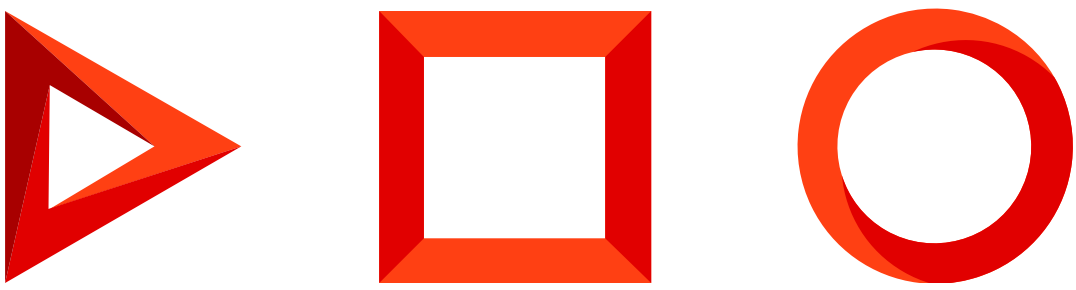
Creatio Academy

Debugging

Back-end debugging

Version 7.18



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Back-end debugging

Advanced

Back-end debugging is debugging of C# code schemas, for example, existing base schemas, custom configuration classes, web services, etc.

Execute back-end debugging

Debug the C# code schemas using the integrated debugging functionality of **external IDEs**, for example, Visual Studio Code.

External IDE debuggers let you execute the following **actions**:

- suspend the execution of methods
- check the values of variables
- change the values of variables

View an example that executes back-end debugging in the Visual Studio Code external IDE below.

To execute debugging in Visual Studio Code, ensure the following **requirements** are met:

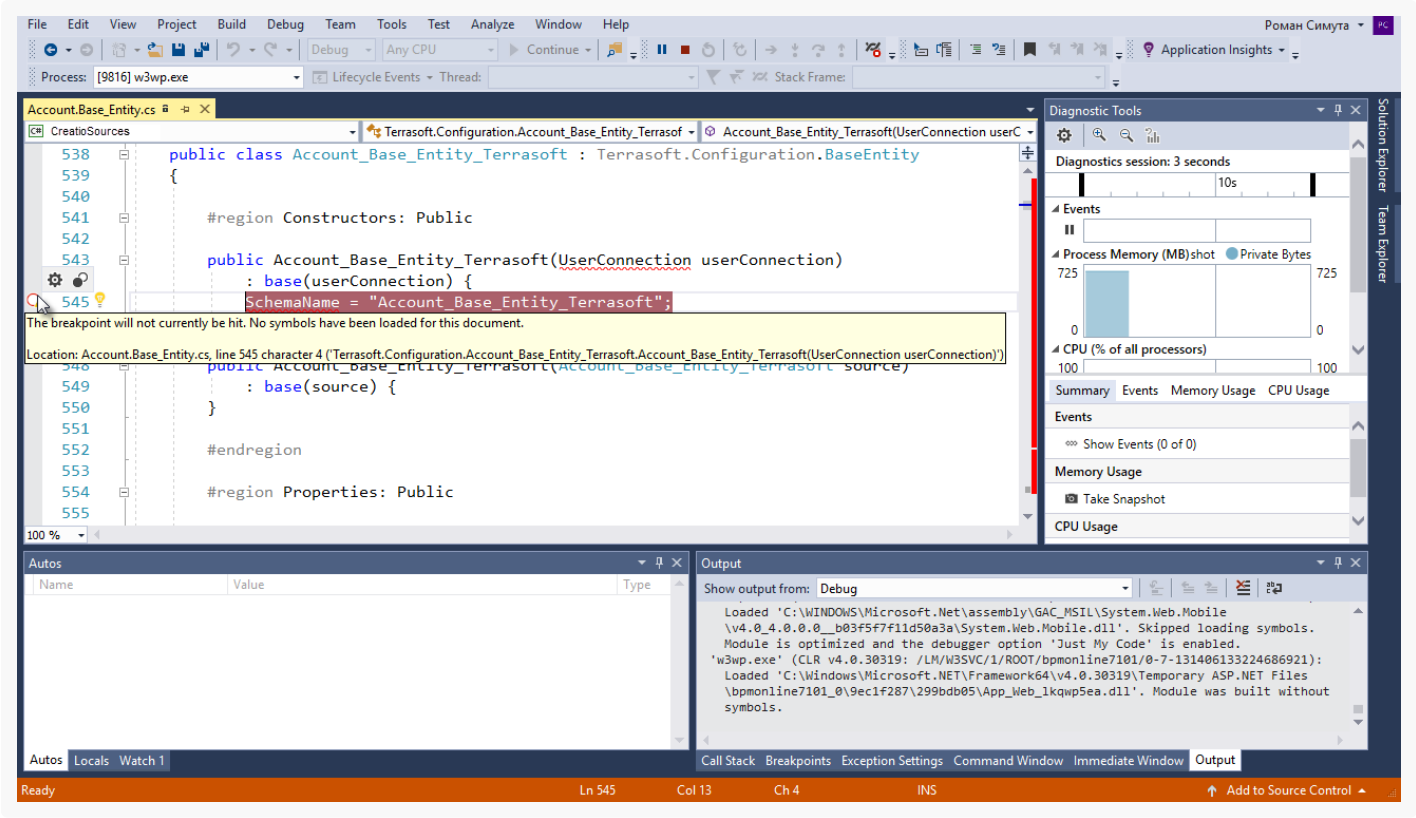
- Use Creatio on-site.
- Turn off the file system development mode.
- Select the [*Suppress JIT Optimization*] checkbox in Visual Studio Code ([*Options*] menu → [*Debugging*] item → [*General*] block). The checkbox lets you control the values of variables while debugging. Learn more about the impact of optimized and unoptimized code on debugging in the official Visual Studio documentation.

