Docgen

(Document Generator)

User Guide

version 1.4

February 5, 2024

Important Notice

Document Revision History

Doc Revision Number	Date	Description
1.4	February 5, 2024	add lua function call in paragraph
1.3	November 12, 2021	support excel table
1.2	July 3, 2021	add word's **@<property>** tag variable
1.1	April 2, 2020	add Visio page to picture & bookmark automation
1.0	February 4, 2019	Initial relase

Table of Contents

List of Tables

Table **Title** **Page**

List of Figures

Figure **Title** **Page**

List of Terms

List	Description
TestDrive	TestDrive Profiling Master (https://testdrive-profiling-master.github.io/)
Lua	Lua script language (Wiki, Homepage)
WORD	Microsft Office's word processor
Visio	Microsoft Office's Visio - Diagramming and vector graphics application
PDF	Portable Document Format (Wiki)
markdown	Mark-up language (Wiki)
VBA	Microsoft's Visual Basic for Application

1. Introduction

If you want to skip the introduction process and use it right away, please be sure to refer to '1.4.3. Prerequisites'.

If you need new features or find improvements or bugs, please make suggestions to Hyunng-Ki Jeong(clonextop@gmail.com). Please note that this document was also written and created with docgen.

1.1 Main functions

docgen is a tool that automatically creates new WORD documents (.docx) and PDF documents (.pdf) by referring to template word (.docx) files.

Basically, CodeGen allows you to write documents in text format through a grammar compatible with the universal Lua programming environment and markdown. The main features are listed below.

- Supports various character modulation functions through Lua script
- Automatic creation of WORD and PDF files
- Automated clause/caption/cross-reference creation function
- Picture, table, style formatting, code quotation, and mathematical equation expression functions
- Watermark insertion function
- Users can easily change various styles and apply consistent formatting based on Word template documents

1.2 Document automated creation process

The document automatedn creation process proceeds in the following steps.

1. Open the template document (template.docx)
2. Add the following from user lua code
3. Create Word(.docx) document
4. Update word (.docx) document fields and create PDF(.pdf) file.

1.3 How to run

To run docgen, run as follows.

```
> docgen

Document Generator for TestDrive Profiling Master. v1.3
Usage: docgen  [--help] [-t template] [-l language] input_file [output_file]

      --help               display this help and exit
  -t template              Document template name/file.
                           *** Installed docgen template list ***
                           testdrive      : ** system default template **
  -l language              Document language code string.
                           ('docgen_language' variable in Lua)
  input_file               input Lua file
  output_file              output Microsoft Word(.docx) file
```

command line : docgen INPUT_LUA_FILE OUTPUT_DOCX_FILE

A Lua script corresponding to INPUT_LUA_FILE is created and executed. If OUTPUT_DOCX_FILE is not specified, it is automatically created appropriately by referring to the given property. The '-t' option specifies the template document that will be the base. If the template document is not specified, the default docgen_template.docx is specified, but various document types can be created by referencing/changing it.

The '-l' option specifies an arbitrary language code. In Lua, you can check it with the 'docgen_language' variable, and in sentences, you can use the expression **'3.11. Specify language code'** to select the desired language code.

1.4 Restrictions on use, licensing and prerequisites

1.4.1 Limitation

Since WORD's VBA is used, a Windows PC environment with WORD installed is required. Additionally, in order to directly specify a Visio file (vsd/vsdx) in Picture insertion, Visio installation is required separately. Creation is possible on Linux, but functions such as updating entire document fields (can be updated manually by opening directly in WORD)/watermarking/PDF conversion are not performed.

1.4.2 Licenses

The source code implemented in docgen complies with the BSD license, and secondary works such as the user's individual scripts or images used to create the document are entirely owned by the user.

1.4.3 Prerequisites

Due to limitations in Microsoft Word's setting automation, the math equation expression is initially set to Unicode, the MS standard math equation expression. If you want to express this in "LaTeX", tab 'Equation/Conversions' on the ribbon menu (the menu below must be selected after creating the math equation with 'Insert/Equation' first) as in Figure 1-1. Select '**{} LaTeX**' instead of '**/Unicode**' A process is required.

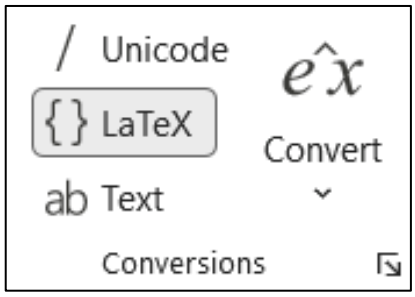


Figure 1-1. LaTeX setting

NOTE: Microsoft currently does not provide an automatic change method in this area, and I do not know why the change function is blocked.

