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SharpDocx

Summary

Generating documents with SharpDocx is a two-step process. First you create a view in Word. A view is a Word document which also contains C# code. Code can be inserted anywhere, e.g. 1/30/2023 10:13:19 PM would insert the current date and time.

The next step is to create documents based on this view. This requires two lines of code:

var document = DocumentFactory.Create("view.cs.docx");

document.Generate("output.docx");

Out of the box SharpDocx supports inserting text, tables, images and more. This tutorial shows you how.

If you want, you can specify a view model to be used in your view. Then you could write things like < % foreach (var item in Model.MyList) { % >. See the Model sample.

If you want to do something that's not supported by SharpDocx, you can do so by creating your own document subclass. See the Inheritance example. This example also shows how to get an output stream instead of a file.

SharpDocx is inspired by Web technologies like ASP.NET and JSP. Developers familiar with those technologies should feel right at home. It supports .NET Framework 3.5-4.8 and .NET Standard 2.0. Since it supports .NET Standard 2.0 it can be used in .NET Core 3.1, .NET 5.0 and .NET 6.0 projects as well.

Generating documents with SharpDocx can be very fast: a slightly modified Model sample produced 25 documents per second on my modest laptop. That’s 1500 documents per minute. Single threaded.

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# The basics

At any point in the text you can insert C# statements. Like right here.

The result looks like this:



## The Write method

If you want to display the value of i, you can use the Write method. Right now, i is 1.

This will show:



There’s also a shorthand notation for the Write method: i is still 1.

This results in:



You can insert line breaks by using ‘\n’:

This paragraph  
contains two  
line breaks.

# Conditional content

You can use an if statement to display conditional content.

This will be displayed.

In this case, any formatting will be lost because the code parser ignores any formatting.

If you want to conditionally display a paragraph with formatting, use a *text block*: text between two code blocks and placed between curly brackets:

This **will** *also* be displayed, but *with* formatting.

If you want, you can span multiple elements in a text block. E.g.

The diverging pronunciation of tomato (though not so much potato) is primarily one of regional dialect.

The pronunciation 'tuh-MAH-toh' is the standard pronunciation in the UK and is accepted in the US regions of New England along with parts of the lower East Coast, while 'tuh-MAY-toh' is found almost everywhere else.

## Text block limitations

1. You can’t use text blocks to conditionally display a part of a paragraph. It’s all or nothing. This makes the text block implementation much simpler. However, it might also give some unexpected results.

2. Text blocks can’t share paragraphs. That means that you can’t write < % } } % > to end two text blocks. Instead, use two paragraphs, each containing < % } % >.

3. Also, text blocks in else statements are at the moment not supported by SharpDocx. Instead, use another if statement.

4. Don’t mix text blocks with the AppendRow or AppendParagraph methods: it just won’t work. Instead, use the Write method to display conditional content. See also issue #25.

# Loops

You can add repeating text blocks to a document like this:

Infobox_info_icon.emfThe value of i is **1.**i *squared* is **1**

Infobox_info_icon.emfThe value of i is **2.**i *squared* is **4**

Infobox_info_icon.emfThe value of i is **3.**i *squared* is **9**

Infobox_info_icon.emfThe value of i is **4.**i *squared* is **16**

Infobox_info_icon.emfThe value of i is **5.**i *squared* is **25**

Infobox_info_icon.emfThe value of i is **6.**i *squared* is **36**

Infobox_info_icon.emfThe value of i is **7.**i *squared* is **49**

Infobox_info_icon.emfThe value of i is **8.**i *squared* is **64**

Infobox_info_icon.emfThe value of i is **9.**i *squared* is **81**

Infobox_info_icon.emfThe value of i is **10.**i *squared* is **100**

Infobox_info_icon.emfThe value of i is **11.**i *squared* is **121**

Infobox_info_icon.emfThe value of i is **12.**i *squared* is **144**

Nested loops  
Loops can also be nested.

