TiefDownConverter Documentation

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Contents

1.	LICE	NSE	. 4
2.	The v	what?	. 5
	2.1.	Why?	5
	2.2.	How, oh wise programmer, did you solve this problem?	. 5
	2.3.	So, what's the point?	
	2.4.	Use Cases	6
	2.5.	Support	7
3.	Usag	e	
	3.1.	Installation	
	3.2.	Getting started	
	3.3.	Adjusting the markdown directory	
	3.4.	Customising the template	
	3.5.	Adjusting template behaviour	
	3.6.	Writing templates	
	3.7.	Writing filters	
4.		e Details	
	U	tiefdownconverter	
		4.1.1. Usage:	
		4.1.2. Subcommands:	
	4.2.	tiefdownconverter convert	
		4.2.1. Usage:	
	4.3.	tiefdownconverter init	
		4.3.1. Usage:	
	4.4.	tiefdownconverter project	
		4.4.1. Usage:	
		4.4.2. Subcommands:	
	4.5.	tiefdownconverter project add-template	
		4.5.1. Usage:	
	4.6.	tiefdownconverter project remove-template	
		4.6.1. Usage:	
	4.7.	tiefdownconverter project update-template	
		4.7.1. Usage:	
	4.8.	tiefdownconverter project update-manifest	
		4.8.1. Usage:	
	4.9.	tiefdownconverter project list-templates	
		4.9.1. Usage:	16
	4.10.	tiefdownconverter project validate	
		4.10.1. Usage:	
	4.11.	tiefdownconverter project clean	
		4.11.1. Usage:	
	4.12.	tiefdownconverter check-dependencies	
		4.12.1. Usage:	
5.	Cont	ributing	

5.1.	Pull Requests	. 18
5.2.	Conversion	. 18
5.3.	Presets	. 18
5.4.	Manifest	. 18
5.5.	Tests	. 18
5.6.	Documentation	. 19
5.7.	Code Style	. 19

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2. The what?

If you want to skip the funny written explanations, skip to the <u>Usage</u> section.

Well, that's a good question. Ask it later.

Jk, of course you may ask it now. TiefDown is a project format I made up to make it easier to convert my markdown files into something pretty. As a matter of fact, this documentation is managed by a TiefDown project!

The important thing is that this isn't a markdown parser, replacement or anything like that. It's a project format, and it's not even a format, it's pretty much just a manifest file and an executable.

2.1. Why?

I wonder myself every day. But alas, I should know, I wrote this cluster**** so let me explain. The initial concept was born from pain (as many are). I was pretty tired of exporting my markdown files, then converting them, overwriting my old files, then converting them again, overwriting all history in the process. It was just... a mess.

So I did what any sane person would do: I learned Python.

Well, I'm being facetious. I didn't "learn Python," I just expanded my capabilities to calling programs from the command line.

So my script, at first, just called Pandoc, then pdflatex, and then pdflatex again for good measure. It created a PDF, overwriting my old one. It was basically just converting a single markdown file into a PDF with a basic TeX template (in my case, LiX Novel).

Then I realized that writing a 40-chapter story in a single markdown file was even dumber than whatever I made in Python. So I added a little combination logic. In the process, I had to write Lua filters as well, and then I added versioning, and then I added conversion to multiple different PDFs, and then I added EPUB support and—you know what? That was a dumb idea. The Python script soon reached 200 lines of code, which was untenable.

So yeah, I decided to make a new book. And of course - *everything* broke. Instantly. I had to copy and paste things, adjust my Python script, rewrote it a bit, and boom - suddenly I had two different projects with different processes, different outputs, different versions, different everything.

And then... I started a third book. Aaaand the Python script didn't really fulfill my needs, so I rewrote it in Bash. But worse.

I thought I had it all figured out. With Python. Then Bash. Then I started a short story and lost my ******* mind.

