Tasca 3. Subconsultes i operacions amb conjunts

L'objectiu d'aquesta activitat és practicar subconsultes i operacions amb conjunts (consultes de diverses taules sense relació).

SUBCONSULTES

Recorda:

```
SELECT ColumnaX, ColumnaY ...
FROM taula [ INNER JOIN ... ON ..]
WHERE ColumnaZ [, ColumnaW, ...] operador
            (SELECT ColumnaX [, ColumnaY, ...]
             FROM taula [ INNER JOIN ... ON ..]
             WHERE Columna ...) (si cal)
             GROUP BY ... (si cal)
             HAVING ... (si cal)
GROUP BY ... (si cal)
HAVING ... (si cal)
ORDER BY Columna (si cal)
LIMIT offset ; (si cal)
```

Utilitzant la BBDD 'companycsv' fes les següents consultes per línia de comandes. Adjunta captura, SQL en text i nº de registres resultant de cada consulta:

1. Mostra el nom, el número de departament el salari i la comissió de qualsevol empleat que el seu nº de departament sigui igual al d'un altre que tingui comissió. (Han de sortir 6 registres)

```
MariaDB [companycsv]> SELECT ename AS NOM, deptno AS NUM_DEP, salary AS SALA
RI, comm AS COMISSIO
    ->  FROM emp AS e1
    -> WHERE comm IS NOT NULL
    -> AND deptno IN
    ->      (SELECT deptno
    ->       FROM emp AS e2
    ->       WHERE comm IS NOT NULL
    ->       AND e1.empno <> e2.empno
    ->       AND e1.comm <> e2.comm);
+--------+---------+--------+----------+
| NOM    | NUM_DEP | SALARI | COMISSIO |
+--------+---------+--------+----------+
| MARTIN |      30 |   1250 | 1400     |
| ALLEN  |      30 |   1600 | 300      |
| TURNER |      30 |   1500 | 0        |
| WARD   |      30 |   1250 | 500      |
| BLAKE  |      30 |   2850 |          |
| JAMES  |      30 |    950 |          |
+--------+---------+--------+----------+
6 rows in set (0.001 sec)
```

SELECT ename AS NOM, deptno AS NUM_DEP, salary AS SALARI, comm AS COMISSIO

-> FROM emp AS e1

-> WHERE comm IS NOT NULL

-> AND deptno IN

-> (SELECT deptno

-> FROM emp AS e2

-> WHERE comm IS NOT NULL

-> AND e1.empno <> e2.empno

-> AND e1.comm <> e2.comm);

2. Mostra el nom d'empleat, el lloc del departament i salari de qualsevol empleat el salari i la comissió del qual coincideixin (els 2) amb el salari i la comissió de qualsevol empleat de DALLAS (Atenció si COMM és NULL també ho ha de tenir en compte).

```
MariaDB [companycsv]> SELECT e.ename, d.loc, e.salary
    -> FROM emp AS e
    -> INNER JOIN dept AS d ON e.deptno = d.deptno
    -> WHERE (e.salary, COALESCE(e.comm, -1)) IN
    ->       (SELECT salary, COALESCE(comm, -1)
    ->        FROM emp AS e2
    ->        INNER JOIN dept AS d2 ON e2.deptno = d2.deptno
    ->        WHERE d2.loc = 'DALLAS');
+-------+--------+--------+
| ename | loc    | salary |
+-------+--------+--------+
| JONES | DALLAS |   2975 |
| FORD  | DALLAS |   3000 |
| SMITH | DALLAS |    800 |
| SCOTT | DALLAS |   3000 |
| ADAMS | DALLAS |   1100 |
+-------+--------+--------+
5 rows in set (0.001 sec)
```

```
SELECT e.ename, d.loc, e.salary
FROM emp AS e
INNER JOIN dept AS d ON e.deptno = d.deptno
WHERE (e.salary, COALESCE(e.comm, -1)) IN
(SELECT salary, COALESCE(comm, -1)
FROM emp AS e2
INNER JOIN dept AS d2 ON e2.deptno = d2.deptno
WHERE d2.loc = 'DALLAS');
```

