Prism for Windows Runtime CodeGen

Monday, September 9, 2013 4:08 PM

Summary:
'PrismRT CodeGen' is a code generation system for setting up Line of Business Windows Store applications that use the 'Prism for Windows Runtime' guidance from the Microsoft Patterns and Practices group. It helps to reduce the repetitious procedures for starting such Windows Store applications.

Motivation:
I wanted to write Windows Store LOB apps that use Windows Azure hosted WebAPI services and SQL Azure hosted databases.
I wanted my design to use best practices and loosely coupled components.
I found that the 'Prism for Windows Runtime' gives my apps a very good MVVM structure and that the Prism base classes included a lot of LOB functionality for free.
I wanted to write a lot of smaller test apps that target specific areas e.g. DataValidation but I wanted my test apps to have the same structure as my production apps. It takes time to set up all the projects and include all the classes I need and is error prone.
So I'm using VS Project Templates, T4 Code Templates, Visual Studio Automation and SQL Server Management Objects to solve the problem.

PrismRT CodeGen objective:
Create a simple 'Prism for Windows Runtime' Starter app that is driven by a a single SQL Server Domain database table. The app:
1. Contains a List Page that presents all table's rows in a ListView
2. Contains a Details Page that presents a single table row when selected from the ListView
3. Supports CRUD
4. Designed with MVVM pattern
    a. UILayer
    b. UILogic
    c. WebAPI
    d. DataRepository
    e. Unity Dependency Injection
    f. EF4

Is PrismRT CodeGen for you?
1) Do you write Windows Store Apps using C# and XAML? If yes, continue.
2) Are your Windows Store Apps mainly Line of Business CRUD type apps? If yes, continue.
3) Do you use the 'Prism for Windows Runtime' guidance? If yes, continue.
4) Do you use the Unity Dependency Injection Container? If yes, continue.
5) Do your Windows Store Apps follow a similar pattern e.g. CRUD apps that get data from a REST service and present that data in Windows Runtime pages? If yes, continue.
6) Do you find that most of your .cs files are similar from app to app but just that the data fields and namespaces are different? If yes, continue.
7) Do your Windows Store Apps use the MVVM Pattern? If yes, continue.
8) Do you use RESTful services to access backend data? If yes, continue.
9) Do you use SQL Server 2012 as your database? If yes, continue.
10) Do you use Entity Framework 4 as your ORM? If yes, continue.
11) Do you use a Repository Pattern in your Data Access Layer? If yes, continue.
12) You are comfortable with the fact that PrismRT CodeGen does not support roundtripping. i.e. Running PrismRT CodeGen a second time will overlay any changes made to the Target application after the 1st time it is run. If yes, then continue.

If PrismRT CodeGen is not for you, there are some things it demonstrates that may have some value to you:
1) Example of Visual Studio 2012 Project Templates
2) Example of Visual Studio Add-in
3) Example of Visual Studio 2012 Automation including ExecuteCommand event handler
4) Example of a SQL Server Database driven app using SSMO (SQL Server Management Objects)
5) Example of EF4 CRUD
6) Example of WebAPI accessing SQL Server 2012 data
7) Example of T4 Templates for code generation
8) Example of a simple 'Prism for Windows Runtime' app

PrismRT CodeGen components:
1) PrismTemplates solution - generalized T4 templates for each .cs file that will be code generated. This solution contains all the projects

and folders for a MVVM based Line of Business application but that does not contain any Domain specific data objects or code. Each project in this solution is Exported to a Visual Studio project template (zip file) that is stored at C:\Users\...\Documents\Visual Studio 2012\My Exported Templates.

2) VS Add-in - using VS Automation and SSMO automatically converts the generalized solution to a target domain specific solution by running T4 Templates and FileSearchAndReplace steps. Target solution goes through these steps:
    i. Rename T4 templates
    ii. Replace in T4 templates
    iii. TransformAllT4Templates (creates .gc [generated code] files)
    iv. Remove T4 Templates from solution
    v. Rename Generated Code Files from .gc to .cs
3) PrismCodeGen metadata - 2 SQL Server 2012 database tables:
    i. CodeGenRules - model class Validation Attributes
    ii. CodeGenStrings - used to create .resx and .resw files
4) Excel metadata spreadsheet - makes working with PrismCodeGen metadata easier.

