```
□ select * from employee
        --1) find duplicates
     select emp_id,count(*) from employee
        group by emp_id
        having count(*)>1
        --2) How to delete duplicates
     select *,
        row_number() over(partition by emp_id order by emp_id) rn
        from employee)
        delete from cte
        where rn>1
121 % 🔻 🔻
emp_id emp_name dept_id salary manager_id emp_age dob
                        100 10000 4 39 1985-11-27 1
               Mohit
                          100 15000 5 48 1976-11-27 1

        Vikas
        100
        10000
        4
        37
        1987-11-27
        1

        Rohit
        100
        5000
        2
        16
        2008-11-27
        1

        Mudit
        200
        12000
        6
        55
        1969-11-27
        1

        Anam
        200
        12000
        2
        14
        2010-11-27
        1

 3
    3
     4
                                                             2010-11-27
2011-11-27 1
~12-11-27 1
 5
     5

    200
    12000
    2
    14
    2010-11-27
    1

    200
    9000
    2
    13
    2011-11-27
    1

    200
    5000
    2
    12
    2012-11-27
    1

    300
    6000
    6
    51
    1973-11-27
    1

    500
    7000
    6
    50
    1974-11-27
    1

6
      6
               Agam
               Sanjay
 7
      7
8
     8
               Ashish
9
               Mukesh
10 10 Rakesh
                        500 7000 6
        -- 3) Details which are not present in dept table
      employee e
        left join dept d on d.dep_id = e.dept_id
        where d.dep id is null
121 % ▼ ◀
emp_id emp_name dept_id salary manager_id emp_age dob
                                                                                     dep_id dep_name
     10
                           500
                Rakesh
                                    7000 6
                                                   50 1974-11-27 NULL NULL
```

```
--4) Second highest salary in each department
   select *,
    DENSE_RANK() over(partition by dept_id order by salary desc) rk
    from employee)
   _select * from cte
     where rk = 2
121 % ▼ ◀
emp_id emp_name dept_id salary manager_id emp_age dob
  3 Vikas 100 10000 4 37 1987-11-27 2
         Ankit
                100
                     10000 4
                                 39
                                       1985-11-27 2
2 1
                                13
3
   7
         Sanjay
                200
                     9000 2
                                       2011-11-27 2
```

With correlated subquery (it will compare each internal query with outer query rows)

2

200

9000

```
--4) Second highest salary in each department
    select e1.dept_id, max(salary) as salary
      from employee e1
      where salary < (select max(salary) as max_salary
                          from employee e2
                          where e1.dept_id = e2.dept_id)
      group by dept_id
121 % ▼ ◀
emp_id emp_name dept_id salary manager_id emp_age dob
                           10000 4 39
15000 5 48
                                                   1985-11-27
                     100
          Ankit
                     100 15000 5
                                                   1976-11-27
   3
                     100 10000 4 37
           Vikas
                                                   1987-11-27
                                    16
          Rohit
    4
                     100 5000 2
                                                   2008-11-27
4
                     200
         Mudit
                                    55
14
                            12000 6
                                                    1969-11-27
5
         Agam
Sanjay
Ashish
                                    13
6
                     200
                            12000 2
                                                   2010-11-27
                     200 9000 2
                                                   2011-11-27
                                                2012-11-27

    200
    9000
    2
    13

    200
    5000
    2
    12

    300
    6000
    6
    51

    500
    7000
    6
    50

8
                                               1973-11-27
            Mukesh
                                          50
 10 10
          Rakesh
                     500 7000 6
                                                  1974-11-27
     dept id salary
    100 10000
```

## With self join

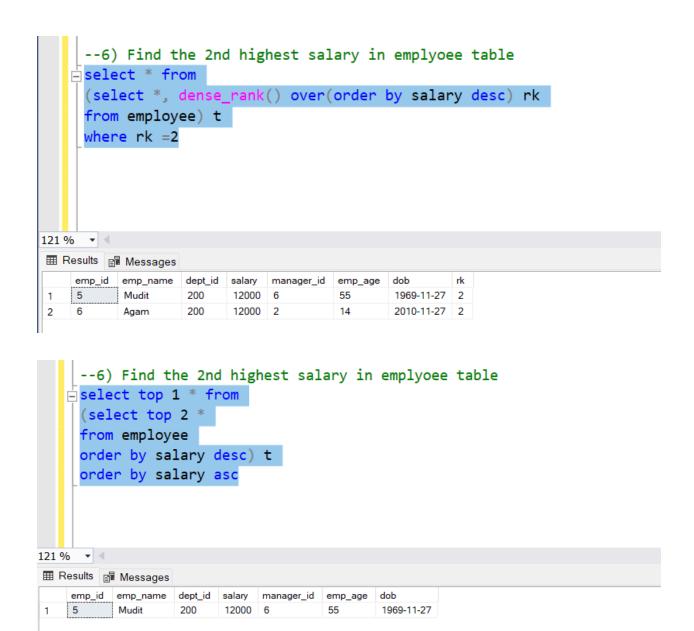
```
--4) Second highest salary in each department
    select e1.*, e2.*
      from employee e1
      join employee e2 on e1.dept_id = e2.dept_id
121 % -
emp_id emp_name dept_id
                             salary manager_id
                                             emp_age dob
                                                      1987-11-27
 3
            Vikas
                       100
                             10000 4
            Rohit
                             5000
                                              16
                                                      2008-11-27
            Mudit
                      200
                             12000
                                              55
                                                      1969-11-27
 6
7
            Agam
                      200
                             12000 2
                                              14
                                                      2010-11-27
                                                      2011-11-27
                      200
                             9000
                                              13
            Sanjay
                             5000
 8
            Mukesh
                      300
                             6000
                                              51
                                                      1973-11-27
 10
     10
            Rakesh
                       500
                             7000
                                              50
                                                      1974-11-27
            emp name
                             salarv
                       100
                             10000
                                                       1985-11-27
                                                                                 100
                                                                                        10000
                                                                                                                  1985-11-27
            Ankit
            Mohit
                       100
                             15000
                                              48
                                                      1976-11-27
                                                                       Ankit
                                                                                 100
                                                                                        10000
                                                                                                         39
                                                                                                                  1985-11-27
 3
            Vikas
                      100
                             10000 4
                                              37
                                                      1987-11-27
                                                                       Ankit
                                                                                 100
                                                                                        10000
                                                                                                         39
                                                                                                                 1985-11-27
 4
            Rohit
                       100
                             5000
                                                      2008-11-27
                                                                       Ankit
                                                                                 100
                                                                                        10000
                                                                                                         39
                                                                                                                  1985-11-27