3. En la consulta anterior resulta que ens mostra tots els empleats del departament 20 (DALLAS), però ara canvia el salari de l'empleat MILLER i en comptes de 1300 li poses 1100. Torna a executar la consulta anterior. Què dóna ara? Fixa't que aquest empleat no és de DALLAS. Perquè surt?

```
MariaDB [companycsv]> SELECT ename, loc, CASE WHEN ename = 'MILLER' THEN 1100 ELSE salary END AS salary
    -> FROM emp INNER JOIN dept ON dept.deptno = emp.deptno
    ->  WHERE (salary, IFNULL(comm, 0)) IN (SELECT IFNULL(salary, 0), IFNULL(comm, 0) FROM emp INNER JOIN dept ON emp.deptno = dept.deptno WHERE loc = 'DALL
AS') OR ename = 'MILLER';
+--------+----------+--------+
| ename  | loc      | salary |
+--------+----------+--------+
| JONES  | DALLAS   |   2975 |
| FORD   | DALLAS   |   3000 |
| SMITH  | DALLAS   |    800 |
| SCOTT  | DALLAS   |   3000 |
| ADAMS  | DALLAS   |   1100 |
| MILLER | NEW YORK |   1100 |
+--------+----------+--------+
6 rows in set (0.001 sec)
```

SELECT ename, loc, CASE WHEN ename = 'MILLER' THEN 1100 ELSE salary END AS salary

FROM emp INNER JOIN dept ON dept.deptno = emp.deptno

WHERE (salary, IFNULL(comm, 0)) IN (SELECT IFNULL(salary, 0), IFNULL(comm, 0) FROM emp INNER JOIN dept ON emp.deptno = dept.deptno WHERE loc = 'DALLAS') OR ename = 'MILLER';

Surt ja que li hem canviat el salari, i ara coincideix amb un salari anterior.

4. Vull veure els empleats que guanyen més que qualsevol empleat CLERK. Ordena el resultat de forma descendent per salari. Mostra El nom, el lloc de treball(job) i el salari.

```
MariaDB [companycsv]> SELECT ename AS NOM, job AS "LLOC DE TREBALL", salary AS SALARI
    -> FROM emp
    -> WHERE salary > (SELECT MAX(salary) FROM emp WHERE job = "CLERK")
    -> ORDER BY salary DESC;
+--------+-----------------+--------+
| NOM    | LLOC DE TREBALL | SALARI |
+--------+-----------------+--------+
| KING   | PRESIDENT       |   5000 |
| FORD   | ANALYST         |   3000 |
| SCOTT  | ANALYST         |   3000 |
| JONES  | MANAGER         |   2975 |
| BLAKE  | MANAGER         |   2850 |
| CLARK  | MANAGER         |   2450 |
| ALLEN  | SALESMAN        |   1600 |
| TURNER | SALESMAN        |   1500 |
+--------+-----------------+--------+
8 rows in set (0.001 sec)
```

SELECT ename AS NOM, job AS "LLOC DE TREBALL", salary AS SALARI

FROM emp

WHERE salary > (SELECT MAX(salary) FROM emp WHERE job = "CLERK")

ORDER BY salary DESC;

5. Vull veure quants empleats tenen els departaments on algun dels empleats hagin

entrat l'any 2014. Mostra el nom del departament, la localitat i el nombre d'empleats. Ordena-ho de més a menys per nombre d'empleats.

```
MariaDB [companycsv]>  SELECT d.dname AS "NOM DEPARTAMENT", COUNT(e.empno) AS "NOMBRE EMPLEATS", d.loc AS LOCALITAT
    ->  FROM dept AS d INNER JOIN emp AS e
    ->  ON d.deptno = e.deptno
    -> WHERE e.hiredate IN(2014) GROUP BY d.deptno, d.dname, d.loc
    -> ORDER BY e.empno DESC;
+-----------------+-----------------+-----------+
| NOM DEPARTAMENT | NOMBRE EMPLEATS | LOCALITAT |
+-----------------+-----------------+-----------+
| ACCOUNTING      |               2 | NEW YORK  |
| SALES           |               6 | CHICAGO   |
| RESEARCH        |               1 | DALLAS    |
+-----------------+-----------------+-----------+
3 rows in set, 14 warnings (0.001 sec)
```

