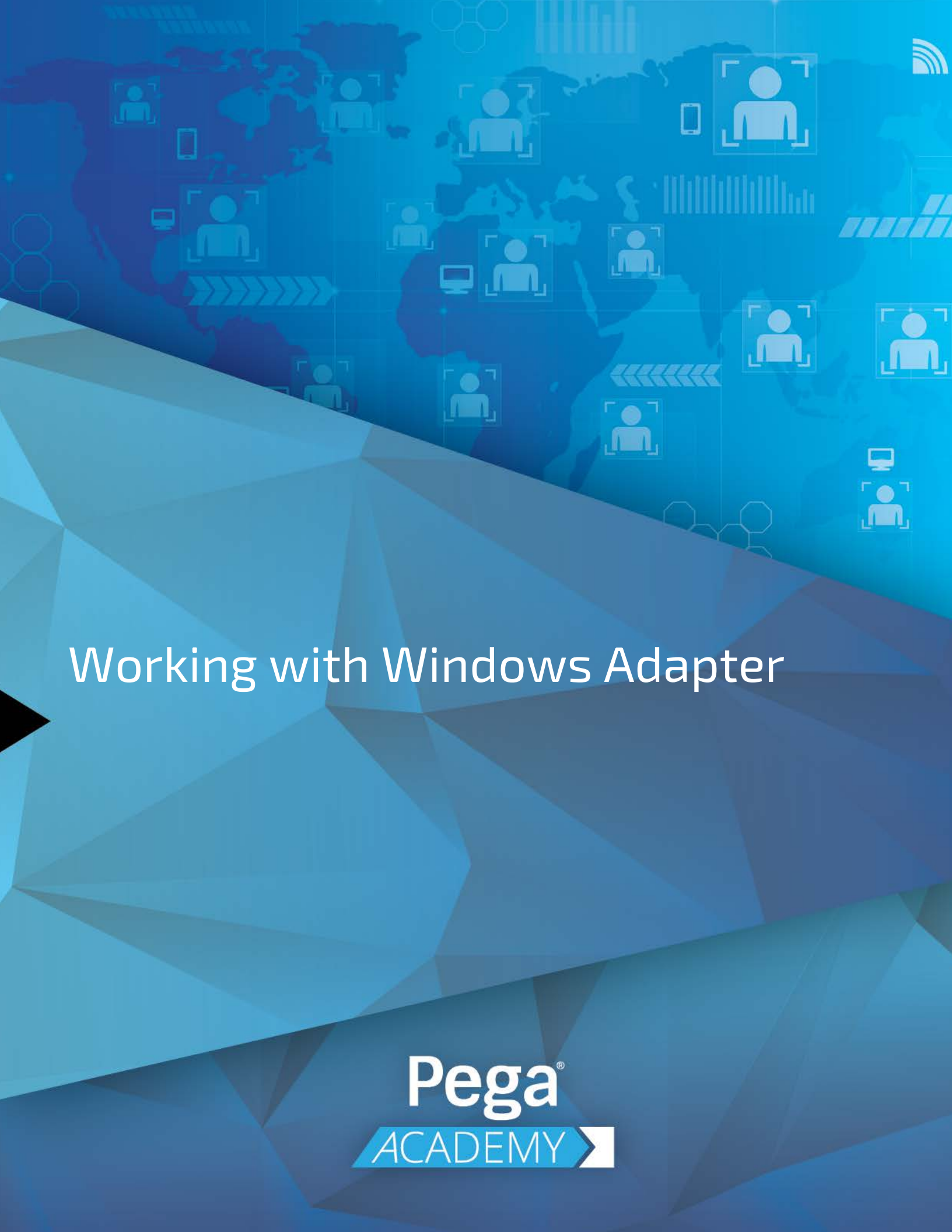
Working with Windows Adapter
Pega
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Chapter 5: Working with the Windows Adapter

OpenSpan Studio provides the Windows adapter for use in projects which automate or monitor Windows applications. The adapter exposes the functionality of the selected application and lets the OpenSpan Interrogator isolate and uniquely identify the targets within the application for automation or event monitoring.

Building Blocks

When you complete this chapter, you should be able to:

- Add a project to your solution.
- Add a Windows application to your project.
- Set the properties for the Window application.
- Interrogate the Windows application:
  - Identify items in Object Explorer
  - Identify matched controls in Object Explorer
  - Highlight controls
  - Use the Create Control method
  - Add File menu options

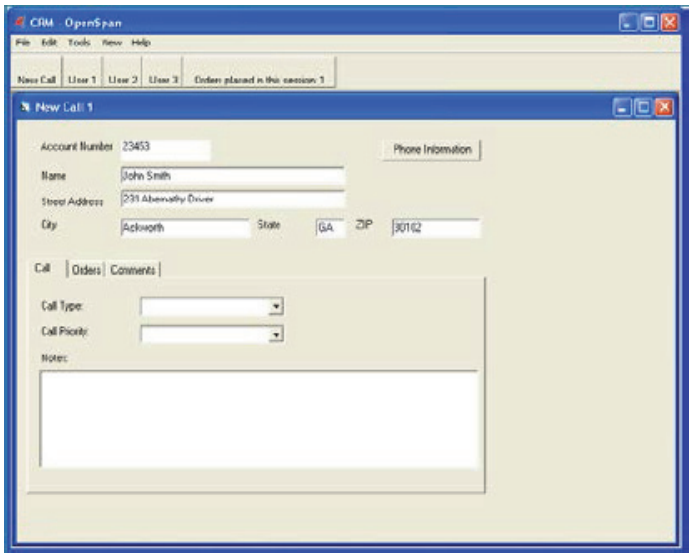
This chapter includes the following topics:

Using the Training CRM Application

For this chapter, the OpenSpan Training CRM.exe application is used. This application contains controls commonly encountered in Windows applications including Multiple-document Interface (MDI) child windows. MDI child windows present a common situation where multiple instances of an identical target may be open and matched during project runtime.

When multiple instances of any control exist, you must use special properties to distinguish between instances of the control you want the automation logic to use. Details on how to work with multiple instances of controls are provided later in this training course.

The following image provides an example of the windows from the OpenSpan Training CRM application:



The CRM application has five toolbar buttons. The New Call and User buttons launch MDI child windows which contain fields for capturing customer information (account number, name, and address).

