EnableTeX User Guide

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Abstract

EnableTeX is a Mathematica package that turns a Mathematica notebook into a LaTeX editor. TeX-enabled notebooks retain full notebook functionality, allowing LaTeX text to be interleaved with any Mathematica computation. If desired, LaTeX source for equations can be automatically generated, with automatic equation alignment, punctuation, and line-breaking. Any required editing of automatically generated LaTeX source can be done within the notebook. The generated source file is human-readable standard LaTeX.

Contents

1 Introduction

EnableTeX is a Mathematica package that enables LaTeX documents to be written in Mathematica notebooks. This is nice to do for many reasons:

- Mathematica notebooks have sections, subsections, etc., that can be collapsed/expanded and are easily rearranged by cut-and-paste. This makes writing LaTeX in a notebook convenient even for non-mathematical documents.
- A PDF viewer can be synchronized with the document. As each fragment of LaTeX code is generated, whether it be typed by hand or automatically generated from Mathematica `Output`, it is compiled by `pdflatex`. An external PDF viewer can display either the fragment or the updated document. Any errors in written LaTeX are caught immediately.
- LaTeX code for equations can be generated without user intervention. While a paper is in its draft state one can concentrate on writing and doing calculations, without having to typeset any equations at all. In the final version of the paper, any automatically generated LaTeX that gives poorly typeset results can be easily edited from within the same notebook.
- The hidden *working* and published *results* of a mathematical paper can be kept together in one place. If the calculations are done entirely by Mathematica, then the results can be reproduced by evaluating the same notebook that generates the PDF for the paper.
- LaTeX preambles can be copied, edited, and saved using any TeX-enabled notebook. Preambles can load any package in your LaTeX installation, including journal style files.
- Any Mathematica notebook can easily generate a PDF document. Simply choose the headings, comments, and `Output` cells that should be sent to the PDF. For headings and comments, change the cell style: Title → TeX:Title, Text → TeX:Text, etc. For algebraic `Output`, add the command `//texit` to the end of the corresponding `Input` command.
- More generally, **EnableTeX** includes methods for labeling, referencing, and manipulating equations. An assignment of the form

  $$\mathrm{Eqn}[\,\mathit{label}] = \mathit{lefteqn} == \mathit{righteqn}$$

  will automatically generate LaTeX for the equation *lefteqn* == *righteqn*, and will allow \ref{*label*} to be used to reference this equation in LaTeX. Equations that have Eqn[*label*] identifiers can be manipulated in obvious ways using the `EqnLabel` package, which is included as part of the **EnableTeX** download.
- The label argument in Eqn[*label*], and in any \ref{*label*} or \label{*label*}, can contain characters from Mathematica's Greek font. For LaTeX purists, all such extensions can be avoided by writing their LaTeX in TeX:Pure cells rather than TeX:Text cells. In either case, the generated source file is always standard LaTeX.
- The LaTeX that is generated for consecutive equations (with no intervening text in the PDF) is automatically combined into an aligned LaTeX environment. Consecutive equations with the same left side are formatted so that only the left side of the first equation is shown. Equations are automatically punctuated in accordance with the surrounding document content.
- By default, **EnableTeX** uses the LaTeX `breqn` package to break long equations and expressions over multiple lines. If `breqn` is incompatible with a LaTeX package that you need to use, then it need not be loaded.
- If manual line breaking or other reformatting of equations is required then the generated LaTeX can be easily edited. The function `InsertTeX[`*eqn*`]` will generate a TeX:Text cell that is pre-filled with the LaTeX code for *eqn*, without any need for copy-and-paste.
- LaTeX source can be imported using `InsertTeX[`*file*`]` to generate a TeX:Text cell that is pre-filled with the contents of *file*.

- The LaTeX source and PDF for the document, together with any other required files (graphics, etc.) can be exported for journal submission using the `Checkpoint[]` function.

Using a TeX-enabled notebook does not restrict anything that can be done in either Mathematica or LaTeX. It just means that both can be used at once in a nice editing environment, with a synchronised PDF viewer, and with the option of automatic generation of LaTeX code for equations.