To **execute back-end debugging**:

1. Export the C#-code schemas to the local directory files.
2. Create a Visual Studio Code project for debugging.
3. Add the exported files to the Visual Studio Code project.
4. Connect the project to the IIS server workflow and execute debugging.

Solve debugging issues

Issue 1. The breakpoint is displayed as a white circle with a red border. This breakpoint does not stop the script execution. Hold the pointer over the inactive breakpoint character to view the tooltip about the issue.

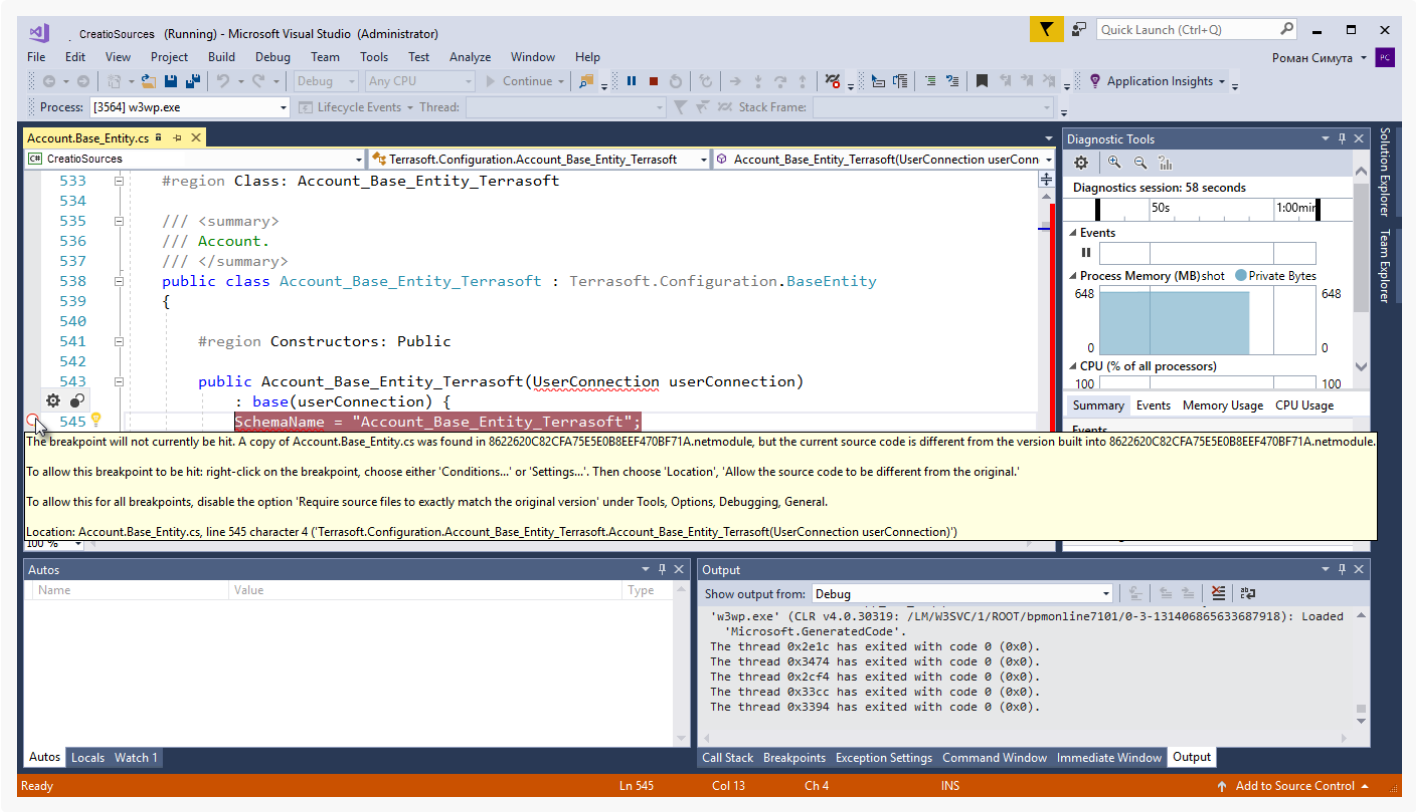


Solution:

1. Stop debugging ([*Debug*] menu → [*Stop Debugging*] item).
2. Close the file that contains the debugged source code.
3. Execute the [*Compile all*] action in the [*Configuration*] Creatio section.
4. Reconnect the project to the IIS process when compiling and reexporting the source code files.
5. Reopen the debugged source code file after the compilation finishes.

You can also recompile code without closing the file and reconnecting the project to the IIS process.

Issue 2. Message about non-uniform end-of-line characters appears after you reopen the source code file.



