

INSERT, UPDATE, DELETE

T-SQL

Transactions

ACID

- A - Atomicity
- C - Consistency
- I - Isolation
- D - Durability

<https://learn.microsoft.com/en-us/sql/t-sql/language-elements/transactions-transact-sql?view=sql-server-ver16>

Transactions c.d.

```
begin transaction
```

```
-- ...
```

```
commit
```

- `begin` - starts transaction
 - <https://learn.microsoft.com/en-us/sql/t-sql/language-elements/begin-transaction-transact-sql?view=sql-server-ver16>
- `commit` - ends transaction, commit, success
 - <https://learn.microsoft.com/en-us/sql/t-sql/language-elements/commit-transaction-transact-sql?view=sql-server-ver16>

Transactions c.d.

```
begin transaction  
  
-- ...  
  
rollback
```

- `rollback` - ends transaction, rollback, failure
 - <https://learn.microsoft.com/en-us/sql/t-sql/language-elements/rollback-transaction-transact-sql?view=sql-server-ver16>

Transactions c.d.

```
select @@trancount
```

<https://learn.microsoft.com/en-us/sql/t-sql/functions/trancount-transact-sql?view=sql-server-ver16>

INSERT

```
insert customers (customerid, companyname, contactname, contacttitle,  
address, city, region, postalcode, country,  
phone ,fax)  
values ('PECOF', 'Pecos Coffee Company', 'Michael Dunn', 'Owner',  
        '1900 Oak Street', 'Vancouver', 'BC', 'V3F 2K1', 'Canada',  
        '(604) 555-3392' , '(604) 555-7293')
```

```
select * from customers where customerid = 'PECOF'
```

shippers table

```
create table dbo.shippers
(
    shipperid    int identity
                constraint pk_shippers
                primary key,
    companyname  nvarchar(40) not null,
    phone        nvarchar(24)
)
```

INSERT c.d.

```
insert shippers (companyname)
values ('Fitch & Mather')
```

```
select * from shippers
where companyname = 'Fitch & Mather'
```

```
select * from shippers
where shipperid = @@identity
```

	 shipperid ▾	 companyname ▾	 phone ▾
1	4	Fitch & Mather	<null>

INSERT c.d.

```
select @@identity
```

- @@identity
 - <https://learn.microsoft.com/en-us/sql/t-sql/functions/identity-transact-sql?view=sql-server-ver16>

INSERT c.d.

```
DBCC CHECKIDENT ('shippers');  
  
IDENT_CURRENT( 'shippers')  
  
DBCC CHECKIDENT ('shippers', RESEED, 3);
```

- IDENT_CURRENT
 - <https://learn.microsoft.com/en-us/sql/t-sql/functions/ident-current-transact-sql?view=sql-server-ver16>
- DBCC CHECKIDENT
 - <https://learn.microsoft.com/en-us/sql/t-sql/database-console-commands/dbcc-checkident-transact-sql?view=sql-server-ver16>

INSERT c.d.

```
insert shippers (companyname, phone)
values ('Taxi 1', '912')
```

```
insert shippers (companyname, phone)
values ('Taxi 2', '913')
```

```
insert shippers (companyname, phone)
values ('Taxi 1', '912'),
      ('Taxi 2', '913')
```

INSERT c.d.

```
insert shippers (companyname, phone)
values ('Taxi 1', '912'),
      (null, '913')
```

error

[23000][515] Line 1: Cannot insert the value NULL into column 'CompanyName', table 'Northwind_m.dbo.Shippers'; column does not allow nulls. INSERT fails.

- `companyname` in `shippers` table can not be `null`
- `insert` returns an error
 - no row will be inserted

INSERT c.d.

```
begin transaction

insert shippers (companyname, phone)
values ('null', '912')

insert shippers (companyname, phone)
values ('Taxi 2', '913')

commit transaction
```

- "second" insert ends successfully, row will be inserted to database

INSERT c.d.

```
begin transaction

insert shippers (companyname, phone)
values (null, '912'),
       ('Taxi 2', '913')

commit
```

- insert ends with error, no row will be inserted

INSERT c.d.

```
begin try
  begin transaction

  insert shippers (companyname, phone)
  values ('Taxi1', '912')

  insert shippers (companyname, phone)
  values (null, '913')

  commit
end try
begin catch
  rollback
  ;throw
end catch
```

- try ... catch
 - transaction will be rolled back, no row will be inserted
 - <https://learn.microsoft.com/en-us/sql/t-sql/language-elements/try-catch-transact-sql?view=sql-server-ver16>

INSERT c.d.

- insert into existing `shippers` table

```
insert shippers (companyname, phone)
select companyname, phone from suppliers
```

- creation of a new table `newshippers`

```
select supplierid as shipperid, companyname, phone
into newshippers
from suppliers
```


newshippers table

```
create table dbo.newshippers
(
    shipperid    int identity,
    companyname  nvarchar(40) not null,
    phone        nvarchar(24)
)
```

UPDATE

```
update suppliers  
set phone = '12 423 512',  
    fax = '12 423 512'  
where supplierid = 2
```

UPDATE c.d.

```
update products
set unitprice = unitprice * 1.15
where categoryid = 2
```

```
update products
set unitprice = unitprice + 2
where supplierid in (
    select supplierid
    from suppliers
    where country = 'USA'
)
```

UPDATE c.d.

```
update products
set unitprice = unitprice - 10
where unitprice > (select avg(unitprice) from products)
```

```
update products
set unitprice = unitprice - 10
where unitprice > (select avg(unitprice) from products p2
                  where p2.categoryid = products.categoryid)
```

DELETE

```
delete shippers  
where companyname = 'Fitch & Mather'
```

```
delete shippers  
where shipperid = 4
```

DELETE c.d.

```
select * from orders  
where datediff(month, shippeddate, getdate()) >= 6
```

```
delete orders  
where datediff(month, shippeddate, getdate()) >= 6
```

Error

[23000][547] Line 1: The DELETE statement conflicted with the REFERENCE constraint "FK_Order_Details_Orders". The conflict occurred in database "Northwind_m", table "dbo.Order Details", column 'OrderID'.

DELETE c.d.

```
delete [order details]
where orderid in (
    select orderid from orders
    where datediff(month, shippeddate, getdate()) >= 6
)
```

```
delete from orders
where datediff(month, shippeddate, getdate()) >= 6
```