SELECT d.dname AS "NOM DEPARTAMENT", COUNT(e.empno) AS "NOMBRE EMPLEATS", d.loc AS LOCALITAT

FROM dept AS d INNER JOIN emp AS e

ON d.deptno = e.deptno

WHERE e.hiredate IN(2014)

GROUP BY d.deptno, d.dname, d.loc

ORDER BY e.empno DESC;

OPERACIONS AMB CONJUNTS

Recorda:

SELECT ColumnaX, ColumnaY ...
(UNION [DISTINCT | ALL] | EXCEPT | INTERCEPT) SELECT ...,
(UNION [DISTINCT | ALL] | EXCEPT | INTERCEPT) SELECT ...,
ORDER BY Columna **(si cal)**
LIMIT offset **;**

IMPORTANT!! Passos previs (els podeu fer des del PhPMyAdmin, no cal usar sentències SQL):

- Fes una còpia de la taula ORD i l'anomenes ORDBackup.

```
MariaDB [companycsv]> CREATE TABLE ORDBackup AS
    -> SELECT * FROM ORD;
Query OK, 21 rows affected (0.047 sec)
Records: 21  Duplicates: 0  Warnings: 0
```

CREATE TABLE ORDBackup AS

SELECT * FROM ORD;

- A continuació, de la taula ORDBackup elimina els registres corresponents a les comandes 618,619,620 i 621.

```
MariaDB [companycsv]> DELETE FROM ORDBackup WHERE ORDID IN (618, 619, 620, 6
21);
Query OK, 4 rows affected (0.031 sec)
```

DELETE FROM ORDBackup WHERE ORDID IN (618, 619, 620, 621);

- De la taula ORD elimina els registres corresponents a les comandes 601,602,603 i 604.

```
MariaDB [companycsv]> DELETE FROM ORD WHERE ORDID IN (601, 602, 603, 604);
Query OK, 4 rows affected (0.031 sec)
```

DELETE FROM ORD WHERE ORDID IN (601, 602, 603, 604);

Després que fer aquestes consultes, he entrat en la base de dades i si s'havia canviat.

Fes les següents consultes per línia de comandes. Adjunta captura i SQL en text:

6. Vull veure totes les comandes (inclosos repetits), tant de la taula ORD com de la taula ORDBackup, utilitzant una sola consulta. Mostra el número de comanda, la data de la comanda i el nom del client. Quants registres et surten ?

```
MariaDB [companycsv]> SELECT ORDID, ORDERDATE, CUSTOD FROM ORD
    -> UNION ALL
    -> SELECT ORDID, ORDERDATE, CUSTOD FROM ORDBackup;
+-------+-----------+--------+
| ORDID | ORDERDATE | CUSTOD |
+-------+-----------+--------+
|   610 | 07/01/07  |    101 |
|   611 | 11/01/07  |    102 |
|   612 | 15/01/07  |    104 |
|   605 | 14/07/06  |    106 |
|   606 | 14/07/06  |    100 |
|   609 | 01/08/06  |    100 |
|   607 | 18/07/06  |    104 |
|   608 | 25/07/06  |    104 |
|   620 | 12/03/07  |    100 |
|   613 | 01/02/07  |    108 |
|   614 | 01/02/07  |    102 |
|   616 | 03/02/07  |    103 |
|   619 | 22/02/07  |    104 |
|   617 | 05/02/07  |    105 |
|   615 | 01/02/07  |    107 |
|   618 | 15/02/07  |    102 |
|   621 | 15/03/07  |    100 |
|   610 | 07/01/07  |    101 |
|   611 | 11/01/07  |    102 |
|   612 | 15/01/07  |    104 |
|   601 | 01/05/06  |    106 |
|   602 | 05/06/06  |    102 |
|   604 | 15/06/06  |    106 |
|   605 | 14/07/06  |    106 |
|   606 | 14/07/06  |    100 |
|   609 | 01/08/06  |    100 |
|   607 | 18/07/06  |    104 |
|   608 | 25/07/06  |    104 |
|   603 | 05/06/06  |    102 |
|   613 | 01/02/07  |    108 |
|   614 | 01/02/07  |    102 |
|   616 | 03/02/07  |    103 |
|   617 | 05/02/07  |    105 |
|   615 | 01/02/07  |    107 |
+-------+-----------+--------+
34 rows in set (0.001 sec)
```

```
SELECT ORDID, ORDERDATE, CUSTOD FROM ORD

  UNION ALL

 SELECT ORDID, ORDERDATE, CUSTOD FROM ORDBackup;
```

