

Биткин Н.С., гр. 751001.
Лабораторная №3, Вариант 3.

Задание 3.1

а)

The screenshot shows the SQL Server Enterprise Manager interface on the left, displaying the database structure of AdventureWorks. The 'dbo.Address' table is selected, and its columns are listed: AddressID (int, not null), AddressLine1 (nvarchar(60), not null), AddressLine2 (nvarchar(60), null), City (nvarchar(20), null), StateProvinceID (PK, int, not null), PostalCode (PK, nvarchar(15), not null), ModifiedDate (datetime, not null), and AddressType (nvarchar(50), null). The 'AddressType' column is highlighted with a red box.

The SQL Query window on the right shows the following script:

```
USE [AdventureWorks]
GO

ALTER TABLE [dbo].[Address]
ADD [AddressType] nvarchar(50) NULL;

DECLARE @temp_var TABLE (
    [AddressID] [int] NOT NULL,
    [AddressLine1] [nvarchar](60) NOT NULL,
    [AddressLine2] [nvarchar](60) NULL,
    [City] [nvarchar](20) NULL,
    [StateProvinceID] [int] NOT NULL,
    [PostalCode] [nvarchar](15) NOT NULL,
    [ModifiedDate] [datetime] NOT NULL,
    [AddressType] nvarchar(50) NULL
)

INSERT INTO @temp_var (
    [AddressID],
    [AddressLine1],
    [AddressLine2],
    [City],
    [StateProvinceID],
    [PostalCode],
    [ModifiedDate],
    [AddressType]
)
SELECT [AddressID],
       [AddressLine1],
       [AddressLine2],
       [City],
       [StateProvinceID],
       [PostalCode],
       [ModifiedDate],
       [AddressType]
FROM [dbo].[Address]
```

The Messages pane at the bottom shows the command completed successfully. The completion time is 2020-10-31T18:15:47.8394223+03:00, which is highlighted with a red box.

б), c)

The screenshot shows a SQL Query window with a complex script for updating and deleting data in the Address table. The script is as follows:

```
DECLARE @temp_var TABLE (
    [AddressID] [int] NOT NULL,
    [AddressLine1] [nvarchar](60) NOT NULL,
    [AddressLine2] [nvarchar](60) NULL,
    [City] [nvarchar](20) NULL,
    [StateProvinceID] [int] NOT NULL,
    [PostalCode] [nvarchar](15) NOT NULL,
    [ModifiedDate] [datetime] NOT NULL,
    [AddressType] nvarchar(50) NULL
)

INSERT INTO @temp_var (
    [AddressID],
    [AddressLine1],
    [AddressLine2],
    [City],
    [StateProvinceID],
    [PostalCode],
    [ModifiedDate],
    [AddressType]
)
SELECT [AddressID],
       [AddressLine1],
       [AddressLine2],
       [City],
       [StateProvinceID],
       [PostalCode],
       [ModifiedDate],
       [AddressType]
FROM [dbo].[Address]

UPDATE [dbo].[Address]
SET [AddressType] = [tv].[AddressType],
    [AddressLine2] = ISNULL([tv].[AddressLine2], [tv].[AddressLine1])
FROM @temp_var [tv]
WHERE [tv].[PostalCode] = [dbo].[Address].[PostalCode] AND [tv].[StateProvinceID] = [dbo].[Address].[StateProvinceID]
--using PK of PostalCode and StateProvinceID from lab2, not AddressID.

SELECT * FROM [dbo].[Address]

DELETE FROM [dbo].[Address]
FROM [dbo].[Address] [a]
WHERE [a].[AddressID] = [tv].[AddressID]
```

The Results pane at the bottom shows the data after the update and delete operations. The data is as follows:

| AddressID | AddressLine1 | AddressLine2 | City | StateProvinceID | PostalCode | ModifiedDate | AddressType |
|-----------|---------------------------|---------------------------|------------|-----------------|------------|-------------------------|-------------|
| 18752 | 3235 M Casa Court | 3235 M Casa Court | Birmingham | 3 | 35203 | 2007-11-15 00:00:00.000 | Home |
| 932 | 656 Cox Creek Pkwy. | 656 Cox Creek Pkwy. | Florence | 3 | 35630 | 2006-08-01 00:00:00.000 | Main Office |
| 951 | Parkway City Mall | Parkway City Mall | Huntsville | 3 | 35801 | 2006-07-01 00:00:00.000 | Main Office |
| 944 | 574 Atlanta Highway | 574 Atlanta Highway | Montgomery | 3 | 36104 | 2007-07-01 00:00:00.000 | Main Office |
| 929 | 39950 Airport Blvd. | 39950 Airport Blvd. | Mobile | 3 | 36602 | 2005-09-01 00:00:00.000 | Main Office |
| 1068 | 7709 West Virginia Avenue | 7709 West Virginia Avenue | Phoenix | 6 | 85004 | 2006-07-01 00:00:00.000 | Main Office |

