1.

```sql
Create function ufn_TotalAmountByCustomer(@customerId int = 0)
Returns decimal(12,2)
as
Begin
    Declare @TotalAmount decimal(12,2)

    Select @TotalAmount=sum(o.TotalAmount)
    From [Order] as o
    Where o.CustomerId = @customerId

    Return @TotalAmount
END


Select *, dbo.ufn_TotalAmountByCustomer(c.Id) as [TotalAmountByCustomer]
From Customer as c
```

	Id	FirstName	LastName	City	Country	Phone	TotalAmountByCustomer
1	1	Maria	Anders	Berlin	Germany	030-0074321	4596.20
2	2	Ana	Trujillo	México D.F.	Mexico	(5) 555-4729	1402.95
3	3	Antonio	Moreno	México D.F.	Mexico	(5) 555-3932	7515.35
4	4	Thomas	Hardy	London	UK	(171) 555-7788	13806.50
5	5	Christina	Berglund	Luleå	Sweden	0921-12 34 65	26968.15
6	6	Hanna	Moos	Mannheim	Germany	0621-08460	3239.80
7	7	Frédérique	Citeaux	Strasbourg	France	88.60.15.31	19088.00
8	8	Martín	Sommer	Madrid	Spain	(91) 555 22 82	5297.80
9	9	Laurence	Lebihan	Marseille	France	91.24.45.40	23850.95
10	10	Elizabeth	Lincoln	Tsawassen	Canada	(604) 555-4729	22607.70
11	11	Victoria	Ashworth	London	UK	(171) 555-1212	6089.90
12	12	Patricio	Simpson	Buenos Aires	Argentina	(1) 135-5555	1814.80
13	13	Francisco	Chang	México D.F.	Mexico	(5) 555-3392	100.80
14	14	Yang	Wang	Bern	Switzerland	0452-076545	12886.30
15	15	Pedro	Afonso	Sao Paulo	Brazil	(11) 555-7647	3810.75
16	16	Elizabeth	Brown	London	UK	(171) 555-2282	1719.10
17	17	Sven	Ottlieb	Aachen	Germany	0241-039123	3763.21
18	18	Janine	Labrune	Nantes	France	40.67.88.88	1615.90

Query executed successfully.   MSI\SQLEXPRESS (15.0 RTM) MSI\GP65 (131) Northwind 00:00:00 91 rows

2.

```sql
Create function ufn_ProductInRange(@min  decimal(12,2) = 0, @max  decimal(12,2) = 0)
Returns table
as
Return(
    Select *
    From Product as p
    Where p.UnitPrice >= @min and p.UnitPrice <= @max
)

Select * from ufn_ProductInRange(5,50)
```

	Id	ProductName	SupplierId	UnitPrice	Package	IsDiscontinued
1	1	Chai	1	18.00	10 boxes x 20 bags	0
2	2	Chang	1	19.00	24 - 12 oz bottles	0
3	3	Aniseed Syrup	1	10.00	12 - 550 ml bottles	0
4	4	Chef Anton's Cajun Seasoning	2	22.00	48 - 6 oz jars	0
5	5	Chef Anton's Gumbo Mix	2	21.35	36 boxes	1
6	6	Grandma's Boysenberry Spread	3	25.00	12 - 8 oz jars	0
7	7	Uncle Bob's Organic Dried Pears	3	30.00	12 - 1 lb pkgs.	0
8	8	Northwoods Cranberry Sauce	3	40.00	12 - 12 oz jars	0
9	10	Ikura	4	31.00	12 - 200 ml jars	0
10	11	Queso Cabrales	5	21.00	1 kg pkg.	0
11	12	Queso Manchego La Pastora	5	38.00	10 - 500 g pkgs.	0
12	13	Konbu	6	6.00	2 kg box	0
13	14	Tofu	6	23.25	40 - 100 g pkgs.	0
14	15	Genen Shouyu	6	15.50	24 - 250 ml bottles	0
15	16	Pavlova	7	17.45	32 - 500 g boxes	0
16	17	Alice Mutton	7	39.00	20 - 1 kg tins	1
17	19	Teatime Chocolate Biscuits	8	9.20	10 boxes x 12 pieces	0
18	21	Sir Rodney's Scones	8	10.00	24 pkgs. x 4 pieces	0