1.5 Knwon issues

1.5.1 Number format issue in Excel table

Regarding the expression of numerical data in Excel, expression using 'number format' is currently not possible. I'm working on it and will invest appropriate time to test & support it in the future.

2. Lua expression

Lua scripts are very lightweight, fast, and simple, making them the preferred language for non-programmers. There are examples of non-programmer game designers using it in various games such as 'Warcraft WoW' and 'Angry Birds'.

docgen also operates by executing the docgen.lua file as listed in '1.3. How to run'.

In detail, docgen is implemented using general-purpose Lua basic functions and functions added to codegen, and document automation is again achieved through this implementation.

The expression is a general-purpose Lua syntax, CodeGen's additional syntax, and the functions listed below are added.

- External Lua-related links
  - https://en.wikipedia.org/wiki/Lua_(programming_language)/Lua wiki
  - property[] property object
  - AddRevision() function
  - AddTerm() function
  - AddParagraph() function

Here, only the features added to docgen are explained, and documents can be created with minimal template implementation without learning Lua.

2.1 Property object

```
property["Document_Name"]          -- Document name
property["IP_Version"]             -- IP version (예:"1.00")
property["Main_Title"]             -- Main title name on the first page of the document
property["Sub_Title"]              -- Sub title name on the first page of the document (Can be
skipped)
property["IP_Name_First_Page"]     -- Name of the first page of the document
property["IP_Name_Header"]         -- Header and name on file (예 : "doc_guide")
property["Ownership"]              -- Ownership name
property["Document_Name_Header"]   -- header name (...)
property["Water_Mark"]             -- watermarking text (Leave blank if not used.)
```

In Word, there is a 'Property' tab in the menu "File/Information" as like Figure 2-1.

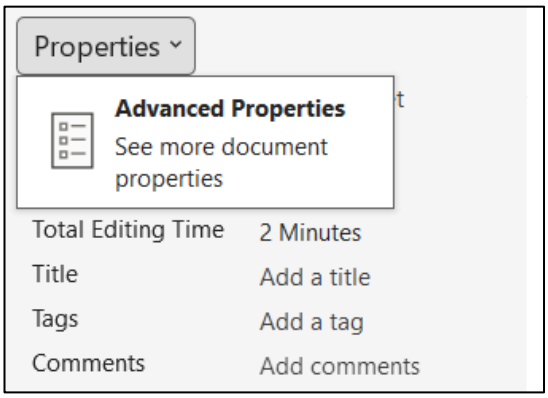


Figure 2-1. Property tab in WORD

In this menu, you can add the Field property you want or change the existing Property. The declared property is reflected in the Field information throughout the document.

Within the lua code, you can change the field value that already exists in the template document in the following way.

Alternatively, direct reference is possible within markdown sentences, such as Property reference.

ex) Example of field designation in this document (Sentences starting with "--" refer to 'comment' notation in Lua.)

```
property["Document_Name"]          = "UserGuide"
property["IP_Version"]             = "1.00"
property["Main_Title"]             = "Document Generator"
property["IP_Name_First_Page"]     = "User Guide"
property["IP_Name_Header"]         = "document_generator"
property["Ownership"]              = "TestDrive"
property["Document_Name_Header"]   = "userguide"
property["Water_Mark"]             = "TESTDRIVE CONFIDENTIAL"
```

2.2 AddRevision() function

Function prototype : AddRevisoion(version, year, month, day, description)

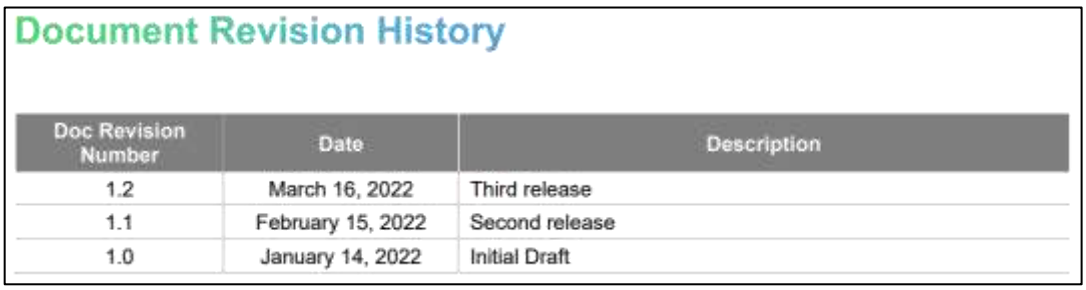
This is a function that manages the version information of a document. They can be listed in version order as shown in the example below, and description can use "3**. Paragraph expression**".