                                                       1985-11-27
                                                                                                                  1976-11-27
                       100
                             10000
                                              39
                                                                       Mohit
                                                                                 100
                                                                                        15000
                                                                                                         48
 5
            Ankit
 6
                             15000
                                              48
                                                       1976-11-27
                                                                                        15000
                                                                                                         48
                                                                                                                  1976-11-27
                             10000
                                                                       Mahit
                                                                                        15000
                                                                                                                 1076 11 27
       --4) Second highest salary in each department
       select e1.*, e2.*
       from employee e1
       join employee e2 on e1.dept_id = e2.dept_id and e1.salary < e2.salary
121 % ▼ 4

    ■ Results    ■ Messages
      emp_id emp_name
                                salary
                                                                                                salary
                                                                              emp_name
                                                           2008-11-27
                                                                                                                            1985-11-27
             Rohit
                        100
                                5000
                                                  16
                                                                              Ankit
                                                                                         100
                                                                                                10000
                                                                                                                   39
             Rohit
                                5000
                                                           2008-11-27
                                                                                                 15000
                                                                                                                            1976-11-27
                        100
                                                  16
                                                                              Mohit
                                                                                         100
                                                                                                                   48
                         100
                                                            1985-11-27
                                                                                                                            1976-11-27
3
                                10000
                                                  39
                                                                                         100
                                                                                                                   48
              Ankit
                         100
                                10000
                                                            1987-11-27
                                                                              Mohit
                                                                                         100
                                                                                                 15000
                                                                                                                            1976-11-27
             Rohit
                        100
                                5000
                                                  16
                                                           2008-11-27 3
                                                                              Vikas
                                                                                         100
                                                                                                 10000
                                                                                                                   37
                                                                                                                            1987-11-27
     8
             Ashish
                        200
                                5000
                                                  12
                                                           2012-11-27 5
                                                                              Mudit
                                                                                         200
                                                                                                12000
                                                                                                                   55
                                                                                                                            1969-11-27
             Saniav
                        200
                                9000
                                                  13
                                                           2011-11-27 5
                                                                              Mudit
                                                                                         200
                                                                                                12000
                                                                                                                   55
                                                                                                                            1969-11-27
                                                           2012-11-27
                                                                                                                            2010-11-27
                        200
                                5000
                                       2
                                                  12
                                                                                         200
                                                                                                12000
8
     8
             Ashish
                                                                              Agam
                                                                                                                   14
                        200
                                9000
                                                  13
                                                           2011-11-27 6
                                                                                         200
                                                                                                 12000
                                                                                                                            2010-11-27
             Sanjay
                                                                              Agam
                                                           2012-11-27 7
                                                                                                9000
                                                                                                                            2011-11-27
 10
      select e1.dept_id, max(e1.salary) as second_highest_salary
         from employee e1
        join employee e2 on e1.dept_id = e2.dept_id and e1.salary < e2.salary</pre>
