

```
MariaDB [lab]> create table employees (id int primary key, name varchar(50), dept_id int);
Query OK, 0 rows affected (0.008 sec)
```

Figure 1 create employee table

```
MariaDB [lab]> create table department (did int primary key, dname varchar(50));
Query OK, 0 rows affected (0.043 sec)
```

Figure 2 create department table

```
MariaDB [lab]> insert into department values (10, "IT"), (20, "HR"), (30, "INFRA");
Query OK, 3 rows affected (0.040 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

Figure 3 insert values into department table

```
MariaDB [lab]> insert into employees values (101, 'Anurag', 10), (102, 'Pranaya', 20), (103, 'Hina', 30);
Query OK, 3 rows affected (0.040 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

Figure 4 insert values into employees table

```
MariaDB [lab]> alter table employees add foreign key (dept_id) references department(did) on delete no action on update no action;
Query OK, 3 rows affected (0.076 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

Figure 5 add foreign key with no action rule

```
MariaDB [lab]> update department set did = 100 where did = 10;
ERROR 1451 (23000): Cannot delete or update a parent row: a foreign key constraint fails (`lab`.`employees`, CONSTRAINT `employees_ibfk_1` FOREIGN KEY (`dept_id`) REFERENCES `department` (`did`) ON DELETE NO ACTION ON UPDATE NO ACTION)
MariaDB [lab]> select * from department;
+-----+-----+
| did | dname |
+-----+-----+
| 10 | IT |
| 20 | HR |
| 30 | INFRA |
+-----+-----+
3 rows in set (0.000 sec)
```

Figure 6 we couldn't update the data

```
MariaDB [lab]> delete from department where did=10;
ERROR 1451 (23000): Cannot delete or update a parent row: a foreign key constraint fails (`lab`.`employees`, CONSTRAINT `employees_ibfk_1` FOREIGN KEY (`dept_id`) REFERENCES `department` (`did`) ON DELETE NO ACTION ON UPDATE NO ACTION)
MariaDB [lab]> select * From department;
+-----+-----+
| did | dname |
+-----+-----+
| 10 | IT |
| 20 | HR |
| 30 | INFRA |
+-----+-----+
3 rows in set (0.000 sec)

MariaDB [lab]>
```

Figure 7 we couldn't delete the data

```

MariaDB [lab]> drop table employees;
Query OK, 0 rows affected (0.043 sec)

MariaDB [lab]> create table employees (id int primary key, name varchar(50), dept_id
int);
Query OK, 0 rows affected (0.046 sec)

MariaDB [lab]> insert into employees values (101, 'Anurag', 10), (102, 'Pranaya', 20)
, (103, 'Hina', 30);
Query OK, 3 rows affected (0.002 sec)
Records: 3 Duplicates: 0 Warnings: 0

MariaDB [lab]> alter table employees add foreign key (dept_id) references department(
did) on delete cascade on update cascade;
Query OK, 3 rows affected (0.077 sec)
Records: 3 Duplicates: 0 Warnings: 0

```

Figure 8 drop employee table, re-create it, and add foreign key with cascade rule

```

MariaDB [lab]> update department set did = 100 where did = 10;
Query OK, 1 row affected (0.003 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [lab]> select * from department
-> ;
+-----+-----+
| did | dname |
+-----+-----+
| 20 | HR |
| 30 | INFRA |
| 100 | IT |
+-----+-----+
3 rows in set (0.000 sec)

MariaDB [lab]> select * from employees;
+-----+-----+-----+
| id | name | dept_id |
+-----+-----+-----+
| 101 | Anurag | 100 |
| 102 | Pranaya | 20 |
| 103 | Hina | 30 |
+-----+-----+-----+

```

Figure 9 updating department table also updates employee table

```

MariaDB [lab]> delete from department where did = 10;
Query OK, 1 row affected (0.040 sec)

MariaDB [lab]> select * from department;
+-----+-----+
| did | dname |
+-----+-----+
| 20 | HR |
| 30 | INFRA |
+-----+-----+
2 rows in set (0.000 sec)

MariaDB [lab]> select * from employees;
+-----+-----+-----+
| id | name | dept_id |
+-----+-----+-----+
| 102 | Pranaya | 20 |
| 103 | Hina | 30 |
+-----+-----+-----+
2 rows in set (0.000 sec)

```

Figure 10 deleting an item from department also deletes from employee table

```

MariaDB [lab]> drop table employees;
Query OK, 0 rows affected (0.031 sec)

MariaDB [lab]>
MariaDB [lab]> create table employees (id int primary key, name varchar(50), dept_id
int);
Query OK, 0 rows affected (0.005 sec)

MariaDB [lab]> insert into employees values (101, 'Anurag', 10), (102, 'Pranaya', 20)
, (103, 'Hina', 30);
Query OK, 3 rows affected (0.040 sec)
Records: 3 Duplicates: 0 Warnings: 0

MariaDB [lab]> alter table employees add foreign key (dept_id) references department(
did) on delete set null on update set null;
Query OK, 3 rows affected (0.076 sec)
Records: 3 Duplicates: 0 Warnings: 0

```

Figure 11 adding foreign key with set null type

```

MariaDB [lab]> update department set did = 100 where did = 10;
Query OK, 1 row affected (0.040 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [lab]> select * from department;
+-----+-----+
| did | dname |
+-----+-----+
| 20  | HR    |
| 30  | INFRA |
| 100 | IT     |
+-----+-----+
3 rows in set (0.000 sec)

MariaDB [lab]> select * from employees;
+-----+-----+-----+
| id  | name  | dept_id |
+-----+-----+-----+
| 101 | Anurag | NULL    |
| 102 | Pranaya | 20      |
| 103 | Hina   | 30      |
+-----+-----+-----+
3 rows in set (0.000 sec)

```

Figure 12 updating a record in department table sets null in the foreign key field in employee table

```

MariaDB [lab]> delete from department where did=20;
Query OK, 1 row affected (0.040 sec)

MariaDB [lab]> select * from department;
+-----+-----+
| did | dname |
+-----+-----+
| 30  | INFRA |
| 100 | IT     |
+-----+-----+
2 rows in set (0.000 sec)

MariaDB [lab]> select * from employees;
+-----+-----+-----+
| id  | name  | dept_id |
+-----+-----+-----+
| 101 | Anurag | NULL    |
| 102 | Pranaya | NULL    |
| 103 | Hina   | 30      |
+-----+-----+-----+
3 rows in set (0.000 sec)

```

Figure 13 deleting a record in department table sets null in the foreign key field in employee table