Write a query to show the full names of employees with maximum salary.

```
SQL> select first||last salary from staff where salary >= all(select salary from staff);

SALARY
----------------------------------------
 Timothy P.Love
 Michael M.Hash

SQL> select first||last from staff where salary = (select max(salary) from staff);

FIRST||LAST
----------------------------------------
 Michael M.Hash
 Timothy P.Love
```

---

Using the query below, find the last names of people with the same salary as “Zichal”.

```
SQL> select last, salary from staff where salary = (select salary from staff where lower(last) = 'zichal');

LAST                 SALARY
-------------------- ----------
Bhowmik                  100000
DuBois                   100000
Frankel      100000
Hurwitz      100000
Jarvis-Shean             100000
Jones                    100000
Simas                    100000
Teehee                   100000
Vega                     100000
Zichal                   100000
```

---

Substitute the last name “Young” for “Zichal” and run the query again. Did it work? If it did not work, why? Fix the query and re-run the query.

```
SQL> select last, salary from staff where salary = (select salary from staff where lower(last) = 'young');
select last, salary from staff where salary = (select salary from staff where lower(last) = 'young')
                                              *
ERROR at line 1:
ORA-01427: single-row subquery returns more than one row
```

This error occurs because unlike the last query, there are more than one staff member with the last name of ‘Young’ while there is only one ‘Zichal’.

```
SQL> select last, salary from staff where salary = any(select salary from staff where lower(last) = 'young');

LAST                 SALARY
-------------------- ----------
Alley                     42000
Asen                      42000
Attili                    58511
Ayling                    42000
Baggetto     42000
Bates                     42000
Bisi                      42000
```

| | |
|---|---|
| Block | 42000 |
| Campbell | 42000 |
| Campos | 42000 |
| Canery | 58511 |

| LAST | SALARY |
|---|---|
| Carden | 42000 |
| Castillo | 42000 |
| Chhabra | 42000 |
| Claude | 58511 |
| Cobbina | 42000 |
| Conrad | 42000 |
| Cuba | 42000 |
| Cunningham | 42000 |
| Donovan | 42000 |
| Dorsett | 42000 |
| Faulman | 42000 |

| LAST | SALARY |
|---|---|
| Fenn | 42000 |
| Fergenson | 42000 |
| Ford | 42000 |
| Frank | 42000 |
| Godfrey | 42000 |
| Gottlieb | 42000 |
| Grant | 42000 |
| Hanson | 42000 |
| Harris | 42000 |
| Hegde | 42000 |
| Hernandez | 42000 |

| LAST | SALARY |
|---|---|
| Hiatt | 42000 |
| Hughes | 42000 |
| Jackson | 42000 |
| Jones | 42000 |
| Kennedy | 42000 |
| Ledbetter | 42000 |
| Lee | 42000 |
| Lewin | 42000 |
| Lewis | 42000 |
| Limon | 42000 |
| Metcalf | 42000 |

| LAST | SALARY |
|---|---|
| Mrazek | 42000 |
| Northern | 42000 |
| Ocampo | 42000 |
| Oxtoby | 42000 |
| Page | 42000 |
| Pope | 42000 |
| Portilla | 42000 |
| Posey | 42000 |

| | | |
|---|---|---|
| Pulliam | 42000 | |
| Robertson | | 42000 |
| Schaub | | 42000 |

| LAST | SALARY |
|---|---|
| Schmuck | 42000 |
| Sinha | 42000 |
| Sirbu | 42000 |
| Smith | 42000 |
| Smith | 42000 |
| Stickel | 42000 |
| Swanson | 42000 |
| Tennison | 42000 |
| Thomas | 42000 |
| Tranchin | 42000 |
| Young | 42000 |

| LAST | SALARY |
|---|---|
| Young | 58511 |

67 rows selected.

---

Write and run a query to find the number of people with salaries greater than 100,000.

```
SQL> select count(salary) as salary_above_100k from staff where salary>=100000;
```

| SALARY_ABOVE_100K |
|---|
| 144 |

---

Write and run a query to find the number of peoplewith salaries greater than 100,000and grouped by a salary number.See the example output below(the count may vary for your table):

```
SQL> select salary, count(salary) as salaries_above_100k from staff group by salary having salary > 100000;
```

| SALARY | SALARIES_ABOVE_100K |
|---|---|
| 102000 | 8 |
| 158500 | 9 |
| 155500 | 5 |
| 145000 | 1 |
| 112774 | 1 |
| 113000 | 5 |
| 136134 | 1 |
| 130000 | 5 |
| 129758 | 1 |
| 165000 | 1 |
| 153500 | 2 |