If you never use the AddRevision() function, the "Document Revision History" section is automatically removed.

ex)

```
AddRevision("1.0",  2022, 1,  14,   "Initial Draft")
AddRevision("1.1",  2022, 2,  15,   "Second release")
AddRevision("1.2",  2022, 3,  16,   "Third release")
```

Result)



Document Revision History

Doc Revision Number	Date	Description
1.2	March 16, 2022	Third release
1.1	February 15, 2022	Second release
1.0	January 14, 2022	Initial Draft

Figure 2-2. AddRevision() function example

2.3 AddTerm() function

Function prototype : AddTerm(word, description)

This function inserts a description of a word. It can be used as in the example below, and Description can use "3**. Paragraph expression**".

If you never use the AddTerm() function, the "List of Terms" clause is automatically removed.

```
AddTerm("TestDrive", "TestDrive Profiling Master (@<link:https://testdrive-profiling-
master.github.io/>)")
AddTerm("Lua", "Lua script language
(@<link:https://en.wikipedia.org/wiki/Lua_(programming_language);Wiki>,
@<link:http://www.lua.org/;Homepage>)")
```

Result)

List of Terms

List	Description
TestDrive	TestDrive Profiling Master (https://testdrive-profiling-master.github.io/)
Lua	Lua script language (Wiki, Homepage)

Figure 2-3. AddTerm() function example

2.4 AddParagraph() function

Function prototype : AddParagraph(word, sentence)

You can fill in the actual document content, and sentence can use "3. **Paragraph expression**".

The contents of sentence can be directly described as a string, but the sentence can be converted to "**[[file_name]]**" refers to an external text file, and direct sentence notation is affected by the POSIX escape character notation, so users unfamiliar with soft programming can use "Example #2) It is recommended to describe it in an external text file like "

ex #1) Direct implementation

```
AddParagraph("#Title₩
Paragraph content 1₩
Paragraph content 2")
```

ex #2) External markdown expression text file implementation

```
AddParagraph("[[some.txt]]")
```

ex #3) Implemented using the file read function

```
do
    local   txt_contents    = String(nil)
    txt_contents:ReadFile("some.txt", false)
    AddParagraph(txt_contents.s)
end
```

ex #4) Lua application that checks the 'IsInsert' variable, reads several files,

changes all "%ABC%" expressions to "good", and inserts sentences.

```
if IsInsert == true then    -- directive check
    local   txt_contents    = String(nil)

    txt_contents:Append(ReadText("some_1.txt")) -- some_1.txt added
    txt_contents:Append(ReadText("some_2.txt")) -- some_2.txt added
    txt_contents:Append(ReadText("some_3.txt")) -- some_3.txt added
    txt_contents:Replace("%ABC%", "good", true) -- change all "%ABC%" to "good"

    AddParagraph(txt_contents.s)    -- Apply to document
end
```

3. Paragraph expression

Paragraph expression refers to how to describe the arguments description and sentence of the Lua functions of AddRevision, AddTerm, and AddParagraph. The notation method is a mixture of markdown and some html notation, and it additionally has its own grammar for versatility in expression. Additionally, each formula can be used equally wherever sentences are used, such as paragraphs and tables.

NOTE: If you have any suggestions for paragraph expressions or requests for improvement, please contact me at any time. (Refer to 1. Introduction.)

3.1 Title expression

Expression : # Main title

Sub title1

Sub title2

Sub title3

Sub title4

Sub title5

The document title is displayed by placing the '#' character at the beginning of the line, from Main title to Sub title. This is the same as markdown. If the '#' character is not at the beginning of the line, it is not recognized as a title and is affected by the "text style" of the WORD's template document. Up to 6 levels can be used.

3.2 Cataloging

Expression : * Element1

**** Element2**

**** Element3**

**** Element4**

***** Element5**

****** Element6**

Cataloging is similar to markdown, but there are some differences for more expressive functions. If the '*' character exists at the beginning of a line, it is displayed as a list, and the indentation is determined by the number of '*'s.

You can also use '>' after the '*' character listed for a number or special expression to remove the existing marker and use a different form of expression. Up to 6 levels can be used.

ex)

```
* first element
** second element
*** third element
**** fourth #1 element
**** fourth #2 element
**** >fourth #2 element extension
**** @<b>@<color:FF0000>Cataloging@</color>(目錄, List)@</b> refers to writing down names of
people, names of products, book titles, tables of contents, and items to be checked in a certain
standard and order to make them easier to read.
* >1). first number element
** >1-1). second number element
* >2). first number element
** >2-1). second number element
*** >Unmarked Element Extended element
```

Result)

- first element
  - second element
    - third element
      - fourth #1 element
      - fourth #2 element
        fourth #2 element extension
      - **Cataloging(目錄, List)** refers to writing down names of people, names of products, book titles, tables of contents, and items to be checked in a certain standard and order to make them easier to read.