The status bar at the bottom indicates that the query was executed successfully.

d)

```

DELETE FROM [dbo].[Address]
FROM [dbo].[Address] [a]
INNER JOIN (
    SELECT
        [AddressType],
        MAX([AddressID]) [MaxID]
    FROM [dbo].[Address]
    GROUP BY [AddressType]
) [maxIDs] ON [maxIDs].[AddressType] = [a].[AddressType]
WHERE [a].[AddressID] <> [maxIDs].[MaxID];

SELECT * FROM [dbo].[Address]

ALTER TABLE [dbo].[Address]
DROP COLUMN [AddressType]

DECLARE @Command nvarchar(1000) = 'ALTER TABLE [dbo].[Address] DROP CONSTRAINT '

SELECT @Command += [name] + ', '
FROM sys.objects

```

90 %

Results Messages

| | AddressID | AddressLine1 | AddressLine2 | City | StateProvinceID | PostalCode | ModifiedDate | AddressType |
|---|-----------|-----------------------|-----------------------|-----------|-----------------|------------|-------------------------|-------------|
| 1 | 11383 | 1010 Maple | 1010 Maple | Baltimore | 32 | 21201 | 2008-05-07 00:00:00.000 | Shipping |
| 2 | 1104 | 9927 N. Main St. | 9927 N. Main St. | Tooele | 74 | 84074 | 2005-08-01 00:00:00.000 | Main Office |
| 3 | 32521 | 7145 Matchstick Drive | 7145 Matchstick Drive | Sammanish | 79 | 98074 | 2003-02-16 00:00:00.000 | Home |

e)

AdventureWorks

- Database Diagrams
- Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Address
 - Columns
 - Keys
 - Constraints
 - Triggers
 - Indexes
 - Statistics
 - dbo.AWBuildVersion
 - dbo.DatabaseLog
 - dbo.ErrorLog
 - HumanResources.Department
 - HumanResources.Employee
 - HumanResources.EmployeeDepartmentHistory
 - HumanResources.EmployeePayHistory
 - HumanResources.JobCandidate
 - HumanResources.Shift
 - Person.Address
 - Person.AddressType
 - Person.BusinessEntity
 - Person.BusinessEntityAddress
 - Person.BusinessEntityContact
 - Person.ContactType

```

) [maxIDs] ON [maxIDs].[AddressType] = [a].[AddressType]
WHERE [a].[AddressID] <> [maxIDs].[MaxID];

SELECT * FROM [dbo].[Address]

ALTER TABLE [dbo].[Address]
DROP COLUMN [AddressType]

DECLARE @Command nvarchar(1000) = 'ALTER TABLE [dbo].[Address] DROP CONSTRAINT '

SELECT @Command += [name] + ', '
FROM sys.objects
WHERE [type] IN ('C', 'D') AND [parent_object_id] = (
    SELECT object_id
    FROM sys.objects
    WHERE schema_name(schema_id) = 'dbo' AND [name] = 'Address')
SET @Command = RTRIM(SUBSTRING(@Command, 0, LEN(@Command)))
PRINT @Command

EXECUTE (@Command)

DROP TABLE [dbo].[Address]

