Exercise II - SQL

Part 1 – Create Tables in SQL Server

CEE412/CET522

Transportation Data Management and Visualization

WINTER 2020

Outline

The objectives of this exercise include:

- Learn how to create tables using SQL Server Management Studio
- Query tables to answer questions

Final product: two tables in a SQL Server database and query results

Step 1: Open SQL Server

Use either way to open SQL Server Management Studio:

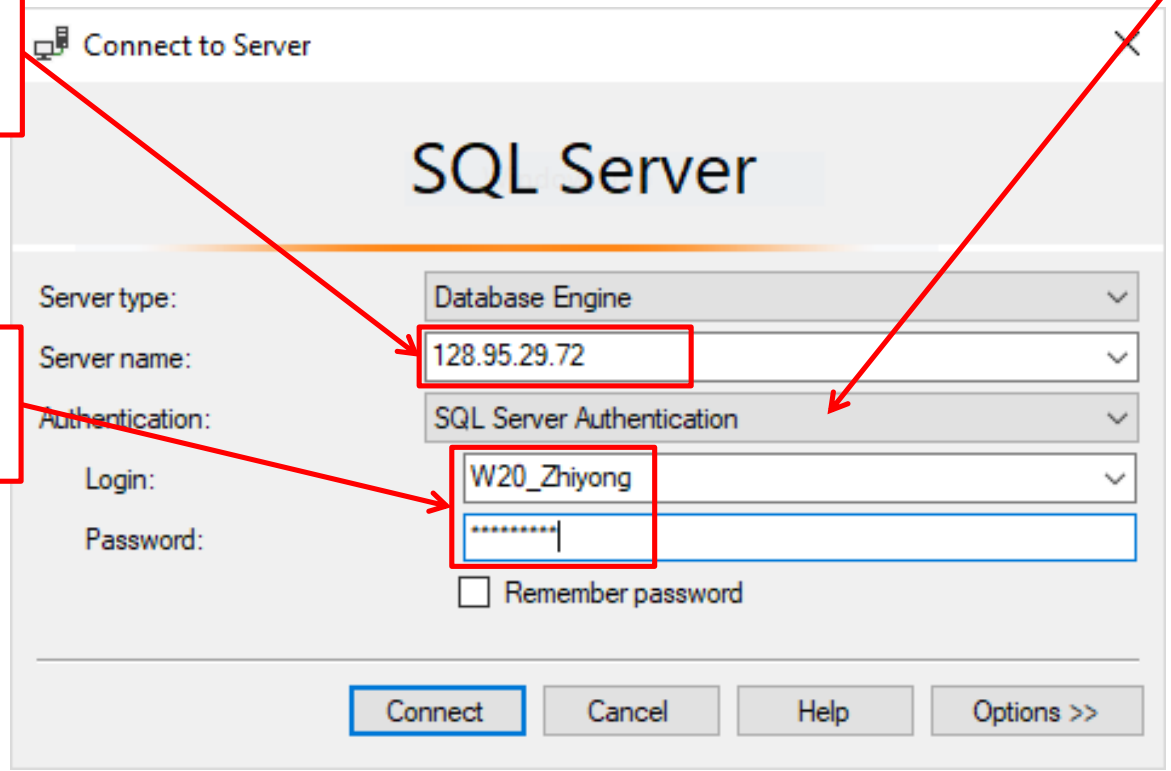
- Click **Start → Microsoft SQL Server Tools 2018 → Microsoft SQL Server Management Studio 18**.
- Or ask **Cotana** (the search box in the windows taskbar)!

Step 2: Log on Your Database Account

Input the class server IP address: 128.95.29.72

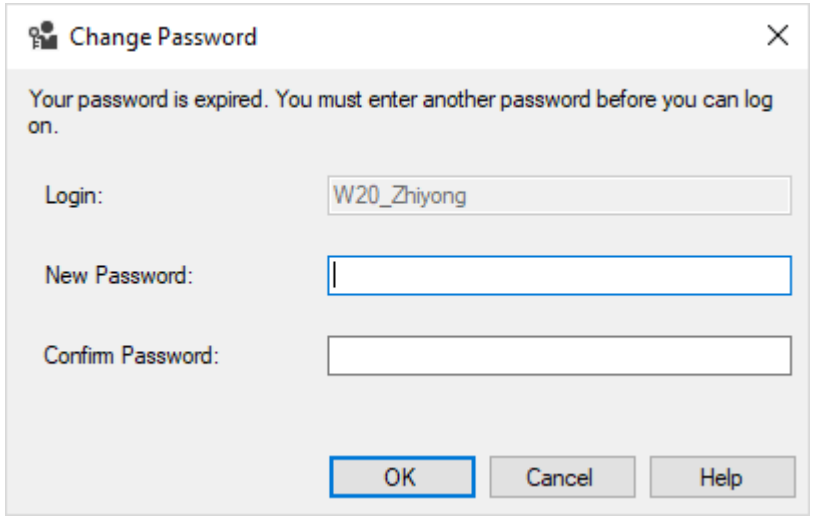
Input your login name and your password

Use **SQL Server Authentication**



Step 2: Log on Your Database Account

Since this is your first time to use your account, you are required to change the password.

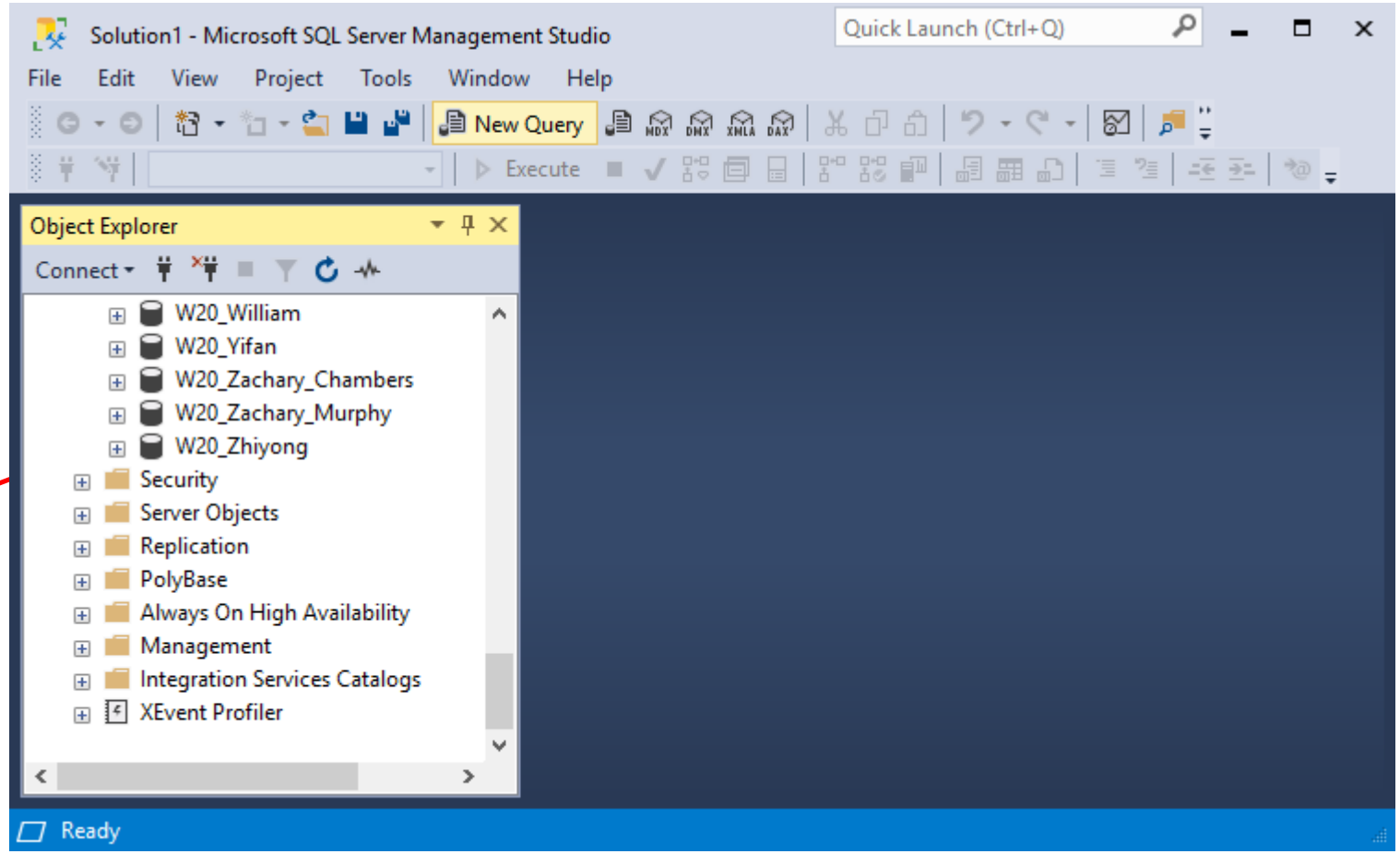


MS SQL Server password guidelines:

1. The password does not contain the account name of the user.
2. The password is at least eight characters long.
3. The password contains characters from three of the following four categories:
   - Latin uppercase letters (A through Z)
   - Latin lowercase letters (a through z)
   - Base 10 digits (0 through 9)
   - Non-alphanumeric characters such as: exclamation point (!), dollar sign ($), number sign (#), or percent (%).

