         FROM           Employees E
```

```
WHERE          E.salary >100000
  AND
  NOT EXISTS (SELECT   *
                FROM   Aircraft A, Certified C
                WHERE  A.crusingrange > F.distance
                 AND   E.eid = C.eid
                AND    A.eid = C.aid) )
```

8.
```
SELECT      DISTINCT E.ename
FROM        Employees E, Certified C, Aircraft A
WHERE       C.eid = E.eid
AND         C.eid = A.aid
AND         A.crusingrange > 3000
AND         E.eid NOT IN ( SELECT        C.eid
FROM        Certified C1, Aircraft A1
WHERE       C1.aid = A1.aid
AND         A1.aname = “Boeing” )
```

9.
```
SELECT F.departs
FROM Flights F
WHERE F.flno IN ( ( SELECT F0.flno
                     FROM Flights F0
                    WHERE F0.from = `Madison' AND F0.to = `NY' AND
                     AND F0.arrives < 1800 )
                  UNION
                  ( SELECT F0.flno
                  FROM Flights F0, Flights F1
                  WHERE F0.from = `Madison' AND F0.to <> `NY' AND
                  AND F0.to = F1.from AND F1.to = `NY'
                  F1.departs > F0.arrives AND
                  F1.arrives < 1800 )
                  UNION
                  ( SELECT F0.flno
                  FROM Flights F0, Flights F1, Flights F2
                  WHERE F0.from = `Madison'
                  WHERE F0.to = F1.from
                  AND F1.to = F2.from
                  AND F2.to = `NY'
                  AND F0.to <> `NY'
```

```
AND F1.to <> `NY'
AND F1.departs > F0.arrives
AND F2.departs > F1.arrives
AND F2.arrives < 1800 ))
```

10.
```
SELECT   Temp1.avg – Temp2.avg
FROM     ( SELECT    AVG (E.salary) AS avg
           FROM      Employees E
           WHERE     E.eid IN (SELECT    DISTINCT C.eid
                     FROM      Certified C)) AS Temp1
         ( SELECT    AVG (E1.salary) AS avg
           FROM      Employees E1,) AS Temp2
```

11.
```
SELECT   E.ename, E.salary
FROM     Employees E
WHERE    E.eid NOT IN ( SELECT    DISTINCT C.eid
                        FROM      Certified C
AND      E.salary > ( SELECT      AVG (E1.salary)
                      FROM       Employees E1
                      WHERE      E1.eid IN
                                 (SELECT     DISTINCT C1.eid
                                  FROM       Certified C1 ) )
```

3. Ramakrishnan 5.4

1.
```
SELECT   E.ename, E.age
FROM     Employee E, Works W1, Works W2, Dept D1, Dept D2
WHERE    E.eid = W1.eid AND W1.did = D1.did AND D1.dname = “Hardware”
         AND E.eid = W2.eid AND W2.did = D2.did AND D1.dname =
         “Software”
```

2.
```
SELECT   W.did, COUNT (W.eid)
FROM     Works W
GROUP BY W.did
HAVING   2000 > (SELECT     SUM(W1.pct time)
                 FROM       Works W1
                 WHERE      W1.did = W.did)
```

3.
```
SELECT   E.ename
FROM     Employee E
WHERE    E.salary > ALL (SELECT     D.budget
```

```
                    FROM        dept D, Works W
                    WHERE       E.eid = W.eid AND D.did = W.did)
```

4.
```
SELECT      D.managerid
FROM        Dept D
WHERE       1000000 < ALL (SELECT       D.managerid
                           FROM         Dept D
                           WHERE        D.budget = (SELECT MAX
(D2.budget)
                                                    FROM      Dept D2) )
```

5.
```
SELECT      E.name
FROM        Employee E
WHERE       E.eid IN (SELECT        D.managerid
                      FROM          Dept D
                      WHERE         D.budget = ( SELECT    MAX (D2.budget)
                                                 FROM     Dept D2 ) )
```

6.
```
SELECT      D.managerid
FROM        Dept D
WHERE       5000000 < ( SELECT          SUM(D2.budget)
                        FROM            Dept D2
                        WHERE           D2.managerid = D.managerid)
```

7.
```
SELECT      DISTINCT tempD.managerid
FROM        (SELECT         DISTINCT D.managerid, SUM (D.budget) AS
tempBudget
            FROM            Dept D
            GROUP BY        D.managerid) AS tempD
            WHERE           tempD.tempBudget = (SELECT
      MAX(tempD.tempBudget)
                                                FROM tempD)
```