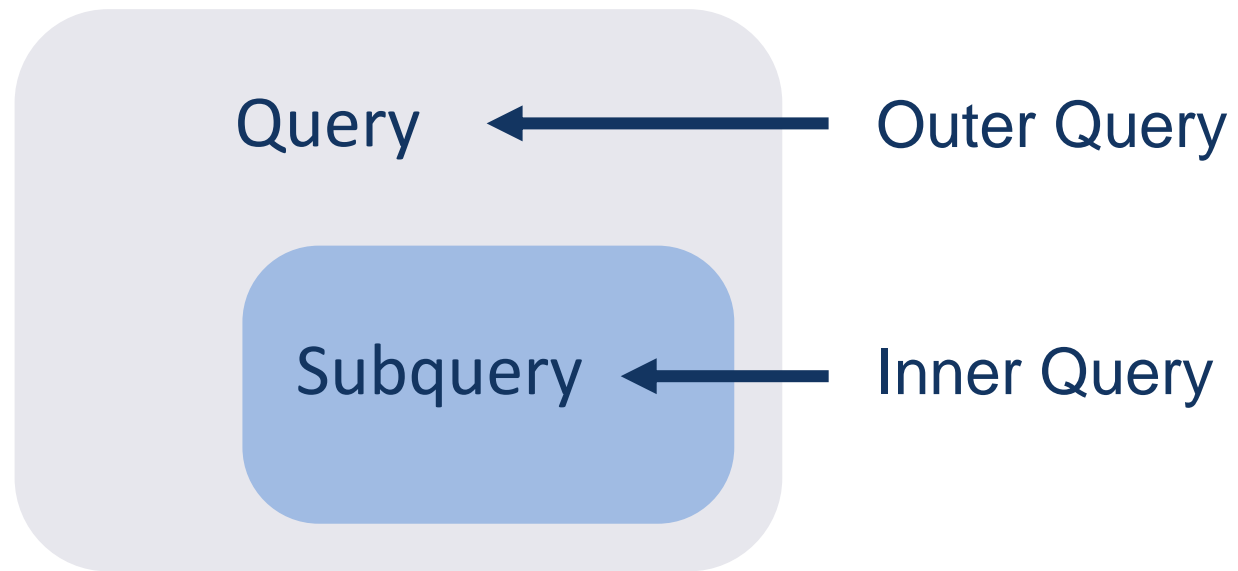




Subqueries

```
( SELECT  
    AVG(price)  
FROM Products )
```

▲ Subqueries



▲ Syntax

```
( SELECT MAX(qty) FROM Sales )
```

2 types:

- **self-contained**
- **correlated**

Example

self-contained
correlated

Details of the product(s) with the highest price

```
SELECT name, color, price
FROM Products
WHERE price = (
```

```
SELECT MAX(price)
FROM Products
```

name	color	price
ball	blue	743
rope	brown	743

743

👉 scalar

Example

self-contained
correlated

Order details of customers in city Ede

```
SELECT orderdate, ordertotal  
FROM Orders  
WHERE custid IN (
```

```
SELECT id  
FROM Customers  
WHERE city = 'Ede'
```

orderdate	ordertotal
2021-09-21	128.50
2020-11-03	64.00
2021-10-15	76.40

22, 37, 48

👉 multi-valued

▲ Again ...

self-contained
correlated

```
SELECT name, color, price
FROM Products
WHERE price =
(
  SELECT MAX(price)
  FROM Products
)
```

743

👉 scalar

```
SELECT orderdate, ordertotal
FROM Orders
WHERE custid IN
(
  SELECT id
  FROM Customers
  WHERE city = 'Ede'
)
```

22,
37,
48

👉 multi-valued

▲ Rewrite to a JOIN

self-contained
correlated

Subquery

```
SELECT orderdate, orderdertotal
FROM Orders
WHERE custid IN
(
    SELECT id
    FROM Customers
    WHERE city = N'Ede'
);
```

👉 multi-valued

JOIN

```
SELECT o.orderdate, o.orderdertotal
FROM Orders AS o
INNER JOIN Customers AS c
ON o.custid = c.id
WHERE c.city = N'Ede';
```

Example

self-contained
correlated

Most recent orderdate for each customer

```
SELECT o.custid, o.orderdate
FROM Orders AS o
WHERE o.orderid = (
```

```
SELECT MAX(id)
FROM Orders
WHERE custid = 2
```

custid	orderdate
1	2020-04-01
2	2022-01-06
...	...

1

2

43

EXISTS

JOIN

```
SELECT
  o.*
FROM Employees AS e
INNER JOIN Orders AS o
ON e.empid = o.empid
WHERE e.country = N'UK';
```

selfcontained
subquery

```
SELECT
  *
FROM Orders
WHERE empid IN
(
  SELECT empid
  FROM Employees
  WHERE country = N'UK'
);
```

correlated subquery
with EXISTS

```
SELECT
  *
FROM Orders AS o
WHERE EXISTS
(
  SELECT 1
  FROM Employees
  WHERE country = 'UK'
  AND empid = o.empid
);
```