Step 3: Locate Your own Database

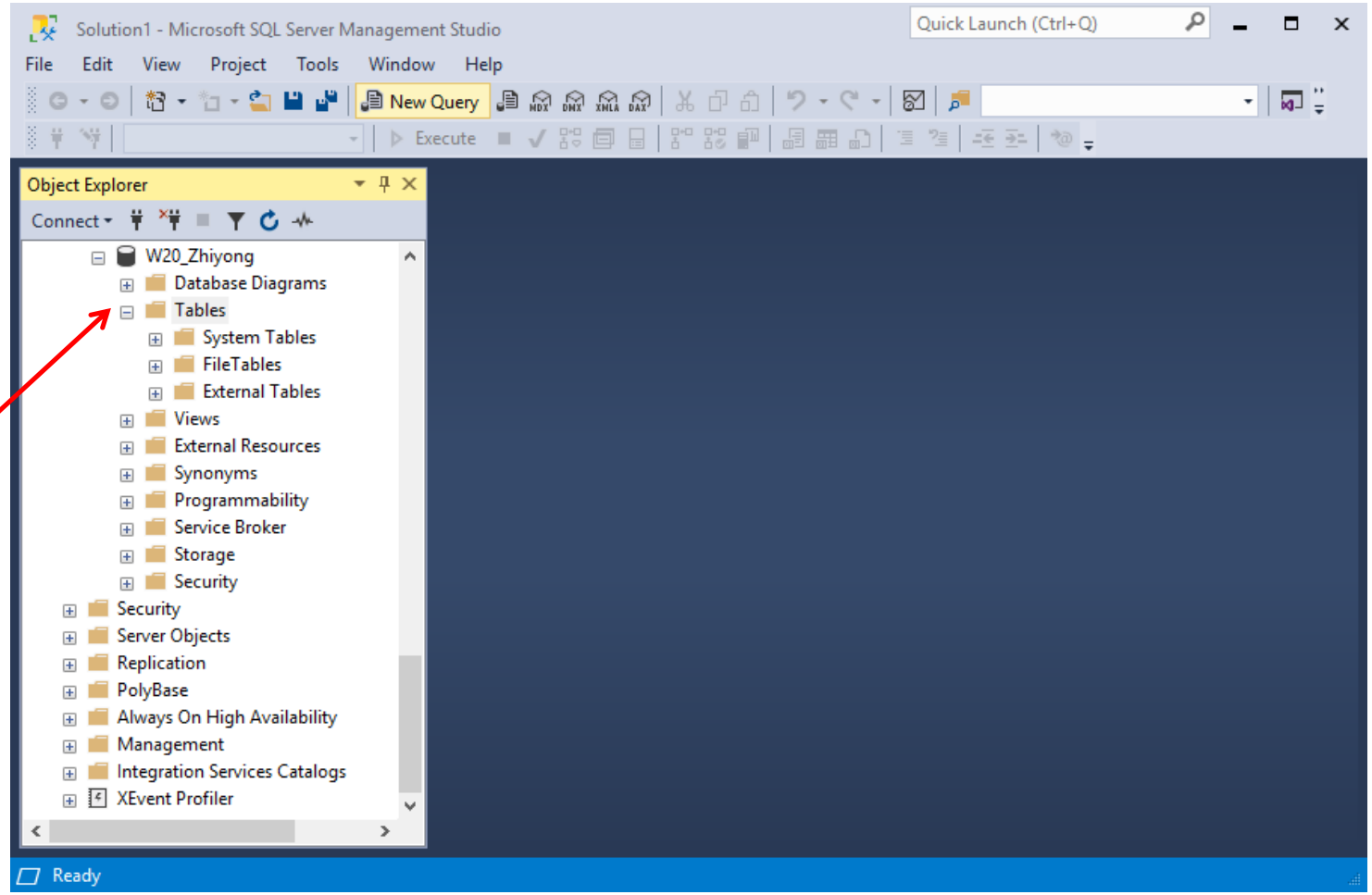
Click the “+” to expand the list of contents.



Find your name in the database list

Step 3: Locate Your own Database

Expand the **Table** list to see relations in your database.

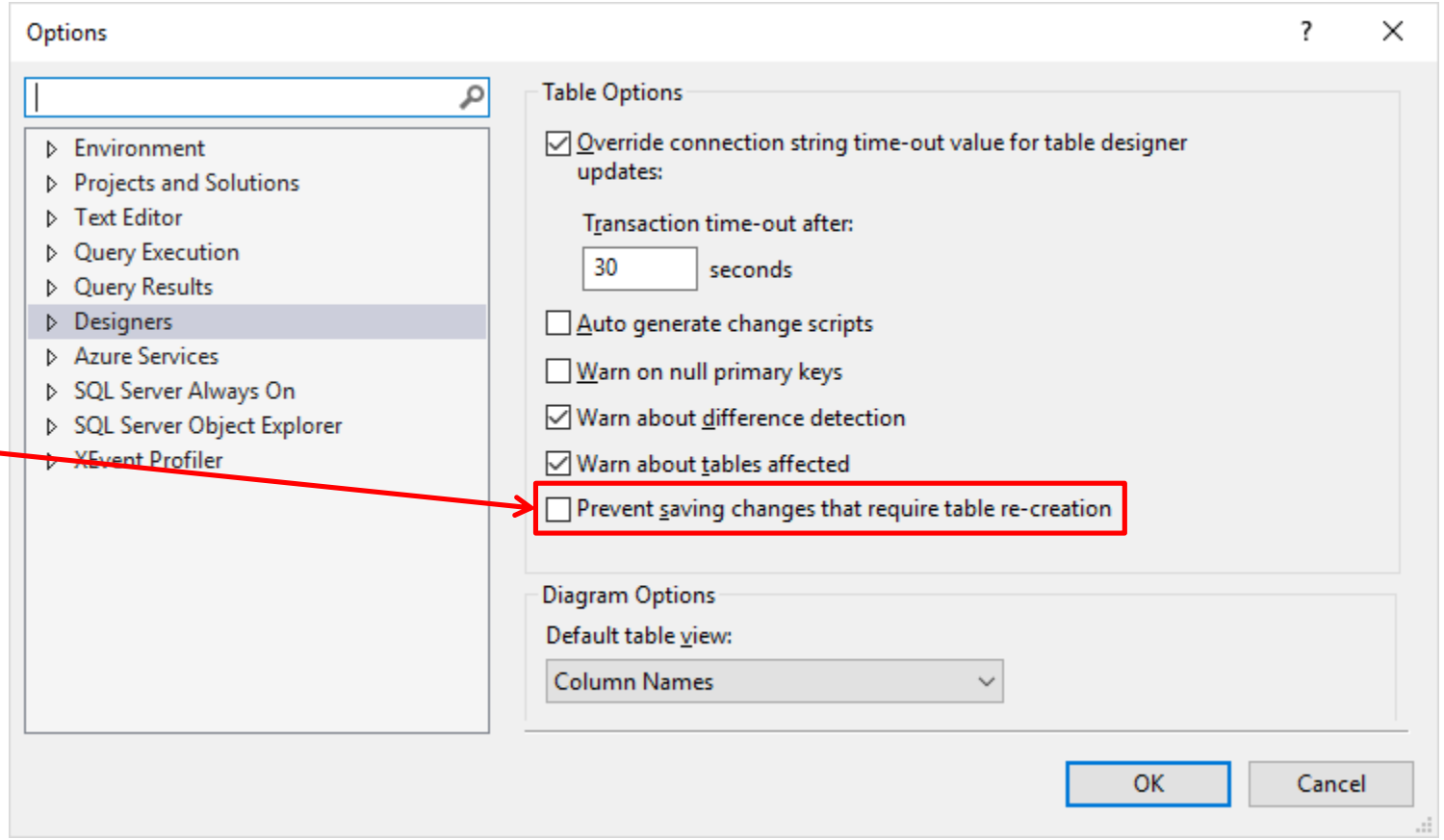


Right now you should have no table in your database.

