Part 1 - Creating a Dynamic Template

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Introduction

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The ExcelTemplate object is used for template-driven document generation. This object opens an ExcelWriter template file, populates it with data from a specified data source, and generates a new Excel workbook. An Excel file uploaded as an ExcelTemplate object is not directly modifiable at runtime.

The ExcelApplication object is an Excel file engine that can be used to create, open, modify, and save workbooks. A single instance of Exce lApplication can generate multiple Excel workbooks.

This tutorial opens an Excel template file formatted as for ExcelTemplate (i.e. it contains data markers) and makes customizations using Excel Application object, based on a user's selections. In particular, it highlights the functionality of the CopySheet method. Then data is bound to the template using ExcelTemplate, again, based on a user's selections.

This tutorial assumes a basic understanding of the ExcelTemplate object. If you have not familiar with creating an Excel template and binding data with ExcelTemplate, please go through the Simple Expense Summary tutorial first.

Setting up the template

Following the Sample Code

In the downloadable <u>ExcelWriter_Basic_Tutorials.zip</u>, there is a completed template file located in *ExtendedSalesSummary/templates/t emplate.xlsx*.

A copy of the completed template file is also available here.

The template file should look something like this:

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In the template, the <code>%%=Header.FiscalYear</code> data marker is concatenated with "Sales Summary -". Data markers cannot be used directly in formulas; the data marker needs to be in a separate cell, which can be referenced in an Excel formula.

In the header, there is a formula =CONCATENATE("Sales Summary - ", N1), where N1 is the cell that actually contains the %%=Header.Fi scalYear data marker. This is shown in the image below.

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Adding an ExcelWriter Reference in Visual Studio

Following the Sample Code

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In the sample code, the reference to SoftArtisans.OfficeWriter.ExcelWriter.dll has already been added to the *ExtendedS* alesSummary web application project.

To create a .NET project and add a reference to the ExcelWriter library:

- 1. Open Visual Studio and create a .NET project.
- 2. Add a reference to SoftArtisans.OfficeWriter.ExcelWriter.dll

SoftArtisans.OfficeWriter.ExcelWriter.dll is located under Program Files > SoftArtisans > OfficeWriter > dotnet
 > bin

Writing the Code

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Following the Sample Code The code behind for this part of the tutorial can be found under *Extended Sales Summary/Part1.aspx.cs*.

There are two main sections of code that will be covered:

- ExcelApplication code to customize the template based on a list of countries that a user has selected
 In the sample, this code is contained in the GenerateTemplate() method
- ExcelTemplate code to bind data to the customized template
 - In the sample, this code is contained in the PopulateTemplate() method

Getting Started

1. Include the SoftArtisans.OfficeWriter.ExcelWriter namespace in the code behind:

```
using SoftArtisans.Office.ExcelWriter;
```

2. At the top of the class definition, define global variations for the ExcelApplication, ExcelTemplate, and Workbook objects:

```
private ExcelApplication xla;
private ExcelTemplate xlt;
private Workbook wb;
```

Following the Sample Code

In the sample code, you will also see List<string> selectedCountries defined with the global variables. This is the list that will contain the countries the user selects from the web form in the sample code.

Customizing the template

1. Define a method to contain the ExcelApplication code for customizing the sheet. In the sample, this method is called GenerateTemplate ()

```
//Use ExcelApplication to make a copy of a regional worksheet for each
//country that is selected by the user.
protected void GenerateTemplate()
{
}
```

2. In the helper method, instantiate the ${\tt ExcelApplication}$ object.

```
ExcelApplication xla = new ExcelApplication();
```

 $3. \ Open \ the \ {\tt Workbook} \ template \ file \ with \ {\tt ExcelApplication.Open} \ method.$

```
Workbook wb = xla.Open(Page.MapPath(@"templates\template.xlsx"));
```

4. In the sample, the user selects anywhere from 1-4 countries to include in the report. The selected countries are stored in the List<string> o bject, selectedCountries. For each country, make a copy of the basic template sheet with Worksheets.CopySheet(), place the copied worksheet at the end of the workbook, and give the new sheet a name.

