## Task1

```
create table Emp(
eid int primary key,
ename varchar(20),
age int,
salary float
);
create table Dept(
did int primary key,
budget float,
managerid int,
foreign key (managerid) references Emp(eid)
);
create table Works(
eid int,
did int,
pct_time int,
primary key(eid,did),
foreign key (eid) references Emp(eid),
foreign key (did) references Dept(did)
);
insert into Emp values
(1, 'Jim', 33, 70000.0
                                    ),
(2, 'Zhuo', 33, 70000.0
                                    ),
(3, 'Sid', 33, 70000.0
                                   ),
(4, 'Gusto', 34, 70000.0
                                    ),
(5, 'Andy', 33, 70000.0
                                    ),
(6, 'Mary', 34, 70000.0
                                    ),
(7, 'Mouse', 50, 890000.0
                                     ),
(8, 'Kim', 55, 70000.0
                                    ),
(9, 'Meck', 20, 70000.0
                                    ),
(10, 'Mock', 30, 40000.0
                                     ),
(11, 'Tom', 30, 20000.0
                                     ),
(12, 'Toozy', 40, 80000.0
                                    ),
(13, 'Roro', 54, 90000.0
                                    ),
(14, 'Rara', 34, 780000.0
                                    ),
(15, 'Randy', 34, 40000.0
                                    ),
(16, 'Marry', 45, 80000.0
                                    ),
```

```
(17, 'Larry', 32, 35000
                                     ),
(18, 'Jarry', 32, 40000.0
                                    ),
(19, 'Herry', 30, 50000.0
                                     ),
(20, 'Mary', 40, 50000.0
                                      ),
(21, 'MooMoo', 50, 780000.0
(22, 'Giles', 40, 210000.0
                                    ),
(23, 'Deniz',24,
                     1000000.0
                                       ),
                         89000.0
(24, 'Suresh',22,
                                      ),
(25, 'Shiva', 22,
                       95000.0
                                     ),
(26, 'Airy', 23,
                     77000.0
                                     ),
(27, 'Kirohashi', 24,
                            10700.0),
(28, 'Krishna',23,
                          11000.0
(29, 'Kasi'
               , 21,
                           92000.0),
                     100000.0
(30, 'Raja', 25,
                                      ),
(31, 'Bill', 43, 60000.0
                                    ),
(32, 'Bob', 24, 37000.0
                                      ),
(33, 'Ang', 32, 60000.0
                                      ),
(34, 'Dave', 32, 63000.0
                                      ),
(35, 'Kenneth', 36, 65000.0
                                      ),
(36, 'Henry', 32, 160000.0
                                      ),
(37, 'May', 32, 660000.0
                                      ),
(38, 'Balaji', 22, 90000.0
                                    ),
(39, 'Shiva', 28, 10000.0
                                     ),
(40, 'Meck', 25, 100000.0
                                      ),
(41, 'Lee', 23, 50000.0
                                     ),
(42, 'Brian', 33, 47000.0
                                     ),
(43, 'Michael', 36, 80000.0
                                     ),
(44, 'Lisa', 42, 69000.0
(45, 'Steven', 31, 45000.0
                                     ),
(46, 'Charles', 39, 660000.0
                                     ),
(47, 'Justin', 52, 70000.0
                                    ),
(48, 'Aron', 27, 40000.0
                                      ),
(49, 'Ellen', 20, 60000.0
                                    ),
(50, 'William', 35, 90000.0
                                     ),
(51, 'Bobbie', 23, 580000.0
                                      ),
(52, 'Sonia', 33, 570000.0
                                     ),
(53, 'Cindy', 45, 80000.0
                                     ),
(54, 'Kathy', 42, 69000.0
                                     ),
(55, 'Thai', 31, 45000.0
                                     ),
(56, 'Ding', 32, 760000.0