Step 4: Change Settings

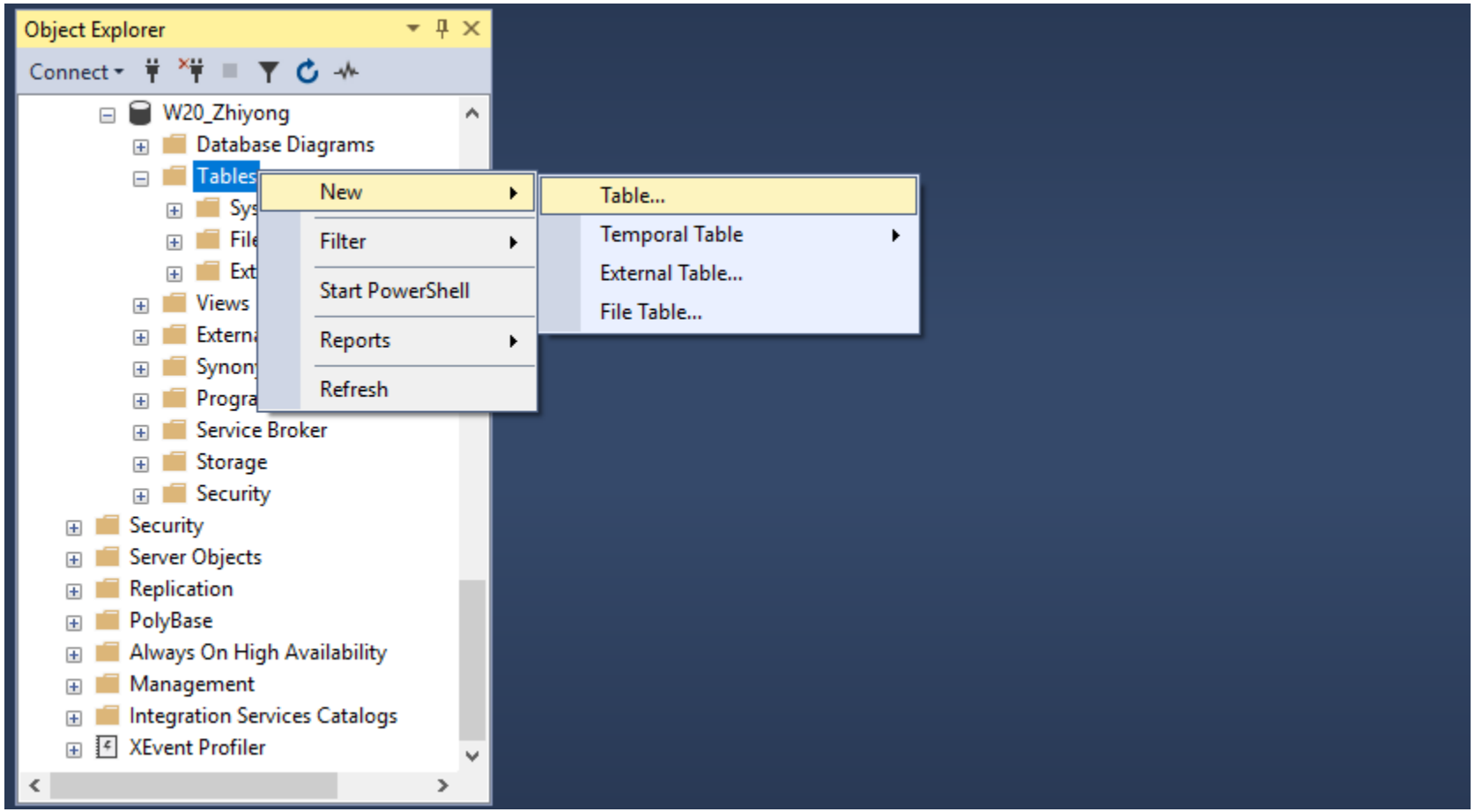
SQL Server has an annoying configuration default setting that will prohibit you from saving your tables. Please go to **Tool → Options → Designers**

Make sure this is unchecked



Step 5: Create A New Table

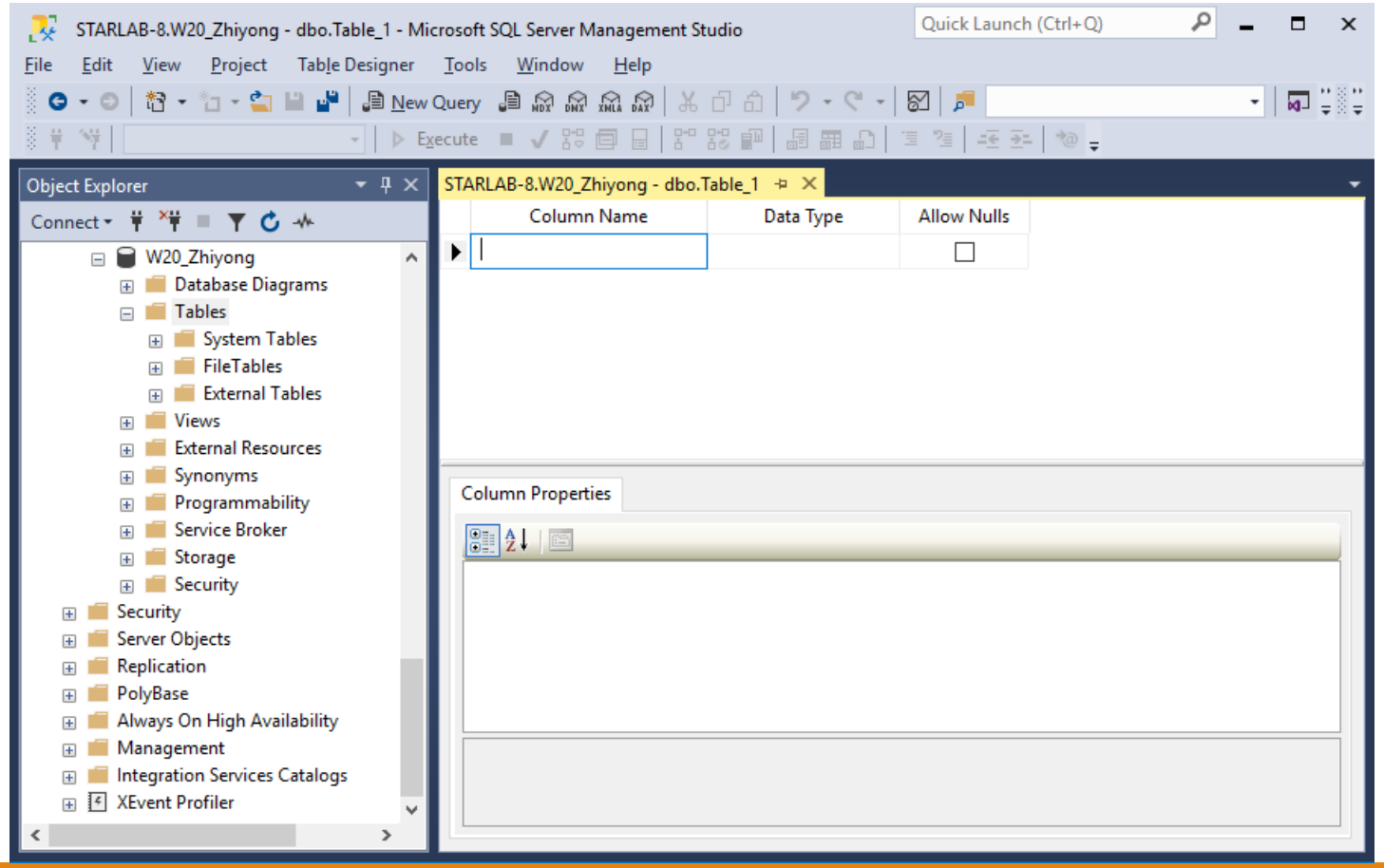
Right click **Tables** and then select **New Table…**



Step 5: Create A New Table

You should see the following windows

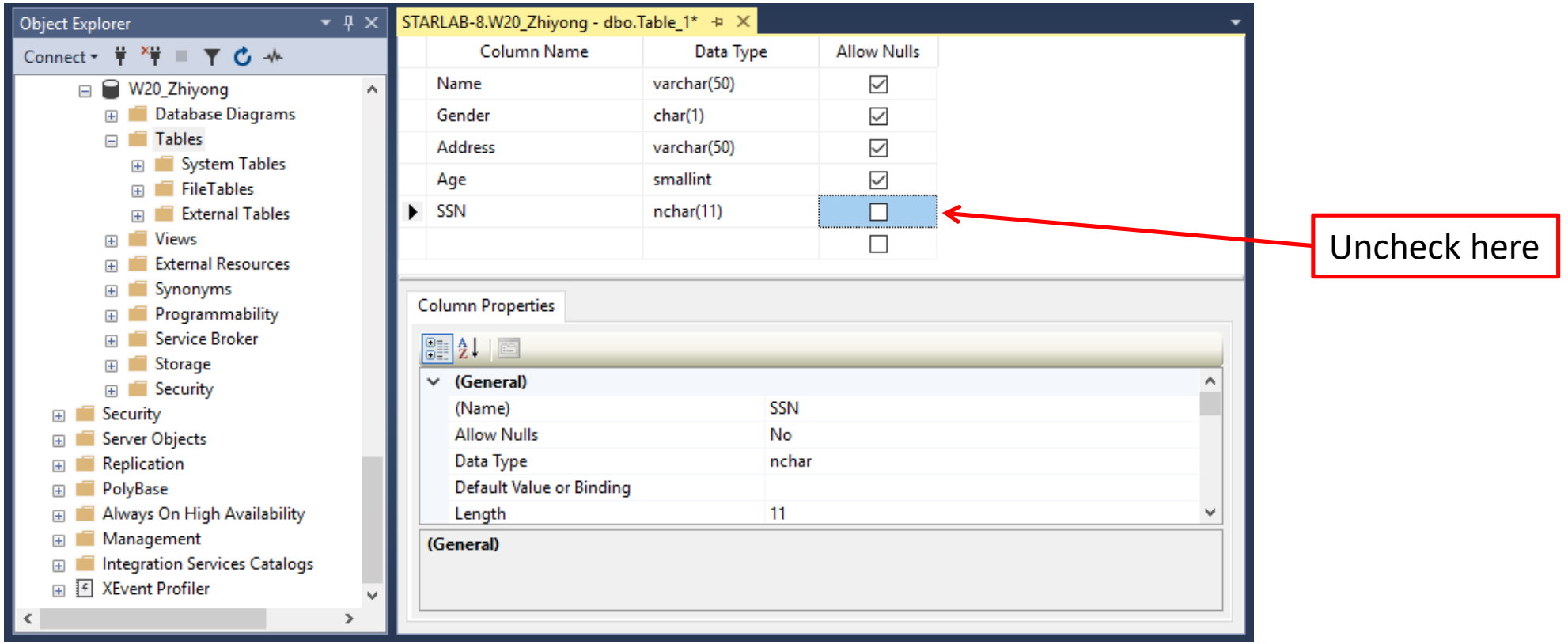
- If you accidently closed the Object Explorer and Properties Window, you can reopen them in the **View** menu.



