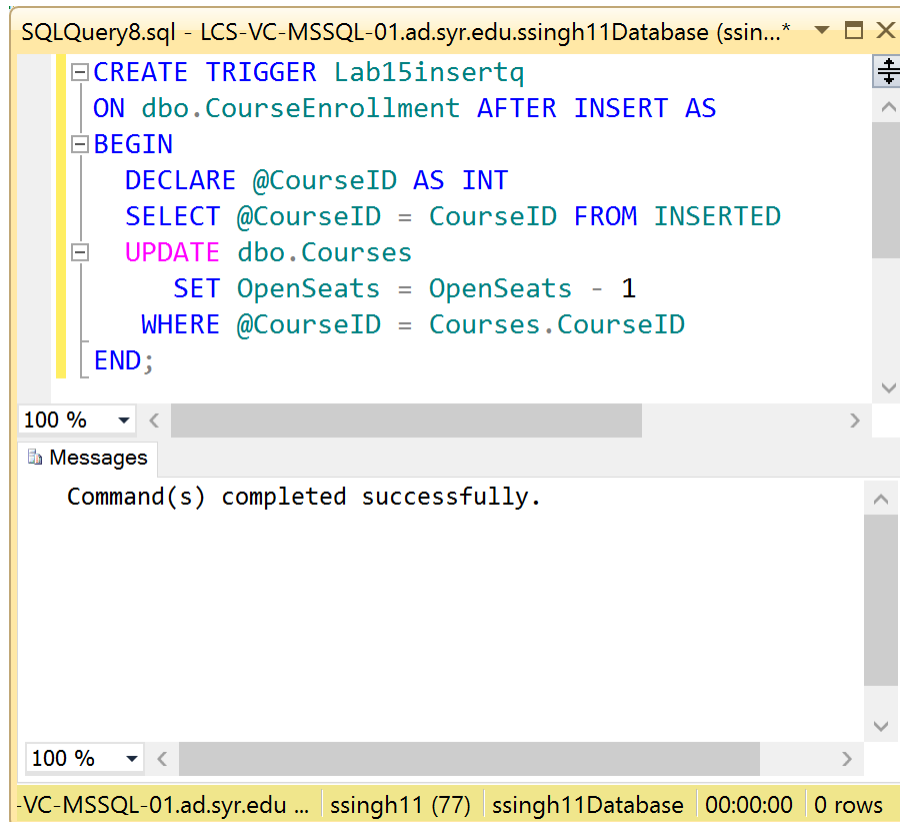


Lab 15: Triggers

1. Create a trigger on insert/delete/update of the Enrollment table:

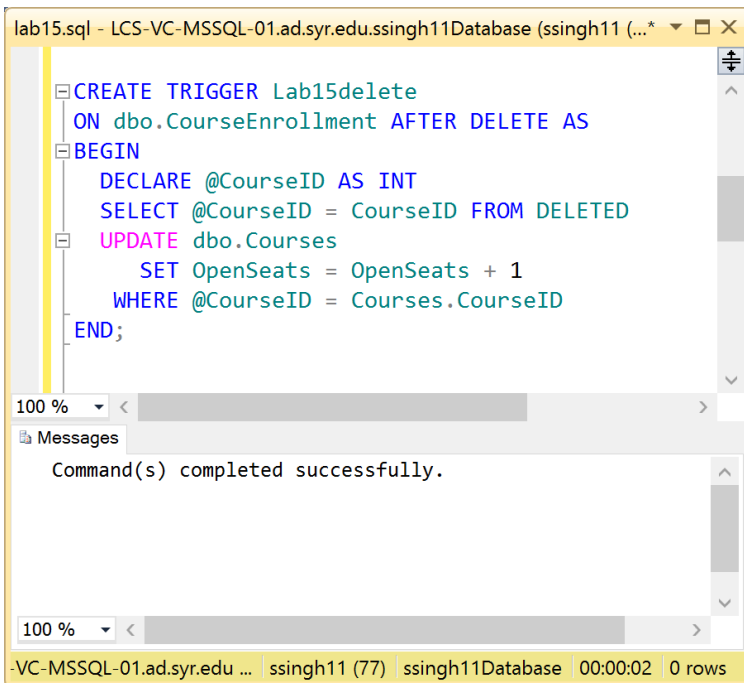
a)

```
CREATE TRIGGER Lab15insertq
ON dbo.CourseEnrollment AFTER INSERT AS
BEGIN
    DECLARE @CourseID AS INT
    SELECT @CourseID = CourseID FROM INSERTED
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats - 1
    WHERE @CourseID = Courses.CourseID
END;
```



b)

```
CREATE TRIGGER Lab15delete
ON dbo.CourseEnrollment AFTER DELETE AS
BEGIN
    DECLARE @CourseID AS INT
    SELECT @CourseID = CourseID FROM DELETED
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats + 1
    WHERE @CourseID = Courses.CourseID
END;
```



