MarkTeX

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Introduction

MarkTeX is an application that converts markup (markdown) into LaTeX code. This converter application will allow files written in markdown (and even with raw LaTeX code mixed in) to be converted to LaTeX documents that can be compiled to Portable Document Format (pdf) with out error. MarkTeX does not need to comply fully with other markup languages entirely; the markup language that is used with MarkTeX will most likey be an off-shoot of markdown.

1 Requirements

1.1 Markup Parsing

MarkTeX should be able to parse the general markup rules, like those in the markdown langauge, namely:

- Headings
  - `# Heading` should convert to `\section{Heading}`.
  - `## Subheading` should convert to `\subsection{Subheading}`.
  - `### Subsubheading` should convert to `\subsubsection{Subsubheading}`.
- Paragraphs and Formatting
  - Paragraphs should be separated by blank lines.
  - Lines ending in two spaces should create a line break in paragraphs, `\\` or `\newline`.
  - `_text_` and `*text*` should convert to `\textit{text}`.
  - `__text__` and `**text**` should convert to `\textbf{text}`.
  - `` `text` `` should convert to `\texttt{text}` (or even perhaps `\verb!text!`).
  - `---` should convert to `\hline`.
- Links
  - `[link-url]` should convert to `\url{link-url}`.
  - `[link-text](link-url)` should convert to `\href{link-url}{link-text}`.
  - URLs that are written without any wrapping should attempt to be parse to links.
  - Links should also work with mailto links.
- Lists
  - Lines that start with `-` should add to a unordered list with the *itemize* environment.
  - Lines that start with contiguous numbers followed by periods should add to a ordered list with the *enumerate* environment.
  - Nested lists should be able to be parsed correctly.
- Code
  - Code surrounded by ``` should be handled appropriately.

1.2 LaTeX Preserving

MarkTeX should also support raw LaTeX in documents, and upon rendering/parsing, all LaTeX code should be preserved.

1.3 Document Layout

MarkTeX documents should have a certain layout, which consists of a plain text document starting with the compulsory front matter secton followed by markdown/LaTeX code (the body of the document).

1.3.1 Front Matter

A MarkTeX document should start with what is known as front matter. The front matter is a header section that defines variables that can be used or refered to throughout the document. This section should start with a line containing only `---` and ending on a line containing only `---`. Variable declarations are one per line and the name and value are separated by a colon (:), eg `title: MarkTeX`

1.3.2 Example/Template

```
---
title: Specifications
author: Kevin Hira
date: 11 December 2016
a: 1
b: true
---
# Hello World
## A Template
Hello World
```

1.4 Generating LaTeX

MarkTeX, upon execution of the program, should generate a error free (when possible) LaTeX document that can later be used to generate a pdf output from.