Step 6: Input Attributes

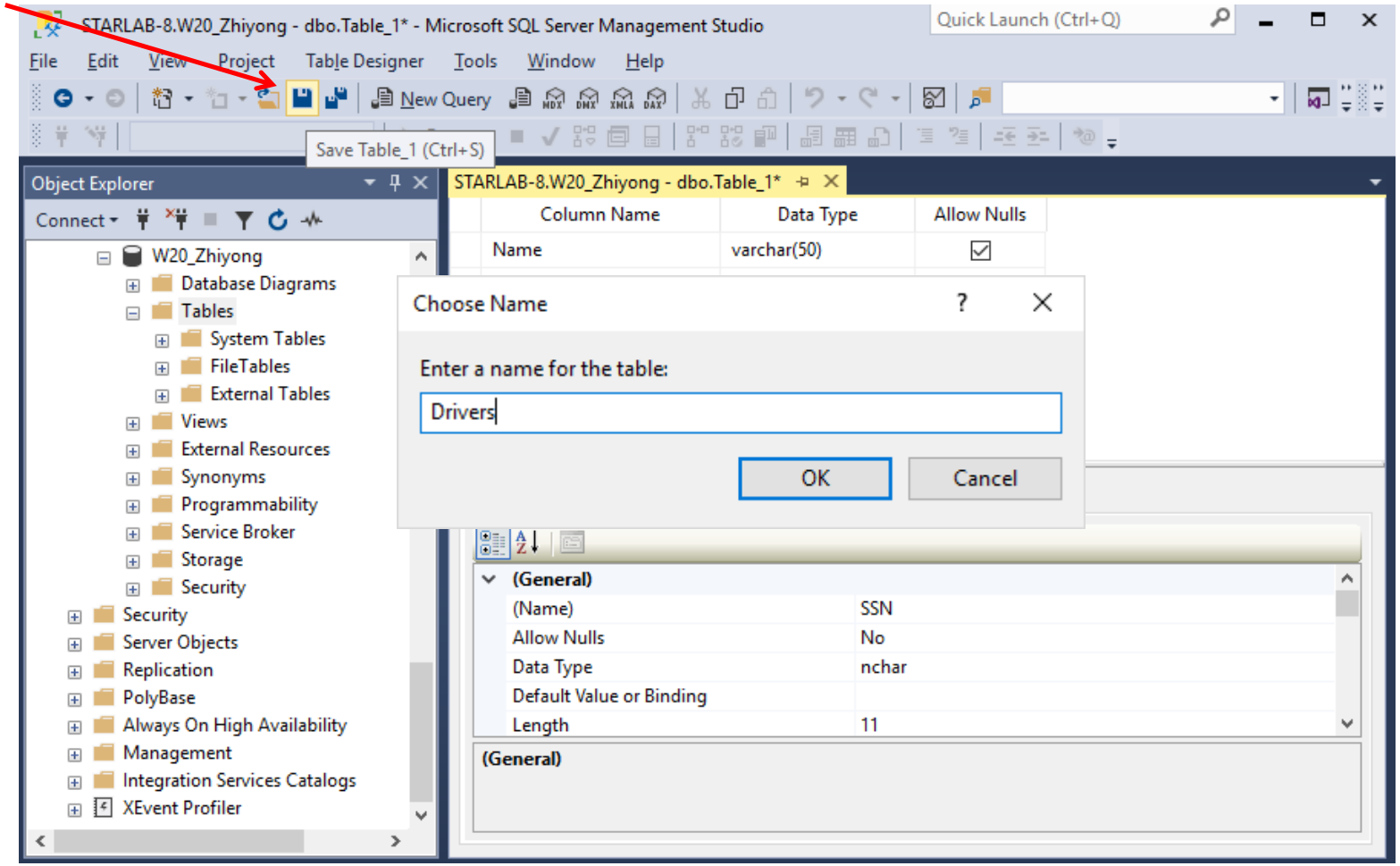
Add column names (Name, Gender, etc.) and select the appropriate data types as shown.

- Make sure you uncheck the “Allow Nulls” checkbox for “SSN”, as we need to define this as a key later



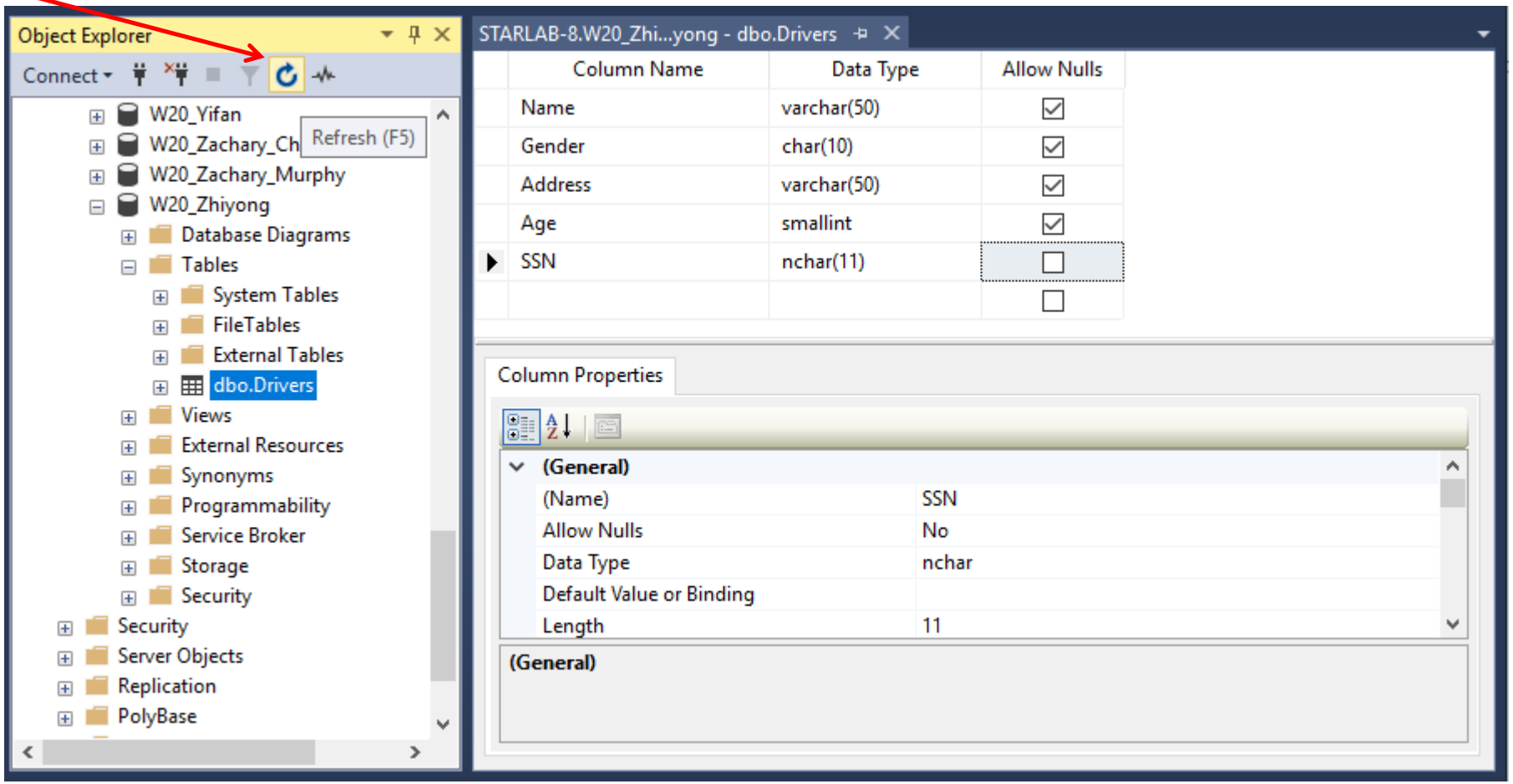
Step 7: Save the Table

Click the **Save** button and save the table as “Drivers”.