In this example, the sheet that needs to be copied is the first worksheet in the template file. It can be accessed through Workbook.Worksheets by index (0) or by name ("SimpleTemplate").

```
for (int i = 0; i < selectedCountries.Count; i++)
{
    wb.Worksheets.CopySheet(wb.Worksheets[0], wb.Worksheets.Count,
    selectedCountries[i]);
}</pre>
```

6. At this point the workbook contains a worksheet named after each selected country in addition to the original worksheet. Hide the original template sheet by setting Worksheet.Visibility.

wb.Worksheets[0].Visibility = Worksheet.SheetVisibility.Hidden;

7. Select the first visible worksheet to be displayed when the file first is opened using Worksheets.Select().

wb.Worksheets[1].Select();

8. The final code for the GenerateTemplate() method should look like this:

```
protected void GenerateTemplate()
{
    xla = new ExcelApplication();
    wb = xla.Open(Page.MapPath(@"templates\template.xlsx"));
    for (int i = 0; i < selectedCountries.Count; i++)
    {
        wb.Worksheets.CopySheet(wb.Worksheets[0], wb.Worksheets.Count,
        selectedCountries[i]);
    }
    wb.Worksheets["SimpleTemplate"].Visibility = Worksheet.SheetVisibility.Hidden;
    wb.Worksheets[1].Select();
    }
</pre>
```

Binding Data Dynamically

1. Define a method to contain the ExcelTemplate code for binding the data to the template. In the sample, this method is called PopulateTem plate()

```
//Use ExcelTemplate to bind data for each selected country
//to worksheets in the template, then populate the report
//with that data
protected void PopulateTemplate()
{
}
```

2. In the helper method, instantiate a new ExcelTemplate object.

```
ExcelTemplate xlt = new ExcelTemplate();
```

3. Pass the existing ExcelApplication and Workbook to the ExcelTemplate object using ExcelTemplate.Open(ExcelApplication, Workbook).

```
xlt.Open(xla, wb);
```

4. Although not necessary, it may be useful to set ExcelTemplate.RemoveExtraDataMarkers to true. This will tell ExcelWriter to ignore any data markers that are not bound to data sets. This is helpful if you are adding the data binding calls to the code one at a time.

```
xlt.RemoveExtraDataMarkers = true;
```

5. For each selected country, data needs to be bound to the corresponding worksheet. Define a DataBindingProperties object for future use and set up a for loop to go through all the selected countries.

```
DataBindingProperties dataBindProps;
for (int i = 0; i < selectedCountries.Count; i++)
{
}</pre>
```

The next few steps relate to code contained in the ${\tt for}$ loop.

For each selected country:

6. Retrieve the name of the country.

string country = selectedCountries[i];

7. Instantiate a new DataBindingProperties object.

dataBindProps = xlt.CreateDataBindingProperties();

8. When a data set is bound to an Excel template, any data markers with matching syntax will be populated with the data from that data set. This can be problematic if your template contains copied sheets, where all the data markers are identical.

To get around this, set the DataBindingProperties.WorksheetName to bind a data set only to a particular worksheet.

dataBindProps.WorksheetName = country;

9. Create an string array for the header values and a string array for the column names.

ExcelTemplate can be bound to numerous types of .NET data structures: single variables, arrays (1-D, jagged, multi-dimensional), DataSet, DataTable, IDataReader etc. The source of the data can come from anywhere.

Some of the aforementioned structures have built in column names, such as the DataTable. When working with arrays, which don't have built in column names, you have to define the column names in a separate string array.

```
string[] headerValues = { "FY 2008", "Foreign Trade Division", country };
string[] headerNames = { "FiscalYear", "TradeDivision", "Country" };
```

10. Use the ExcelTemplate.BindRowData method to bind the header data to the data markers in the template file (i.e. %%=Header.FiscalY ear).

