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INFORMATION TECHNOLOGY FOR CLASS 12

(Study materials)

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## CHAPTER-1-DATABASE MANAGEMENT SYSTEM

In the last class, we created a database of teachers, now we are going to explain in detail on the same.

Let us discuss each in detail:

```
❖ CREATE TABLE Teacher
(
Teacher_ID INTEGER PRIMARY KEY,
First_Name VARCHAR(20) NOT NULL,
Last_Name VARCHAR(20),
Gender CHAR(1),
Salary DECIMAL(10,2) DEFAULT 40000,
Date_of_Birth DATE,
Dept_No INTEGER,
FOREIGN KEY (Dept_No) REFERENCES Department (Dept_ID) ON
DELETE SET NULL ON UPDATE SET NULL
);
```

If a department with a given value of `Dept_ID` is deleted in Department table, `Dept_No` attribute in Teacher table would be set to `NULL`. Similarly, if `Dept_ID` value is updated then also the corresponding attribute in Teacher table would be set to `NULL`.

```
❖ CREATE TABLE Teacher
(
Teacher_ID INTEGER PRIMARY KEY,
First_Name VARCHAR(20) NOT NULL,
Last_Name VARCHAR(20),
Gender CHAR(1),
Salary DECIMAL(10,2) DEFAULT 40000,
Date_of_Birth DATE,
Dept_No INTEGER,
FOREIGN KEY (Dept_No) REFERENCES Department (Dept_ID) ON
DELETE CASCADE ON UPDATE CASCADE
);
```

In the above table, if a department with a given value of the `Dept_ID` attribute in Department table is deleted, then the corresponding rows in the Teacher table would also be deleted. However if `Dept_ID` value is updated in the Department table, the change in corresponding value is also reflected in Teacher Table.

```
❖ CREATE TABLE Teacher
(
```

```

Teacher_ID INTEGER PRIMARY KEY,
First_Name VARCHAR(20) NOT NULL,
Last_Name VARCHAR(20),
Gender CHAR(1),
Salary DECIMAL(10,2) DEFAULT 40000,
Date_of_Birth DATE,
Dept_No INTEGER,
FOREIGN KEY (Dept_No) REFERENCES Department (Dept_ID) ON
DELETE RESTRICT ON UPDATE RESTRICT
);

```

**RESTRICT** option will reject the delete or update operation for the referenced table if there are one or more related foreign key values in a referencing table, i.e, you cannot delete or update a department if there are teachers who belong to that department.

Employee that contains five columns: **Employee\_ID, Name, Age, Salary and Manager\_ID**. Because the manager is also an employee, there is a foreign key relationship between the **Manager\_ID** and **Employee\_ID** as shown below:

```

❖ CREATE TABLE Employee
(
Employee_ID INTEGER PRIMARY KEY,
Name VARCHAR(30),
Age INTEGER,
Salary DECIMAL(10,2),
Manager_ID INTEGER,
FOREIGN KEY (Manager_ID) REFERENCES Employee
(Employee_ID)
);

```

1. **Naming of constraint** :- Constraints can be named in the create Table command. The advantage is that named constraints can be easily deleted or updated using the Alter Table command. A constraint can be named by using the keyword **CONSTRAINT** followed by the name of the constraint and its specification. For example consider the following Create Table command:

```

CREATE TABLE Teacher
(
Teacher_ID INTEGER,
First_Name VARCHAR(20) NOT NULL,
Last_Name VARCHAR(20),
Gender CHAR(1),
Salary DECIMAL(10,2) DEFAULT 40000,
Date_of_Birth DATE,
Dept_No INTEGER,
CONSTRAINT TEACHER_PK PRIMARY KEY (Teacher_ID),
CONSTRAINT TEACHER_FK FOREIGN KEY (Dept_No) REFERENCES
Department(Dept_ID) ON DELETE SET NULL ON UPDATE SET NULL
);

```

2. **Drop Table command** :- This command is used to delete tables. For example, suppose you want to drop the Teacher table then the command would be:

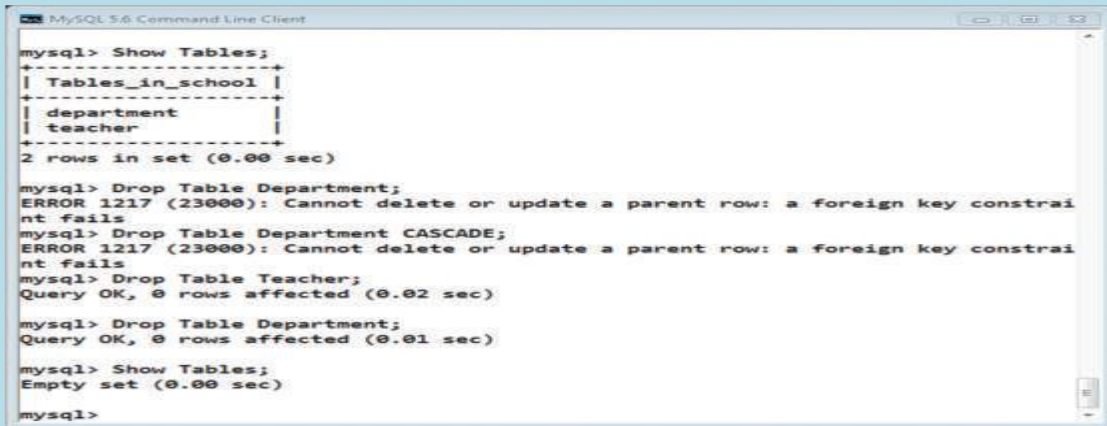
```
DROP TABLE Teacher CASCADE;
```

Thus Teacher table would be dropped and with the **CASCADE** option, i.e. all the constraints that refer this table would also be automatically dropped. However if the requirement is that the table

should not be dropped if it is being referenced in some other table then RESTRICT option can be used as shown below:

```
DROP TABLE Teacher RESTRICT;
```

Drop table command can also be used to drop named constraints. However it is used along with the Alter Table command which is discussed in next section.



```
mysql> Show Tables;
+-----+
| Tables_in_school |
+-----+
| department      |
| teacher        |
+-----+
2 rows in set (0.00 sec)

mysql> Drop Table Department;
ERROR 1217 (23000): Cannot delete or update a parent row: a foreign key constraint fails
mysql> Drop Table Department CASCADE;
ERROR 1217 (23000): Cannot delete or update a parent row: a foreign key constraint fails
mysql> Drop Table Teacher;
Query OK, 0 rows affected (0.02 sec)

mysql> Drop Table Department;
Query OK, 0 rows affected (0.01 sec)

mysql> Show Tables;
Empty set (0.00 sec)

mysql>
```

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