                                      ),
(57, 'Yang', 52, 70000.0
                                      ),
(58, 'Jack', 30, 40000.0
                                     ),
(59, 'Wang', 40, 60000.0
                                       ),
(60, 'Zhong', 35, 90000.0
                                      );
```

),

```
insert into Dept values
(0, 1000000.0, 7),
(1, 750000.0, 59),
(2, 800000.0, 19),
(3,7000000.0,22),
(4,6000000.0,23),
(5, 5000000.0, 22),
(6, 2500000.0, 7),
(7, 3100000.0, 13),
(8, 2000000.0, 38),
(9, 3005000.0, 27),
(10, 4500000.0, 32);
insert into Works values
(1, 1, 10)
           ),
(1, 2, 10)
           ),
(1, 6, 80
           ),
(2, 0, 60)
           ),
(2, 7, 40)
           ),
(3, 0, 100 ),
(4, 5, 80)
            ),
(4, 9, 20)
            ),
(5, 0, 100),
(6, 1, 70
            ),
(6, 2, 30)
            ),
(7, 0, 25)
            ),
(7, 6, 50
            ),
(7, 10, 25),
(8, 0, 33)
            ),
(8, 3, 33)
            ),
(8, 8, 33
           ),
(9, 0, 100 ),
(10, 1, 20 ),
(10, 2, 80 ),
(11, 2, 50),
(11, 5, 50),
(12, 0, 100),
(13, 2, 30),
(13, 7, 70),
(14, 0, 33),
(14, 3, 33),
(14, 10, 33),
(15, 4, 70),
```

- (15, 5, 30),
- (16, 0, 100),
- (17, 9, 100),
- (18, 3, 100),
- (19, 2, 100),
- (20, 0, 100),
- (21, 0, 33 ),
- (21, 1, 33 ),
- (21, 2, 33),
- (22, 3, 50 ),
- (22, 5, 50 ),
- (23, 4, 100),
- (24, 0, 100), (25, 0, 100),
- (26, 0, 100),
- (27, 3, 20),
- (27, 9, 80 ),
- (28, 0, 100),
- (29, 0, 100),
- (30, 1, 100),
- (31, 4, 30 ),
- (31, 6, 70 ),
- (32, 3, 50 ),
- (32, 10, 50),
- (33, 10, 100),
- (34, 0, 80 ),
- (34, 6, 20 ),
- (35, 3, 50),
- (35, 10, 50),
- (36, 0, 100),
- (37, 0, 33),
- (37, 5, 33),
- (37, 7, 33 ),
- (38, 8, 100),
- (39, 2, 30),
- (39, 9, 70 ),
- (40, 0, 100),
- (41, 0, 100),
- (42, 0, 100),
- (43, 3, 80 ),
- (43, 7, 20),
- (44, 0, 100),
- (45, 0, 100),
- (46, 1, 35),

- (46, 4, 30 ),
- (46, 6, 35),
- (47, 0, 100),
- (48, 1, 100),
- (49, 4, 50 ),
- (49, 10, 50),
- (50, 0, 100),
- (51, 0, 50 ),
- (51, 3, 20 ),
- (51, 6, 30 ),
- (52, 1, 33 ),
- (52, 3, 10 ),
- (52, 8, 60 ),
- (53, 2, 30 ),
- (53, 9, 70 ),
- (54, 0, 100),
- (55, 0, 100),
- (56, 0, 30 ),
- (56, 3, 50 ),
- (56, 4, 20 ),
- (57, 0, 100 ),
- (58, 0, 34 ),
- (58, 1, 33 ),
- (58, 2, 33 ),
- (59, 0, 20 ),
- (59, 1, 80 ),
- (60, 0, 100);

```
mysql> create table Emp(
     -> eid int primary key,
-> ename varchar(20),
     -> age int,
     -> salary float
-> );
Query OK, 0 rows affected (0.05 sec)
mysq1>
mysql> create table Dept(
-> did int primary key,
     -> budget float,
     -> managerid int,
     -> foreign key (managerid) references Emp(eid) -> );
Query OK, 0 rows affected (0.04 sec)
{	t mysq1} >
mysql> create table Works(
     -> eid int,
-> did int,
     -> pct_time int,
     -> primary key(eid, did),
-> foreign key (eid) references Emp(eid),
-> foreign key (did) references Dept(did)
     -> );
Query OK, 0 rows affected (0.03 sec)
```

```
nysql> insert into Emp values
                              Jim', 33, 70000.0
                  (1,
                               Zhuo', 33, 70000.0
Sid', 33, 70000.0
                            'Gusto', 34, 70000.0
'Andy', 33, 70000.0
'Mary', 34, 70000.0
'Mouse', 50, 890000.0
'Kim', 55, 70000.0
'Meck', 20, 70000.0
'Mock', 30, 40000.0
        -> (4,

-> (5,

-> (6,

-> (7,

-> (8,

-> (9,

-> (10,

-> (11,

-> (12,

-> (13,

-> (14,

-> (15,

-> (16,

-> (17,

-> (20,

-> (21,

-> (22,

-> (24,

-> (25,

-> (26,

-> (29,

-> (30,
                              Tom', 30, 20000.0
Toozy', 40, 80000.0
                               'Roro', 54, 90000.0
                               'Rara', 34, 780000.0
'Randy', 34, 40000.0
'Marry', 45, 80000.0
                               'Larry', 32, 35000
'Jarry', 32, 40000.0
'Herry', 30, 50000.0
                               'Mary', 40, 50000.0
                              'Mary', 40, 50000.0
'MooMoo', 50, 780000.0
'Giles', 40, 210000.0
'Deniz', 24, 1000000.0
'Suresh', 22, 89000.0
'Shiva', 22, 95000.0
'Airy', 23, 77000.0
'Kirohashi', 24, 1070.0
'Krishna', 23, 11000.0
'Kasi', 21, 92000
