Basic Concepts

Introduction

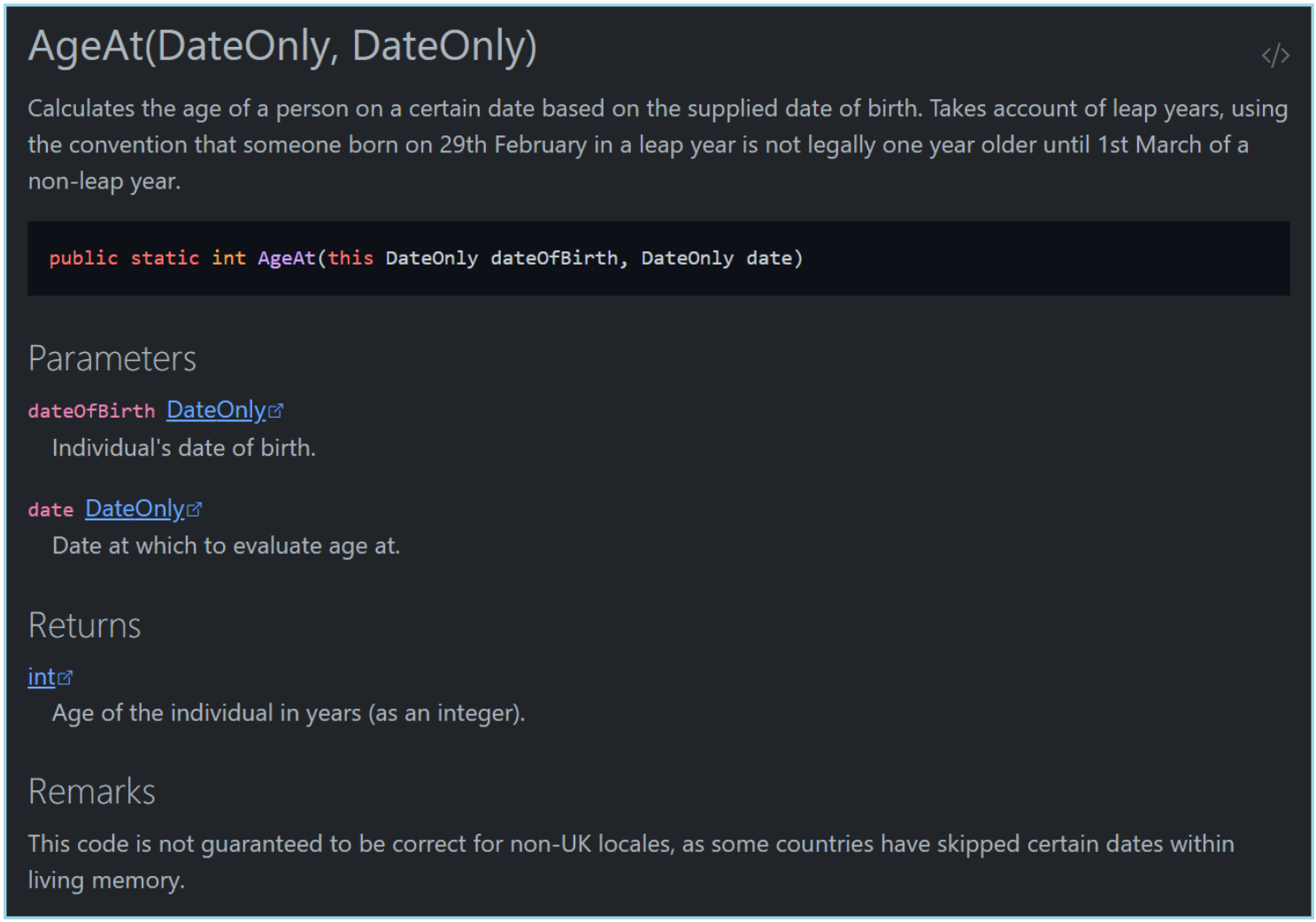
Docfx is a powerful tool but easy to use for most regular use cases, once you understand the basic concepts.

