CREATE PROCEDURE AllocateOpenElectives()

BEGIN

    DECLARE done INT DEFAULT FALSE;

    DECLARE studentId INT;

    DECLARE studentGPA FLOAT;

    DECLARE cur CURSOR FOR

        SELECT StudentId, GPA FROM StudentDetails ORDER BY GPA DESC;

    DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = TRUE;

*-- Create temporary tables to store allocations and unallotted students*

    CREATE TEMPORARY TABLE IF NOT EXISTS TempAllotments (

        SubjectId VARCHAR(10),

        StudentId INT

    );

    CREATE TEMPORARY TABLE IF NOT EXISTS TempUnallottedStudents (

        StudentId INT

    );

    OPEN cur;

    read\_loop: LOOP

        FETCH cur INTO studentId, studentGPA;

        IF done THEN

            LEAVE read\_loop;

        END IF;

        DECLARE pref\_done INT DEFAULT FALSE;

        DECLARE subjectId VARCHAR(10);

        DECLARE subjectCur CURSOR FOR

            SELECT SubjectId FROM StudentPreference WHERE StudentId = studentId ORDER BY Preference;

        DECLARE CONTINUE HANDLER FOR NOT FOUND SET pref\_done = TRUE;

        OPEN subjectCur;

        pref\_loop: LOOP

            FETCH subjectCur INTO subjectId;

            IF pref\_done THEN

                LEAVE pref\_loop;

            END IF;

            DECLARE seatCount INT;

            SELECT RemainingSeats INTO seatCount FROM SubjectDetails WHERE SubjectId = subjectId;

            IF seatCount > 0 THEN

*-- Allocate the student to the subject*

                INSERT INTO TempAllotments (SubjectId, StudentId) VALUES (subjectId, studentId);

*-- Update the remaining seats*

                UPDATE SubjectDetails SET RemainingSeats = RemainingSeats - 1 WHERE SubjectId = subjectId;

                LEAVE pref\_loop;

            END IF;

        END LOOP;

        CLOSE subjectCur;

*-- Check if student was unallotted*

        IF pref\_done THEN

            INSERT INTO TempUnallottedStudents (StudentId) VALUES (studentId);

        END IF;

    END LOOP;

    CLOSE cur;

*-- Insert final allocations into Allotments table*

    INSERT INTO Allotments (SubjectId, StudentId)

    SELECT SubjectId, StudentId FROM TempAllotments;

*-- Insert unallotted students into UnallottedStudents table*

    INSERT INTO UnallottedStudents (StudentId)

    SELECT StudentId FROM TempUnallottedStudents;

*-- Drop temporary tables*

    DROP TEMPORARY TABLE IF EXISTS TempAllotments;

    DROP TEMPORARY TABLE IF EXISTS TempUnallottedStudents;

END;