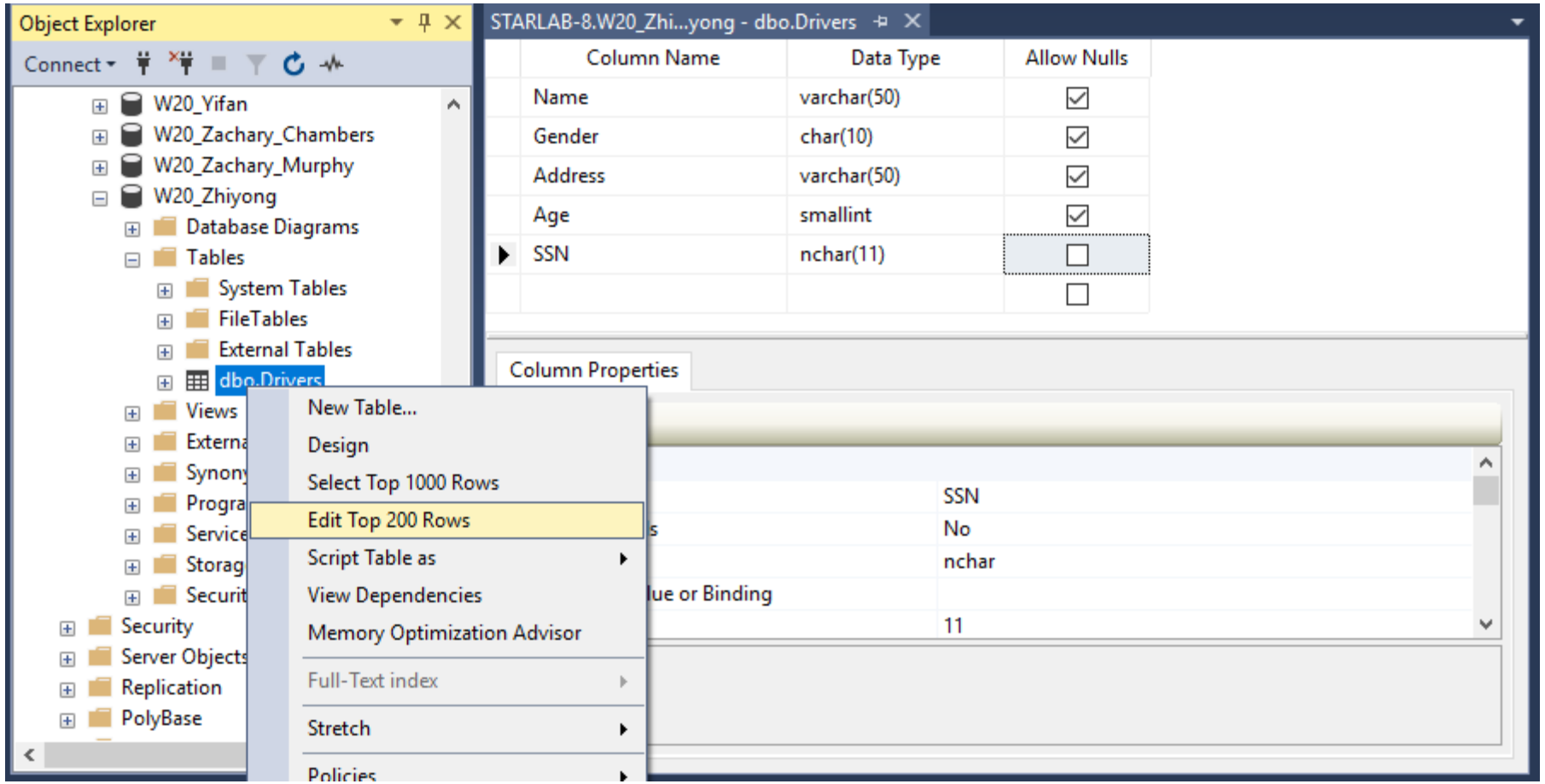
Step 7: Save the Table

Click Refresh icon or **Press F5** to see your table in the Tables list



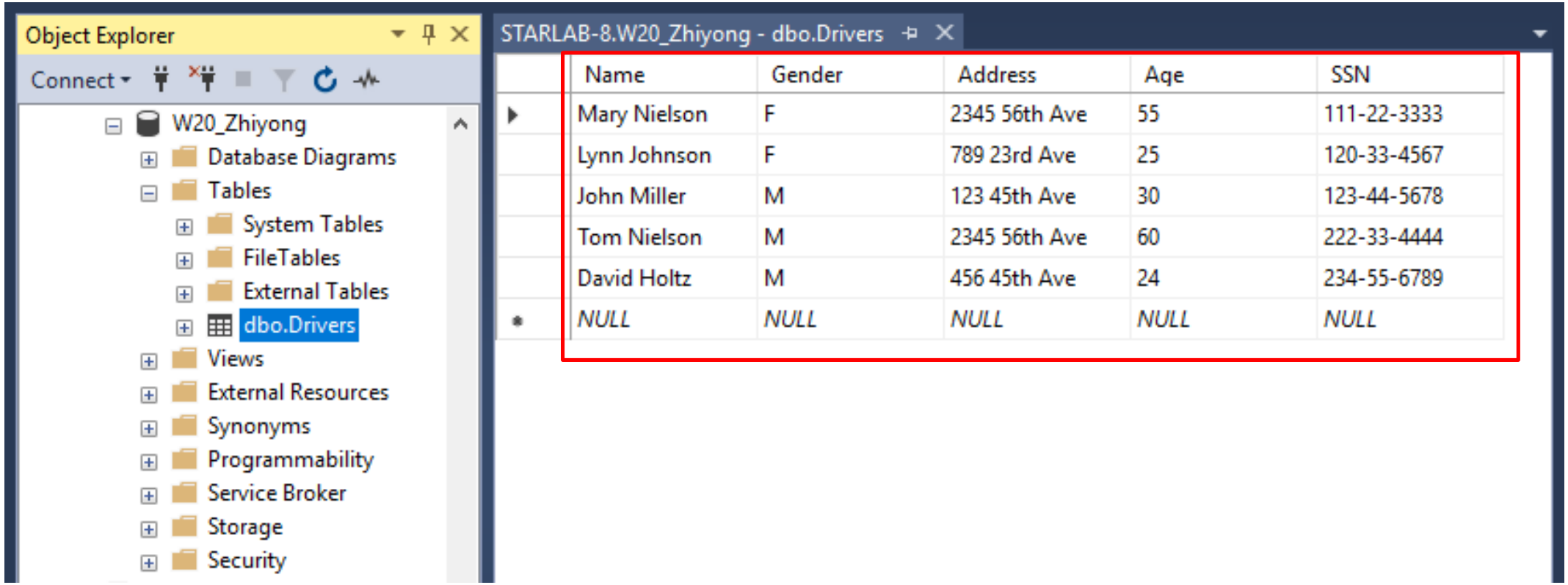
Step 8: Edit Data in the Table

Now you should see a user table called “Drivers” (refresh your database if you don’t). Right click this table and select **Edit Top 200 Rows**.



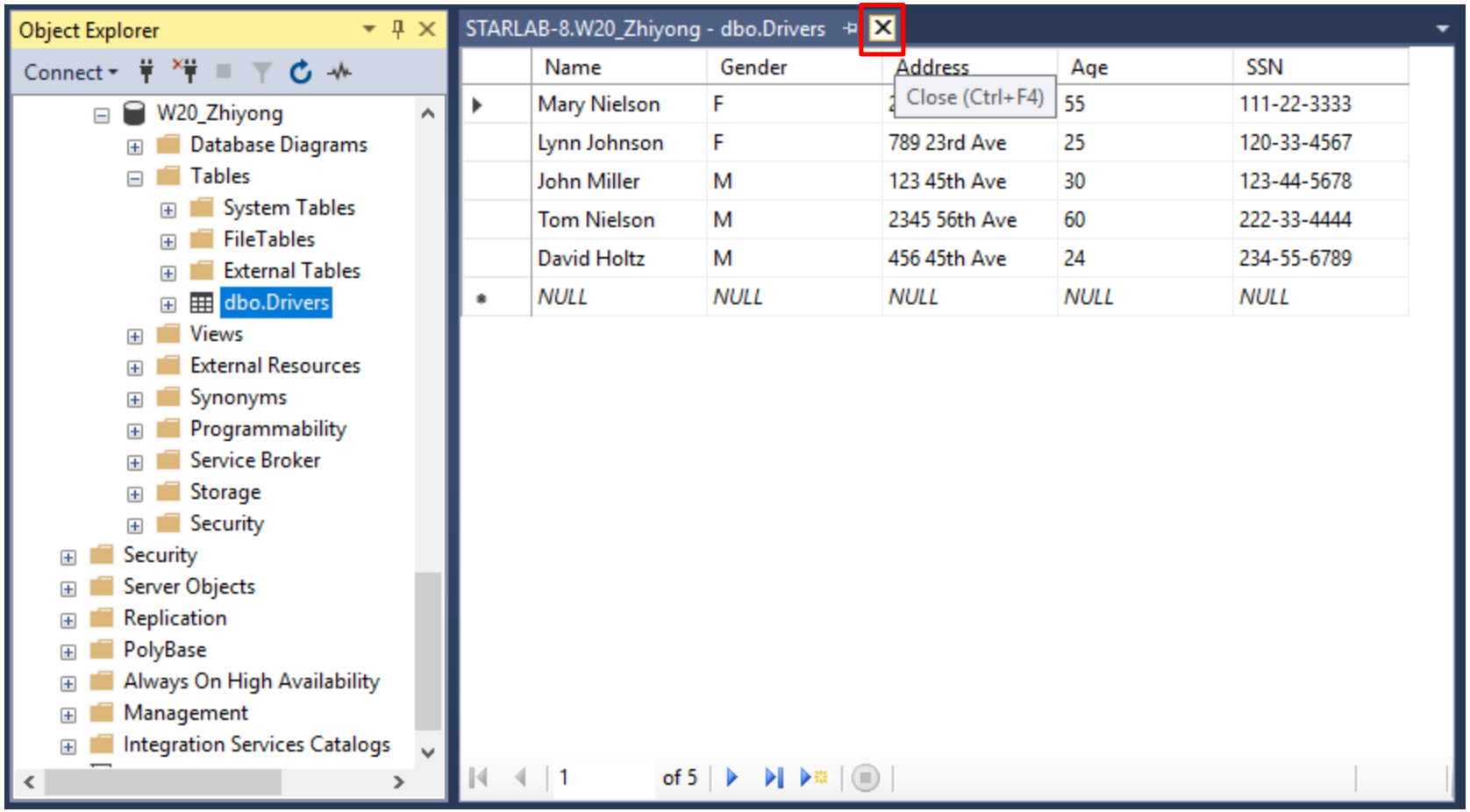
Step 9: Input Data

Now you should see a user table called “Drivers”. Input data as shown below.