Docfx can be used as a static site generator, but the real value of the tool is in bringing together static documentation pages and .NET API documentation. Docfx supports both C# and VB projects (although currently the output of tool is limited to C# syntax), and relies on the long-established XML comment syntax for C# (and similarly for VB). For example, the following C# code:

```
/// <summary>
/// Calculates the age of a person on a certain date based on the supplied date of
/// using the convention that someone born on 29th February in a leap year is not
/// of a non-leap year.
/// </summary>
/// <param name="dateOfBirth">Individual's date of birth.</param>
/// <param name="date">Date at which to evaluate age at.</param>
/// <returns>Age of the individual in years (as an integer).</returns>
/// <remarks>This code is not guaranteed to be correct for non-UK locales, as some
/// within living memory.</remarks>
public static int AgeAt(this DateOnly dateOfBirth, DateOnly date)
{
    int age = date.Year - dateOfBirth.Year;

    return dateOfBirth > date.AddYears(-age) ? --age : age;
}
```

can be used to generate output like this:



Static documentation pages are prepared using Markdown (slightly enhanced to support specific features). Markdown content can also be injected into the generated API documentation using a feature called 'Overwrites'.

Once the API documentation has been parsed from the source code, it is compiled along with the Markdown content into a set of HTML pages which can be published on a website. It is also possible to compile the final output into one or more PDFs for offline use.

Docfx is a command-line tool that can be invoked directly, or as a .NET Core CLI tool using the `dotnet` command, but it can also be invoked from source code using the `Docset.Build` method in the `Docfx` namespace. It is configured using a JSON configuration file, `docfx.json` which has sections for different parts of the build process.

Consuming .NET projects

The most common use case for processing .NET projects is to specify one or more .csproj files in the `docfx.json` file:

```
{
  "metadata": [
    {
      "src": [
        {
          "files": [
            "src/MyProject.Abc/*.csproj",
            "src/MyProject.Xyz/*.csproj"
          ],
          "src": "path/to/csprojs"
        }
      ],
      "dest": "api"
    }
  ],
  //...
}
```

Although Docfx can build a documentation website in one step, it's helpful to understand the separate steps the tool uses to generate its output.

The first step is called the ***metadata*** step and can be completed using the following command line:

```
docfx metadata path/to/docfx.json
```

This command reads all the source files specified by the projects listed in `docfx.json` and searches for XML documentation entries. Note that this step does not use `.xml` compiler output but rather uses the Roslyn compiler to navigate the supplied codebase. The output of this step is a set of YAML files that are stored in the `dest` folder specified in `docfx.json`.

Here's an example of the (partial) output from the above code example:

```
### YamlMime:ManagedReference
items:
- uid: MyProject.Extensions.DateOnlyExtensions.AgeAt(System.DateOnly,System.DateOnly)
  commentId: M:MyProject.Extensions.DateOnlyExtensions.AgeAt(System.DateOnly,System.Dat
  id: AgeAt(System.DateOnly,System.DateOnly)
  isExtensionMethod: true
  parent: MyProject.Extensions.DateOnlyExtensions
  langs:
  - csharp
  - vb
```

```
  name: AgeAt(DateOnly, DateOnly)
  nameWithType: DateOnlyExtensions.AgeAt(DateOnly, DateOnly)
  fullName: MyProject.Extensions.DateOnlyExtensions.AgeAt(System.DateOnly, System.DateO
  type: Method
  source:
    remote:
      path: src/MyProject/Extensions/DateOnlyExtensions.cs
      branch: main
      repo: https://github.com/MyUser/MyProject.git
    id: AgeAt
    path: ../../MyProject/src/MyProject/Extensions/DateOnlyExtensions.cs
    startLine: 63
  assemblies:
  - MyProject.Common
  namespace: MyProject.Extensions
  summary: >-
    Calculates the age of a person on a certain date based on the supplied date of birt
```

For the most part, it isn't important to know too much about the output of the `metadata` step, except where you want to make reference to entities from your Markdown content. When doing so, you need to reference the relevant `uid` from the YAML file. However, as you can see, the `uid` is the same as the full signature of the entity or method including the namespace.

