

Chapter 4: PDSC Developer Utilities Usage

The PDSC Developer Utilities (Figure 1) is a set of tools to help you develop your .NET applications and keep your development environment clean and working as efficient as it can. This chapter gives you an overview of the various utilities and describes the installation of the tool.

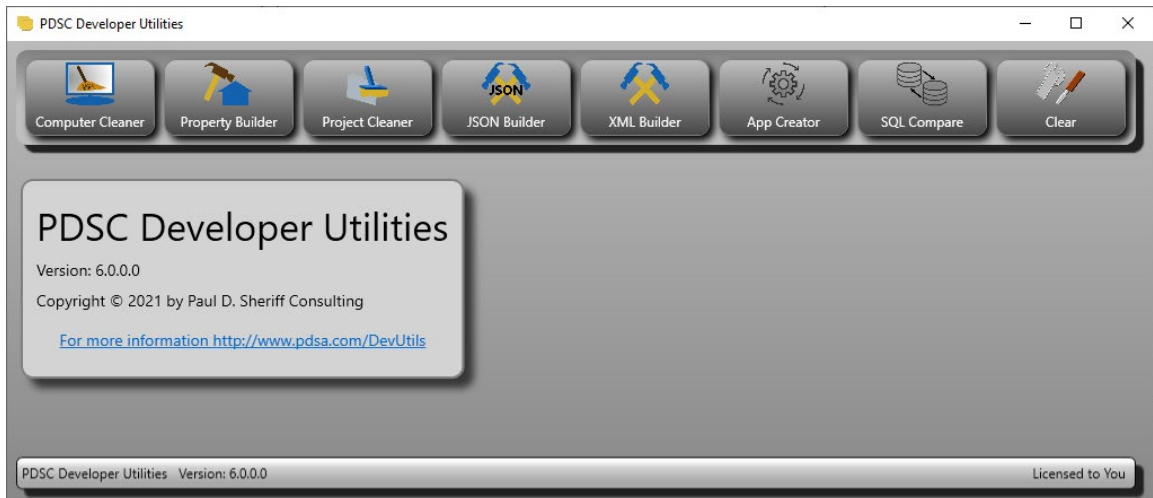


Figure 1: Screen shot of the PDSC Developer Utilities

Overview of the Developer Utilities

After installing the PDSC Developer Utilities you will have the following programs that you can run.

Utility	Description
Computer Cleaner	Visual Studio is a great development environment for creating applications quickly. However, it will leave a lot of miscellaneous files all over your hard drive. There are a few locations on your hard drive that you should be checking to see if there are left-over folders or files that you can delete. This utility will help you get rid of all of these left-over files.

Utility	Description
Property Builder	This utility allows you to generate Property statements for your C# or Visual Basic classes. There are several templates (similar to the snippets in the Visual Studio editor) that you can choose from. You can also create your own templates to generate any type of property you want.
Project Cleaner	This tool will go through a folder and all sub-folders and delete any \bin and \obj folders. It will also delete any .suo, .webinfo and .user files. You can optionally have it look in .SLN, VBProj, CSProj files and eliminate any references to source control. It will also remove any read-only attributes from the files. This utility is configurable so you can choose what folders and files you wish to delete.
JSON Builder	This utility will allow you to choose a table, view or a SELECT stored procedure and will generate a JSON file of the data in the table or view.
XML Builder	This utility will allow you to choose a table, view or a SELECT stored procedure and will generate an XML file of the data, or an XSD file of the schema of the table or view.
Application Creator	This utility copies all the files and folders from the where you installed the PDSC Framework template project to a new folder and name that you specify. It then renames the appropriate files to the new application name you specify.
SQL Compare	This utility compares two SQL Server databases to determine what objects are missing, or have been changed between them.

Table 1. List of PDSC Developer Utilities

Computer Cleaner

Visual Studio and Visual Studio Code are two great development environments for creating applications quickly. However, both leave a lot of miscellaneous files all over your hard drive. There are a few locations on your hard drive that you should check to see if there are left-over folders or files that you can delete. I have attempted to gather as much data as I can about the various versions of .NET and operating systems. Of course, your mileage may vary on the folders and files listed here. This utility attempts to find the various folders depending on which version(s) of Visual Studio/VS Code you have installed on your machine.

You will first have to click on the **Preview** button. This will then display a list of files and folders that will be deleted (Figure 2). Be sure to review this list carefully. Then you can click on the **Clean** button.

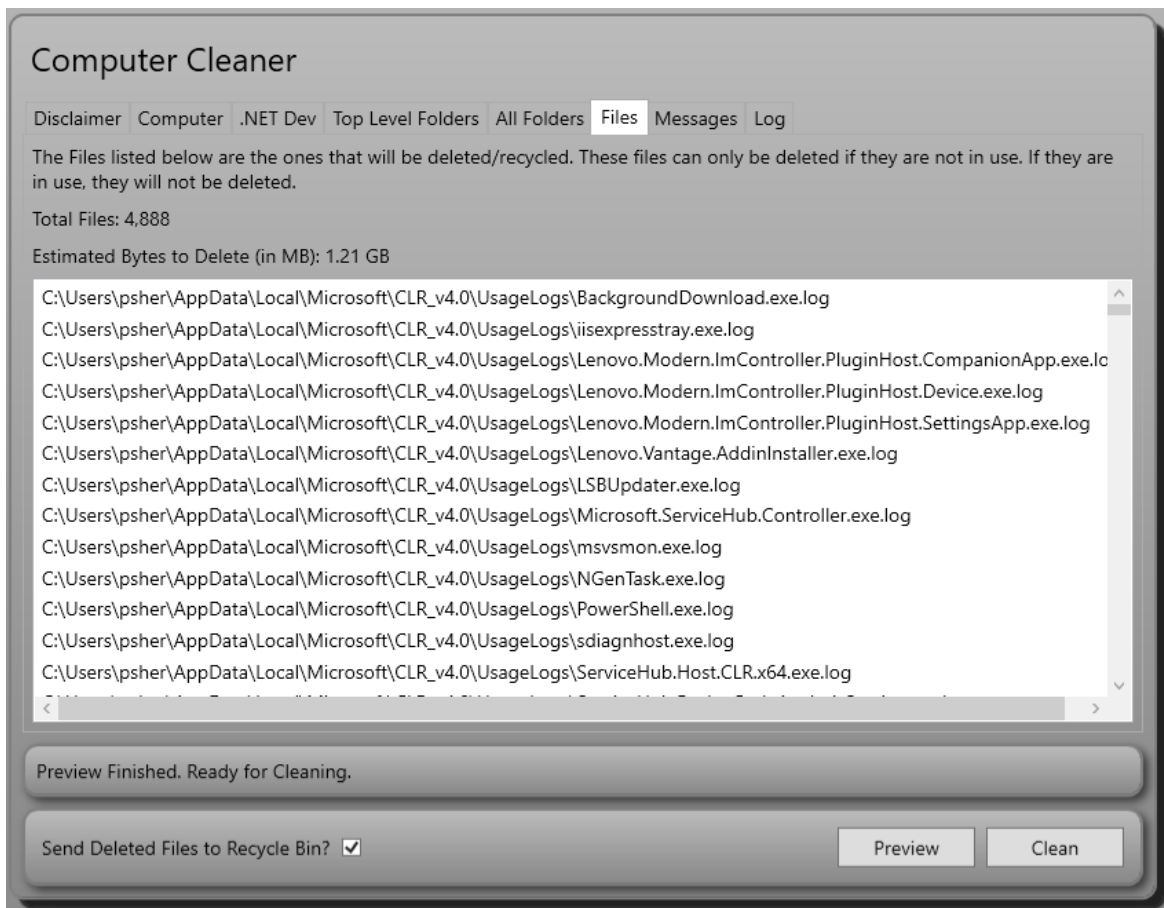


Figure 2: The Computer Cleaner utility will help you clean up your hard drive

Each version of VS.NET will create “temporary” files in different folders. The problem is that the files created are not always “temporary”. Most of these files do not get cleaned up like they should.