How PrismRT CodeGen works

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Let's say that I work in Utah for the NSA and I'm assigned the task to write an app that will keep track of all the information on a person which includes personal, work, financial, medical, email, phone etc. I'm going to need a database with many tables and I'm going to need an app that has many forms to view and edit the information. Each type of information will have many pieces of data. For example a phone call has an Id, SSN of the person who owns the call, FromPhoneNumber, ToPhoneNumber, DateAndTime, Lat/Long (if mobile then a series if moving), LengthOfCall, Audio, Text etc. Some types of information could involve hundreds of data items. If my app is design for MVVM then I'm going to be moving the data in code at least from the data layer to the business layer to the service layer to the presentation layer. I'll be basically doing the same thing for each table of data and I could have hundreds of tables.

This is where Code Generation comes in handy. It's like Mail Merge but a little more complex. In Mail Merge I have a letter with placeholders for address information and I have a database with the addresses. For each letter I go to the database for the address and plug it into the address placeholder in the letter. With Code Generation I have a T4 (Text Template) file with placeholders for the data items I working with. For example a PageView form will have xaml for each data item - a title label, a textbox, an error message label. This will be repeated for each data item in the form which could have 10 to 100 data items. This repetition will occur in each layer of code as data is transferred from one layer to another. The combination of T4 Templates and SQL Server Management Objects (SMO) helps will this boring and error prone coding. With SMO you can retrieve the metadata for each table i.e. the data fields's name, type, keys etc. (See the Skill Links page for more info) and then within the T4 Template loop through the metadata to generate a line of code for each data field. In other places in the code, if it follows a similar pattern, a system of word placeholders can be devised to change a code template. e.g. If you had 20 code files with a generic namespace of say 'PrismTemplates' and your app's namespace should be 'BigBrother', you could read the whole file in, use C# string functions to find and replace 'PrismStarter' with 'BigBrother' and write the whole file out. These 2 methods of code generation (T4 and FindAndReplace) are used by PrismRT CodeGen.

To simplify the CodeGen process, let's say that my app will be called BigBrother and that my database contains just one table (PhoneCall) and that the table contains only 2 fields (Id and SSN). I want to code generate an app that will present a ListView of phone calls on the main page and when I select a phone call from the ListView, I'm taken to a Details page with label and text controls for each phone call data field and options to create a new call, update an existing call or delete a phone call (CRUD). Since this app follows a pattern (a list page and a corresponding detail page) I can create a set of templates that will do the same thing for each table in the database.

In the downloads I've included the PrismTemplates solution that contains the .tt files. PrismTemplates is a Windows Store app that contains the T4 templates that generate C# code. It's like the Mail Merge addresses. Prism Templates is generic and reusable. It does not contain any BigBrother or PhoneCall objects. You do not need to touch PrismTemplates. I wrote PrismTemplates and Exported each project within each of them to Visual Studio Project Template zip files that are included in the downloads. Take these zip files and put them in the place Visual Studio looks for them (see What you have to do). You do not need to touch the zip files after they are placed. They will be used by the PrismAddin solution (Visual Studio Automation app included in download) to create domain specific solution (BigBrother).

The idea is to create a Target solution from VS Project Templates (zip files). The VS Project Templates do not contain any domain specific code but contain T4 templates to generate the List and Detail pages of the app. The Target solution goes through these steps:

i. Create Target soluiton from VS Project Templates (zip files)
ii. Rename T4 templates (from generic .tt names to domain specific .tt names which are listed in Add-in App.config)
iii. Replace in T4 templates (from generic words to domain specific words
iv. TransformAllT4Templates (creates .gc [generated code] files)
v. Remove T4 Templates from solution
vi. Rename Generated Code Files from .gc to .cs

After PrismAddin finishes all its steps you need to do one more domain specific thing. You need to add an ADO.NET Entity Data Model to the DalEF4 Target project (see What you have to do).

Now we are ready to test the WebAPI to see if we are getting SQL Server data. Note that PrismAddin will generate a WebAPI project that uses the Visual Studio Development Server at port 56789. If not getting data, use debugging (see Debugging using 2 VS Instances and Debug WebAPI with Fidder2).

After the WebAPI test is successful, run the Target app to see if CRUD is working. Make sure that an instance of Visual Studio Development Server is running.

That's how PrismRT CodeGen works in some detail.

