Assignment No	3
Title	Analytical query
Objective	Rollup, Cube, Rank, Dense Rank, Lead, Lag, First, Last, Row number
Roll No	MCA2565

1) Create Employee Table and inserting values in the table

```
SQL> create table Employee(
  2  EmpNo number(6),Name
  3  varchar(10),Position
  4  varchar(6),Manager
  5  number(6),JoinDate date
  6  ,
  7  Salary number(7),
  8  DeptNo number(3))
  9  ;

Table created.
```

2)insert values in the tables

```
SQL> insert into Employee
  2  values(1461,'Lark','Asst',131461,to_date('2-4-1965','dd-mm-yyyy'),25410,203);

1 row created.
```

```
SQL> insert into Employee
  2  values(1461,'Alex','Clerk',124561,to_date('5-12-1955','dd-mm-yyyy'),25000,208);

1 row created.

SQL> insert into Employee
  2  values(1462,'Hex','Swiper',124567,to_date('15-2-1989','dd-mm-yyyy'),25640,301);

1 row created.
```

```
SQL> Select * from Employee
  2  ;

     EMPNO NAME       POSITI    MANAGER JOINDATE      SALARY     DEPTNO
---------- ---------- ------ ---------- --------- ---------- ----------
      1461 Lark       Asst       131461 02-APR-65      25410        203
      1461 Alex       Clerk      124561 05-DEC-55      25000        208
      1462 Hex        Swiper     124567 15-FEB-89      25640        301
      1489 Martha     JrAsst     185644 07-MAY-01      15000        401
      1475 Henry      JrAsst     185789 27-APR-99      18000        405
      1375 Atharva    Head       178941 03-MAR-94     180000        306
      1462 MAX        Swiper     124567 15-FEB-78      25640        301

7 rows selected.
```

3) Without Rollup

```
SQL> select DeptNo,sum(Salary) as total from Employee group by DeptNo order by DeptNo;

    DEPTNO      TOTAL
---------- ----------
       203      25410
       208      25000
       301      25640
       306     180000
       401      15000
       405      18000
```

4) With Rollup

```
SQL> select DeptNo,sum(Salary) as total from Employee group by rollup(DeptNo) order by DeptNo;

    DEPTNO      TOTAL
---------- ----------
       203      25410
       208      25000
       301      25640
       306     180000
       401      15000
       405      18000
               289050

7 rows selected.
```

Difference between roll up and without rollup is that in rollup the (super aggregate) sum of salary is given.

5) Multiple column without Rollup

```
SQL> select DeptNo,Position,sum(Salary) as Total from Employee group by DeptNo,Position order by 1,2;

    DEPTNO POSITI      TOTAL
---------- ------ ----------
       203 Asst        25410
       208 Clerk       25000
       301 Swiper      25640
       306 Head       180000
       401 JrAsst      15000
       405 JrAsst      18000

6 rows selected.
```

6) Multiple columns with Rollup

```
SQL> select DeptNo,Position,sum(Salary) as Total from Employee group by rollup(DeptNo,Position) order by 1,2;

    DEPTNO POSITI      TOTAL
---------- ------ ----------
       203 Asst        25410
       203             25410
       208 Clerk       25000
       208             25000
       301 Swiper      25640
       301             25640
       306 Head       180000
       306            180000
       401 JrAsst      15000
       401             15000
       405 JrAsst      18000

    DEPTNO POSITI      TOTAL
---------- ------ ----------
       405             18000
                      289050

13 rows selected.
```

The multiple columns in roll up and without roll up is that in without rollup only salary is given but in roll up sum is given of salary.

7) Without CUBE

```
SQL> select DeptNo,sum(Salary) as Total from Employee group by DeptNo order by DeptNo;

    DEPTNO      TOTAL
---------- ----------
       203      25410
       208      25000
       301      25640
       306     180000
       401      15000
       405      18000

6 rows selected.
```

8) With cube

```
SQL> select DeptNo,sum(Salary) as Total from Employee group by cube(DeptNo) order by DeptNo;

    DEPTNO      TOTAL
---------- ----------
       203      25410
       208      25000
       301      25640
       306     180000
       401      15000
       405      18000
                289050

7 rows selected.
```

9) Multiple Columns Without cube

```
SQL> select DeptNo,Position,sum(Salary) as Total from Employee group by DeptNo,Position order by 1,2;

    DEPTNO POSITI      TOTAL
---------- ------ ----------
       203 Asst        25410
       208 Clerk       25000
       301 Swiper      25640
       306 Head       180000
       401 JrAsst      15000
       405 JrAsst      18000

6 rows selected.
```

