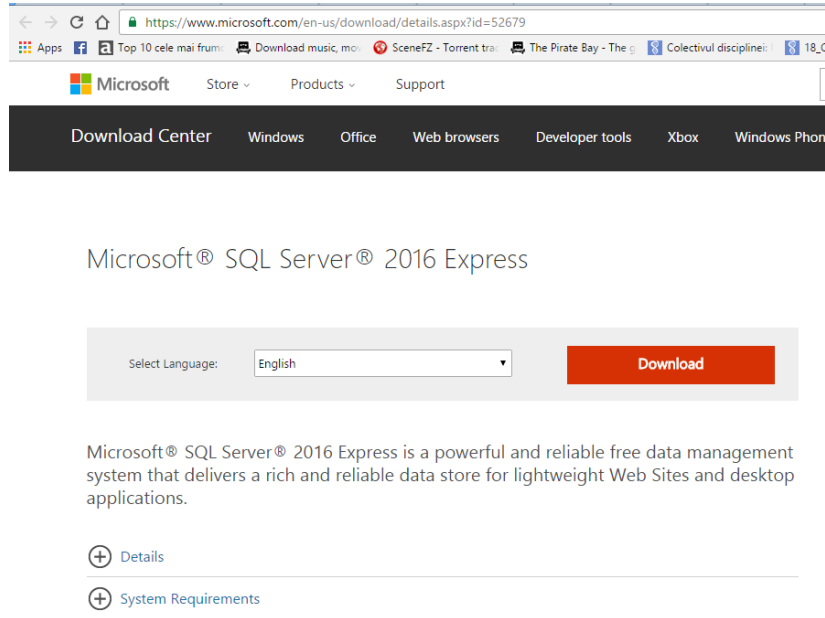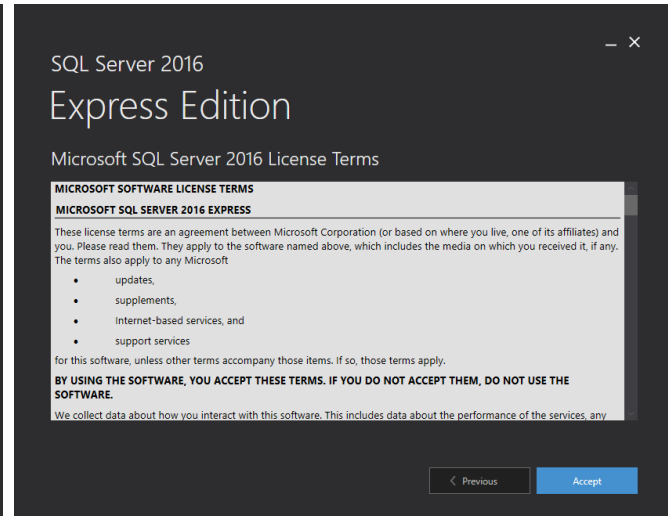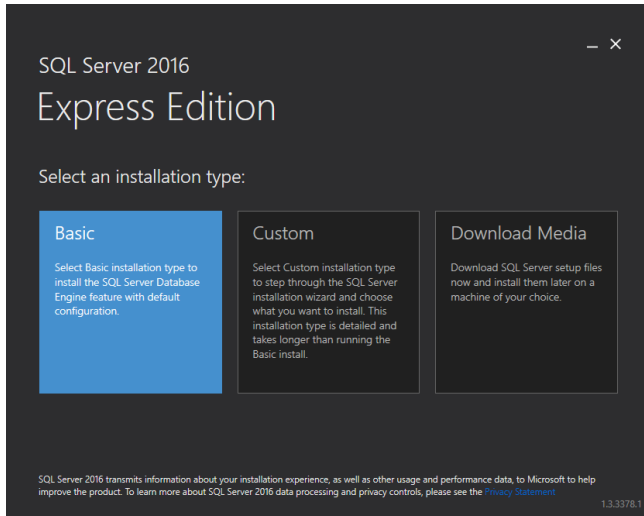# *Installation Microsoft SQL Server 2016*

Microsoft SQL Server 2016 is a relational database management system (RDBMS). It retrieve and manipulate data, create connections between pieces of data and uses the Transact-SQL version of the language.

It can be download from https://www.microsoft.com/en-us/download/details.aspx?id=54284
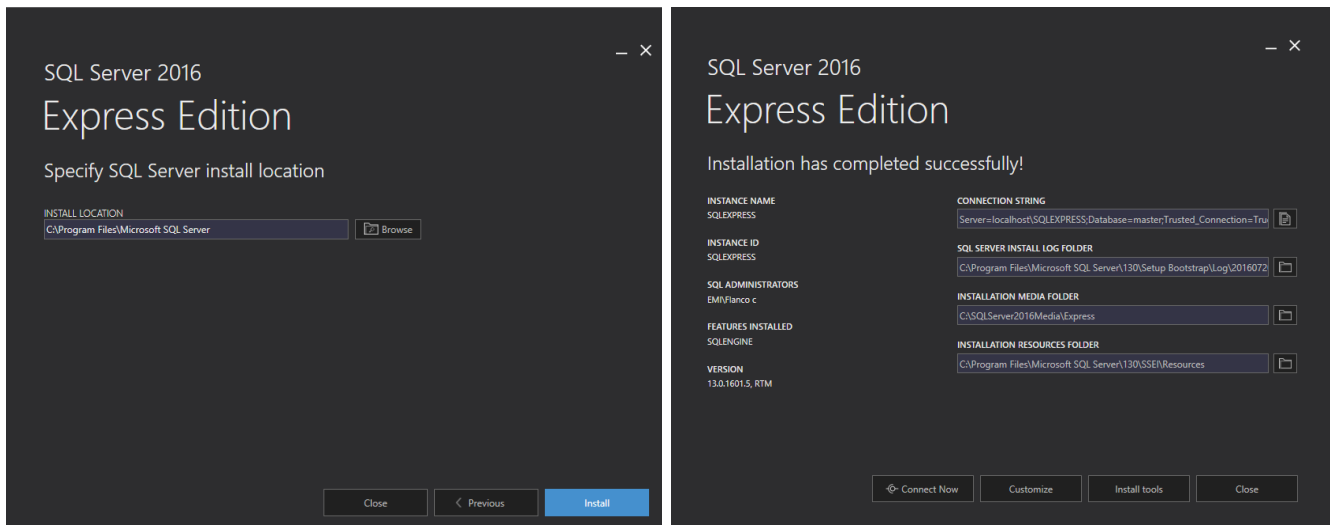
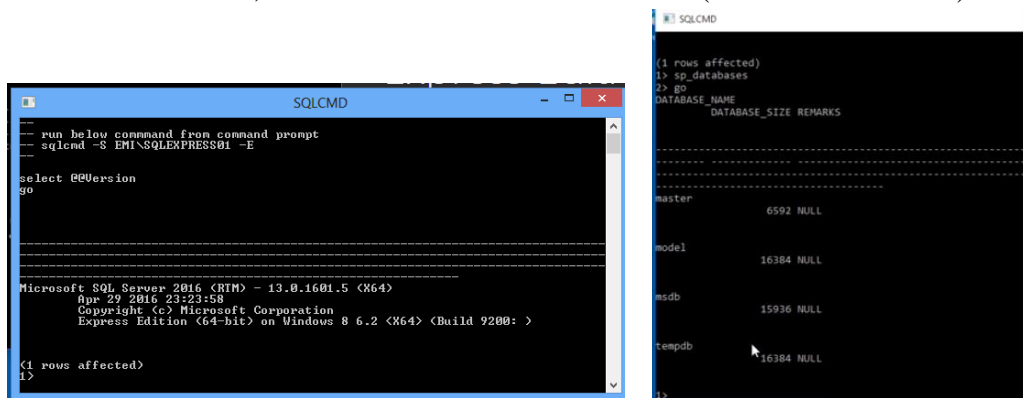The **version Express** will be installed (SQLServer2016-SSEI-Expr).