2 Examples

Example notebooks for **EnableTeX**, together with the PDF documents they generate, can be found in the download directory

```
ahn/EnableTeX/Examples
```

This User Guide is also generated by a TeX-enabled notebook, and is included with the download,

```
ahn/EnableTeX/Guides/EnableTeX-UserGuide.nb
```

This too can be consulted as an example notebook.

Some of the example notebooks (e.g., HelloWorld.nb) contain significantly more information by way of explanatory comments than the PDFs that they generate. So if you are wanting to try **EnableTeX** then you should definitely read the notebooks. However:

> *The example notebooks will only display properly after installing an* **EnableTeX** *stylesheet.*

To evaluate any of the example notebooks you will also need to install the **EnableTeX** software.

3 Installation

Installation of **EnableTeX** involves the following 3 steps (to be explained below):

- move the downloaded software into your Applications directory,
- copy the **EnableTeX** style files into your StyleSheets directory,
- add a line of code to your init.m file to update your Mathematica $Path variable.

To completely remove/uninstall **EnableTeX**, simply undo the above changes.

EnableTeX will run on Linux and Windows, and should also run on OS X/macOS. It was written using Mathematica 11.3 on Linux. It has had minimal testing on Windows and (as yet) none on OS X. If you encounter problems, please get in touch.

3.1 Download and extract the EnableTeX software

EnableTeX is available from the home page: https://ahnorton.github.io/EnableTeX/. To extract the software from the downloaded file, one can use the following command (edit the date as appropriate for your download),

```
unzip EnableTeX-2019-04-25.zip
```

The above will create a directory `./ahn` that contains the Mathematica package **EnableTeX**, as well as a number of stand-alone Mathematica packages, most of which **EnableTeX** depends on:[1]

[1] The exceptions are: **PackageTemplate**, which is included for use with **About**; **ShortWindowTitles** which does nothing unless **EnableTeX** is running on Linux; and **Backup** which is recommended for routine use, but it is not actually loaded by **EnableTeX**.

About	Generate copyright/license notices for Mathematica packages.
Backup	Automatic scheduled backups for Mathematica notebooks.
EditValue	Edit string values and file contents in evaluatable notebook cells.
EqnLabel	Encourage an equation-focused calculation style using labeled equations.
EnableTeX	Write LaTeX documents in Mathematica notebooks (main package).
FileFunctions	Utility functions for reading, writing, and viewing files (for PDFViewer).
PackageTemplate	An empty package template, set up for use with **About**.
ShortWindowTitles	Declutter Mathematica window titles on Linux desktops (especially KDE).
Timer	Timers with stopwatch-like control (for triggering `pdflatex` compilation).
UsageTable	Display usage documentation for a collection of Mathematica functions.

3.2 Move the software to your applications directory

The extracted directory `ahn` needs to be moved to your Mathematica applications directory. The correct location can be determined by evaluating the Mathematica expression,

```
FileNameJoin[{$UserBaseDirectory, "Applications"}]
```

On Linux, this location is typically `/home/<username>/.Mathematica/Applications`, so one can do

```
mv ahn ~/.Mathematica/Applications
```

3.3 Copy the EnableTeX stylesheets to your StyleSheets directory

It is *essential* that an **EnableTeX** stylesheet be used for any TEX-enabled notebook.

> **Why?** Because the stylesheets define several new cell styles (such as TeX:Text) for cells that generate LATEX code from their contents when the cell is evaluated. If a notebook that uses the Default stylesheet is changed to use an **EnableTeX** stylesheet, then you will notice little to no change in its appearance because the default cell styles are still defined. However, the converse does not hold. Cells with style names of the form TeX:... will not display correctly with the Default stylesheet. Moreover, they will not generate LATEX code until their cell evaluation functions are defined, and that wont happen until **EnableTeX** is loaded (even if an **EnableTeX** stylesheet is already in use).

The **EnableTeX** stylesheets are in the download directory `ahn/EnableTeX/Source/StyleSheets` and have names of the form `EnableTeX-`*version*`.nb`. The stylesheets are installed by copying them to the directory returned by the Mathematica expression

```
FileNameJoin[{$UserBaseDirectory, "SystemFiles", "FrontEnd", "StyleSheets"}]
```

On Linux, this is typically `/home/<username>/.Mathematica/SystemFiles/FrontEnd/StyleSheets`, in which case,

```
cd ~/.Mathematica/Applications/ahn/EnableTeX/Source/StyleSheets
cp EnableTeX-*.nb  ~/.Mathematica/SystemFiles/FrontEnd/StyleSheets
```

The stylesheet that is used for a notebook is selected from the menu: `Format` → `Stylesheet`. After installing (or deleting) a stylesheet, this menu will be automatically updated when the notebook is next opened.

