

SQL DML. Part 4.

Sub-queries

Subqueries



CITY UNIVERSITY
LONDON

- SQL statements can have a **SELECT** embedded within them.
- It can compute a set or used as a Table itself. We do not talk about the latter one.
- A subselect can be used in **WHERE** and **HAVING** clauses of an outer **SELECT**, where it is called a subquery or nested query.
- Subselects may also appear in **INSERT**, **UPDATE**, and **DELETE** statements.

Example 1.



CITY UNIVERSITY
LONDON

List the names of all the players who have a batting score of 100 or more in any match.

```
SELECT DISTINCT (name)
FROM mccPlayer INNER JOIN mccMatch_performance
ON mccPlayer.registration_number =
mccMatch_performance.registration_number
WHERE batting_score >= 100;
```

Example 1.



CITY UNIVERSITY
LONDON

Another way.

```
SELECT name
FROM mccPlayer
WHERE registration_number IN
    (SELECT DISTINCT registration_number
     FROM mccMatch_performance
     WHERE batting_score >= 100);
```



Subquery Rules

- **ORDER BY** clause may not be used in a subquery (although it may be used in outermost **SELECT**).
- Subquery **SELECT** list must consist of a single column name or expression, except for subqueries that use **EXISTS**.
- By default, column names refer to table name in **FROM** clause of subquery. Can refer to a table in **FROM** clause using an *alias*.
- When subquery is an operand in a comparison, subquery must appear on right-hand side.
- A subquery may not be used as an operand in an expression.

Example 2.



CITY UNIVERSITY
LONDON

List the registration numbers of any players who have not played in a match.

```
SELECT name
FROM mccPlayer
WHERE registration_number NOT IN
    (SELECT DISTINCT registration_number
     FROM mccMatch_performance);
```

Example 2.



CITY UNIVERSITY
LONDON

What can we can get rid of?

Example 3.



CITY UNIVERSITY
LONDON

List the registration number, or numbers, of players who have achieved the highest score

```
SELECT registration_number, batting_score
FROM mccMatch_performance
WHERE batting_score IN
    (SELECT MAX(batting_score)
     FROM mccMatch_performance);
```

```
SELECT registration_number, batting_score
FROM mccMatch_performance
WHERE batting_score =
    (SELECT MAX(batting_score) FROM mccMatch_performance)
```


Example 4.



CITY UNIVERSITY
LONDON

List the names of players who have scored at least once more than the average batting score of all players

```
SELECT name
FROM mccPlayer
WHERE registration_number IN
  (SELECT DISTINCT registration_number
   FROM mccMatch_performance
   WHERE batting_score >
    (SELECT AVG(batting_score) FROM mccMatch_performance));
```

Example 5. Exists.



CITY UNIVERSITY
LONDON

List the names of players who have played at the Collingwood Fields ground.

```
SELECT name
FROM mccPlayer P
WHERE EXISTS (SELECT *
              FROM mccMatch_performance MP INNER JOIN mccMatches M
              ON MP.match_date = M.match_date
              WHERE P.registration_number = MP.registration_number
              AND ground_name = 'Collingwood Fields');
```

Example 6.



CITY UNIVERSITY
LONDON

List the names of players who have NOT played at the Collingwood Fields ground

```
SELECT name
FROM mccPlayer P
WHERE NOT EXISTS (SELECT *
                   FROM mccMatch_performance MP INNER JOIN mccMatches M
                   ON MP.match_date = M.match_date
                   WHERE P.registration_number = MP.registration_number
                   AND ground_name = 'Collingwood Fields');
```