Question 1)

جدول زیر را ایجاد کنید:

Book:

(ID(int, identity,primary key), Bookname(varchar(30)), yearpublish(int), authorname(varchar(40)), QTY(int))

Triggerهای زیر را ایجاد کنید. در هر مرحله عکسی از trigger و صحت آن درج کنید.

Here, the table is created:

```
create table Book(
    ID int identity not null primary key,
    Bookname varchar(30),
    yearpublish int,
    authorname varchar(40),
    QTY int
);
```

۱- trigger بنویسید که در زمان insert کردن داده‌ها، به جای عملیات insert، پیام 'No change was done' را نشان دهد.

The query for the trigger is as below:

```
create trigger t1
on Book
instead of insert
as
begin
    print 'No change was done';
    ROLLBACK TRANSACTION
end;



SET IDENTITY_INSERT Book ON
insert into Book(ID, Bookname, yearpublish, authorname, QTY) values (1, 'The Catcher in the Rye', 1951, 'J.D Salinger', 23);
```

The output of the query is:

```
No change was done
Msg 3609, Level 16, State 1, Line 13
The transaction ended in the trigger. The batch has been aborted.

Completion time: 2021-04-26T16:44:41.4982172+04:30
```

As can be seen, our desired message "No change was done" is written in the output instead of the insert operation.

Question 2)

First, the table "Book_Audit" is created:

```sql
create table Book_Audit(
    ID int,
    Bookname varchar(30),
    yearpublish int,
    authorname varchar(40),
    QTY int,
    Ins_or_del int
);
```

Next, the query for the trigger is written as follows:

```sql
exec sp_configure 'nested triggers', 0
reconfigure with override

create trigger t2
on Book
after insert, delete
as
begin

    declare @ID_2 int, @Bookname_2 varchar(30), @yearpublish_2 int, @authorname_2 varchar(40), @QTY_2 int, @Ins_or_del_2 int;

    if exists (select * from INSERTED)
    begin
        set @Ins_or_del_2 = 1;
        select @ID_2 = ID, @Bookname_2 = Bookname, @yearpublish_2 = yearpublish, @authorname_2 = authorname, @QTY_2 = QTY
        from INSERTED
    end

    if exists (select * from DELETED)
    begin
        set @Ins_or_del_2 = 0;
        select @ID_2 = ID, @Bookname_2 = Bookname, @yearpublish_2 = yearpublish, @authorname_2 = authorname, @QTY_2 = QTY
        from DELETED
    end

    insert into Book_Audit values(@ID_2, @Bookname_2, @yearpublish_2, @authorname_2, @QTY_2, @Ins_or_del_2);

end
```

After that, it is tried to add data to the table "Book_Audit" just created:

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```
SET IDENTITY_INSERT Book ON
insert into Book(ID, Bookname, yearpublish, authorname, QTY) values(1, 'Jane Eyre', 1847, 'Charlotte Bronte', 32);
insert into Book(ID, Bookname, yearpublish, authorname, QTY) values(2, 'War and Peace', 1800, 'Leo Tolstoy', 50);
```

Which will result in the following output. As expected, since we did two "inserts", then both values for the newly created column "Ins_or_del" is set to 1.

	ID	Bookname	yearpublish	authorname	QTY	Ins_or_del
1	1	Jane Eyre	1847	Charlotte Bronte	32	1
2	2	War and Peace	1800	Leo Tolstoy	50	1

Now, "delete" is tried:

```
delete from Book where Bookname = 'Jane Eyre';
```

Which will result in the following output. As expected, since we did a "delete", then the value for the newly created column "Ins_or_del" for book "Jane Eyre" is set to 0.

	ID	Bookname	yearpublish	authorname	QTY	Ins_or_del
1	1	Jane Eyre	1847	Charlotte Bronte	32	1
2	2	War and Peace	1800	Leo Tolstoy	50	1
3	1	Jane Eyre	1847	Charlotte Bronte	32	0

Question 3)

۳- trigger بنویسید که مانع از update فیلد Bookname شود.[راهنمایی: از rollback و تابع Update استفاده کنید]

First od all, here is how the table looks like before applying any query:

	ID	Bookname	yearpublish	authorname	QTY
1	10	Liar	NULL	Tom Jackson	91
2	20	Sam?	NULL	Mary Lee	200
3	21	Robots	NULL	Karen Pam	1
4	22	X-Man	NULL	James Ren	3
5	40	X-Man	NULL	James Ren	3
6	41	X-Man	NULL	James Ren	3

And here is the query of the trigger:

```
create trigger t3
on Book
after update
as
if UPDATE(Bookname)
begin
    print 'No update is allowed on "Bookname" :))'
    rollback transaction
end;
```

As can be seen, I have specifically placed a restriction on updating the column "Bookname'". Now if I try to update this column to be "Mary II" through the below query, I should get a message that I am not allowed to do so by "No update is allowed on "Bookname" :))"

```
update Book
set Bookname = 'Mary II'
where ID = 10;
```

Here is the output:

```
No update is allowed on "Bookname" :))
Msg 3609, Level 16, State 1, Line 5
The transaction ended in the trigger. The batch has been aborted.

Completion time: 2021-04-26T00:25:08.0245581+04:30
```

Question 4)

۴-view را تعریف کنید که نام هر کتاب را به همراه نام نویسنده‌ی آن کتاب و تعدادچاپ(QTY) را نمایش دهد.

بر روی این view، trigger تعریف کنید که در هنگام insert، کتاب‌هایی را که QTY<1000 دارند را به QTY=1000 تغییر دهد.

Here is the view "v1" and the query for the trigger "t4" on this view:

```
create view v1 as
select Bookname, authorname, QTY
from Book;

create trigger t4
on v1
instead of insert
as
insert into Book(Bookname, authorname, QTY)
select INSERTED.Bookname, INSERTED.authorname, 1000
from INSERTED
where INSERTED.QTY < 1000;
```

But before running the query, here is how view "v1" looks like:

	Bookname	authorname	QTY
1	Liar	Tom Jackson	91
2	Sam?	Mary Lee	200
3	Robots	Karen Pam	1
4	X-Man	James Ren	3
5	X-Man	James Ren	3
6	X-Man	James Ren	3
7	Out of Planet	Sarah Ford	12

As can be seen above, before inserting any new data, all the previous instances with "QTY" less than 1000, have their original value.

But, after executing the query and after new data is inserted to view "v1", if its "QTY" is less than 1000 then the view shows it as 1000 nonetheless.

```
insert into v1 values ('The Wind', 'Lary Jones', 56);
select * from v1;
```

As can be seen, the new data "The wind" is inserted to the view but since its "QTY" is 56, then it will be changed to 1000 in the view:

	Bookname	authorname	QTY
1	Liar	Tom Jackson	91
2	Sam?	Mary Lee	200
3	Robots	Karen Pam	1
4	X-Man	James Ren	3
5	X-Man	James Ren	3
6	X-Man	James Ren	3
7	Out of Planet	Sarah Ford	12
8	The Wind	Lary Jones	1000

Question 5)

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۵- trigger بنویسید که امکان حذف جدول Book را از ما بگیرد.

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Here is the query for the trigger "t5":

```
create trigger t5
on DATABASE
for DROP_TABLE
as
print('The Admin does not allow you to drop the table!')
ROLLBACK;
```

Now of I try to drop the table "Book", I will get an error with the desired message "The Admin does not allow you to drop the table!":

```
drop table Book;
```

The output:

```
The Admin does not allow you to drop the table!
Msg 3609, Level 16, State 2, Line 17
The transaction ended in the trigger. The batch has been aborted.

Completion time: 2021-04-26T17:15:42.4348705+04:30
```