        group by e1.dept_id
 121 % 🔻 🔻
  emp_name
                          dept_id
                                  salary
                                         manager_id
                                                     emp_age
                                                              dob
                                                                                  emp_name
                                                                                             dept_id
                                                                                                     salarv
                                                                                                            manager_id
                                                                                                                        emp_age
                                                                                                                                  dob
                                                               2008-11-27
                                                                                                                                  1985-11-27
                Rohit
                                                                                              100
                                                                                                      10000
                                   5000
                                                      16
                                                                                  Ankit
                                                                                                                        39
                           100
                                   5000
                                                               2008-11-27
                                                                                                      15000
                                                                                                                                  1976-11-27
                Ankit
                           100
                                   10000
                                                     39
                                                               1985-11-27 2
                                                                                  Mohit
                                                                                              100
                                                                                                      15000
                                                                                                                        48
                                                                                                                                  1976-11-27
                Vikas
                          100
                                   10000
                                                     37
                                                               1987-11-27 2
                                                                                  Mohit
                                                                                             100
                                                                                                      15000
                                                                                                                        48
                                                                                                                                  1976-11-27
                                                               2008-11-27
                                                                                                                                  1987-11-27
                                                                                                      10000
  5
                           100
                                                     16
                                                                                             100
                                                                                                                        37
               Rohit
                                                                                  Vikas
                                                               2012-11-27
                                                                                                                                  1969-11-27
               Ashish
                           200
                                                                                  Mudit
                                                                                             200
                                                                                                      12000
                Sanjay
                           200
                                   9000
                                                     13
                                                               2011-11-27 5
                                                                                  Mudit
                                                                                             200
                                                                                                      12000
                                                                                                                        55
                                                                                                                                  1969-11-27
               Ashish
                           200
                                   5000
                                                     12
                                                               2012-11-27 6
                                                                                  Agam
                                                                                             200
                                                                                                      12000 2
                                                                                                                        14
                                                                                                                                  2010-11-27
                                                               2011-11-27 6
                                                                                                                                  2010-11-27
               Sanjay
                           200
                                   9000
                                                     13
                                                                                  Agam
                                                                                             200
                                                                                                     12000
                                                                                                                        14
               Ashish
                           200
                                   5000
                                                               2012-11-27 7
                                                                                                     9000
  10
                                                                                  Sanjay
```

```
select e1.dept_id, e1.salary,e2.salary
      from employee e1
     join employee e2 on e1.dept_id = e2.dept_id and e1.salary < e2.salary
     group by e1.dept_id
     having COUNT(DISTINCT e2.salary) >= 2 --ensures that there are at least two distinct salaries in the department.
 121 % ▼ ◀ ■
 dept_id salary
100 5000
              salary
10000
          5000
    100
          10000 15000
    100
         5000
              10000
    200
              12000
         5000
    200
         9000
              12000
    200
         5000
              12000
    200
         5000
              9000
    --4) Second highest salary in each department
    select e1.dept id, max(e1.salary) as second highest salary
     from employee e1
    join employee e2 on e1.dept_id = e2.dept_id and e1.salary < e2.salary</pre>
     group by e1.dept_id
     having COUNT(DISTINCT e2.salary) >= 2 --ensures that there are at least two distinct salaries in the department.
