

Quiz 3: Solution

Given the following two tables:

Student(ID, name, address);

Grade(Sequence, StudentID, exam1, exam2, exam3, total);

Note: Grade.StudentID references Student.ID

Question 1 (25 Points): Write an Update statement to set exam3 grade for student(s) 'John Smith' to 55 (More than one student can have the same name).

```
Update Grade
Set exam3 = 55
Where StudentID in (Select ID
                    From Student
                    Where name = 'John Smith');
```

Question 2 (25 Points): Create a view (named *ExamAvg*) that computes the average of each exam. The output from the view should be =====>

Test	Average
Exam 1	...
Exam 2
Exam 3	...

```
Create View ExamAvg As (
    Select 'Exam 1' As Test, Avg(exam1) As Average From Grade
Union
    Select 'Exam 2' As Test, Avg(exam2) As Average From Grade
Union
    Select 'Exam 3' As Test, Avg(exam3) As Average From Grade);
```

Question 3 (25 Points): Use the ExamAvg view (as well as the base tables if needed) to report the student IDs whose total grade is larger than the sum of the three exams' averages, i.e., $\text{Grade.total} > (\text{Exam1's avg} + \text{Exam2's avg} + \text{Exam3's avg})$

```
Select StudentID
From Grade
Where total > (Select sum(Average) From ExamAvg);
```

Question 4 (25 Points): Assume relations $R(x, y, z)$ and $S(x, w)$, **Constraint:** No record r in R should have a value $r.x$ which is present in $S.x$. An operation violating this constraint should be cancelled.

Write the needed trigger(s) **ONLY** on relation S .

Solution 1

```
Create Trigger XYZ
After Insert or Update ON S
For Each Statement
Declare
    temp int;
Begin
    Select count(*) into temp
    From R, S
    Where R.x = S.x;

    If temp > 0 Then
        Raise_Application_Error(...)
    End If
End;
/
```

Optional to include this line



Solution 2

```
Create Trigger XYZ
Before Insert or Update ON S
For Each Row
Declare
    temp int;
Begin
    Select count(*) into temp
    From R
    Where R.x = :new.x;

    If temp > 0 Then
        Raise_Application_Error(...)
    End If
End;
/
```