1). first number element
    1-1). second number element
2). first number element
    2-1). second number element
        Unmarked Element Extended element

3.3 Text expression

Text expressions can specify the color, thickness, italics, underline, size, superscript/subscript, etc. of the text. The scope of application is limited to one line, and multiple formula notations may be expressed overlapping.

3.3.1 Bold text

Expression : @expression@

Bold text is expressed by surrounding Expression with a 'b' tag, similar to HTML.

ex)

```
@<b>It's in bold.@</b> It's not in bold.
```

Result : **It's in bold.** It's not in bold.

3.3.2 Italic text

Expression : @expression@

Italic text is expressed by surrounding the expression with an 'i' tag, similar to HTML.

ex)

```
@<i>italic@</i> Non italic
```

Result : *italic* Non italic

3.3.3 Underline

Expression : @<u>expression@</u>

The underlined text is expressed by surrounding expression with a 'u' tag, similar to HTML.

ex)

```
@<u>underlined text@</u>
```

Result : underlined text

3.3.4 Strikethrough

Expression : @<s>expression@</s>

The strikethrough text is expressed by surrounding expression with 's' tags, similar to HTML.

ex)

```
@<s>Strikethrough text@</s>
```

Result : ~~Strikethrough text~~

3.3.5 Superscript

Expression : @^{expression@}

Superscript text is expressed by surrounding expression with 'sup' tags, similar to HTML.

ex)

```
Text@<sup>Superscript@</sup>
```

Result : Text^{Superscript}

3.3.6 Subscript

Expression : @_{expression@}

Subscript text is expressed by surrounding expression with 'sub' tags, similar to HTML.

ex)

```
Text@<sub>Subscript@</sub>
```

Result : Text$_{Subscript}$

3.3.7 Text color

Expression : @<color:color_value>expression@</color>

To change the font color, the expression is expression surrounded by 'color' tags similar to HTML, and the color is specified by color_value Expressed in 24bit RGB hexadecimal.

ex)

```
@<color:FF0000>Red text@</color> expression
```

Result : Red text expression

3.3.8 Text size

Expression : @<size:font_size>expression@</size>

To change the font size, the expression is expression surrounded by 'size' tags similar to HTML, and the color is specified by font_size Specify it in point units.

ex)

```
@<size:30>Big text@</size> @<size:10>small text@</size>
```

Result : Big text $_{small\ text}$

3.3.9 Paragraph style

Expression : :::style_name

Change the paragraph style of the next line to 'style_name'. The style changes for only one line, and reverts to the original style formatting for the next line.

Style formatting is implemented by referencing the style specified in the initial template document, and can be changed or added by searching for 'text style' in WORD.

ex) Apply note style

```
:::NoteHeading
Including both civilian and military deaths, an estimated 60 to 70 million people died as a result of World War II. In the aftermath of this war, collectivistic ideology, which had been the mainstream of society, declined in the Western world and individualistic ideology emerged, which continues to this day.
```

Result)

NOTE: Including both civilian and military deaths, an estimated 60 to 70 million people died as a result of World War II. In the aftermath of this war, collectivistic ideology, which had been the mainstream of society, declined in the Western world and individualistic ideology emerged, which continues to this day.

3.4 Cross-reference

Expression : @<bookmark:target>

Implement cross-referencing of titles, pictures, tables, etc.

Just write the caption or title of the figure or table in target.

3.4.1 Cross-reference in picture or table

ex)

```
@<bookmark:LaTeX setting>
```

Result : Figure 1-1

3.4.2 Cross-reference in title

In the case of titles, cross-references can be expressed in four ways depending on the presence or absence of a prefix, as shown below.

1. Reference to general sentences (expressed without a separate prefix)
   : **target**
2. Page number reference
   : **&target**
3. Chapter/section number reference
   : **#target**
4. Chapter/section number and full sentence reference
   : **@target**

The example below shows an actual usage example, and you can see that clicking on the sentence moves to the link to the current document.

ex) Reference to general sentences

```
@<bookmark:Restrictions on use, licensing and prerequisites>
```

Result : Restrictions on use, licensing and prerequisites

ex) Page number reference

```
@<bookmark:&Restrictions on use, licensing and prerequisites>
```

Result : 10

ex) Chapter/section number reference

```
@<bookmark:#Restrictions on use, licensing and prerequisites>
```

Result : 1.4

ex) Chapter/section number and full sentence reference

```
@<bookmark:@Restrictions on use, licensing and prerequisites>
```

Result : 1.4. Restrictions on use, licensing and prerequisites

3.5 Property reference

Expression : @<property:property_name>

You can create properties with various names using 'Property object' among 'Lua expression', and methods for using them in the text are provided.

