

# **CSIS05I**

## **Database Systems II**

### **Lab (5)**

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#### **Triggers – Solutions**

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## *Exercises*

1. Create Triggers that keep track with both the inserted and the deleted records of table “Person” to be saved and displayed from a log table called “Auditing Table”.

### **Solution:**

```
CREATE TABLE Person (  
  SSN INT Primary key,  
  PName VARCHAR (20),  
  Age INT  
);
```

```
CREATE TABLE Auditing (  
  SSN INT,  
  Audit_msg VARCHAR (50),  
  Audit_date Date  
);
```

```
CREATE TRIGGER PersonAuditInsertionTrigger  
ON Person  
FOR INSERT  
AS
```

```
BEGIN
```

```
DECLARE @ssn INT;  
DECLARE @audit_msg VARCHAR (50);
```

```
SELECT @ssn = SSN FROM inserted;  
SELECT @audit_msg = ' row is inserted ';
```

```
INSERT INTO Auditing  
VALUES (@ssn, @audit_msg, getdate());
```

```
END
```

```

CREATE TRIGGER PersonAuditDeletionTrigger
ON Person
FOR DELETE
AS

BEGIN

DECLARE @ssn INT;
DECLARE @audit_msg VARCHAR (50);

SELECT @ssn = SSN FROM deleted;
SELECT @audit_msg = 'row is deleted';

INSERT INTO Auditing
VALUES (@ssn, @audit_msg, getdate());

END

--Insertion
INSERT INTO Person
VALUES (1,'Ahmed', 20);
INSERT INTO Person
VALUES (2,'Mohamed', 30);

--Deletion
Delete From Person where SSN = 1;

--Testing the Triggers
SELECT * FROM Auditing;

```

*Output:*

	SSN	Audit_msg	Audit_date
1	1	row is inserted	2021-11-14
2	2	row is inserted	2021-11-14
3	1	row is deleted	2021-11-14

2. Create a Trigger that enables the user to insert in a view called “StMajorView” that has attributes (StudentID, StudentName, and MajorName). In which this view joins two tables; Table Student (StudentID, StudentName and MajorNo) and Table Major (MajorID and MajorName). In addition, make sure that the user will not be able to insert non-existing majors or NULL values, otherwise raise an error message to the user (**Self-study**).

**Solution:**

Create table Major

```
(  
Mid    int primary key,  
Mname  varchar (20)  
);
```

--No need for a foreign key as we make a view from both tables

Create table Student

```
(  
Stid int primary key,  
Sname varchar(20),  
Major_no int,  
);
```

-- Major Table Insertion

Insert into Major

values (1,'HR');

Insert into Major

values (2,'IT');

Insert into Major

values (3,'CS');

go

Create view StMajorView

as

select Stid,Sname,Mname

from Student, Major

where Mid = Major\_no

go

--View Limitation Example that causes raising an error by the SQL server!

```
Insert into StMajorView  
values (1,'Mona', 'HR');
```

```
go  
Create Trigger StMajorTrigger  
on StMajorView  
Instead Of Insert  
As
```

```
Begin
```

```
Declare @majorno int
```

```
Select @majorno = Major.Mid  
From Inserted, Major  
Where Inserted.Mname = Major.Mname;
```

```
If (@majorno is NULL)  
Begin  
raiserror ('Error! Cannot Insert a Null Value!',16,1)  
return  
End
```

```
insert into Student  
select Stid, Sname, @majorno  
from Inserted
```

```
End  
go
```

--inserting using the view after executing the instead of insert trigger successfully

```
Insert into StMajorView  
values (1,'Mona', 'HR');
```

--inserting a Null Value to test the insertion validation condition raised by the trigger!

```
Insert into StMajorView  
values (2,'Sara', NULL);
```

--Testing the trigger!

```
Select * From StMajorView;
```