

L^AT_EX Mode Scripts for SubEthaEdit

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1 Introduction

To take full advantage of the L^AT_EX mode for SubEthaEdit, you will need to install several other things. Most importantly, you will need a T_EX distribution. The MacT_EX distribution is simple to install and requires no additional configuration of the SubEthaEdit L^AT_EX mode. If you select another T_EX distribution, you may need to configure the PATH variable.

Additionally, BibDesk is necessary for automated completion of citation keys. A utility such as latexmk is highly recommended to simplify the multiple runs of L^AT_EX and associated programs needed for a typical document.

All actions for the L^AT_EX mode appear in the Mode menu, with appropriate subsets appearing in the SubEthaEdit document toolbar or contextual menus. The actions are defined using a mixture of AppleScript and shell scripts. The behavior of the shell scripts can be customized by setting appropriate environment variables. Such customization is strongly encouraged, as the basic behavior is designed more for minimizing additional requirements than for maximizing convenience.

2 Interacting with L^AT_EX

2.1 Typesetting the document

The *Typeset and View* action compiles the frontmost SubEthaEdit document and opens the product file in an external viewer. By default, `pdflatex` is used to typeset the document, producing a PDF file that is opened in Preview. The typesetting behavior can be modified by setting the `SEE_LATEX_COMPILER` environment variable, while the preview behavior can be modified by setting the `SEE_LATEX_VIEWER` or `SEE_LATEX_COMPILEVIEWER` environment variables. If your desired output format is something other than PDF, you should also set the `SEE_LATEX_PRODUCT_TYPE` environment variable (see section 2.2).

It is sometimes desirable or necessary to eliminate the various regenerable files produced for a L^AT_EX document. The *Clean Up Auxiliary Files* menu item removes such files that are in the same directory as the front SubEthaEdit document. Files are removed if they have the same base name as the front SubEthaEdit document, but a different file name extension that is on a predefined list of extensions. The clean-up behavior can be customized by setting the `SEE_LATEX_CLEANUP` environment variable.

BibTeX can be called using the *Run BibTeX* menu item. This runs BibTeX for the front SubEthaEdit document. The behavior can be customized by setting the `SEE_BIBTEX` environment variable.

Commonly, L^AT_EX must be run more than once to completely process a document; it may be necessary to run BibTeX as well. With the default settings, the L^AT_EX mode does not manage running L^AT_EX and BibTeX the correct number of times. By installing `latexmk` and using it in the `SEE_LATEX_COMPILER` environment variable, the multiple runs can be fully automated.

2.2 Viewing the product

The L^AT_EX mode integrates with external applications to display the product file typeset by L^AT_EX. Since the L^AT_EX mode uses `pdflatex` by default, the default format for the product file is PDF. The default external application used to display the product is Preview.

The viewer is called from the *Typeset and View* and *View* items in the Mode menu. *Typeset and View* typesets the front SubEthaEdit document and displays the product, while *View* displays a previously compiled—and possibly outdated—product file. The preview behavior can be customized by setting the `SEE_LATEX_COMPILEVIEWER` or `SEE_LATEX_VIEWER` environment variables.

The name for the product file is determined from the saved name of the front document in SubEthaEdit. The filename extension, normally `tex`, is replaced by the value of the `SEE_LATEX_PRODUCT_TYPE` environment variable; by default, this is `pdf`. Redefining `SEE_LATEX_PRODUCT_TYPE` is not essential for other product types such as `dvi`, but can greatly simplify definitions of the `SEE_LATEX_COMPILEVIEWER` and `SEE_LATEX_VIEWER` environment variables.

While Preview is a capable PDF viewer, third party applications that support `pdfsync` have significant advantages over Preview. Through `pdfsync`, the application can jump to the portion of the PDF corresponding to a specific line in the L^AT_EX source file. Conversely, the application can provide the source line number for a particular part of the PDF file, allowing SubEthaEdit to jump to

the line. Applications supporting pdfsync include Skim, PDFView, and TeXniscop; Skim is under active development.

To jump to the appropriate source line in SubEthaEdit through the mechanism of pdfsync, some configuration of the external viewer is normally necessary. The viewer needs to call to the `see` command line tool with the appropriate arguments. In, e.g., Skim, this consists of setting the Sync “Command” to `see` and the “Arguments” to `-g %line "%file"`.

3 Editing L^AT_EX documents

3.1 Completing citation keys

The L^AT_EX mode depends on BibDesk for inserting BibTeX-style citation keys. The *Complete Citation* menu item treats the text near the insertion point as a partial citation key, using it to search the BibDesk database for matching keys. Any matches are presented as a list, from which one or more keys may be selected. The selected keys are formatted appropriately for L^AT_EX and inserted into the document in place of the partial key.

