**Exists clause**

Let’s use the example from the nested correlation:

```sql
mysql> Select * from Class;
+------------+------------------------+
| ClassID    | TimeOffered           |
|------------+------------------------+
| CS314      | 11-12:15               |
| CS575      | NULL                   |
| CT320      | 11-12:15               |
+------------+------------------------+
3 rows in set (0.00 sec)

mysql> Select * from Enrolled;
+-----+------------+---------+
| SID | ClassID    | Grade   |
|-----|------------+---------+
| 1   | CS314      | NULL    |
| 1   | CS575      | NULL    |
| 2   | CS575      | NULL    |
| 3   | CT320      | NULL    |
+-----+------------+---------+
4 rows in set (0.00 sec)

mysql> Select * from Students;
+-----+--------------+-----------+
| SID | SName        | NumCredits|
|-----|--------------+-----------+
| 1   | Elmer Fudd   | 48        |
| 2   | Roger Ramjet | 20        |
| 3   | Alice Wonderland | 72       |
+-----+--------------+-----------+
3 rows in set (0.00 sec)

mysql> SELECT S.Sname
    -> FROM Students S
    -> WHERE S.SID IN
    -> (SELECT E.SID
    ->     FROM Enrolled E, Class C
    ->     WHERE E.ClassID = C.ClassID
    -> AND C.TimeOffered = '11-12:15'
    -> AND E.SID = S.SID);
+-----------+
| Sname     |
|-----------+
| Elmer Fudd|
| Alice Wonderland |
+-----------+
2 rows in set (0.00 sec)
```

In this example, we are using an inner and outer query to find all the people taking classes at 11-12:15. We can do the same with the where exists:
mysql> SELECT S.Sname  
-> FROM Students S  
-> WHERE EXISTS  
-> (SELECT *  
-> FROM Enrolled E, Class C  
-> WHERE E.ClassID = C.ClassID  
-> AND C.TimeOffered = '11-12:15'  
-> AND E.SID = S.SID);  
+------------------+
| Sname            |
+------------------+
| Elmer Fudd       |
| Alice Wonderland |
+------------------+

In this case, if the subquery returns any rows, EXISTS is set to true, otherwise false. NOT EXISTS is a valid query as well.

mysql> SELECT S.Sname  
-> FROM Students S  
-> WHERE NOT EXISTS  
-> (SELECT *  
-> FROM Enrolled E, Class C  
-> WHERE E.ClassID = C.ClassID  
-> AND C.TimeOffered = '11-12:15'  
-> AND E.SID = S.SID);  
+--------------+
| Sname        |
+--------------+
| Roger Ramjet |
+--------------+
1 row in set (0.00 sec)

In the above query, every time the inner query returns a false (i.e. when the student has no classes at 11-12:15), a true is returned to the outer query and the name is printed. How about if the student has multiple entries?
mysql> insert into Class values ("CS430", "12:30-1:45");
Query OK, 1 row affected (0.00 sec)

mysql> insert into Enrolled values (2, "CS430", NULL);
Query OK, 1 row affected (0.00 sec)

mysql> SELECT S.Sname
    ->   FROM Students S
    ->   WHERE NOT EXISTS
    ->     (SELECT *
    ->         FROM Enrolled E, Class C
    ->         WHERE E.ClassID = C.ClassID
    ->             AND C.TimeOffered = '11-12:15'
    ->             AND E.SID = S.SID);

+------------------+
| Sname            |
+------------------+
| Roger Ramjet     |
+------------------+
1 row in set (0.00 sec)

No difference. Why is that?

Because the check on the inner loop can only return a TRUE or FALSE for each row it is checking.