```sql
1  --CELEBAL TECHNOLOGIES
2  --SUMMER INTERN
3  --CHETANYA YADAV
4  --ID:CT_CSI_SQ_1260
5  --ASSIGNMENT-Student Allotment SQL Problem
6
7  CREATE PROCEDURE AllocateElectives
8  AS
9  BEGIN
10     DECLARE @StudentId INT, @SubjectId NVARCHAR(50), @Preference INT,
            @GPA FLOAT;
11
12     -- Temporary table to hold sorted students
13     CREATE TABLE #SortedStudents (
14         StudentId INT,
15         GPA FLOAT
16     );
17
18     -- Insert students sorted by GPA
19     INSERT INTO #SortedStudents (StudentId, GPA)
20     SELECT StudentId, GPA
21     FROM StudentDetails
22     ORDER BY GPA DESC;
23
24     -- Cursor to iterate over each student
25     DECLARE student_cursor CURSOR FOR
26     SELECT StudentId, GPA
27     FROM #SortedStudents;
28
29     OPEN student_cursor;
30     FETCH NEXT FROM student_cursor INTO @StudentId, @GPA;
31
32     WHILE @@FETCH_STATUS = 0
33     BEGIN
34         DECLARE @Allotted BIT = 0;
35
36         -- Cursor to iterate over each student's preferences
37         DECLARE preference_cursor CURSOR FOR
38         SELECT SubjectId, Preference
39         FROM StudentPreference
40         WHERE StudentId = @StudentId
41         ORDER BY Preference;
42
43         OPEN preference_cursor;
44         FETCH NEXT FROM preference_cursor INTO @SubjectId, @Preference;
45
46         WHILE @@FETCH_STATUS = 0 AND @Allotted = 0
47         BEGIN
48             -- Check if the subject has available seats
49             IF EXISTS (SELECT 1 FROM SubjectDetails WHERE SubjectId =
                  @SubjectId AND RemainingSeats > 0)
50             BEGIN
51                 -- Allocate the subject to the student
```

```sql
52                    INSERT INTO Allotments (SubjectId, StudentId) VALUES
                        (@SubjectId, @StudentId);
53
54                    -- Decrement the remaining seats for the subject
55                    UPDATE SubjectDetails SET RemainingSeats =
                        RemainingSeats - 1 WHERE SubjectId = @SubjectId;
56
57                    SET @Allotted = 1;
58                END
59
60                FETCH NEXT FROM preference_cursor INTO @SubjectId,
                    @Preference;
61            END
62
63        CLOSE preference_cursor;
64        DEALLOCATE preference_cursor;
65
66        -- If student was not allotted any subject
67        IF @Allotted = 0
68        BEGIN
69            INSERT INTO UnallotedStudents (StudentId) VALUES
                (@StudentId);
70        END
71
72        FETCH NEXT FROM student_cursor INTO @StudentId, @GPA;
73    END
74
75    CLOSE student_cursor;
76    DEALLOCATE student_cursor;
77
78    -- Drop the temporary table
79    DROP TABLE #SortedStudents;
80 END;
81
82
83
84 EXEC AllocateElectives;
85
86
87 -- Check Allotments
88 SELECT * FROM Allotments;
89
90 -- Check UnallotedStudents
91 SELECT * FROM UnallotedStudents;
92
```