

Advanced SQL Server Triggers and Procedures (No Transactions)

Advanced Stored Procedures (No Transactions)

Procedure - Get Students by GPA Range and Date

```
CREATE PROCEDURE sp_GetStudentsByGPAAndDate
    @MinGPA DECIMAL(3,2),
    @MaxGPA DECIMAL(3,2),
    @SinceDate DATETIME
AS
BEGIN
    SELECT * FROM Students
    WHERE GPA BETWEEN @MinGPA AND @MaxGPA
    AND EnrollmentDate >= @SinceDate;
END;
```

Procedure - Search by Partial Name and GPA Above Threshold

```
CREATE PROCEDURE sp_SearchStudents
    @NameFragment NVARCHAR(50),
    @MinGPA DECIMAL(3,2)
AS
BEGIN
    SELECT * FROM Students
    WHERE Name LIKE '%' + @NameFragment + '%'
    AND GPA > @MinGPA;
END;
```

Procedure - Report Summary (GPA Stats)

```
CREATE PROCEDURE sp_GPASTatistics
AS
BEGIN
    SELECT
        COUNT(*) AS TotalStudents,
        AVG(GPA) AS AvgGPA,
        MAX(GPA) AS MaxGPA,
        MIN(GPA) AS MinGPA
    FROM Students;
END;
```

Advanced Triggers (No Transactions)

Trigger - Track Multiple Field Changes

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```
CREATE TABLE ChangeLog (
    StudentID INT,
    FieldChanged NVARCHAR(50),
    OldValue NVARCHAR(100),
    NewValue NVARCHAR(100),
    ChangedAt DATETIME
);

CREATE TRIGGER trg_TrackFieldChanges
ON Students
AFTER UPDATE
AS
BEGIN
    -- Track GPA changes
    INSERT INTO ChangeLog(StudentID, FieldChanged, OldValue, NewValue, ChangedAt)
    SELECT d.StudentID, 'GPA', CAST(d.GPA AS NVARCHAR), CAST(i.GPA AS NVARCHAR), GETDATE()
    FROM inserted i
    JOIN deleted d ON i.StudentID = d.StudentID
    WHERE i.GPA <> d.GPA;

    -- Track Name changes
    INSERT INTO ChangeLog(StudentID, FieldChanged, OldValue, NewValue, ChangedAt)
    SELECT d.StudentID, 'Name', d.Name, i.Name, GETDATE()
    FROM inserted i
    JOIN deleted d ON i.StudentID = d.StudentID
    WHERE i.Name <> d.Name;
END;
```

Trigger - Conditional Update on Insert

```
-- Adds ' (new)' to the name if GPA is below 2.5 on insert
CREATE TRIGGER trg_AddNewSuffix
ON Students
AFTER INSERT
AS
BEGIN
    UPDATE s
    SET Name = Name + ' (new)'
    FROM Students s
    JOIN inserted i ON s.StudentID = i.StudentID
    WHERE i.GPA < 2.5;
END;
```