It's also worth knowing that the `metadata` step generates `toc.yml`, a table-of-contents file for the input source code, grouped by .NET namespace. This is the only auto-generated table-of-contents file; all other `toc.yml` must be manually created/edited.

> **NOTE**
>
> In additional to using `.csproj` files for input, it is also possible to generate the intermediate YAML output from compiled `.dll` (or `.exe`) and `.xml` files. See .NET API Docs for further details.

Documentation Build Process

The next step is called the ***build*** step and can be completed using the following command line:

```
docfx build path/to/docfx.json
```

(You can append `--serve` to this step and Docfx will start a local web server so you can preview the final output.)

Internally, there are many parts to this step, but in short, Docfx does the following during the `build` step:

- resolve all cross-references
- convert the YAML content from the `metadata` step into a structured data format, for passing onto the template engine
- convert all Markdown content into HTML
- apply templates and themes

Conversion of Markdown to HTML is achieved using the Markdig CommonMark-compliant Markdown processor.

Template and theme processing is the one part of Docfx that is not coded in C#; instead the Jint JavaScript interpreter is used to run a set of JavaScript scripts; this approach allows an extra level of customisation of the build process as Docfx provides a way to override the default scripts using the template section of the `docfx.json` file:

```
{
  "build": {
    //...
    "output": "_site",
    "template": [
      "default",
      "modern",
      "templates/mytemplate"
    ]
  }
}
```

In this example, Docfx first searches the `templates\mytemplate` folder, then the `modern` folder, then `default` folder for each `.css` or `.js` file. Note that `default` and `modern` templates are included with Docfx and included in the Docfx installation packaged alongside the Docfx executable.

(The embedded templates can be exported using the command

```
docfx template export default -o path/for/exported_templates
```

where `default` is the name of the template being exported. The command `docfx template list` can be used to list the embedded templates within Docfx.)

Namespace Docfx

Namespaces

Docfx.Build

Docfx.DataContracts

Docfx.Dotnet

Docfx.Exceptions

Docfx.Pdf

Classes

BuildOptions

Provides options to be used with Docfx.Docset.Build(System.String,Docfx.BuildOptions).

Docset

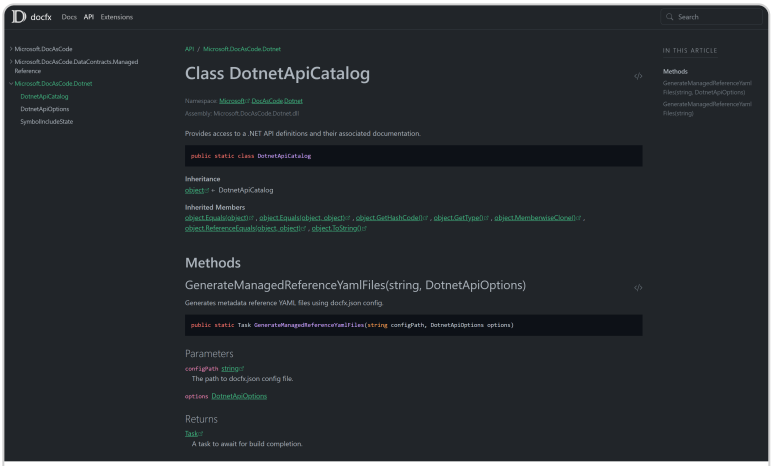
Provides access to a set of documentations and their associated configs, compilations and models.

