

Лабораторная работа №5

Вариант 2

1. Создайте scalar-valued функцию, которая будет принимать в качестве входного параметра id отдела (HumanResources.Department.DepartmentID) и возвращать количество сотрудников, работающих в отделе.

```
CREATE FUNCTION HumanResources.getDepartmentEmployeeCount(@dID INT)
RETURNS INT
AS
BEGIN
    RETURN (
        SELECT COUNT(*)
        FROM EmployeeDepartmentHistory
        WHERE EndDate IS NULL AND DepartmentID = @dID
    );
END;
```

HumanResources.getDepartmentEmployeeCount

Aggregate Functions

```
PRINT HumanResources.getDepartmentEmployeeCount(1);
```

Messages

GO

```
SELECT *
FROM HumanResources.EmployeeDepartmentHistory
WHERE EndDate IS NULL AND DepartmentID = 1;
```

	BusinessEntityID	DepartmentID	ShiftID	StartDate	EndDate	ModifiedDate
1	2	1	1	2002-03-03	NULL	2002-03-02 00:00:00.000
2	3	1	1	2001-12-12	NULL	2001-12-11 00:00:00.000
3	5	1	1	2002-02-06	NULL	2002-02-05 00:00:00.000
4	6	1	1	2002-02-24	NULL	2002-02-23 00:00:00.000
5	14	1	1	2005-01-30	NULL	2005-01-29 00:00:00.000
6	15	1	1	2005-02-18	NULL	2005-02-17 00:00:00.000

2. Создайте inline table-valued функцию, которая будет принимать в качестве входного параметра id отдела (HumanResources.Department.DepartmentID), а возвращать сотрудников, которые работают в отделе более 11 лет.

```
CREATE FUNCTION HumanResources.getDepartmentEmployees(@dID INT)
RETURNS TABLE
AS
RETURN (
    SELECT * FROM EmployeeDepartmentHistory
    WHERE DepartmentID = @dID AND
        EndDate IS NULL AND
        DATEDIFF(YEAR, StartDate, GETDATE()) > 11
);
```

Table-valued Functions

dbo.ufnGetContactInformation

HumanResources.getDepartmentEmployees

```
SELECT * FROM HumanResources.getDepartmentEmployees(1);
GO
```

Results		Messages				
	BusinessEntityID	DepartmentID	ShiftID	StartDate	EndDate	ModifiedDate
1	2	1	1	2002-03-03	NULL	2002-03-02 00:00:00.000
2	3	1	1	2001-12-12	NULL	2001-12-11 00:00:00.000
3	5	1	1	2002-02-06	NULL	2002-02-05 00:00:00.000
4	6	1	1	2002-02-24	NULL	2002-02-23 00:00:00.000
5	14	1	1	2005-01-30	NULL	2005-01-29 00:00:00.000
6	15	1	1	2005-02-18	NULL	2005-02-17 00:00:00.000

3. Вызовите функцию для каждого отдела, применив оператор CROSS APPLY. Вызовите функцию для каждого отдела, применив оператор OUTER APPLY.

```
SELECT
    dep.DepartmentID,
    BusinessEntityID,
    ShiftID,
    StartDate,
    EndDate,
    emps.ModifiedDate
FROM
    HumanResources.Department AS dep
CROSS APPLY
    HumanResources.getDepartmentEmployees(dep.DepartmentID) as emps
ORDER BY dep.DepartmentID;
```

