

SQL Server Triggers - Teaching Materials

Example 1: AFTER INSERT Trigger

```
CREATE TRIGGER trg_AfterInsert_Student
ON Students
AFTER INSERT
AS
BEGIN
    INSERT INTO StudentLog (StudentID, ActionTaken, LogDate)
    SELECT StudentID, 'New student added', GETDATE()
    FROM inserted;
END;
```

Example 2: AFTER UPDATE Trigger

```
CREATE TRIGGER trg_AfterUpdate_Student
ON Students
AFTER UPDATE
AS
BEGIN
    INSERT INTO StudentLog (StudentID, ActionTaken, LogDate)
    SELECT i.StudentID, 'Student record updated', GETDATE()
    FROM inserted i;
END;
```

Example 3: INSTEAD OF DELETE Trigger

```
CREATE TRIGGER trg_InsteadOfDelete_Student
ON Students
INSTEAD OF DELETE
AS
BEGIN
    INSERT INTO ArchivedStudents (StudentID, Name, ArchiveDate)
    SELECT StudentID, Name, GETDATE()
    FROM deleted;

    DELETE FROM Students
    WHERE StudentID IN (SELECT StudentID FROM deleted);
END;
```

Example 4: Prevent Deletion of 'Admin'

```
CREATE TRIGGER trg_PreventDelete_Admin
ON Students
```

SQL Server Triggers - Teaching Materials

```
INSTEAD OF DELETE
AS
BEGIN
    IF EXISTS (
        SELECT 1
        FROM deleted
        WHERE Name = 'Admin'
    )
    BEGIN
        RAISERROR ('Cannot delete Admin user.', 16, 1);
        RETURN;
    END;

    DELETE FROM Students
    WHERE StudentID IN (SELECT StudentID FROM deleted);
END;
```

Example 5: GPA Validation

```
CREATE TRIGGER trg_ValidateGPA
ON Students
AFTER INSERT, UPDATE
AS
BEGIN
    IF EXISTS (
        SELECT 1 FROM inserted WHERE GPA > 4.0
    )
    BEGIN
        RAISERROR('GPA cannot exceed 4.0', 16, 1);
        ROLLBACK TRANSACTION;
    END;
END;
```

Example 6: Salary Change Log

```
CREATE TRIGGER trg_LogSalaryChange
ON Employees
AFTER UPDATE
AS
BEGIN
    INSERT INTO SalaryChanges (EmployeeID, OldSalary, NewSalary, ChangeDate)
    SELECT i.EmployeeID, d.Salary, i.Salary, GETDATE()
    FROM inserted i
    JOIN deleted d ON i.EmployeeID = d.EmployeeID
    WHERE i.Salary <> d.Salary;
END;
```

SQL Server Triggers - Teaching Materials

Example 7: Limit Number of Courses

```
CREATE TRIGGER trg_LimitCourses
ON Courses
AFTER INSERT
AS
BEGIN
    IF (SELECT COUNT(*) FROM Courses) > 100
    BEGIN
        RAISERROR('Cannot have more than 100 courses.', 16, 1);
        ROLLBACK TRANSACTION;
    END
END;
```

Example 8: Update Timestamp

```
CREATE TRIGGER trg_UpdateTimestamp
ON Students
AFTER UPDATE
AS
BEGIN
    UPDATE Students
    SET LastModified = GETDATE()
    WHERE StudentID IN (SELECT StudentID FROM inserted);
END;
```

Example 9: Cascade Delete for Enrollments

```
CREATE TRIGGER trg_CascadeDelete_Student
ON Students
AFTER DELETE
AS
BEGIN
    DELETE FROM Enrollments
    WHERE StudentID IN (SELECT StudentID FROM deleted);
END;
```