예)

```
@<property:Main_Title>, @<property:Ownership>
```

Result : Docgen, clonextop@gmail.com

3.6 Hyperlink

Expression : @<link:URL_target;display_text>

Hyperlinks are displayed as above, and display_text can be skipped.

ex) "https://testdrive-profiling-master.github.io/" hyperlink expression

```
@<link:https://testdrive-profiling-master.github.io/;TestDrive Profiling Master>
```

Result : TestDrive Profiling Master

3.7 Math equation expression

Expression : $$math_formula$$

In the case of mathematical formulas, the mathematical equation is displayed by surrounding it with "$$", as in markdown.

But, WORD's mathematical equation is initially set to the expression "**Unicode**". Therefore, if you want to use the equation "**LaTeX**", please note that you must change the settings by referring to "1.4.3. ***Prerequisites***".

When a mathematical equation is expressed as a single expression, it is displayed centered, but when expressed in the middle of a sentence, the expression is automatically changed to match the sentence, and the example below is implemented in LaTeX expression, so if the result is notated incorrectly, it is the result of not attempting the "Prerequisites" above.

ex) 2 types of mathematical equation expressions

```
$$f₩left(x₩right)=a_0+₩sum_{n=1}^{₩infty}₩left(a_n₩cos{₩frac{n₩pi x}{L}}+b_n₩sin{₩frac{n₩pi x}{L}}₩right)$$
The expression in the sentence changes to $$f₩left(x₩right)=a_0+₩sum_{n=1}^{₩infty}₩left(a_n₩cos{₩frac{n₩pi x}{L}}+b_n₩sin{₩frac{n₩pi x}{L}}₩right)$$.
```

Result :

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L}\right)$$

The expression in the sentence changes to $f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L}\right)$.

WORD's mathematical equation can be changed by first creating the equation as shown in Figure 3-1 and then pressing the 'Linear format' button in the menu. You can write this string as a mathematical equation by adding the characters "$$" to both ends.

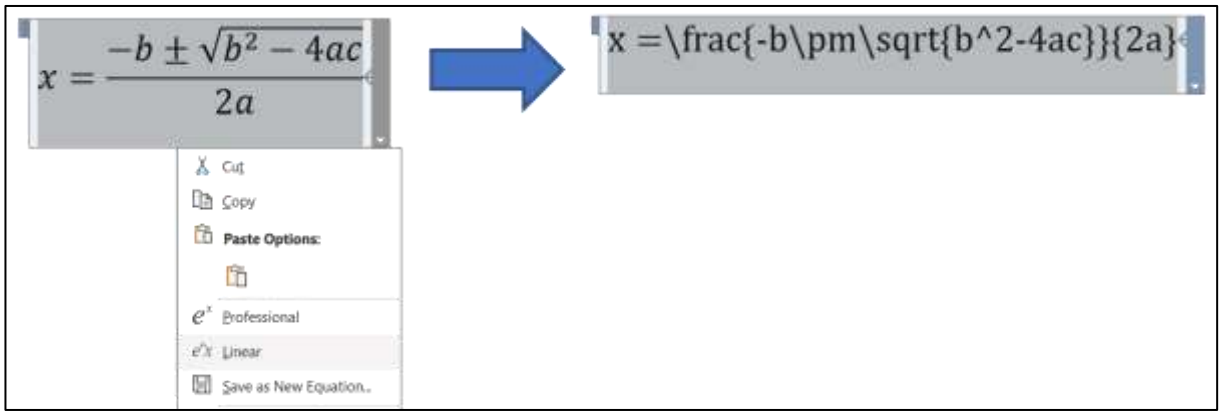


Figure 3-1. WORD mathematical equation LaTeX conversion

3.8 Code citation

Expression : ```code_format

code_contents

```

In the case of code_format, you can check the supported code formats by entering the "code_highlighter -l" command as shown below.