If the New Call button is selected, a window with blank fields is launched and the Call tab is on top. The Orders tab lets you create and process orders, and the Comments tab contains a text box for entering comments.

Note The account number is automatically generated and unique. You cannot edit this field.

Project 1: Add a Project to Your Solution

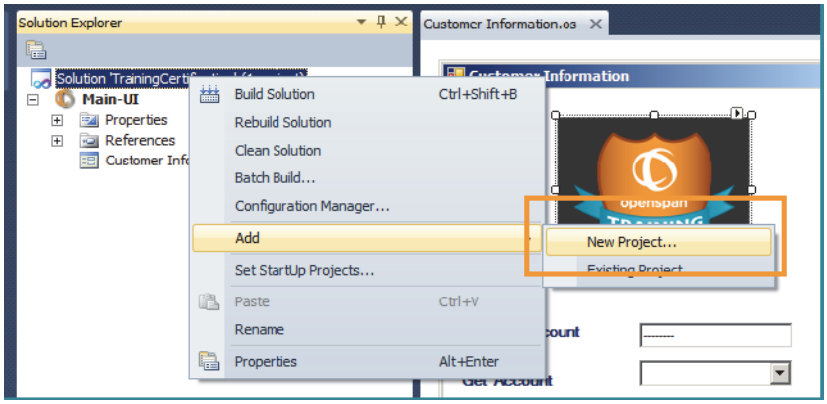
In this part of the project, you add a new Project and Window Application (adapter) to your OpenSpan Developer Certification solution. You learn how to set the properties and interrogate your windows application. In this project, you add a project to your solution.

Group Exercise 1: Creating a CRM Adapter Project at the Solution level

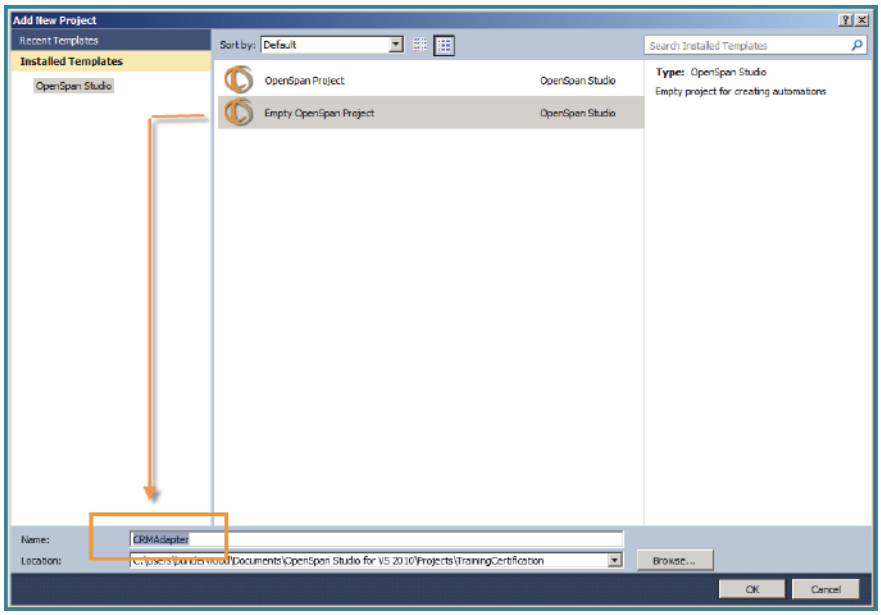
You use the Training CRM application for this exercise.

Follow these steps to create a CRM adapter project at the solution level:

1. In Solution Explorer, right-click the **TrainingCertification** solution and select **Add | New Project**.



2. Type **CRMAdapter** in the Name field on the **Add New Project** window and click **OK**.



3. Select **File | Save All.**

Project 2: Add Window Application to Your Solution

In this project, you learn how to:

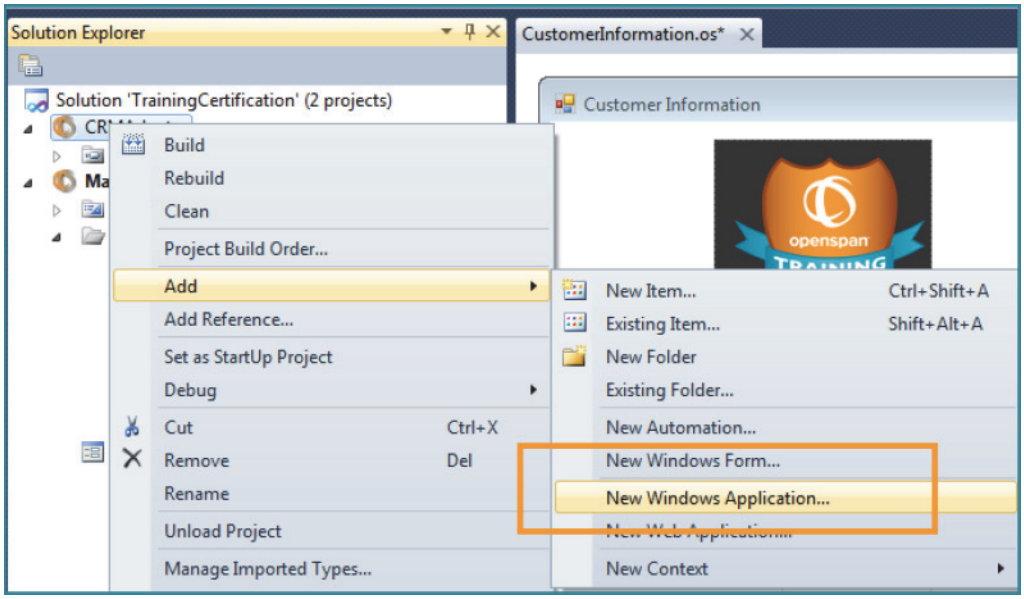
- Add a Windows application to your project.
- Set properties for the Window application.

Group Exercise 1: Adding a Windows Application and Setting the Application Properties

In this exercise, you identify the Windows application you want to interrogate via a Windows adapter. You configure the Windows adapter for a specific application by specifying the executable file name (along with the full path). In the CRM project, you set the Path property to the executable for the Training CRM Windows application.