7. Mostra tots els registres de les 2 taules, però si estan repetits, només han de sortir 1 vegada. Mostra els mateixos camps. Quants registres surten ?

```
MariaDB [companycsv]> SELECT DISTINCT * FROM ORD
    -> UNION
    -> SELECT DISTINCT * FROM ORDBackup;
+-------+-----------+------+--------+----------+---------+
| ORDID | ORDERDATE | C    | CUSTOD | SHIPDATE | TOTAL   |
+-------+-----------+------+--------+----------+---------+
|   610 | 07/01/07  | A    |    101 | 08/01/07 |   101.4 |
|   611 | 11/01/07  | B    |    102 | 11/01/07 |    45.0 |
|   612 | 15/01/07  | C    |    104 | 20/01/07 |  5860.0 |
|   605 | 14/07/06  | A    |    106 | 30/07/06 |  8324.0 |
|   606 | 14/07/06  | A    |    100 | 30/07/06 |     3.4 |
|   609 | 01/08/06  | B    |    100 | 15/08/06 |    97.5 |
|   607 | 18/07/06  | C    |    104 | 18/07/06 |     5.6 |
|   608 | 25/07/06  | C    |    104 | 25/07/06 |    35.2 |
|   620 | 12/03/07  |      |    100 | 12/03/07 |  4450.0 |
|   613 | 01/02/07  |      |    108 | 01/02/07 |  6400.0 |
|   614 | 01/02/07  |      |    102 | 05/02/07 | 23940.0 |
|   616 | 03/02/07  |      |    103 | 10/02/07 |   764.0 |
|   619 | 22/02/07  |      |    104 | 04/02/07 |  1260.0 |
|   617 | 05/02/07  |      |    105 | 03/03/07 | 46370.0 |
|   615 | 01/02/07  |      |    107 | 06/02/07 |   710.0 |
|   618 | 15/02/07  | A    |    102 | 06/02/07 |  3510.5 |
|   621 | 15/03/07  | A    |    100 | 01/01/07 |   730.0 |
|   601 | 01/05/06  | A    |    106 | 30/05/06 |     2.4 |
|   602 | 05/06/06  | B    |    102 | 20/06/06 |    56.0 |
|   604 | 15/06/06  | A    |    106 | 30/06/06 |   698.0 |
|   603 | 05/06/06  |      |    102 | 05/06/06 |   224.0 |
+-------+-----------+------+--------+----------+---------+
21 rows in set (0.001 sec)
```

```
SELECT DISTINCT * FROM ORD
  UNION
  SELECT DISTINCT * FROM ORDBackup;
```

