https://www.youtube.com/watch?v=29tBY-BpjBg

Microsoft Windows [Version 10.0.26100.2605]
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C:\Users\DELL>cd\

C:\>cd \xampp\mysql\bin

 C:\xampp\mysql\bin>mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 35
Server version: 10.4.32-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database university;
Query OK, 1 row affected (0.073 sec)

MariaDB [(none)]> show databases;
+--------------------+
| Database |
+--------------------+
| dbwa |
| information_schema |
| mysql |
| performance_schema |
| phpmyadmin |
| test |
| university |
+--------------------+
7 rows in set (0.066 sec)
MariaDB [(none)]> use university;
Database changed
MariaDB [university]> create table department (dept_name varchar (20), building
varchar (15), budget numeric (12,2), primary key (dept_name));
Query OK, 0 rows affected (0.103 sec)

MariaDB [university]> desc department;
+-----------+---------------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+-----------+---------------+------+-----+---------+-------+
dept_name	varchar(20)	NO	PRI	NULL	
building	varchar(15)	YES		NULL	
budget	decimal(12,2)	YES		NULL	
+-----------+---------------+------+-----+---------+-------+
3 rows in set (0.046 sec)

MariaDB [university]> alter table department add id int first;
Query OK, 0 rows affected (0.157 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [university]> desc department;
+-----------+---------------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+-----------+---------------+------+-----+---------+-------+
id	int(11)	YES		NULL	
dept_name	varchar(20)	NO	PRI	NULL	
building	varchar(15)	YES		NULL	
budget	decimal(12,2)	YES		NULL	

```
+-----------+---------------+------+-----+---------+-------+
4 rows in set (0.027 sec)

MariaDB [university]> alter table department add Feculty_name varchar(20) after
building;
Query OK, 0 rows affected (0.029 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+--------------+---------------+------+-----+---------+-------+
| Field        | Type          | Null | Key | Default | Extra |
+--------------+---------------+------+-----+---------+-------+
| id           | int(11)       | YES  |     | NULL    |       |
| dept_name    | varchar(20)   | NO   | PRI | NULL    |       |
| building     | varchar(15)   | YES  |     | NULL    |       |
| Feculty_name | varchar(20)   | YES  |     | NULL    |       |
| budget       | decimal(12,2) | YES  |     | NULL    |       |
+--------------+---------------+------+-----+---------+-------+
5 rows in set (0.005 sec)

MariaDB [university]> alter table department add A int;
Query OK, 0 rows affected (0.079 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+--------------+---------------+------+-----+---------+-------+
| Field        | Type          | Null | Key | Default | Extra |
+--------------+---------------+------+-----+---------+-------+
| id           | int(11)       | YES  |     | NULL    |       |
| dept_name    | varchar(20)   | NO   | PRI | NULL    |       |
| building     | varchar(15)   | YES  |     | NULL    |       |
| Feculty_name | varchar(20)   | YES  |     | NULL    |       |
| budget       | decimal(12,2) | YES  |     | NULL    |       |
| A            | int(11)       | YES  |     | NULL    |       |
+--------------+---------------+------+-----+---------+-------+
6 rows in set (0.035 sec)

MariaDB [university]> alter table department drop column A;
Query OK, 0 rows affected (0.023 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+--------------+---------------+------+-----+---------+-------+
| Field        | Type          | Null | Key | Default | Extra |
+--------------+---------------+------+-----+---------+-------+
| id           | int(11)       | YES  |     | NULL    |       |
| dept_name    | varchar(20)   | NO   | PRI | NULL    |       |
| building     | varchar(15)   | YES  |     | NULL    |       |
| Feculty_name | varchar(20)   | YES  |     | NULL    |       |
| budget       | decimal(12,2) | YES  |     | NULL    |       |