Name	Gender	Address	Age	SSN
Mary Nielson	F	2345 56th Ave	55	111-22-3333
Lynn Johnson	F	789 23rd Ave	25	120-33-4567
John Miller	M	123 45th Ave	30	123-44-5678
Tom Nielson	M	2345 56th Ave	60	222-33-4444
David Holtz	M	456 45th Ave	24	234-55-6789
NULL	*NULL*	*NULL*	*NULL*	*NULL*

Step 10: Close All the Tabs

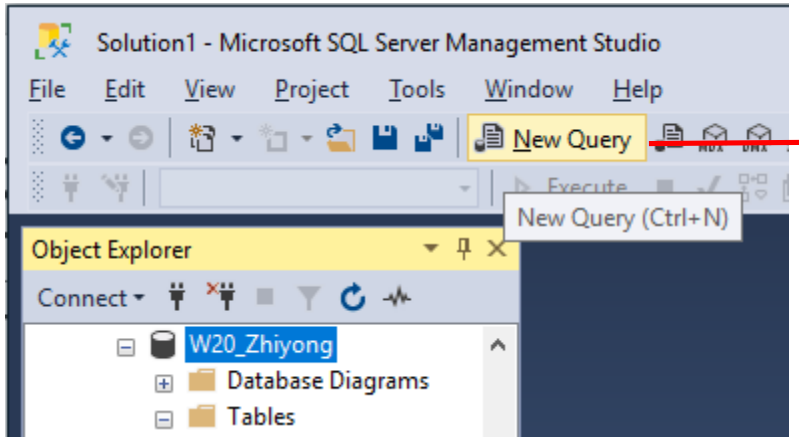


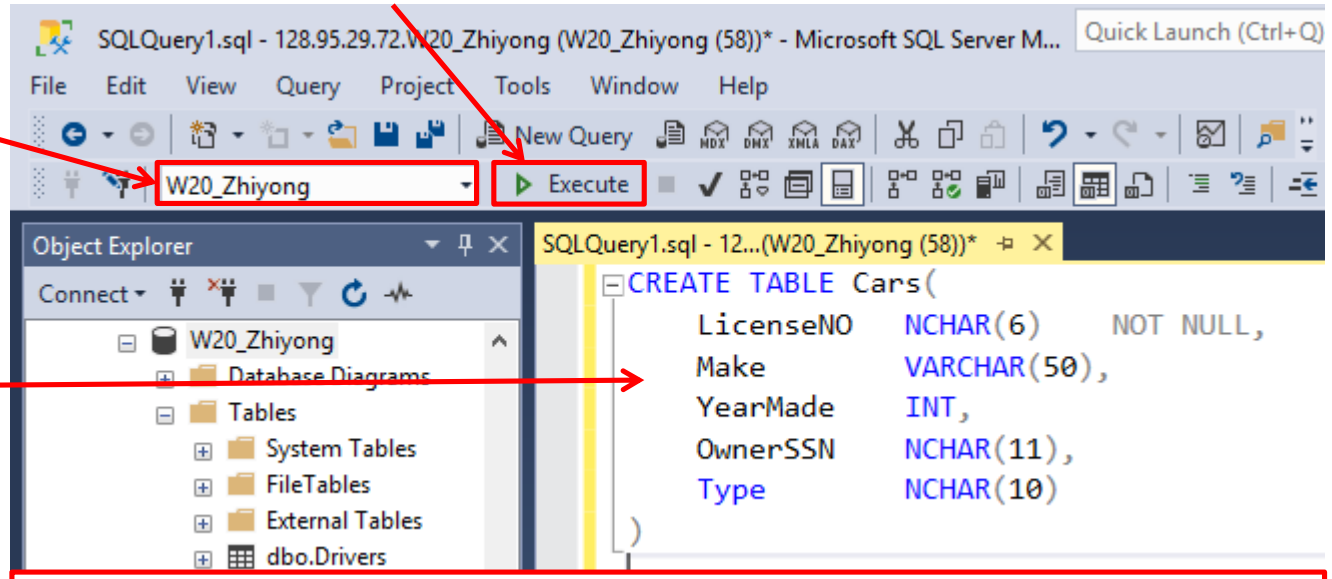
Step 11: Create Another Table

To create a table named “Cars”, you can repeat the previous steps. Instead of this, let us create the Cars table using a SQL statement.

- Create a blank query by clicking the **New Query** button.
- Type in the SQL statement below, then click **Execute**.

This is the database you are working on. Make sure your database is selected here.



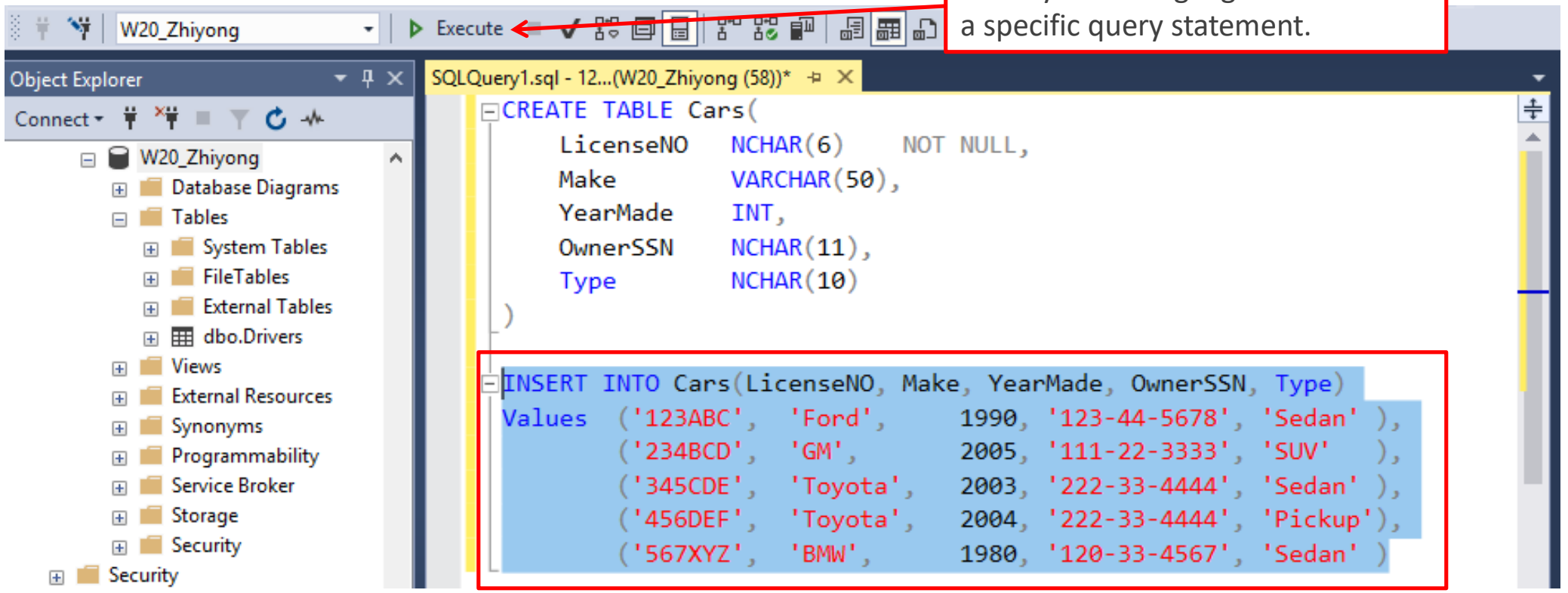


Note that the column “LicenseNo” is defined as NCHAR(6) NOT NULL. NOT NULL is a constraint that requires the column to contain a value for every row. This is one of the requirements for a primary key column.