```
> code_highlighter -l
*** Available current input code format(C:/Project/Profiles/Common/bin/source-highlight-
lang/lang.map) list

        C, F77, F90, H, ac, ada, adb, am, applescript, asm
        autoconf, awk, bash, bat, batch, bib, bison, c, caml, cbl
        cc, changelog, clipper, cls, cobol, coffee, coffeescript, conf, cpp, cs
        csh, csharp, css, ctp, cxx, d, desktop, diff, dmd, docbook
        dtx, el, eps, erl, erlang, errors, f, f77, f90, feature
        fixed-fortran, flex, fortran, free-fortran, glsl, go, groovy, h, haskell, haxe
        hh, hpp, hs, htm, html, hx, hxx, in, ini, ipxe
        islisp, java, javalog, javascript, js, json, kcfg, kdevelop, kidl, ksh
        l, lang, langdef, latex, ldap, ldif, lex, lgt, lhs, lilypond
        lisp, ll, log, logtalk, lsm, lua, ly, m4, makefile, manifest
        mf, ml, mli, moc, opa, outlang, oz, pas, pascal, patch
        pc, perl, php, php3, php4, php5, pkgconfig, pl, pm, po
        postscript, pot, prg, prolog, properties, proto, protobuf, ps, py, python
        r, rb, rc, rs, ruby, s, scala, scheme, scm, scpt
        sh, shell, sig, sl, slang, slsh, sml, spec, sql, sty
        style, syslog, systemverilog, tcl, tcsh, tex, texi, texinfo, tk, tml
        txt, ui, upc, v, vala, vbs, vbscript, verilog, vim, xhtml
        xml, xorg, y, yacc, yaml, yml, yy, zsh
```
```

Below is an example of quoting verilog code. To use the string "```" when quoting, you can quote it by writing "@```". To insert a line number in the code, you can add '#' and quote it like this: "#code_format".

ex) Verilog code citation with line numbers

```
```#verilog
`ifndef __TESTDRIVE_SRAM_SINGLE_V__
`define __TESTDRIVE_SRAM_SINGLE_V__
`timescale 1ns/1ns

module SRAM_Single #(
    parameter   ADDR_WIDTH   = 4,
    parameter   DATA_WIDTH   = 4
) (
    // System
    input   CLK,   // clock
    // SRAM interface
    input   nCE,   // Chip enable (active low)
    input   nWE,   // write enable (active low)
    input   [(ADDR_WIDTH-1):0]   ADDR,   // address
    input   [(DATA_WIDTH-1):0]   DIN,   // input data
    output reg [(DATA_WIDTH-1):0] DOUT   // output data
);
// synopsys template

// definition & assignment ---
reg   [(DATA_WIDTH-1):0]   mem[(2**ADDR_WIDTH)-1:0];

// implementation --
always@(posedge CLK) begin
    if(!nCE) begin
        if(!nWE)
            mem[ADDR]   <= DIN;
        DOUT   <= mem[ADDR];
    end
end

endmodule

`endif//__TESTDRIVE_SRAM_SINGLE_V__
```
```

Result)

```
 1: `ifndef __TESTDRIVE_SRAM_SINGLE_V__
 2: `define __TESTDRIVE_SRAM_SINGLE_V__
 3: `timescale 1ns/1ns
 4:
 5: module SRAM_Single #(
 6:     parameter   ADDR_WIDTH          = 4,
 7:     parameter   DATA_WIDTH          = 4
 8: ) (
 9:     // System
10:     input                           CLK,            // clock
```

```
11:     // SRAM interface
12:     input                           nCE,            // Chip enable (active low)
13:     input                           nWE,            // write enable (active low)
14:     input   [(ADDR_WIDTH-1):0]      ADDR,           // address
15:     input   [(DATA_WIDTH-1):0]      DIN,            // input data
16:     output  reg [(DATA_WIDTH-1):0]  DOUT            // output data
17: );
18: // synopsys template
19:
20: // definition & assignment ---------------------------------------------------
21: reg     [(DATA_WIDTH-1):0]      mem[(2**ADDR_WIDTH)-1:0];
22:
23: // implementation -----------------------------------------------------------
24: always@(posedge CLK) begin
25:     if(!nCE) begin
26:         if(!nWE)
27:             mem[ADDR]   <= DIN;
28:         DOUT    <= mem[ADDR];
29:     end
30: end
31:
32: endmodule
33:
34: `endif//__TESTDRIVE_SRAM_SINGLE_V__
```

3.9 Seperating page

Expression : ;;;

If you enter at least three ';' characters at the beginning of a line, it will advance to the next page.

3.10 horizontal line

Expression : ---

If you enter at least three '-' characters at the beginning of a line, a horizontal line will be entered, just like in markdown.

ex)

```
---
```

Result)

3.11 Specify language code

Expression : %%%language_code

Compare 'language_code' with the '-l' option specified one. Refer to '1.3. How to run'. If they are not equal, the

following sentences are ignored until the language code is changed again. This ensures that only sentences written in your desired language can be used in your document.