Skill Links

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Links:

How to: Create a Project Template
http://msdn.microsoft.com/en-us/library/xkh1wxd8.aspx

How to: Create a Multi-Project Template
Note: Multi-Project Template (PrismStarter.zip) did not work out. When creating a New Project with it, the ProjectName e.g. BigBrother did not flow down to the child projects.
http://msdn.microsoft.com/en-us/vstudio/cc315061.aspx (video)
http://msdn.microsoft.com/en-us/library/ms185308.aspx

How to: Write a T4 Text Template
http://msdn.microsoft.com/en-us/library/bb126478.aspx
http://www.olegsych.com/2007/12/how-to-create-a-simple-t4-template/
http://visualstudiogallery.msdn.microsoft.com/a42a8538-8d6e-491b-8097-5a8a00174d37
http://www.devart.com/t4-editor/download.html (DevArt T4 Editor - Free)

How to: Work with Microsoft.SqlServer.Management.Smo
http://www.codeproject.com/Articles/127065/SMO-Tutorial-1-of-n-Programming-data-storage-objec
http://ittecture.wordpress.com/2009/01/04/tip-of-the-day-82/

How to: Automate Visual Studio 2012
http://msdn.microsoft.com/en-us/library/vstudio/1xt0ezx9.aspx
Professional Visual Studio 2012 -> Part XI -> Chapter 51: The Automation Model -> TheVisual Studio Automation Model
(see this book to understand DTE, DTE2, EnvDTE80, EnvDTE90, EnvDTE100)

How to: Create a WebAPI Service
http://www.asp.net/web-api/overview/getting-started-with-aspnet-web-api/tutorial-your-first-web-api
http://www.asp.net/web-api/overview/creating-web-apis/creating-a-web-api-that-supports-crud-operations

How to: Deploy WebAPI to Azure Cloud
http://www.windowsazure.com/en-us/develop/net/tutorials/get-started/

How to: Deploy SQL Server 2012 Database to Azure Cloud
http://channel9.msdn.com/posts/SQL11UPD00-REC-02 (video)

Simple way to import data into SQL Server
http://www.mssqltips.com/sqlservertutorial/203/simple-way-to-import-data-into-sql-server/
Run .dtsx from command prompt (on 64-bit machine needs to run 32-bit dtexec)
http://stackoverflow.com/questions/8787007/how-to-execute-dtsx-packages-through-command-line
"C:\Program Files (x86)\Microsoft SQL Server\110\DTS\Binn\DTExec.exe" /File "C:\Dev\Metro.2013.2\CodeGen\Docs\DataTypes2.dtsx"

How to: Create an Add-in
http://msdn.microsoft.com/en-us/library/80493a3w.aspx
http://msdn.microsoft.com/en-us/library/ms228767.aspx

How to: Access App.config from Add-in
http://stackoverflow.com/questions/3925308/is-there-a-config-type-file-for-visual-studio-add-in

What has been provided

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1) **_readme-> PrismRT CodeGen.pdf -** documentation
2) **PrismTemplates** - Visual Studio 2012 Solution that was used to create VS Project Template zip files:
    a. File->Export Template… for each project to create 7 zip files
3) **My Exported Templates** - VS Project Template zip files
    a. 7 PrismTemplatesxxx.zip files
4) **PrismAddin** - VS->New Project->Other Project Types->Extensibility->Visual Studio Add-in (see Skill Links)
5) **Data->BigBrother.bak** - A sample SQL Server database called BigBrother that contains 7 tables. The data in these tables drive the PrismDTE app
    a. PhoneCall
    b. CodeGenRules
    c. CodeGenStrings
6) **Data->BigBrother.CodeGenTables.xlsx** - A sample Excel spreadsheet that contains the data for the CodeGen tables. Excel's Find and Replace makes it easy to create CodeGen data for a new project. Also included are .dtsx files and .cmd to Import excel data into SQL Server (see Skill links)
7) Result of running PrismAddin (not including PrismForWindowsRuntime dlls, EntityFramework dlls, Unity Container dlls)
    a. **BigBrother -** Target solution (Windows Store app that runs on user device)
        i. BigBrother.DalInterface project
        ii. BigBrother.DalEF4 project
        iii. BigBrother.DalMemory project
        iv. BigBrother.WebAPI project
        v. BigBrother.UILogic project
        vi. BigBrother.UILayer project
8) **Screenshots (3) -** Start, Running, End

What you have to do

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1) Copy Project Template zip files (6 for PrismStarter and 7 for PrismTemplates) to Visual Studio Project Template locations
   C:\Users\<your name>\Documents\Visual Studio 2012\My Exported Templates
   C:\Users\<your name>\Documents\Visual Studio 2012\Templates\ProjectTemplates

2) SQL Server 2012 CodeGenTables configuration
   Create a SQL Server 2012 database that contains tables similar to the ones provided in the sample database:
   PhoneCall
   CodeGenRules
   CodeGenStrings
   Cut and paste blocks of spreadsheet cells into VS Server Explorer -> Data Connections -> Tables.

