cmarker.typ

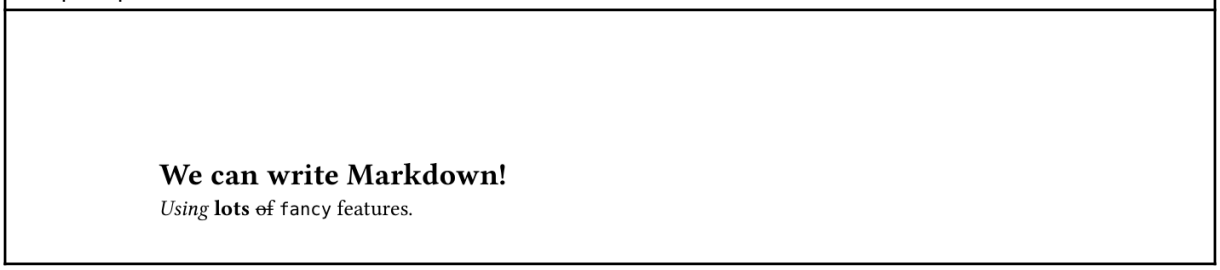
https://github.com/SabrinaJewson/cmarker.typ

This package enables you to write CommonMark Markdown, and import it directly into Typst.

simple.typ	simple.md

`#import "@preview/cmarker:0.1.3"`
 	
`#cmarker.render(read("simple.md"))`
	`# We can write Markdown!`
	
	`*Using* __lots__ ~of~ ` `fancy` ` [features](https://example.org/).`

simple.pdf



This document is available in Markdown and rendered PDF formats.

1. API

We offer a single function:

```
render(
  markdown,
  smart-punctuation: true,
  blockquote: none,
  math: none,
  h1-level: 1,
  raw-typst: true,
  html: (:),
  scope: (:),
  show-source: false,
) -> content
```

The parameters are as follows:

- `markdown`: The CommonMark Markdown string to be processed. Parsed with the pulldown-cmark Rust library. You can set this to `read("somefile.md")` to import an external markdown file; see the documentation for the read function.
  - Accepted values: Strings and raw text code blocks.
  - Required.
- `smart-punctuation`: Automatically convert ASCII punctuation to Unicode equivalents:
  - nondirectional quotations (" and ') become directional (“” and ‘’);
  - three consecutive full stops (...) become ellipses (…);
  - two and three consecutive hypen-minus signs (-- and ---) become en and em dashes (– and —).

  Note that although Typst also offers this functionality, this conversion is done through the Markdown parser rather than Typst.

  - Accepted values: Booleans.
  - Default value: `true`.
- `blockquote`: A callback to be used when a blockquote is encountered in the Markdown, or `none` if blockquotes should be treated as normal text. Because Typst does not support blockquotes natively, the user must configure this.
  - Accepted values: Functions accepting content and returning content, or `none`.
  - Default value: `none`.

  For example, to display a black border to the left of the text one can use:

  ```
  box.with(stroke: (left: 1pt + black), inset: (left: 5pt, y: 6pt))
  ```

  > which displays like this.

- `math`: A callback to be used when equations are encountered in the Markdown, or `none` if it should be treated as normal text. Because Typst does not support LaTeX equations natively, the user must configure this.
  - Accepted values: Functions that take a boolean argument named `block` and a positional string argument (often, the `mitex` function from the mitex package), or `none`.
  - Default value: `none`.

  For example, to render math equation as a Typst math block, one can use:

  ```
  #import "@preview/mitex:0.2.4": mitex
  #cmarker.render(`$\int_1^2 x \mathrm{d} x$`, math: mitex)
  ```

  which renders as: $\int_1^2 x \, \mathrm{d}x$
- `h1-level`: The level that top-level headings in Markdown should get in Typst. When set to zero, top-level headings are treated as text, ## headings become = headings, ### headings become == headings, et cetera; when set to 2, # headings become == headings, ## headings become === headings, et cetera.
  - Accepted values: Integers in the range [0, 255].
  - Default value: 1.
- `raw-typst`: Whether to allow raw Typst code to be injected into the document via HTML comments. If disabled, the comments will act as regular HTML comments.
  - Accepted values: Booleans.
  - Default value: `true`.