```

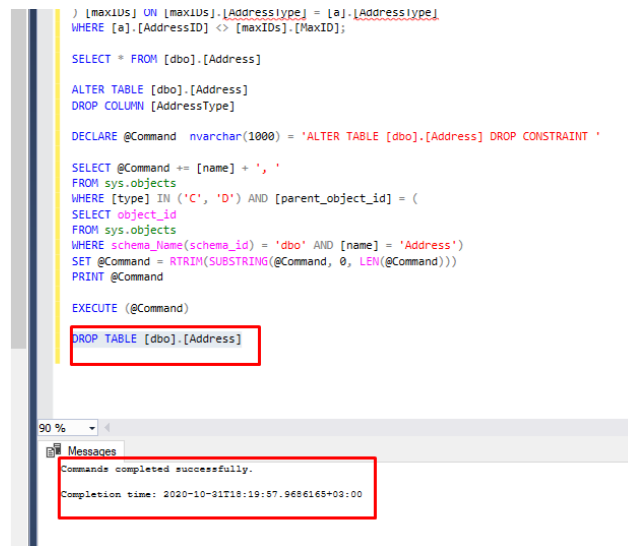
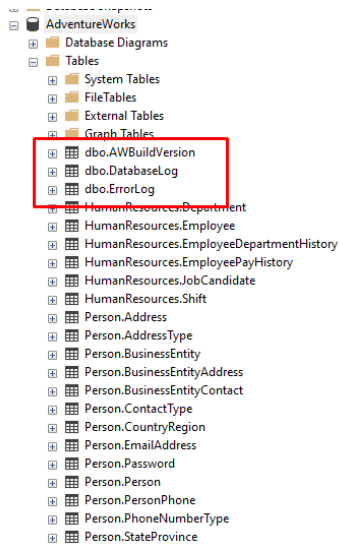
90 %

Messages

ALTER TABLE [dbo].[Address] DROP CONSTRAINT CH_PostalCode, DF_ModifiedDate

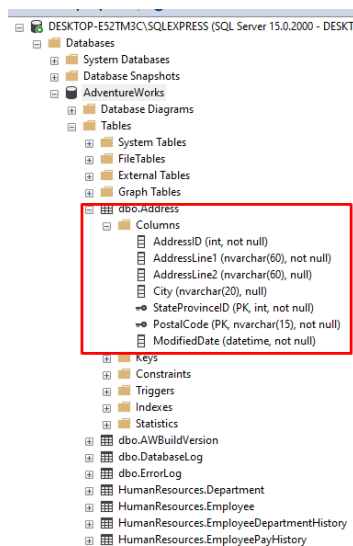
Completion time: 2020-10-31T18:19:28.7292100+03:00

f)



Задание 3.2.

a)



Object Explorer

- Database Snapshots
- AdventureWorks
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Address
 - Columns
 - AddressID (int, not null)
 - AddressLine1 (nvarchar(60), not null)
 - AddressLine2 (nvarchar(60), null)
 - City (nvarchar(20), null)
 - StateProvinceID (PK, int, not null)
 - PostalCode (PK, nvarchar(15), not null)
 - ModifiedDate (datetime, not null)
 - CountryRegionCode (nvarchar(3), null)
 - TaxRate (smallmoney, null)
 - DiffMin (Computed, numeric(11,4), null)
 - Keys
 - Constraints
 - Triggers
 - Indexes
 - Statistics
 - dbo.AWBuildVersion
 - dbo.DatabaseLog

SQLQuery16.sql - DE...Nikita Bitkin (58)* - V3_2.sql - DESKTOP-...Nikita Bitkin (68)

```

USE [AdventureWorks]
GO

ALTER TABLE [dbo].[Address]
ADD [CountryRegionCode] NVARCHAR(3) NULL,
[TaxRate] SMALLMONEY NULL,
[DiffMin] AS [TaxRate] - 5.00

CREATE TABLE [#Address](
[AddressID] [int] NOT NULL PRIMARY KEY,
[AddressLine1] [nvarchar](60) NOT NULL,
[AddressLine2] [nvarchar](60) NULL,
[City] [nvarchar](20) NULL,
[StateProvinceID] [int] NOT NULL,
[PostalCode] [nvarchar](15) NOT NULL,
[ModifiedDate] [datetime] NOT NULL,
[CountryRegionCode] [nvarchar](3) NULL,
[TaxRate] [smallmoney] NULL
);

WITH [CTE] AS (
SELECT
[a].[AddressID],
[a].[AddressLine1],
[a].[AddressLine2],
[a].[City],
[a].[StateProvinceID],
[a].[PostalCode],
[a].[CountryRegionCode],
[a].[TaxRate]
FROM [AdventureWorks].[dbo].[Address] [a]
INNER JOIN [AdventureWorks].[dbo].[StateProvince] [sp] ON [a].[StateProvinceID] = [sp].[StateProvinceID]
INNER JOIN [AdventureWorks].[dbo].[SalesTaxRate] [str] ON [sp].[StateProvinceID] = [str].[StateProvinceID]
WHERE [str].[TaxRate] > 5.00
)
INSERT INTO [#Address]
SELECT * FROM [CTE];

```

90 %

Messages

Commands completed successfully.