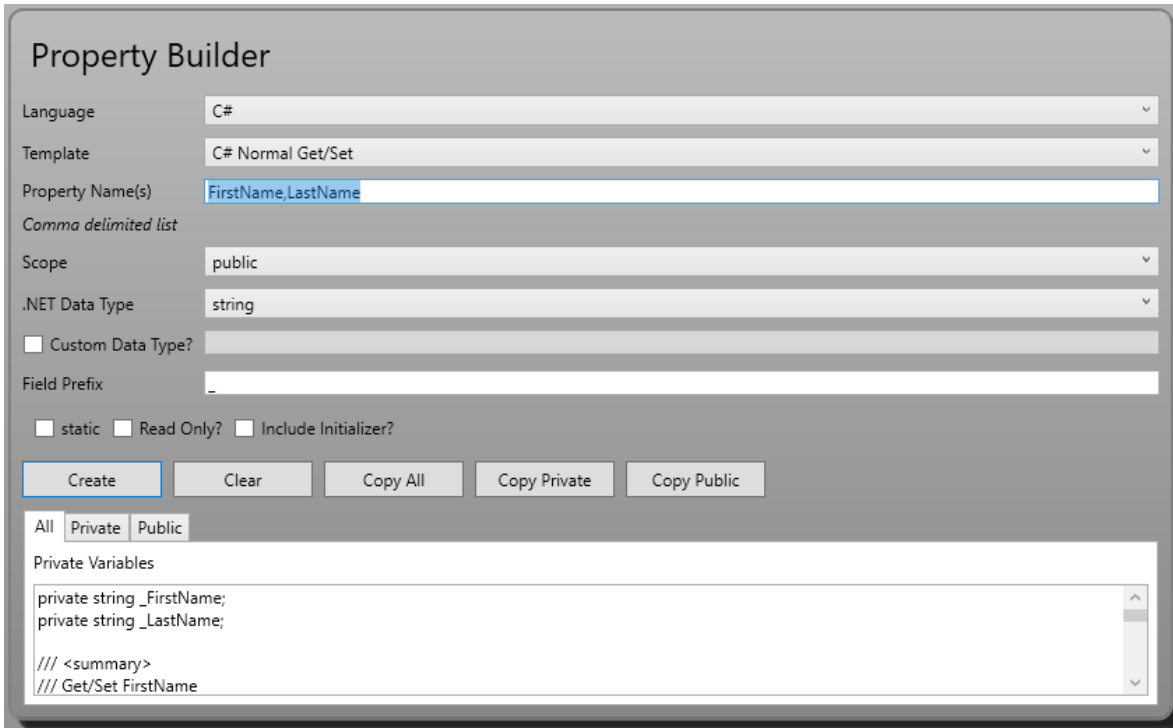
Click on the **Preview** button and once it has finished, click on the **Top Level Folders** tab to view the many folders where I have identified Visual Studio and some other utilities leave files that are no longer needed.

Property Builder

Visual Studio has code snippets that will let you create properties (Figure 3). These snippets such as **prop** and **propfull** are great for normal one-at-a-time properties.

However, when you wish to create a lot of properties, or you need other types of properties, this is where the PDSC Property Builder can help you out.

This tool will allow you to put in a comma-delimited list of property names, choose a scope and a data type and will then generate all of the appropriate private variables and public property names in C# or Visual Basic. You will have a set of different templates to choose from that will allow you to create automatic properties, properties that raise the `NotifyPropertyChanged` event, properties that are stored in session or viewstate, and others. You will also be able to add your own templates to control how you generate the properties.



The screenshot shows the 'Property Builder' application window. It has a title bar and a menu bar. The main area contains several input fields and buttons. The 'Language' dropdown is set to 'C#'. The 'Template' dropdown is set to 'C# Normal Get/Set'. The 'Property Name(s)' text box contains 'FirstName,LastName'. Below this is a label 'Comma delimited list'. The 'Scope' dropdown is set to 'public'. The '.NET Data Type' dropdown is set to 'string'. There is a checkbox for 'Custom Data Type?' which is unchecked. Below that is a 'Field Prefix' text box. There are three checkboxes: 'static', 'Read Only?', and 'Include Initializer?'. Below these are five buttons: 'Create', 'Clear', 'Copy All', 'Copy Private', and 'Copy Public'. At the bottom, there are three tabs: 'All', 'Private', and 'Public'. The 'Private' tab is selected, and the 'Private Variables' section shows the following code:

```
private string _FirstName;
private string _LastName;

/// <summary>
/// Get/Set FirstName
```

Figure 3: Property Builder helps you create properties in many different styles

Adding Your Own Templates

Under the folder where you installed the Developer Utilities you will find an \Xml folder (Figure 4). In that folder is a file named `PropertyTemplates.xml`. This contains the list of template files that you can use to generate properties. There is also a folder named \Resources where all of the .txt files that hold the snippets for each of the types of properties that you can generate.

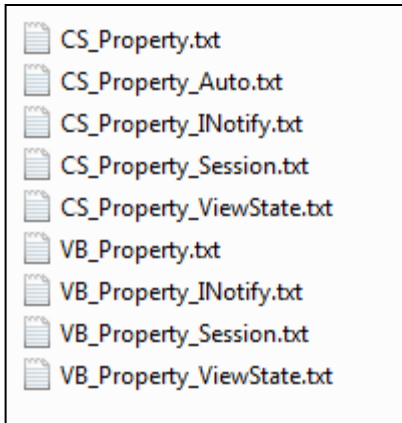


Figure 4: All the property snippets are just contained in .txt files

You will find one XML node in the PropertyTemplates.xml file for each .txt file located in the \Resources folder. To add a new template, you should just copy one of the existing .txt files and give it a new name.

As an example, let's say you wanted to add a method call from every property "setter". You could copy the CS_Property.txt and call it CS_Test.txt. Open the CS_Test.txt in Notepad. It should look something like the following:

```
<|SCOPE|><|STATIC|> <|DATATYPE|> <|PUBLICNAME|>
{
    get { return <|PRIVATENAME|>; }
    <READONLY>set { <|PRIVATENAME|> = value; }</READONLY>
}
```

You can now expand the "set" portion and add your own method call by changing this code to look something like the following:

```
<|SCOPE|><|STATIC|> <|DATATYPE|> <|PUBLICNAME|>
{
    get { return <|PRIVATENAME|>; }
    <READONLY>set
    {
        <|PRIVATENAME|> = value;
        MyMethod("<|PUBLICNAME|>") ;
    }</READONLY>
}
```

In the above template you broke up the "set" onto separate lines and then added a call to a method called MyMethod and you pass in as a string the public property name.