+--------------+---------------+------+-----+---------+-------+
5 rows in set (0.007 sec)

MariaDB [university]> alter table department add A int, add B int;
Query OK, 0 rows affected (0.012 sec)
Records: 0  Duplicates: 0  Warnings: 0


MariaDB [university]> desc department;
+--------------+---------------+------+-----+---------+-------+
| Field        | Type          | Null | Key | Default | Extra |
+--------------+---------------+------+-----+---------+-------+
| id           | int(11)       | YES  |     | NULL    |       |
| dept_name    | varchar(20)   | NO   | PRI | NULL    |       |
```

```
| building    | varchar(15)  | YES  |     | NULL    |       |
| Feculty_name | varchar(20) | YES  |     | NULL    |       |
| budget      | decimal(12,2) | YES |     | NULL    |       |
| A           | int(11)      | YES  |     | NULL    |       |
| B           | int(11)      | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
7 rows in set (0.008 sec)


MariaDB [university]> alter table department drop column A, drop column B;
Query OK, 0 rows affected (0.105 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| id           | int(11)      | YES  |     | NULL    |       |
| dept_name    | varchar(20)  | NO   | PRI | NULL    |       |
| building     | varchar(15)  | YES  |     | NULL    |       |
| Feculty_name | varchar(20)  | YES  |     | NULL    |       |
| budget       | decimal(12,2) | YES |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
5 rows in set (0.017 sec)

MariaDB [university]> alter table department drop column id, drop column
Feculty_name;
Query OK, 0 rows affected (0.061 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| dept_name | varchar(20)  | NO   | PRI | NULL    |       |
| building  | varchar(15)  | YES  |     | NULL    |       |
| budget    | decimal(12,2) | YES |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
3 rows in set (0.010 sec)
MariaDB [university]> alter table department modify building varchar(18);
Query OK, 0 rows affected (0.094 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| dept_name | varchar(20)  | NO   | PRI | NULL    |       |
| building  | varchar(18)  | YES  |     | NULL    |       |
| budget    | decimal(12,2) | YES |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
3 rows in set (0.033 sec)
MariaDB [university]> alter table department change building building_name
varchar(15);
Query OK, 0 rows affected (0.172 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [university]> desc department;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| dept_name     | varchar(20)  | NO   | PRI | NULL    |       |
| building_name | varchar(15)  | YES  |     | NULL    |       |
| budget        | decimal(12,2) | YES |     | NULL    |       |
```

```
        +--------------+--------------+------+-----+---------+-------+
3 rows in set (0.028 sec)

MariaDB [university]> alter table department rename department_new;
Query OK, 0 rows affected (0.044 sec)

MariaDB [university]> desc department;
ERROR 1146 (42S02): Table 'university.department' doesn't exist
MariaDB [university]> desc department_new;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| dept_name     | varchar(20)  | NO   | PRI | NULL    |       |
| building_name | varchar(15)  | YES  |     | NULL    |       |
| budget        | decimal(12,2)| YES  |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
3 rows in set (0.005 sec)

create table classroom
        (building              varchar(15),
      room_number              varchar(7),
      capacity           numeric(4,0),
      primary key (building, room_number)
      );

create table department
      (dept_name         varchar(20),
       building          varchar(15),
       budget                    numeric(12,2) check (budget > 0),
       primary key (dept_name)
      );

create table course
      (course_id         varchar(8),
       title                   varchar(50),
       dept_name         varchar(20),
       credits           numeric(2,0) check (credits > 0),
       primary key (course_id),
