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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. 11-12-2022 20:54:45 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.

Contents

[The basics 3](#_Toc48598503)

[The Write method 3](#_Toc48598504)

[Conditional content 4](#_Toc48598505)

[Text block limitations 4](#_Toc48598506)

[Loops 5](#_Toc48598507)

[Nested loops 6](#_Toc48598508)

[Loops, tables and the AppendRow method 7](#_Toc48598509)

[Combining loops, text blocks and tables 8](#_Toc48598510)

[Images 9](#_Toc48598511)

[Replacing text 10](#_Toc48598512)

[Referencing assemblies and importing namespaces 11](#_Toc48598513)

[Notes 11](#_Toc48598514)

[The Map 13](#_Toc48598515)

[The SharpDocx solution 14](#_Toc48598516)

# 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.

**It's DOOM's 29th Anniversary. What's Your Favorite Story?**It was 29 years ago today that DOOM was first released &mdash; and we're still using it! Here in 2022, the latest mod reportedly converts its demons into the zombies and creepers from Minecraft. This …

**Class-Action Alleging Fortnite Is Addictive Will Go Ahead, Judge Rules**"The CBC is reporting that a class action lawsuit against Epic Games over Fortnite being addictive to children will go ahead," writes Slashdot reader lowvisioncomputing. From the report: The suit was …

**Atari Revives Unreleased Arcade Game That Was Too Damn Hard For 1982 Players**Atari is reviving Akka Arrh, a 1982 arcade game canceled because test audiences found it too difficult. Engadget reports: For the wave shooter's remake, the publisher is teaming up with developer Jeff…

**Microsoft Reaches 10-year Deal With Nintendo for Call of Duty**Microsoft says it has reached a 10-year agreement with Nintendo to make Call of Duty available on Nintendo consoles if the Activision Blizzard acquisition closes. From a report: The deal is similar in…

**Dwarf Fortress' Graphical Upgrade Provides a New Way Into a Wildly Wonky Game**An anonymous reader quotes a report from Ars Technica, written by Kevin Purdy: Available tomorrow on Steam and itch.io, the new version of Dwarf Fortress updates the legendary (and legendarily arcane)…

**Amazon Luna Can Now Play Games You Own On PC, No Channel Subscriptions Required**Amazon Luna is one of the better cloud gaming options if you play a lot of Ubisoft titles, and it's getting a big upgrade this week. You can now sync purchases on Luna to PC and play without a subscri…

**Microsoft Offers Sony a 10-Year Deal On New CoD Games, Plans To Raise Game Prices Next Year**In an op-ed in the Wall Street Journal today, Microsoft president Brad Smith said the company has offered Sony a 10-year contract to make future Call of Duty games available on PlayStation if its prop…

**Trailers Released for 2023 First-Person Shooter 'Starship Troopers: Extermination'**You can read the news in Military Times magazine. "Coming just after the 25th anniversary of the release of the cult classic Starship Troopers (November 1997), Offworld Industries and Sony Pictures Co…

**20 Videogame QA Testers in Albany Win Union Vote at Activision Blizzard**"A group of about 20 quality assurance testers at Activision Blizzard's Albany location won their bid for a union Friday afternoon," reports the Washington Post:  
  
The workers join the Game Workers All…

**'The New Wordle Editor Is Ruining Wordle'**An anonymous reader quotes a report from Slate, written by Lizzie O'Leary: When the New York Times announced, on November 7, that Wordle would have an editor, I didn't give it much thought. How much c…

**Google Stadia Hardware Refunds Will Be Issued Within Two Weeks**Google will be issuing refunds for Stadia hardware purchased from the Google Store within two weeks, according to an email sent to customers on Wednesday. The Verge reports: That means the refunds sho…

**Military Sim Developer Tired of Its Game Being Used To Fake War Footage**An anonymous reader quotes a report from Motherboard: Bohemia Interactive, the Czech Republic based developer of the military simulator game Arma 3, has published a blog and a video it hopes will help…

**Netflix is Working on 'Brand-New AAA PC Game'**Netflix has put up more than a dozen job listings on its website for Netflix Games Studio's Los Angeles office. From a report: These listings give us a few hints about the company's plans for the new …

**Microsoft Argues Nintendo Offers a 'Broader Range of Mature Content' than Xbox**An anonymous reader shares a report: According to Microsoft, Nintendo "offers a broader range of mature content than Xbox." Microsoft's statements came about as part of its response to the UK CMA abou…

**Valve Introduces Proton Next**Proton Next has been announced by Valve developer Pierre-Loup Griffais on Twitter, as an easier way to check out and test the upcoming stable releases of new Proton versions for Linux desktop and Stea…

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 2.3.0.0  
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December 2022  
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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. 11-12-2022 20:54:45 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)