Completion time: 2020-10-31T19:58:09.9074956+03:00

b), c)

```

CREATE TABLE [#Address](
[AddressID] [int] NOT NULL PRIMARY KEY,
[AddressLine1] [nvarchar](60) NOT NULL,
[AddressLine2] [nvarchar](60) NULL,
[City] [nvarchar](20) NULL,
[StateProvinceID] [int] NOT NULL,
[PostalCode] [nvarchar](15) NOT NULL,
[ModifiedDate] [datetime] NOT NULL,
[CountryRegionCode] [nvarchar](3) NULL,
[TaxRate] [smallmoney] NULL
);

WITH [CTE] AS (
SELECT
[a].[AddressID],
[a].[AddressLine1],
[a].[AddressLine2],
[a].[City],
[a].[StateProvinceID],
[a].[PostalCode],
[a].[CountryRegionCode],
[a].[TaxRate]
FROM [AdventureWorks].[dbo].[Address] [a]
INNER JOIN [AdventureWorks].[dbo].[StateProvince] [sp] ON [a].[StateProvinceID] = [sp].[StateProvinceID]
INNER JOIN [AdventureWorks].[dbo].[SalesTaxRate] [str] ON [sp].[StateProvinceID] = [str].[StateProvinceID]
WHERE [str].[TaxRate] > 5.00
)
INSERT INTO [#Address]
SELECT * FROM [CTE];

SELECT * FROM [#Address];

```

12 %

Results Messages

| | AddressID | AddressLine1 | AddressLine2 | City | StateProvinceID | PostalCode | ModifiedDate | CountryRegionCode | TaxRate |
|----|-----------|------------------------|--------------|---------------|-----------------|------------|-------------------------|-------------------|---------|
| 1 | 39 | 3997 Via De Luna | NULL | Cambridge | 30 | 02139 | 2006-10-25 00:00:00.000 | US | 7.00 |
| 2 | 60 | 4852 Chaparral Court | NULL | Shohomish | 79 | 98296 | 2004-01-26 00:00:00.000 | US | 8.80 |
| 3 | 75 | 3747 W. Landing Avenue | NULL | Monroe | 79 | 98272 | 2003-04-01 00:00:00.000 | US | 8.80 |
| 4 | 85 | 991 Vista Verde | NULL | Duvall | 79 | 98019 | 2003-03-05 00:00:00.000 | US | 8.80 |
| 5 | 90 | 9752 Jeanne Circle | NULL | Camation | 79 | 98014 | 2004-02-10 00:00:00.000 | US | 8.80 |
| 6 | 255 | 7469 Paradise Ct. | NULL | Newport Hills | 79 | 98006 | 2008-04-02 00:00:00.000 | US | 8.80 |
| 7 | 260 | 3884 Beauty Street | # 14 | Gold Bar | 79 | 98251 | 2003-03-08 00:00:00.000 | US | 8.80 |
| 8 | 265 | 3127 El Camino Drive | NULL | Index | 79 | 98256 | 2003-03-06 00:00:00.000 | US | 8.80 |
| 9 | 313 | 2141 Delaware Ct. | NULL | Downey | 72 | 37501 | 2006-01-23 00:00:00.000 | US | 7.25 |
| 10 | 342 | 8513 Hurlstone Ct. | NULL | Altadena | 9 | 91001 | 2006-02-25 00:00:00.000 | US | 8.75 |
| 11 | 345 | 6441 Co Road | NULL | Lemon Grove | 6 | 85252 | 2006-02-25 00:00:00.000 | US | 7.75 |
| 12 | 348 | 3664 Colt Ct. | NULL | Richmond | 9 | 94801 | 2006-02-25 00:00:00.000 | US | 8.75 |
| 13 | 349 | 3294 Buena Vista | NULL | Lemon Grove | 6 | 85284 | 2006-03-06 00:00:00.000 | US | 7.75 |
| 14 | 381 | 7682 Fern Leaf Lane | NULL | Boston | 30 | 02113 | 2006-03-05 00:00:00.000 | US | 7.00 |

Query executed successfully.