2.2. How, oh wise programmer, did you solve this problem?

I'm glad you asked! I'm glad. I... I hope you asked? Well, regardless of whether or not you did, I'll tell you.

I learned Rust.

For real this time, I learned a completely new programming language just for this. But there was a reason, or a few rather:

- 1. I wanted cross-platform support.
- 2. I wanted a single executable.
- 3. I needed a language with good CLI support because, believe it or not, I'm awful at GUIs.
- 4. I'm crazy.

These reasons led me to two options: Python, a language I was somewhat familiar with but didn't particularly enjoy writing in, and Rust, a language I had never written in before but was very interested in.

Evidently, I chose Rust.

So I started: a CLI interface, command-line calls, and so on. Here's the rundown of how it works internally:

- You initialize a project with tiefdownconverter init. This creates a few bits and bobs, but importantly the manifest.toml file. This contains all the information needed to actually manage and convert the project.
- You can then manipulate the project, and so on.
- When you add your markdown files to the Markdown directory, running tiefdownconverter convert will do a few things:
 - Create a new folder for the current compilation. That way, you have a history.
 - Combine all the markdown files into one megafile called combined.md.
 - ▶ Run Pandoc conversion to TeX, EPUB, or Typst. This uses Lua filters that are defined in the manifest.toml file.
 - Run XeLaTeX on all TeX templates, Typst on all Typst templates, and so on. It even supports EPUB conversion.
 - Copy the files around so you end up with your output files in the right places.

Isn't that simple?

It isn't. But oh well. We've got a lot of work to do on this, and if you're interested, don't shy away from the <u>Contributing</u> section!

2.3. So, what's the point?

Really? Making my life easier. I wanted to export my novel as a PDF in A4, 8x5in, so on. If I can make your life easier as well, then I'm the happiest woman alive.

2.4. Use Cases

So where does TiefDownConverter actually come in handy? Well, anywhere you need Markdown to turn into something nice without manually fiddling with formats every time. Here are a few scenarios where it saves the day:

• Writing Books - Markdown is great for writing, but formatting a 300-page novel? Not so much. TiefDown handles that for you. Well, at least the part where you need to convert stuff, you still need to write out your templates.

- **Technical Documentation** Software projects need structured documentation, and Tief-Down makes sure it's consistent. Case and point, this documentation is managed as a TiefDown project.
- **Multi-format Exports** Need a A4 PDF, a Book PDF, a letter PDF, EPUB, so on? TiefDown can generate them all from the same source.

Basically, if your workflow involves Markdown and you're sick of manually converting everything, TiefDown is your new best friend.

2.5. Support

Now, you want support? Check out the Discord or write an issue on GitHub!

- Discord Server°
- GitHub Issues°

3. Usage

The basic usage of tiefdownconverter is relatively simple. The difficult part is understanding the templating system and how to customise it for your usecases. Presets can only do so much.

3.1. Installation

Currently the only way to install tiefdownconverter is to either build it yourself, install it from cargo, or download a precompiled binary from the releases page°. Then just add it to the path and you're good to go. You can of course also just call it relatively by placing the binary in your project folder or something like that.

That said, the recommended way to install TiefDownConverter is cargo install tiefdownconverter. This will always install the latest version.

There are a few dependencies that you need to install.

- Pandoc : Conversion from Markdown to TeX, Typst and Epub.
- A TeX distribution: For converting TeX files to PDF. It has to include xelatex.
 - ► If using <u>TeX Live</u>° you may need to additionally install texlive-xetex depending on your system.
 - ► If using MikTeX°, no need to do anything.
- <u>Typst</u>°: For converting Typst files to PDF.

Windows is easy enough: winget install miktex pandoc typst.

Linux varies by distro of course, but for ubuntu it's apt install texlive-xetex pandoc and cargo install typst or downloading the typst binary and adding it to the path.

