

SchemeWEB

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SchemeWEB provides simple support for literate programming in any dialect of Lisp. Originally created for use with Scheme, it defines a new source file format which may be used to produce L^AT_EX input or Lisp code.

SchemeWEB source lines are divided into text and code. Lines of code start with a line beginning with “(”, and continue until the line containing the matching “)”. The remaining lines are text lines, and they are treated as comments.

When producing a L^AT_EX document, both the text lines and the code lines are copied into the document source file, but the code lines are surrounded by a pair of formatting commands (`\begin{astyped}` and `\end{astyped}`). This L^AT_EX environment formats the code as written, in typewriter font. A Lisp comment within a code line is formatted in an `\mbox` in Roman font. A SchemeWEB style command should include the `astyped` style option, so that the `astyped` environment is available. An example:

```
\documentstyle[astyped]{article}
```

SchemeWEB was designed under the constraint that code lines must be unmodified Lisp code, and text lines must be unmodified L^AT_EX code. Text editors with support for Lisp and L^AT_EX, such as Emacs, may be used for SchemeWEB code much as they are used for Lisp code and L^AT_EX code.

For those who prefer not to modify the reader used by their Lisp system’s loader and compiler, the rule that text lines must be unmodified L^AT_EX code has been relaxed. Text lines that begin with “;” are copied without the initial “;”.

Usage in Scheme

The file `sweb.scm` contains programs used to obtain code or L^AT_EX from a SchemeWEB source file. The Scheme expression

```
.SUFFIXES:      .dvi .tex .scm .sw
.sw.dvi:
    make $*.tex && make $*.dvi
.sw.tex:
    sweave $*.sw $*.tex
.tex.dvi:
    latex $*
.sw.scm:
    stangle $*.sw $*.scm
```

Figure 1: A SchemeWEB Makefile

```
(TANGLE "SchemeWEB file" "Scheme
file")
```

creates Scheme source from a SchemeWEB file, and the expression

```
(WEAVE "SchemeWEB file" "LATEX
file")
```

creates L^AT_EX source.

The file `reader.sw` contains a SchemeWEB reader in R⁴R Scheme. Use that reader with your Scheme system’s loader and compiler to avoid running TANGLE and creating a temporary file.

Usage in a Unix shell

Files are produced from SchemeWEB source using the Unix shell commands

```
sweave [SchemeWEB file] [LATEX file]
stangle [SchemeWEB file] [Scheme
file]
```

The obvious make file is in Figure 1. It uses the convention that the extension for SchemeWEB files is “.sw.”