Solution:

1. Click [*No*] to cancel character normalization. If you click [*Yes*] to normalize the characters, the breakpoint might become inactive again.
2. Execute one of the suggested solution options from the tooltip that also specifies the cause of the issue (file version mismatch).

Debug C# code

Advanced

1. Export the C# code schemas to the local directory files

1. Modify the Creatio configuration files to debug C# code.

   a. Set the `debug` attribute of the `<compilation>` element to `true` in the `Web.config` configuration file located in the Creatio root directory.

   Web.config

   ```
   <compilation debug="true" targetFramework="4.5" />
   ```

   Save the file.

   b. Set the following values in the `Web.config` configuration file located in the `...\Terrasoft.WebApp` directory:

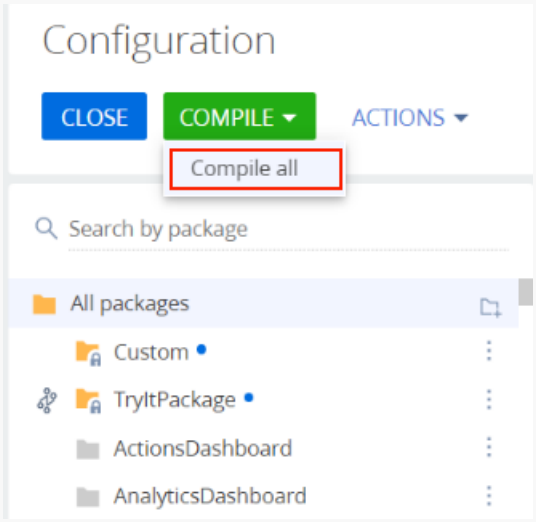
- Set `IncludeDebugInformation` to "true."
- Set `ExtractAllCompilerSources` to "true" (if you need to export all schemas while executing the [*Compile*] action in the [*Configuration*] section) or "false" (if you need to export only modified schemas, the default value).