### Multiples of 1

1 \* 1 = 1

1 \* 2 = 2

1 \* 3 = 3

**Note:** 3 is divisible by 3.

### Multiples of 2

2 \* 1 = 2

2 \* 2 = 4

2 \* 3 = 6

**Note:** 6 is divisible by 3.

### Multiples of 3

3 \* 1 = 3

**Note:** 3 is divisible by 3.

3 \* 2 = 6

**Note:** 6 is divisible by 3.

3 \* 3 = 9

**Note:** 9 is divisible by 3.

### Multiples of 4

4 \* 1 = 4

4 \* 2 = 8

4 \* 3 = 12

**Note:** 12 is divisible by 3.

# Loops, tables and the AppendRow method

Sometimes you do want a loop, but you don’t want a repeating text block. For example, you just want to append rows to a table, but you don’t want to repeat the table itself. In this case, use {! instead of {.

This text and table do NOT repeat, because we used {!. However, a couple of rows do get appended to the table by using the AppendRow method.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| i \* 1 | i \* 2 | i \* 3 | i \* 4 | i \* 5 | i \* 6 | i \* 7 | i \* 8 | i \* 9 | i \* 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 |
| 13 | 26 | 39 | 52 | 65 | 78 | 91 | 104 | 117 | 130 |
| 14 | 28 | 42 | 56 | 70 | 84 | 98 | 112 | 126 | 140 |
| 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 |
| 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160 |
| 17 | 34 | 51 | 68 | 85 | 102 | 119 | 136 | 153 | 170 |
| 18 | 36 | 54 | 72 | 90 | 108 | 126 | 144 | 162 | 180 |
| 19 | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 |
| 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 |
| 21 | 42 | 63 | 84 | 105 | 126 | 147 | 168 | 189 | 210 |
| 22 | 44 | 66 | 88 | 110 | 132 | 154 | 176 | 198 | 220 |
| 23 | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 |
| 24 | 48 | 72 | 96 | 120 | 144 | 168 | 192 | 216 | 240 |
| 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 |
| 26 | 52 | 78 | 104 | 130 | 156 | 182 | 208 | 234 | 260 |
| 27 | 54 | 81 | 108 | 135 | 162 | 189 | 216 | 243 | 270 |
| 28 | 56 | 84 | 112 | 140 | 168 | 196 | 224 | 252 | 280 |
| 29 | 58 | 87 | 116 | 145 | 174 | 203 | 232 | 261 | 290 |
| 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 |

## Combining loops, text blocks and tables

You can nest tables in text blocks in order to create multiple tables. Note that the inner loop does not create a repeating text block, but does append rows.

### Multiples of 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| i |  | j |  | i \* j |
| 1 | \* | 1 | = | 1 |
| 1 | \* | 2 | = | 2 |
| 1 | \* | 3 | = | 3\* |
| 1 | \* | 4 | = | 4 |
| 1 | \* | 5 | = | 5 |
| 1 | \* | 6 | = | 6\* |
|  |  |  |  | \* Divisible by 3 |

### Multiples of 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| i |  | j |  | i \* j |
| 2 | \* | 1 | = | 2 |
| 2 | \* | 2 | = | 4 |
| 2 | \* | 3 | = | 6\* |
| 2 | \* | 4 | = | 8 |
| 2 | \* | 5 | = | 10 |
| 2 | \* | 6 | = | 12\* |
|  |  |  |  | \* Divisible by 3 |

### Multiples of 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| i |  | j |  | i \* j |
| 3 | \* | 1 | = | 3\* |
| 3 | \* | 2 | = | 6\* |
| 3 | \* | 3 | = | 9\* |
| 3 | \* | 4 | = | 12\* |
| 3 | \* | 5 | = | 15\* |
| 3 | \* | 6 | = | 18\* |
|  |  |  |  | \* Divisible by 3 |

# Images

Insert images using the Image method.

​

If only a file name is specified, SharpDocx searches this file in a directory specified by the ImageDirectory property. Right now this property has been set to ‘C:\Projects\SharpDocx\Samples\SampleProjects\Tutorial\bin\Debug\net48/../../../../../Images’.

The Image method accepts a second optional parameter that specifies the relative size of the image. Here’s  at 15%.