Now you should be able to run tiefdownconverter from the command line. You can test it by initialising a test project using tiefdownconverter init testproject and running tiefdownconverter convert in the project directory or tiefdownconverter convert -p testproject. You could also, as a test, clone the Github Repo and run tiefdownconverter convert -p docs (this may however throw warnings if you don't have the appropriate fonts installed).

3.2. Getting started

TL;DR: Make a folder, go into it and run tiefdownconverter init and tiefdownconverter convert. That's it.

Long anser: First off, you need to create a project using tiefdownconverter init. This will create a new project in the current directory. You can (and maybe should) specify a project using the -p flag.

This command creates the basic template structure like so:

The Markdown folder contains an example Markdown file. When placing your markdown files in this folder, make sure they're named like Chapter X.md, with anything following the number being ignored. *This is important*, as the converter will use this to sort the files for conversion, as otherwise it'd have no idea in which order they should be converted.

Now you should be able to run tiefdownconverter convert -p path/to/your_project (or ommitting the -p flag if you're already in the project directory) and it should generate a PDF file in the project directory. You can now adjust the template, add your own Markdown files, and so on.

3.3. Adjusting the markdown directory

You can change what directory the converter looks for markdown files in by changing the <code>markdown_dir</code> field in the manifest.toml file or saying <code>-m path/to/markdown/dir</code> when initialising the project. You can also change it post-initialisation using <code>tiefdownconverter project update-manifest -m path/to/markdown/dir</code>. If you don't do so, the converter will look for markdown files in the <code>project_dir/Markdown</code> directory.

3.4. Customising the template

The key idea behind tiefdownconverter is, that it can handle multiple templates at the same time. This is done by creating a template file in the template directory and adding it to the project's manifest.toml file.

could if inclined, You do this manually, you were so but using tiefdownconverter project add-template is much easier. Check the <u>Usage Details</u> for command. But importantly, once you the usage of this created the template and added it to the manifest, you will be able to convert using it. tiefdownconverter convert -p path/to/your_project --templates <TEMPLATE_NAME> will convert only the selected template, aiding in debugging.

And now, you're pretty much free to do whatever you want with the template. Write tex or typst templates, use custom filters, so on.

3.5. Adjusting template behaviour

You have a few options for editing template behaviour using tiefdownconverter. You can of course edit the template files directly, but there are a few more options.

Mainly and most interestingly, lua filters can adjust the behaviour of the markdown conversion. These are lua scripts that are run before the markdown is converted to tex or typst. You can add lua filters to a template by either editing the manifest or using tiefdownconverter project update-template <TEMPLATE_NAME> --add-filters <FILTER_NAME>. This can be either the path to a lua filter (relative to the project directory) or a directory containing lua filters.

You can also change the name of the exported file by setting the output option. For example, tiefdownconverter project update-template <TEMPLATE_NAME> --output <NEW_NAME> . This will export the template to <NEW_NAME>.pdf instead of the default <TEMPLATE_NAME>.pdf .

Similarly, you could change the template file and type, though I advice against it, as this may break the template. I advice to just add a new template and remove the old one using tiefdownconverter project remove-template <TEMPLATE_NAME>.

3.6. Writing templates

Importantly, when you write your own template, you need to include the content somehow. That somehow is done via \input{output.tex} or #include "./output.typ". This will include the output of the Markdown conversion in your template file. In the future, it may be possible to specify per template, what the output should be called, but for now, it's just output.tex.

3.7. Writing filters

Note: This section only really addresses LaTeX, but the concepts are the same for Typst.