Enums

MemberLayout

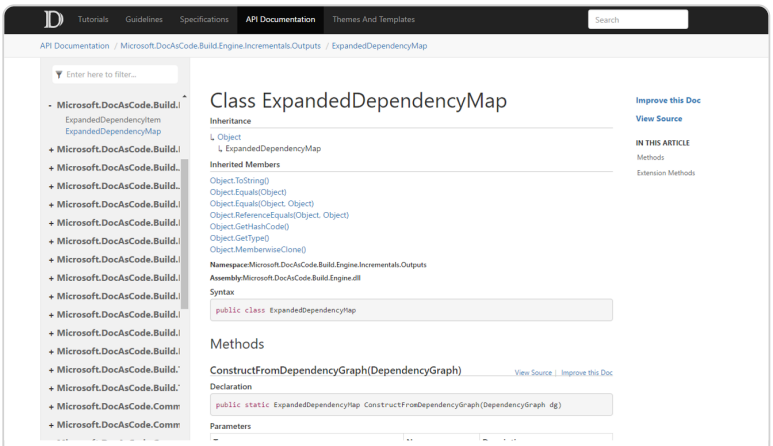
Specifies the layout of members.

Templates



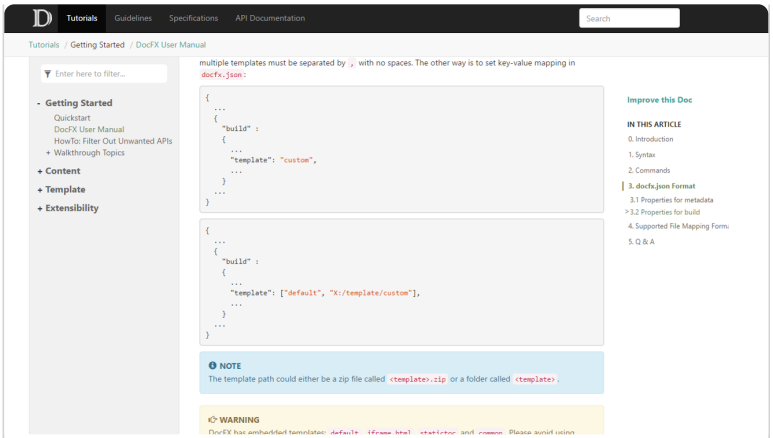
modern

The modern template



default

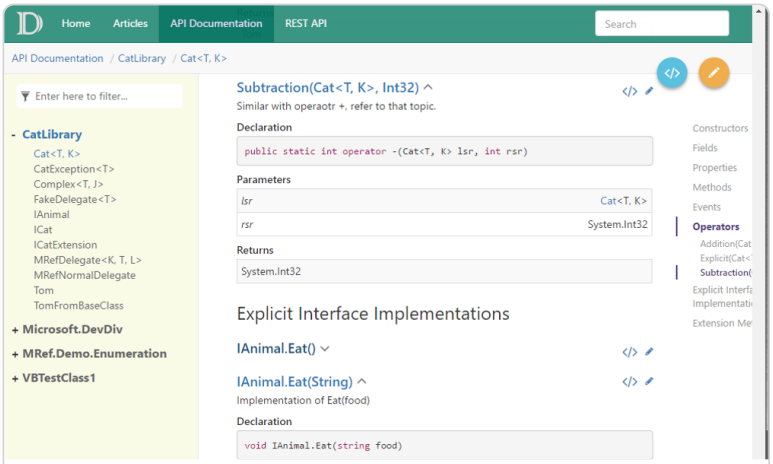
The default template



statictoc

The template similar to default template however with static toc. With static toc, the generated web pages can be previewed from local file system.