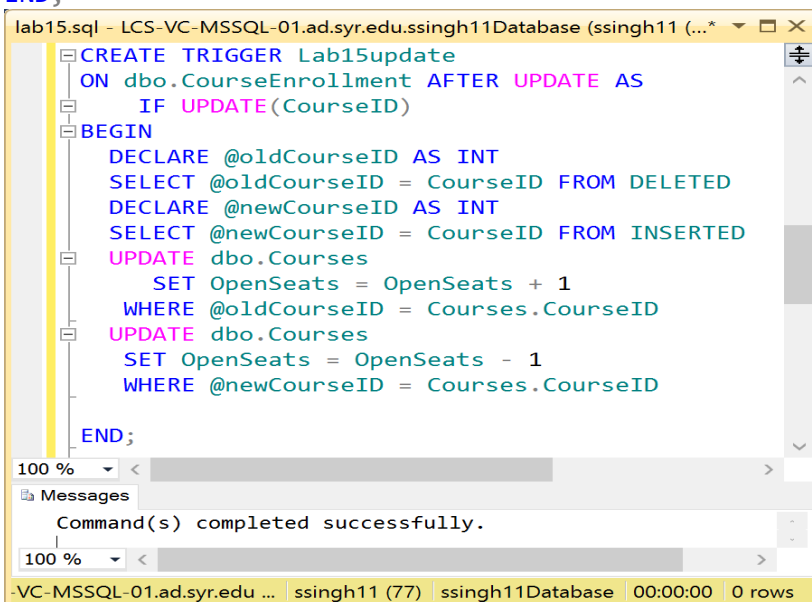
The screenshot shows a SQL Server Enterprise Manager window titled 'lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (...*)'. The main pane displays the following T-SQL code:

```
CREATE TRIGGER Lab15delete
ON dbo.CourseEnrollment AFTER DELETE AS
BEGIN
    DECLARE @CourseID AS INT
    SELECT @CourseID = CourseID FROM DELETED
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats + 1
    WHERE @CourseID = Courses.CourseID
END;
```

The Messages pane at the bottom shows the message: 'Command(s) completed successfully.' The status bar at the bottom indicates the connection is to 'VC-MSSQL-01.ad.syr.edu ...', the user is 'ssingh11 (77)', the database is 'ssingh11Database', and the execution time is '00:00:02' with '0 rows' affected.

c)

```
CREATE TRIGGER Lab15update
ON dbo.CourseEnrollment AFTER UPDATE AS
    IF UPDATE(CourseID)
BEGIN
    DECLARE @oldCourseID AS INT
    SELECT @oldCourseID = CourseID FROM DELETED
    DECLARE @newCourseID AS INT
    SELECT @newCourseID = CourseID FROM INSERTED
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats + 1
    WHERE @oldCourseID = Courses.CourseID
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats - 1
    WHERE @newCourseID = Courses.CourseID
END;
```



The screenshot shows a SQL Server Enterprise Manager window titled 'lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (...*)'. The main pane displays the following T-SQL code:

```
CREATE TRIGGER Lab15update
ON dbo.CourseEnrollment AFTER UPDATE AS
    IF UPDATE(CourseID)
BEGIN
    DECLARE @oldCourseID AS INT
    SELECT @oldCourseID = CourseID FROM DELETED
    DECLARE @newCourseID AS INT
    SELECT @newCourseID = CourseID FROM INSERTED
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats + 1
    WHERE @oldCourseID = Courses.CourseID
    UPDATE dbo.Courses
        SET OpenSeats = OpenSeats - 1
    WHERE @newCourseID = Courses.CourseID
END;
```

The Messages pane at the bottom shows the message: 'Command(s) completed successfully.' The status bar at the bottom indicates the connection is to 'VC-MSSQL-01.ad.syr.edu ...', the user is 'ssingh11 (77)', the database is 'ssingh11Database', and the execution time is '00:00:00' with '0 rows' affected.

2. a) Insert trigger :

SQLQuery9.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (77))*

```
SELECT *
FROM CourseEnrollment;
```

100 %

Results Messages

	EnrollmentId	StudentId	CourseId	FinalGrade
1	1	01-HJPotter	1	98.00
2	2	01-HJPotter	4	95.00
3	3	03-HJGranger	1	95.00
4	4	03-HJGranger	4	95.00
5	5	02-RBWeasley	1	98.00
6	6	02-RBWeasley	4	95.00
7	7	01-HJPotter	1	100.00
8	8	03-HJGranger	6	96.00

syr.edu ... ssingh11 (74) ssingh11Database 00:00:00 8 rows

lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (77))*

```
SELECT * FROM Courses;
```