If it ends with '%%%' without a language code, it will be activated for all language codes from the next line.

NOTE: Language code names are case-insensitive, and you can improve readability by listing '-', '=', or '%' characters after the language code name.

ex)

```
%%% ko ------------------------
한글 출력입니다.
%%% en ------------------------
It's an english output.
%%% --------------------------
It's all output.
```

ex) When using the '-l en' option.

```
It's an english output.
It's all output.
```

NOTE: The default is enabled for all language codes.

3.12 Lua function call

Expression : @<lua:lua_function>

Call a Lua function and reuse the returned string as an expression.

ex)

```
Lua variable 'docgen_language' is @<lua:docgen_language>
```

Result)

Lua variable 'docgen_language' is en

3.13 Picture insertion

Expression : @<img:filename;scale;caption>

Pictures support jpg, png, bmp, gif, tif, svg, wmf, and vsd/vsdx (Visio installation required) formats. file name specifies the file name to display, if the picture requires an outline border, indicate it as "#filename". In the case of a Visio file, a separate page name can be specified as "filename[page name]", and if page name is not specified, it is considered the first page.

Additionally, in the case of scale, the maximum value based on the width of the paper is 1.0, and you can specify the size by entering a value between 0 and 1. If not specified, the default 1.0 is assumed.

caption literally specifies the caption content and can be used in '3.4. Cross-reference'. If not specified, the caption will not be inserted.

ex1) Illustration of a donut with border in size $1/4$

```
@<img:#media/donut.jpg;0.25;Donut image example>
```

Result)

Figure 3-2. Donut image example

ex2) Borderless vector image

```
@<img:media/awesome_svg.svg;0.7;SVG vector image example>
```

Result)

Figure 3-3. SVG vector image example

ex3) Insert Visio specific page as vector image

```
@<img:media/test.vsdx[test_sample];0.8;Visio vector image example>
```

Result)

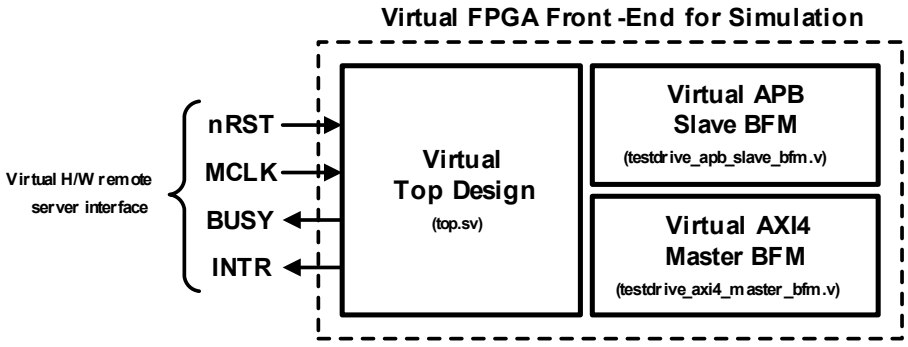


Figure 3-4. Visio vector image example

ex4) Insert only a caption without a picture

```
@<img:nil;0;Insert only a caption without picture content>
```

Result)

Figure 3-5. Insert only a caption without picture content

3.14 Table insertion

Tables support two expression methods: Excel and Lua script.

If the table is too long and you move to the next page, the header is automatically repeated.