   Spreadsheet to Database steps

Run Reset Page T-Sql commands to clean out SQL Server 2012 BigBrother database	
Copy Rules Excel page rows to CodeGenRules DB Table	
Copy Strings Excel page rows to CodeGenStrings DB Table	

3) PrismAddin Configuration
   Change the PrismAddin App.config <appSettings> with configuration data (sample app has examples)

```
<appSettings>
    <add key="DELL15z" value="DELL15z" />
    <add key="DbContextAssembly" value="PrismDTE, Version=1.0.0.0, Culture=neutral, PublicKeyToken=null" />
    <add key="DbContextClass" value="PrismDTE.BigBrotherEntities" />
    <add key="EntityRulesTableName" value="CodeGenRules" />
    <add key="EntityStringsTableName" value="CodeGenStrings" />
    <add key="EntityNameParameterPlural" value="phoneCalls" />
    <add key="EntityNameParameter" value="phoneCall" />
    <add key="EntityNamePlural" value="PhoneCalls" />
    <add key="EntityName" value="PhoneCall" />
    <add key="PrismTemplatesDatabaseName" value="BigBrother" />
    <add key="PrismTemplatesEntities" value="BigBrotherEntities" />
    <add key="PrismTemplates" value="BigBrother" />
    <add key="TargetSolutionName" value="BigBrother.sln" />
    <add key="TargetSolutionPath" value="C:\Dev\Metro.2013.2\CodeGen\BigBrother\BigBrother\" />
    <add key="ProjectNames"
  value="BigBrother.DalInterface.csproj;BigBrother.DalEF4.csproj;BigBrother.DalMemory.csproj;BigBrother.WebAPI.csproj;
  BigBrother.UILogic.csproj;BigBrother.UILayer.csproj;CommonTemplate.csproj" />
    <add key="ProjectPaths" value="BigBrother.DalInterface\;BigBrother.DalEF4\;BigBrother.DalMemory
  \;BigBrother.WebAPI\;BigBrother.UILogic\;BigBrother.UILayer\;CommonTemplate\" />
    <add key="ZipFileNames"
  value="PrismTemplatesDalInterface.zip;PrismTemplatesDalEF4.zip;PrismTemplatesDalMemory.zip;PrismTemplatesWebAP
  I.zip;PrismTemplatesUILogic.zip;PrismTemplatesUILayer.zip;CommonTemplate.zip" />
</appSettings>
```

4) After PrismAddin solution is built, it will be installed in VS (see Skill Links). To run Add-in, start a new Visual Studio. Go to Tools-> Add-in Manager. Check the PrismAddin checkbox and press OK. Add-in runs and displays a MessageBox when done.
   Note: <appSettings> can be dynamically changed without having to rebuild PrismAddin. Change them in C:\...\...\...\PrismAddin\PrismAddin\bin\PrismAddin.dll.config then save them. Start new Visual Studio and run PrismAddin.

5) Target Solution fixups
   BigBrother.DalEF4
   Add ADO.NET Entity Data Model - BigBrother.edmx
   BigBrother.WebAPI -> Web.config
   Copy BigBrother.DalEF4->App.config->BigBrotherEntities connectionString to Web.API->Web.config

Set BigBrother.UILayer as StartUp Project

6) For each provided .sln check for missing references (to save space on github I removed packages like Prism for Windows Runtime, Entity Framework, Unity3 etc). Right click each project -> Manage NuGet packages… to restore them. Use the names from the Project -> References folder.

7) Visual Studio 2012 Settings changes
Visual Studio 2012 Tools -> Options -> Projects and Solutions -> Web Projects -> Use IIS Express for new file-based web sites and projects (uncheck). We are going to test with Visual Studio Development Server.

8) Rebuild Solution
NuGet Package Manager should find missing references and load the missing packages

9) Start Debug instance of WebAPI
Right-click BigBrother.WebAPI Project -> Debug -> Start new instance
Run http://localhost:51379/api/PhoneCall to check that WebAPI is accessing Database
Stop Debugging

10) Start BigBrother.sln

Debug WebAPI with Fiddler2

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Http Verbs:

GET	
POST	Add
PUT	Update
Delete	

Composer Urls:

http://localhost:50420/api/<Entity>	Visual Studio Development Server
http://dell15z:8082/api/<Entity>	IIS Server
http://bigbrotherwebservice.azurewebsites.net/api/<Entity>	Windows Azure

