

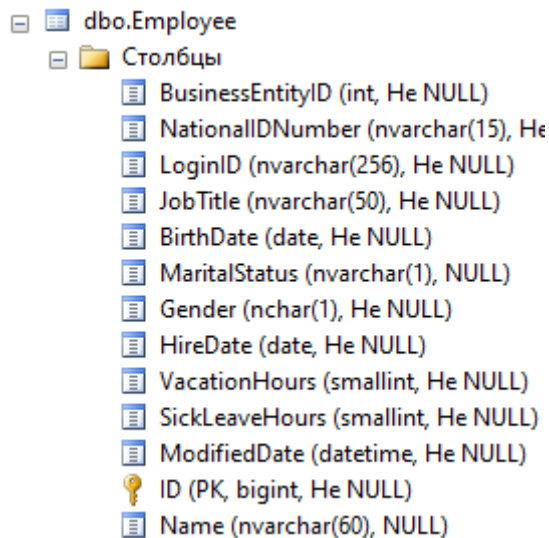
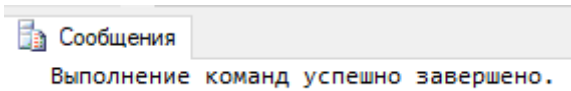
## Лабораторная работа №3

### Задание 1

#### Вариант 10

а) добавьте в таблицу dbo.Employee поле Name типа nvarchar размерностью 60 символов.

```
ALTER TABLE dbo.Employee ADD Name NVARCHAR(60);  
GO
```



б) объявите табличную переменную с такой же структурой как dbo.Employee и заполните ее данными из dbo.Employee. Поле Name заполните данными таблицы Person.Person, из полей Title и FirstName. Если Title содержит null значение, замените его на 'М.'.

```

DECLARE @Employee TABLE
(
    BusinessEntityID INT NOT NULL,
    NationalIDNumber NVARCHAR(15) NOT NULL,
    LoginID NVARCHAR(256) NOT NULL,
    JobTitle NVARCHAR(50) NOT NULL,
    BirthDate DATE NOT NULL,
    MaritalStatus NVARCHAR(1) NULL, |
    Gender NCHAR(1) NOT NULL,
    HireDate DATE NOT NULL,
    VacationHours SMALLINT NOT NULL,
    SickLeaveHours SMALLINT NOT NULL,
    ModifiedDate DATETIME NOT NULL,
    ID BIGINT PRIMARY KEY NOT NULL,
    Name NVARCHAR(60) NULL);
INSERT INTO @Employee(
    BusinessEntityID,
    NationalIDNumber,
    LoginID,
    JobTitle,
    BirthDate,
    MaritalStatus,
    Gender,
    HireDate,
    VacationHours,
    SickLeaveHours,
    ModifiedDate,
    ID,
    Name
)
SELECT
    e.BusinessEntityID,
    e.NationalIDNumber,
    e.LoginID,
    e.JobTitle,
    e.BirthDate,
    e.MaritalStatus,
    e.Gender,
    e.HireDate,
    e.VacationHours,
    e.SickLeaveHours,
    e.ModifiedDate,
    e.ID,
    CONCAT( (CASE WHEN p.Title IS NULL THEN 'M.' ELSE p.Title END ), p.FirstName)
FROM dbo.Employee as e
INNER JOIN Person.Person as p ON p.BusinessEntityID = e.BusinessEntityID;

```

Результаты		Сообщения					
	BusinessEntityID	Name	NationalIDNumber	LoginID	Job Title	BirthDate	Marital!
1	22	M.Sariya	95958330	adventure-works\sariya0	Marketing Specialist	1981-06-21	S
2	23	M.Mary	767955365	adventure-works\mary0	Marketing Specialist	1956-10-14	M
3	24	Ms.Jill	72636981	adventure-works\jill0	Marketing Specialist	1973-07-19	M
4	25	M.James	519899904	adventure-works\james1	Vice President of Production	1977-02-07	S
5	26	M.Peter	277173473	adventure-works\peter0	Production Control Manager	1976-12-04	M
6	27	M.Jo	446466105	adventure-works\jo0	Production Supervisor - WC60	1950-11-09	S
7	28	M.Guy	14417807	adventure-works\guy1	Production Technician - WC60	1976-05-15	M
8	11	M.Ovidiu	974026903	adventure-works\ovidiu0	Senior Tool Designer	1972-02-18	S
9	9	M.Gigi	658797903	adventure-works\gigi0	Research and Development Engineer	1973-02-21	M
10	41	M.Bryan	458159238	adventure-works\bryan0	Production Technician - WC60	1967-09-28	S