Next you need to add a new node to the PropertyTemplate.xml file. Copy an existing node and paste it immediately after one of the descendant nodes. Modify

the Description element to something you will recognize and the FileName element to the name of your new .txt file.

```
<PropertyTemplate>
  <Description>C# My Method Get/Set</Description>
  <FileName>CS_Test.txt</FileName>
  <Language>CSharp</Language>
  <GenPrivateVars>True</GenPrivateVars>
  <GenPublic>True</GenPublic>
</PropertyTemplate>
```

Now, restart the PDSC Developer Utilities and your new template will now appear.

Property Builder Tokens

In the .txt files that represent the code to generate for the properties you find a set of tokens in the format <|TOKEN_NAME|>. There are just a few tokens that are recognized by our property builder. Table 2 contains the list of the tokens that you can use in your templates.

Token	Description
CONVERSIONMETHOD	Based on the Data Type you choose for the variable, you can wrap the private or public property into a Convert.< CONVERSIONMETHOD >. For example, if you are generating a string property and you store it into a session variable, you will want to convert it to a string when you bring it back from the session variable. You would then write code like the following: <i>get { return Convert.< CONVERSIONMETHOD ></i> <i>(HttpContext.Current.Session["< PUBLICNAME >"]); }</i>
DATATYPE	The data type you choose for this property. This type comes from the DataTypes??.xml file.
PRIVATENAME	The private variable name for this property.
PUBLICNAME	The public property name.
< READONLY ></READONLY >	Wrap these tokens around your "set" property to remove the "set" if you choose "read only" on the interface.
SCOPE	The scope you choose in the user interface for your property. These scopes come from the Scope??.xml files.
SHARED	Will generate "Shared" or "static" on your property if you choose this option on the interface.

Table 2. List of Tokens in Property Builder

Other XML files for the Property Builder

There are a few other XML files that the property builder uses to assist with the generation. These are located in the \Xml folder under the location where you installed the Developer Utilities.

Xml File name	Description
DataTypesCS	A list of data types for C#.
DataTypesVB	A list of data types for Visual Basic.
DotNetLanguages	The list of .NET languages.
ScopeCS	A list of scopes for C#.
ScopeVB	A list of scopes for Visual Basic.

Table 3. List of XML files for the Property Builder

Project Cleaner

When you create a project in Visual Studio, compile in different modes, and add the project to source control; a set of files and folders are created under your original project folder. Sometimes you might want to delete all these folders and files. For example, if you wish to give your project to someone else that is not on your network, does not have access to your source control, or you just want to clean up the folders under your project prior to adding your project for the first time to source control, you will want to eliminate all these extra files and folders using the Project Cleaner shown in Figure 5.

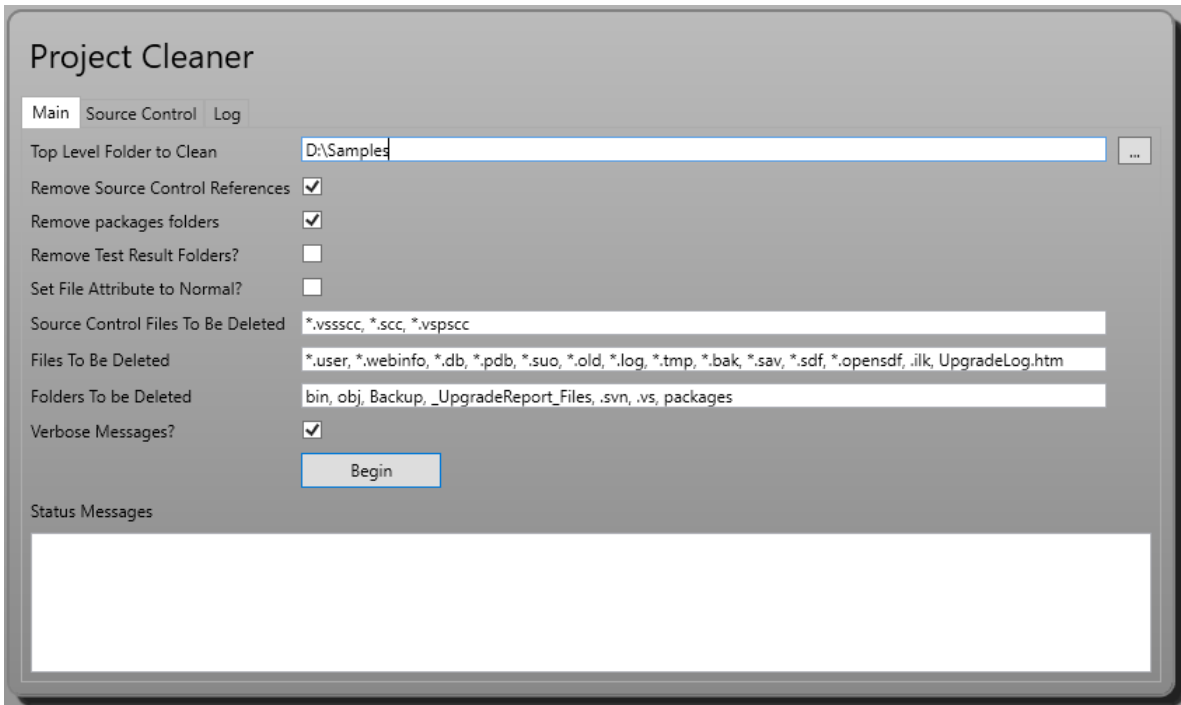


Figure 5: Clean up files using the Project Cleaner utility

You will first enter a top-level folder and the Project Cleaner utility will iterate through all the lower level folders and files underneath this folder and perform a series of operations. The operations performed will depend on what you fill in on the form in the following fields:

Field	Description
Top Level Folder to Clean	Enter the top level folder you wish to iterate through
Remove Source Control References	Check this is you wish this utility to open your .SLN and any .csproj or .vbproj files and remove the source control tags from these files.
Remove packages folder	Remove the "packages" folder.
Remove Test Result folders	Remove any test result folders.
Source Files to be Deleted	A list of source control file extensions that should be removed. The files with these extensions will only be deleted if the Remove Source Control References is checked.
Files to be Deleted	A list of file extensions that should be removed.
Folders to be Deleted	A list of folder names that should be deleted.
Verbose Messages?	Display verbose messages while cleaning. NOTE: The utility will run much faster with this unchecked.

Table 4: Fields to fill in for cleaning projects.

In addition to the above items, this utility will also remove read-only attributes from all files.

NOTE: This utility only goes thru the folder and sub-folders specified in the **Top Level Folder** field. If the solution in the top-level folder points to another project in another folder structure, that other project will NOT have any of its attributes reset, or its source control references removed.

JSON Builder

JSON files are very handy for a lot of things. If you have data in a database you might want to generate some JSON files from that data. The PDSC JSON Builder utility will build a JSON file from any table or view in your SQL Server database.