10) Multiple Columns With cube

```
SQL> select DeptNo,Position,sum(Salary) as Total from Employee group by cube(DeptNo,Position) order by 1,2;

    DEPTNO POSITI      TOTAL
---------- ------ ----------
       203 Asst        25410
       203                25410
       208 Clerk       25000
       208                25000
       301 Swiper      25640
       301                25640
       306 Head       180000
       306                180000
       401 JrAsst      15000
       401                15000
       405 JrAsst      18000

    DEPTNO POSITI      TOTAL
---------- ------ ----------
       405                18000
           Asst        25410
           Clerk       25000
           Head       180000
           JrAsst      33000
           Swiper      25640
                      289050

18 rows selected.
```

Difference in multiple column is that in with cube the total is given and also the deptno,position and total are given again .

11) With Rank

```
SQL> select Salary,rank() over(order by Salary)Rank from Employee;

    SALARY       RANK
---------- ----------
     15000          1
     18000          2
     25000          3
     25410          4
     25640          5
     25640          5
    180000          7

7 rows selected.
```

12) Dense Rank

```
SQL> select Salary,dense_rank() over(order by Salary) DENSE_RANK from Employee;

    SALARY DENSE_RANK
---------- ----------
     15000          1
     18000          2
     25000          3
     25410          4
     25640          5
     25640          5
    180000          6

7 rows selected.
```

Difference between rank and dense rank is that the dense rank if the salary is same the dense rank is given the same

13) Row number function

```
SQL> select EmpNo,row_number() over(order by Salary) ROW_NUM from Employee;

     EMPNO    ROW_NUM
---------- ----------
      1489          1
      1475          2
      1461          3
      1461          4
      1462          5
      1462          6
      1375          7

7 rows selected.
```

14) Multiple Columns Row number

```
SQL> select EmpNo,DeptNo,Salary,JoinDate,row_number() over(order by Salary)
  2  ROW_NUM from Employee;

     EMPNO     DEPTNO     SALARY JOINDATE     ROW_NUM
---------- ---------- ---------- --------- ----------
      1489        401      15000 07-MAY-01          1
      1475        405      18000 27-APR-99          2
      1461        208      25000 05-DEC-55          3
      1461        203      25410 02-APR-65          4
      1462        301      25640 15-FEB-89          5
      1462        301      25640 15-FEB-78          6
      1375        306     180000 03-MAR-94          7

7 rows selected.
```

15) Lead()

```
SQL> select DeptNo,EmpNo,Salary,LEAD(Salary,1,0) over(partition by DeptNo order by Salary desc)
  2  next_low_sal from Employee where DeptNo in(203,301) order
  3  by DeptNo,Salary desc;

    DEPTNO      EMPNO     SALARY NEXT_LOW_SAL
---------- ---------- ---------- ------------
       203       1461      25410            0
       301       1462      25640        25640
       301       1462      25640            0
```

16) LAG()

```
SQL> select DeptNo,EmpNo,Salary,LAG(Salary,1,0) over(partition by DeptNo order by Salary desc)
  2  next_high_sal from Employee where DeptNo in(203,301) order
  3  by DeptNo,Salary desc;

    DEPTNO      EMPNO     SALARY NEXT_HIGH_SAL
---------- ---------- ---------- -------------
       203       1461      25410             0
       301       1462      25640             0
       301       1462      25640         25640
```

17) FIRST()

This show the first value in specific Department

```
SQL> select DeptNo,EmpNo,Salary,min(Salary)keep(dense_rank FIRST order by Salary)
  2  over(partition by DeptNo) as lowest
  3  from Employee
  4  order by DeptNo,Salary;

    DEPTNO      EMPNO     SALARY     LOWEST
---------- ---------- ---------- ----------
       203       1461      25410      25410
       208       1461      25000      25000
       301       1465       1800       1800
       301       1462      25640       1800
       301       1462      25640       1800
       306       1375     180000     180000
       401       1489      15000      15000
       405       1475      18000      18000

8 rows selected.
```

18) LAST()

This show the last value in specific Department

```
SQL> select DeptNo,EmpNo,Salary,min(Salary)keep(dense_rank LAST order by Salary)
  2  over(partition by DeptNo) as highest
  3  from Employee
  4  order by DeptNo,Salary;

    DEPTNO      EMPNO     SALARY    HIGHEST
---------- ---------- ---------- ----------
       203       1461      25410      25410
       208       1461      25000      25000
       301       1465       1800      25640
       301       1462      25640      25640
       301       1462      25640      25640
       306       1375     180000     180000
       401       1489      15000      15000
       405       1475      18000      18000

8 rows selected.
```

19)