                                                                                           10700.0)
                                                                                  11000.0
                                                                                        92000.0
                               'Raja', 25,
                                                                          100000.0
                               'Bill', 43, 60000.0
                 (31,
                               'Bob', 24, 37000.0
                  (32,
                               'Ang', 32, 60000.0
                  (33,
                                                 32, 63000, 0
                               'Dave'
```

```
Kenneth', 36, 65000.0
        (35,
               Henry', 32, 160000.0
        (36,
               May', 32, 660000.0
        (37,
               Balaji', 22, 90000.0
        (38,
               Shiva', 28, 10000.0
        (39,
               Meck', 25, 100000.0
Lee', 23, 50000.0
Brian', 33, 47000.0
        (40,
        (41.
        (42,
               Michael', 36, 80000.0
        (43,
               Lisa', 42, 69000.0
Steven', 31, 45000.0
        (44,
        (45,
               Charles', 39, 660000.0
Justin', 52, 70000.0
        (46,
        (47,
               Aron', 27, 40000.0
        (48,
               Ellen', 20, 60000.0
        (49,
               William', 35, 90000.0
        (50,
               Bobbie', 23, 580000.0
        (51,
        (52,
               Sonia, 33, 570000.0
               Cindy', 45, 80000.0
        (53,
               Kathy', 42, 69000.0
        (54,
              'Thai', 31, 45000.0
        (55,
               Ding', 32,
        (56,
                            760000.0
        (57,
              'Yang', 52,
                            70000.0
               Jack', 30, 40000.0
        (58,
              'Wang', 40, 60000.0
'Zhong', 35, 90000.0
    -> (59,
    -> (60,
Query OK, 60 rows affected (0.00 sec)
Records: 60 Duplicates: 0 Warnings: 0
```

```
mysql> insert into Dept values
-> (0, 1000000.0, 7),
-> (1, 750000.0, 59),
-> (2, 800000.0, 19),
-> (3, 7000000.0, 22),
-> (4, 6000000.0, 23),
-> (5, 5000000.0, 22),
-> (6, 2500000.0, 7),
-> (7, 3100000.0, 13),
-> (8, 2000000.0, 38),
-> (9, 3005000.0, 27),
-> (10, 4500000.0, 32);

Query 0K, 11 rows affected (0.01 sec)

Records: 11 Duplicates: 0 Warnings: 0
```

```
mysq1>
           insert
                       into Works values
           (1,
                       10
                  1,
2,
6,
                       10
           (1,
            (1,
                       80
           (2,
(2,
                  0,
7,
                       60
                       40
            (3,
                  0,
                       100
            (4,
                  5,
                       80
           (4,
(5,
(6,
                  9,
                       20
                  0,
                       100
                  1,
                       70
                  2,
0,
                       30
           (6, (7, (7, (7, (8,
                       25
                  6, 50
10, 25
0, 33
           (8,
(8,
                       33
33
                  3,
                  8,
           (9,
(10,
                 0,
                       100
                   1,
2,
                        20
           (10,
                        80
           (11,
                   2,
5,
                        50
           (11,
                        50
           (12,
(13,
                   0,
2,
7,
                        100
                        30
           (13,
                        70
                        33
                   0,
           (14,
           (14,
                   3, 33
10, 33
           (14,
           (15,
                        70
                   4,
                   5,
                        30
           (15,
                        100
           (16,
                   0,
           (17,
                        100