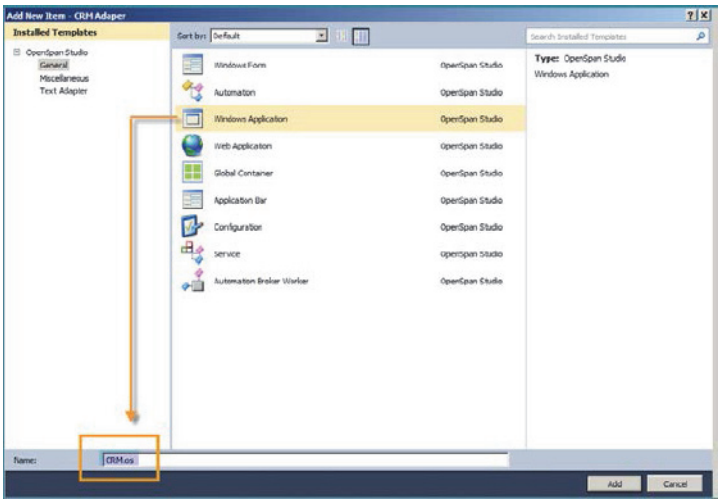
Note You do not need to give the adapter the same name as the application you are integrating via the adapter. The adapter name does not identify the application for integration purposes. As a best practice, however, adapter names should relate to the corresponding application.

4. In Solution Explorer, right-click the **CRMAdapter** project level and select **Add | New Windows Application.**



The Add New Item dialog appears.

5. Type **CRM** in the Name field and click **Add**.



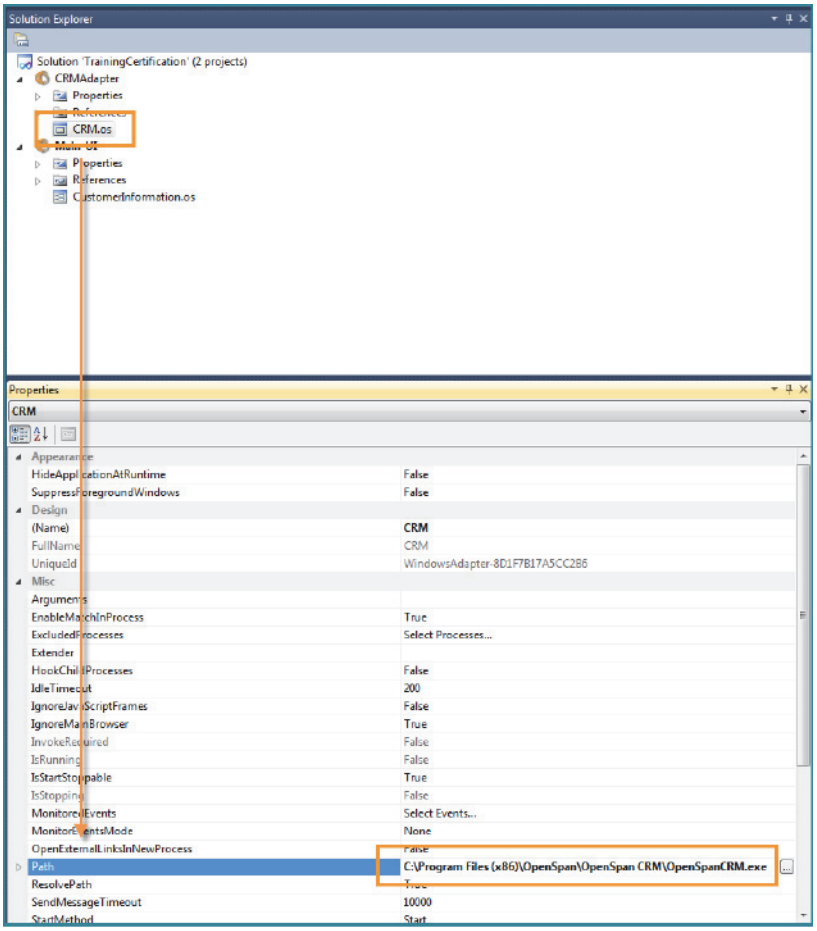
6. In Solution Explorer, double-click the **CRM.os** adapter.

If the Designer window is not open, right-click the **CRM.os** Windows application in Solution Explorer and select **Open.**

7. On the **Properties** window, CRM should already be selected in the list at the top of the window.
8. In the **Path** field, click **Browse** and go to the install location of the Training CRM application. This should be located in one of the following folders:

```
C:\Program Files (x86)\OpenSpan\OpenSpan\CRM.exe
C:\Program Files\OpenSpan\ OpenSpan\CRM.exe
```

Note If the application is moved from this location that is defined in the Path property, the solution fails.



9. Select **File | Save All**.

Project 3: Interrogating Windows Applications

In this project, you learn how to:

- Interrogate Windows Application:
  - Identify items in the Object Explorer
  - Identify matched controls in the Object Explorer
  - Highlight controls
  - Use the Create Control method
  - Add File menu options

Group Exercise 1: Interrogating the Training CRM Windows Application

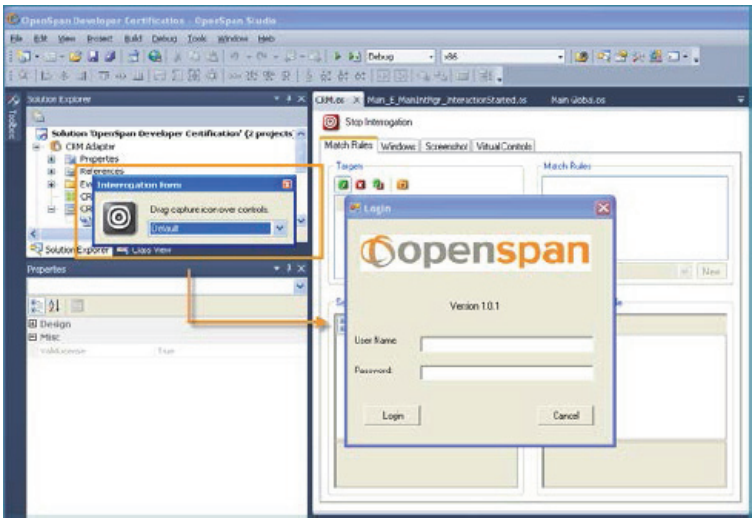
To use controls from a Windows application in your project, use the Interrogator to select and match the application targets. In this part of the exercise, you interrogate the Training CRM application by selecting targets (or controls) in the application which you use later in the project automation. When selecting targets through interrogation, OpenSpan applies match rules to uniquely identify each target. Match rules use the properties of the target.