с) обновите поле Name в dbo.Employee данными из табличной переменной.

```
UPDATE dbo.Employee
SET dbo.Employee.Name = eVar.Name
FROM dbo.Employee AS e
INNER JOIN @Employee eVar ON e.BusinessEntityID = eVar.BusinessEntityID;
```

Результаты		Сообщения					
	BusinessEntityID	Name	NationalIDNumber	LoginID	Job Title	BirthDate	Marital
1	22	M.Sariya	95958330	adventure-works\sariya0	Marketing Specialist	1981-06-21	S
2	23	M.Mary	767955365	adventure-works\mary0	Marketing Specialist	1956-10-14	M
3	24	Ms.Jill	72636981	adventure-works\jill0	Marketing Specialist	1973-07-19	M
4	25	M.James	519899904	adventure-works\james1	Vice President of Production	1977-02-07	S
5	26	M.Peter	277173473	adventure-works\peter0	Production Control Manager	1976-12-04	M
6	27	M.Jo	446466105	adventure-works\jo0	Production Supervisor - WC60	1950-11-09	S
7	28	M.Guy	14417807	adventure-works\guy1	Production Technician - WC60	1976-05-15	M
8	11	M.Ovidiu	974026903	adventure-works\ovidiu0	Senior Tool Designer	1972-02-18	S
9	9	M.Gigi	658797903	adventure-works\gigi0	Research and Development Engineer	1973-02-21	M
10	41	M.Bryan	458159238	adventure-works\bryan0	Production Technician - WC60	1967-09-28	S

d) удалите из dbo.Employee сотрудников, которые хотя бы раз меняли отдел (таблица HumanResources.EmployeeDepartmentHistory);

Сотрудники, попадающие под условие:

```
SELECT DISTINCT edh.BusinessEntityID
FROM HumanResources.EmployeeDepartmentHistory AS edh
INNER JOIN dbo.Employee AS e
ON edh.BusinessEntityID = e.BusinessEntityID
WHERE edh.EndDate IS NOT NULL;
```

Результаты		Сообщения	
	BusinessEntityID		
1	4		
2	250		

Удаление:

```
DELETE FROM dbo.Employee
WHERE EXISTS
(
    SELECT DISTINCT edh.BusinessEntityID
    FROM HumanResources.EmployeeDepartmentHistory AS edh
    WHERE edh.BusinessEntityID = dbo.Employee.BusinessEntityID and edh.EndDate IS NOT NULL
);
```

Сообщения

(строк обработано: 2)

	BusinessEntityID	NationalIDNumber	LoginID	Job Title	BirthDate	MaritalStatus	Gender
1	1	295847284	adventure-works\ken0	Chief Executive Officer	1963-03-02	S	M
2	3	509647174	adventure-works\roberto0	Engineering Manager	1968-12-13	M	M
3	5	695256908	adventure-works\gail0	Design Engineer	1946-10-29	M	F
4	6	998320692	adventure-works\jossef0	Design Engineer	1953-04-11	M	M
5	8	811994146	adventure-works\diane1	Research and Development Engineer	1980-07-06	S	F
6	9	658797903	adventure-works\gigi0	Research and Development Engineer	1973-02-21	M	F
7	11	974026903	adventure-works\ovidiu0	Senior Tool Designer	1972-02-18	S	M
8	22	95958330	adventure-works\sariya0	Marketing Specialist	1981-06-21	S	M
9	23	767955365	adventure-works\mary0	Marketing Specialist	1956-10-14	M	F
10	24	72636981	adventure-works\jill0	Marketing Specialist	1973-07-19	M	F

	BusinessEntityID	NationalIDNumber	LoginID	Job Title	BirthDate	MaritalStatus	Gender
132	242	363923697	adventure-works\debor...	Accounts Receivable Specialist	1970-04-07	M	F
133	243	60517918	adventure-works\candy0	Accounts Receivable Specialist	1970-03-26	S	F
134	244	931190412	adventure-works\bryan1	Accounts Receivable Specialist	1978-10-22	S	M
135	245	363910111	adventure-works\barbar...	Accountant	1970-02-04	M	F
136	247	519756660	adventure-works\janet0	Accounts Payable Specialist	1973-04-09	M	F
137	252	792847334	adventure-works\arvind0	Buyer	1968-09-21	M	M
138	253	407505660	adventure-works\linda2	Buyer	1964-12-31	M	F
139	254	482810518	adventure-works\fukiko0	Buyer	1964-12-25	M	M
140	255	466142721	adventure-works\gordon0	Buyer	1960-12-30	M	M
141	256	367453993	adventure-works\frank2	Buyer	1946-06-13	M	M