`...\Terrasoft.WebApp\Web.config`

```
<add key="IncludeDebugInformation" value="true" />
<add key="ExtractAllCompilerSources" value="false" />
```

Save the file.

2. Execute the [*Compile all*] action in the [*Configuration*] section.



As a result of compilation, Creatio will export the files that contain the source code of configuration schemas to the `../Terrasoft.WebApp/Terrasoft.Configuration/Autogenerated/Src` directory. For example, configuration libraries, their modules, and files that contain debugging information (*.pdb files). Creatio exports the source code of schemasupon each compilation.

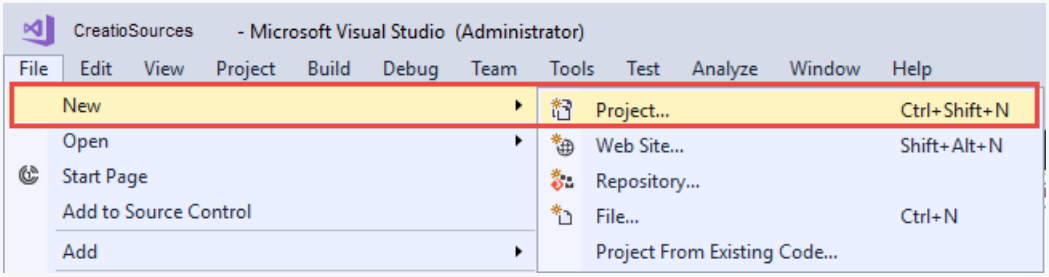
The file names of exported schemas follow this pattern: `SchemaNameInConfiguration.PackageName_SchemaType.cs`, for example, `Contact.Base_Entity.cs`, `ContractReport.Base_Report.cs`.

2. Create a Visual Studio Code project for debugging

Attention. You do not have to create a Visual Studio project to debug the source code. You can simply open the needed files in Visual Studio. If you debug files often or need to manage a large number of files at the same time, create a project streamline the workflow.