DESKTOP-E52TM3C\SQLEXPRESS ... AdventureWorks 00:00:00 227 rows

d)

```
DELETE TOP(1) FROM [dbo].[Address]
WHERE [StateProvinceID] = 36;
--here I have 6 rows in my db, task is to delete one row. that's why TOP(1).

MERGE [dbo].[Address] [target]
USING [#Address] [source]
ON ([source].[AddressID] = [target].[AddressID])
WHEN MATCHED THEN
UPDATE
SET
    [target].[TaxRate] = [source].[TaxRate],
    [target].[CountryRegionCode] = [source].[CountryRegionCode]
WHEN NOT MATCHED BY TARGET THEN
INSERT (
    [AddressID],
    [AddressLine1],
    [AddressLine2],
    [City],
    [StateProvinceID],
    [PostalCode],
    [ModifiedDate],
    [CountryRegionCode],
    [TaxRate])
VALUES (
    [source].[AddressID],
    [source].[AddressLine1],
    [source].[AddressLine2],
    [source].[City],
    [source].[StateProvinceID],
    [source].[PostalCode],
    [source].[ModifiedDate],
    [source].[CountryRegionCode],
    [source].[TaxRate])
```

12 %

Messages

(1 row affected)

Completion time: 2020-10-31T19:58:23.7694580+03:00

e) Before merge:

SELECT * FROM [dbo].[Address]

| AddressID | AddressLine1 | AddressLine2 | City | StateProvinceID | PostalCode | ModifiedDate | CountryRegionCode | TaxRate | DffMn |
|-----------|---------------------------|--------------|-------------|-----------------|------------|-------------------------|-------------------|---------|-------|
| 18752 | 3235 M Casa Court | NULL | Birmingham | 3 | 35203 | 2007-11-15 00:00:00.000 | NULL | NULL | NULL |
| 932 | 656 Cox Creek Pkwy. | NULL | Florence | 3 | 35630 | 2006-08-01 00:00:00.000 | NULL | NULL | NULL |
| 951 | Parkway City Mall | NULL | Huntsville | 3 | 35801 | 2006-07-01 00:00:00.000 | NULL | NULL | NULL |
| 944 | 574 Atlanta Highway | NULL | Montgomery | 3 | 36104 | 2007-07-01 00:00:00.000 | NULL | NULL | NULL |
| 929 | 39950 Airport Blvd. | NULL | Mobile | 3 | 36602 | 2005-09-01 00:00:00.000 | NULL | NULL | NULL |
| 1068 | 7709 West Virginia Avenue | NULL | Phoenix | 6 | 85004 | 2006-07-01 00:00:00.000 | NULL | NULL | NULL |
| 1065 | Factory Stores Of America | NULL | Mesa | 6 | 85201 | 2006-09-01 00:00:00.000 | NULL | NULL | NULL |
| 26956 | 4584 Hamilton Ave. | NULL | Chandler | 6 | 85225 | 2007-10-05 00:00:00.000 | NULL | NULL | NULL |
| 1082 | 2551 East Warner Road | NULL | Gilbert | 6 | 85233 | 2007-08-01 00:00:00.000 | NULL | NULL | NULL |
| 345 | 6441 Co Road | NULL | Lemon Grove | 6 | 85252 | 2006-02-25 00:00:00.000 | NULL | NULL | NULL |
| 1094 | 25250 N 90th St | NULL | Scottsdale | 6 | 85257 | 2005-09-01 00:00:00.000 | NULL | NULL | NULL |
| 349 | 3294 Buena Vista | NULL | Lemon Grove | 6 | 85284 | 2006-03-06 00:00:00.000 | NULL | NULL | NULL |
| 1087 | 253731 West Bell Road | NULL | Surprise | 6 | 85374 | 2006-08-01 00:00:00.000 | NULL | NULL | NULL |
| 1072 | 6500 East Grant Road | NULL | Tucson | 6 | 85701 | 2007-09-01 00:00:00.000 | NULL | NULL | NULL |

Query executed successfully. DESKTOP-E52TM3C\SQLEXPRESS ... DESKTOP-E52TM3C\Nikita... AdventureWorks 00:00:00 398 rows

