

# Part 1 - Creating a Dynamic Template

## Table of Contents

- [Introduction](#)
  - [Setting up the template](#)
  - [Adding an ExcelWriter Reference in Visual Studio](#)
- [Writing the Code](#)
  - [Getting Started](#)
  - [Customizing the template](#)
  - [Binding Data Dynamically](#)
- [Downloads](#)
- [Next Steps](#)

## Introduction

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 `ExcelApplication` 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 `ExcelApplication` 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

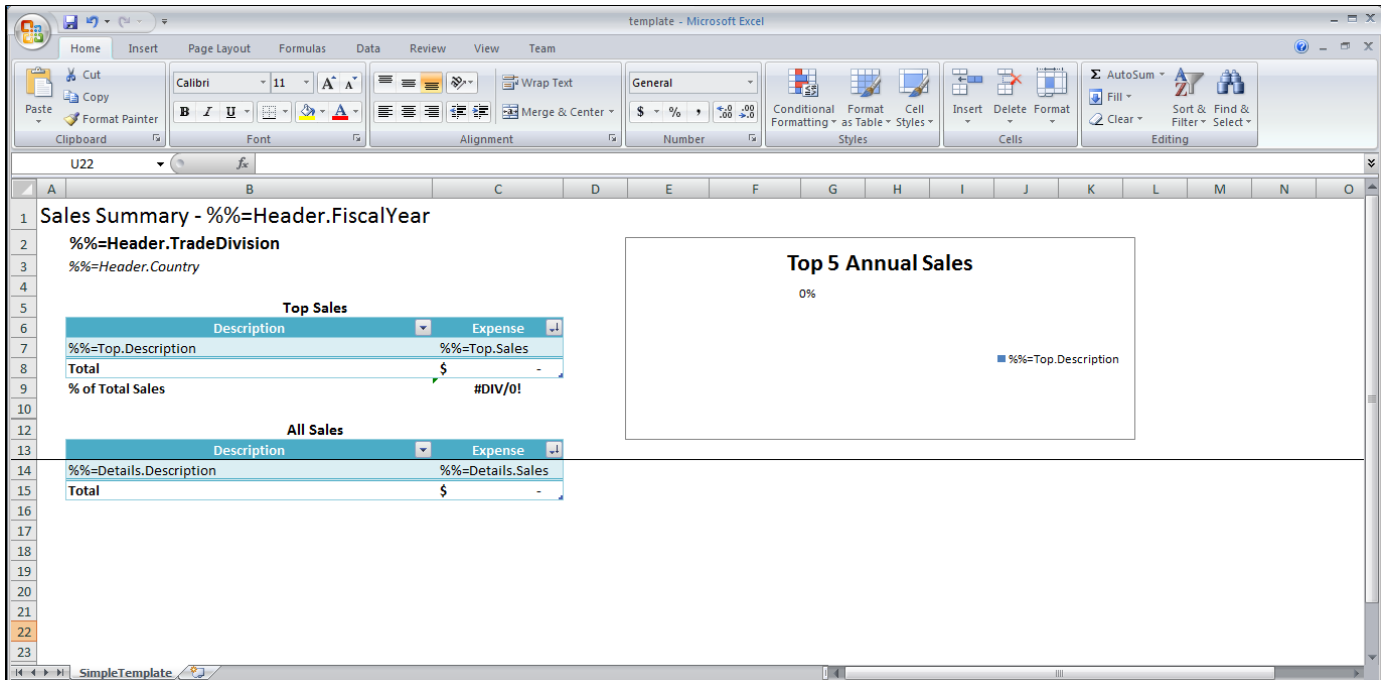


### Following the Sample Code

In the downloadable [ExcelWriter Basic Tutorials.zip](#), there is a completed template file located in `ExtendedSalesSummary/templates/template.xlsx`.