Step 1: Connection

To start the JSON generation process you first need to select the data provider you wish to use as shown in Figure 6. You then put in the appropriate connection string for that provider that will connect you to your database. Select a valid SQL Server connection string. After entering the connection string, click on the Test Connection button to ensure that you can reach the database.

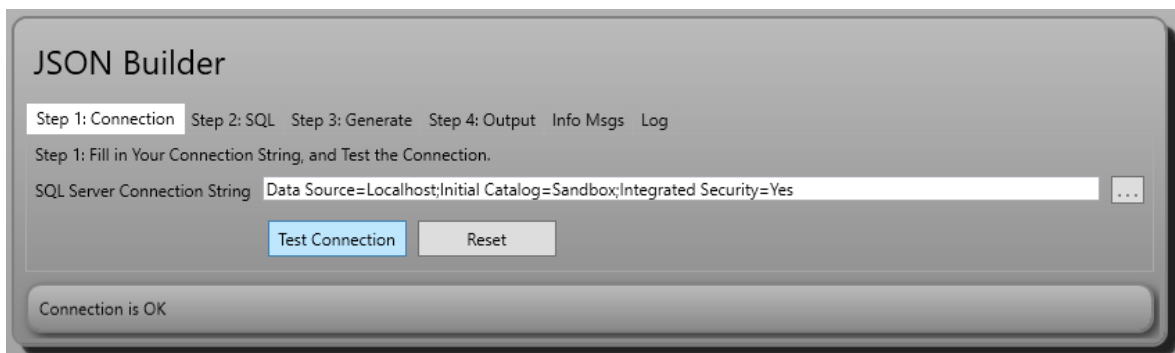
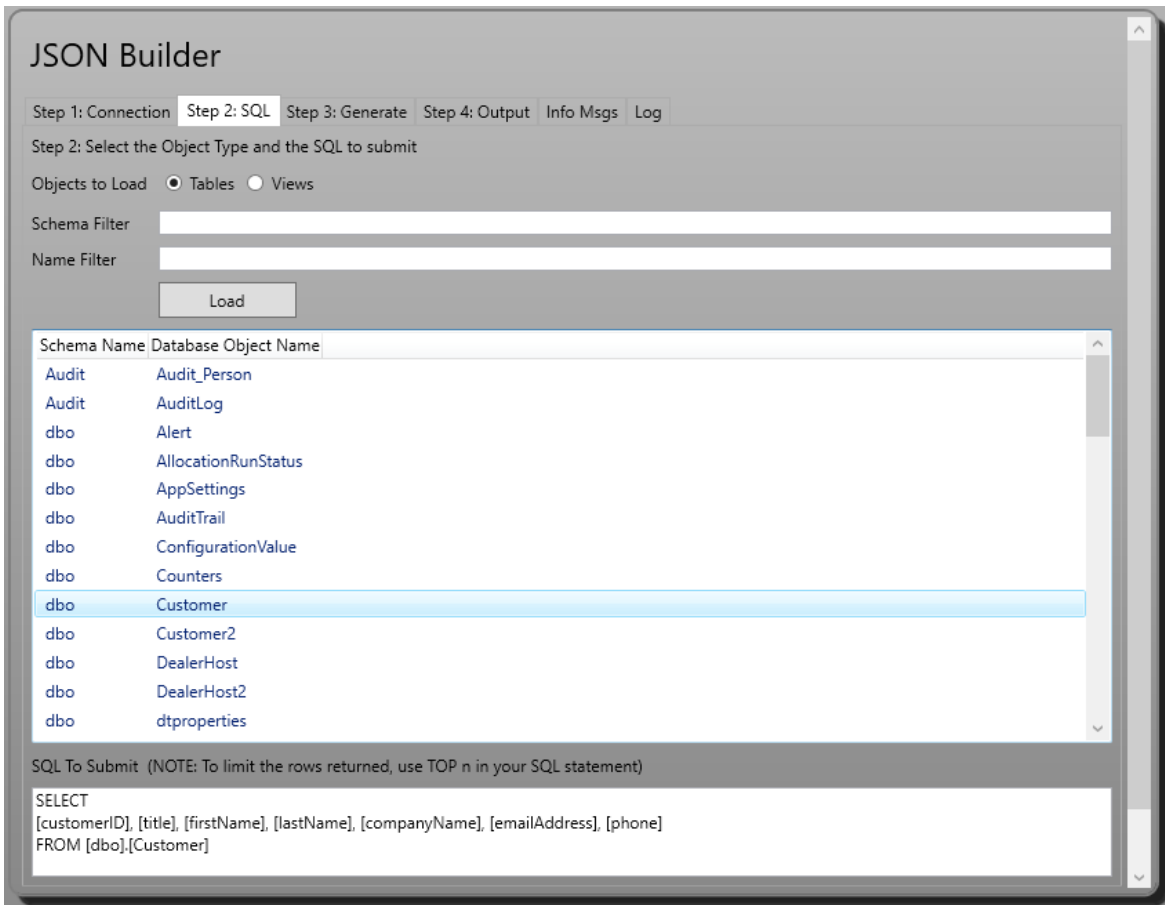


Figure 6: Step 1: JSON Builder Connection Tab

Step 2: SQL

Click on the **Step 2: SQL** tab (Figure 7) to select a table or view to generate JSON from. First choose whether you wish to load Tables or Views by selecting the appropriate radio button. If you have a large collection of objects in your database, you may wish to fill in a Schema name (or partial schema name), and/or an object name (or partial object name) prior to clicking on the Load button.



The screenshot shows the 'JSON Builder' application window. At the top, there are tabs for 'Step 1: Connection', 'Step 2: SQL' (which is active), 'Step 3: Generate', 'Step 4: Output', 'Info Msgs', and 'Log'. Below the tabs, the instruction 'Step 2: Select the Object Type and the SQL to submit' is displayed. Underneath, there are radio buttons for 'Objects to Load' with 'Tables' selected and 'Views' unselected. There are also input fields for 'Schema Filter' and 'Name Filter', followed by a 'Load' button. A table lists database objects with columns 'Schema Name' and 'Database Object Name'. The 'Customer' table is highlighted. Below the table, a text box contains the generated SQL query: 'SELECT [customerID], [title], [firstName], [lastName], [companyName], [emailAddress], [phone] FROM [dbo].[Customer]'.

Schema Name	Database Object Name
Audit	Audit_Person
Audit	AuditLog
dbo	Alert
dbo	AllocationRunStatus
dbo	AppSettings
dbo	AuditTrail
dbo	ConfigurationValue
dbo	Counters
dbo	Customer
dbo	Customer2
dbo	DealerHost
dbo	DealerHost2
dbo	dtproperties

SQL To Submit (NOTE: To limit the rows returned, use TOP n in your SQL statement)

```
SELECT
[customerID], [title], [firstName], [lastName], [companyName], [emailAddress], [phone]
FROM [dbo].[Customer]
```

Figure 7: Step 2: JSON Builder SQL Tab

After clicking on the Load button, you will be presented with a list of database objects that match your specific filter. Click on one of the objects in the list and the appropriate SQL statement will be generated in the text box below the object list. You can modify this SQL prior to moving to step 3 if you wish to generate different names for your element or attribute names.

