

```
CREATE PROCEDURE AllocateElectives
AS
BEGIN
    DECLARE @StudentId INT, @SubjectId NVARCHAR(50), @Preference INT, @GPA FLOAT;

    -- Temporary table to hold sorted students
    CREATE TABLE #SortedStudents (
        StudentId INT,
        GPA FLOAT
    );

    -- Insert students sorted by GPA
    INSERT INTO #SortedStudents (StudentId, GPA)
    SELECT StudentId, GPA
    FROM StudentDetails
    ORDER BY GPA DESC;

    -- Cursor to iterate over each student
    DECLARE student_cursor CURSOR FOR
    SELECT StudentId, GPA
    FROM #SortedStudents;

    OPEN student_cursor;
    FETCH NEXT FROM student_cursor INTO @StudentId, @GPA;

    WHILE @@FETCH_STATUS = 0
    BEGIN
        DECLARE @Allotted BIT = 0;

        -- Cursor to iterate over each student's preferences
        DECLARE preference_cursor CURSOR FOR
        SELECT SubjectId, Preference
        FROM StudentPreference
        WHERE StudentId = @StudentId
        ORDER BY Preference;

        OPEN preference_cursor;
        FETCH NEXT FROM preference_cursor INTO @SubjectId, @Preference;

        WHILE @@FETCH_STATUS = 0 AND @Allotted = 0
        BEGIN
            -- Check if the subject has available seats
            IF EXISTS (SELECT 1 FROM SubjectDetails WHERE SubjectId = @SubjectId AND
                RemainingSeats > 0)
            BEGIN
                -- Allocate the subject to the student
                INSERT INTO Allotments (SubjectId, StudentId) VALUES (@SubjectId,
                    @StudentId);

                -- Decrement the remaining seats for the subject
                UPDATE SubjectDetails SET RemainingSeats = RemainingSeats - 1 WHERE
```

```
        SubjectId = @SubjectId;

        SET @Allotted = 1;
    END

    FETCH NEXT FROM preference_cursor INTO @SubjectId, @Preference;
END

CLOSE preference_cursor;
DEALLOCATE preference_cursor;

-- If student was not allotted any subject
IF @Allotted = 0
BEGIN
    INSERT INTO UnallotedStudents (StudentId) VALUES (@StudentId);
END

    FETCH NEXT FROM student_cursor INTO @StudentId, @GPA;
END

CLOSE student_cursor;
DEALLOCATE student_cursor;

-- Drop the temporary table
DROP TABLE #SortedStudents;
END;

EXEC AllocateElectives;

-- Check Allotments
SELECT * FROM Allotments;

-- Check UnallotedStudents
SELECT * FROM UnallotedStudents;
```