======== BigBrother ==

```
GET http://localhost:50420/api/PhoneCall
GET http://http://bigbrotherwebservice.azurewebsites.net/api/PhoneCall
GET http://dell15z:8082/api/PhoneCall
GET http://dell15z:8082/api/PhoneCall/1
GET http://dell15z:8082/api/PhoneCall?SSN=987654321

POST    http://dell15z:8082/api/PhoneCall
POST    http://localhost:59444/api/PhoneCall
Composer->RequestHeaders->
        Accept: application/json
        Content-Type: application/json
        User-Agent: Fiddler
        Host: dell15z:8082
        Host: localhost:59444
Composer->RequestBody
        {"Id":"0","SSN":"333333333"}
        [{"Id":0,"FldBit":true,"FldDateTime":"1913-09-30T00:00:00","FldInt":93,"FldMoney":93.93,"FldNVarChar":"Clara Lemire"}]
        [{"Id":1,"FldBit":true,"FldDateTime":"1945-11-24T00:00:00","FldInt":67,"FldMoney":67.6700,"FldNVarChar":"ron was here"}]

PUT             http://dell15z:8082/api/PhoneCall/3
PUT             http://localhost:59444/api/PhoneCall/3
Composer->RequestHeaders->
        Accept: application/json
        Content-Type: application/json
        User-Agent: Fiddler
        Host: dell15z:8082
        Host:  localhost:59444
        Content-Length: 28
Composer->RequestBody
        {"Id":"3","SSN":"999999999"}

DELETE http://dell15z:8082/api/PhoneCall/3
DELETE http://localhost:59444//api/PhoneCall/3
Composer->RequestHeaders->
        Accept: application/json
        User-Agent: Fiddler
        Host: dell15z:8082
        Host:localhost:59444
```

```
======== AdventureWorks ==================================================================================

                // GET /api/Product
                http://http://dell15z:8084/api/Product/
                http://localhost:2112/api/Product/
                Composer->RequestHeaders-> (Accept header is the format of return data)
                        Accept: application/json
                        Accept: application/xml

      public IEnumerable<Product> GetProducts()
                        return _products.ToArray();


                // GET /api/Product/id
                http://http://dell15z:8084/api/Product/BK-R19B-58
                http://localhost:2112/api/Product/BK-R19B-58
      public Product GetProduct(string id)
                        var item = _productRepository.GetProduct(id);
                      public Product GetProduct(string productNumber)


                // GET /api/Product?queryString={queryString}
                http://localhost:2112/api/Product?queryString=Mountain-500%20Red,%2042
      public SearchResult GetSearchResults(string queryString)
                        var fullsearchResult = _productRepository.GetProducts().Where(p =>
                        p.Title.ToUpperInvariant().Contains(queryString.ToUpperInvariant()));


      // GET /api/Product?categoryId={categoryId}
                http://localhost:2112/api/Product?categoryId=2
      public IEnumerable<Product> GetProducts(int categoryId)
                   if (categoryId == 0)
         {
            return _productRepository.GetTodaysDealsProducts();
         }
         return _productRepository.GetProductsForCategory(categoryId);



========= PluralSight ==============================================================================

public class ValuesController : ApiController
{
        static List<string> data = initList();

        private static List<string> initList()
        {
                var ret new List<string>();
                ret.Add("value1");
                ret.Add("value2");
                return ret;
        }

        // GET api/values
        public IEnumerable<string> Get()
        {
                return data;
        }

        // GET api/values/5
        public string Get(int id)
        {
```

```
    return data[id];
}

// POST api/values
public void Post([FromBody]string value)
{
    data.Add(value);
}

// PUT api/values/5
public void Put(int id, [FromBody] string value)
{
    data[id] = value;
}

// DELETE api/values/5
public void Delete(int id)
{
    data.RemoveAt(id);
}
```

Debug using 2 VS Instances

Sunday, September 15, 2013 11:15 AM

How to debug BigBrother.WebAPI using 2 instances of Visual Studio 2012:

1) Open BigBrother Solution as 1st instance

2) Set Startup Project->BigBrother.UILayer

3) In C:\Dev\Apps\BigBrother\BigBrother.UILogic\Constants.cs set ServerAddress to Visual Studio Development Server Url:

    public const string ServerAddress = "http://localhost:50909";

4) In BigBrother.WebAPI->Properties->Web->Servers:

    Select-> Use Visual Studio Development Server radio button
    Select-> Specific port 50909

5) Delete all breakpoints

6) Set a breakpoint in UILogic->PhoneCallServiceProxy.cs->GetPhoneCallsAsync()

7) Start 1st instance using Local Machine Debugging.
Debugger should stop at breakpoint.
There should be an ASP.NET Development Server - Port 50909 started in Windows tray.

