

SE1748 – Đỗ Thế Phi – SE161229 – DBI 202 – LAB 3

Table :

Department

SQLQuery1.sql - D...-3TLQI9M\MSI (59) ✕

```
/****** Script for SelectTopNRows command from SSMS *****/  
SELECT TOP (1000) [DName]  
                , [DNumber]  
                , [MgrSSN]  
                , [MgrStartDate]  
                , [nbrEmployees]  
FROM [Lab 3].[dbo].[Department]
```

100 %

Results Messages

	DName	DNumber	MgrSSN	MgrStartDate	nbrEmployees
1	Research	5	333445555	1978-05-22 00:00:00	4
2	Administration	4	987654321	1985-01-01 00:00:00	3
3	Headquarters	1	888665555	1971-06-19 00:00:00	1

Dependent

SQLQuery2.sql - D...-3TLQI9M\MSI (62)) X SQLQuery1.sql - D...-3TLQI9M\MSI (59))

```
/****** Script for SelectTopNRows command from SSMS *****/  
SELECT TOP (1000) [ESSN]  
    , [DependentName]  
    , [Sex]  
    , [BDate]  
    , [Relationship]  
FROM [Lab 3].[dbo].[Dependent]
```

100 %

Results Messages

	ESSN	DependentName	Sex	BDate	Relationship
1	333445555	Alice	F	1976-04-05 00:00:00	Daughter
2	333445555	Theodore	M	1973-10-25 00:00:00	Son
3	333445555	Joy	F	1948-05-03 00:00:00	Spouse
4	987654321	Abner	M	1932-02-29 00:00:00	Spouse
5	123456789	Michael	M	1978-01-01 00:00:00	Son
6	123456789	Alice	F	1978-12-31 00:00:00	Daughter
7	123456789	Elizabeth	F	1957-05-05 00:00:00	Spouse

DepLocations

SQLQuery3.sql - D...-3TLQI9M\MSI (60)) SQLQuery2.sql - D...-3TLQI9M\MSI (62))

/***** Script for SelectTopNRows command from SSMS *****/

SELECT TOP (1000) [DNumber]
 ,[DLocation]
FROM [Lab 3].[dbo].[DeptLocations]

100 %

Results Messages

	DNumber	DLocation
1	1	Houston
2	4	Stafford
3	5	Bellaire
4	5	Sugarland
5	5	Houston

Employee

SQLQuery4.sql - D...-3TLQI9M\MSI (64))
SQLQuery3.sql - D...-3TLQI9M\MSI (60))
SQLQuery2.sql - D...-3TLQI9M\MSI (62))

```

/***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP (1000) [FName]
      ,[MInit]
      ,[LName]
      ,[SSN]
      ,[BDate]
      ,[Address]
      ,[Sex]
      ,[Salary]
      ,[SuperSSN]
      ,[DNo]
      ,[HireDate]
FROM [Lab 3].[dbo].[Employee]

```

100 %

Results

Messages

	FName	MInit	LName	SSN	BDate	Address	Sex	Salary	SuperSSN	DNo	HireDate
1	John	B	Smith	123456789	1955-05-09 00:00:00	731 Fondren, Houston, TX	M	30000.00	333445555	5	1985-01-01 00:00:00
2	Franklin	T	Wong	333445555	1945-12-08 00:00:00	638 Voss, Houston, TX	M	40000.00	888665555	5	1982-01-01 00:00:00
3	Alicia	J	Zelaya	999887777	1958-07-19 00:00:00	3321 Castle, Spring, TX	F	25000.00	987654321	4	1985-01-01 00:00:00
4	Jennifer	S	Wallace	987654321	1931-06-20 00:00:00	291 Berry, Bellaire, TX	F	43000.00	888665555	4	1982-01-01 00:00:00
5	Ramesh	K	Narayan	666884444	1952-09-15 00:00:00	975 Fire Oak, Humble, TX	M	38000.00	333445555	5	1985-01-01 00:00:00
6	Joyce	A	English	453453453	1962-07-31 00:00:00	5631 Rice, Houston, TX	F	25000.00	333445555	5	1985-01-01 00:00:00
7	Ahmad	V	Jabbar	987987987	1959-03-29 00:00:00	980 Dallas, Houston, TX	M	25000.00	987654321	4	1985-01-01 00:00:00
8	James	A	Borg	888665555	1927-11-10 00:00:00	450 Stone, Houston, TX	M	55000.00	NULL	1	1980-01-01 00:00:00