For example, the .NET Control Name match rule uses the name of the control as designated in the application to identify the target. Since many controls on a window or dialog can share similar attributes, multiple rules are usually required to uniquely match a single object. Generally, OpenSpan is able to automatically select the default match rules. In some cases, you may need to either modify the properties of the default match rule for a target or select additional match rules.

Matching Interrogated Objects

During interrogation, OpenSpan matches the targets and creates controls to represent the targets. The controls display in Object Explorer. As you retrieve target objects into OpenSpan Studio, they display in Object Explorer.

The Object Explorer is a hierarchal tree view that shows adapters and associated controls. The controls are displayed in a hierarchy built by OpenSpan during interrogation. The hierarchy represents the relationships between the controls and their parent objects. The following image provides an example of targets interrogated from the Training CRM application:

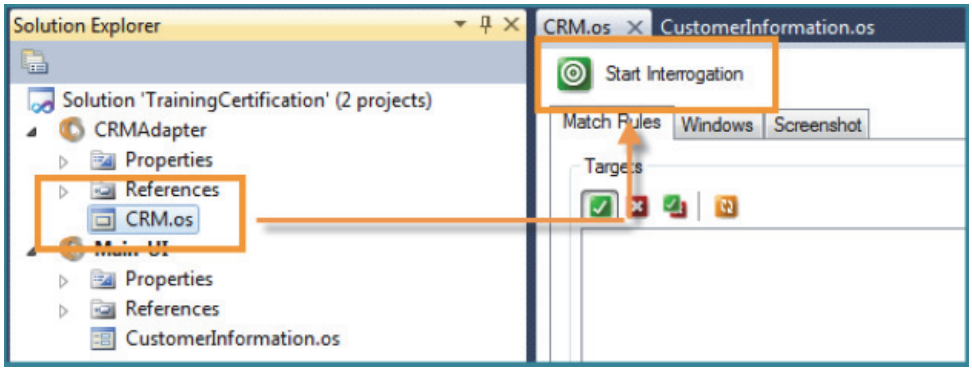


This project gives you hands-on experience with these interrogation concepts:

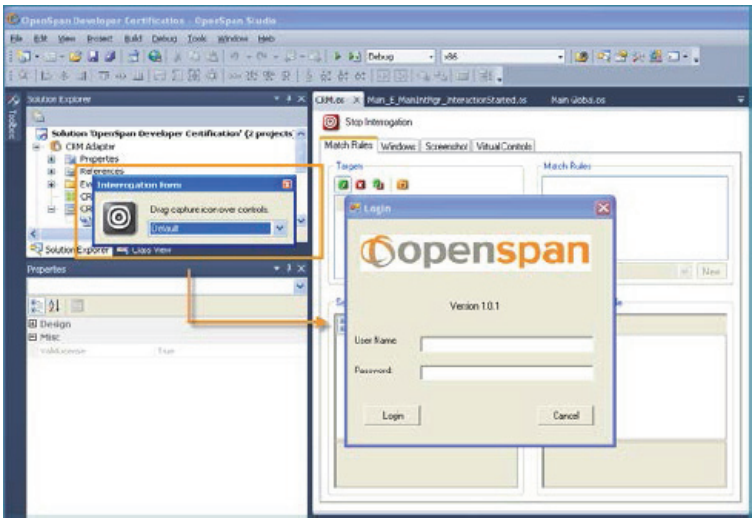
To:	You:
Uniquely match targets	Interrogate and match basic objects.
Create controls	Use the Windows tab to locate a target and create the control.
Highlight controls	Use the Highlight Control option to confirm matching and target location.
Add menu options	Use the Menu Options function to add Menu Option objects to a solution.

Note Match rules are discussed in greater detail in “Working with Web Adapter Match Rules” on page 14-1.

With the **CRM.os** project item open in the Designer Window, click the **Start Interrogation** button.



OpenSpan launches the Training CRM application (as specified in the Path property) and opens an Interrogation Form dialog.

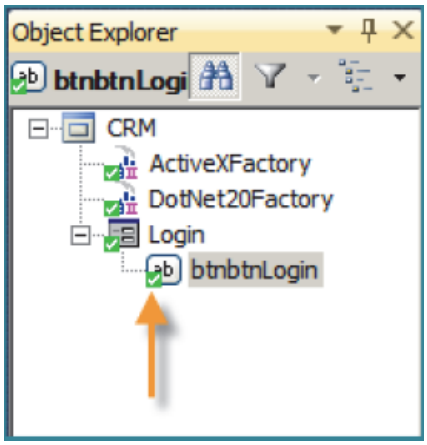


10. Begin by interrogating the **Login** button on the Login form dialog. To interrogate a target, click the **Bulls-eye** icon on the Interrogator Form dialog and drag it to the **Login** button. Leave the **Default** option selected in the drop-down list.

    Release the mouse button when the field has a rectangular highlight around it.

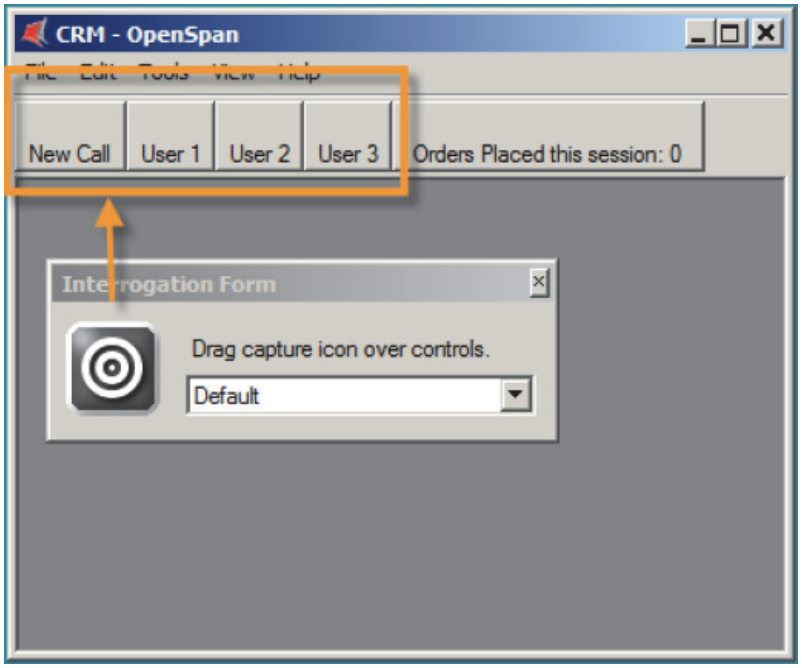
Look at Object Explorer and notice that the Login button you interrogated is listed. Because matching of the Login button is dependent upon the successful matching of its parent object (the Login form), OpenSpan Studio automatically identified and matched all of the parent controls.