Step 12: Add Data to the Table

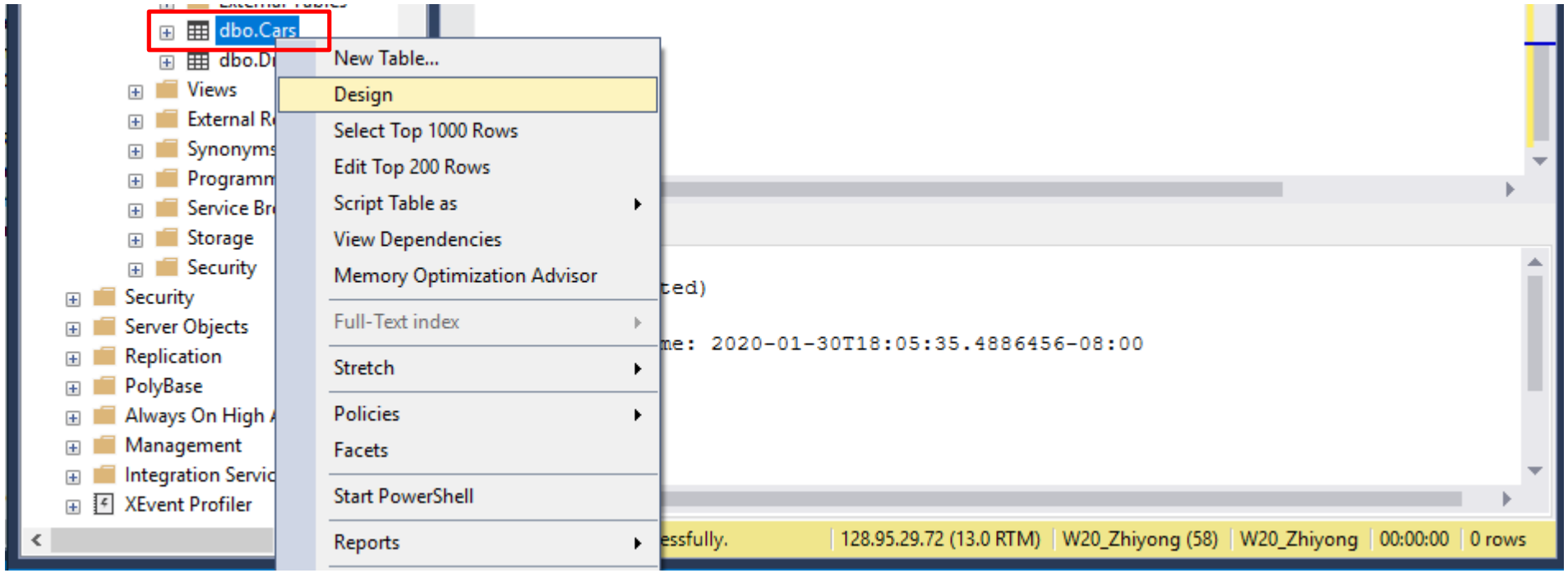
Now we will insert values into the Cars table. We will also do this with a SQL statement. Type in the query as shown below.

- This will insert five rows into the newly created Cars table. Note that each row is enclosed in parenthesis, and separated by commas.



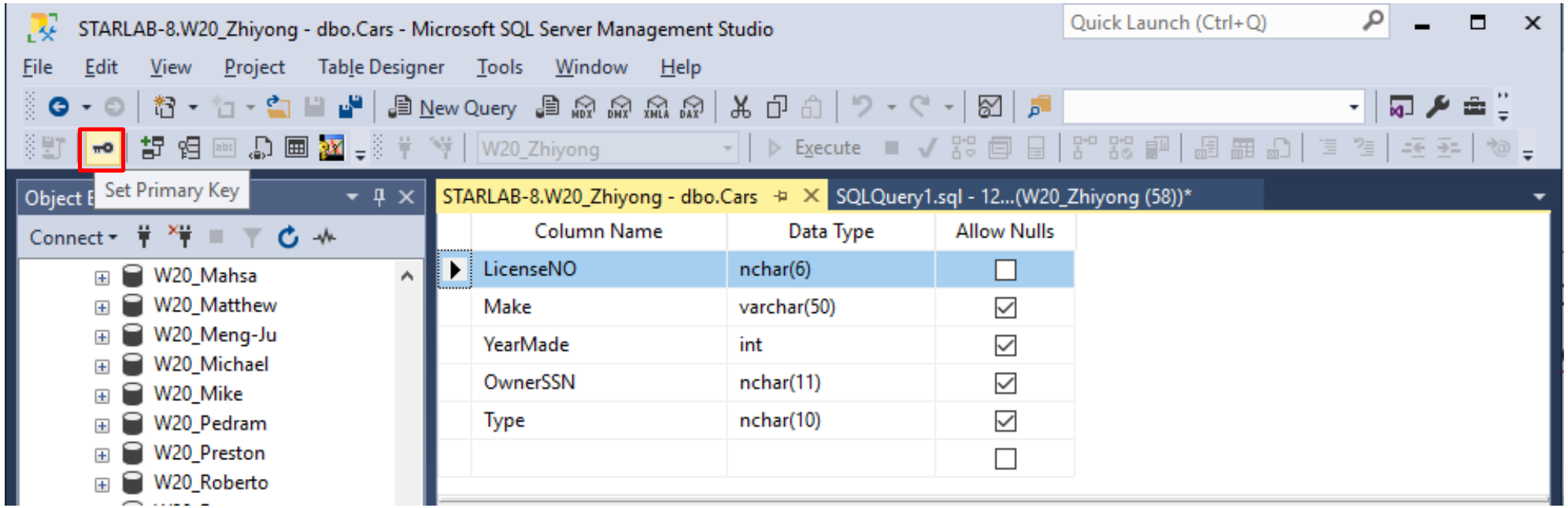
Step 13: Define the Key

In the Object Explorer, right click the new created table **Cars** and click **Design**.



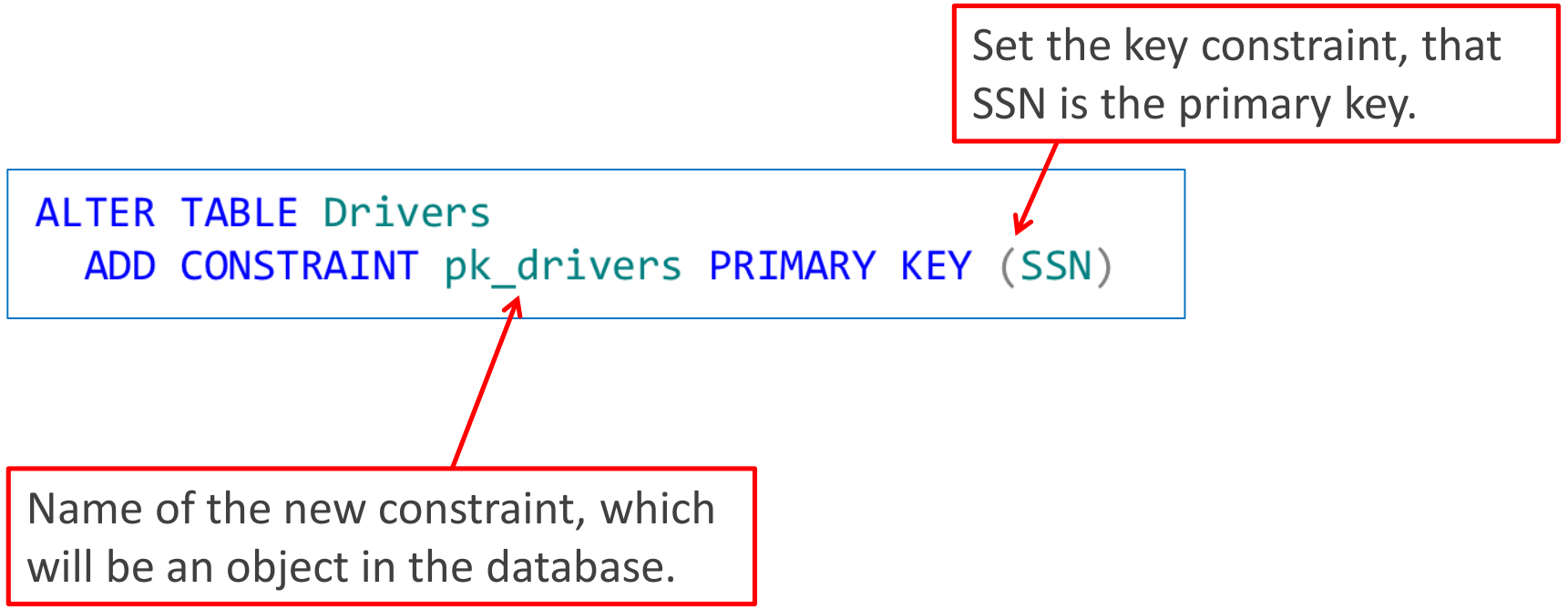
Step 13: Define the Key

- Select the LicenseNo column name and then click the key icon to set it as the primary key.
- After you see a small key icon appears in front of the LicenseNo column name, close the design table and save the change.