After downloading the **SQL Server 2016 Express Edition**, the Basic type will be installed. Multiple instances can be installed (if someone install it more than once).
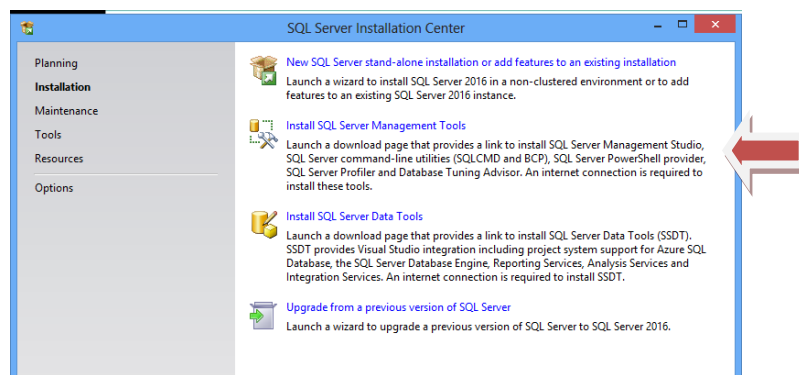

Accept the License -> Install

After the installation is finished, the connection has to be checked (from Connect Now).


The commands that has to checked for the connection are: sp_databases -> go

From SQL Server 2016 Express Edition -> Customize / Install tools, the SQL Server Management Tools has to be install.

From the web page https://msdn.microsoft.com/en-us/library/mt238290.aspx, the **SQL Server Management Studio (SSMS)** will be downloaded (SSMS-Setup-ENU).
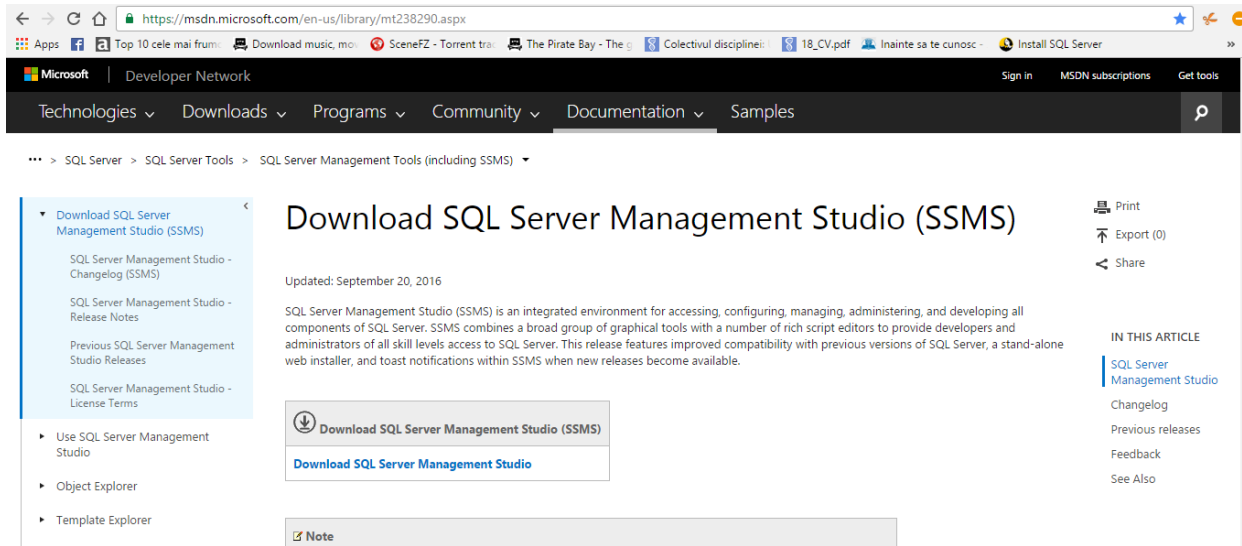
Now, the SQL Server 2016 Express Edition can be quit. The SSMS will be installed.
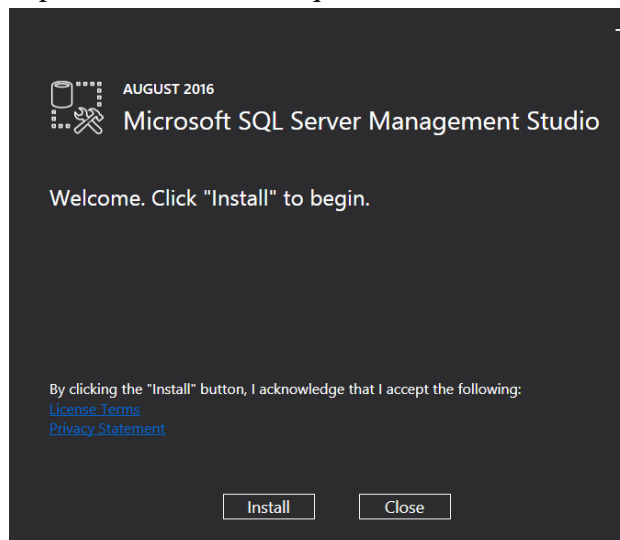

A restart of the computer is recommended after the installation.
- **Microsoft SQL Server Management Studio (yellow icon)** –we will work here
- **SQL Server 2016 Configuration Manager (red icon)**

SQL Server 2016 Configuration Manager (red icon) – run into the background (not necessarily open). It is used for the service to be started or stopped.
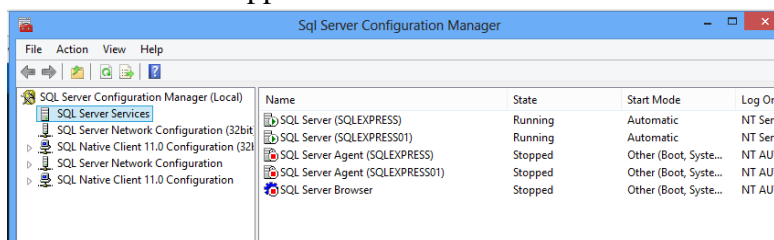

Usually, the SQL Server Services is running automatic. This property can be changed from Properties (by pressing right click on it): Start, Stop, Pause, Restart.
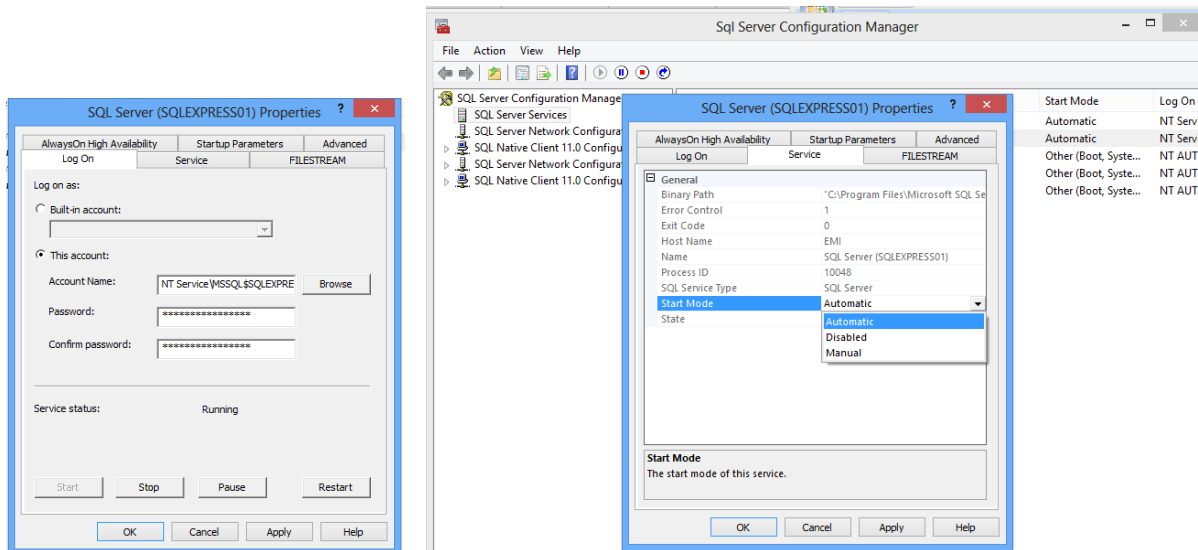
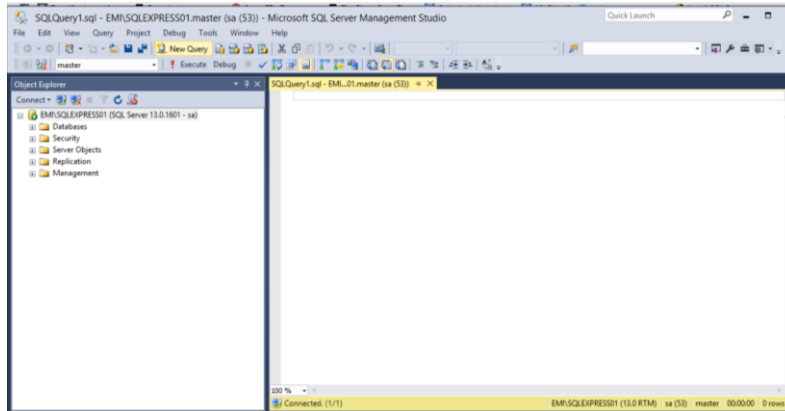The automatic running (when the computer starts) can be changed from Properties -> Service -> Start Mode.