  For example, when this is enabled, `<!--raw-typst #circle(radius: 10pt) -->` will result in a circle in the document (but only when rendered through Typst). See also `<!--typst-begin-exclude-->` and `<!--typst-end-exclude-->`, which is the inverse of this.
- `html`: The dictionary of HTML elements that cmarker will support.
  - Accepted values: Dictionaries whose keys are the tag name (without the surrounding <>) and whose values can be:
    - `("normal", (attrs, body) => [/* … */])`: Defines a normal element, where `attrs` is a dictionary of strings, `body` is content, and the function returns content.
    - `("void", (attrs) => [/* … */])`: Defines a void element (e.g. `<br>`, `<img>`, `<hr>`).
    - `("raw-text", (attrs, body) => [/* … */])`: Defines a raw text element (e.g. `<script>`, `<style>`), where `body` is a string.
    - `("escapable-raw-text", (attrs, body) => [/* … */])`: Defines an escapable raw text element (e.g. `<textarea>`), where `body` is a string.

  - `(attrs, body) => [/* … */]`: Shorthand for `("normal", (attrs, body) => [/* … */])`.
  - Default value: `(:)`.
  - Overridable keys: The following HTML elements are provided by default, but you are free to override them: `<sub>`, `<sup>`, `<mark>`, `<h1>`–`<h6>`, `<ul>`, `<ol>`, `<li>`, `<dl>`, `<dt>`, `<dd>`, `<table>`, `<thead>`, `<tfoot>`, `<tr>`, `<th>`, `<td>`, `<hr>`, `<a>`, `<em>`, `<strong>`, `<s>`, `<code>`, `<br>`, `<img>`.

  For example, the following code would allow you to write `<circle radius="25">` to render a 25pt circle:

```
#cmarker.render(read("input.md"), html: (
  circle: ("void", attrs => circle(radius: int(attrs.radius) * 1pt))
))
```

- `scope`: A dictionary providing the context in which the evaluated Typst code runs. It is useful to pass values in to code inside `<!--raw-typst-->` blocks, but can also be used to override element functions generated by cmarker itself.
  - Accepted values: Any dictionary.
  - Default value: `(:)`.
  - Overridable keys:
    - All built-in Typst functions.
    - `rule`: Expected to be a function returning content. Will be used when thematic breaks (`---` in Markdown) are encountered. Defaults to `line.with(length: 100%)`.
- `show-source`: A debugging tool. When set to `true`, the Typst code that would otherwise have been displayed will be instead rendered in a code block.
  - Accepted values: Booleans.
  - Default value: `false`.

This function returns the rendered `content`.

2. Resolving Paths Correctly

Because of how Typst handles paths, elements like images will by default resolve relative to the project root of `cmarker` itself and not your project.

To fix this, one can override the `image` function in the scope the Typst code is evaluated.

```
#import "@preview/cmarker:0.1.3"

#cmarker.render(
  read("yourfile.md"),
  scope: (image: (path, alt: none) => image(path, alt: alt))
)
```

3. Supported Markdown Syntax

We support CommonMark with a couple extensions.