If you are in the business of writing filters (and don't just solve everything in TeX itself), I advice checking out the documentation at https://pandoc.org/lua-filters.html°. But here's a quick rundown of what you can do. For example, if you wanted to change the font of all block quotes, there's a few things you'd need to do. First off, in your template, you will need to define a font. It could look something like this:

```
tex
1 \usepackage{fontspec}
2 \newfontfamily\blockquotefont{Noto Sans}
```

Then, add a filter to your template as described above. The filter could look something like this:

```
1 function BlockQuote(el)
2 local tt_start = pandoc.RawBlock('latex', '\\blockquotefont\\small')
3
4 table.insert(el.content, 1, tt_start)
5
6 return el
7 end
```

Of course, you could just redefine the font in TeX but I think this is a bit more flexible. One usecase that is quite important is to change the way chapters are handled for LiX. In case of LiX, they expect \h{chapter_name} instead of \section, which is the standard behaviour of pandoc. So when you create a LiX backed template, you have to add a filter to change that behaviour. Something like this:

```
1 function Header(elem)
2  if elem.level = 1 then
3    return pandoc.RawBlock("latex", "\\h{" ... pandoc.utils.stringify(elem.content) .. "}")
4  end
5  if elem.level = 2 then
```

```
6    return pandoc.RawBlock("latex", "\\hh{" .. pandoc.utils.stringify(elem.content) .. "}")
7    end
8    -- add more levels here if needed
9   end
```

4. Usage Details

Below are the usage details for the various commands. **Note:** These are autogenerated! For clearer documentation, please see the <u>Usage</u> section.

4.1. tiefdownconverter

Version: tiefdownconverter 0.5.0

4.1.1. Usage:

```
1 TiefDownConverter manages TiefDown projects.
 2 TiefDown is a project structure meant to simplify the conversion process
       from Markdown to PDFs.
 4 TiefDownConverter consolidates multiple conversion processes and templating
       systems to generate a configurable set or subset of output documents.
 6 It is not in itself a converter, but a wrapper around pandoc, xelatex and
 7
       typst. As such, it requires these dependencies to be installed.
8
9 Usage: tiefdownconverter <COMMAND>
10
11 Commands:
12
     convert
                         Convert a TiefDown project. By default, it will
13
       convert the current directory.
    init
14
                        Initialize a new TiefDown project.
15
   project
                        Update the TiefDown project.
    check-dependencies Validate dependencies are installed.
16
17
                         Print this message or the help of the given
18
       subcommand(s)
19
20 Options:
21
    -h, --help
22
             Print help (see a summary with '-h')
23
   -V, --version
24
25
             Print version
```

4.1.2. Subcommands:

- convert
- init
- project
- check-dependencies

4.2. tiefdownconverter convert

Version: tiefdownconverter 0.5.0

4.2.1. Usage:

```
1 Convert a TiefDown project. By default, it will convert the current
2 directory.
3
4 Usage: tiefdownconverter convert [OPTIONS]
5
```

```
6 Options:
7 -p, --project <PROJECT> The project to convert. If not provided,
8 the current directory will be used.
9 -t, --templates <TEMPLATES>... The templates to use. If not provided,
10 the default templates from the manifest file will be used.
11 -h, --help Print help
```

4.3. tiefdownconverter init

Version: tiefdownconverter 0.5.0

4.3.1. Usage:

```
1 Initialize a new TiefDown project.
 3 Usage: tiefdownconverter init [OPTIONS] [PROJECT]
 5 Arguments:
    [PROJECT] The project to initialize. If not provided, the current
 7
       directory will be used.
8
9 Options:
10
     -t, --templates <TEMPLATES>...
                                        The preset templates to use. If not
       provided, the default template.tex will be used.
11
12
                                        For custom templates, use the update
13
       command after initializing the project.
14
                                        If using a LiX template, make sure to
15
       install the corresponding .sty and .cls files from
       https://github.com/NicklasVraa/LiX. Adjust the metadata in
16
17
       template/meta.tex accordingly.
18
                                         [possible values: template.tex,
       booklet.tex, lix_novel_a4.tex, lix_novel_book.tex, template_typ.typ,
19
20
       default_epub]
21
                                        Do not include the default templates.
     -n, --no-templates
22
       You will need to add templates manually with Update
23
     -f, --force
                                        Delete the project if it already
24
       exists.
25
    -m, --markdown-dir <MARKDOWN_DIR> The directory where the Markdown files
26
       are located. If not provided, Markdown/ will be used.
27
     -h, --help
                                        Print help
```