BindRowData() binds a single row of data to the template, but the data markers in the template do not need to be in a single row.

```
xlt.BindRowData(specificInfo, headerTitles, "Header", dataBindProps);
```

11. Get the data for the Top and Details Sales data sets.

Following the Sample

In the sample project, we are parsing CSV files with query results, rather than querying a live database. The CSV files are available under the *data* directory. There is a copy of the CSV parser, GenericParsing.dll in the *bin* directory of the project GetCSVData is defined in *Part1.aspx.cs* in a region marked *Utility Methods*.

These calls are to a helper method GetCSVData that parses the CSV files and returns a DataTable with the values.

```
DataTable dts = GetCSVData(Page.MapPath("//data//" + country + "5.csv"));
DataTable dts2 = GetCSVData(Page.MapPath("//data//" + country + "All.csv"));
```

If you are following in your own project and would like to parse the CSV files as well, you will need to:

- Add a reference to GenericParsing.dll
- Include GeneringParsing at the top of your code.
- Add the GetCSVData method that can be found in the sample code.

12. Use ExcelTemplate.BindData to bind the data for the Top and Details Sales data sets.

Recall that the data source names (Top, Details) need to match the data marker names exactly.

```
xlt.BindData(dts, "Top", dbp);
xlt.BindData(dts2, "Details", dbp);
```

13. The final for loop should look like this:

```
for (int i = 0; i < selectedCountries.Count; i++)
{
   string country = selectedCountries[i];
   dataBindProps = xlt.CreateDataBindingProperties();
   dataBindProps.WorksheetName = country;
   string[] headerValues = { "FY 2008", "Foreign Trade Division", country };
   string[] headerNames = { "FiscalYear", "TradeDivision", "Country" };
   xlt.BindRowData(headerValues, headerNames, "Header", dataBindProps);
   DataTable dts = GetCSVData(Page.MapPath("//data//" + country + "5.csv"));
   DataTable dts2 = GetCSVData(Page.MapPath("//data//" + country + "All.csv"));
   xlt.BindData(dts, "Top", dataBindProps);
   }
}</pre>
```

14. Call ExcelTemplate.Process() to import all data into the file.

```
xlt.Process();
```

15. Call ExcelTemplate.Save to save the output file.

ExcelTemplate has several output options: save to disk, save to a stream, stream the output file in a page's Response inline or as an attachment.

```
xlt.Save(Page.Response, "output.xlsx", false);
```

16. The final code for <code>PopulateTemplate()</code> should look like this:

```
protected void PopulateTemplate()
{
            xlt = new ExcelTemplate(); //Create a new ExcelTemplate object
            xlt.Open(xla, wb);
            xlt.RemoveExtraDataMarkers = true;
            DataBindingProperties dataBindProps;
            for (int i = 0; i < selectedCountries.Count; i++)</pre>
            {
                string country = selectedCountries[i];
                dataBindProps = xlt.CreateDataBindingProperties();
                dataBindProps.WorksheetName = country;
                string[] headerValues = { "FY 2008", "Foreign Trade Division", country
};
                string[] headerNames = { "FiscalYear", "TradeDivision", "Country" };
                xlt.BindRowData(headerValues, headerNames, "Header", dataBindProps);
                DataTable dts = GetCSVData(Page.MapPath("//data//" + country +
"5.csv"));
                DataTable dts2 = GetCSVData(Page.MapPath("//data//" + country +
"All.csv"));
                xlt.BindData(dts, "Top", dataBindProps);
                xlt.BindData(dts2, "Details", dataBindProps);
            }
            xlt.Process();
            xlt.Save(Page.Response, "Output.xlsx", false);
}
```

17. Now you may run your code. Just call GenerateTemplate() and PopulateTemplate() to customize and populate your template. Here is an example of what the sample will look like:



Note that there are multiple worksheets, each with the tab name and data for that region.

Downloads

You can download the code for the Extended Sales Summary here.

ExcelWriter Basic Tutorials.zip

Next Steps

Continue on to Part 2 - Adding a Coversheet