                   9,
                   3,
           (18,
                        100
                   2,
0,
           (19,
                        100
           (20,
                        100
            (21,
                        33
                   0,
           (21,
                   1,
                        33
                    2,
           (21,
                        33
           (22,
(22,
                   3,
                        50
                    5,
                        50
```

```
(23,
      4,
         100),
(24,
      0,
         100
(25,
      0,
         100
         100),
(26,
      0,
      3,
(27,
         20
(27,
     9,
         80
      0,
         100
(28,
(29,
      0,
         100
     1,
         100
(30,
(31,
     4,
         30
(31,
     6,
         70
     3, 50
(32,
     10, 50
(32,
     10, 100),
(33,
     0, 80
(34,
     6, 20
(34,
     3, 50
(35,
     10, 50
(35,
(36,
     0,
         100
(37,
      0,
         33
     5,
         33
(37,
(37,
     7,
         33
(38,
         100
     8,
(39,
     2,
         30
(39,
     9,
         70
(40,
         100
     0,
(41,
     0,
         100
         100
(42,
     0,
(43,
     3,
         80
     7,
         20
(43,
(44,
      0,
         100
(45,
      0,
         100
(46,
      1,
         35
(46,
     4,
         30
         35
(46,
      6,
(47,
         100
     0,
```

```
(48,
                 100),
        (49,
             4,
                 50
        (49,
             10, 50
                 100
              0,
        (50,
        (51,
              0,
                 50
              3,
                 20
        (51,
        (51,
                 30
              6,
        (52,
              1,
                 33
        (52,
              3,
                 10
              8,
        (52,
                 60
        (53,
             2,
                 30
        (53,
             9,
                 70
        (54,
             0,
                 100
        (55,
              0,
                 100
        (56,
             0,
                 30
        (56,
              3,
                 50
        (56,
                 20
             4,
        (57,
                 100
              0,
        (58,
              0,
                 34
        (58,
             1,
                 33
             2,
        (58,
                 33
    -> (59,
             0,
                 20
        (59,
             1,
                 80
                 100);
    -> (60, 0,
Query OK, 100 rows affected (0.01 sec)
Records: 100 Duplicates: 0 Warnings: 0
mvsal>
```

## Task2

```
select e.ename,e.salary
from Emp e
where e.eid in (
select eid
from Works
where did=0
)
and e.eid in (
select eid
from Works
where did=2
```

```
);
select e1.ename, e1.age, e1.salary
from Emp e1
join Works w1 on e1.eid=w1.eid
join (
select w.did,min(e.age) as min_age
from Emp e
join Works w on w.eid=e.eid
group by w.did
) t on t.did=w1.did and t.min_age=e1.age;
select e.ename
from Emp e
join Dept d on d.managerid=e.eid
where d.budget=(
select max(budget)
from Dept
);
select d.did, d.budget, d.managerid
from Dept d
join Works w on d.did=w.did
join Emp e on e.eid=w.eid
group by d.did, d.budget, d.managerid
having avg(e.salary)=
(
select max(avg_salary) as max_avg
from
select w.did, avg(e.salary) as avg_salary
from Emp e
join Works w on w.eid=e.eid
group by w.did
) t
);
select *
from Emp
```

where salary > some (select e.salary from Emp e join Dept d on d.managerid=e.eid);

```
mysql> select e.ename, e.salary
    -> from Emp e
    -> where e.eid in (
    -> select eid
    -> from Works
    -> where did=0
    -> and e.eid in (
    -> select eid
    -> from Works
    \rightarrow where did=2
    -> );
            salary
  ename
  MooMoo
            780000
  Jack
             40000
 rows in set (0.00 sec)
```

```
mysql> select el.ename, el.age, el.salary
    -> from Emp el
    -> join Works w1 on e1.eid=w1.eid
    -> join (
    -> select w.did, min(e.age) as min_age
