

Nested Queries with Correlation

In the example of Nested queries, we saw how you could insert subqueries into FROM, WHERE, AND HAVING clauses. Correlation allows the ability to allow the inner query to use the row being examined in the outer query. Let's look at the following:

```
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)
```

The above example goes through row by row of the Students table seeing if the student is currently enrolled in a class that is offered at the 11-12:15 time slot.

So - with SID = 1, the inner query is executed, and finds Elmer is in a class at that time. SID = 2 returns an empty set, and SID=3 returns a true.

Question:

What happens if you execute the following:

```
SELECT S.Sname C.ClassID
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);
```

```
mysql> SELECT S.Sname C.ClassID
-> 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);
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '.ClassID

```
FROM Students S
WHERE S.SID IN
  (SELECT E.SID
   FROM Enrolled E, ' at line 1
```

It fails because ClassID is not in a relation in the FROM clause - it is only present during the inner query.