Images that are too wide to be displayed at 100% are automatically scaled back. Here’s an example:



New methods in SharpDocx 2.4 are ImageFromBase64 and ImageFromUrl. And if you want you can now also use your own streams using the ImageFromStream(Stream stream, int percentage = 100, string extension = null)method.

 ImageFromBase64 example.

 ImageFromUrl example.

SharpDocx supports the following image formats: bmp, gif, jpeg, png, tiff and emf.

# Replacing text

If you want to replace text, you can use the Replace method.

This will replace *all* occurrences of the specified string.[[1]](#footnote-2)

Here’s the **replaced text**. And here’s some more replaced text.

# Referencing assemblies and importing namespaces

If you want to use specific types in a view, you can use the Assembly and Import directives to get access to them. Directives look like regular code blocks, but they always start with < %@.

Reference an assembly with the Assembly directive.

Import namespaces with the Import directive.

In C# you would write:

using System.Xml.Linq;

Now we can use types in System.Xml.Linq. Let’s read some news.

**Classic Videogame 'Goldeneye 007' Finally Comes to Nintendo Switch and Xbox**The classic 1997 vidoegame GoldenEye 007 "has finally landed on Xbox and Nintendo Switch," writes the Verge:  
On Xbox, the remaster includes 4K resolution, smoother frame rates, and split-screen local…

**D&D Won't Change Its Original 1.0 OGL License, Reference Document Enters Creative Commons**An anonymous reader shares a report from PC Gamer:  
  
In a blog post published Friday, Wizards of the Coast announced that it is fully putting the kibosh on the proposed Open Gaming License (OGL) 1.2 th…

**Amazon Is Reportedly Making a Tomb Raider TV Series**Amazon is developing a TV series based on the Tomb Raider video game franchise with scripts written by Phoebe Waller-Bridge, according to The Hollywood Reporter. The Verge reports: Details are light o…

**Hackers Demand $10M From Riot Games To Stop Leak of 'League of Legends' Source Code**An anonymous reader quotes a report from Motherboard: Hackers stole the source code for League of Legends, and now they're asking for $10 million from developer Riot Games. Motherboard has obtained a …

**GameCube and Wii Games Are Now Easier To Play On Xbox Consoles**The new standalone Dolphin emulator will let you play almost any GameCube or Wii game on your Xbox console. Windows Central reports: Dolphin Emulator for UWP first rolled out in beta on December 6, 20…

**Blizzard Will Suspend World of Warcraft In China Because of Licensing Dispute**Blizzard will suspend games in China because it can't reach an agreement with its licensing and publishing partner NetEase, it said in a press release. World of Warcraft, Hearthstone, Overwatch 2, Sta…

**Chess.com Visits Spike with New Cat-Themed AI Bot Named 'Mittens'**On New Year's Day, Chess.com launched five chess-playing bots &mdash; each with a cat persona. But the Deseret News reports that something unexpected happened with "Mittens"...  
Interest generated by M…

**From Halo to the Simpsons, Would Fictional Mad Scientists Pass Ethical Review?**From Science magazine:  
  
Cave Johnson is almost ready to start a new study in his secret underground facility. The founder of the Michigan-based technology company Aperture Science, he's invented a por…

**Merriam-Webster Acquires Wordle Clone Quordle**Merriam-Webster, the Encyclopaedia Britannica subsidiary best known for its online dictionary, has acquired a popular Wordle clone called Quordle. Terms of the deal have not been disclosed. TechCrunch…

**The First 'Bored Ape' NFT Game Costs $2,300+ For Three Weeks of Play**An anonymous reader quotes a report from Ars Technica: Owners of Yuga Labs' infamous "Bored Ape" non-fungible tokens (and related crypto tokens) get free access to a simple endless runner/tunnel racin…

**D&amp;D Will Move To a Creative Commons License, Requests Feedback On a New OGL**A new draft of the Dungeons &amp; Dragons Open Gaming License, dubbed OGL 1.2 by publisher Wizards of the Coast, is now available for download. Polygon reports: The announcement was made Thursday by K…