docfx.json: `"template": "statictoc"`
docfx: `-t statictoc`

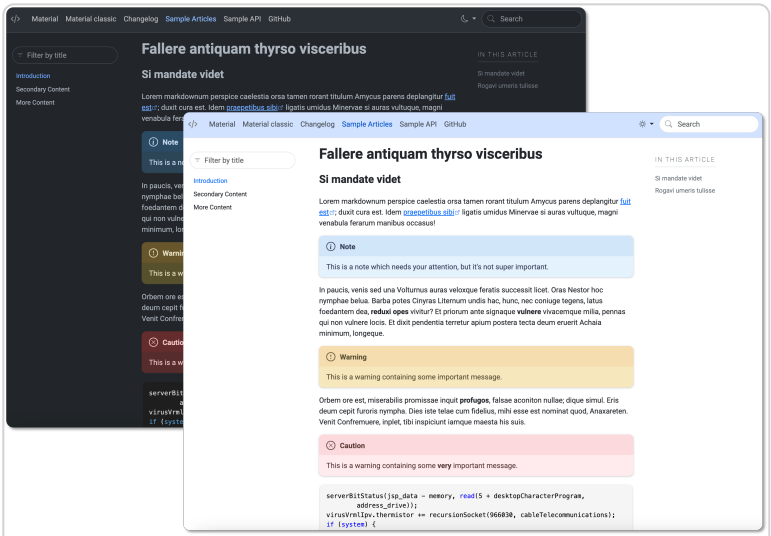


mathew

A simple template

docfx.json: `"template": ["default","mathew/src"]`
docfx: `-t default,mathew/src`

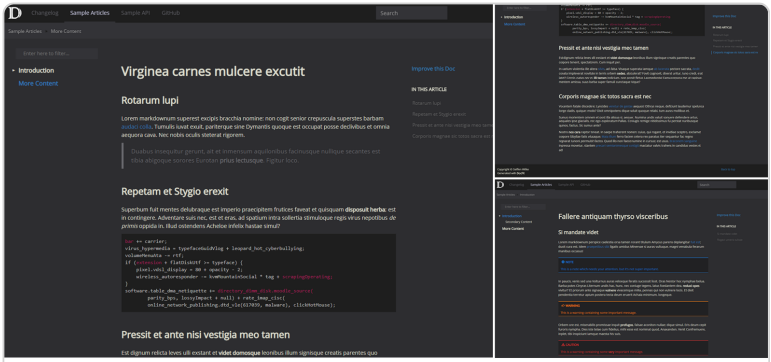
docfx init: `git clone https://github.com/MathewSachin/docfx-tmpl.git mathew`



DocFX Material

A simple material theme for DocFX

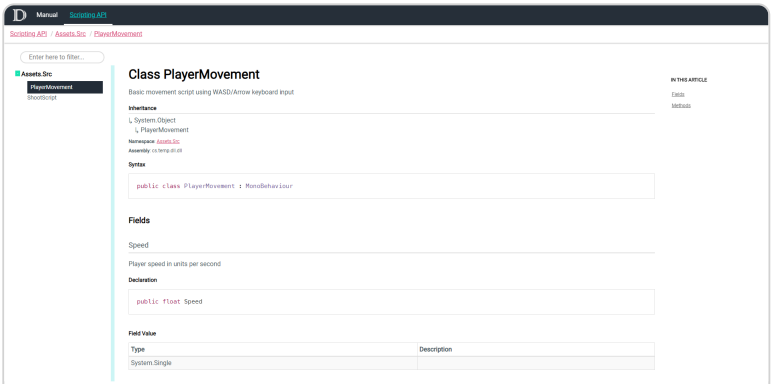
docfx.json: `"template": ["default","material/material"]`
docfx: `-t default,material/material`
docfx init: `git clone https://github.com/ovasquez/docfx-material.git material`



darkFX

A dark theme for DocFX .

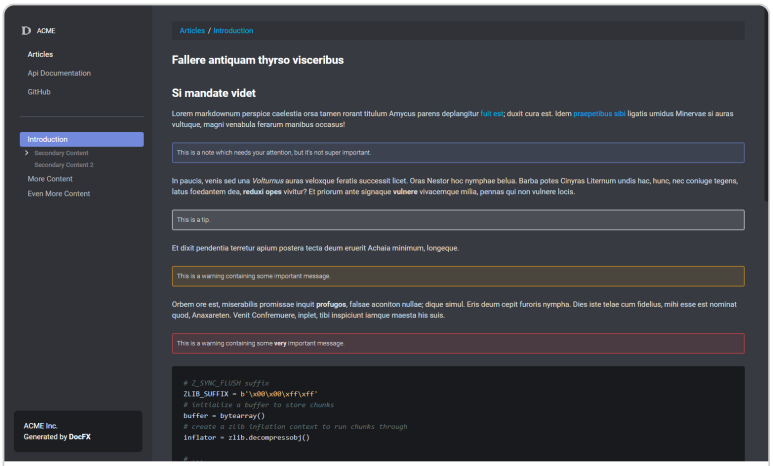
docfx.json: `"template": ["default","templates/darkfx"]`
docfx: `-t default,templates/darkfx`
docfx init: `git clone https://github.com/steffen-wilke/darkfx.git darkfx`