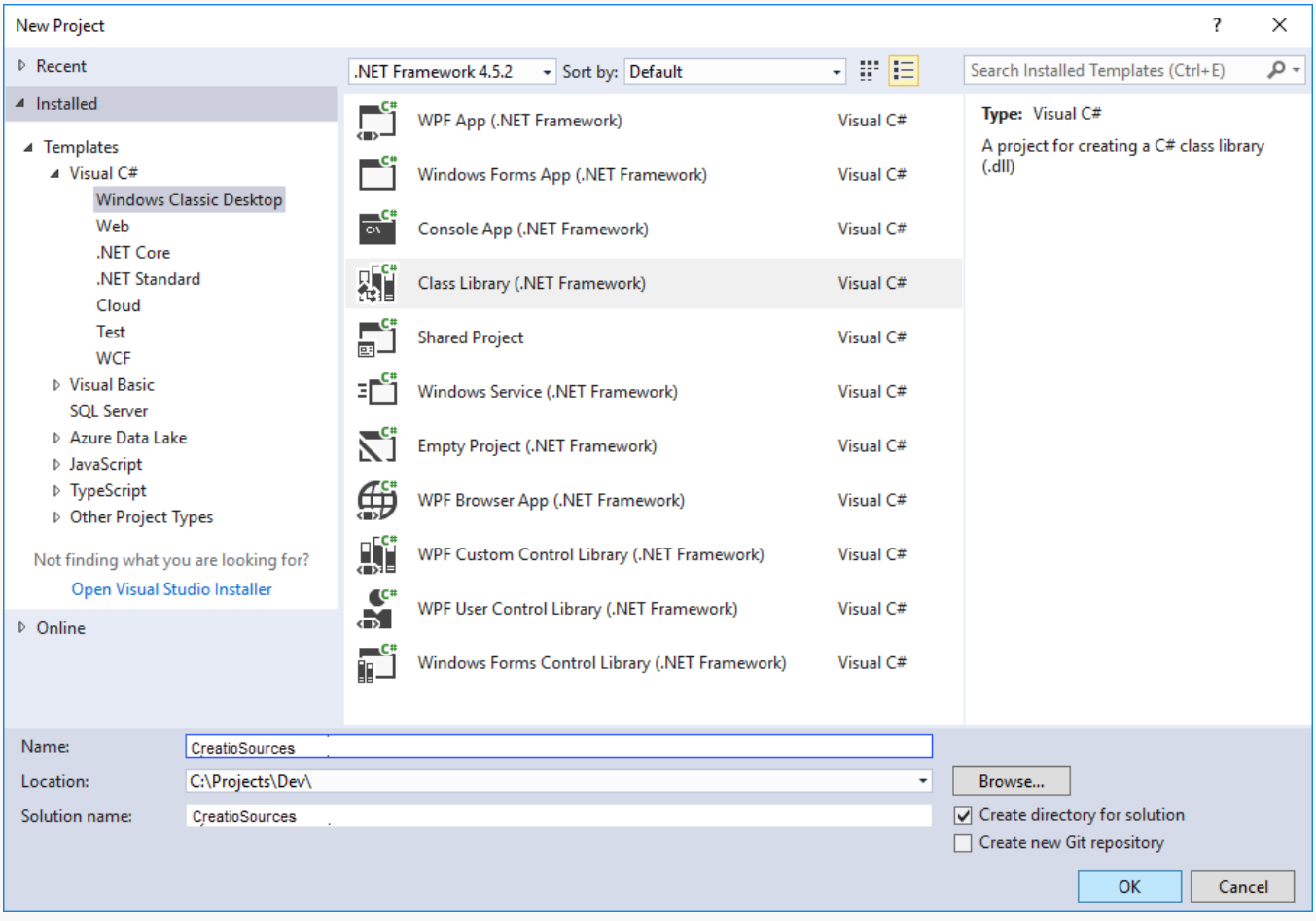
To **create a Visual Studio Code project for debugging**:

1. Click [*File*] → [*New*] → [*Project*] on the Visual Studio toolbar.



2. Fill out the **project properties**:

   - Select the "`Class Library (.NET Framework)`" project type.
   - Enter the project name.
   - Enter the project location.