Microsoft SQL Server Management Studio (yellow icon)

The first connection present an authentication as Windows Authentication or can be changed to SQL Server Authentication. We have just to press Connect.
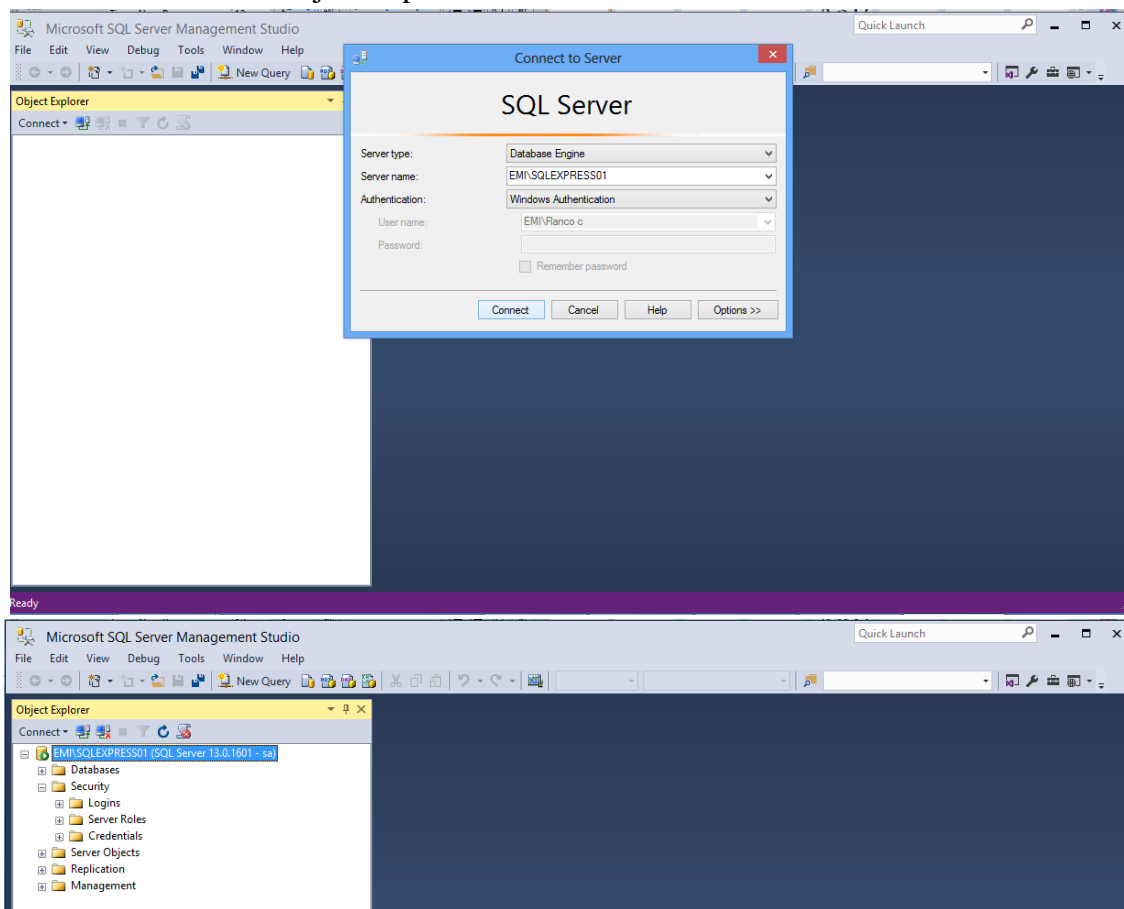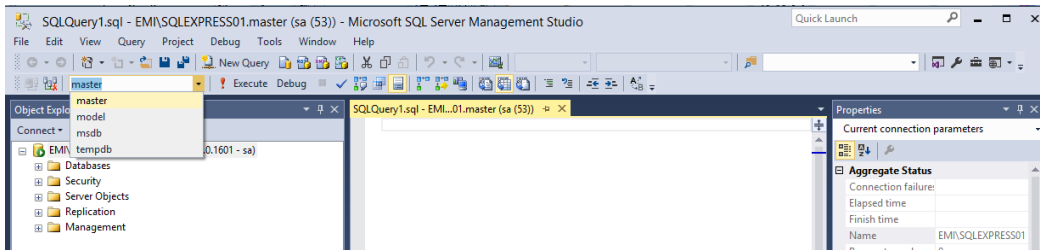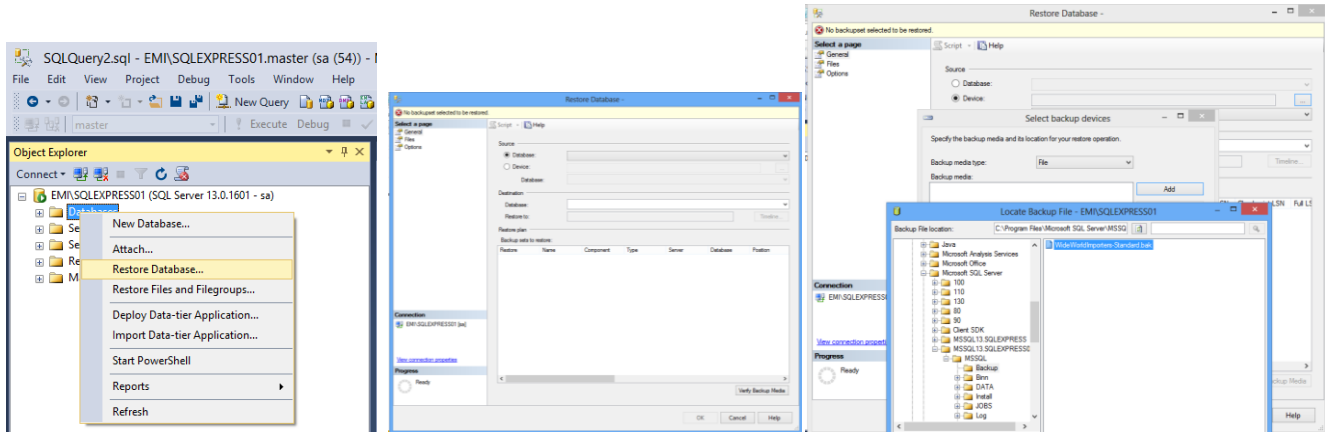
SQL Server Management Studio
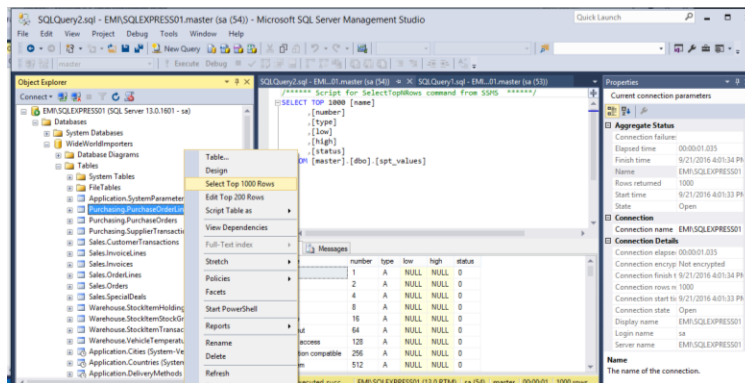
New Query:

Choose the database
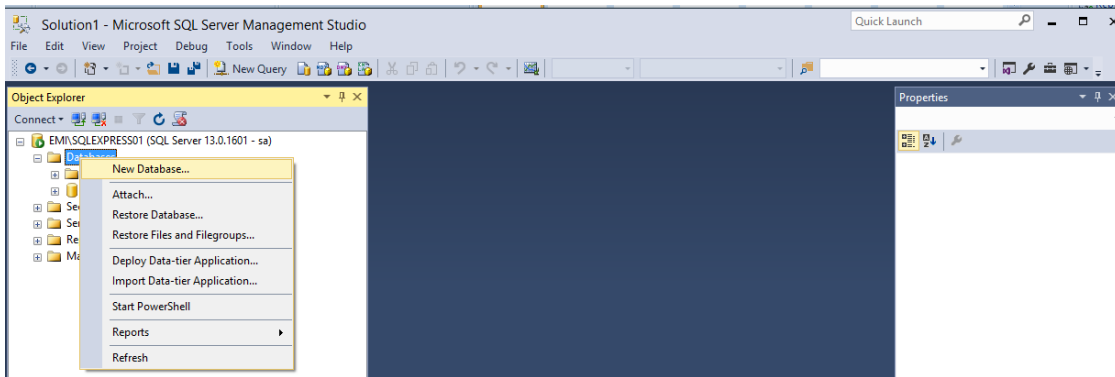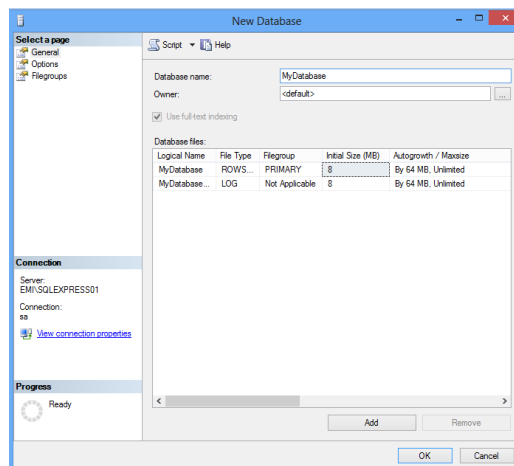

Restore databases

Select

Create a new Database on the Server

Databases -> New Database (by right click)

Create a database: General menu -> name it

Then press ok. The database will appear in the Databases menu (eventually by right click -> Refresh)
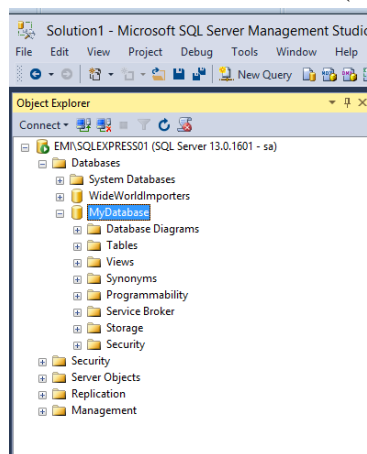

Table Structure

- Horizontal rows – store information about a single item, are called "records"
- Vertical rows – attribute fields, descriptive component of each record
A table example:

Customers

	Name	Birthday	Favorite Color
1	Sean	5/23/1972	Blue
2	Tabitha	7/6/1984	Orange
3	Marcus	3/27/1996	Aqua

Data Type

Text Data Types:

Char(10) – text data of 10 characters

NChar(10) – Unicode text with 10 characters

VarChar(50) – Variable length text data up to 50 characters

NVarChar(50) – Variable length Unicode text data up to 50 characters

Numerical Data Types:

TinyInt – whole numbers between 0 and 255

Int – whole numbers between -2 billion and +2 billion

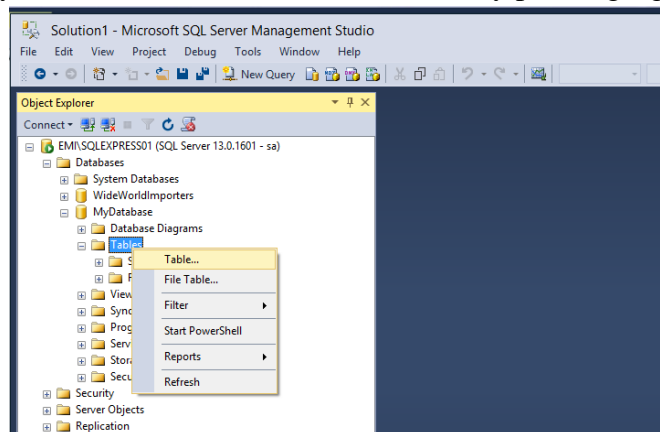**Decimal / Float** – fractional numeric with varying degrees of precision