8) Open same BigBrother Solution for the 2nd instance.
(There is no need to right click BigBrother.WebServices node->Debug->Start new instance)

9) Keep Startup Project, ServerAddress, WebService port same as 1st instance

10) Delete all breakpoints in 2nd instance

11) Set a breakpoint in C:\Dev\Apps\BigBrother\BigBrother.WebServices\Controllers \PhoneCallController.cs->Get() in 2nd instance

12) Go to MainMenu->Debug->Attach to Process->WebDev.WebServer40.EXE - ASP.NET Development Server - Port 50909->press Attach button.

13) At this point there should be only 1 ASP.NET Development Server - Port 50909 in Windows tray
Debugging symbols for 2nd instance may or may not be loaded at this point.
If not they will be loaded by doing step 14).

14) In 1st instance press Continue debugging button

PrismTemplates Project Templates

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Project Name	Project Type	ProjectTemplate
PrismTemplates.DalInterface	C#->Windows->Class Library	PrismTempatesDalInterface.zip
PrismTemplates.DalEF4	C#->Windows->Class Library	PrismTempatesDalEF4.zip
PrismTemplates.DalMemory	C#->Windows->Class Library	PrismTempatesDalMemory.zip
PrismTemplates.WebAPI	C#->Web->ASP.NET MVC Web Application->WebAPI	PrismTempatesWebAPI.zip
PrismTemplates.UILogic	C#->Windows Store->Class Library (Windows Store apps)	PrismTempatesUILogic.zip
PrismTemplates.UILayer	C#->Windows Store->Blank App (XAML)	PrismTempatesUILayer.zip
CommonTemplate	C#->Windows->Class Library	CommonTemplate.zip

How to: Create Project Templates
http://msdn.microsoft.com/en-us/library/xkh1wxd8.aspx

Project Templates located at:
C:\Users\Ron\Documents\Visual Studio 2012\My Exported Templates
C:\Users\Ron\Documents\Visual Studio 2012\Templates\ProjectTemplates

List of Renamed Template Files

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BigBrother.DalInterface
- Models
  - Rename Entity.tt -> PhoneCall.tt
- Repositories
  - Rename IEntityRepository.tt -> IPhoneCallRepository.tt

BigBrother.DalEF4
- Repositories
  - Rename EntityMapper.tt -> PhoneCallMapper.tt
  - Rename EntityRepository.tt -> PhoneCallRepository.tt

BigBrother.DalMemory
- Repositories
  - Rename EntityRepository.tt -> PhoneCallRepository.tt

BigBrother.WebAPI
- Controllers
  - Rename EntityController.tt -> PhoneCallController.tt

BigBrother.UILogic
- Events
  - Rename EntityDeletedEvent.tt -> PhoneCallDeletedEvent.tt
- Models
  - Rename Entity.tt -> PhoneCall.tt
- Repositories
  - Rename EntityRepository.tt -> PhoneCallRepository.tt
  - Rename IEntityRepository.tt -> IPhoneCallRepository.tt
- Services
  - Rename IEntityServiceProxy.tt -> IPhoneCallServiceProxy.tt
  - Rename EntityServiceProxy.tt -> PhoneCallServiceProxy.tt
- ViewModels
  - Rename EntityDetailPageViewModel.tt -> PhoneCallDetailPageViewModel.tt
  - Rename EntityListPageViewModel.tt -> PhoneCallListPageViewModel.tt)

BigBrother.UILayer
- Views
  - Rename EntityListPage.tt -> PhoneCallListPage.tt
  - Rename EntityLIstPage.xaml.tt -> PhoneCallListPage.xaml.tt
  - Rename EntityDetailPage.tt -> PhoneCallDetailPage.tt
  - Rename EntityDetailPage.xaml.tt -> PhoneCallDetailPage.xaml.tt

List of Find and Replace Words

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Do FindAndReplace

From	To
PrismTemplates	BigBrother
"Entity"	"PhoneCall"
"EntityId"	"PhoneCallId"
"Entities"	"PhoneCalls"
"entity"	"phoneCall"
"entityId"	"phoneCallId"
"entities"	"phoneCalls"
"EntityRules"	"PhoneCallRules"
"EntityServerSideRules"	"PhoneCallServerSideRules"
"EntityList"	"PhoneCallList"
"EntityListPage"	"PhoneCallListPage"
"EntityListPageViewModel"	"PhoneCallPageViewModel"
"EntityDetail"	"PhoneCallDetail"
"EntityDetailPage"	"PhoneCallDetailPage"
"EntityDetailPageViewModel"	"PhoneCallDetailPageViewModel"

