

Ensuring Entity integrity

Entity integrity is ensured by the DBMS – and is accomplished by making sure that every tuple inserted into the database meets the criteria that fields that are defined as unique are in fact unique when compared to the rows currently existing in the database.

Let's assume we have the following:

Class
<u>ClassID</u>
Time Offered

The SQL that creates this is :

```
CREATE TABLE Class (  
    ClassID char(20),  
    TimeOffered char(10),  
    PRIMARY KEY (ClassID));
```

By specifying ClassID as the primary key, we are telling the DBMS that every tuple in this relation (or using database terminology – every row in this table) will have a unique ClassID. If we attempt to insert two rows that have the same ClassID, the DBMS will not allow it.

See the example below:

```
carrot> mysql -h faure -p -v < create.sql
```

```
Enter password:
```

```
-----
```

```
DROP TABLE IF EXISTS Class
```

```
-----
```

```
-----
```

```
CREATE TABLE Class (  
    ClassID CHAR(20),  
    TimeOffered CHAR(20),  
    PRIMARY KEY (ClassID))
```

```
-----
```

```
carrot>
```

```
carrot> mysql -h faure -p -v < populate.sql
```

```
Enter password:
```

```
-----
```

```
INSERT INTO Class VALUES ('CS430', 'T TH 11-12:30')
```

```
-----
```

```
-----
```

```
INSERT INTO Class VALUES ('CS430', 'T TH 9:30-10:45')
```

```
-----
```

```
ERROR 1062 (23000) at line 3: Duplicate entry 'CS430' for key 'PRIMARY'
```

```
carrot>
```

When the second insert was attempted to be executed, the DBMS did not allow it to occur.

Candidate keys

This is also true for any candidate keys. Remember that a candidate key is just like a primary key in that it is unique for each tuple in the relation.

See below:

```
carrot> mysql -h faure -p -v < create.sql
```

```
Enter password:
```

```
-----  
DROP TABLE IF EXISTS Class
```

```
-----  
CREATE TABLE Class (  
    ClassID CHAR(20),  
    TimeOffered CHAR(20),  
    ClassName CHAR(20),  
    PRIMARY KEY (ClassID),  
    UNIQUE (ClassName))
```

```
-----  
carrot>
```

```
carrot> mysql -h faure -p -v < populate.sql
```

```
Enter password:
```

```
-----  
INSERT INTO Class VALUES ('CS430', 'T TH 11-12:30', 'Database Systems')
```

```
-----  
INSERT INTO Class VALUES ('CS314', 'T TH 9:30-10:45', 'Database Systems')
```

```
-----  
ERROR 1062 (23000) at line 3: Duplicate entry 'Database Systems' for key 'ClassName'  
carrot>
```