## TeXShop, Version 5: HTML previews

Richard Koch

Abstract

The Mac previewer TeXShop provides a preview window for each open document, showing pdf output. Version 5 of the program provides an extra preview window for html output. Therefore, TeXShop authors can use typesetting engines which convert source files to pdf, or html, or both. Examples include TeX4ht, which accepts LaTeX source and outputs html, PreTeXt, which accepts xml source and outputs either pdf or html, and pure html source, which can be displayed as a live web page.

1 HTML source

Pictured below is the most straightforward example. The window on the left contains html source and the window on the right shows the resulting web page. Links to local or remote web pages work, as do links to pdf files, illustrations, and all other standard web content. After revising the source file, a user can type command-T, the standard TeXShop shortcut to typeset, and the web page will instantly update.
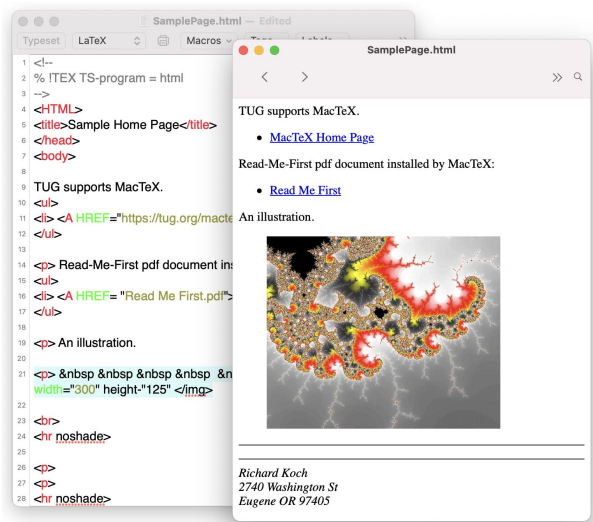

2 TeX4ht

Pictured next is an editing session using TeX4ht. To save space, the source window is not shown. The window on the left contains `pdflatex` output and the window on the right contains TeX4ht output. The TeX4ht engine, a very short shell script, typesets the source twice, once with `pdflatex` for the pdf preview and once with TeX4ht for the html preview. If the user edits the source and typesets again, both windows instantly update. In the illustration, both

windows were resized to be very small. The resizing changed the magnification in the pdf window, but reflowed the text in the html window.
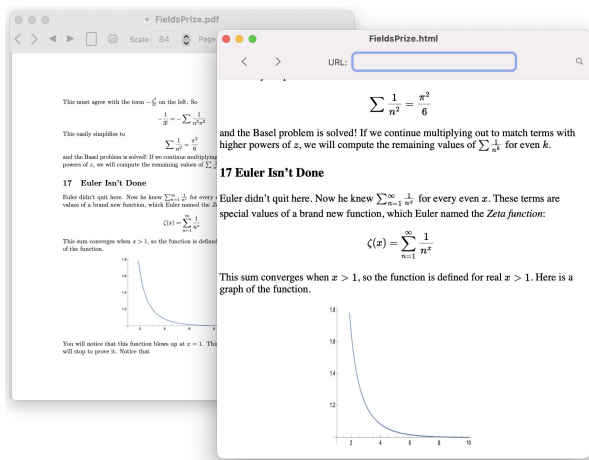
3 PreTeXt

PreTeXt is a project managed by Robert Beezer at the University of Puget Sound. Pictured below is a typical editing session. The source window (not shown) contains xml source for document markup, but LaTeX source for mathematics. Typesetting calls the `xsltproc` program twice, once to convert the source to pdf, and once to convert it to html. The pdf is shown on the left and the html is shown on the right. PreTeXt deliberately formats these outputs differently, so the pdf looks like standard TeX and the html looks like a web project. A key advantage of the PreTeXt project is support for many forms of user interactions in the html page.
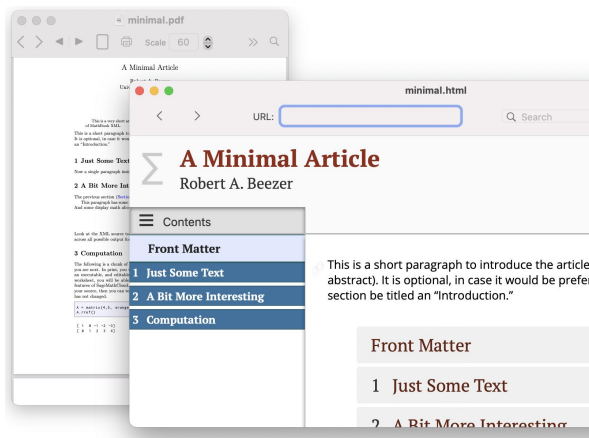
4 TeXShop engines

TeXShop typesetting engines are simple shell scripts stored in `~/Library/TeXShop/Engines`. A TeXShop

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user can navigate to this spot within the program, open files there, and edit them. Thus the user has complete control over the exact typesetting method used. In TeXShop 5.0, engine scripts can contain additional commands like

- `!TEX-pdfPreview`
- `!TEX-htmlPreview`
- `!TEX-bothPreview`

After typesetting, the first of these lines tells TeXShop to search for a file in the source directory with the same name as the source file and extension `.pdf`. If this file exists, it is opened in the pdf Preview window. The other commands work similarly.

5   Help recalling HTML commands

Several items in the TeXShop Help menu provide help recalling LaTeX commands. A new menu provides a list of html commands. The purpose of each command is listed, the appropriate tags are shown, and a short usage sample is provided. This help document can be typeset with command-T for easy viewing of examples explaining how to link to a pdf file, how to link to an external web page, how to display a movie, and how to display a YouTube video.

If the user needs a command not listed, they can search for it on Google. Then they can enter a new item in TeXShop Help, because the help file is editable. TeXShop will remember the edit, so the Help list will expand as the user adds items.

6   Different output for PDF and HTML

The PreTeXt system automatically adjusts input for display in pdf, html, and other formats. In TeX4ht, it is possible to manually write different source for pdf and html outputs. The recommended procedure is:

```
\ifx\HCode\undefined
  % source for pdf
\else
  <!-- source for html -->
\fi
```

Some web authors recommend a similar solution using "ifpdf", but that solution fails if the pdf output is typeset with XꟼLaTeX.

7   Purpose of new additions

Several talks at past TUG conferences predicted the demise of TeX in five or six years, because faculty members need to provide interactive source material. I thought these talks were ridiculous. Then Covid struck, and faculty colleagues had to switch to remote learning in a week. The pessimistic talks had a point.

In my "dream setup", a faculty member would write lecture notes in LaTeX or xml and these notes would be typeset by an engine which outputs both pdf and html. The pdf document would contain the course in final polished form, so students could understand the logical flow of the lectures. The html document would contain interactive material: movies, questions with student input, etc., so students would learn how mathematics is actually created.

I don't know what system faculty will use in the future, but I predict it will be able to output both pdf and html. This system might be PreTeXt, it might be TeX4ht, it might be software not yet invented. TeXShop is ready for all possibilities.

⋄ Richard Koch
  koch (at) uoregon dot edu
  https://pages.uoregon.edu/koch/