callout2latex.lua: Convert Markdown Callout Blocks into LaTeX Environments

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Abstract

This is the `README.md` file of `callout2latex.lua`, the pandoc Lua filter for converting Markdown callout blocks into LaTeX Environments. This document introduced the features and usage of the script, and provided some examples.

Contents

1 Description

`callout2latex.lua` is a Pandoc Lua filter for converting GitHub, Typora, Obsidian, and Microsoft[1] styled Markdown Callout Blocks (also known as Alert Blocks, Message Boxes, or Admonitions[2]) into LaTeX environments.

The basic functionality of this script has been implemented correctly, although some issues still remain, which I plan to address in future updates.

2 Key Features

- No additional syntax introduced.

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[1]There are some minor differences between the syntax formats defined across different platforms.
[2]These terms are interchangeable and refer to the same feature.

- Compatibility across different platforms.
- Lightweight (just one Lua script), simple and easy to use.

3 Usage

To use this filter script, specify it as a Lua filter for Pandoc using the `--lua-filter` flag. Examples of conversion commands are provided in `command.sh` and `command.ps1`.

```
pandoc file.md --output file.pdf --lua-filter callout2latex.lua
```

3.1 Syntax Example

If your Markdown file contains the following:

```
1  A note callout block with a title:
2
3  > [!note] This is the note title
4  > This is a line of info.
5
6  A note callout block without a title:
7
8  > [!note]
9  > This is a line of info
10 > It may contain multiple lines,
11 >
12 > Or even a new paragraph.
```

It will be converted to LaTeX as:

```
1  A note callout block with a title:
2
3  \begin{note}[This is the note title]
4
5  This is a line of info.
6
7  \end{note}
8
9  A note callout block without a title:
10
11 \begin{note}[]
12
13 This is a line of info
14
15 It may contain multiple lines,
16
17 Or even a new paragraph.
18
19 \end{note}
```

> **Tip**
>
> **In case you didn't know: Pandoc has a built-in Lua interpreter, so you don't need to install or configure an independent Lua runtime environment.**

4 Announcements

Here are a few things to note about this filter script[3]:

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[3]These limitations will be addressed in future updates.

1. Currently, ordered lists (`enumerate`) and unordered lists (`itemize`) are not supported within callout blocks.
2. Every single line in the callout block will be converted into one paragraph in LaTeX.

> **Warning**
>
> **DO NOT USE SPACE AFTER THE TYPE LABEL.**
> Leaving a space (or any other blank character) after the callout block type label [!TYPE] may cause unwanted and unexpected LaTeX formatting. For example:
>
> ```
> > [!NOTE]
> > Notice the two spaces after the `[!NOTE]` label.
> ```
>
> You may can't see the spaces but they do exist. This will be converted to:
>
> ```
> \begin{note}[Notice the two spaces after the `[!NOTE]` label. ]
> \end{note}
> ```
>
> This may result in unexpected formatting of the content.

5 Installation

To install `callout2latex.lua` and make it accessible globally, follow these steps:

5.1 Locate Pandoc's User Data Directory

Pandoc stores user-specific data, including filters, in its user data directory. To find the directory, you should firstly run the following command in your terminal or command prompt:

```
pandoc --version
```

Then Look for the line that shows `User data directory:`, which might look something like:

```
User data directory: /home/username/.pandoc
```

On different systems, the typical paths are:

- **Linux:** `~/.pandoc/`
- **macOS:** `~/Library/Application Support/pandoc/`
- **Windows:** `C:\Users\username\AppData\Roaming\pandoc\`

If the directory does not exist, create it manually.

5.2 Copy the Filter to the Filters Directory

Inside the user data directory, locate or create a `filters` subdirectory:

```
mkdir -p ~/.pandoc/filters
```

Copy `callout2latex.lua` to the `filters` directory:

```
cp callout2latex.lua ~/.pandoc/filters/
```

5.3 Verify the Installation

To ensure the filter is correctly installed, run:

```
ls ~/.pandoc/filters/
```

You should see `callout2latex.lua` in the list.

5.4 Using the Filter Globally

After installation, you can apply the filter from any directory by running:

```
pandoc file.md --output file.pdf --lua-filter callout2latex.lua
```

Or, simply refer to the filter from the user data directory without specifying the full path:

```
pandoc file.md --output file.pdf --lua-filter callout2latex.lua
```

5.5   Optionally Create a Global Alias on Linux or Mac

To simplify usage, you can create a shell alias:

```
1  echo 'alias callout2latex="pandoc
   ↪  --lua-filter=$HOME/.pandoc/filters/callout2latex.lua"' >> ~/.bashrc
2  source ~/.bashrc
```

Now you can use:

```
callout2latex file.md -o file.pdf
```

6   Examples

6.1   Alert Boxes

Consider the following Markdown syntax:

```
1   > [!NOTE]
2   > Highlights information that users should take into account, even when skimming.
3
4   > [!TIP]
5   > Optional information to help a user be more successful.
6
7   > [!IMPORTANT]
8   > Crucial information necessary for users to succeed.
9
10  > [!WARNING]
11  > Critical content demanding immediate user attention due to potential risks.
12
13  > [!CAUTION]
14  > Negative potential consequences of an action.
```

After running `pandoc` with the Lua filter, the above blocks will be converted into LaTeX environments. (Ensure the required environments are defined in your document class[4]. See `example.cls` for their definitions.)

Note

Highlights information that users should take into account, even when skimming.

Tip

Optional information to help a user be more successful.

Important

Crucial information necessary for users to succeed.

Warning

Critical content demanding immediate user attention due to potential risks.

Caution

Negative potential consequences of an action.

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[4]Make sure to define the required environments in your document class.

6.2 Theorem Environments

This script supports custom LaTeX environments. For example[5], if you've defined `definition` and `theorem` environments correctly in your document class, you can use the following syntax:

Definition 6.1 (Left Coset) Let H be a subgroup of a group~G. A *left coset* of H in G is a subset of G that is of the form xH, where $x \in G$ and $xH = \{xh : h \in H\}$. Similarly, a *right coset* of H in G is a subset of G that is of the form Hx, where $Hx = \{hx : h \in H\}$

Theorem 6.1 (Lagrange's Theorem) Let G be a finite group, and let H be a subgroup of G. Then the order of H divides the order of G.

See `README.pdf` for the formatted theorem of the LaTeX output.

7 License

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8 Acknowledgement

Most of this script was generated with the assistance of ChatGPT and DeepSeek, with minor modifications made by me.

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[5]This is an example from ElegantNote.