Normally, the word preceding the insertion point is used for the partial key. When text is selected, the selected text is used as the partial key, allowing precise control of the search term passed to BibDesk.

The text is *not* checked to ensure that a citation macro precedes the partial key. This allows the completion to be invoked at inappropriate points, but also permits the completion to be invoked for user-defined macros.

3.2 Inline math

The *Inline Math* menu item wraps any selected text with L^AT_EX-style delimiters, or just inserts paired delimiter if no text is selected. The insertion point is placed between the delimiters to allow immediate typing when no text is selected.

3.3 Inserting environments

The *Insert Environment...* menu item inserts the begin-end pairs for an environment. A dialog is brought up in which to specify the environment.

3.4 Comments

The *Un/Comment Selected Lines* menu item adds or removes comment indicators from selected or partially selected lines in the front document. As an important special case, the current line is commented or uncommented for an empty selection. The precise behavior can be customized by setting the `SEE_LATEX_COMMENT` environment variable.

A line in the L^AT_EX source document is considered to be commented if it begins with a specified comment indicator, which is “`%`” by default. If all the selected or partially selected lines are commented, then the comments are removed from the lines. Otherwise, comments are added to all the lines.

4 Customizing the L^AT_EX mode

4.1 The Shell Environment

SubEthaEdit modes are extensible using AppleScript. In turn, AppleScript can call shell scripts using the **do shell script** action. The combination of AppleScript and shell scripts is used extensively for the L^AT_EX mode. Where appropriate, the shell scripts are written to have sensible default behavior that can be customized by setting variables in the shell environment. Further, a few convenient environment variables are automatically set.

The environment settings for shell scripts are stored in your Preferences folder as a property list file (or “plist”) called `de.codingmonkeys.SubEthaEdit.LaTeX.environment.plist`. Since SubEthaEdit provides no internal means for setting the environment, it is handled by an external application. The *Customize Mode...* menu item opens the plist in the default application for the file; unless you have taken action to change it, this is likely to be the Property List Editor.

Any environment variables set in the plist will be passed to the shell scripts. Appropriate quoting, normally meaning single-quoting any shell commands, should be used for the variables. Standard environment settings that can be useful in the L^AT_EX mode include `TEXINPUTS`, `BIBINPUTS`, `BSTINPUTS`, and `PATH`; `PATH` is automatically extended with `/usr/local/bin` and `/usr/texbin`, common locations for the executables of the T_EX system.

Several environment variables are treated specially in the L^AT_EX mode shell scripts. These are:

SEE_LATEX_COMPILER The shell command used to typeset the front SubEthaEdit document. Evaluated in the directory containing the front SubEthaEdit document. Defaults to `'pdflatex "$FILE"'`.

SEE_LATEX_VIEWER The shell command used to open the product file, if it exists, in an external viewer. Evaluated in the directory containing the front SubEthaEdit document. Defaults to `'open "$PRODUCT"'`.

SEE_LATEX_COMPILEVIEWER The shell command used to open the product file after typesetting; allows separate behavior for viewing a just-typeset file and an existing product file. Evaluated in the directory containing the front SubEthaEdit document. Defaults to `$SEE_LATEX_VIEWER`.

SEE_LATEX_PRODUCT_TYPE File extension for the product file. Used to generate the `PRODUCT` environment variable. Defaults to `pdf`. Note that this does not affect what type of file is produced during typesetting, it just describes the expected result. Set **SEE_LATEX_COMPILER** to change the type of file produced.

SEE_LATEX_CLEANUP The shell command used to clean up regenerable auxiliary files. Evaluated in the directory containing the front SubEthaEdit document. Defaults to `'rm -f $(basename "$FILE" .tex).{aux,bbl,blg,dvi,log,out,ps,pdf,pdfsync,toc}'`.

SEE_LATEX_COMMENT The shell command used to comment or uncomment selected lines. Defaults to `'"$SEE_MODE_RESOURCES/bin/comment.sh" %'`, calling an additional shell script provided in the L^AT_EX mode.

SEE_BIBTEX The shell command used to run BibTeX for the front SubEthaEdit document. Evaluated in the directory containing the front SubEthaEdit document. Defaults to `'bibtex "$(basename $FILE .tex)''`.

Additionally, some convenient environment variables are provided when appropriate. These are:

FILE Name of the file for the front SubEthaEdit document. The path is not included. Available for **SEE_LATEX_COMPILER**, **SEE_LATEX_VIEWER**, **SEE_LATEX_COMPILEVIEWER**, **SEE_LATEX_CLEANUP**, and **SEE_BIBTEX**.

