About Typst

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1   Introduction

There are several projects in the TeX world attempting to rewrite TeX from scratch. Sometimes these programs input LaTeX source files and just modify the typesetting code. LuaTeX and XeTeX are familiar examples. Other programs start completely from scratch with new markup input languages.

An interesting example is JSBox by Doug McKenna. This was described at TUG meetings in 2014 and 2019. One goal of the project is to create documents for iPhones and iPads which reflow immediately when the user resizes the window, and which can contain interactive illustrations. JSBox is not well-known because McKenna did not release it as open source, but the iOS app *Hilbert Curves* by McKenna shows many of its capabilities. In his 2014 report, McKenna discussed showing the program to Donald Knuth, who encouraged him but warned that "any rewrite of TeX will be a full time job taking at least five years."

More recently Martin Haug and Laurenz Mädje began a project in Berlin to rewrite both the input language and the typesetting code for a Latex-like program. Their program is named *Typst* and is programmed in Rust. The project began in 2019, so Knuth's estimate of the time it might take remains quite accurate. Details about the reasons for the rewrite, and the goals, can be found at their web site https://typst.app.

2   A Typst Engine

Recently I received a TeXShop engine file from Jeroen Scheerder which can typeset Typst source files. These source files usually have extension ".typ", so I added that as a file type which TeXShop recognizes and is willing to typeset. Thus TeXShop users can easily experiment with the new typesetting engine and its distinctive input language.

To set this up, perform the following steps:

- Note that Typst was updated on October 18, 2024. It is important to use this latest version. Go to https://github.com/typst/typst/releases/, scroll down to the "Assets" section, and download either typst-aarch64-apple-darwin.tar.xz or typst-x86_64-apple-darwin.tar.xz depending on whether you have an Arm processor or an Intel processor. The zip file will decompress into a folder containing "typst" and some license and readme files. The file "typst" is the full typesetting program.

- If you try to run typst, the Mac will display a dialog reading

  ```
  "typst" can't be opened because Apple
  cannot check it for malicious software.
  ```

  We should ask the authors to notarize the file with Apple, but if you trust them, you can remove the warning by opening Terminal, changing to the directory containing typst, and typing

  ```
  xattr -d com.apple.quarantine typst
  ```

  Then drag typst to /usr/local/bin.

- Find the file Typst.engine in the folder containing this document and drag a copy to the active engine folder, ~/Library/TeXShop/Engines.

Now you are ready to experiment. If you are given a Typst source file, add the following line to the top of the file

```
//% !TEX TS-program = Typst
```

This line tells TeXShop to typeset using Typst. Unfortunately, % is not a comment symbol in the Typst input language, so we preface the line with the comment symbol in that language, //. It is not necessary to remember this line; just choose the TeXShop Macro titled "Program" and a list of active typesetting engines will appear. Select "Typst" and the line will be written at the top of your source. Add the extra // at the beginning.

If you start a new source file completely from scratch, TeXShop will display a Save Dialog the first time you typeset it. The file must be saved with extension ".typ" so Typst will recognize it. It is tempting to just type the new extension when you name the file, but that will not work because TeXShop will add an extra ".tex" to the end of the filename when saving. Instead, find the pulldown menu "File Format:" at the bottom of the dialog and select "typ" near the bottom of the list. Once the file has been saved with the proper extension, TeXShop will use that extension from then on.

3   Sample Source Files

A large collection of sample source files are available on the Typst web site. To examine a few, go to https://typst.app/universe/search/?kind=packages. In the left hand column, select *Templates*. The right side of the page then shows a large number of templates. Let us at random select *tufte-memo*.

Click on this icon and a full page about tufte-memo will appear. On the right side, emphasized in black, is a line reading

```
typst init @preview/tufte-memo:0.1.2
```

Open Terminal in /Applications/Utilities and type the following lines:

```
cd
mkdir typst-docs
cd typst-docs
typst init @preview/tufte-memo:0.1.2
```

The first three commands create a folder in your home directory named *typst-docs* where you can store various typst documents. Feel free to modify these lines. The final line creates a subfolder named *tufte-memo* for this particular document, and fills the folder with all files needed to typeset the project. Find *main.typ* in the folder and open it in TeXShop. Add the line

```
// % !TEX TS-program = Typst
```

to the top of the file. Then typeset to see the result. Done.

The crucial line *typst init @preview/tufte-memo:0.1.2* lists the required package in the ending letters. When these letters are omitted as below, the latest version of the package will be used.

```
typst init @preview/tufte-memo
```

Any template on the typst web site can be typeset in the same manner. Pick a few that look interesting.

Note that https://typst.app/docs/ contains a useful tutorial about Typst.

4   Changes from the Previous Version of Typst

You may have used Typst in earlier versions of TeXShop. In those earlier versions we provided sample templates for typst in TeXShop's *Templates* toolbar menu. These templates were accompanied by associated packages created by Jeroen Scheerder and stored in subfolders of the folder ~/Library/"ApplicationSupport"/typst. The current version

of Typst has a package manager which automatically loads packages over the internet as needed, so the previous package files are no longer needed. Therefore if you installed these package files earlier, you can go to `~/Library/"ApplicationSupport"/typst` and remove the folders named *ams, dept-news, fiction, ieee,* and *letter*.

You may also have added a folder to `~/Library/TeXShop/Templates` containing typst templates named *ams-example, dept-news-example, fiction-example, ieee-example* and *letter-example*. These templates are obsolete and can be removed.

5   Templates

If you begin using typst regularly, you will want to create templates for standard typst projects and store them in TeXShop's Templates menu. This works just like other LaTeX templates, and Typst templates and Latex templates can be mixed together in the menu.

As mentioned earlier, the sample sources *ams, dept-news, fiction, ieee,* and *letter* are obsolete. They have been replaced by modern versions named *unequivocal-ams, dashing-dept-news, wonderous-book, charged-ieee,* and *letter-pro*. The folder `Engines/Inactive/Typst` contains a folder named Typst-Templates containing these documents. If you like, move Typst-Templates to `~/Library/TeXShop/Templates`, making these templates available in the standard Templates toolbar item. These templates have been chosen because they provide a fair sample of typical typesetting tasks. But of course, if you actually begin using Typst for serious work, you'll want to add your own templates to the location.

A few of the templates require additional files in the folder, so the initial typesetting will fail. These additional files have been collected in `~/Library/TeXShop/Engines/Inactive/Typst/Typst-Template-Extras`. This contains three subfolders with the additional files required by *unequvocal-arms, dashing-dept-news,* and *charged-ieee*.

6   Acknowledgement

This new capability is really the work of Jeroen Scheerder, who wrote the engine file. Without his encouragement, I would not have looked at the Typst site, and certainly would not have realized that the project is very approachable in its current state. Contact Scheerder at Jeroen Scheerder <js@gumby.nl> if you have questions about the engine.