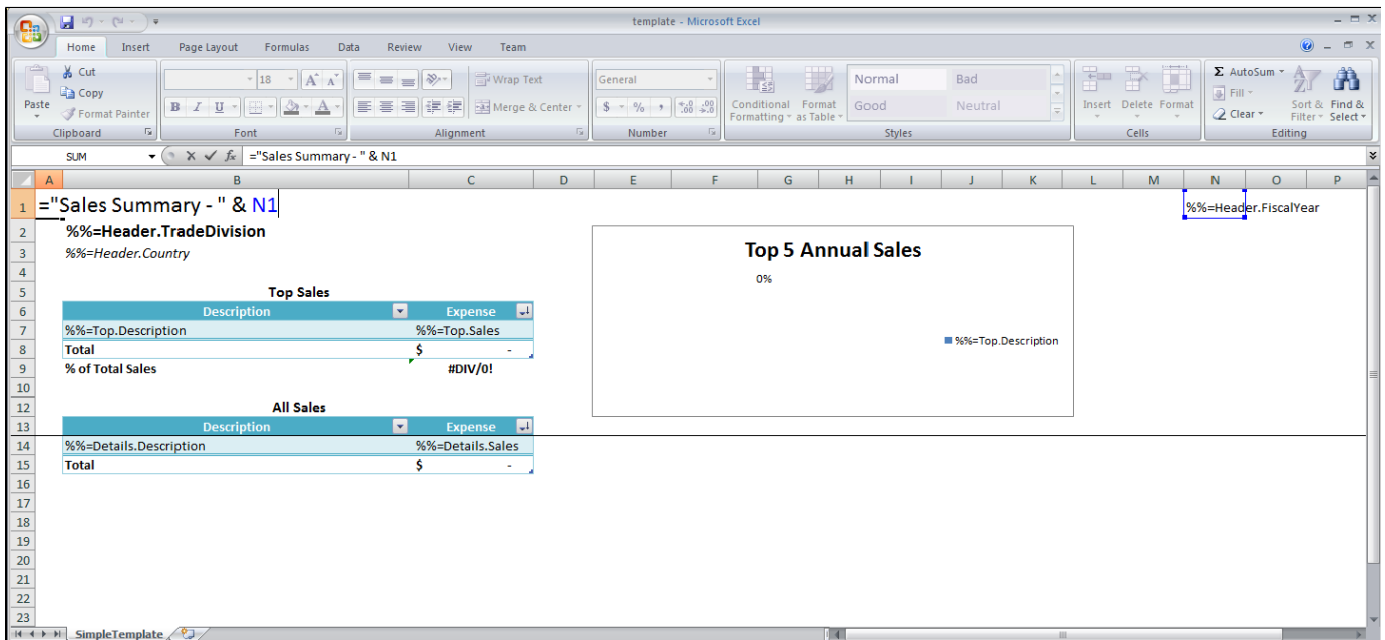
A copy of the completed template file is also available [here](#).

The template file should look something like this:



In the template, the `%%=Header.FiscalYear` 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.FiscalYear` data marker. This is shown in the image below.



## Adding an ExcelWriter Reference in Visual Studio



### Following the Sample Code

In the sample code, the reference to `SoftArtisans.OfficeWriter.ExcelWriter.dll` has already been added to the *ExtendedSalesSummary* 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



### 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 `ExcelApplication` object.

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

3. Open the `Workbook` template file with `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>` object, `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]);
}
```

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();
}
```

## 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 `PopulateTemplate()`

```
//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++)
{

}
```

The next few steps relate to code contained in the `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.FiscalYear`).