3.

```sql
Create function ufn_OrderByMonths(@monthFilter nvarchar(max))
Returns @ResultTable Table (Id int, OrderDate datetime, OrderNumber nvarchar(max), CustomerId int, TotalAmount decimal(12,2))
As
Begin
    Set @monthFilter=LOWER(@monthFilter)

    Insert into @ResultTable
    Select Id, OrderDate, OrderNumber,CustomerId, TotalAmount
    From [Order]
    Where CHARINDEX(LTRIM(RTRIM( LOWER(DATENAME(MONTH, DATEADD(MONTH, 0, OrderDate))))),@monthFilter) > 0
    Return
End

Create function ufn_OrderByMonths2(@monthFilter nvarchar(MAX))
Returns table
As
Return
(
    Select *
    From [Order] as o
    Where CHARINDEX(LTRIM(RTRIM(LOWER(DATENAME(MONTH, DATEADD(MONTH, 0, OrderDate))))),LOWER(@monthFilter)) > 0
)

Set STATISTICS TIME on
Select * From ufn_OrderByMonths('June;July;August;September')
Select * From ufn_OrderByMonths2('June;July;August;September')
Set STATISTICS TIME off
```

	Id	OrderDate	OrderNumber	CustomerId	TotalAmount
1	1	2012-07-04 00:00:00.000	542378	85	440.00
2	2	2012-07-05 00:00:00.000	542379	79	1863.40
3	3	2012-07-08 00:00:00.000	542380	34	1813.00
4	4	2012-07-08 00:00:00.000	542381	84	670.80
5	5	2012-07-09 00:00:00.000	542382	76	3730.00
6	6	2012-07-10 00:00:00.000	542383	34	1444.80
7	7	2012-07-11 00:00:00.000	542384	14	625.20
8	8	2012-07-12 00:00:00.000	542385	68	2490.50

	Id	OrderDate	OrderNumber	CustomerId	TotalAmount
1	1	2012-07-04 00:00:00.000	542378	85	440.00
2	2	2012-07-05 00:00:00.000	542379	79	1863.40
3	3	2012-07-08 00:00:00.000	542380	34	1813.00
4	4	2012-07-08 00:00:00.000	542381	84	670.80
5	5	2012-07-09 00:00:00.000	542382	76	3730.00
6	6	2012-07-10 00:00:00.000	542383	34	1444.80
7	7	2012-07-11 00:00:00.000	542384	14	625.20
8	8	2012-07-12 00:00:00.000	542385	68	2490.50

```
SQL Server parse and compile time:
    CPU time = 0 ms, elapsed time = 0 ms.

(203 rows affected)

 SQL Server Execution Times:
    CPU time = 8 ms,  elapsed time = 8 ms.

(203 rows affected)

 SQL Server Execution Times:
    CPU time = 0 ms,  elapsed time = 75 ms.

Completion time: 2021-06-04T16:33:16.4115504+07:00
```

4.

```
Create function ufn_CheckItemQuantity(@Id int)
Returns BIT
As
    Begin
        Declare @OverNumber BIT;

        IF((Select count(oi.Id) From OrderItem as oi Where oi.OrderId=@Id)<=5)
            set @OverNumber=1;
        ELSE
            set @OverNumber=0;
        Return @OverNumber;
    End
Go

ALTER TABLE OrederItem
ADD CONSTRAINT CheckNumberOfItem
    CHECK (dbo.ufn_CheckItemQuantity(OrderId)=1);

Set Identity_Insert [OrderItem] on
Insert INTO OrderItem Values(2156, 830,1,18.00,6)
Set Identity Insert [OrderItem] off
```

Messages
```
Msg 8101, Level 16, State 1, Line 82
An explicit value for the identity column in table 'OrderItem' can only be specified when a column list is used and IDENTITY_INSERT is ON.

Completion time: 2021-06-10T11:36:10.1296427+07:00
```

107 %

⚠ Query completed with errors.   MSI\SQLEXPRESS (15.0 RTM)   MSI\GP65 (101)   Northwind   00:00:00   0 rows