LINE Line number for the insertion point, or the first line of a multi-line selection, of the front SubEthaEdit document. Available for **SEE_LATEX_COMPILER**, **SEE_LATEX_VIEWER**, and **SEE_LATEX_COMPILEVIEWER**.

PRODUCT Name of the file produced by typesetting the front SubEthaEdit document. Determined by replacing the file name extension with **SEE_LATEX_PRODUCT_TYPE**. Available for **SEE_LATEX_COMPILER**, **SEE_LATEX_VIEWER**, **SEE_LATEX_COMPILEVIEWER**, and **SEE_LATEX_CLEANUP**.

SEE_MODE_RESOURCES Path to the resources directory for the \LaTeX mode. Available for all environment settings, including user-defined environment variables.

4.2 Examples

To typeset the front SubEthaEdit document into a PDF file using latexmk, set **SEE_LATEX_COMPILER** to:

```
'latexmk -pdf "$FILE"'
```

With latexmk, the multiple runs of **latex**, **bibtex**, and related programs are automatically handled.

Cleaning up auxiliary files can also be handled using latexmk. Set **SEE_LATEX_CLEANUP** to:

```
'latexmk -C "$FILE"'
```

There are numerous useful options for latexmk; consult the latexmk documentation for more.

By using Skim as the viewer for the PDF document produced, pdfsync can be taken advantage of to jump to the point in the document corresponding to the current line in the SubEthaEdit document. Set Skim as the viewer by setting **SEE_LATEX_VIEWER** to:

```
'export __CF_USER_TEXT_ENCODING=0x1F5:0:0;
/Applications/Skim.app/Contents/SharedSupport/displayline
$LINE "$PRODUCT"'
```

The line breaks shown are not substantive, existing only to fit the shell command to the limits of the page. Note that **__CF_USER_TEXT_ENCODING** adjusts for different expectations of the character encoding between SubEthaEdit and the **displayline** script included with Skim—it is normally *not* necessary.

The viewer can be made to behave differently after typesetting. Set **SEE_LATEX_COMPILEVIEWER** to

```
'open -a Skim "$PRODUCT"'
```

With these settings for `SEE_LATEX_VIEWER` and `SEE_LATEX_COMPILEVIEWER`, the document will be opened in Skim, if necessary, and brought to the front after invoking *Typeset and View*. When *View* is invoked, the view in Skim will additionally be changed to show the portion of the document corresponding to the current selected line in the SubEthaEdit document.

The string used to comment out lines can be changed by setting `SEE_LATEX_COMMENT`. It can be convenient to invoke the internal `comment.sh` shell script, such as:

```
'"$SEE_MODE_RESOURCES "/bin/comment.sh "% "'
```

This makes a cosmetic change to the comment string.

The default behavior of the \LaTeX mode actions is not to show any response from the invoked shell commands. This can be altered by appropriate use of shell redirection. For example, BibTeX can be called on and the response shown by setting `SEE_BIBTEX` to:

```
'bibtex "${FILE%.tex}" | open -f -a SubEthaEdit'
```

Alternatively, the `see` command-line tool can be used:

```
'bibtex "${FILE%.tex}" | /usr/bin/see &> /dev/null &'
```

The somewhat complex invocation of `see` is needed to prevent SubEthaEdit from hanging—without it, `see` waits until the window is closed to write the text to `stdout`, but SubEthaEdit needs to read from `stdout` to open the window.

5 Miscellaneous

5.1 Copyright and Licensing

This manual and the scripts provided with the \LaTeX mode copyright ©2008 by Michael J. Barber. The scripts (the “Mode Scripts”) consist of the AppleScripts

```
05-TypesetAndView.scpt
10-CleanUpAuxiliaries.scpt
20-RunBibTeX.scpt
30-ViewProduct.scpt
40-BibDeskCompletions.scpt
50-InlineMath.scpt
60-InsertEnvironment.scpt
70-CommentLines.scpt
90-OpenEnvironment.scpt
95-ModeHelp.scpt
```

and the shell scripts

```
buildlatex.sh
cleanupaux.sh
comment.sh
commentlines.sh
```

```
reloadSEEModes.scpt
runbibtex.sh
viewproduct.sh
```

No claim is made on any other files in the \LaTeX mode or on any other products or software mentioned in this manual.

The Mode Scripts and documentation are made available under a permissive, MIT-style license. You are welcome—and encouraged—to use them as a basis for scripting your own SubEthaEdit modes.

5.2 Related Documents

The scripts for the \LaTeX mode are described at greater length in a series of blog posts. A collection of AppleScript handlers used to create the mode scripts are provided in one of the posts.