Note Controls that are uniquely matched are indicated by the green check mark (V).



11. Next, on the Login dialog, interrogate the **User Name** and **Password** fields.

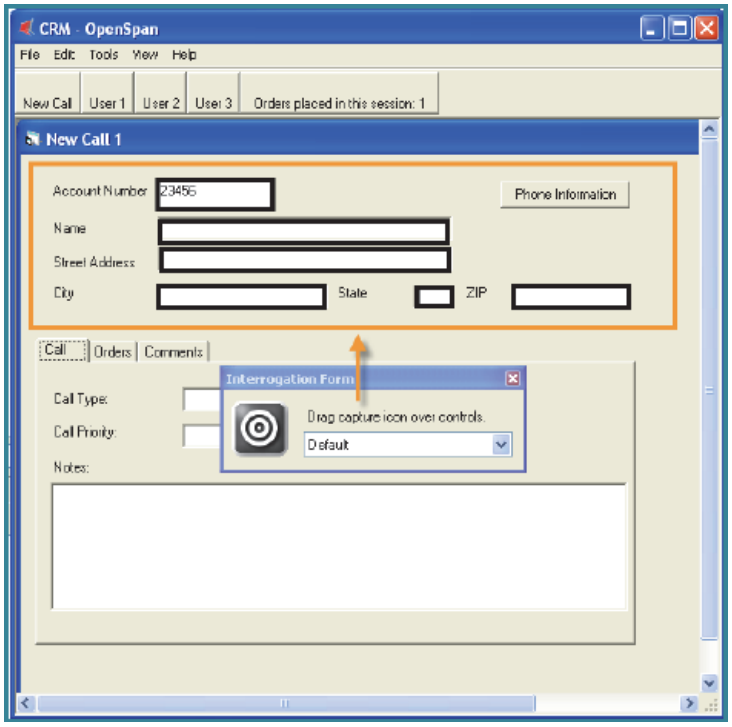
12. Enter your user name (1234) and password (1234), then click **Login**. The CRM – OpenSpan window appears. Interrogate the following CRM buttons:
    - New Call
    - User 1
    - User 2
    - User 3



13. Click **New Call** to open the New Call 1 window.

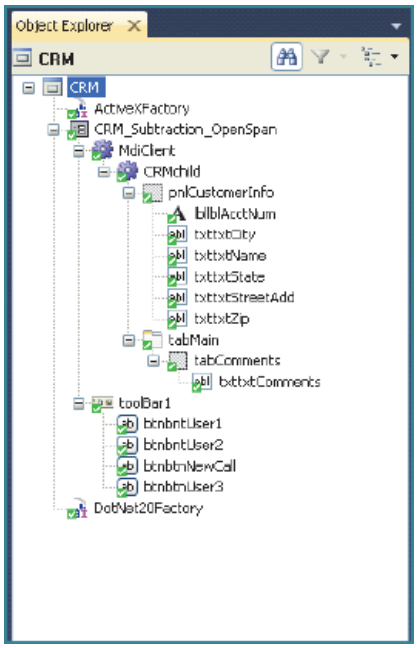
Note The Account Number field is automatically generated by the Training CRM application.

14. Interrogate the following additional targets:
    - Account Number
    - Name
    - Street Address
    - City
    - State
    - ZIP



15. Click the **Comments** tab and interrogate the **Comments** field.

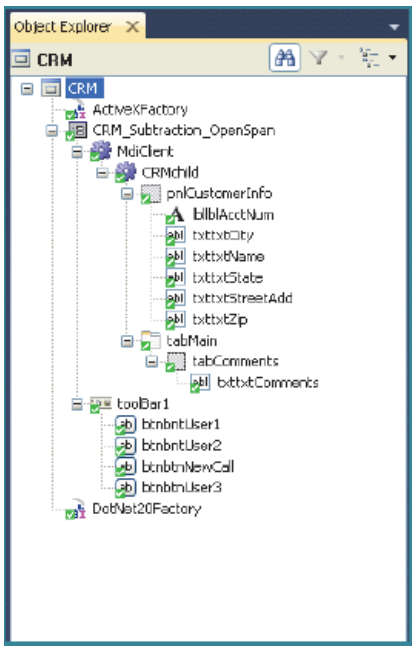
    After interrogating the controls from the Training CRM application, Object Explorer should look like the following example:



    Notice in Object Explorer that the controls currently have a green check mark (√). Why at this stage are these interrogated controls displayed with a green check mark (√)**?**

16. Click **Stop Interrogation**. The Interrogation Form and the Training CRM application close.

    After interrogating the controls from the OpenSpan CRM application, Object Explorer should look like the following example:



    Notice in Object Explorer that the controls currently have a green check mark (√). Why are they displayed that way?

17. Click the **Stop Interrogation** button. The Interrogation Form and the Training CRM application close.

You can stop the interrogation by doing any one of the following things:

- Clicking **Stop Interrogation** on the CRM.os Designer window
- Clicking the window title bar **X** on the **Interrogation Form** dialog
- Clicking the window title bar **X** on the **CRM** application

18. Select **File | Save All**.

Note You can return to the Interrogation process at any time if you determine that your project requires additional targets from an application.