121 % 🕶 🖣
■ Results ■ Messages
| dept_id | second_highest_salary | 1 | 100 | 10000 |
   200
       --5) Find the employees with highest salary in each department
       with cte as(
                             RANK() over(partition by dept_id order by salary desc) rk
       select *, DE
       from employee)
       select * from cte
       where rk = 1
121 % ▼ ◀
 Results Messages
      emp_id emp_name dept_id salary manager_id emp_age dob
             Mohit
                                                        1976-11-27 1
     2
                       100
                              15000 5
                                               48
 2
      5
             Mudit
                       200
                               12000 6
                                                55
                                                        1969-11-27
 3
      6
             Agam
                       200
                              12000 2
                                                14
                                                        2010-11-27
                                                        1973-11-27 1
             Mukesh
                              6000 6
                                               51
 4
     9
                       300
                                                        1974-11-27 1
 5
             Rakesh
                       500
                              7000 6
                                               50
      10
```

## With self join

```
--5) Find the employees with highest salary in each department
     select e1.*, e2.*
     from employee e1
     left join employee e2 on e1.dept_id = e2.dept_id and e1.salary < e2.salary
     where e2.salary is null
121 % 🔻 🖪
dept_id salary manager_id emp_age dob
    emp_id emp_name dept_id
                                          1985-11-27
                                                                                       1976-11-27
         Ankit
                       10000
                                                       Mohit
                                                                    15000
                                   48
                                          1976-11-27
                                                       NULL
                                                                    NULL
                                                                                       NULL
                                                               NULL
                       10000
                                          1987-11-27
                                                       Mohit
          Rohit
                       5000
                                   16
                                          2008-11-27 1
                                                               100
                                                                    10000 4
                                                                                 39
                                                                                       1985-11-27
         Rohit
                 100
                       5000
                                   16
                                          2008-11-27 2
                                                       Mohit
                                                               100
                                                                    15000 5
                                                                                 48
                                                                                       1976-11-27
6
7
                                          2008-11-27 3
                                                                                       1987-11-27
         Rohit
                 100
                       5000
                                   16
                                                       Vikas
                                                               100
                                                                    10000 4
                                                                                 37
         Mudit
                 200
                       12000
                                          1969-11-27 NULL
                                                       NULL
                                                              NULL
                                                                    NULL NULL
                                                                                 NULL
                 200
                       12000 2
                                          2010-11-27 NULL
                                                       NULL
                                                              NULL
                                                                    NULL NULL
                                                                                 NULL
                                                                    12000 6
         Sanjay
                 200
                       9000 2
                                   13
                                          2011-11-27 5
                                                       Mudit
                                                              200
                                                                                 55
                                                                                       1969-11-27
10
                                                                                       2010-11-27
         Saniav
                 200
                       9000
                                   13
                                          2011-11-27 6
                                                       Agam
                                                              200
                                                                    12000 2
                                                                                 14
11
                                          2012-11-27 5
                                                                    12000 6
                                                                                       1969-11-27
                 200
                       5000
                                                       Mudit
                                                              200
                                                                                 55
         Ashish
12
                                                       Agam
      --5) Find the employees with highest salary in each department
   select e1.*, e2.*
      from employee e1
      left join employee e2 on e1.dept_id = e2.dept_id and e1.salary < e2.salary</pre>
      where e2.salary is null
.21 % 🔻 🔻
emp_id emp_name dept_id salary manager_id emp_age dob
                                                                emp_id emp_name dept_id salary manager_id emp_age dob
                      100
                             15000 5
                                             48
                                                      1976-11-27 NULL
                                                                       NULL
                                                                                 NULL NULL NULL
                                                                                                         NULL
                                                                                                                  NULL
                             12000 6
                                             55
                                                      1969-11-27 NULL
                                                                       NULL
                                                                                 NULL
                                                                                        NULL NULL
                                                                                                         NULL
                                                                                                                  NULL
2
    5
            Mudit
                      200
    6
                      200
                             12000 2
                                             14
                                                      2010-11-27 NULL
                                                                       NULL
                                                                                 NULL
                                                                                        NULL NULL
                                                                                                         NULL
                                                                                                                  NULL
3
            Agam
    9
            Mukesh
                      300
                             6000 6
                                             51
                                                      1973-11-27 NULL
                                                                       NULL
                                                                                 NULL
                                                                                         NULL
                                                                                              NULL
                                                                                                         NULL
                                                                                                                  NULL
                            7000 6
                                                      1974-11-27 NULL
                                             50
5
            Rakesh
                     500
                                                                       NULL
                                                                                 NULL
                                                                                       NULL NULL
                                                                                                         NULL
                                                                                                                 NULL
       --5) Find the employees with highest salary in each department
     select e1.*
       from employee e1