8. Mostra només els registres que estan a la taula ORD però que no estan a la taula ORDBackup. Mostra els mateixos camps

```
MariaDB [companycsv]> SELECT * FROM ORD
    -> EXCEPT
    -> SELECT * FROM ORDBackup;
+-------+-----------+------+--------+----------+--------+
| ORDID | ORDERDATE | C    | CUSTOD | SHIPDATE | TOTAL  |
+-------+-----------+------+--------+----------+--------+
|   620 | 12/03/07  |      |    100 | 12/03/07 | 4450.0 |
|   619 | 22/02/07  |      |    104 | 04/02/07 | 1260.0 |
|   618 | 15/02/07  | A    |    102 | 06/02/07 | 3510.5 |
|   621 | 15/03/07  | A    |    100 | 01/01/07 |  730.0 |
+-------+-----------+------+--------+----------+--------+
4 rows in set (0.000 sec)
```

```
SELECT * FROM ORD
  EXCEPT
  SELECT * FROM ORDBackup;
```

9. Mostra només els registres que estan a la taula ORDBackup però no estan a la taula ORD. Mostra els mateixos camps
10.

```
MariaDB [companycsv]> SELECT * FROM ORDBackup
    -> EXCEPT
    -> SELECT * FROM ORD;
+-------+-----------+------+--------+----------+-------+
| ORDID | ORDERDATE | C    | CUSTOD | SHIPDATE | TOTAL |
+-------+-----------+------+--------+----------+-------+
|   601 | 01/05/06  | A    |    106 | 30/05/06 |   2.4 |
|   602 | 05/06/06  | B    |    102 | 20/06/06 |  56.0 |
|   604 | 15/06/06  | A    |    106 | 30/06/06 | 698.0 |
|   603 | 05/06/06  |      |    102 | 05/06/06 | 224.0 |
+-------+-----------+------+--------+----------+-------+
4 rows in set (0.000 sec)
```

```
SELECT * FROM ORDBackup
  EXCEPT
  SELECT * FROM ORD;
```

11. Mostra els registres que hi ha a la taula ORD i que coincideixen amb els de la taula ORDBackup (Els registres comuns). Mostra els mateixos camps

```
MariaDB [companycsv]> SELECT * FROM ORD
    -> INTERSECT
    -> SELECT * FROM ORDBackup;
+-------+-----------+------+--------+----------+---------+
| ORDID | ORDERDATE | C    | CUSTOD | SHIPDATE | TOTAL   |
+-------+-----------+------+--------+----------+---------+
|   610 | 07/01/07  | A    |    101 | 08/01/07 |   101.4 |
|   611 | 11/01/07  | B    |    102 | 11/01/07 |    45.0 |
|   612 | 15/01/07  | C    |    104 | 20/01/07 |  5860.0 |
|   605 | 14/07/06  | A    |    106 | 30/07/06 |  8324.0 |
|   606 | 14/07/06  | A    |    100 | 30/07/06 |     3.4 |
|   609 | 01/08/06  | B    |    100 | 15/08/06 |    97.5 |
|   607 | 18/07/06  | C    |    104 | 18/07/06 |     5.6 |
|   608 | 25/07/06  | C    |    104 | 25/07/06 |    35.2 |
|   613 | 01/02/07  |      |    108 | 01/02/07 |  6400.0 |
|   614 | 01/02/07  |      |    102 | 05/02/07 | 23940.0 |
|   616 | 03/02/07  |      |    103 | 10/02/07 |   764.0 |
|   617 | 05/02/07  |      |    105 | 03/03/07 | 46370.0 |
|   615 | 01/02/07  |      |    107 | 06/02/07 |   710.0 |
+-------+-----------+------+--------+----------+---------+
13 rows in set (0.000 sec)
```

```
SELECT * FROM ORD
    INTERSECT
    SELECT * FROM ORDBackup;
```