Self-Paced Exercise 1: Renaming Control Properties

While OpenSpan uses the control names as specified in the interrogated application, you can rename the controls so they are easy to identify. For example, in the Training CRM application, the Account Number

control has a default name of lbllblAcctNum. If your project contained many label controls, the account label name lbllblAcctNum would not provide any context within the application. You can use the Properties window to rename the controls to something easier to identify. For example:

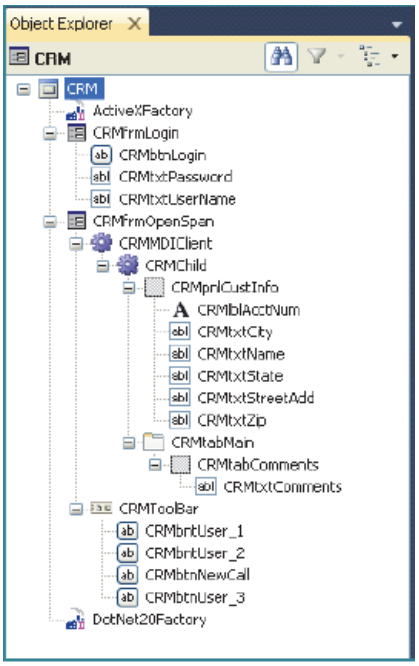
```
CRMlblAccNum
```

You can rename controls while the Interrogator is running.

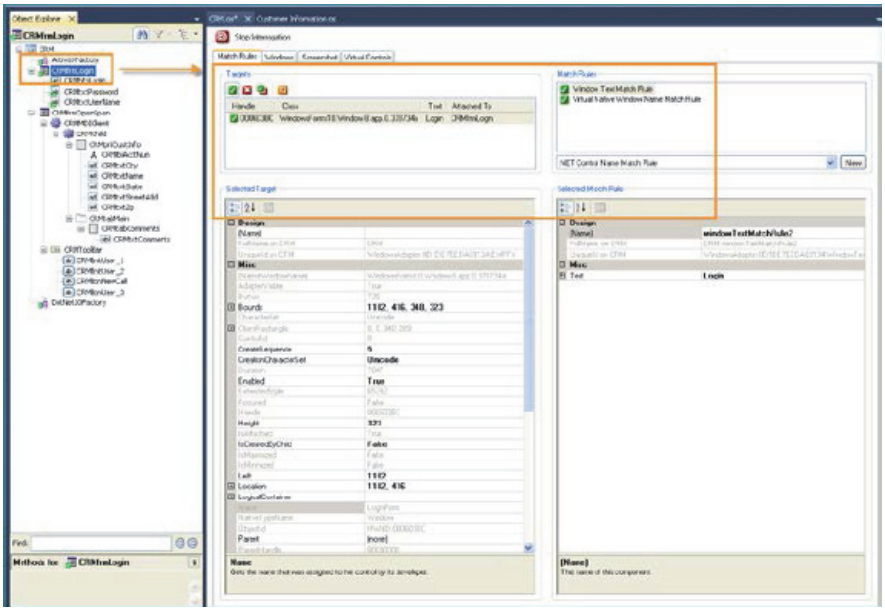
1. Return to Object Explorer and locate and rename the following controls:

Control | Object Name	Design Name
CRM_Subtraction_OpenSpan	**CRMfrmOpenSpan**
MdiClient	**CRMMDIClient**
CRMchild	**CRMChild**
pnlCustomerInfo	**CRMpnlCustInfo**
lbllblAcctNum	**CRMlblAcctNum**
txttxtName	**CRMtxtName**
txttxtStreetAdd	**CRMtxtStreetAdd**
txttxtCity	**CRMtxtCity**
txttxtState	**CRMtxtState**
txttxtZip	**CRMtxtZip**
toolbar1	**CRMToolBar**
btnbtnNewCall	**CRMbtnNewCall**
btnbtnUser1	**CRMbtnUser1**
btnbtnUser2	**CRMbtnUser2**
btnbtnUser3	**CRMbtnUser3**
tabMain	**CRMtabMain**
tabComments	**CRMtabComments**
txttxtComments	**CRMtxtComments**
Login	**CRMfrmLogin**
btnbtnLogin	**CRMbtnLogin**
txttxtCredentials	**CRMtxtUserName**
txttxtPassword	**CRMtxtPassword**

After renaming the controls using the Properties window, Object Explorer should look like the following example:



During interrogation, the Designer window displays the targets, target properties, and match rules used by OpenSpan to identify the control. The following image provides an example of a Match Rules tab using a web application where the control name *CRMfrmLogin* for the OpenSpan Training CRM is used.

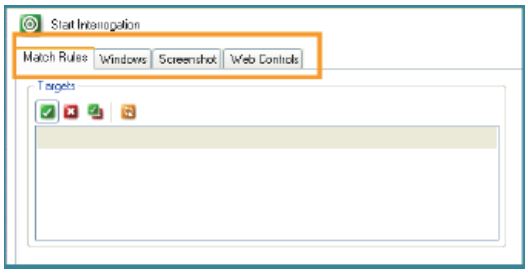


OpenSpan Studio can uniquely identify the **CRMfrmLogin** control using the following match rules:

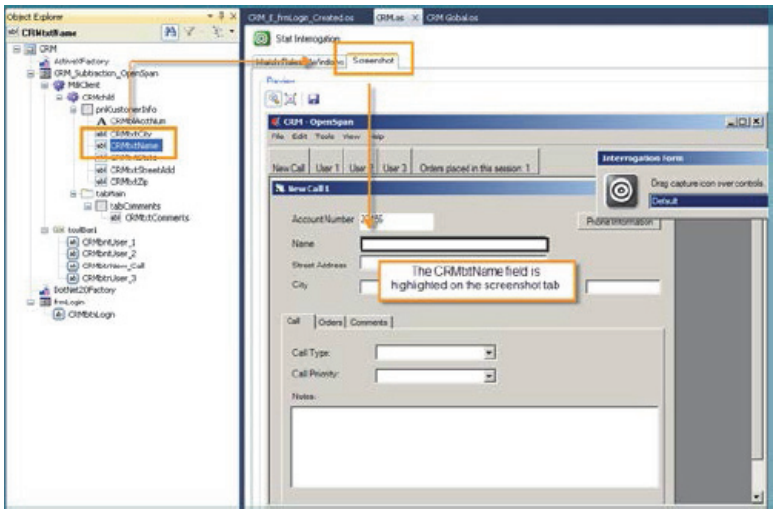
- Window Text match rule
- Virtual Native Window Name match rule

As shown in the previous example Designer window, the following tabs appear:

Tab	Description
Match Rules	Displays information for matching interrogated targets
Windows	Lists all Windows targets currently available in the interrogated application
Screenshot	Shows the location of interrogated targets
Web controls	Lists the web targets currently available in the interrogated application



To see the screenshot of an interrogated control, click on a control in Object Explorer. Click the **CRMtxtName** text field in Object Explorer. Click the **Screenshot** tab. The location of the interrogated text field is highlighted on the screenshot of the CRM – OpenSpan dialog window.