       where salary = (select max(salary) from employee e2 where e1.dept_id = e2.dept_id)
 121 % ▼ 4
 emp_id emp_name dept_id
                              salary manager_id emp_age dob
      10
             Rakesh
                       500
                              7000
                                    6
                                               50
                                                       1974-11-27
                       300
                               6000 6
                                               51
                                                       1973-11-27
      9
             Mukesh
      5
             Mudit
                       200
                               12000 6
                                               55
                                                       1969-11-27
                       200
                                              14
                                                       2010-11-27
      6
                              12000 2
             Agam
             Mohit
                      100
                              15000 5
                                              48
                                                       1976-11-27
```



In this case same salary not going to handle

```
--6) Find the 2nd highest salary in emplyoee table
    SELECT salary
    FROM employee
    WHERE salary = (
      SELECT MAX(salary)
      FROM employee
      WHERE salary < (
          SELECT MAX(salary)
          FROM employee
121 % ▼ 4
salary
1 12000
2 12000
      --6) Find the 2nd highest salary in emplyoee table
    SELECT MAX(salary) AS second_highest_salary
      FROM employee
      WHERE salary < (SELECT MAX(salary) FROM employee);
121 % ▼ 4
 second_highest_salary
     12000
    --7) Department with highest number of employees
   SELECT top 1 dept_id, count(emp_id) cn
    FROM employee
    group by dept_id
    order by cn desc
121 % ▼ ◀
dept_id cn
  200 4
```

```
--8) employees of salary greater than average emp salary
    ⊢SELECT *
      FROM employee
      where salary > (select AVG(salary) from employee)
121 % ▼ ◀
emp_id emp_name
                      dept_id
                             salary manager_id emp_age
                                                       dob
                              10000 4
                                               39
            Ankit
                       100
                                                        1985-11-27
                       100
                              15000 5
                                              48
    2
             Mohit
                                                        1976-11-27
            Vikas
                       100
                              10000 4
                                              37
                                                       1987-11-27
3
     5
             Mudit
                       200
                              12000 6
                                              55
                                                       1969-11-27
4
                       200
                              12000 2
                                                       2010-11-27
5
    6
            Agam
     --8) employees salary greater than manager salary
   SELECT e1.*,e2.*
     FROM employee e1
     join employee e2 on e1.manager id = e2.emp id
121 % ▼ ◀
emp_id emp_name dept_id salary manager_id emp_age dob
    emp_id emp_name dept_id salary manager_id emp_age dob
         Ankit
                  100 10000 4
                                                           Rohit
                                                                   100
                                                                         5000 2
                                                                                             2008-11-27
                        15000 5
                                      48
                                             1976-11-27 5
                                                           Mudit
                                                                   200
                                                                         12000
                                                                                              1969-11-27
3
    3
          Vikas
                  100
                        10000 4
                                     37
                                             1987-11-27 4
                                                           Rohit
                                                                   100
                                                                         5000 2
                                                                                      16
                                                                                              2008-11-27
                                             2008-11-27 2
4
    4
          Rohit
                  100
                        5000 2
                                     16
                                                           Mohit
                                                                   100
                                                                         15000 5
                                                                                      48
                                                                                              1976-11-27
5
          Mudit
                  200
                       12000 6
                                     55
                                            1969-11-27 6
                                                           Agam
                                                                   200
                                                                        12000 2
                                                                                      14
                                                                                             2010-11-27
                      12000 2
                                                                        15000 5
                                                                                      48
                                                                                             1976-11-27
6
   6
          Agam
                  200
                                     14
                                             2010-11-27 2
                                                           Mohit
                                                                   100
                        9000 2
                  200
                                             2011-11-27 2
                                                                   100
                                                                         15000 5
                                                                                      48
                                                                                              1976-11-27
7
          Sanjay
                       5000 2
                                     13
                                                           Mohit
                  200
                                            2012-11-27 2
                                                                         15000 5
                                                                                             1976-11-27
8
   8
          Ashish
                                     12
                                                           Mohit
                                                                   100
                                                                                      48
                200 5000 2
300 6000 6
                                                                        12000 2
          Mukesh
                                            1973-11-27 6
                                                           Agam
                                                                                             2010-11-27
10 10
          Rakesh
                500
                       7000 6
                                     50
                                            1974-11-27 6
                                                                                             2010-11-27
                                                                   200
                                                                        12000 2
                                                           Agam
     --8) employees salary greater than manager salary
     SELECT e1.*,e2.*
     FROM employee e1
     join employee e2 on e1.manager_id = e2.emp_id
     where e1.salary > e2.salary
121 % ▼ ◀
emp_id emp_name dept_id salary manager_id emp_age dob
                                                    emp_id emp_name dept_id salary manager_id emp_age dob
  1 Ankit 100
2 Mohit 100
                                                                         5000 2
                                            1985-11-27 4
                        10000 4 39
                                                                                              2008-11-27
                                                           Rohit
                                                                   100
                                                                                      16
  2
                       15000 5
                                     48
                                             1976-11-27 5
                                                           Mudit
                                                                   200
                                                                         12000 6
                                                                                       55
                                                                                              1969-11-27
   3
               100
          Vikas
                        10000 4
                                     37
                                             1987-11-27 4
                                                           Rohit
                                                                   100
                                                                         5000 2
                                                                                      16
                                                                                              2008-11-27
3
```