Results		Messages				
	DepartmentID	BusinessEntityID	ShiftID	StartDate	EndDate	ModifiedDate
1	1	2	1	2002-03-03	NULL	2002-03-02 00:00:00.000
2	1	3	1	2001-12-12	NULL	2001-12-11 00:00:00.000
3	1	5	1	2002-02-06	NULL	2002-02-05 00:00:00.000
4	1	6	1	2002-02-24	NULL	2002-02-23 00:00:00.000
5	1	14	1	2005-01-30	NULL	2005-01-29 00:00:00.000
6	1	15	1	2005-02-18	NULL	2005-02-17 00:00:00.000
7	2	4	1	2004-07-01	NULL	2004-06-30 00:00:00.000
8	2	11	1	2005-01-05	NULL	2005-01-04 00:00:00.000
9	2	12	1	2002-01-11	NULL	2002-01-10 00:00:00.000
10	2	13	1	2005-01-23	NULL	2005-01-22 00:00:00.000
11	3	273	1	2005-03-18	NULL	2005-03-17 00:00:00.000
12	3	274	1	2005-02-04	NULL	2005-02-03 00:00:00.000

```
SELECT
    dep.DepartmentID,
    BusinessEntityID,
    ShiftID,
    StartDate,
    EndDate,
    emps.ModifiedDate
FROM
    HumanResources.Department AS dep
OUTER APPLY
    HumanResources.getDepartmentEmployees(dep.DepartmentID) as emps
ORDER BY dep.DepartmentID;
```

Results		Messages				
	DepartmentID	BusinessEntityID	ShiftID	StartDate	EndDate	ModifiedDate
1	1	2	1	2002-03-03	NULL	2002-03-02 00:00:00.000
2	1	3	1	2001-12-12	NULL	2001-12-11 00:00:00.000
3	1	5	1	2002-02-06	NULL	2002-02-05 00:00:00.000
4	1	6	1	2002-02-24	NULL	2002-02-23 00:00:00.000
5	1	14	1	2005-01-30	NULL	2005-01-29 00:00:00.000
6	1	15	1	2005-02-18	NULL	2005-02-17 00:00:00.000
7	2	4	1	2004-07-01	NULL	2004-06-30 00:00:00.000
8	2	11	1	2005-01-05	NULL	2005-01-04 00:00:00.000
9	2	12	1	2002-01-11	NULL	2002-01-10 00:00:00.000
10	2	13	1	2005-01-23	NULL	2005-01-22 00:00:00.000
11	3	273	1	2005-03-18	NULL	2005-03-17 00:00:00.000
12	3	274	1	2005-02-04	NULL	2005-02-03 00:00:00.000

4. Измените созданную inline table-valued функцию, сделав ее multistatement table-valued (предварительно сохранив для проверки код создания inline table-valued функции).

```
CREATE FUNCTION HumanResources.getDepartmentEmployees2(@dID INT)
RETURNS @employees TABLE (
    DepartmentID SMALLINT NOT NULL,
    BusinessEntityID INT NOT NULL,
    ShiftID TINYINT NOT NULL,
    StartDate DATE NOT NULL,
    EndDate DATE NULL,
    ModifiedDate DATETIME NOT NULL
) AS
```

```
BEGIN
    INSERT INTO @employees
    SELECT *
    FROM EmployeeDepartmentHistory
    WHERE DepartmentID = @dID AND
        EndDate IS NULL AND
        DATEDIFF(YEAR, StartDate, GETDATE()) > 11;
    RETURN;
END;
```

Functions

Table-valued Functions

- dbo.ufnGetContactInformation
- HumanResources.getDepartmentEmployees
- HumanResources.getDepartmentEmployees2

```
SELECT *
FROM HumanResources.getDepartmentEmployees2(1);
GO
```

Results		Messages				
	DepartmentID	BusinessEntityID	ShiftID	StartDate	EndDate	ModifiedDate
1	2	1	1	2002-03-03	NULL	2002-03-02 00:00:00.000
2	3	1	1	2001-12-12	NULL	2001-12-11 00:00:00.000
3	5	1	1	2002-02-06	NULL	2002-02-05 00:00:00.000
4	6	1	1	2002-02-24	NULL	2002-02-23 00:00:00.000
5	14	1	1	2005-01-30	NULL	2005-01-29 00:00:00.000
6	15	1	1	2005-02-18	NULL	2005-02-17 00:00:00.000