These screenshots can be saved as individual graphics files in the project folder. The images on the Screenshot tab can be viewed at any time whether or not the interrogation function is active. This differs from the information shown on the Match Rules, Windows, and Web tabs, which only show detailed information during interrogation of the application corresponding to the adapter. The screenshots help identify controls when creating automations involving controls from several interrogated applications.

Group Exercise 2: Interrogating Using the Create Control Method

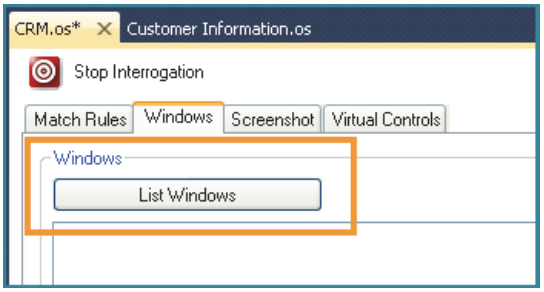
At times you may encounter a target that is visible but positioned so the bulls-eye icon cannot be localized on the object. This exercise explores how to add a target object to a solution using the Create Control method.

Follow these steps to interrogate using the Create Control method:

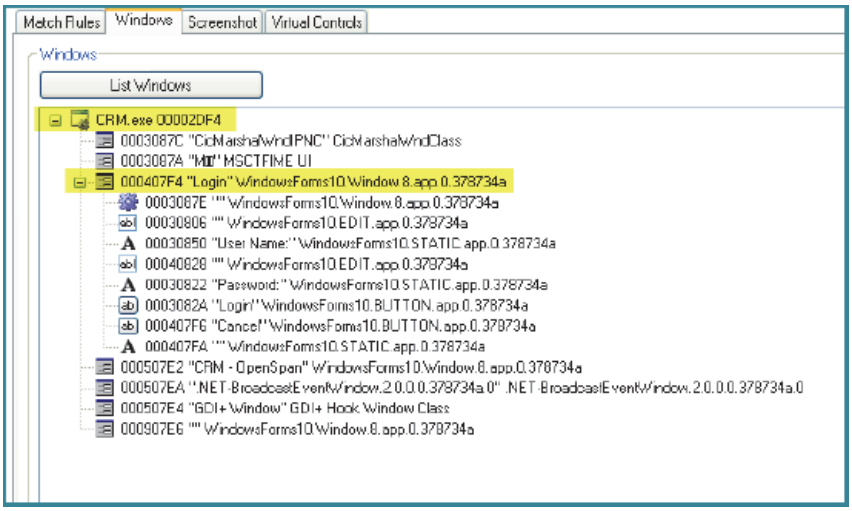
1. Using the **CRMAdpater** project, double-click the **CRM.os** project item in Solution Explorer.
2. In the **CRM.os** Designer window, click **Start Interrogation**.

   You are interrogating the **Version 1.0.1** label on the Login screen. Instead of dragging the bulls-eye icon over the Version label on the Login screen, though, click the **Windows** tab on the **CRM.os** Design window.

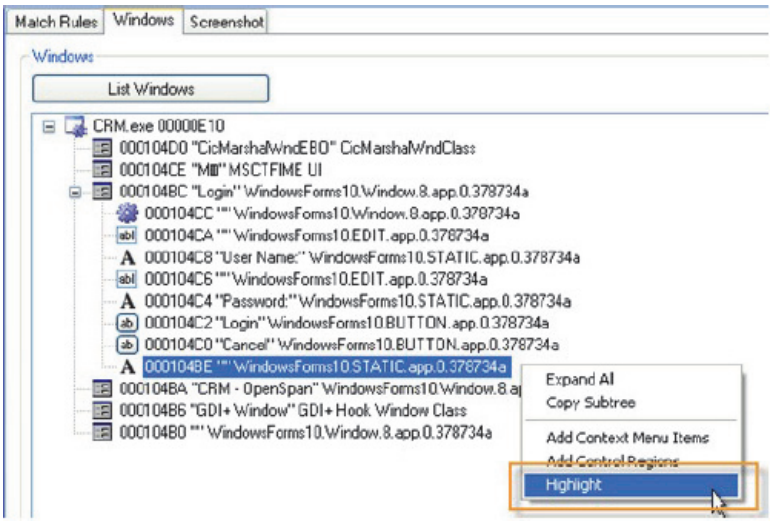
   Click **List Windows** to show all available processes within the selected adapter.



3. Expand the **CRM.exe | "Login" Window Form** item in the tree view of the Windows group box.

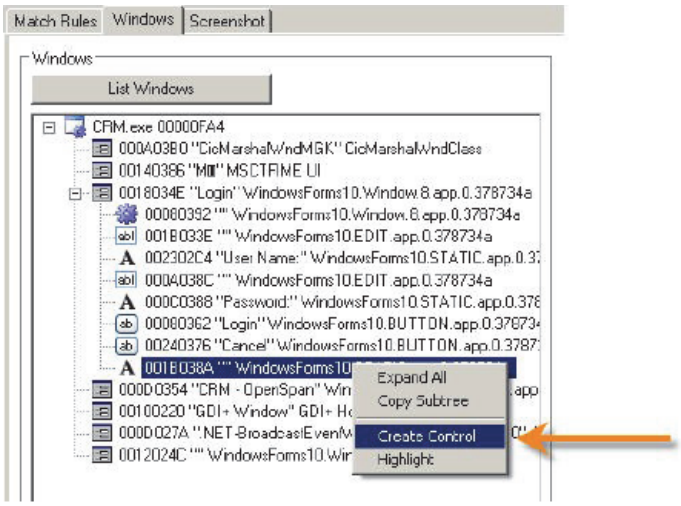


4. Select the last object in the list, which is the label assigned to the CRM application version information. Right-click the **Label** and select **Highlight**.