е) удалите поле Name из таблицы, удалите все созданные ограничения и значения по умолчанию. Имена значений по умолчанию найдите самостоятельно, приведите код, которым пользовались для поиска;

```
ALTER TABLE dbo.Employee
DROP COLUMN Name;
```

Сообщения

Выполнение команд успешно завершено.

```

) dbo.Employee
  Столбцы
    BusinessEntityID (int, Не NULL)
    NationalIDNumber (nvarchar(15), Не NULL)
    LoginID (nvarchar(256), Не NULL)
    JobTitle (nvarchar(50), Не NULL)
    BirthDate (date, Не NULL)
    MaritalStatus (nvarchar(1), NULL)
    Gender (nchar(1), Не NULL)
    HireDate (date, Не NULL)
    VacationHours (smallint, Не NULL)
    SickLeaveHours (smallint, Не NULL)
    ModifiedDate (datetime, Не NULL)
    ID (PK, bigint, Не NULL)
  Ключи
  Ограничения
    birth_date_check
    default_hire_date
  Триггеры

```

## Поиск ограничений:

```
SELECT * FROM AdventureWorks2012.INFORMATION_SCHEMA.CONSTRAINT_TABLE_USAGE  
WHERE TABLE_SCHEMA = 'dbo' AND TABLE_NAME = 'Employee';
```

	TABLE_CATALOG	TABLE_SC...	TABLE_NAME	CONSTRAINT_CATAL...	CONSTRAIN...	CONSTRAINT_NAME
1	AdventureWorks2012	dbo	Employee	AdventureWorks2012	dbo	PK__Employee__3214EC273E4B8476
2	AdventureWorks2012	dbo	Employee	AdventureWorks2012	dbo	birth_date_check

```
SELECT * FROM AdventureWorks2012.sys.default_constraints  
WHERE SCHEMA_NAME(schema_id) = 'dbo' and OBJECT_NAME(parent_object_id) = 'Employee';
```

	name	object_id	principal_id	schema_id	parent_object_id	type	type_desc	create_date
1	default_hire_date	663673412	NULL	1	615673241	D	DEFAULT_CONSTRAINT	2020-09-30 21:54:07.627

## Удаление ограничений:

```
ALTER TABLE dbo.Employee  
DROP CONSTRAINT birth_date_check;  
GO
```

```
ALTER TABLE dbo.Employee  
DROP CONSTRAINT default_hire_date;  
GO
```

Сообщения

Выполнение команд успешно завершено.

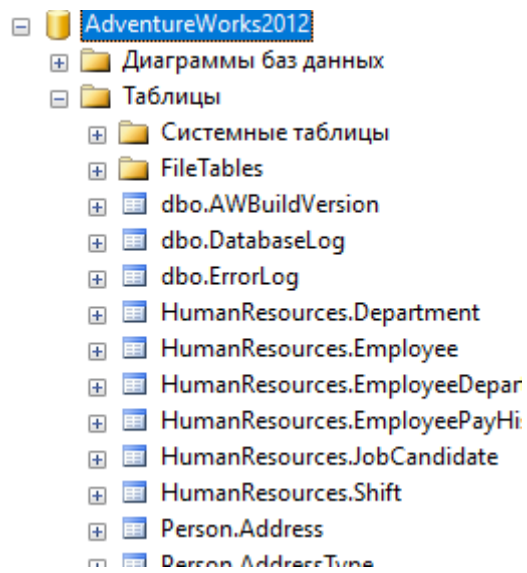
- dbo.Employee
  - Столбцы
  - Ключи
  - Ограничения
  - Триггеры
  - Индексы
  - Статистика

f) удалите таблицу dbo.Employee.

```
DROP TABLE dbo.Employee;  
GO
```

Сообщения

Выполнение команд успешно завершено.