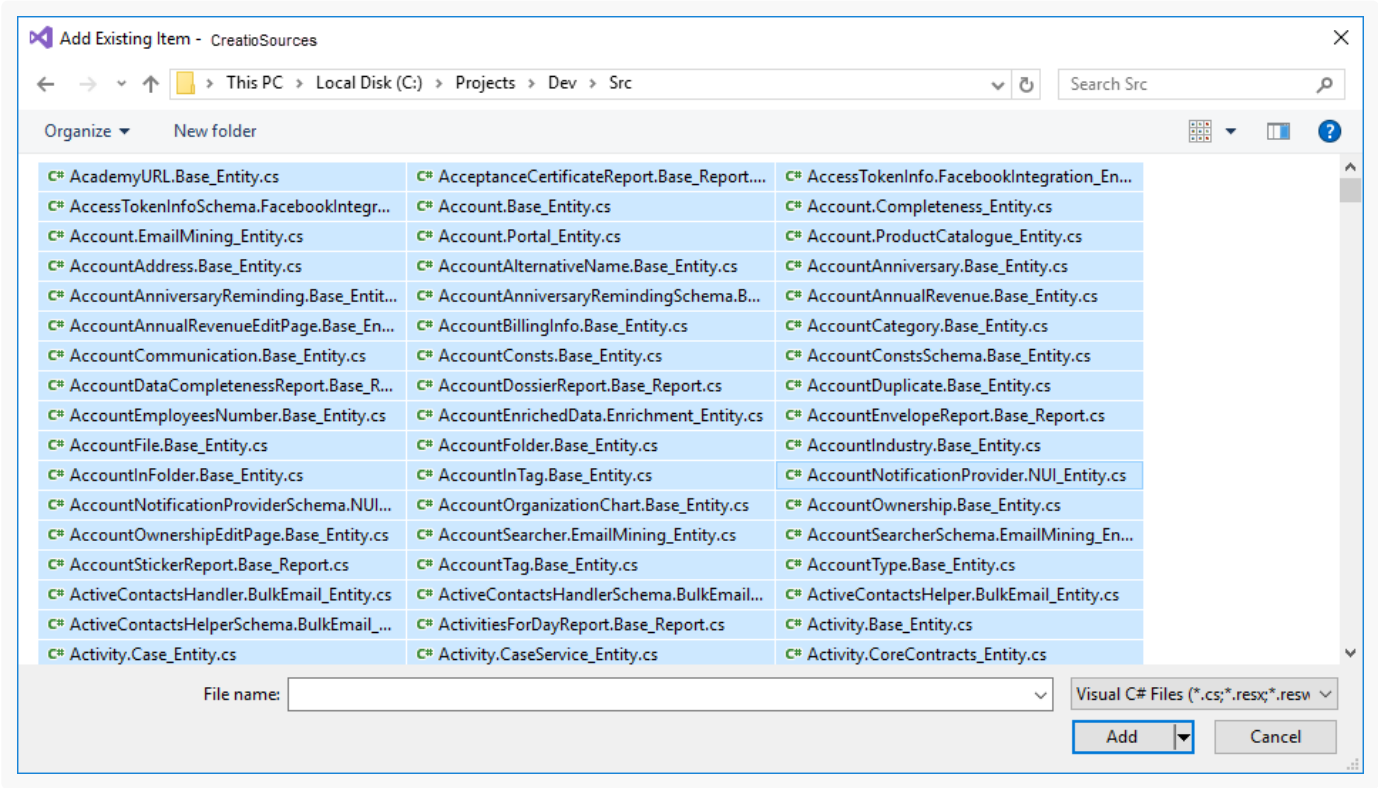


3. Delete the `Class1.cs` file from the project after creating it and save the project.

3. Add the exported files to the Visual Studio Code project

1. Click [*Add*] → [*Existing Item*] in the context menu of the project in the solution explorer.

2. Select all files in the exported files directory.

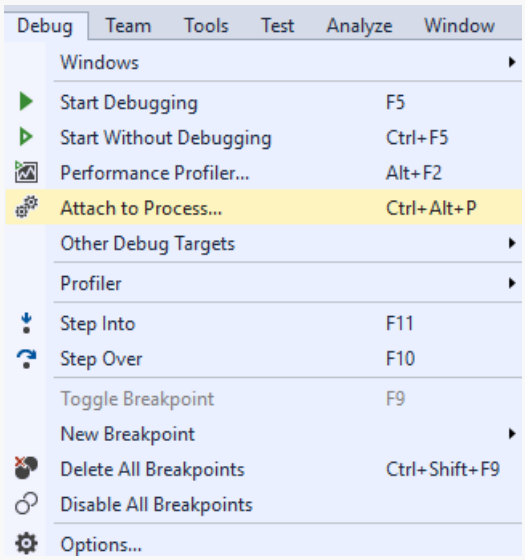


Note. You can only add files needed to debug to the Visual Studio project. In this case, the transition among methods while debugging is limited to the class methods implemented in the added project files.