UnityFX

A theme for Unity-esque documentation

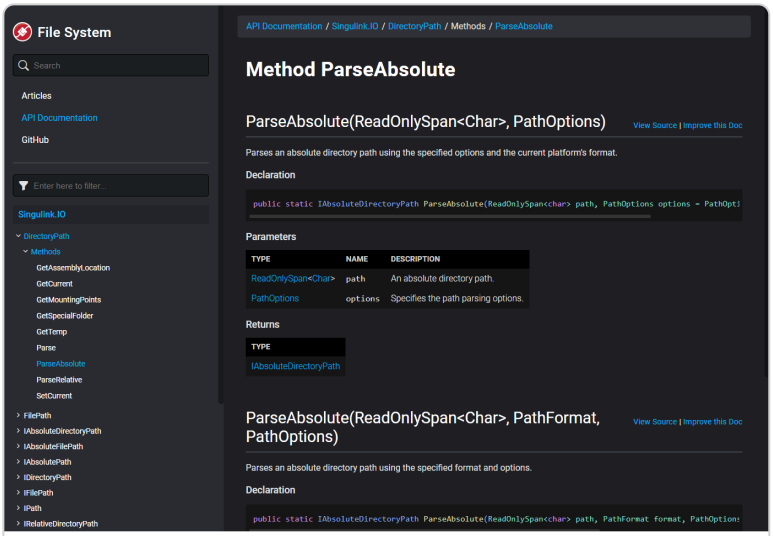
docfx.json: `"template": ["default","templates/unity"]`
docfx: `-t statictoc`



DiscordFX

DocFX template to create documentation similar to Discord

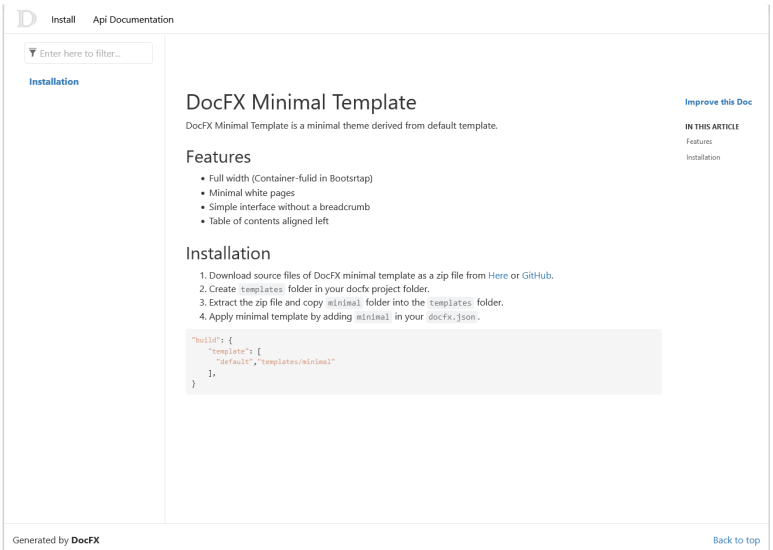
docfx.json: `"template": ["default","templates/discordfx"]`
docfx: `-t default,templates/discordfx`



SingulinkFX

Customizable responsive DocFX template designed with memberpage plugin compatibility to produce docs similar to Microsoft .NET docs.

docfx.json: `"template": ["default","templates/singulinkfx"]`
docfx: `-t default,templates/singulinkfx`



Minimal

A minimal template.

docfx.json: `"template": ["default","templates/minimal"]`

docfx: `-t default,templates/minimal`