Step 3: Generate

Click on **Step 3: Generate** (Figure 8) to fill in information on how you wish to generate the JSON file. You can specify the name of the file and the folder for the JSON file.

A ".json" file extension will automatically be added to the file name. You will be prompted to overwrite this file if you check the **Prompt to Overwrite?** check box.

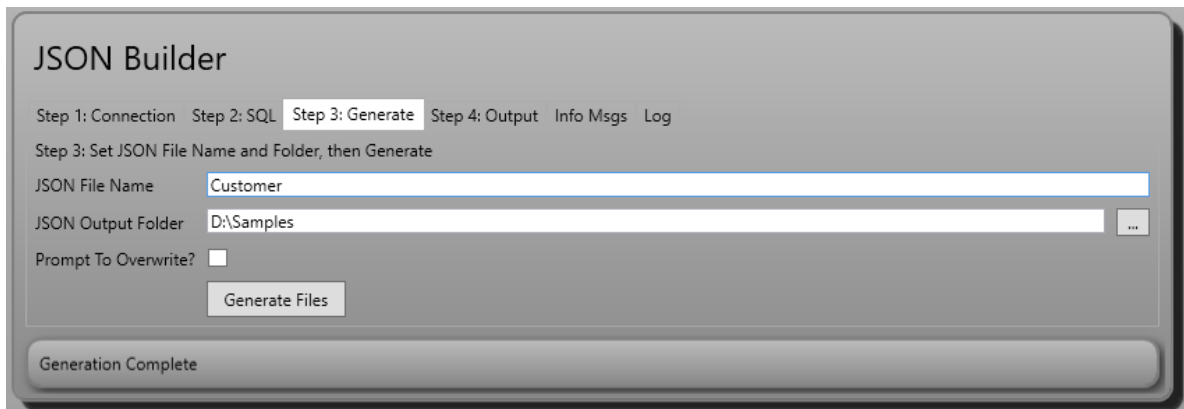


Figure 8: Step 3: JSON Builder Generate Tab

Click the **Generate Files** button to start the generation process.

Step 4: Output

After you click on the **Generate Files** (Figure 9) button, you are presented with the screen shown in Figure 9. This screen tells you how many rows were generated, where the JSON file is located.

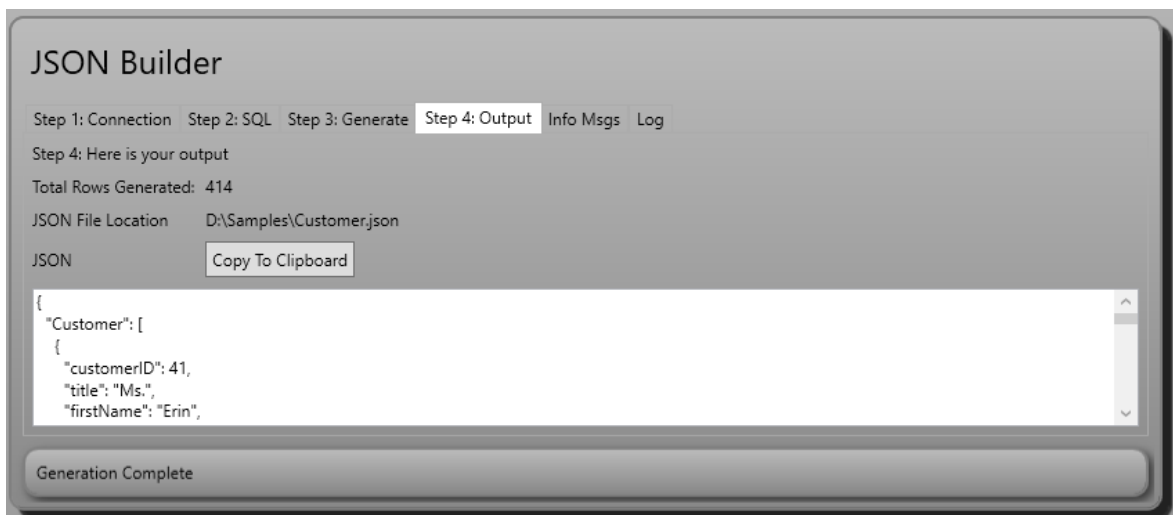


Figure 9: Step 4 JSON Builder Output tab

XML Builder

XML files are very handy for a lot of things. If you have data in a database you might want to generate some XML files from that data. The PDSC XML Builder utility will build XML and XSD files from any table or view in your SQL Server or Oracle database.

Step 1: Connection

To start the XML generation process you first need to select the data provider you wish to use as shown in Figure 10. You then put in the appropriate connection string for that provider that will connect you to your database. You may use any valid SQL Server or Oracle connection string. After entering the connection string, click on the Test Connection button to ensure that you can reach the database.

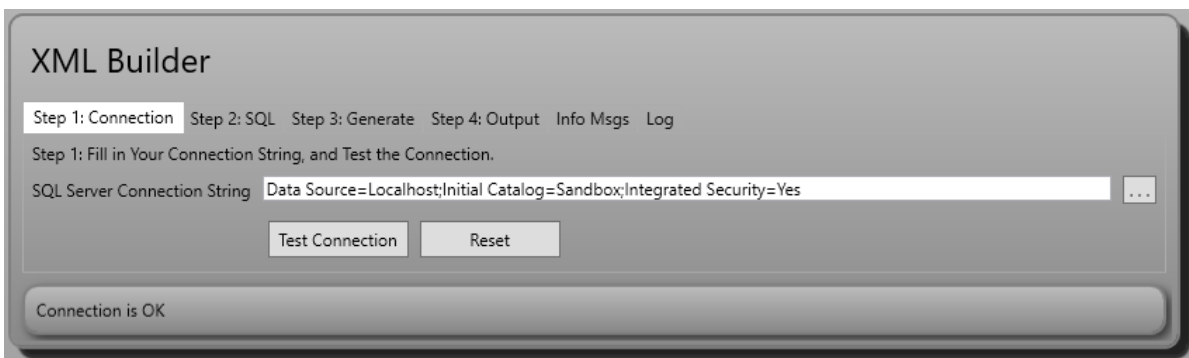


Figure 10: Step 1: XML Builder Connection Tab

Step 2: SQL

Click on the **Step 2: SQL** (Figure 11) tab to select a table or view to generate XML from. First choose whether you wish to load Tables or Views by selecting the appropriate radio button. If you have a large collection of objects in your database, you may wish to fill in a Schema name (or partial schema name), and/or an object name (or partial object name) prior to clicking on the Load button.