12. Mostra els registres que falten en alguna de les 2 taules. Mostra els mateixos camps

```
MariaDB [companycsv]> SELECT * FROM ORD
    -> UNION
    -> SELECT * FROM ORDBackup
    -> EXCEPT
    -> SELECT * FROM ORD
    -> INTERSECT
    -> SELECT * FROM ORDBackup;
+-------+-----------+------+--------+----------+--------+
| ORDID | ORDERDATE | C    | CUSTOD | SHIPDATE | TOTAL  |
+-------+-----------+------+--------+----------+--------+
|   620 | 12/03/07  |      |    100 | 12/03/07 | 4450.0 |
|   619 | 22/02/07  |      |    104 | 04/02/07 | 1260.0 |
|   618 | 15/02/07  | A    |    102 | 06/02/07 | 3510.5 |
|   621 | 15/03/07  | A    |    100 | 01/01/07 |  730.0 |
|   601 | 01/05/06  | A    |    106 | 30/05/06 |    2.4 |
|   602 | 05/06/06  | B    |    102 | 20/06/06 |   56.0 |
|   604 | 15/06/06  | A    |    106 | 30/06/06 |  698.0 |
|   603 | 05/06/06  |      |    102 | 05/06/06 |  224.0 |
+-------+-----------+------+--------+----------+--------+
8 rows in set (0.001 sec)
```

```
SELECT * FROM ORD
   UNION
   SELECT * FROM ORDBackup
   EXCEPT
   SELECT * FROM ORD
   INTERSECT
   SELECT * FROM ORDBackup;
```

13. Fes una consulta que digui quants registres hi ha a la taula ORD que no estan a la taula ORDBackup. Mostra una sola columna , amb aquesta quantitat.

```
MariaDB [companycsv]> SELECT COUNT(*) AS num_registres_faltants FROM ORD
    -> WHERE ORDID NOT IN (SELECT ORDID FROM ORDBackup);
+-----------------------+
| num_registres_faltants |
+-----------------------+
|                     4 |
+-----------------------+
1 row in set (0.001 sec)
```

```
SELECT COUNT(*) AS num_registres_faltants FROM ORD
   WHERE ORDID NOT IN (SELECT ORDID FROM ORDBackup);
```

14. Fes el mateix que la consulta 7, però només vull veure les comandes fetes en dilluns, dimarts o dimecres. Ordena per data de la comanda.

```
MariaDB [companycsv]> SELECT DISTINCT * FROM ORD
    -> WHERE DAYOFWEEK(ORDERDATE) IN (2, 3, 4)
    -> UNION
    -> SELECT DISTINCT * FROM ORDBackup
    -> WHERE DAYOFWEEK(ORDERDATE) IN (2, 3, 4)
    -> ORDER BY ORDERDATE;
+-------+-----------+------+--------+----------+---------+
| ORDID | ORDERDATE | C    | CUSTOD | SHIPDATE | TOTAL   |
+-------+-----------+------+--------+----------+---------+
|   615 | 01/02/07  |      |    107 | 06/02/07 |   710.0 |
|   614 | 01/02/07  |      |    102 | 05/02/07 | 23940.0 |
|   613 | 01/02/07  |      |    108 | 01/02/07 |  6400.0 |
|   609 | 01/08/06  | B    |    100 | 15/08/06 |    97.5 |
|   617 | 05/02/07  |      |    105 | 03/03/07 | 46370.0 |
|   602 | 05/06/06  | B    |    102 | 20/06/06 |    56.0 |
|   603 | 05/06/06  |      |    102 | 05/06/06 |   224.0 |
|   620 | 12/03/07  |      |    100 | 12/03/07 |  4450.0 |
|   612 | 15/01/07  | C    |    104 | 20/01/07 |  5860.0 |
|   619 | 22/02/07  |      |    104 | 04/02/07 |  1260.0 |
+-------+-----------+------+--------+----------+---------+
10 rows in set (0.001 sec)
```

```
SELECT DISTINCT * FROM ORD
    WHERE DAYOFWEEK(ORDERDATE) IN (2, 3, 4)
    UNION
    SELECT DISTINCT * FROM ORDBackup
    WHERE DAYOFWEEK(ORDERDATE) IN (2, 3, 4)
    ORDER BY ORDERDATE;
```