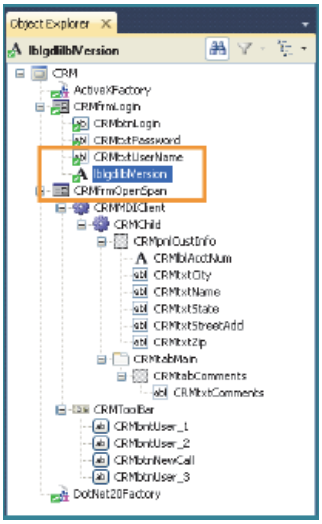


The CRM application is brought to the front, and a black frame blinks around the version label. Using the Highlight feature is helpful while trying to determine the location of a control within the application interface.

5. Return to the Windows list. Right-click on **Label** and select **Create Control** to add this target to the project.



A label object is added to Object Explorer. Your Object Explorer should look similar to the following example:



6. In the Properties window, rename the **lblgdilblVersion** control to **CRMlblVersion.**

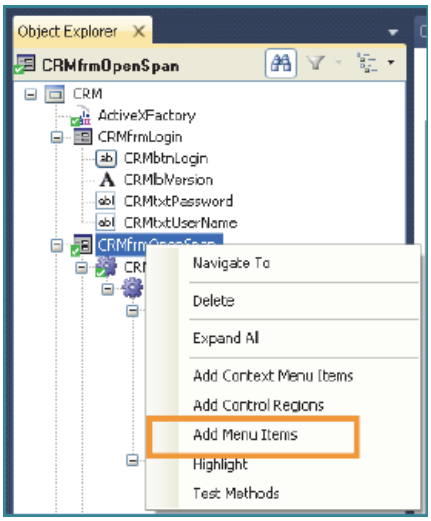
Group Exercise 3: Interrogating Using the Add Menu Items

Generally, menu items are not directly interrogated. Instead, you interrogate the form that contains the menu, and then select the menu options you want to include in the solution using the Add Menu Items option.

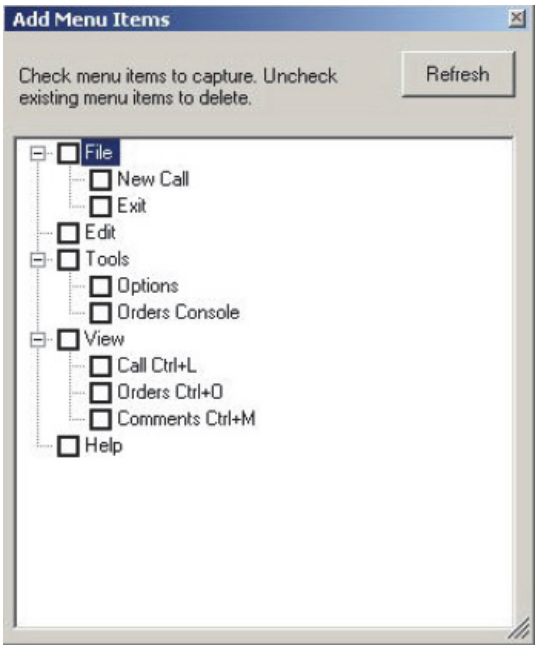
Follow these steps to add menu options from the CRM application to the project:

1. In Object Explorer, highlight the **CRMfrmOpenSpan** object, right-click, and select **Add Menu Items**.

Note The control must be matched for the Add Menu Items option to be available.



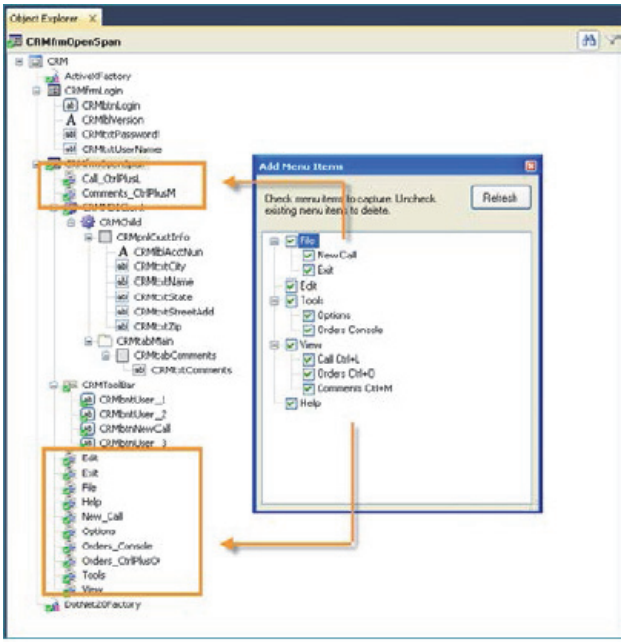
The Add Menu Items dialog appears.



In some cases, menu options are defined in such a way that OpenSpan Studio cannot identify them with the form object. If this occurs, the Add Menu Items function is not available.

2. Select all of the sub-menu options from the **Add Menu Items** dialog and then close the dialog to save your selections.

   The selected menu items appear as objects in Object Explorer.



Note As long as the main form is matched, the menu items from the form are matched. OpenSpan Studio uses the Menu Item Path match rule to match these controls. The path refers to the hierarchy of options.

For example, the path for the Exit menu option is: File | Exit. When using suboptions (like the Exit option) in an automation, you do not need to first call the PerformClick method on the parent (in this case, the File option).

To use menu items that are dynamically added while the application is running, a RefreshMenuItem method is available at the form level. This method lets OpenSpan Studio match on newly created menu items.

1. Click the **Stop Interrogation** button on the CRM.os Designer window to stop the interrogator and close the CRM application.
2. Select **File | Save**.

In this chapter you should have learned how to:

- Add a new project named *CRMAdapter.*
- Add a new Windows application called *CRM* to the CRM Adapter project.
- Set the Path property for the CRM application on the Properties window.
- Use the Start Interrogation feature to interrogate and expose controls and properties.
  - Identify the different items in Object Explorer.
  - Identify the visual for a matched controls in Object Explorer — green check mark.
  - Identify a control that has been interrogated using the Highlighting Controls feature.
  - Use the List Windows feature to explore controls.
  - Use the Create Control feature to add additional controls to a project.
  - Add menu items to a project using the Adding File Menu options.