Project

SQLQuery5.sql - D...-3TLQI9M\MSI (66)) SQLQuery4.sql - D...-3TLQI9M\MSI (64))

```
/****** Script for SelectTopNRows command from SSMS *****/  
SELECT TOP (1000) [PName]  
    , [PNumber]  
    , [PLocation]  
    , [DNumber]  
FROM [Lab 3].[dbo].[Project]
```

100 %

Results Messages

	PName	PNumber	PLocation	DNumber
1	ProductX	1	Bellaire	5
2	ProductY	2	Sugarland	5
3	ProductZ	3	Houston	5
4	Computerization	10	Stafford	4
5	Reorganization	20	Houston	1
6	Newbenefits	30	Stafford	4

WorksOn

SQLQuery6.sql - D...-3TLQI9M\MSI (53) X SQLQuery5.sql - D...-3TLQI9M\MSI (66)

/****** Script for SelectTopNRows command from SSMS *****/

```
SELECT TOP (1000) [ESSN]
      , [PNo]
      , [hours]
FROM [Lab 3].[dbo].[WorksOn]
```

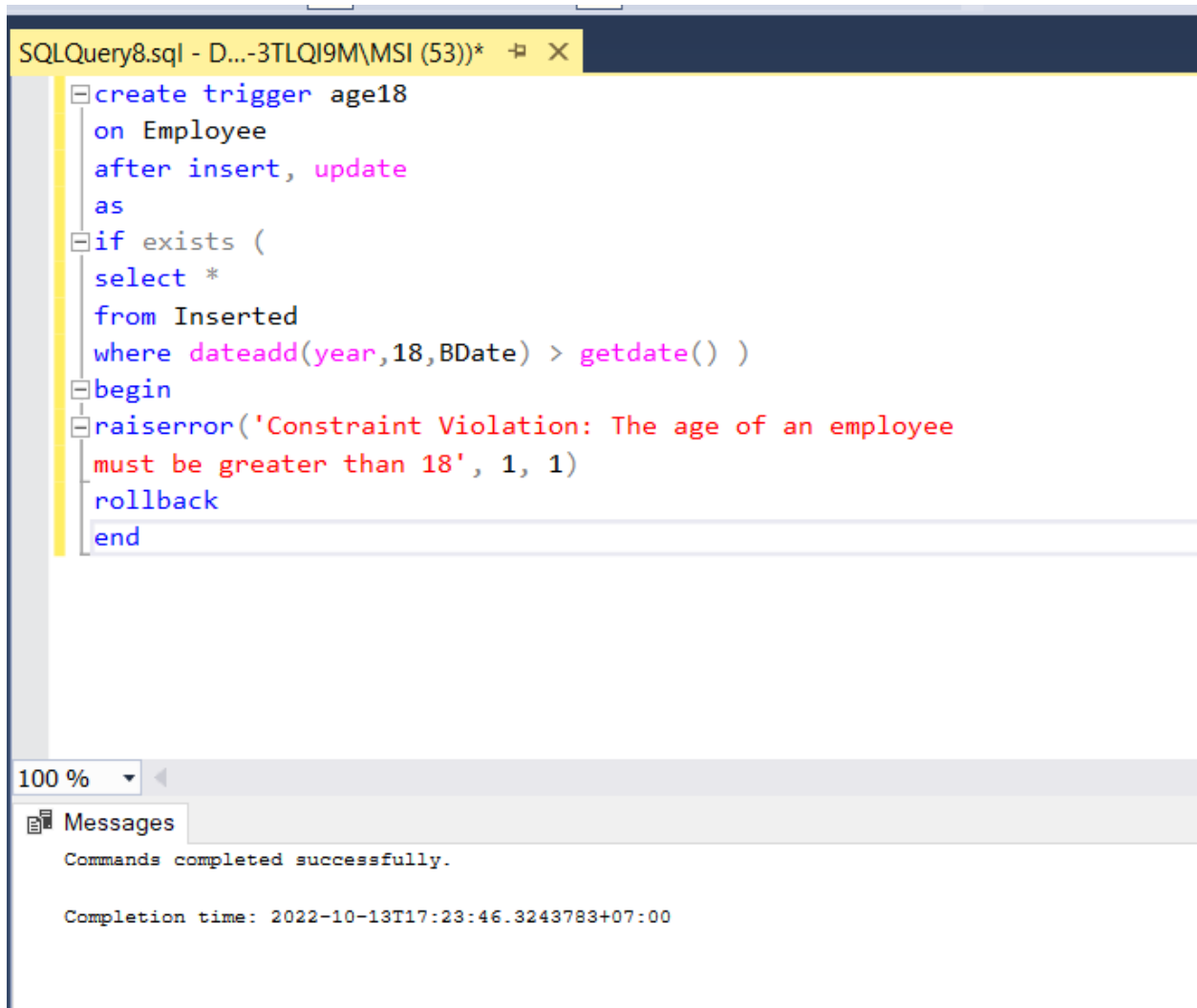
100 %

Results Messages

	ESSN	PNo	hours
1	123456789	1	32.5
2	123456789	2	7.5
3	333445555	1	10.0
4	333445555	2	10.0
5	333445555	3	20.0
6	453453453	1	20.0
7	453453453	2	20.0
8	666884444	3	40.0
9	888665555	20	30.0
10	987654321	10	5.0
11	987654321	20	15.0
12	987654321	30	20.0
13	987987987	10	35.0
14	987987987	30	5.0
15	999887777	10	10.0
16	999887777	30	30.0

✓ Query executed successfully.

Exercise 1



The screenshot displays the SQL Server Enterprise Manager interface. The top pane shows a script named 'SQLQuery8.sql' with the following T-SQL code:

```
create trigger age18
on Employee
after insert, update
as
if exists (
select *
from Inserted
where dateadd(year,18,BDate) > getdate() )
begin
raiserror('Constraint Violation: The age of an employee
must be greater than 18', 1, 1)
rollback
end
```

The bottom pane shows the 'Messages' tab with the following output:

```
