Writing LaTeX in Markdown

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The background

I really like writing documents with LaTeX, but it is not always so simple or fast to write a document. I use Texmaker for writing LaTeX documents. Texmaker helps a lot with the shortcuts to insert LaTeX orders. I wrote a thesis there and the final document was amazing, but at the beginning was harsh.

LaTeX syntax helps you to keep order in figures, tables, quotes, sections and style citation for scientific documents. This is great because after so many revisions and corrections you move a lot of figures, citations, tables are removed and new images are added, but you don't need to worry, because LaTeX will always keep the order for you no matter how many times you modify the main document.
If you have practice and experience, using Texmaker won't be a challenge, if you don't, it is tedious and frustrating at the beginning. I recently found Pandoc's Markdown syntax and its integration with Vim and LaTeX.

Markdown syntax is much more simple than all LaTeX orders. I wrote this document using Vim with vim-pandoc plugin to help me write quick documents and notes. Also, I hope this helps other as well to quickly learn how to use Vim, Pandoc and Markdown to generate really nice LaTeX documents.

Inline text

Here goes the text of the document. It can be *italic*, **bold** or even SMALL CAPS.

```
It can be *italic*, **bold** or even [small caps]{.smallcaps}.
```

This is centered text using LaTeX syntax because Markdown does not have a syntax to cernter text yet..

And this is a Helvetica font inside the same document.

And back to normal.

```
\begin{center} This is centered text using LaTeX syntax because Markdown
does not have a syntax to cernter text yet.
\end{center}
\fontfamily{phv}\selectfont{And this is a Helvetica font inside the same document.}

\normalfont And back to normal.
```

Lists

Listing objects should be as the following.

1. item 1
2. Item 2
   - subitem

That simple, WYSIWYG.

Equations

Equations can be inline $x^2 \cdot y^2 = (xy)^2$.

```
$x^2 \cdot y^2 = (xy)^2$.
```

You can put only the superscripts for chemical formulas like H_2O or O^{2-}.

```
H~2~O or O^2-^
```

A numbered equation (using LaTeX syntax) goes like this:

$$3x \cdot 2y \rightarrow 6xy \tag{1}$$

```
\begin{equation}
3x \cdot 2y \rightarrow 6xy
\end{equation}
```

Or unnumbered equation (Markdown + LaTeX syntax)

$$H_2 + \frac{1}{2}O_2 \rightarrow H_2O$$

```
$$ H_{2} + \frac{1}{2} O_{2} \rightarrow H_{2}O $$
```

Blocks

Quote blocks used to pay attention to something important.

> This is a written block inside the document.
> This is a continuation of the same block.
>
> > And this is a nested block.

```
> This is a written block inside the document.
> This is a continuation of the same block.
>
> > And this is a nested block.
```

Or code blocks for... Whatever:

```
And this is a code block
```

```
>       And this is a code block
```

Did you noticed that colorful code in the text? Well it is easy to do by just inserting:

```
~~~{.tex}
Code and text goes here.
~~~
```

Links and images

This is an inline link to google.

```
[google](www.google.com)
```

You can specify urls at the end of the document.

```
[google]: www.google.com
```

Images can be inserted using LaTeX syntax as in texmaker, but it is not so quick.

```
\begin{figure}[hbtp]
\centering
\includegraphics[scale=0.28]{example.png}
\caption{Example image} \label{fig:example}
\end{figure}
```

On the other hand, Markdown's syntax is simpler.
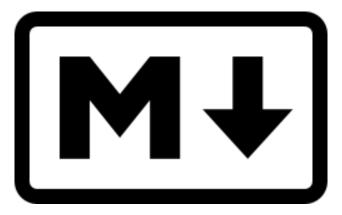
```
![Example image](example.png){#ID width=28%}
```


Figure 1: Example image

Tables

Now for tables we use.

```
 Right align     Center align      Left align
 ------------    --------------    ------------
          21          342         12
     1224          550                  3457
```

Table:This is the simple fast table

Table 1: This is the simple fast table

Right align	Center align	Left align
21	342	12
1224	550	3457

```
| Right align| Left align | Default align | Center align |
|-----------:|:-----------|---------------|:------------:|
|         12 |         12 |            12 |           12 |
|        123 |        123 |           123 |          123 |
```

: And this is pipe table syntax, not so quick, but more comprehensive.

Table 2: And this is pipe table syntax, not so quick, but more comprehensive.

Right align	Left align	Default align	Center align
12	12	12	12
123	123	123	123

```
Right align | Left align | Center align
-:|:|:-:
21|12|342
1234|2457|550
```

 : Quicker pipe table, ugly to see at write time, but same final result

Table 3: Quicker pipe table, ugly to see at write time, but same final result

Right align	Left align	Center align
21	12	342
1234	2457	550

Preamble

The document can begin with the following block

```
--- (dashed lines)
title: Test
author: Author Name
header-includes: |
\usepackage{fancyhdr}
\pagestyle{fancy}
\fancyhead[CO,CE]{This is fancy}
\fancyfoot[CO,CE]{So is this}
\fancyfoot[LE,RO]{\thepage}
abstract: This is a pandoc test . . .
---
```

There you can specify variables to include in the document (e.g. packages to use like \usepackage{graphicx}). Other alternative is to make an external .tex file and include it in the header with the variable "-H path/to/the/file"
The file format must be like this:

```
\usepackage[urw-garamond]{mathdesign}
\usepackage[T1]{fontenc}
\usepackage[utf8]{inputenc}
\usepackage[left=2.54cm,right=2.54cm,top=2.54cm,bottom=2.54cm,letterpaper]{geometry}
\usepackage{graphicx}
\DeclareGraphicsExtensions{.pdf,.png,.jpg}
\usepackage[font=small,labelfont=bf]{caption}
```

I use vim-pandoc and execute the following command at every save:

```
"Pandoc pdf --pdf-engine=pdflatex -H /home/user/Documentos/headerMD.tex
-V documentclass=article -V fontsize=12pt -V papersize=letter"
```

This specifies that the output-compiled file will be a PDF. The compiler is pdflatex. The file included in header (-H) is "headerMD.tex" and variables (-V) are "documentclass=article", "fontsize=12pt" and "papersize=letter".

Final thoughts

In summary, LaTeXdocuments are beautiful but the syntax scares a lot of people. Markdown's syntax is more friendly and pandoc makes it easy to convert that syntax to LaTeXsyntax for compilation in order to obtain a neat document.

I actually wrote this entire blog using vim-pandoc, then convert it to HTML and paste it here which saved a lot of time for writing this blog.