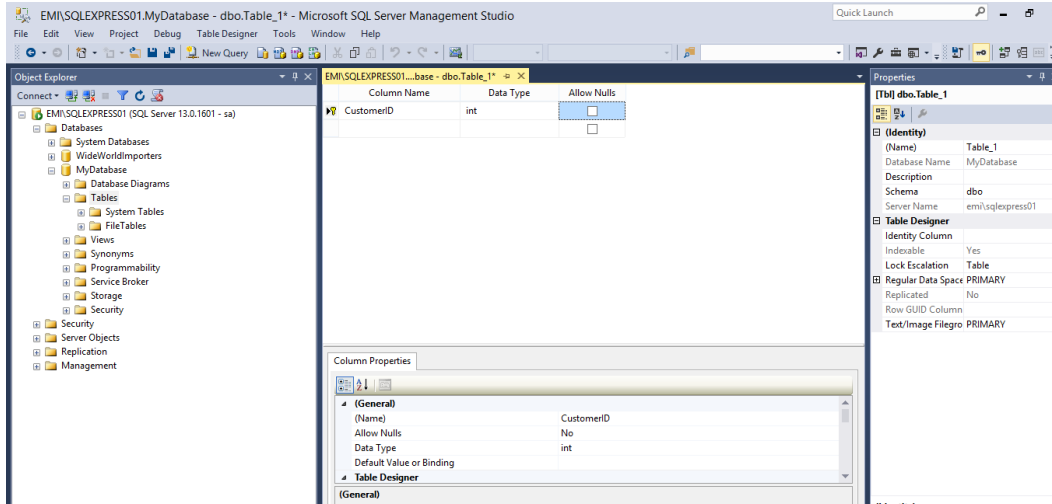Specialty Data Types

Date

Currency
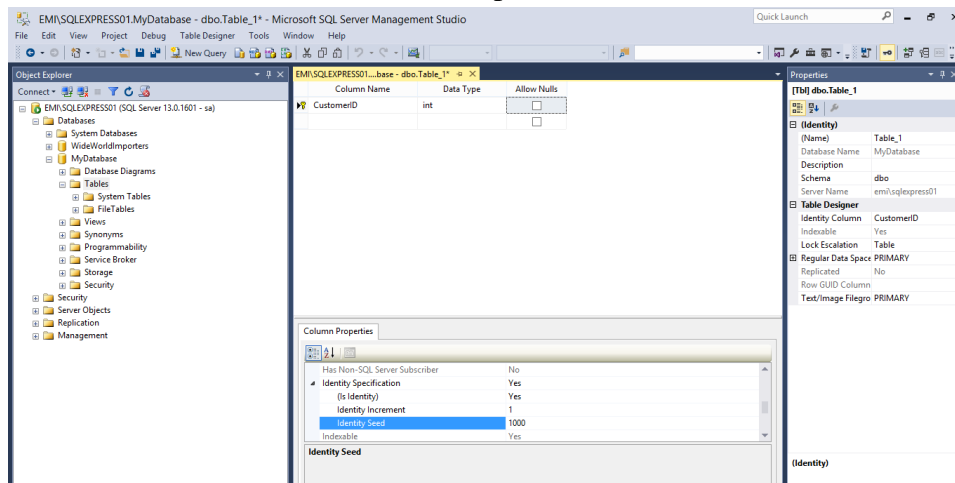
Geographic coordinates …

Create a table

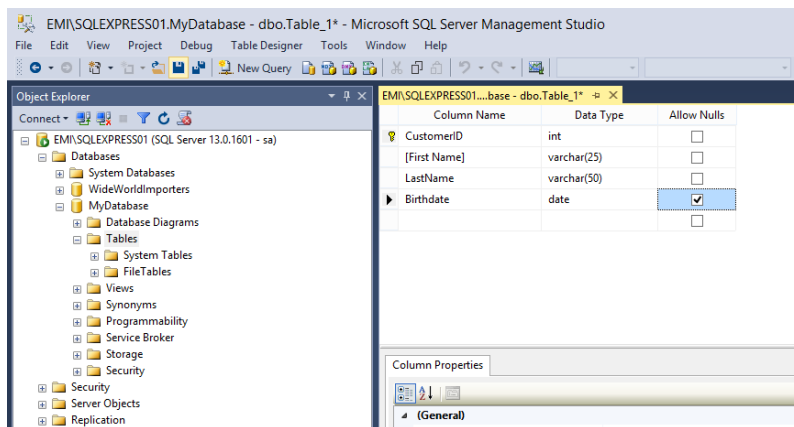Inside of the Database (MyDatabase) -> Table menu -> Table (by pressing right click)
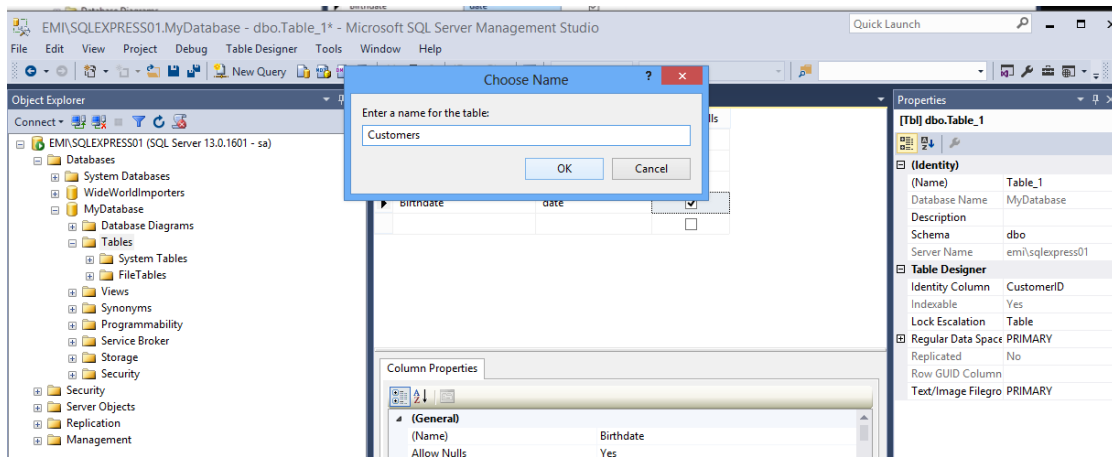

A column

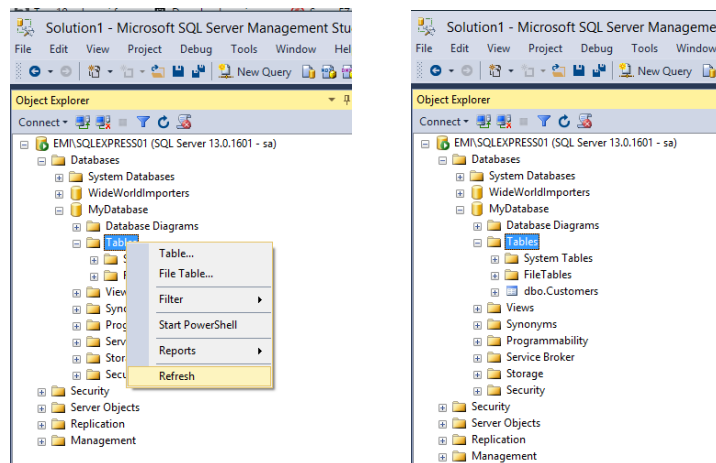A identity of the instances: Yes – 1 – 1000 (for example)

Introducing more fields (If another add will be required later than the save of the table: right click on table -> Design)

Save the table by pressing the disc or closing the window where we write.
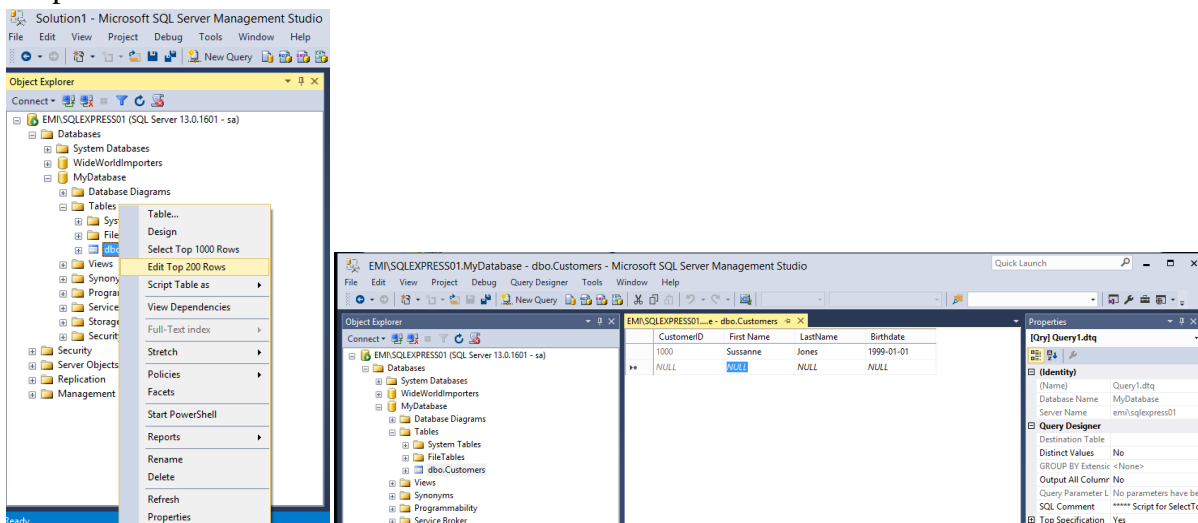
Refresh on Tables tab to see the table

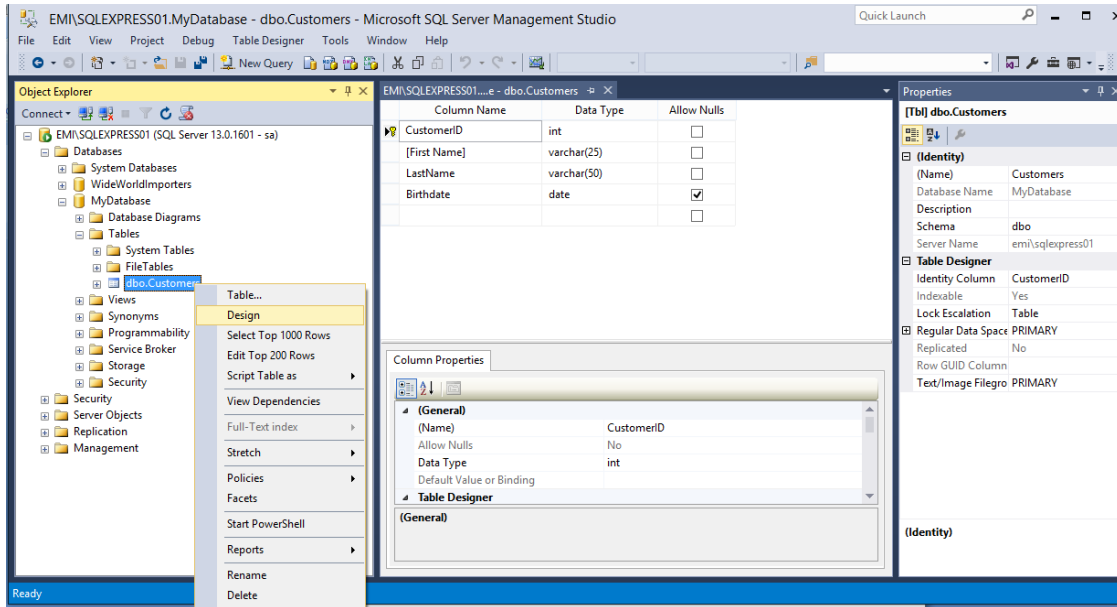There is the dbo.Customers table.