**Ubisoft Devs Grill Boss On Shifting Blame And Chasing Trends**Ubisoft CEO Yves Guillemot faced tough questions from some exhausted and fed-up staff about recent missteps and future plans in a company-wide Q&amp;A session on Wednesday. The meeting comes just a we…

**Google's Stadia Cloud Gaming Platform Shuts Down Today**Google is officially shutting down its Stadia cloud gaming service today, Wednesday, January 18, after having failed to gain the traction that the company was expecting. Google servers that host the s…

**Game Makers Stage Mass Exodus From Dungeons &amp; Dragons' 'Open' License**Following controversial changes to Dungeons &amp; Dragons' decades-old Open Gaming License (OGL), "many prominent third-party RPG publishers now say they're abandoning the OGL, regardless of what chan…

**Videogame Studio Called 'Proletariat' Declines to Recognize Union**An anonymous reader shares a report from the Washington Post:  
  
Staff at Activision Blizzard-owned video game studio Proletariat &mdash; whose name is a term for the working class &mdash; announced the…

In a real world scenario you wouldn’t fetch data or have this much code in a view. But hey, this is just an example.

## Notes

SharpDocx will automatically reference the calling assembly. So if the view model is declared in the calling assembly, you can use that model in your document without explicitly referencing that assembly. However, if the view model is defined in another assembly, you need to explicitly reference it. If you don't, you'll get compilation errors like:

Line 26: error CS0012: The type 'ClassLibrary1.Models.Country' is defined in an assembly that is not referenced. You must add a reference to assembly 'ClassLibrary1, Version=1.0.0.0, Culture=neutral, PublicKeyToken=null'.

The simplest way to add a reference to ClassLibrary1 is by using an Assembly-directive in your document:

< %@ Assembly Name="ClassLibrary1" % >

Or, if you're using .NET Core, you might want to use:

< %@ Assembly Name="~/ClassLibrary1" % >

The tilde represents the directory that contains SharpDocx.dll. Use it when you get errors like:

System.IO.FileNotFoundException: Could not find file 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\2.0.9\ClassLibrary1.dll'.

Another way to add references and namespaces is by defining your own SharpDocx document subclass. See the Inheritance example.

# The Map

The Map maps OpenXmlElements to plain text and vice versa. It’s being used internally by the Replace method and for finding the C# code in views, among other things. At the moment Map.Text looks something like this:

Version 2.4.0.0  
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January 2023  
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Summary  
Generating documents with SharpDocx is a two-step process. First you create a view in Word. A view is a Word document which also contains C# code. Code can be inserted anywhere, e.g. 1/30/2023 10:13:19 PM would insert the current date and time.  
The next step is to create documents based on this view. This requires two lines of code:  
var document = DocumentFactory.Create("view.cs.docx");  
do …

The Map might be handy when you want to search the document for text.

# The SharpDocx solution

### Building the example programs

The Tutorial, Inheritance and Model samples will by default be built for .NET Framework 4.8 and .NET 6.0. The.NET 6.0 build will use the .NET Standard 2.0 version of SharpDocx.

The samples will by default run in .NET Framework 4.8 in Visual Studio 2022. If you want to change this, right click on the project file in and select **Edit Project File**. This will open the csproj file. The first target named on this line will be used for startup/debugging in Visual Studio:

<TargetFrameworks>net48;net6.0</TargetFrameworks>

Depending on the SDKs you have installed, you can choose between net35, net40, net45, net46, net47, net48, netstandard2.0, netcoreapp3.1, net5.0, net6.0 and net7.0.

### Linux and Mac

First clone the SharpDocx repository:

git clone https://github.com/egonl/SharpDocx

cd SharpDocx

Now you can build and run the Tutorial sample.

dotnet build SharpDocx.sln

dotnet Samples/SampleProjects/Tutorial/bin/Debug/net6.0/Tutorial.dll

If you want you can remove the net48 target from all projects on Unix-like systems, because they will produce Windows executables.

1. Actually, this will only replace text in the body of the document, and not in headers, footers, end- or footnotes. So this won’t work as expected. But you can use code here. [↑](#footnote-ref-2)