| SALARY | SALARIES_ABOVE_100K |
|---|---|

```
    162500                          1
    139500                          1
    130500                         26
    100904                          2
    149000                          2
    114000                          3
    172200                         23
    123758                          1
    147500                          4
    162900                          1
    115731                          1

    SALARY SALARIES_ABOVE_100K
---------- --------------------
    172000                          1
    122744                          1
    140259                          1
    106839                          1
    110500                          1
    132009                          1
    148510                          2
    126251                          1
    113605                          1
    140000                          2
    120000                          8

    SALARY SALARIES_ABOVE_100K
---------- --------------------
    105211                          1
    179700                          2
    150000                          3
    102829                          1
    110000                          1
    144868                          1
    107770                          1

40 rows selected.
```

---

Write and run a query to find the number of people with salaries greater than 100,000, grouped by a salary number, where the no. of people in the group is >= 10. See the example output below:

```
SQL> select salary, count(salary) as salaries_above_100k from staff group by salary having salary > 100000 and
count(*)>=10;

    SALARY SALARIES_ABOVE_100K
---------- --------------------
    130500                         26
    172200                         23
```

---

Examine the query below. It uses regular expressions (regex)to show the last names where the same vowel repeats itself.

```
select last from staff where regexp_like (last, '([aeriou])\1', 'i');
```

The ‘i’ option in the regexp_like command is: 'i' specifies case-insensitive matching.

---

In this query, wewanttoshow the deptid and the number of employees in each dept.

```
SQL> select deptid as deptno, count(*) as empcount from l_emp group by deptid;

DEPTN   EMPCOUNT
----- ----------
d3              2
d1              4
d2              1
```

show the deptname (note the change from the previous exercise)and the number of employees in each dept.

```
SQL> select deptno,deptname,empcount from (select deptid as deptno, count(*) as empcount from l_emp group by deptid),
l_dept where deptno = l_dept.deptid;

DEPTN DEPTNAME             EMPCOUNT
----- ---------- ----------
d1    Research                  4
d2    Devt                      1
d3    Testing                   2
```

This appears to return the correct results.

Add the statement to show the rows displayed in ascending order, sorted by empcount(think of orderbyin the outer clause). Execute the statement.

```
SQL> select deptno,deptname,empcount from (select deptid as deptno, count(*) as empcount from l_emp group by deptid),
l_dept where deptno = l_dept.deptid order by empcount;

DEPTN DEPTNAME             EMPCOUNT
----- ---------- ----------
d2    Devt                      1
d3    Testing                   2
d1    Research                  4
```

---

find the deptid ofthe department with maximum number of employees.

```
SQL> select deptid, max(count(*)) from l_emp group by deptid;
select deptid, max(count(*)) from l_emp group by deptid
       *
ERROR at line 1:
ORA-00937: not a single-group group function
```

This query did not work.

```
SQL> select deptid from l_emp group by deptid having count(*) = (select count(*) from l_emp group by deptid);
select deptid from l_emp group by deptid having count(*) = (select count(*) from l_emp group by deptid)
                                                 *
ERROR at line 1:
ORA-01427: single-row subquery returns more than one row
```

This query also did not work. We will attempt to fix below…

a)

The above query is fixing the problem because it is now looking for the max.

```
SQL> select deptid from l_emp group by deptid having count(*) = (select max(count(*)) from l_emp group by deptid);

DEPTI
-----
D1
```

b)

Find the dept.nameof the department with maximum number of employees.

```
SQL> select deptname from (select deptid from l_emp group by deptid having count(*) = (select max(count(*)) from l_emp
group by deptid)) a, l_dept where a.deptid = l_dept.deptid;

DEPTNAME
----------
Research
```

---

Natural join

```
SQL> select * from l_emp natural join l_dept;

DEPTI       EMPNO EMPNAME    DEPTNAME
----- ---------- ---------- ----------
d1              6 chen       Research
d1              3 wayne      Research
d1              1 smith      Research
d1              5 king       Research
d2              2 jones      Devt
d3              7 winger     Testing
d3              4 moor       Testing

7 rows selected.
```

Cartesian Product

```
SQL> select * from l_emp, l_dept where l_emp.deptid = l_dept.deptid;

    EMPNO EMPNAME    DEPTI DEPTI DEPTNAME
---------- ---------- ----- ----- ----------
         6 chen       d1    d1    Research
         3 wayne      d1    d1    Research
         1 smith      d1    d1    Research
         5 king       d1    d1    Research
         2 jones      d2    d2    Devt
         7 winger     d3    d3    Testing
         4 moor       d3    d3    Testing

7 rows selected.
```