Edit Top 200 rows (from right click on dbo.Customers) is used to introduce values.

Select Top 1000 rows is used to see the records from the table.

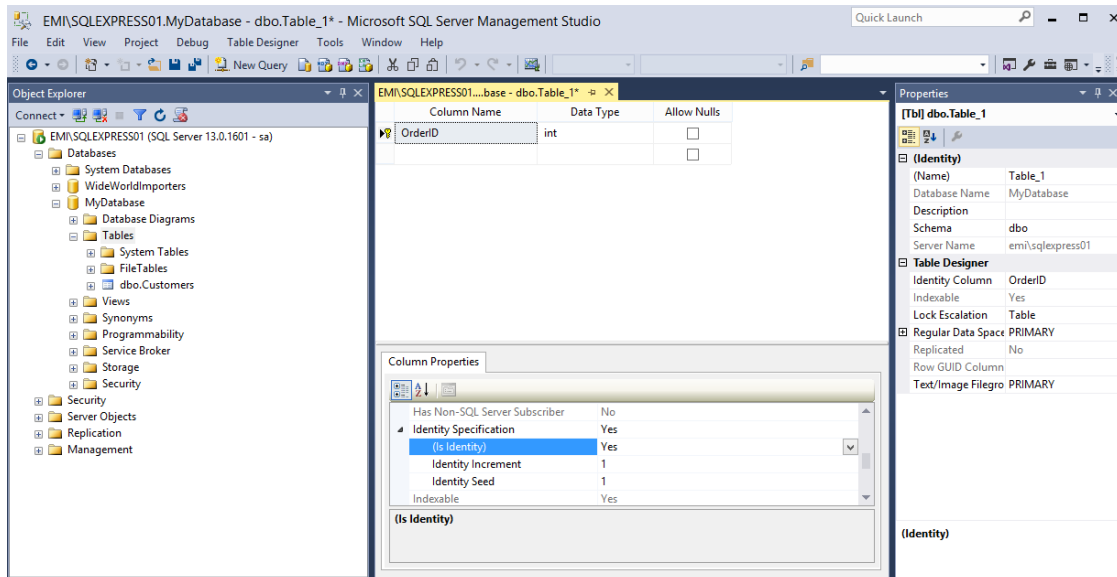The CustomerID (primary key) is not necessary to be introduced if it was set as Identity.

The UNIQUE IDENTIFIER in the table = PRIMARY KEY
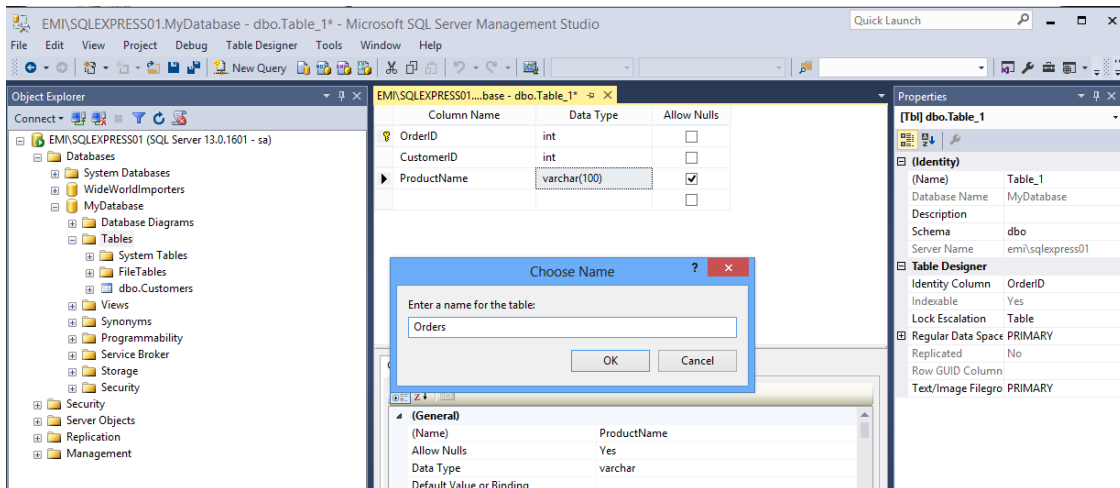
Join tables together with keys

Primary key from a table

- Allows null – NEVER
- Identity Specification – Yes – if someone wants to be autoincrement

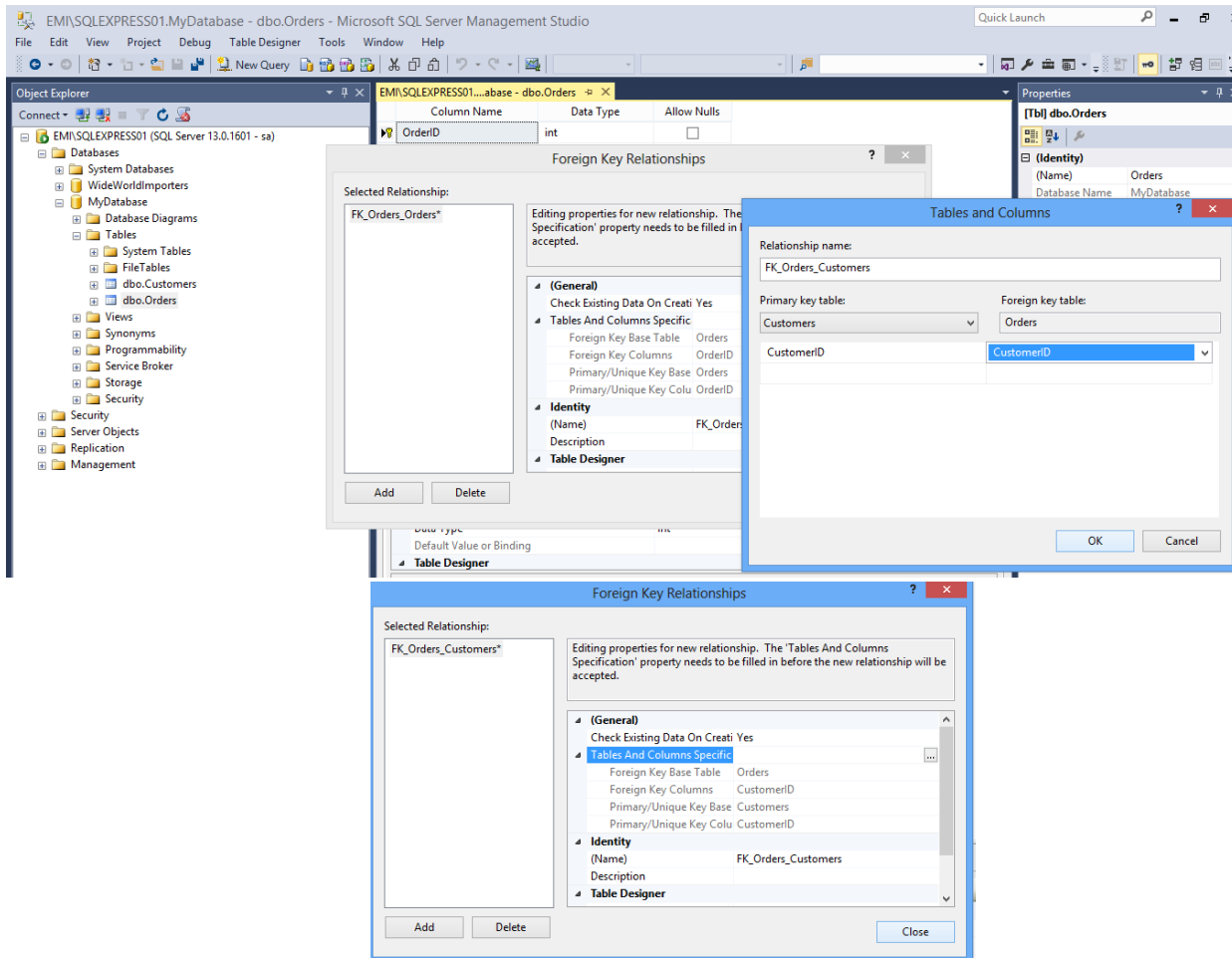Foreign key – CustomerID – from Customers table