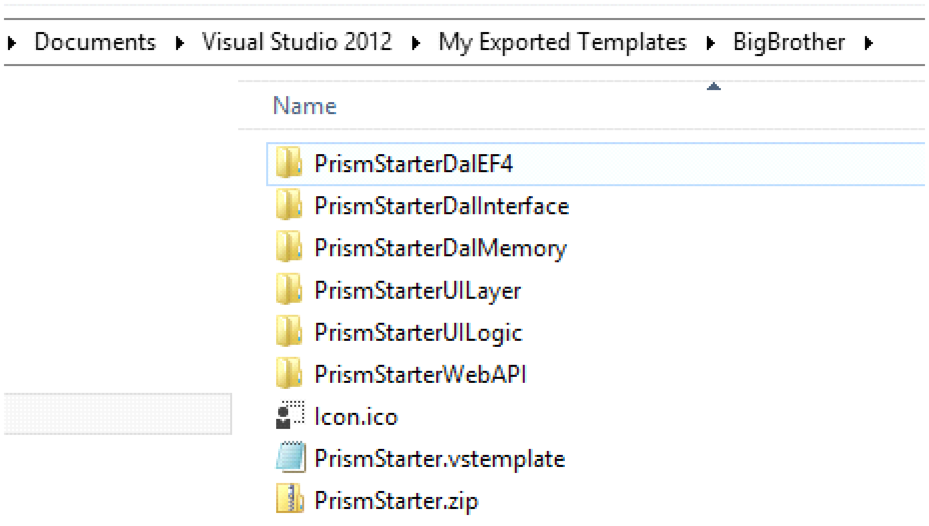
Do ReplaceAll for whole Solution to change 'PrismStarter' occurrences

From	To
PrismStarter.UILogic.Services	BigBrother.UILogic.Services
PrismStarter.UILogic.Models	BigBrother.UILogic.Models

Multi-Project Template

Saturday, September 14, 2013 7:04 AM

Multi-Project Template (PrismStarter.zip) did not work out. When creating a New Project with it, the ProjectName e.g. BigBrother did not flow down to the child projects.


Documents ▸ Visual Studio 2012 ▸ My Exported Templates ▸ BigBrother ▸
Name

PrismStarterDalEF4
PrismStarterDalInterface
PrismStarterDalMemory
PrismStarterUILayer
PrismStarterUILogic
PrismStarterWebAPI
Icon.ico
PrismStarter.vstemplate
PrismStarter.zip

```
<VSTemplate Version="2.0.0" Type="ProjectGroup"
  xmlns="http://schemas.microsoft.com/developer/vstemplate/2005">
  <TemplateData>
    <Name>PrismStarter</Name>
    <Description>An example of a multi-project template</Description>
    <Icon>Icon.ico</Icon>
    <ProjectType>CSharp</ProjectType>
  </TemplateData>
  <TemplateContent>
    <ProjectCollection>
      <ProjectTemplateLink ProjectName="PrismStarterDalEF4">
        PrismStarterDalEF4\MyTemplate.vstemplate
      </ProjectTemplateLink>
      <ProjectTemplateLink ProjectName="PrismStarterDalInterface">
        PrismStarterDalInterface\MyTemplate.vstemplate
      </ProjectTemplateLink>
      <ProjectTemplateLink ProjectName="PrismStarterDalMemory">
        PrismStarterDalMemory\MyTemplate.vstemplate
      </ProjectTemplateLink>
      <ProjectTemplateLink ProjectName="PrismStarterUILayer">
        PrismStarterUILayer\MyTemplate.vstemplate
      </ProjectTemplateLink>
      <ProjectTemplateLink ProjectName="PrismStarterUILogic">
        PrismStarterUILogic\MyTemplate.vstemplate
      </ProjectTemplateLink>
      <ProjectTemplateLink ProjectName="PrismStarterWebAPI">
        PrismStarterWebAPI\MyTemplate.vstemplate
```

```
            </ProjectTemplateLink>
        </ProjectCollection>
    </TemplateContent>
</VSTemplate>
```

DevArt T4 Editor

Saturday, September 14, 2013 5:51 PM

http://www.devart.com/t4-editor/download.html (DevArt T4 Editor - Free)

VS2012->Tools->Options...->Environment->Fonts and Colors->Display Items:

T4(Devart) - Attribute	Magenta
T4(Devart) - C# Keyword	Lime
T4(Devart) - C# String	Cyan
T4(Devart) - String	White