After:

```

MERGE [dbo].[Address] [target]
USING [Address] [source]
ON ([source].[AddressID] = [target].[AddressID])
WHEN MATCHED THEN
UPDATE
SET
    [target].[TaxRate] = [source].[TaxRate],
    [target].[CountryRegionCode] = [source].[CountryRegionCode]
WHEN NOT MATCHED BY TARGET THEN
INSERT (
    [AddressID],
    [AddressLine1],
    [AddressLine2],
    [City],
    [StateProvinceID],
    [PostalCode],
    [ModifiedDate],
    [CountryRegionCode],
    [TaxRate])
VALUES (
    [source].[AddressID],
    [source].[AddressLine1],
    [source].[AddressLine2],
    [source].[City],
    [source].[StateProvinceID],
    [source].[PostalCode],
    [source].[ModifiedDate],
    [source].[CountryRegionCode],
    [source].[TaxRate])
WHEN NOT MATCHED BY SOURCE THEN DELETE;
SELECT * FROM [dbo].[Address]

```

| Messages | | | | | | | | | | |
|---|---------------------------|---------------------|-------------|------------------|------------|-------------------------|-------------------------|---------|---------|--------|
| AddressID | AddressLine1 | AddressLine2 | City | StateProvinceID | PostalCode | ModifiedDate | CountryRegionCode | TaxRate | DiffMin | |
| 1068 | 7709 West Virginia Avenue | NULL | Phoenix | 6 | 85004 | 2006-07-01 00:00:00.000 | US | 7.75 | 2.7500 | |
| 1065 | Factory Stores Of America | NULL | Mesa | 6 | 85201 | 2006-09-01 00:00:00.000 | US | 7.75 | 2.7500 | |
| 26956 | 4584 Hamilton Ave. | NULL | Chandler | 6 | 85225 | 2007-10-05 00:00:00.000 | US | 7.75 | 2.7500 | |
| 1082 | 2551 East Warner Road | NULL | Gilbert | 6 | 85233 | 2007-08-01 00:00:00.000 | US | 7.75 | 2.7500 | |
| 345 | 6441 Co Road | NULL | Lemon Grove | 6 | 85252 | 2006-02-25 00:00:00.000 | US | 7.75 | 2.7500 | |
| 1094 | 25250 N 90th St | NULL | Scottsdale | 6 | 85257 | 2005-09-01 00:00:00.000 | US | 7.75 | 2.7500 | |
| 349 | 3294 Buena Vista | NULL | Lemon Grove | 6 | 85284 | 2006-03-06 00:00:00.000 | US | 7.75 | 2.7500 | |
| 1087 | 253731 West Bell Road | NULL | Surprise | 6 | 85374 | 2006-08-01 00:00:00.000 | US | 7.75 | 2.7500 | |
| 1072 | 6500 East Grant Road | NULL | Tucson | 6 | 85701 | 2007-09-01 00:00:00.000 | US | 7.75 | 2.7500 | |
| 0 | 29724 | 7496 Sunset Meadows | NULL | Los Angeles | 9 | 90012 | 2007-01-16 00:00:00.000 | US | 8.75 | 3.7500 |
| 1 | 12144 | 7243 St. George Dr. | NULL | City Of Commerce | 9 | 90040 | 2007-07-22 00:00:00.000 | US | 8.75 | 3.7500 |
| 2 | 20417 | 7527 Brook Way | NULL | Bel Gardens | 9 | 90201 | 2006-06-06 00:00:00.000 | US | 8.75 | 3.7500 |
| 3 | 29877 | 1726 Hacienda | NULL | Beverly Hills | 9 | 90210 | 2007-11-25 00:00:00.000 | US | 8.75 | 3.7500 |
| 4 | 1040 | Fox Hills | NULL | Culver City | 9 | 90232 | 2005-08-01 00:00:00.000 | US | 8.75 | 3.7500 |
| 5 | 20012 | 4518 S. ... | NULL | D ... | 9 | 90211 | 2007-05-21 00:00:00.000 | US | 8.75 | 3.7500 |
| Query executed successfully. | | | | | | | | | | |
| DESKTOP-E52TM3C\SQLEXPRESS ... DESKTOP-E52TM3C\Nikita... AdventureWorks 00:00:00 227 rows | | | | | | | | | | |