– the same type like in that table where is primary key (int)
– the same values as where it is primary key, but not necessarily unique (a value can appear more than once)
– Allow Null – Never

Relationships – right click on the left part where the fields are -> Add a new relationship
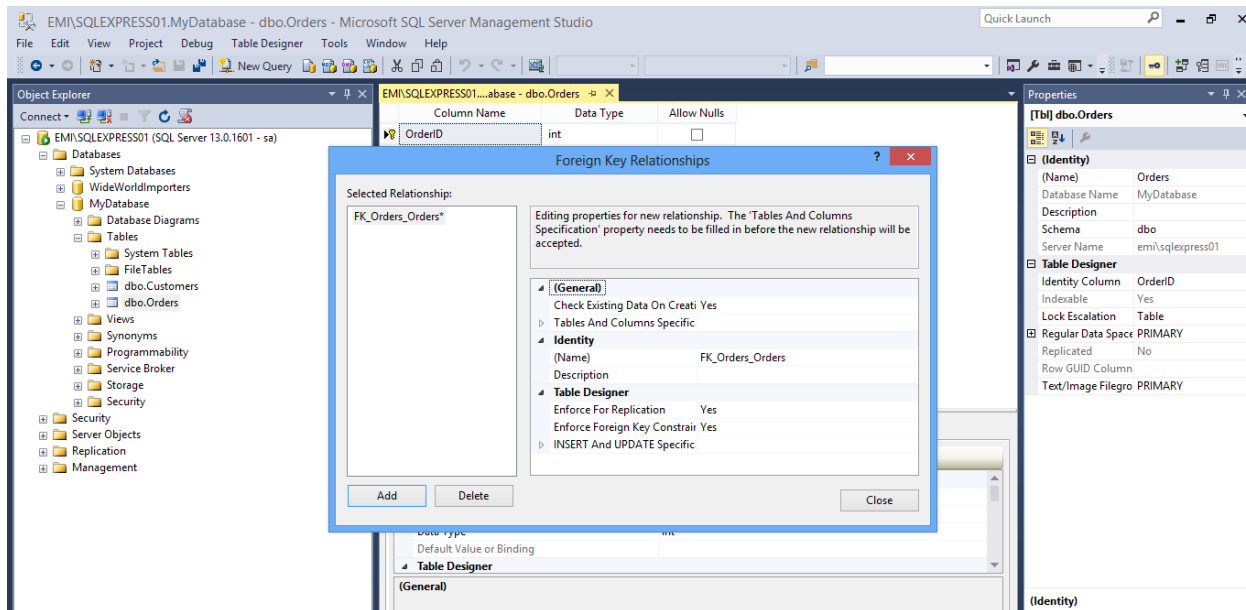