3.14.1 Table insertion from excel file

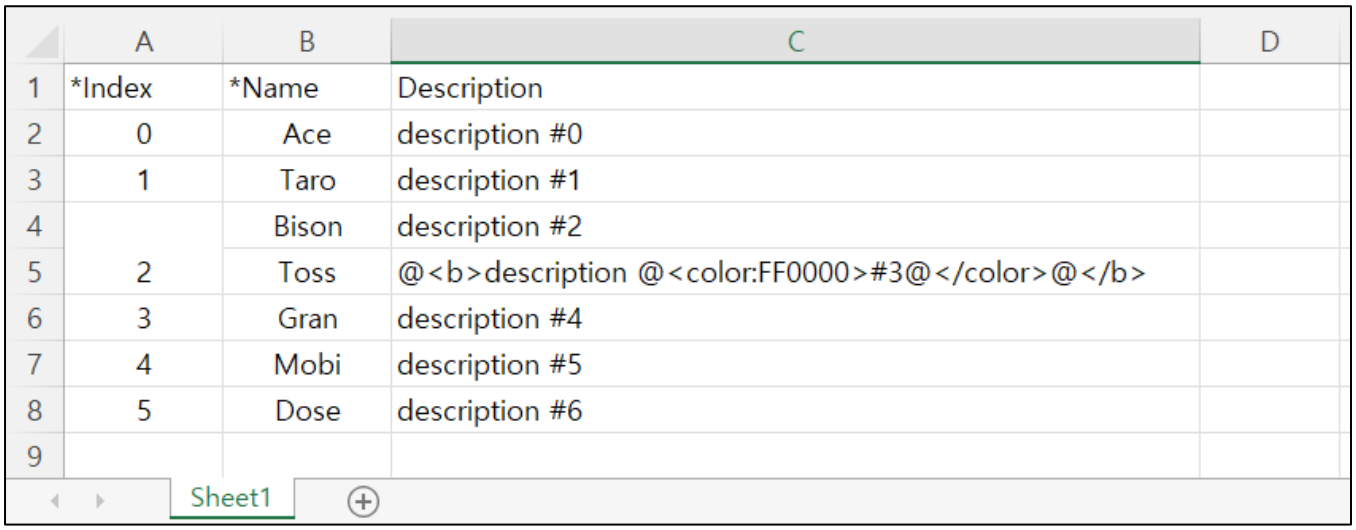
Expression : @<tbl:file_name;sheet_name;caption>

In the case of inserting a table, you can move the content created in Excel, and the width will be the same as possible for the cells merged in Excel.

The first line of the table is the top title, and when you want to align lower data columns in the center, insert the character '*' front of the title name.

ex1) Table from excel file : "media/table_sample.xlsx"

```
@<tbl:media/table_sample.xlsx;Sheet1;Excel table example>
```



	A	B	C	D
1	*Index	*Name	Description	
2	0	Ace	description #0	
3	1	Taro	description #1	
4		Bison	description #2	
5	2	Toss	@description @<color:FF0000>#3@</color>@	
6	3	Gran	description #4	
7	4	Mobi	description #5	
8	5	Dose	description #6	
9				

Sheet1

Figure 3-6. "media/table_sample.xlsx" Actual excel file

Result)

Table 3-1. Excel table example

Index	Name	Description
0	Ace	description #0
1	Taro	description #1
2	Bison	description #2
	Toss	**description #3**
3	Gran	description #4
4	Mobi	description #5
5	Dose	description #6

ex2) Insert only captions without table content

```
@<tbl:nil;nil;Insert only a caption without table content>
```

Result)

Table 3-2. Insert only a caption without table content

3.14.2 Inserting table from Lua expressions

Expression : @<tbl:lua;table_variable_name;caption>

Basically, since docgen is written based on Lua scripts, you can create a table with Lua variables and utilize it.

This is an example that utilizes the lua table already defined as shown below.

예) declared lua expression

```
lua_table_example = {
```

```
    HeaderCount = 2,
    {{"Head A", merge={1,2}}, {"Head B", merge={3,1}}, {width=300, style="TableTextCenter"}, ""},
    {"", "Sub A", "Sub B", "Sub C"},
    {"index1", "a", "1", "aa"},
    {"index2", "b", "2", "bb"},
    {"index3", {"c", merge={2,1}}, "", "@<color:ff0000>cc@</color>"}
}
```

예) Expression within paragraph

```
@<tbl:lua;lua_table_example;Lua table example>
```

결과)

Table 3-3. Lua table example

Head A	Head B		
	Sub A	Sub B	Sub C
index1	a	1	aa
index2	b	2	bb
index3	c		cc

Lua tables are expressed with multiple braces, such as "{ { { ... }, ... }, ... }". The outer curly braces indicate the table, the next brace indicates Row, and the next brace indicates Column.

When expressing Column and Row, you can specify the following properties. In the case of Column, if you describe it only as a string, the braces can be omitted.

- Lua table Row properties
  - HeaderCount: Specifies the number of header lines. (Default: 1)
- Lua table Column properties
  - data : Specifies the string data of the cell. It is possible to omit "data=" and describe only as a string. However, if omitted, it must be the first attribute of the cell technology. (default : " ")
  - width : Specifies the horizontal length of one column. The final relative length is given by dividing it from the total length of all columns. This property is valid only for the Column described in the first Row. (Default: 100)
  - style : Specifies the text style name to apply to the column. The specified style is equally applied to the same child columns. (Default: "TableTextLeft", when specifying the style back to default, specify "" rather than nil.)
  - merge : It functions to merge multiple cells within a certain range starting from the current cell location. Range can be specified in properties as **{width,height}**.