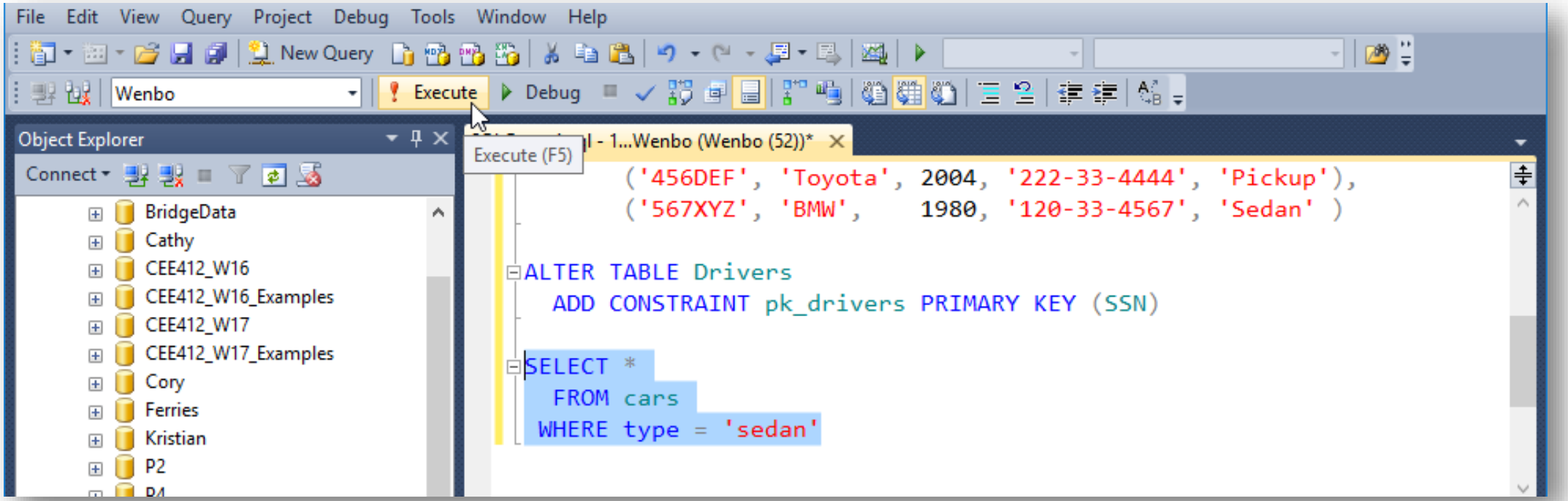
Step 13: Define the Key

We will use a SQL statement to set “SSN” as the primary key for the “Drivers” table. Run the code shown below to do this.



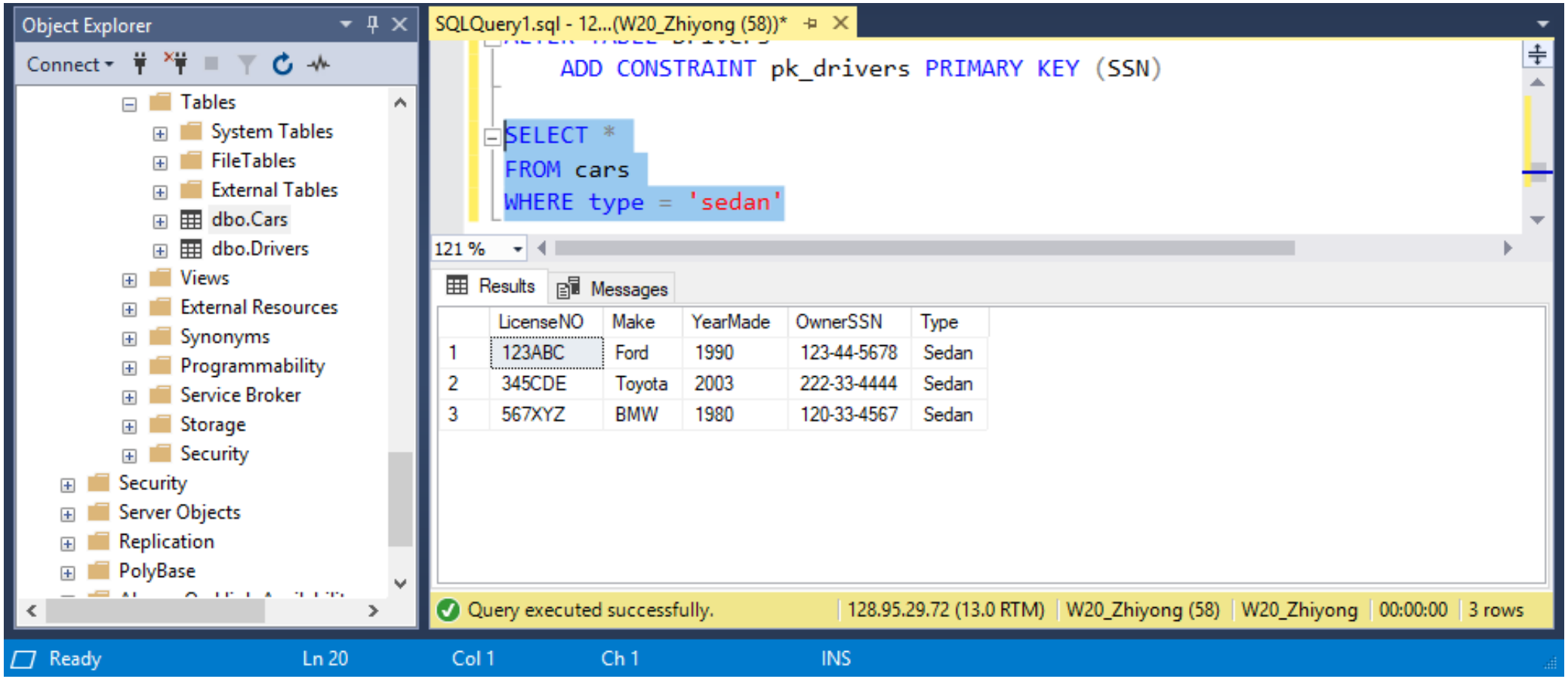
Step 14: Working with Queries

Write the query as shown below. Highlight and execute the query.



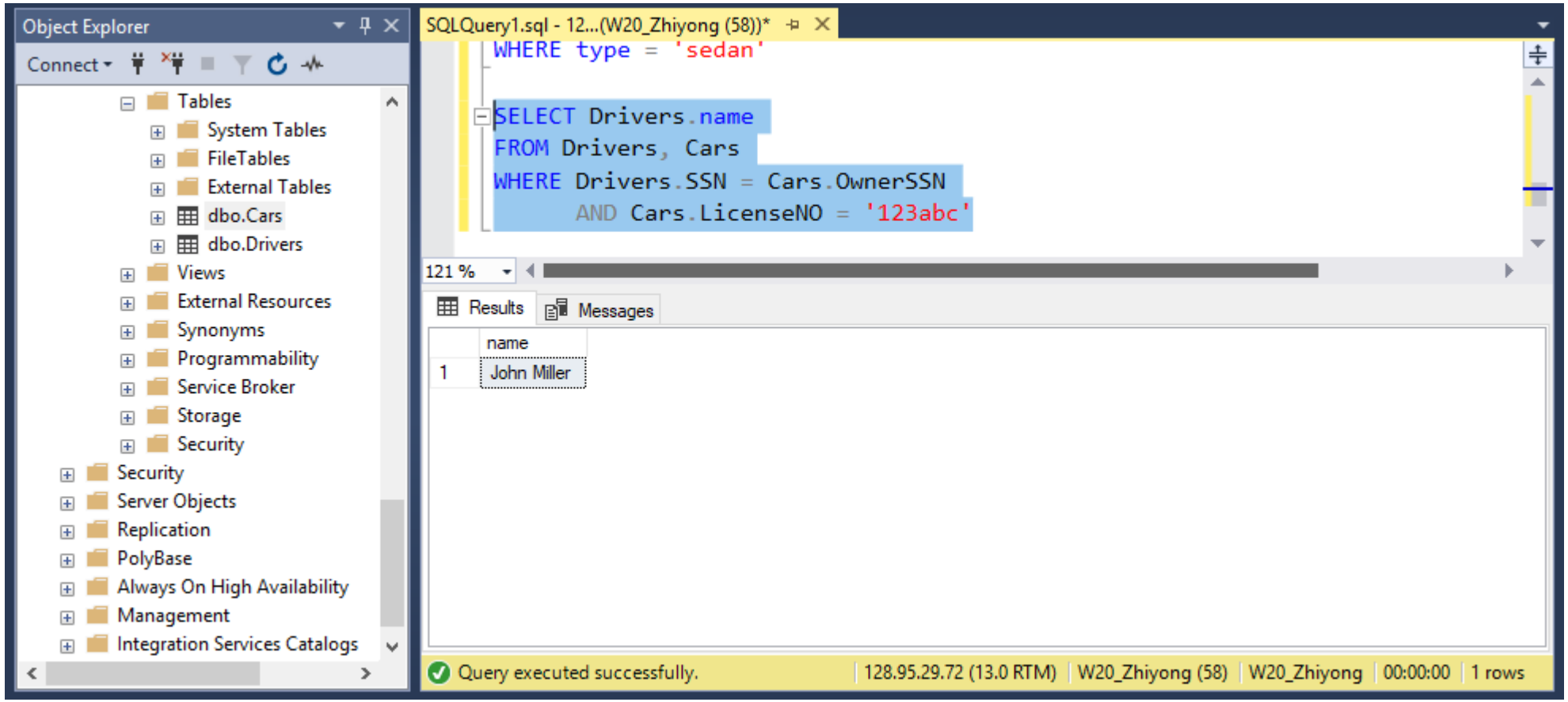
Step 14: Working with Queries

Your result should look like the screenshot below.



Step 14: Working with Queries

Try another query to answer: What is the owner's name for vehicle with a license number of "123ABC"?



Step 14: Working with Queries

Now use your own SQL command to answer the following questions:

- What is the type of the car whose LicenseNo is “234BCD”?
- What is the LicenseNo for Lynn Johnson’s vehicle?
- Who owns a pickup?
- Produce a list of drivers who own at least one car that was made after 2000.

Check your results with my answers on the next slide.

Step 14: Working with Queries

- What is the type of the car whose LicenseNo is “234BCD”?

  SUV

- What is the LicenseNo for Lynn Johnson’s vehicle?

  567XYZ

- Who owns a pickup?

  Tom Nielson

- Produce a list of drivers who own at least one car that was made after 2000.

  Mary Nielson

  Tom Nielson