`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);
    xlt.BindData(dts2, "Details", dataBindProps);
}

```

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 `PopulateTemplate()` 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++)
    {
        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"));

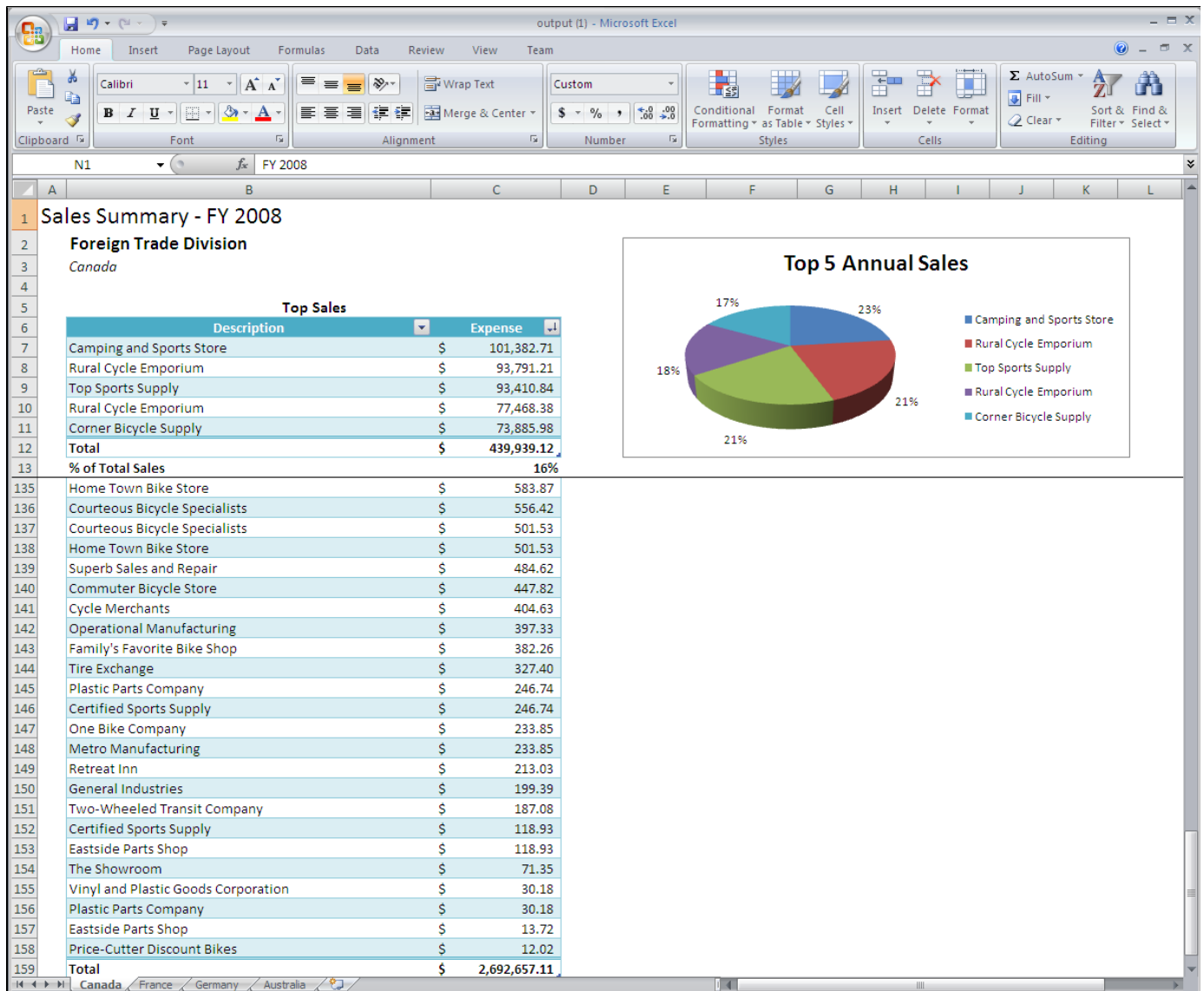
    xlt.BindData(dts, "Top", dataBindProps);
    xlt.BindData(dts2, "Details", dataBindProps);
    }
    xlt.Process();
    xlt.Save(Page.Response, "Output.xlsx", false);
}

```

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.

You can download the code for the Extended Sales Summary [here](#).

## Next Steps