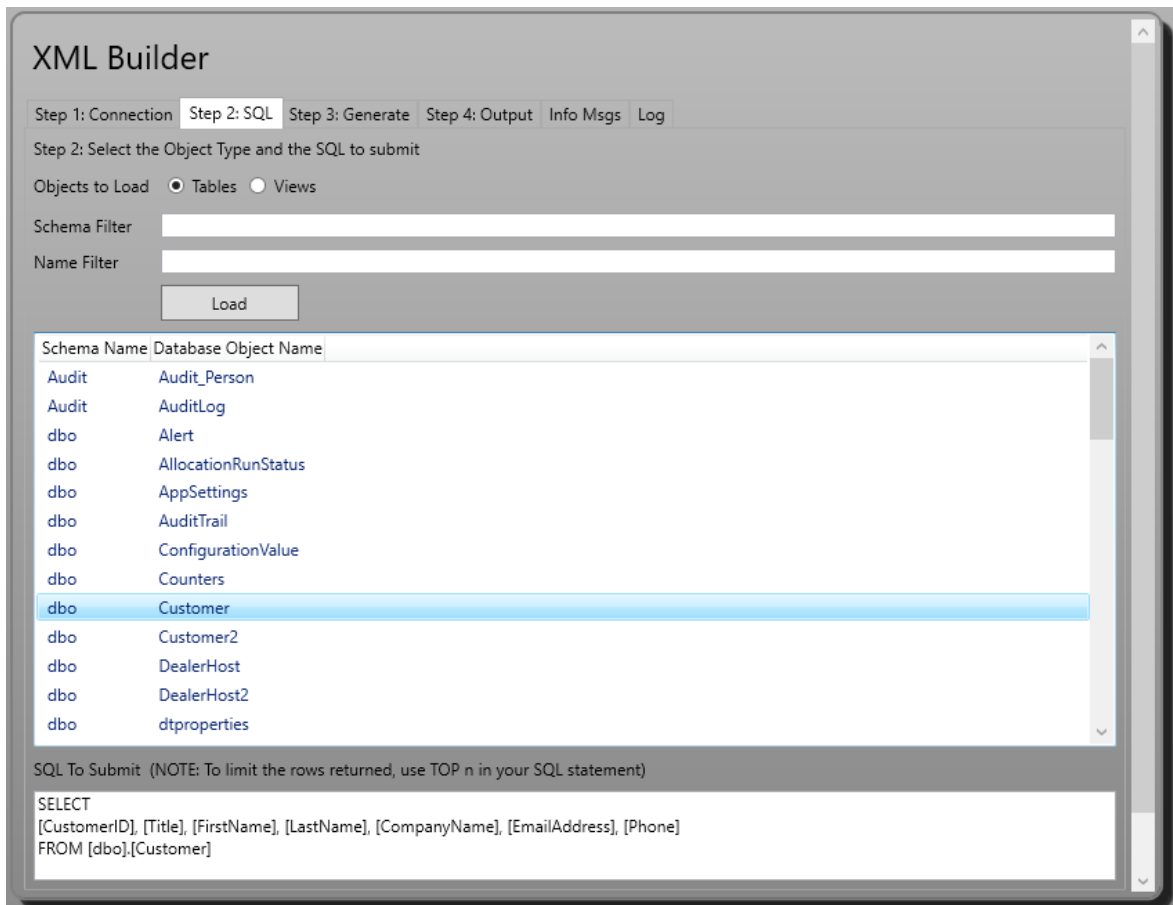


Figure 11: Step 2: XML Builder SQL Tab

After clicking on the Load button, you will be presented with a list of database objects that match your specific filter. Click on one of the objects in the list and the appropriate SQL statement will be generated in the text box below the object list. You can modify this SQL prior to moving to step 3 if you wish to generate different names for your element or attribute names.

Step 3: Generate

Click on **Step 3: Generate** (Figure 12) to fill in information on how you wish to generate the XML file. You can specify your top level element name, and for each row the XML node name to use. You then specify the folder for the XML file and, optionally, the XSD file.

Check the **Generate XML?** to generate an XML file and check the **Generate XSD?** to generate an XSD file for the query you will be submitting. The file name generated will be the same as the XML Top Level Element name. You will be prompted to overwrite this file if you check the **Prompt To Overwrite?** check box. The last option you can specify is whether or not you want element or attribute-based XML to be generated.

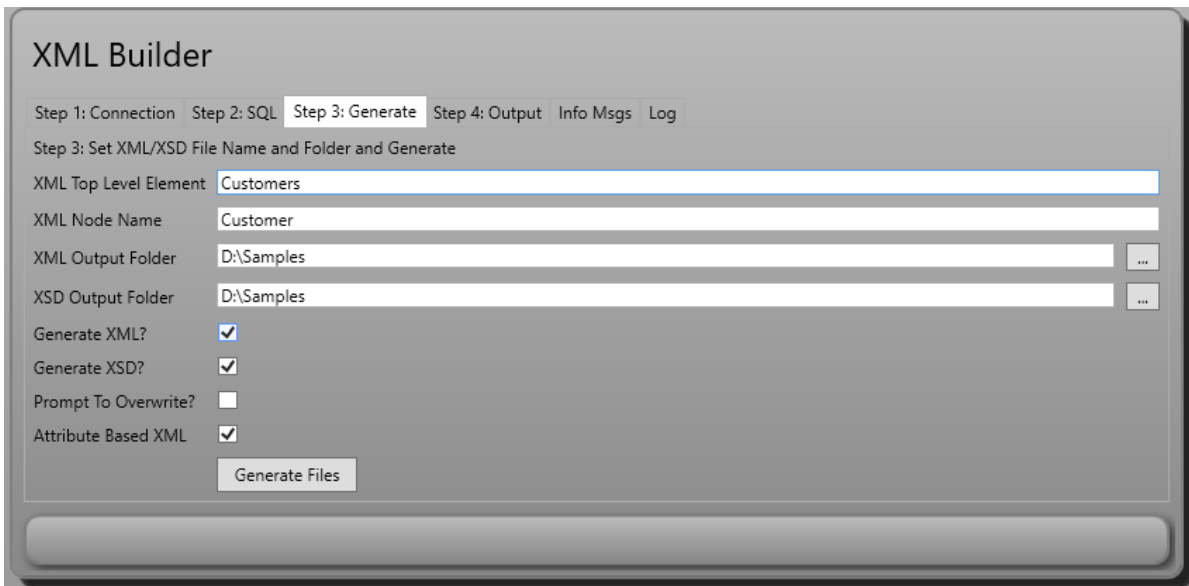


Figure 12: Step 3: XML Builder Generate Tab

Click the **Generate Files** button to start the generation process.

Step 4: Output

After you click on the **Generate Files** button, you will be presented with the screen shown in Figure 13. This screen tells you how many rows were generated, where the files are located and allows you to copy the XML and/or the XSD information to the clipboard.