- Paragraph breaks: Two newlines, i.e. one blank line.
- Hard line breaks (used more in poetry than prose): Put two spaces at the end of the line.
- `*emphasis*` or `_emphasis_`: *emphasis*
- `**strong**` or `__strong__`: **strong**
- `~strikethrough~`: ~~strikethrough~~
- `[links](https://example.org)`: links
- `### Headings`, where # is a top-level heading, ## a subheading, ### a sub-subheading, etc
- `` `inline code blocks` ``: `inline code blocks`

- ```
  out of line code blocks
  ```

  Syntax highlighting can be achieved by specifying a language after the opening backticks:

  ````
  ```rust
  let x = 5;
  ```
  ````

  giving:

  ```rust
  let x = 5;
  ```
- `---`, making a horizontal rule. This corresponds to the Typst code `#rule()`, which, if not overridden by the `scope` parameter, defaults to `#line(length: 100%)`:

- ```
  - Unordered
  - lists
  ```

  - Unordered
  - Lists
- ```
  1. Ordered
  1. Lists
  ```

  1. Ordered
  2. Lists
- `$x + y$` or `$$x + y$$`: math equations, if the `math` parameter is set.
- `> blockquotes`, if the `blockquote` parameter is set.
- Images: `![Some tiled hexagons](examples/hexagons.png)`, giving

  
- Tables:

  ```
  | Column 1 | Column 2 |
  | -------- | -------- |
  | Row 1 Cell 1 | Row 1 Cell 2 |
  | Row 2 Cell 1 | Row 2 Cell 2 |
  ```

Column 1	Column 2
Row 1 Cell 1	Row 1 Cell 2
Row 2 Cell 1	Row 2 Cell 2

- Footnotes:

  ```
  Some text[^footnote]
  [^footnote]: content
  ```
- HTML, e.g. `<sub>subscript</sub>` for _{subscript}.

4. Interleaving Markdown and Typst

Sometimes, you might want to render a certain section of the document only when viewed as Markdown, or only when viewed through Typst. To achieve the former, you can simply wrap the section in `<!--typst-begin-exclude-->` and `<!--typst-end-exclude-->`:
  ```

```
<!--typst-begin-exclude-->
Hello from not Typst!
<!--typst-end-exclude-->
```

Most Markdown parsers support HTML comments, so from their perspective this is no different to just writing out the Markdown directly; but `cmarker.typ` knows to search for those comments and avoid rendering the content in between.

Note that when the opening comment is followed by the end of an element, `cmarker.typ` will close the block for you. For example:

```
> <!--typst-begin-exclude-->
> One

Two
```

In this code, "Two" will be given no matter where the document is rendered. This is done to prevent us from generating invalid Typst code.

Conversely, one can put Typst code inside a HTML comment of the form `<!--raw-typst […]-->` to have it evaluated directly as Typst code (but only if the `raw-typst` option to `render` is set to `true`, otherwise it will just be seen as a regular comment and removed):

```
<!--raw-typst Hello from #text(fill:blue)[Typst]!-->
```

5. Limitations

Although I tried my best to escape everything correctly, I won't provide a hard guarantee that everything is fully sandboxed even if you set `raw-typst: false`. That said, Typst itself is well-sandboxed anyway.

6. FAQ

6.1. Typst is saying it can't find my image – it's looking inside `cmarker` for some reason!

See Section 2.

6.2. How do I include multiple Markdown files in one project?

See the multi-file example.

6.3. My image file contains spaces, but it gets rendered as text!

This is a Markdown quirk – `![alt](image path.png)` is seen as plain text instead of an image. To fix it, use `![alt](<image path.png>)`.

6.4. My Markdown after an open HTML tag is getting rendered as text!

Another Markdown quirk – in code like `<p>hello _world_</p>` or `<!-- -->hello _world_`, italics will not be generated.

There are two fixes: either insert some empty inline-level HTML at the start, e.g. `<span></span><p>hello _world_</p>`, or insert two newlines after the opening tag:

```
<p>

hello _world_</p>
```

7. Development

- Build the plugin with `./build.sh`, which produces the `plugin.wasm` necessary to use this.
- Compile examples with `typst compile examples/{name}.typ`.
- Compile this README to PDF with `typst compile README.typ`.
- Run tests with `cargo test --workspace` and `cargo run -p test-runner`.
- Fuzz the library with `cargo +nightly fuzz run fuzz`.