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.

[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:

```
A note callout block with a title:

> [!note] This is the note title
> This is a line of info.

A note callout block without a title:

> [!note]
> This is a line of info
> It may contain multiple lines,
>
> Or even a new paragraph.
```

It will be converted to LaTeX as:

```
A note callout block with a title:

\begin{note}[This is the note title]

This is a line of info.

\end{note}

A note callout block without a title:

\begin{note}[]

This is a line of info

It may contain multiple lines,

Or even a new paragraph.

\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]:

[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:

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

Now you can use:

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

6 Examples

6.1 Alert Boxes

Consider the following Markdown syntax:

```
> [!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.
```

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.

[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.

These will be converted to LaTeX environments:

```
\begin{definition}[Left Coset]
Let $H$ be a subgroup of a group~$G$. A \emph{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 \emph{right coset} of $H$ in $G$ is a subset of $G$ that is of the
↪ form $Hx$, where $Hx = \{ hx : h \in H \}$.
\end{definition}

\begin{theorem}[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 $G$.
\end{theorem}
```

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.

[5]This is an example from ElegantNote.