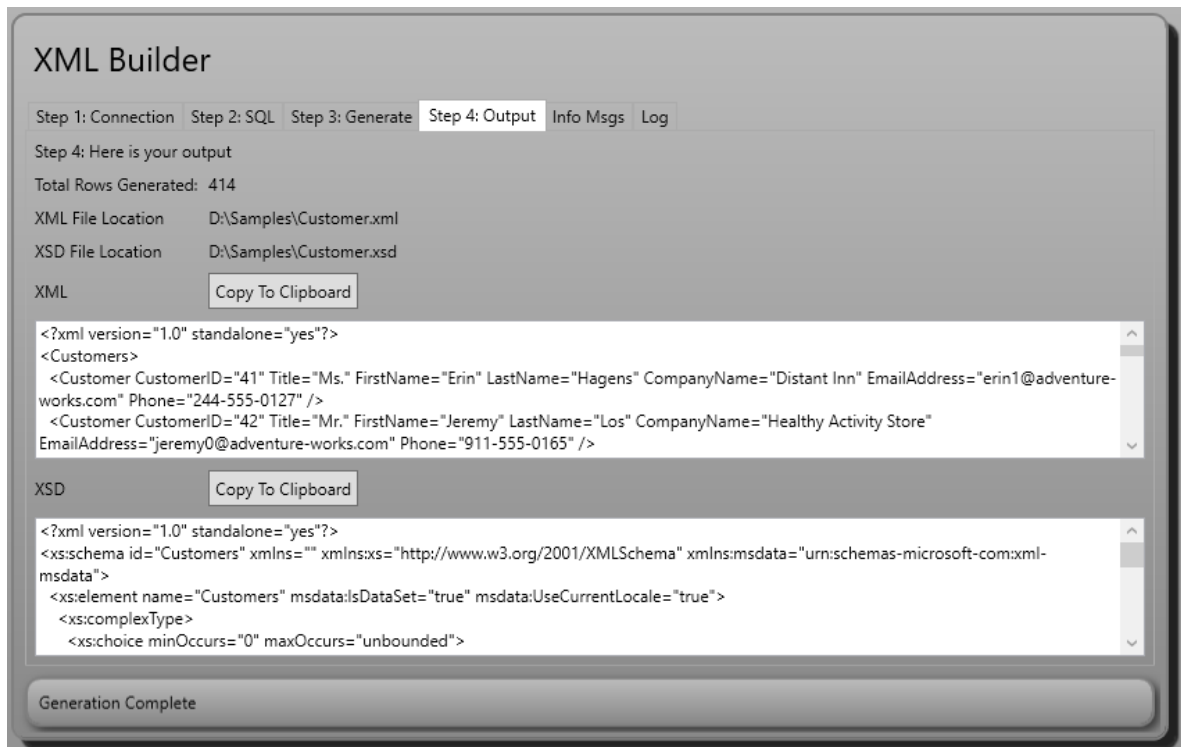


Figure 13: Step 4: XML Builder: Output tab

Application Creator

Locate the PDSC-AppCreator folder and run the **PDSCFramework-AppCreator.exe** file to see a screen that looks like Figure 14. Modify the "New Application Location" to a valid hard drive, and folder, on your system and click the **Create** button. If you get an error that one of the paths is incorrect, fix it up, then click the Create button again. In just a few seconds you should receive a message that the process is complete, and you will see a bunch of messages as seen at the bottom of the screen.

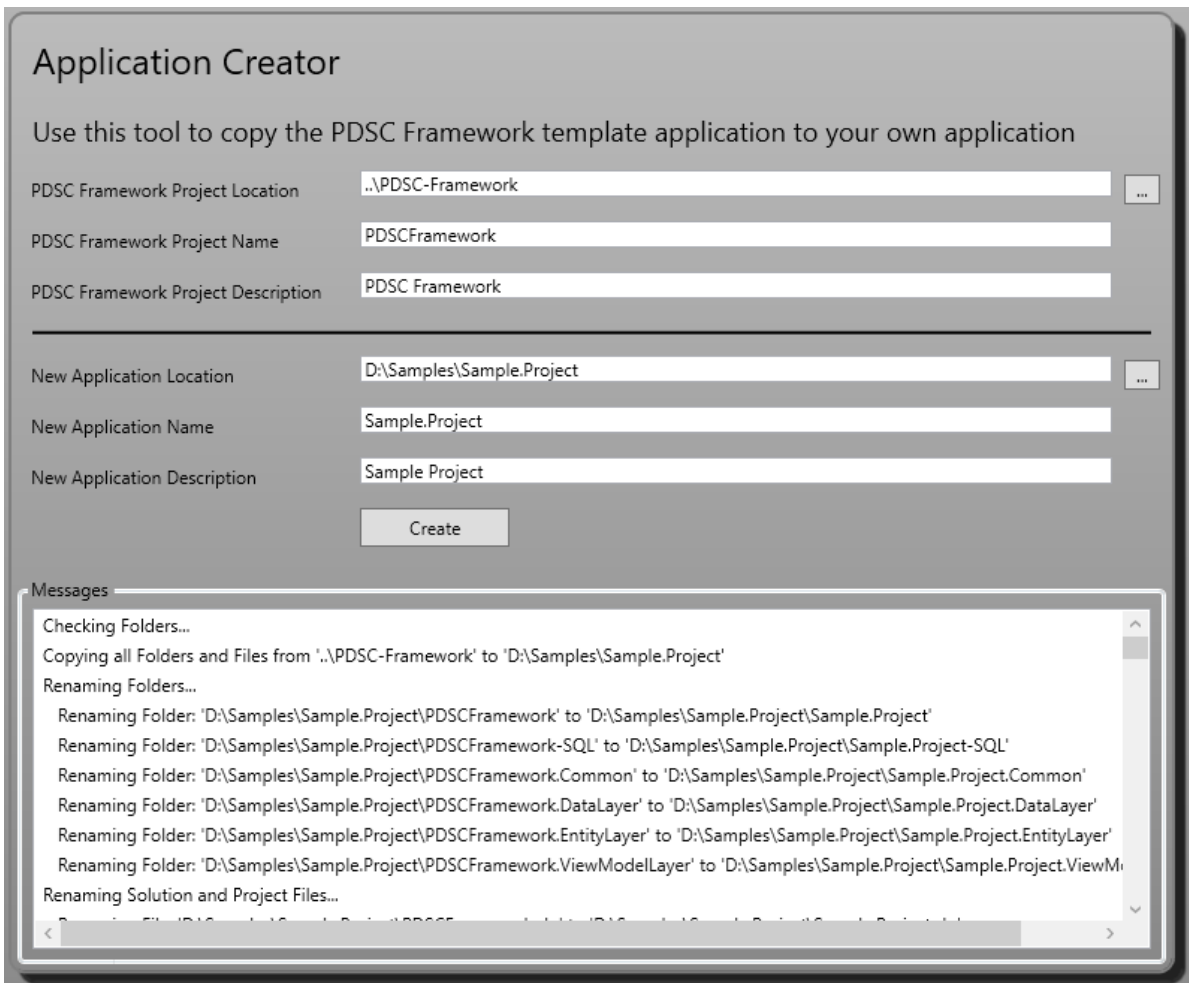


Figure 14: The PDSC Application Creator helps you build a new MVC project.

You can now go to the "New Application Location" folder and view the results of running this tool as shown in Figure 15.