       foreign key (dept_name) references department (dept_name)
            on delete set null
      );


ON DELETE SET NULL. Specifies that the child data is set to NULL when the parent
data is deleted. The child data is NOT deleted.
it updates a foreign key column to NULL when a related parent record is deleted


create table instructor
      (ID                varchar(5),
       name              varchar(20) not null,
       dept_name         varchar(20),
       salary                  numeric(8,2) check (salary > 29000),
       primary key (ID),
       foreign key (dept_name) references department (dept_name)
            on delete set null
      );

create table section
      (course_id         varchar(8),
         sec_id                varchar(8),
       semester          varchar(6)
            check (semester in ('Fall', 'Winter', 'Spring', 'Summer')),
```

```
        year                numeric(4,0) check (year > 1701 and year < 2100),
        building            varchar(15),
        room_number             varchar(7),
        time_slot_id            varchar(4),
        primary key (course_id, sec_id, semester, year),
        foreign key (course_id) references course (course_id)
             on delete cascade,
        foreign key (building, room_number) references classroom (building,
room_number)
             on delete set null
        );

create table teaches
        (ID                 varchar(5),
         course_id          varchar(8),
         sec_id                 varchar(8),
         semester           varchar(6),
         year               numeric(4,0),
         primary key (ID, course_id, sec_id, semester, year),
         foreign key (course_id, sec_id, semester, year) references section
(course_id, sec_id, semester, year)
             on delete cascade,
         foreign key (ID) references instructor (ID)
             on delete cascade
        );

On delete cascade is a feature in SQL that automatically deletes rows in a child
table when the corresponding row in the parent table is deleted

create table student
        (ID                 varchar(5),
         name               varchar(20) not null,
         dept_name          varchar(20),
         tot_cred           numeric(3,0) check (tot_cred >= 0),
         primary key (ID),
         foreign key (dept_name) references department_new (dept_name)
             on delete set null
        );

create table takes
        (ID                 varchar(5),
         course_id          varchar(8),
         sec_id                 varchar(8),
         semester           varchar(6),
         year               numeric(4,0),
         grade                  varchar(2),
         primary key (ID, course_id, sec_id, semester, year),
         foreign key (course_id, sec_id, semester, year) references section
(course_id, sec_id, semester, year)
             on delete cascade,
         foreign key (ID) references student (ID)
             on delete cascade
        );

create table advisor
        (s_ID               varchar(5),
         i_ID               varchar(5),
         primary key (s_ID),
         foreign key (i_ID) references instructor (ID)
             on delete set null,
         foreign key (s_ID) references student (ID)
             on delete cascade
        );
```

```
create table time_slot
     (time_slot_id            varchar(4),
      day                varchar(1),
      start_hr           numeric(2) check (start_hr >= 0 and start_hr < 24),
      start_min          numeric(2) check (start_min >= 0 and start_min < 60),
      end_hr                numeric(2) check (end_hr >= 0 and end_hr < 24),
      end_min            numeric(2) check (end_min >= 0 and end_min < 60),
      primary key (time_slot_id, day, start_hr, start_min)
     );

create table prereq
     (course_id         varchar(8),
      prereq_id         varchar(8),
      primary key (course_id, prereq_id),
      foreign key (course_id) references course (course_id)
           on delete cascade,
      foreign key (prereq_id) references course (course_id)
     );
```