4.4. tiefdownconverter project

Version: tiefdownconverter 0.5.0

4.4.1. Usage:

```
1 Update the TiefDown project.
2
3 Usage: tiefdownconverter project [PROJECT] <COMMAND>
4
5 Commands:
6 add-template Add a new template to the project.
7 remove-template Remove a template from the project.
8 update-template Update a template in the project.
```

```
9
     update-manifest Update the project manifest.
10
    list-templates List the templates in the project.
                      Validate the TiefDown project structure and metadata.
11
     validate
                      Clean temporary files from the TiefDown project.
12
     clean
                      Print this message or the help of the given
13
    help
14
       subcommand(s)
15
16 Arguments:
     [PROJECT] The project to edit. If not provided, the current directory
17
18
       will be used.
19
20 Options:
     -h, --help Print help
```

4.4.2. Subcommands:

- add-template
- remove-template
- update-template
- update-manifest
- list-templates
- validate
- clean

4.5. tiefdownconverter project add-template

Version: tiefdownconverter 0.5.0

4.5.1. Usage:

```
1 Add a new template to the project.
 3 Usage: tiefdownconverter project add-template [OPTIONS] <TEMPLATE>
 4
 5 Arguments:
    <TEMPLATE> The name of the template to create. If using a LiX template,
       make sure to install the corresponding .sty and .cls files from
 7
 8
       https://github.com/NicklasVraa/LiX. Adjust the metadata in
 9
       template/meta.tex accordingly.
10
11 Options:
12
    -f, --template-file <TEMPLATE_FILE> The file to use as the template. If
13
       not provided, the template name will be used.
14
     -t, --template-type <TEMPLATE_TYPE> The type of the template. If not
       provided, the type will be inferred from the template file. [possible
15
16
       values: tex, typst, epub]
17
     -o, --output <OUTPUT>
                                          The output file. If not provided,
       the template name will be used.
18
19
         --filters <FILTERS>...
                                          The luafilters to use for pandoc
20
       conversion of this templates markdown.
21
     -h, --help
                                          Print help
```

4.6. tiefdownconverter project remove-template

Version: tiefdownconverter 0.5.0

4.6.1. Usage:

4.7. tiefdownconverter project update-template

Version: tiefdownconverter 0.5.0

4.7.1. Usage:

```
1 Update a template in the project.
3 Usage: tiefdownconverter project update-template [OPTIONS] <TEMPLATE>
5 Arguments:
   <TEMPLATE> The template to update.
7
8 Options:
9
         --template-file <TEMPLATE_FILE>
10
             The file to use as the template. If not provided, the template
11
     name will be used.
12
         --template-type <TEMPLATE_TYPE>
13
             The type of the template. If not provided, the type will be
14
       inferred from the template file.
15
             Changing this is not recommended, as it is highly unlikely the
       type and only the type has changed. It is recommended to create a new
16
       template instead. [possible values: tex, typst, epub]
17
18
       --output <OUTPUT>
             The output file. If not provided, the template name will be used.
19
20
         --filters <FILTERS>...
21
             The luafilters to use for pandoc conversion of this templates
22
     markdown.
       --add-filters <ADD_FILTERS>...
23
24
             The luafilters add to the template.
25
         --remove-filters <REMOVE_FILTERS>...
26
             The luafilters to remove from the template.
27
   -h, --help
             Print help
```

4.8. tiefdownconverter project update-manifest

Version: tiefdownconverter 0.5.0

4.8.1. Usage:

```
1 Update the project manifest.
2
3 Usage: tiefdownconverter project update-manifest [OPTIONS] [PROJECT]
4
5 Arguments:
```

```
6 [PROJECT] The project to manipulate. If not provided, the current
7 directory will be used.
8
9 Options:
10 -m, --markdown-dir <MARKDOWN_DIR> The directory where the Markdown files
11 are located.
12 -h, --help Print help
```