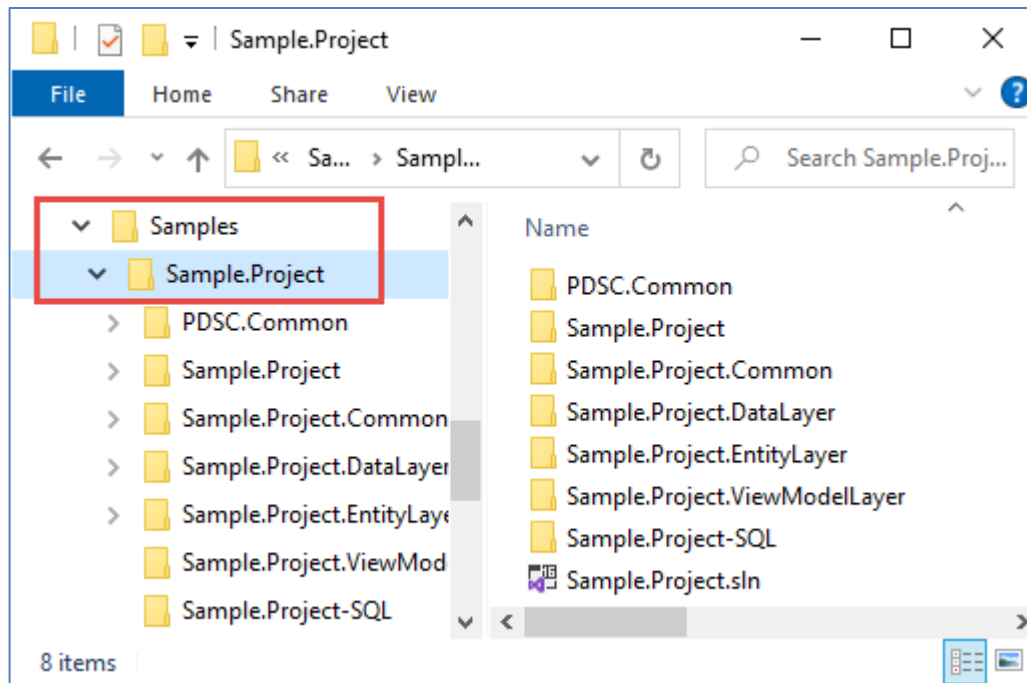


Figure 15: In the Application Location folder you find a folder structure like that of the PDSC Framework template.

Create a Sample Database

Open the SQL Server Management Studio and create a new database named **Sample.Project**. Open the "Sample.Project-SQL" folder and locate the **Sample.Project.sql** file (Figure 16) and load that file into SQL Server Management Studio. Run this script to create the database objects. Open the **Sample.Project-Data.sql** file in SQL Server Management Studio and run this script to add data to the database objects.

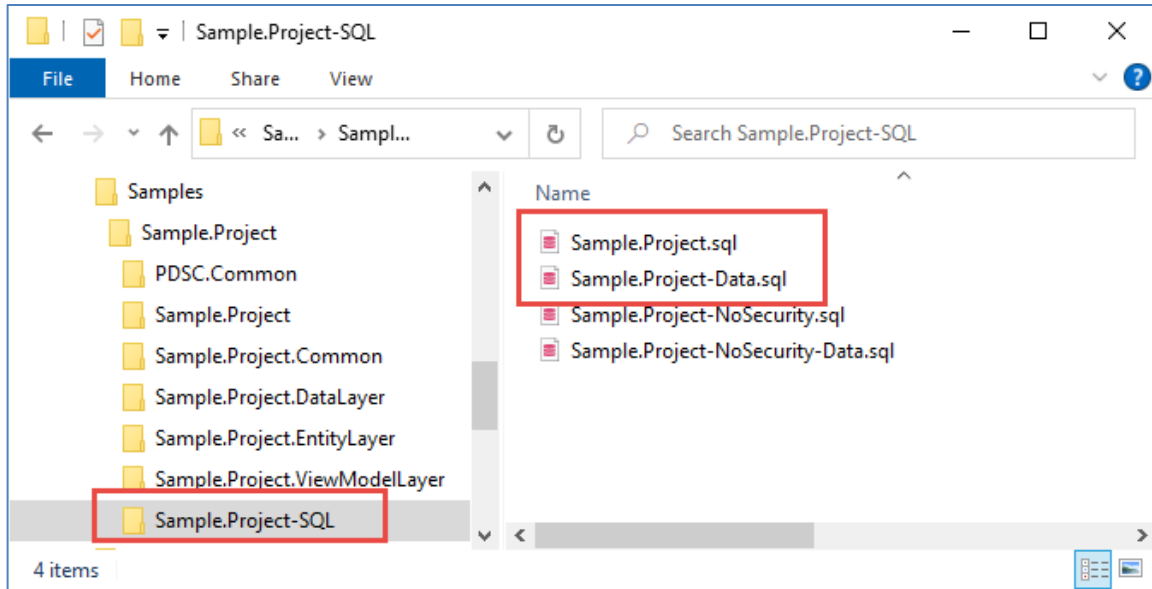


Figure 16: Locate the .SQL files to install in your new application folder.

Run the Sample Project

Go to the **\Sample.Project** folder and double-click on the **Sample.Project.sln** file. Run this project. When you get to the home page, click on the Login link and login with 'bill@microsoft.com' and the password 'P@ssw0rd'. If you have done everything correctly, you should now be logged into your sample application.

Next Steps

Please read the chapter on the **Haystack Code Generator** for information on how to generate add/edit/delete pages for your new project.

SQL Compare

When you run the SQL Compare utility, you put in two different connections string that point to similar databases. For example, maybe you need to find out what you changed in your QA database compared to your Production database. Click the Compare button (shown in Figure 17) and a complete list of missing or changed objects will appear in the messages tabs at the bottom of the screen.

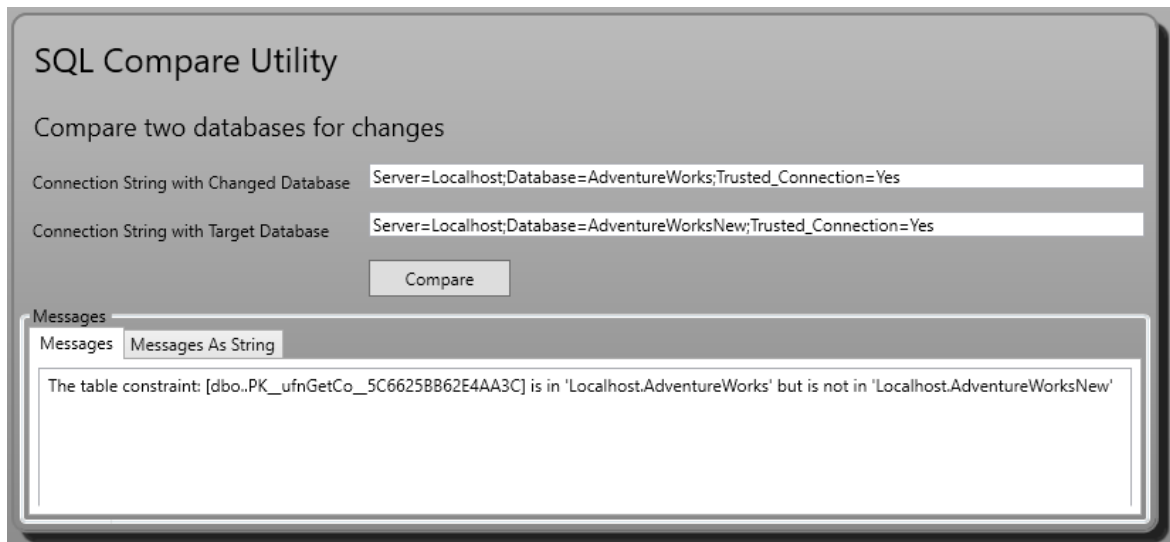


Figure 17: Get missing objects from one database to another via the SQL Compare Utility.

Summary

The PDSC Developer Utilities will help increase your productivity while developing your applications. We hope you enjoy using this product.