Commands completed successfully.

Completion time: 2022-10-13T17:23:46.3243783+07:00
```

Exercise 2

SQLQuery8.sql - D...-3TLQI9M\MSI (53))* ✖

```
create trigger supervisorAge
on Employee
after insert, update
as
if exists (
select *
from Inserted I,
Employee E
where ( I.SuperSSN = E.SSN and I.BDate < E.BDate )
or ( E.SuperSSN = I.SSN and E.BDate < I.BDate ) )
begin
raiserror( 'Constraint Violation:
The age of an employee must be less than
the age of his/her supervisor', 1, 1)
rollback
end
```

100 % ◀

Messages

Commands completed successfully.

Completion time: 2022-10-13T17:27:37.3911409+07:00

Exercise 3

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
create trigger supervisorSalary
on Employee
after insert, update
as
if exists (
select *
from Inserted I,
Employee E
where ( I.SuperSSN = E.SSN and I.Salary > E.Salary )
or ( E.SuperSSN = I.SSN and E.Salary > I.Salary ) )
begin
raiserror('Constraint Violation:
The salary of an employee cannot be greater than
the salary of his/her supervisor', 1, 1)
rollback
end
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T17:28:00.4406558+07:00

Exercise 4

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
alter table Employee
add constraint UN_Employee_SSN_DNo
unique( SSN, DNO )
alter table Department
add constraint FK_Employee_SSN_DNo
foreign key( MgrSSN, DNumber )
references Employee( SSN, DNo )
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T17:28:29.2919894+07:00

Exercise 5

SQLQuery8.sql - D...-3TLQI9M\MSI (53))* ✕

```
alter table Project
add constraint FK_Project_DeptLocations
foreign key( DNumber, PLocation )
references DeptLocations( DNumber, DLocation )
```