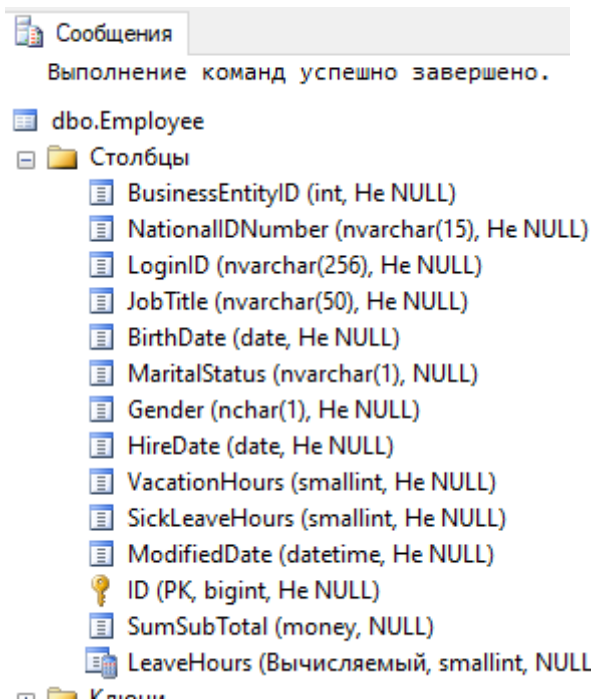


## Задание 2

### Вариант 10

а) выполните код, созданный во втором задании второй лабораторной работы. Добавьте в таблицу `dbo.Employee` поле `SumSubTotal MONEY`. Также создайте в таблице вычисляемое поле `LeaveHours`, вычисляющее сумму часов отпуска и больничных в полях `VacationHours` и `SickLeaveHours`.

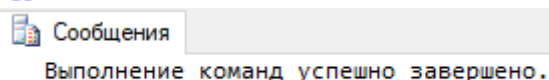
```
ALTER TABLE dbo.Employee
ADD
    SumSubTotal MONEY,
    LeaveHours AS (VacationHours + SickLeaveHours);
GO
```

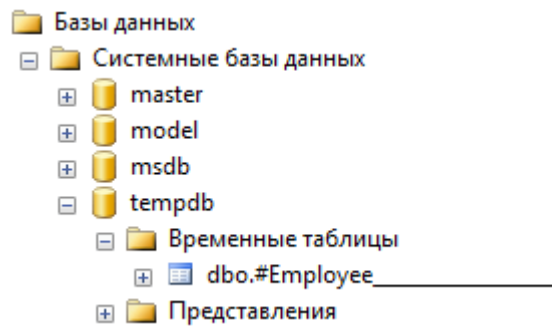


б) создайте временную таблицу `#Employee`, с первичным ключом по полю `ID`. Временная таблица должна включать все поля таблицы `dbo.Employee` за исключением поля `LeaveHours`.

```
CREATE TABLE #Employee
(
    BusinessEntityID INT NOT NULL,
    NationalIDNumber NVARCHAR(15) NOT NULL,
    LoginID NVARCHAR(256) NOT NULL,
    JobTitle NVARCHAR(50) NOT NULL,
    BirthDate DATE NOT NULL,
    MaritalStatus NVARCHAR(1) NULL,
    Gender NCHAR(1) NOT NULL,
    HireDate DATE NOT NULL,
    VacationHours SMALLINT NOT NULL,
    SickLeaveHours SMALLINT NOT NULL,
    ModifiedDate DATETIME NOT NULL,
    ID BIGINT NOT NULL PRIMARY KEY,
    SumSubTotal MONEY NULL);
```

GO





с) заполните временную таблицу данными из `dbo.Employee`. Посчитайте общую сумму без учета налогов и стоимости доставки (`SubTotal`), на которую сотрудник (`EmployeeID`) оформил заказов в таблице `Purchasing.PurchaseOrderHeader` и заполните этими значениями поле `SumSubTotal`. Подсчет суммы осуществите в Common Table Expression (CTE).


```
WITH SumSubTotal_CTE(EmployeeID, SumSubTotal) AS(  
    SELECT EmployeeID, SUM(SubTotal)  
    FROM Purchasing.PurchaseOrderHeader  
    GROUP BY EmployeeID  
)
```



```

INSERT INTO #Employee(
    BusinessEntityID,
    NationalIDNumber,
    LoginID,
    JobTitle,
    BirthDate,
    MaritalStatus,
    Gender,
    HireDate,
    VacationHours,
    SickLeaveHours,
    ModifiedDate,
    ID,
    SumSubTotal
)
SELECT
    e.BusinessEntityID,
    e.NationalIDNumber,
    e.LoginID,
    e.JobTitle,
    e.BirthDate,
    e.MaritalStatus,
    e.Gender,
    e.HireDate,
    e.VacationHours,
    e.SickLeaveHours,
    e.ModifiedDate,
    e.ID,
    cte.SumSubTotal
FROM
    dbo.Employee e
LEFT JOIN SumSubTotal_CTE AS cte ON e.BusinessEntityID = cte.EmployeeID;

```

 Сообщения

(строк обработано: 162)