Problems

Wednesday, September 18, 2013 7:41 PM

1) VS Multi-Project Templates did not work out. When creating a New Project with it, the new ProjectName did not flow down to the child projects.
2) VS Automation with EnvDTE would not work without many Thread.Sleep statements. Would like to eliminate all of them but have not found a way. (Note: corrected with PrismAddin)

Add-in

Thursday, October 17, 2013 3:51 PM

Addins stored in:
C:\Users\Ron\Documents\Visual Studio 2012\Addins

To remove an add-in from the integrated development environment (IDE)

1. Delete the .addin XML registration file for the add-in that you want to remove.
   The default location is ..\Users*username*\My Documents\Visual Studio 2012\Addins\.
2. At a Visual Studio command prompt, type **devenv /resetaddin** *Namespace*.*ClassName*, where *Namespace* is the name of your add-in project and *Classname* is its class name, for example, **devenv /resetaddin MyAddin1.Connect**.

From <http://msdn.microsoft.com/en-us/library/ms228765(v=vs.110).aspx>

Note: Use VS2012 x86 Native Tools Command Prompt to remove add-in
devenv/resetaddin PrismAddin.Connect

To change PrismDTE configuration use:
C:\Dev\Metro.2013.2\CodeGen\PrismDTE\PrismDTE\bin\PrismDTE.dll.config
Do not use:
C:\Dev\Metro.2013.2\CodeGen\PrismDTE\PrismDTE\bin\Debug\PrismDTE.dll.config
C:\Dev\Metro.2013.2\CodeGen\PrismDTE\PrismDTE\App.config

To disable in 'Project properties' go to Project properties -> Build > "Errors and warnings" (section), Suppress Warnings (textbox), add 1591 (comma separated list) – Nick Josevski Dec 23 '09 at 6:29

From <http://stackoverflow.com/questions/203863/missing-xml-comment-for-publicly-visible-type-or-member>

PrismRT changes v1.1

Monday, September 30, 2013 6:02 AM

1) Converted PrismDTE from Winforms app to a VS Add-in.
    a. PrismStarter project templates removed making process simplier. A Domain specific Target solution is created from the generic PrismTemplates VS Project Templates (zip files). Target solution goes through these steps:
        i. Rename T4 templates
        ii. Replace in T4 templates
        iii. TransformAllT4Templates (creates .gc [generated code] files)
        iv. Remove T4 Templates from solution
        v. Rename Generated Code Files from .gc to .cs
    b. Removed all Thread.Sleep which reduces execution time to 1.5 minutes
    c. Implemented Template Method design pattern for 3 methods that Traverse Solution Tree. Traversal does not use CodeGen database tables. Traversal uses EnvDTE methods. CodeGen (Solution,Project,Folder,FolderItem) database tables removed making configuration much easier and more flexible. New project items can be added without any changes to configuration.
2) PrismDTE v1.0 did not handle SQL Server data table name pluralization correctly. Needed to make changes for EntityNamePlural and EntityParameterNamePlural to:
    a. …\PrismDTE\PrismDTE\App.config
    b. …\PrismDTE\PrismDTE\FindAndReplace.cs
    c. …\PrismDTE\PrismDTE\Settings.cs
    d. …\PrismDTE\PrismDTE\CodeGenerator.cs
3) Due to problems with the Validation Rules and value types I decided to define all Model fields except Id in DalInterface.Mode ls as strings. Ids are always int. In the database, fields are defined as SQL Server types (bit, datetime, int, money) but in DalEF 4.Repositories they are converted to strings during Get and they are converted back from strings during Save. [Required] attribute is code g enerated based on whether the field is nullable in the database.
4) Added a MarkedToDelete column to all database tables in anticipation of working with EF4 one -to-many relationships.
5) PrismTemplates.DalInterface->Models were incorrectly using client-side rules instead of server-side rules. PrismTemplates.UILogic-> Models were incorrectly using server-side rules instead of client-side rules. Both have been corrected.
6) The <Entity>Rules and <Entity>ServerSideRules database tables have been combined into a single table called RulesAndStrings. The RulesAndStrings will drive not only client-side and server-side Model Rule attributes but also the Strings->en-US->Resources in PrismTemplates.DalInterface and PrismTemplates.UILogic projects.
7) RunAllSteps now runs async on BackgroundWorkers (removed in VS Add -in)
8) TransformAllTemplates now raises a CommandEvent when done instead of running on a timer
9) Form Validation (both client-side and server-side) has been implemented
10) SQL Server SSIS packages have been created to Import Excel spreadsheet data from the CodeGen tables into their corresponding SQL Server tables.
11) All WebAPI results are returned in a complex type (CrudResult) so that multiple results (e.g. numRowAffected and error messag es) can be returned in one package.