

-- create tables

create table Instructors(

Name varchar(20) Primary key,

OfficeRoom int)

create table Students(

Student# int primary key,

Name varchar(20) constraint Name not null,

Email varchar(40),

MajorSpecialization varchar(10))

create table Courses(

Course# int,

Name varchar(20) constraint Name not null,

InstructorName varchar(20) foreign key references Instructors,

primary key(Course#))

create table Registrations(

Course# int foreign key references Courses(Course#),

Student# int foreign key references Students(Student#),

Grade varchar(1),

primary key(Student#, Course#))

-- Database diagram created above

-- insert 2 records atleast in each table

insert into instructors (Name, OfficeRoom) values ('Bob', 1)

insert into instructors (Name, OfficeRoom) values ('Harry', 2)

insert into instructors (Name, OfficeRoom) values ('Alan', 3)

insert into instructors (Name, OfficeRoom) values ('Elena', 4)

output:

(1 row affected)

(1 row affected)

(1 row affected)

(1 row affected)

Completion time: 2020-01-13T11:59:53.4255609-07:00

insert into students (student#, Name, Email, MajorSpecialization) values (1, 'Robert', 'rob@gmail.com', 'Physics')

insert into students (student#, Name, Email, MajorSpecialization) values (2, 'Elon', 'elon@gmail.com', 'Chemistry')

insert into students (student#, Name, Email, MajorSpecialization) values (3, 'Wade', 'wade@gmail.com', 'Biology')

output:

(1 row affected)

(1 row affected)

(1 row affected)

Completion time: 2020-01-13T12:01:03.4121662-07:00

insert into courses(course#, name, InstructorName) values(101, 'Physics', 'Bob')

insert into courses(course#, name, InstructorName) values(102, 'chemistry', 'Harry')

insert into courses(course#, name, InstructorName) values(103, 'Biology', 'Elena')

output:

(1 row affected)

(1 row affected)

(1 row affected)

Completion time: 2020-01-13T12:01:38.6291815-07:00

insert into Registrations(Student#, Course#, Grade) values(1, 101, 'A')

insert into Registrations(Student#, Course#, Grade) values(2, 102, 'B')

insert into Registrations(Student#, Course#, Grade) values(3, 103, 'C')

output:

(1 row affected)

(1 row affected)

(1 row affected)

Completion time: 2020-01-13T12:02:04.8575245-07:00

-- command to change grade to w

update registrations set grade = 'W' where Course#=101

output:

(1 row affected)

Completion time: 2020-01-13T12:03:18.4223545-07:00

-- Command to find out how many students

select count(\*) as NumberOfStudents

from Registrations

inner join Courses on Courses.Course# = Registrations.Course#

output:

NumberOfStudents

3

(1 row affected)

Completion time: 2020-01-13T12:03:44.4375175-07:00

-- command to find instructors that have not assigned courses yet

select i.Name

from Instructors i

left join courses c on c.InstructorName = i.Name

where InstructorName is null

output:

Name

Alan

(1 row affected)

Completion time: 2020-01-13T12:04:50.0740455-07:00

-- unique names of all courses that students are taking and sorted

select distinct s.majorspecialization

from students s

order by MajorSpecialization

output:

majorspecialization

Biology

Chemistry

Physics

(3 rows affected)

Completion time: 2020-01-13T12:05:26.5273809-07:00

-- list all student names and courses they are taking and their grades

select s.name as StudentName, c.name as CourseName, r.grade as Grade

from Students s

join Registrations r on r.Student# = s.Student#

join Courses c on c.Course# = r.Course#

output:

StudentName CourseName Grade

Robert Physics W

Elon chemistry B

Wade Biology C

(3 rows affected)

Completion time: 2020-01-13T12:06:19.7925530-07:00

-- delete one instructor courses and all students registered in that course

--test before deleting

select \* from Courses

output:

Course# Name InstructorName

101 Physics Bob

102 chemistry Harry

103 Biology Elena

(3 rows affected)

Completion time: 2020-01-13T12:07:29.0895021-07:00

select \* from Registrations

output:

Course# Student# Grade

101 1 W

102 2 B

103 3 C

(3 rows affected)

Completion time: 2020-01-13T12:08:49.2914487-07:00

-- delete child element first

delete from Registrations

where Student# in

(select s.Student# from Students s

join Registrations r on s.Student# = r.Student#

join courses c on c.Course# = r.Course#

where c.InstructorName = 'Elena')

output:

(1 row affected)

Completion time: 2020-01-13T12:09:42.0014264-07:00

-- delete parent element now

delete from courses

where Courses.InstructorName = 'Elena'

output:

(1 row affected)

Completion time: 2020-01-13T12:10:02.3757688-07:00

--test after deleting

select \* from Courses

output:

Course# Name InstructorName

101 Physics Bob

102 chemistry Harry

(2 rows affected)

Completion time: 2020-01-13T12:10:48.1119805-07:00

select \* from Registrations

output:

Course# Student# Grade

101 1 W

102 2 B

(2 rows affected)

Completion time: 2020-01-13T12:11:31.2268049-07:00