MariaDB [university]> insert into department values('IIT','Math State
IIT',20000000);
Query OK, 1 row affected (0.008 sec)

MariaDB [university]> insert into student values(10,'Tahsan','IIT', 20000);
Query OK, 1 row affected, 1 warning (0.003 sec)

MariaDB [university]> select * from department;
```
+-----------+----------------+-------------+
| dept_name | building_name  | budget      |
+-----------+----------------+-------------+
| IIT       | Math State IIT | 20000000.00 |
+-----------+----------------+-------------+
```
1 row in set (0.001 sec)

MariaDB [university]> select * from student;
```
+----+--------+-----------+----------+
| ID | name   | dept_name | tot_cred |
+----+--------+-----------+----------+
| 10 | Tahsan | IIT       |      999 |
+----+--------+-----------+----------+
```
1 row in set (0.001 sec)

MariaDB [university]> insert into department values('CSE','GEO-CSE', 3000000
0);
Query OK, 1 row affected (0.009 sec)

MariaDB [university]> insert into department values('Math','Math State IIT',
15000000),('State','Math State IIT',20000000);
Query OK, 2 rows affected (0.008 sec)
Records: 2 Duplicates: 0 Warnings: 0

MariaDB [university]> select * from department;
```
+-----------+----------------+-------------+
| dept_name | building_name  | budget      |
+-----------+----------------+-------------+
| CSE       | GEO-CSE        | 30000000.00 |
| IIT       | Math State IIT | 20000000.00 |
| Math      | Math State IIT | 15000000.00 |
| State     | Math State IIT | 20000000.00 |
+-----------+----------------+-------------+
```
4 rows in set (0.001 sec)

```
MariaDB [university]> delete from department where dept_name='State';
Query OK, 1 row affected (0.008 sec)

MariaDB [university]> select * from department;
+-----------+----------------+-------------+
| dept_name | building_name  | budget      |
+-----------+----------------+-------------+
| CSE       | GEO-CSE        | 30000000.00 |
| IIT       | Math State IIT | 20000000.00 |
| Math      | Math State IIT | 15000000.00 |
+-----------+----------------+-------------+
3 rows in set (0.001 sec)

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 10 | Tahsan   | IIT       |       20 |
| 11 | Tanha    | IIT       |       12 |
| 12 | Akhi     | CSE       |       24 |
| 13 | Nurjahan | Math      |       30 |
+----+----------+-----------+----------+
4 rows in set (0.001 sec)

MariaDB [university]> alter table student change tot_cred tot_cred
numeric(12,2);
Query OK, 4 rows affected (0.062 sec)
Records: 4  Duplicates: 0  Warnings: 0

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 10 | Tahsan   | IIT       | 20       |
| 11 | Tanha    | IIT       | 12       |
| 12 | Akhi     | CSE       | 24       |
| 13 | Nurjahan | Math      | 30       |
+----+----------+-----------+----------+
4 rows in set (0.001 sec)

MariaDB [university]> insert into student values(14,'Akber','CSE', 500),
(15,'Farrien','Math', 200);
Query OK, 2 rows affected (0.007 sec)
Records: 2  Duplicates: 0  Warnings: 0

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 10 | Tahsan   | IIT       | 20       |
| 11 | Tanha    | IIT       | 12       |
| 12 | Akhi     | CSE       | 24       |
| 13 | Nurjahan | Math      | 30       |
| 14 | Akber    | CSE       | 36       |
| 15 | Farrien  | Math      | 20       |
+----+----------+-----------+----------+
6 rows in set (0.001 sec)


MariaDB [university]> insert into student values(16,'Robin','CSE', 5000),
(17,'Ibtesam','Math', 1000);
Query OK, 2 rows affected (0.003 sec)
Records: 2  Duplicates: 0  Warnings: 0
```

```
MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 10 | Tahsan   | IIT       |   999.00 |
| 11 | Tanha    | IIT       |   999.00 |
| 12 | Akhi     | CSE       |   999.00 |
| 13 | Nurjahan | Math      |   999.00 |
| 14 | Akber    | CSE       |   500.00 |
| 15 | Farrien  | Math      |   200.00 |
| 16 | Robin    | CSE       |  5000.00 |
| 17 | Ibtesam  | Math      |  1000.00 |