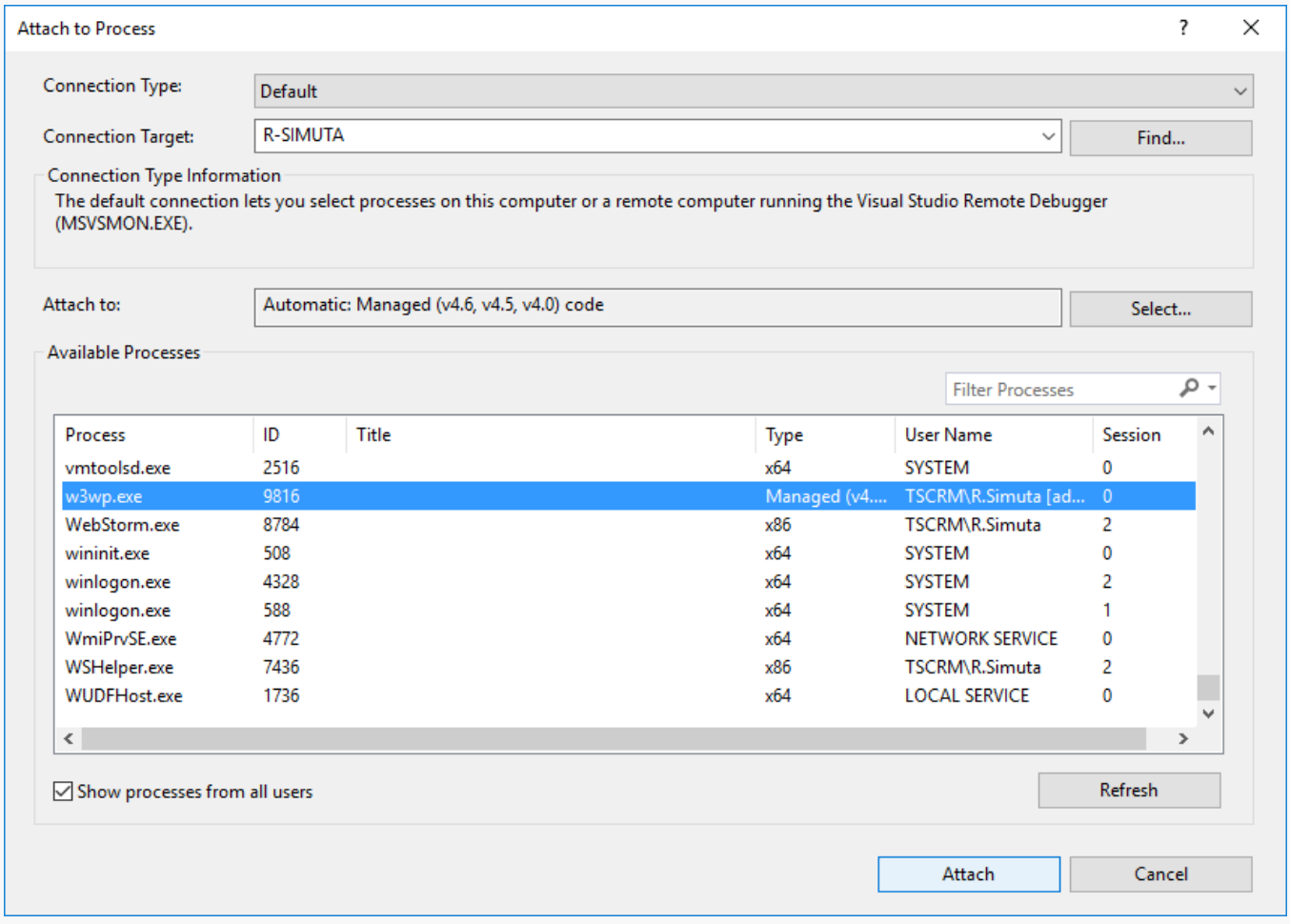
3. Save the project.