	BusinessEntityID	SumSubTotal	NationalIDNumber	LoginID	JobTitle	BirthDate	
137	247	NULL	519756660	adventure-works\janet0	Accounts Payable Specialist	1973-04-09	!
138	250	2263903,20...	895209680	adventure-works\sheela0	Purchasing Manager	1972-03-13	!
139	252	2695419,708	792847334	adventure-works\arvind0	Buyer	1968-09-21	!
140	253	6718019,18...	407505660	adventure-works\linda2	Buyer	1964-12-31	!
141	254	5958173,93	482810518	adventure-works\fukiko0	Buyer	1964-12-25	!
142	255	5705987,175	466142721	adventure-works\gordon0	Buyer	1960-12-30	!
143	256	5930097,722	367453993	adventure-works\frank2	Buyer	1946-06-13	!
144	258	5030095,81...	785853949	adventure-works\erin0	Buyer	1965-02-04	!
145	259	4693241,73...	20269531	adventure-works\ben0	Buyer	1967-07-05	!
146	262	NULL	231203233	adventure-works\david5	Assistant to the Chief Financial Officer	1958-07-23	!

d) удалите из таблицы dbo.Employee строки, где LeaveHours > 160

Строки, подлежащие удалению:

```
SELECT * from dbo.Employee WHERE LeaveHours > 160;
```

Результаты		Сообщения					
	BusinessEntityID	LeaveHours	NationalIDNumber	LoginID	Job Title	BirthDate	MaritalStatu
1	1	168	295847284	adventure-works\ken0	Chief Executive Officer	1963-03-02	S
2	89	164	90888098	adventure-works\patrick0	Production Technician - WC10	1980-10-11	S
3	91	162	390124815	adventure-works\kimberly0	Production Technician - WC10	1980-10-14	S
4	92	167	826454897	adventure-works\tom0	Production Technician - WC10	1980-11-01	M
5	123	162	337752649	adventure-works\vamsi0	Shipping and Receiving Clerk	1971-04-19	M
6	125	161	584205124	adventure-works\matthias0	Shipping and Receiving Clerk	1967-12-13	M
7	126	164	652779496	adventure-works\jimmy0	Stocker	1979-06-05	M
8	88	168	294148271	adventure-works\betsy0	Production Technician - WC10	1961-01-17	S
9	116	167	398737566	adventure-works\michael2	Production Technician - WC50	1968-06-03	S

Удаление:

```
DELETE FROM dbo.Employee WHERE LeaveHours > 160;
```

Сообщения	
(строк обработано: 9)	

```
SELECT COUNT(*) AS Count FROM dbo.Employee WHERE LeaveHours > 160;
```

Результаты		Сообщения	
	Count		
1	0		

е) напишите Merge выражение, использующее dbo.Employee как target, а временную таблицу как source. Для связи target и source используйте ID. Обновите поле SumSubTotal, если запись присутствует в source и target. Если строка присутствует во временной таблице, но не существует в target, добавьте строку в dbo.Employee. Если в dbo.Employee присутствует такая строка, которой не существует во временной таблице, удалите строку из dbo.Employee.

```

MERGE
    dbo.Employee AS trg
    USING #Employee AS src
    ON (trg.ID = src.ID)
WHEN MATCHED THEN
    UPDATE
    SET trg.SumSubTotal = src.SumSubTotal
WHEN NOT MATCHED BY TARGET THEN
    INSERT(
        BusinessEntityID,
        NationalIDNumber,
        LoginID,
        JobTitle,
        BirthDate,
        MaritalStatus,
        Gender,
        HireDate,
        VacationHours,
        SickLeaveHours,
        ModifiedDate,
        ID,
        SumSubTotal )
    VALUES(
        BusinessEntityID,
        NationalIDNumber,
        LoginID,
        JobTitle,
        BirthDate,
        MaritalStatus,
        Gender,
        HireDate,
        VacationHours,
        SickLeaveHours,
        ModifiedDate,
        ID,
        SumSubTotal )
WHEN NOT MATCHED BY SOURCE THEN
    DELETE;

```



Сообщения

(строк обработано: 162)

```

SELECT BusinessEntityID, SumSubTotal
FROM dbo.Employee
ORDER BY BusinessEntityID ASC;

```



Результаты



Сообщения

	BusinessEntityID	SumSubTotal
137	247	NULL
138	250	2263903,20...
139	252	2695419,708
140	253	6718019,18...
141	254	5958173,93
142	255	5705987,175
143	256	5930097,722
144	258	5030095,81...
145	259	4693241,73...
146	262	NULL

```
SELECT BusinessEntityID, LeaveHours
FROM dbo.Employee
WHERE LeaveHours > 160;
```

Результаты			Сообщения		
	BusinessEntityID	LeaveHours			
1	1	168			
2	89	164			
3	91	162			
4	92	167			
5	123	162			
6	125	161			
7	126	164			
8	88	168			
9	116	167			