

Lab 15: Triggers

1. when inserting/deleting/updating a new record, update the Courses table's OpenSeats for the course into which the student is being enrolled.

```

if(OBJECT_ID ('UpdateOpenSeats4','tr')is not null)
    drop trigger UpdateOpenSeats4
go
CREATE TRIGGER UpdateOpenSeats4
    ON CourseEnrollment FOR UPDATE, DELETE, INSERT
    AS
        DECLARE @oldCourseId AS INT
        DECLARE @newCourseId AS INT
        SELECT @oldCourseId = CourseId FROM deleted
        SELECT @newCourseId = CourseId FROM inserted

        IF EXISTS(SELECT * FROM DELETED)
            AND EXISTS(SELECT * FROM INSERTED)
            BEGIN
                UPDATE Courses
                set Courses.OpenSeats = Courses.OpenSeats + 1
                where Courses.CourseId = @oldCourseId
                UPDATE Courses
                set Courses.OpenSeats = Courses.OpenSeats - 1
                where Courses.CourseId = @newCourseId
                AND Courses.OpenSeats >= 1
            END
        ELSE IF EXISTS(SELECT * FROM DELETED)
            BEGIN
                UPDATE Courses
                set Courses.OpenSeats = Courses.OpenSeats + 1
                where Courses.CourseId = @oldCourseId
            END
        ELSE
            BEGIN
                UPDATE Courses
                set Courses.OpenSeats = Courses.OpenSeats - 1
                where Courses.CourseId = @newCourseId
                AND Courses.OpenSeats >= 1
            END
        END
go

```

2. Examine the code by instances.

The original Courses table looks like:

100 %

| | CourseId | CourseCode | CourseTitle | Faculty | OpenSeats |
|---|----------|------------|--|--------------|-----------|
| 1 | 1 | DADA101 | Defence Against the Dark Arts BASIC | 16-Rhagrid | 3 |
| 2 | 2 | DADA201 | Defence Against the Dark Arts INTERMEDIATE | 16-Rhagrid | 4 |
| 3 | 3 | DADA301 | Defence Against the Dark Arts ADVANCED | 16-Rhagrid | 2 |
| 4 | 4 | CHMS101 | Charms BASIC | 11-Pfritwick | 2 |
| 5 | 5 | CHMS201 | Charms INTERMEDIATE | 11-Pfritwick | 0 |
| 6 | 6 | CHMS301 | Charms ADVANCED | 11-Pfritwick | 4 |
| 7 | 7 | HOM101 | History of Magic BASIC | NULL | 10 |

Now '03-HJGranger' enrolled CourseId = 2:

```
Insert into CourseEnrollment(StudentId, CourseId, FinalGrade)
values('03-HJGranger', 2, 88.88);
```

The Courses table looks like:

100 %

| | CourseId | CourseCode | CourseTitle | Faculty | OpenSeats |
|---|----------|------------|--|--------------|-----------|
| 1 | 1 | DADA101 | Defence Against the Dark Arts BASIC | 16-Rhagrid | 3 |
| 2 | 2 | DADA201 | Defence Against the Dark Arts INTERMEDIATE | 16-Rhagrid | 3 |
| 3 | 3 | DADA301 | Defence Against the Dark Arts ADVANCED | 16-Rhagrid | 2 |
| 4 | 4 | CHMS101 | Charms BASIC | 11-Pfritwick | 2 |
| 5 | 5 | CHMS201 | Charms INTERMEDIATE | 11-Pfritwick | 0 |
| 6 | 6 | CHMS301 | Charms ADVANCED | 11-Pfritwick | 4 |
| 7 | 7 | HOM101 | History of Magic BASIC | NULL | 10 |

Now, implement (03-HJGranger dropped the CourseId = 6):

```
DELETE FROM CourseEnrollment
WHERE StudentId = '03-HJGranger'
AND CourseId = 6
```

100 %

| | CourseId | CourseCode | CourseTitle | Faculty | OpenSeats |
|---|----------|------------|--|--------------|-----------|
| 1 | 1 | DADA101 | Defence Against the Dark Arts BASIC | 16-Rhagrid | 3 |
| 2 | 2 | DADA201 | Defence Against the Dark Arts INTERMEDIATE | 16-Rhagrid | 3 |
| 3 | 3 | DADA301 | Defence Against the Dark Arts ADVANCED | 16-Rhagrid | 2 |
| 4 | 4 | CHMS101 | Charms BASIC | 11-Pfritwick | 2 |
| 5 | 5 | CHMS201 | Charms INTERMEDIATE | 11-Pfritwick | 0 |
| 6 | 6 | CHMS301 | Charms ADVANCED | 11-Pfritwick | 5 |
| 7 | 7 | HOM101 | History of Magic BASIC | NULL | 10 |

Now, implement (01-HJPotter switched to CouseId = 2 from CourseId = 3):

```
UPDATE CourseEnrollment
SET CourseId = 2
WHERE StudentId = '01-HJPotter'
AND CourseId = 3
```

| Results | | Messages | | | |
|---------|----------|------------|--|--------------|-----------|
| | CourseId | CourseCode | CourseTitle | Faculty | OpenSeats |
| 1 | 1 | DADA101 | Defence Against the Dark Arts BASIC | 16-Rhagrid | 3 |
| 2 | 2 | DADA201 | Defence Against the Dark Arts INTERMEDIATE | 16-Rhagrid | 2 |
| 3 | 3 | DADA301 | Defence Against the Dark Arts ADVANCED | 16-Rhagrid | 3 |
| 4 | 4 | CHMS101 | Charms BASIC | 11-Pflitwick | 2 |
| 5 | 5 | CHMS201 | Charms INTERMEDIATE | 11-Pflitwick | 0 |
| 6 | 6 | CHMS301 | Charms ADVANCED | 11-Pflitwick | 5 |
| 7 | 7 | HOM101 | History of Magic BASIC | NULL | 10 |