4. Connect the project to the IIS server workflow and debug code

1. Click [*Debug*] → [*Attach to process*] on the Visual Studio toolbar.



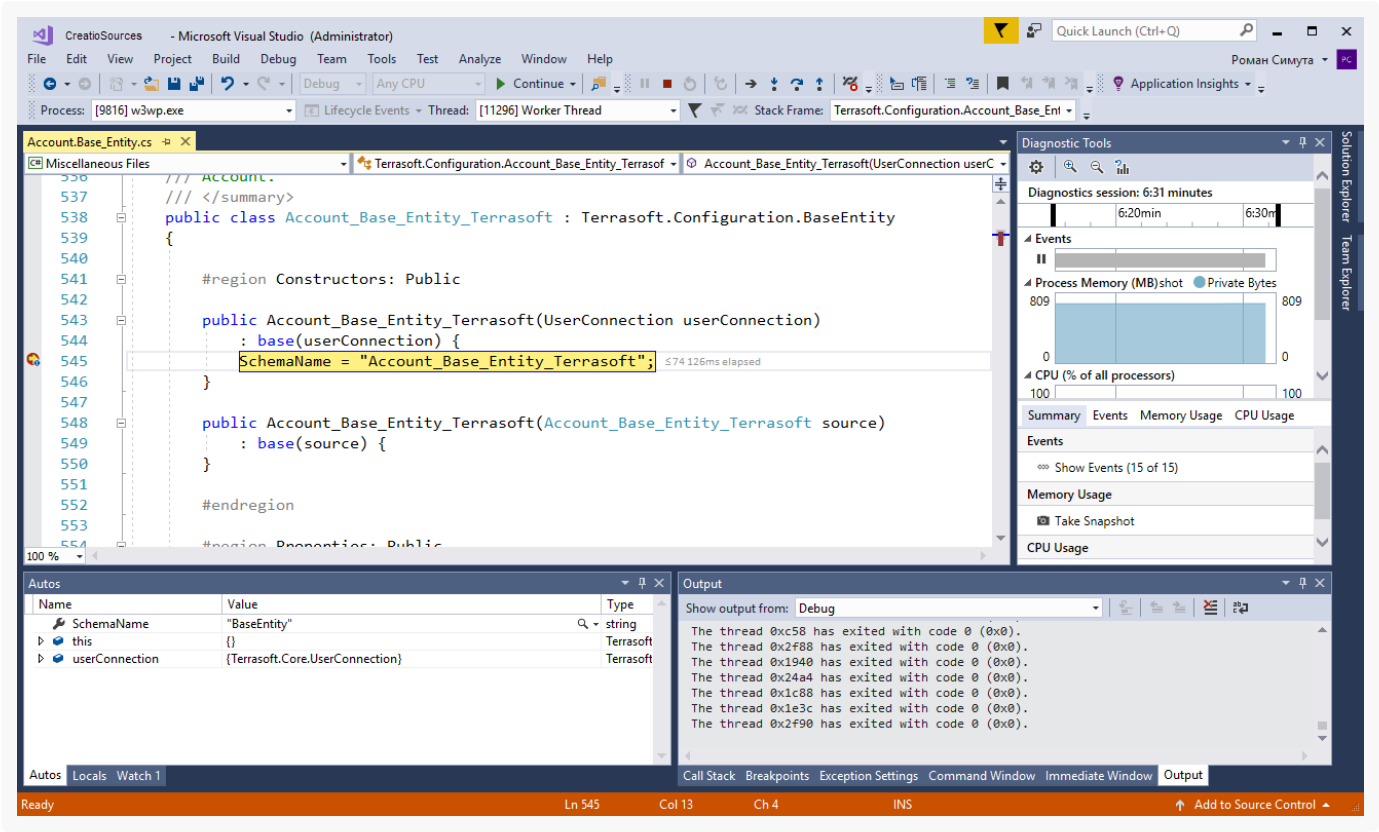
2. Select the IIS workflow where the Creatio instance pool runs from the process list.



Attention. The workflow name depends on the current IIS server configuration and might differ. The process name for the regular IIS Web Server is `w3wp.exe` and `iisexpress.exe` for IIS Express.

By default, IIS runs the working process as the account whose name matches the name of the application pool. To display processes from all users, select the [*Show processes from all users*] checkbox.

3. Open the source code file and set a breakpoint.



As soon Visual Studio Code runs the method that has a breakpoint set, the program execution is stopped. You can check the current state of the variables and trace the code after stopping.