100 % ▾

Messages

Msg 547, Level 16, State 0, Line 1

The ALTER TABLE statement conflicted with the FOREIGN KEY constraint "FK_Project_DeptLocations". The conflict occurred

Completion time: 2022-10-13T17:28:53.0761058+07:00

Exercise 6

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
alter table Employee
add constraint HireDate_BDate
check( HireDate > BDate )
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T18:26:36.3802144+07:00

Exercise 7

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
create trigger hireSuperv
on Employee
after insert, update
as
if exists (
select *
from Inserted I,
Employee E
where ( I.SuperSSN = E.SSN and datediff(year, E.HireDate, I.HireDate) < 1
)
or ( E.SuperSSN = I.SSN and datediff(year, I.HireDate, E.HireDate) < 1
)
)
begin
raiserror('Constraint Violation:
A supervisor must be hired at least 1 year before
every employee s/he supervises', 1, 1)
rollback
end
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T18:29:21.3708118+07:00

Exercise 8

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
create trigger DeptNbrEmp_Employee_InsUpdDel_Derive
on Employee
after insert, update, delete
as
begin
    update Department D
        set NbrEmployees = (
            select count(*)
            from Employee E
            where E.DNo = D.DNumber )
    where D.DNumber in (
        select distinct I.DNo
        from Inserted I )
    or D.DNumber in (
        select distinct D.DNo
        from Deleted D )
end
```

100 %

Messages

Msg 102, Level 15, State 1, Procedure DeptNbrEmp_Employee_InsUpdDel_Derive, Line 5 [Batch Start Line 0]
Incorrect syntax near 'D'.
Msg 156, Level 15, State 1, Procedure DeptNbrEmp_Employee_InsUpdDel_Derive, Line 8 [Batch Start Line 0]
Incorrect syntax near the keyword 'where'.
Msg 156, Level 15, State 1, Procedure DeptNbrEmp_Employee_InsUpdDel_Derive, Line 10 [Batch Start Line 0]
Incorrect syntax near the keyword 'or'.

Completion time: 2022-10-13T20:21:22.5556736+07:00

QLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
create trigger derived_Department_NbrEmployees_Employee
on Employee
after insert, update, delete
as
begin
update Department
set NbrEmployees = NbrEmployees +
( select count(*) from Inserted I where DNumber=I.DNo ) -
( select count(*) from Deleted D where DNumber=D.DNo )
where DNumber in ( select DNo from Inserted )
or DNumber in ( select DNo from Deleted )
end
create trigger derived_Department_NbrEmployees_Department
on Department
after insert, update
as
if exists ( select *
from Inserted
where NbrEmployees < ( select count(*)
```

00 %

Messages

Msg 156, Level 15, State 1, Procedure derived_Department_NbrEmployees_Employee, Line 13 [Batch St
Incorrect syntax near the keyword 'trigger'.

Completion time: 2022-10-13T20:23:29.6770545+07:00

Exercise 9

```
SQLQuery8.sql - D...-3TLQI9M\MSI (53))* X
create trigger empNbrProj
on WorksOn
after insert, update
as
if exists (
select *
from WorksOn W
group by W.ESSN
having count(*) > 4 )
begin
raiserror('Constraint Violation: An employee works at
most in 4 projects', 1, 1)
rollback
end
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T20:23:51.0733697+07:00

Exercise 10


```
SQLQuery8.sql - D...-3TLQI9M\MSI (53))* X
create trigger workson_30_50
on WorksOn
after insert, update, delete
as
if exists ( select *
from WorksOn
group by ESSN
having ( sum(Hours) < 30 )
or ( sum(Hours) > 50 ) )
begin
raiserror('Constraint Violation: An employee works at
least 30 h/week and at most 50 h/week on all its projects', 1, 1)
rollback
end

100 %
Messages
Commands completed successfully.