100 %

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	1
4	4	CHMS101	Charms BASIC	11-Fflitwick	2
5	5	CHMS201	Charms INTERMEDIATE	11-Fflitwick	0
6	6	CHMS301	Charms ADVANCED	11-Fflitwick	2
7	7	HOM101	History of Magic BASIC	NULL	10

Query... LCS-VC-MSSQL-01.ad.syr.edu ... ssingh11 (77) ssingh11Database 00:00:01 7 rows

```
INSERT INTO CourseEnrollment (StudentId, CourseId)
VALUES
    ('01-HJPotter', 6);
```

lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (77))*

```
INSERT INTO CourseEnrollment (StudentId, CourseId)
VALUES
    ('01-HJPotter', 6);
```

100 %

Messages

(1 row(s) affected)

lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (77))*

```
SELECT * FROM CourseEnrollment;
SELECT * FROM Courses;
```

100 %

Results Messages

	EnrollmentId	StudentId	CourseId	FinalGrade
2	2	01-HJPotter	4	95.00
3	3	03-HJGranger	1	95.00
4	4	03-HJGranger	4	95.00
5	5	02-RBWeasley	1	98.00
6	6	02-RBWeasley	4	95.00
7	7	01-HJPotter	1	100.00
8	8	03-HJGranger	6	96.00
9	12	01-HJPotter	6	NULL

	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	1
4	4	CHMS101	Charms BASIC	11-Fflitwick	2
5	5	CHMS201	Charms INTERMEDIATE	11-Fflitwick	0
6	6	CHMS301	Charms ADVANCED	11-Fflitwick	1
7	7	HOM101	History of Magic BASIC	NULL	10

Query executed successfully. LCS-VC-MSSQL-01.ad.syr.edu ... ssingh11 (77) ssingh11Database 00:00:00 16 rows

b) Delete Trigger:

```
DELETE FROM CourseEnrollment
WHERE CourseId=6 AND StudentID = '01-HJPotter';
```

lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (77))*

```
DELETE FROM CourseEnrollment
WHERE CourseId=6 AND StudentID = '01-HJPotter';
```

100 %

Messages

(1 row(s) affected)

100 %

Query... LCS-VC-MSSQL-01.ad.syr.edu ... ssingh11 (77) ssingh11Database 00:00:00 0 rows

SQLQuery10.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (72))*

```

SELECT * FROM CourseEnrollment;
SELECT * FROM Courses;

```

100 %

Results Messages

	EnrollmentId	StudentId	CourseId	FinalGrade
1	1	01-HJPotter	1	98.00
2	2	01-HJPotter	4	95.00
3	3	03-HJGranger	1	95.00
4	4	03-HJGranger	4	95.00
5	5	02-RBWeasley	1	98.00
6	6	02-RBWeasley	4	95.00
7	7	01-HJPotter	1	100.00
8	8	03-HJGranger	6	96.00

	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	1
4	4	CHMS101	Charms BASIC	11-Fflitwick	2
5	5	CHMS201	Charms INTERMEDIATE	11-Fflitwick	0
6	6	CHMS301	Charms ADVANCED	11-Fflitwick	2
7	7	HOM101	History of Magic BASIC	NULL	10

Query exe... LCS-VC-MSSQL-01.ad.syr.edu ... ssingh11 (72) ssingh11Database 00:00:00 15 rows

c) Update Trigger

UPDATE CourseEnrollment

SET CourseId = 1

WHERE StudentID = '03-HJGranger' AND CourseId =6 ;

lab15.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (77))*

```

UPDATE CourseEnrollment
SET CourseId = 1
WHERE StudentID = '03-HJGranger' AND CourseId =6 ;

```

100 %

Messages

(1 row(s) affected)

100 %

Query... LCS-VC-MSSQL-01.ad.syr.edu ... ssingh11 (77) ssingh11Database 00:00:00 0 rows

SQLQuery10.sql - LCS-VC-MSSQL-01.ad.syr.edu.ssingh11Database (ssingh11 (72))*

```
SELECT * FROM CourseEnrollment;  
SELECT * FROM Courses;
```

100 %

Results Messages

	EnrollmentId	StudentId	CourseId	FinalGrade
1	1	01-HJPotter	1	98.00
2	2	01-HJPotter	4	95.00
3	3	03-HJGranger	1	95.00
4	4	03-HJGranger	4	95.00
5	5	02-RBWeasley	1	98.00
6	6	02-RBWeasley	4	95.00
7	7	01-HJPotter	1	100.00
8	8	03-HJGranger	1	96.00

	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	1
4	4	CHMS101	Charms BASIC	11-Fflitwick	2
5	5	CHMS201	Charms INTERMEDIATE	11-Fflitwick	0
6	6	CHMS301	Charms ADVANCED	11-Fflitwick	2
7	7	HOM101	History of Magic BASIC	NULL	10

Query exe... LCS-VC-MSSQL-01.ad.syr.edu ... ssingh11 (72) ssingh11Database 00:00:00 15 rows