4.9. tiefdownconverter project list-templates

Version: tiefdownconverter 0.5.0

4.9.1. Usage:

```
1 List the templates in the project.
2
3 Usage: tiefdownconverter project list-templates
4
5 Options:
6 -h, --help Print help
```

4.10. tiefdownconverter project validate

Version: tiefdownconverter 0.5.0

4.10.1. Usage:

```
1 Validate the TiefDown project structure and metadata.
2
3 Usage: tiefdownconverter project validate
4
5 Options:
6 -h, --help Print help
```

4.11. tiefdownconverter project clean

Version: tiefdownconverter 0.5.0

4.11.1. Usage:

```
1 Clean temporary files from the TiefDown project.
2
3 Usage: tiefdownconverter project clean
4
5 Options:
6 -h, --help Print help
```

4.12. tiefdownconverter check-dependencies

Version: tiefdownconverter 0.5.0

4.12.1. Usage:

1 Validate dependencies are installed.

```
2
3 Usage: tiefdownconverter check-dependencies
4
5 Options:
6 -h, --help Print help
```

5. Contributing

This project is open source, and I'd love for you to contribute! There's a few things you should know before you start.

5.1. Pull Requests

Pull Requests should be made with either a link to an issue or an explanation of

- 1. What was the problem
- 2. How is it solved now
- 3. How did it affect the documentation

It takes a lot of work to understand the intention of code you didn't write and then judging whether this was indeed the intended outcome. That's why it's helpful for everyone if there's an explanation on what was changed and why.

5.2. Conversion

Conversion is split in a few different steps:

- 1. Combine all the markdown files into one megafile called combined.md.
- 2. Run Pandoc conversion to TeX, EPUB, or Typst. This uses Lua filters that are defined in the manifest.toml file.
- 3. Run XeLaTeX on all TeX templates, Typst on all Typst templates, and so on.

Say you were to add a new conversion type. In converters.rs, you'd need to add a new function that handles the full conversion. Including handling lua filters, markdown conversion, so on. This converter function has to then be included in our conversion decision logic in conversion_decider.rs. And for that you need to add a new TemplateType, which includes editing the implementations. Then you need to add the new template type decision logic to get_template_type_from_path.

5.3. Presets

NOTE: This is a bit of a niche usecase, so documentation is lacking. You can always ask for help on this in a GitHub issue.

You can also add new presets, but that's a bit more involved. You should check the implementation for the existing presets, I don't think it's useful to document this nieche usecase for now.

5.4. Manifest

Hope you don't have to change the manifest.toml file. If you do, change the manifest model, increase the version number in consts.rs and add a upgrade logic to manifest_model.rs.

5.5. Tests

Currently primarily integration tests. See the tests folder for examples. Any pull request to main will automatically run tests, and the expectation is that at least the existing tests work. If they break, fix your code or, if you changed behavior on purpose, the tests.

I appreciate it if you add test coverage for your changes. I especially would appreciate more unit tests, but the tests I have are sufficient for now. Integration tests take priority over unit tests for me, as the overall behavior is more important to me than the individual functions, and I only have so much time that I want to spend on this project.

5.6. Documentation

When changing the documentation, it is of utmost importance that the documentation outputs are correctly generated. *These are not automatically generated on release* but rather held in git to more easily track changes during a pull request.

To make sure this documentation is up to date, consider whether your changes significantly affect the workflow of using TiefDownConverter. If you add a command or flag, make sure to run tools/generate_docs.py. Either way, when changing the documentation, always run tiefdownconverter convert -p docs before committing the changes.

You need to have the fonts Iosevka and Fira Mono installed! If you don't, we cannot accept documentation changes. TiefDownConverter will throw a warning should the fonts not be installed.

5.7. Code Style

I don't have one. I'm sorry.