    -> from Emp e
    -> join Works w on w.eid=e.eid
    -> group by w. did
    -> ) t on t.did=w1.did and t.min_age=e1.age;
                      salary
 ename
              age
 Meck
                       70000
                20
                30
                       20000
 Tom
 Kirohashi
                24
                       10700
 Raja
                25
                      100000
 May
                32
                      660000
 Balaji
                22
                       90000
 Shiva
                28
                       10000
 Ellen
                20
                       60000
 Ellen
                20
                       60000
 Bobbie
                23
                      580000
 Bobbie
                23
                      580000
11 rows in set (0.00 sec)
mysql> select e.ename
   -> from Emp e
   -> join Dept d on d.managerid=e.eid
   -> where d.budget=(
   -> select max(budget)
   -> from Dept
   -> );
 ename
 Giles
1 row in set (0.00 sec)
mysq1>
```

```
mysql> select d.did, d.budget, d.managerid

-> from Dept d
-> join Works w on d.did=w.did
-> join Emp e on e.eid=w.eid
-> group by d.did, d.budget, d.managerid
-> having avg(e.salary)=
-> (
-> select max(avg_salary) as max_avg
-> from
-> (
-> select w.did, avg(e.salary) as avg_salary
-> from Emp e
-> join Works w on w.eid=e.eid
-> group by w.did
-> ) t
-> ):

| did | budget | managerid |
| 4 | 6000000 | 23 |
| 1 row in set (0.00 sec)
| mysql>
```

```
mysql>
mysql>
                select *
                from Emp
                where salary > some (select e.salary from Emp e join Dept d on d.managerid=e.eid);
    eid
                                                           salary
                   ename
                                           age
                  Jim
Zhuo
Sid
Gusto
                                                                 70000
                                               \begin{array}{c} 33333434055000004444452200000422233153422223332222333433522333421220 \end{array}
       70000
70000
70000
70000
70000
70000
70000
40000
20000
80000
90000
40000
80000
50000
780000
780000
780000
780000
                  Andy
Mary
                  Mouse
Kim
                  Meck
Mock
                   Tom
Toozy
                   Roro
                   Rara
                   Randy
                   Marry
                   Larry
                  Jarry
Herry
                  Mary
MooMoo
                   Giles
                                                            1000000
89000
95000
                   Deniz
                   Suresh
                   Shiva
                                                                77000
11000
                  Airy
Krishna
Kasi
                                                                92000
                  Raja
Bill
Bob
                                                              100000
                                                                60000
                                                             37000
60000
63000
65000
160000
660000
50000
47000
80000
69000
45000
60000
60000
                   Ang
                  Dave
                   Kenneth
                  Henry
                  May
Balaji
                  Balaji
Meck
Lee
Brian
Michael
Lisa
Steven
Charles
                   Justin
                  Aron
Ellen
William
                                                             90000
580000
570000
80000
69000
45000
                   Bobbie
                  Sonia
Cindy
                   Kathy
                   Thai
                                                              760000
70000
                   Ding
                  Yang
Jack
Wang
                                                                40000
                                               40
35
                                                                60000
                   Zhong
       60
                                                                90000
```

rows in set (0.00 sec)