The Tables and Columns Specific -> has to be access from … -> complete the tables that are in the relationship and corresponding to those the primary key (the first table – Customers – the table with the primary key) and the foreign key (the second table – Orders – the table with the foreign key)
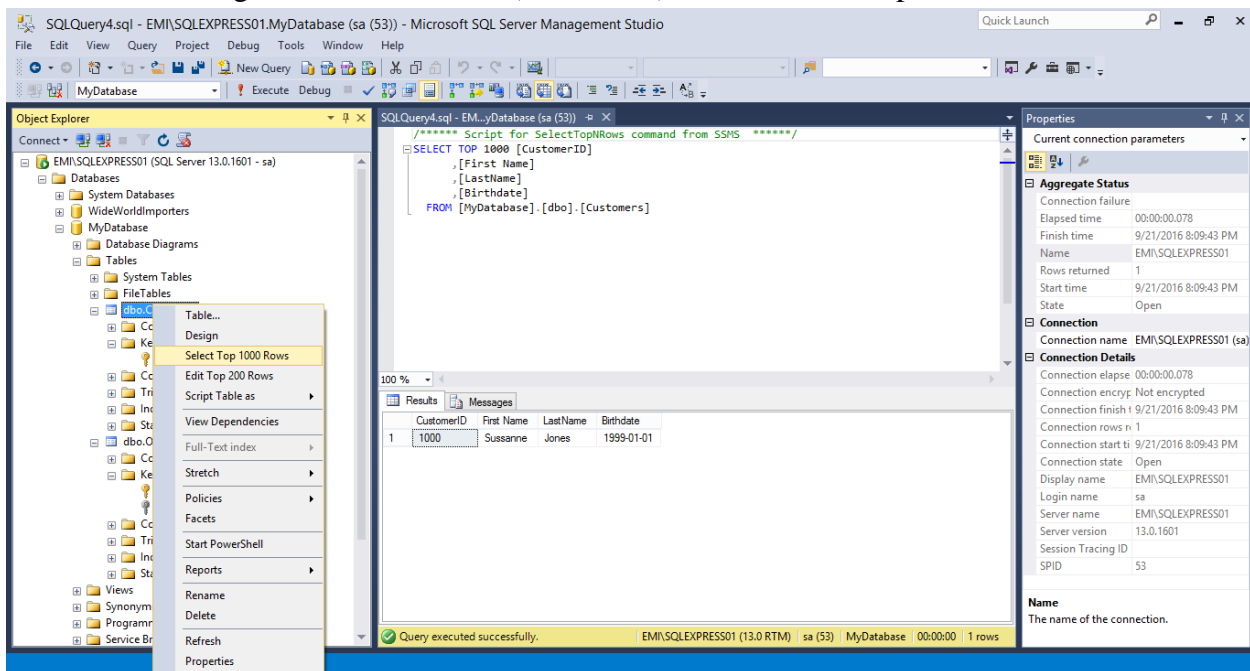
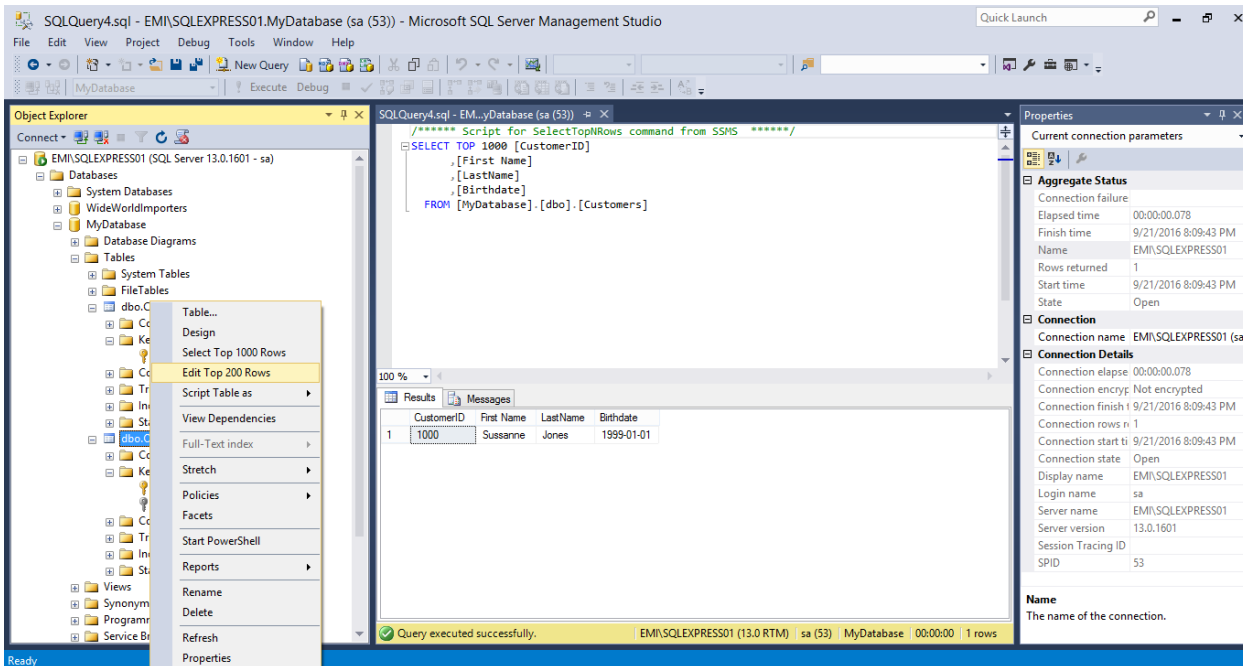SAVE after these changes and Yes to the message that follows.
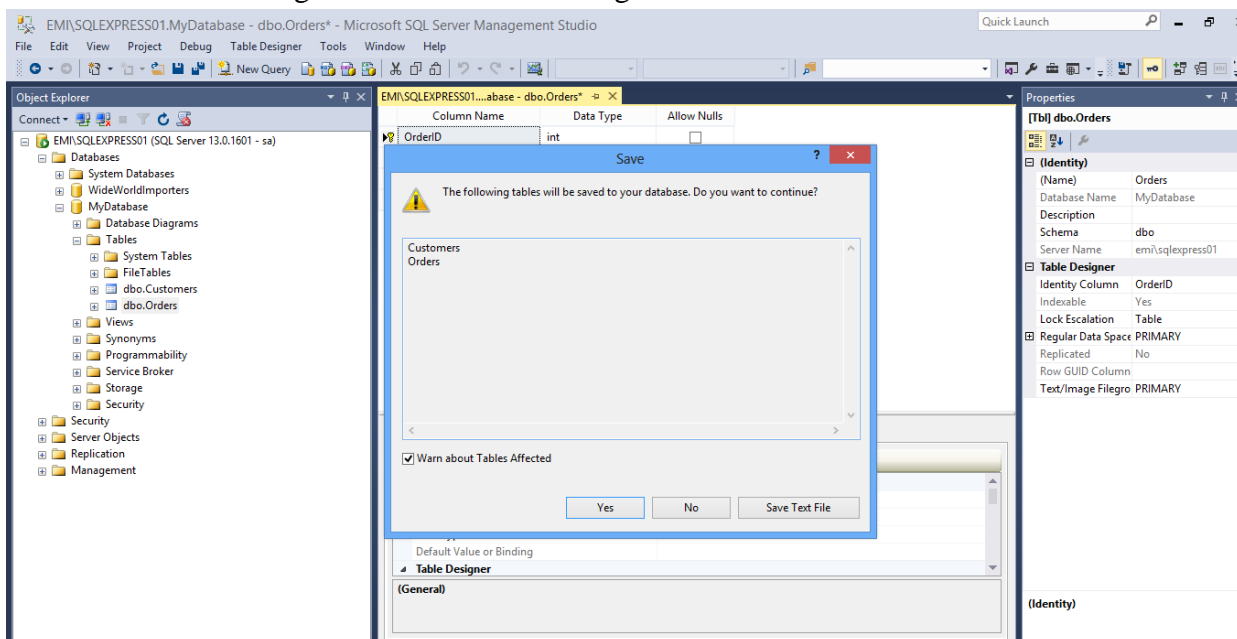
The primary keys and foreign key can be seen in the configuration part after a Refresh.
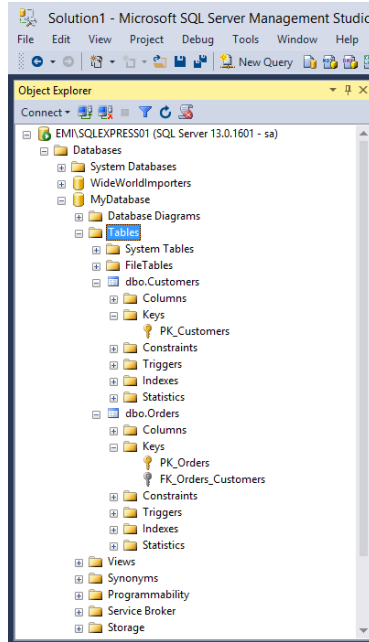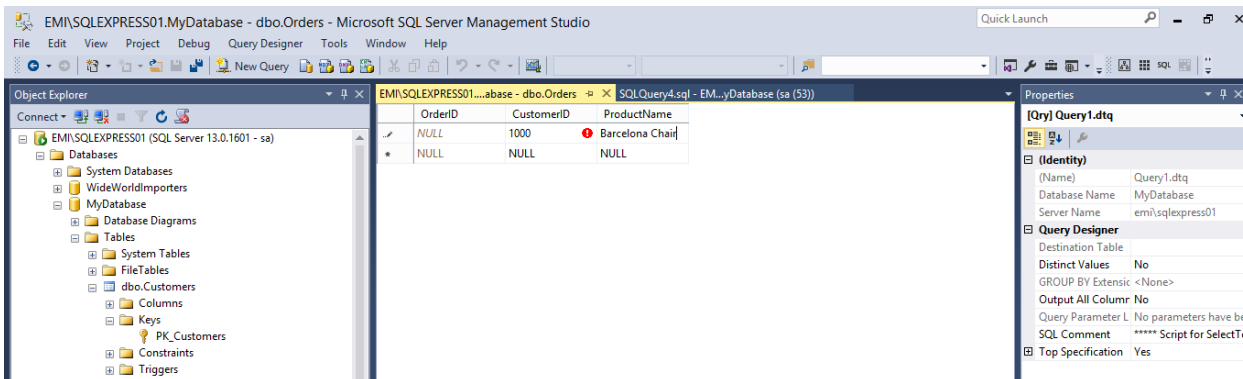
See the records: right click on the table (Customers) -> Select 1000 top rows
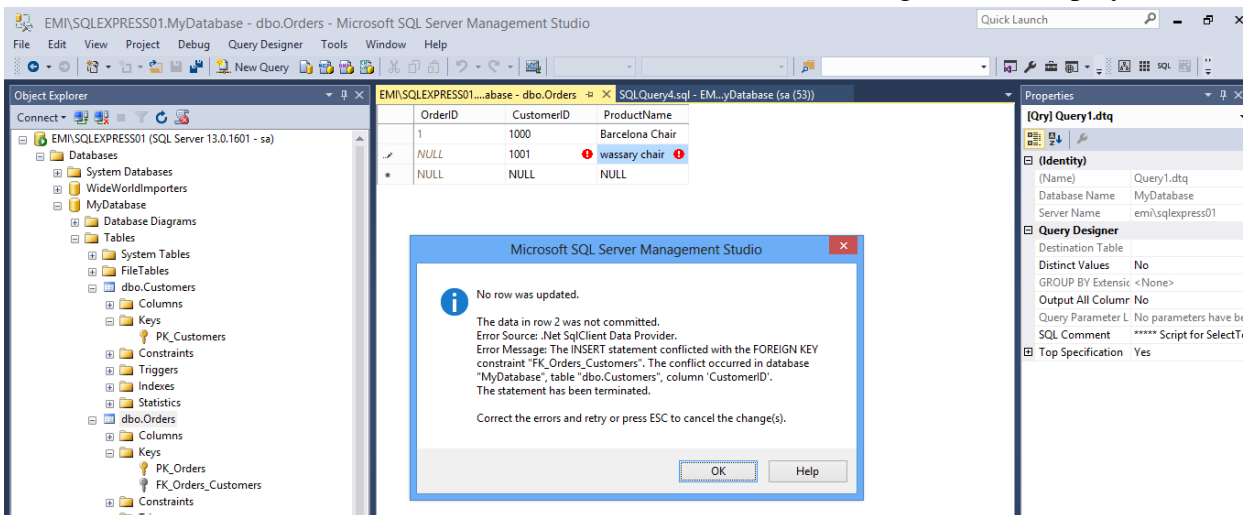

Select right click on table 2 (Orders) -> Edit top 200 rows

THE SAME CustomerID

If a CustomerID that does not exist in Customer table a conflict message will be displayed.

ENTER to save the record introduced. ESC cu give up to the record.