+----+----------+-----------+----------+
8 rows in set (0.000 sec)

MariaDB [university]> insert into student values(18,'Akkas','CSE', 50000),
(19,'Karina','Math', 10000);
Query OK, 2 rows affected (0.003 sec)
Records: 2  Duplicates: 0  Warnings: 0

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 10 | Tahsan   | IIT       |   999.00 |
| 11 | Tanha    | IIT       |   999.00 |
| 12 | Akhi     | CSE       |   999.00 |
| 13 | Nurjahan | Math      |   999.00 |
| 14 | Akber    | CSE       |   500.00 |
| 15 | Farrien  | Math      |   200.00 |
| 16 | Robin    | CSE       |  5000.00 |
| 17 | Ibtesam  | Math      |  1000.00 |
| 18 | Akkas    | CSE       | 50000.00 |
| 19 | Karina   | Math      | 10000.00 |
+----+----------+-----------+----------+
10 rows in set (0.001 sec)


MariaDB [university]> delete from student limit 2;
Query OK, 2 rows affected (0.015 sec)

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 12 | Akhi     | CSE       |   999.00 |
| 13 | Nurjahan | Math      |   999.00 |
| 14 | Akber    | CSE       |   500.00 |
| 15 | Farrien  | Math      |   200.00 |
| 16 | Robin    | CSE       |  5000.00 |
| 17 | Ibtesam  | Math      |  1000.00 |
| 18 | Akkas    | CSE       | 50000.00 |
| 19 | Karina   | Math      | 10000.00 |
+----+----------+-----------+----------+
8 rows in set (0.001 sec)

MariaDB [university]> update student set dept_name='State' where id=19;
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint
fails (`university`.`student`, CONSTRAINT `student_ibfk_1` FOREIGN KEY
(`dept_name`) REFERENCES `department` (`dept_name`) ON DELETE SET NULL)
MariaDB [university]> select * from department;
+-----------+---------------+-------------+
| dept_name | building_name | budget      |
+-----------+---------------+-------------+
```

```
| CSE       | GEO-CSE        | 30000000.00 |
| IIT       | Math State IIT | 20000000.00 |
| Math      | Math State IIT | 15000000.00 |
+-----------+----------------+-------------+
3 rows in set (0.006 sec)

MariaDB [university]> insert into department values('State', 'Math State
IIT',20000000);
Query OK, 1 row affected (0.007 sec)

MariaDB [university]> update student set dept_name='State' where id=19;
Query OK, 1 row affected (0.007 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 12 | Akhi     | CSE       |   999.00 |
| 13 | Nurjahan | Math      |   999.00 |
| 14 | Akber    | CSE       |   500.00 |
| 15 | Farrien  | Math      |   200.00 |
| 16 | Robin    | CSE       |  5000.00 |
| 17 | Ibtesam  | Math      |  1000.00 |
| 18 | Akkas    | CSE       | 50000.00 |
| 19 | Karina   | State     | 10000.00 |
+----+----------+-----------+----------+
8 rows in set (0.001 sec)

MariaDB [university]> update student set dept_name='CSE' limit 3;
Query OK, 1 row affected (0.003 sec)
Rows matched: 3  Changed: 1  Warnings: 0

MariaDB [university]> select * from student;
+----+----------+-----------+----------+
| ID | name     | dept_name | tot_cred |
+----+----------+-----------+----------+
| 12 | Akhi     | CSE       |   999.00 |
| 13 | Nurjahan | CSE       |   999.00 |
| 14 | Akber    | CSE       |   500.00 |
| 15 | Farrien  | Math      |   200.00 |
| 16 | Robin    | CSE       |  5000.00 |
| 17 | Ibtesam  | Math      |  1000.00 |
| 18 | Akkas    | CSE       | 50000.00 |
| 19 | Karina   | State     | 10000.00 |
+----+----------+-----------+----------+
8 rows in set (0.001 sec)
```

```
drop table prereq;
drop table time_slot;
drop table advisor;
drop table takes;
drop table student;
drop table teaches;
drop table section;
drop table instructor;
drop table course;
drop table department;
drop table classroom;

MariaDB [(none)]> create user IIT identified by '123456';
Query OK, 0 rows affected (0.007 sec)
```

```
MariaDB [(none)]> select user from mysql.user;
+--------+
| User   |
+--------+
| IIT    |
| Samien |
| jesmin |
| root   |
| root   |
| pma    |
| root   |
+--------+
7 rows in set (0.001 sec)
```