Completion time: 2022-10-13T20:24:09.6619737+07:00
```

Exercise 11

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
create trigger worksonLess10h
on WorksOn
after insert, update
as
if exists ( select *
from WorksOn
where Hours < 10
group by PNo
having count(*) > 2 )
begin
raiserror('Constraint Violation: A project can have at
most 2 employees working on the project less than 10 hours', 1, 1)
rollback end
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T20:24:32.0864582+07:00

Exercise 12

SQLQuery8.sql - D:\...3TLQI9M\MSI (53))*

```
on Department
after update, delete
as
if exists ( select *
from Deleted
where MgrSSN not in (
select MgrSSN
from Department )
and MgrSSN in (
select ESSN
from WorksOn
where Hours < 5 ) )
begin
raiserror('Constraint Violation: Only department managers
can work less than 5 hours on a project', 1, 1)
rollback
end
```

100 %

Messages

Msg 156, Level 15, State 1, Procedure worksonLess5h_WorksOn, Line 17 [Batch Start Line 0]
Incorrect syntax near the keyword 'trigger'.

Completion time: 2022-10-13T20:27:26.4984448+07:00

Exercise 13

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
create trigger workson10h_WorksOn
on WorksOn
after insert, update
as
if exists ( select *
from Inserted
where Hours < 10
and ESSN not in (
select SuperSSN
from Employee
where SuperSSN is not null ) )
begin
raiserror('Constraint Violation: Employees that are not supervisors
must work at least 10 hours on every project they work', 1, 1)
rollback
end
create trigger workson10h_Employee
on Employee
after update, delete
```

100 %

Messages

Msg 156, Level 15, State 1, Procedure workson10h_WorksOn, Line 16 [Batch Start Line 0]
Incorrect syntax near the keyword 'trigger'.
Msg 156, Level 15, State 1, Procedure workson10h_WorksOn, Line 30 [Batch Start Line 0]
Incorrect syntax near the keyword 'from'.
Msg 156, Level 15, State 1, Procedure workson10h_WorksOn, Line 35 [Batch Start Line 0]
Incorrect syntax near the keyword 'and'.
Msg 102, Level 15, State 1, Procedure workson10h_WorksOn, Line 38 [Batch Start Line 0]
Incorrect syntax near ')'.
Msg 102, Level 15, State 1, Procedure workson10h_WorksOn, Line 42 [Batch Start Line 0]
Incorrect syntax near 'end'.

Completion time: 2022-10-13T20:28:27.7932009+07:00

Exercise 14

```
SQLQuery8.sql - D:\...-3TLQI9M\MSI (53))* X
rollback
end

create trigger mgrProj_WorksOn
on WorksOn
after update, delete
as
if exists ( select *
from ( Department D join Project P on D.DNumber=P.DNumber)
left outer join WorksOn on MgrSSN = ESSN and PNumber = PNo
where D.MgrSSN in ( select ESSN
from Deleted )
and ( Hours is null
or Hours < 5 ) )
begin
raiserror('Constraint Violation: A manager must work at least 5 hours
on all projects controlled by his/her department', 1, 1)
rollback
end

100 %
Messages
Msg 156, Level 15, State 1, Procedure mgrProj_Department, Line 13 [Batch Start Line 0]
Incorrect syntax near the keyword 'trigger'.
Msg 156, Level 15, State 1, Procedure mgrProj_Department, Line 27 [Batch Start Line 0]
Incorrect syntax near the keyword 'trigger'.

Completion time: 2022-10-13T20:30:59.3094217+07:00
```

Exercise 15

Exercise 16

SQLQuery8.sql - D...-3TLQI9M\MSI (53))*

```
if exists ( select
from #Supervision
where SSN = SuperSSN )
begin
raiserror('Constraint Violation: The supervision
relationship is cyclic', 1, 1)
rollback
end
insert into #Supervision
select distinct S1.SSN, S2.SuperSSN
from #Supervision S1 join #Supervision S2
on S1.SuperSSN = S2.SSN
where not exists (
select *
from #Supervision S
where S.SSN = S1.SSN
and S.SuperSSN = S2.SuperSSN )
end
end
```

100 %

Messages

Commands completed successfully.

Completion time: 2022-10-13T20:33:41.8335772+07:00