B.T.W., it is perfectly OK to use an **EnableTeX** stylesheet on a notebook that is not TEX-enabled (one that does not load **EnableTeX**). For example, you may prefer to have group-opener arrows on section headers, whereas the Default stylesheet (for Mathematica 11.3) does not have them.

3.4 Edit your init.m file

The Mathematica command

```
Needs["EnableTeX`"]
```

will try to load **EnableTeX** by searching the directories listed in your $Path variable. This will include your Applications directory, but its subdirectories are not searched. For later upgrade, the packages in the download are best kept together in the directory `Applications/ahn`, so this directory needs to be appended to your $Path. To do so, edit the file returned by the expression

```
FileNameJoin[{$UserBaseDirectory,"Kernel","init.m"}]
```

On Linux, this file is typically `/home/<username>/.Mathematica/Kernel/init.m`. Add the following line to the end of your `init.m`,

```
AppendTo[$Path, FileNameJoin[{$UserBaseDirectory,"Applications","ahn"}]]
```

If you have a Linux system, then it is likely that **EnableTeX** is now ready for use. If your system is Windows or Mac, then you may have to download and configure a suitable PDF viewer.

4 Configuring a PDF viewer

The PDF viewer that **EnableTeX** uses can be any viewer that will auto-reload when its .pdf file changes. Only some PDF viewers will do this, so you may need to download one that does. The default viewers are:

- **Linux:** `okular` for the KDE Desktop, `evince` for the GNOME Desktop,
- **Windows:** `SumatraPDF` from https://www.sumatrapdfreader.org/free-pdf-reader.html,
- **OS X:** `Skim` from https://skim-app.sourceforge.io/.

The above viewers for Linux and Windows auto-reload by default, so they require no configuring.

If running OS X, you will need to configure `Skim` to auto-reload. According to the Skim manual:
Choose Skim → Preferences, click Sync, and select "Check for file changes".
There may also be a useful hidden option for Skim,

https://tex.stackexchange.com/questions/43057/macosx-pdf-viewer-automatic-reload-on-file-modification

To use a non-default PDF viewer, see Section 4.1.

4.1 Additional information

EnableTeX makes use of a function called PDFViewer provided by the **FileFunctions** package. To learn more about the code the **FileFunctions** package can be loaded as a stand-alone package,

```
Needs["FileFunctions`"]
?FileFunctions`*
```

Click on the displayed function names to see their documentation. Also try these commands,

```
$PDFViewer
PDFViewer[]
PDFViewer["name.pdf"]
```

where "name.pdf" is a .pdf file you would like to view. The string variable $PDFViewer is the system command that is used to start the PDF viewer. If you have a preferred (non-default) viewer then a value for $PDFViewer can be set in your init.m file.

5 Using EnableTeX

To use **EnableTeX** in a notebook:

- Set the notebook Stylesheet using the main menu: Format → Stylesheet → EnableTeX-Courier-11.3 (or similar).
- Load **EnableTeX** with `Needs["EnableTeX`"]`. The license notice that is output can be suppressed by terminating this command with a semicolon (;).
- Create a LaTeX preamble for the document. To try out **EnableTeX** it suffices to evaluate `CopyPreamble[]` (no argument) to copy the default preamble into the `$TeXDirectory` for your document.

For starting a new document, you may find it convenient to start with a template notebook that includes the above commands and some other useful content. For example, see file:

```
ahn/EnableTeX/Examples/NewDocument.nb
```

Depending on your desktop environment, it may be possible to add a "Create New" item for such a file to the context menu of your file browser.

5.1 The new cell styles, TeX:*name*

Text that is typed into a cell with a style name of the form TeX:*name* is processed as LaTeX code and "sent to the PDF" when the cell is evaluated.[2] Cells with style TeX:*name* can be inserted like any other notebook cell. For example, when the cursor is a horizontal bar (at the end of your notebook, or between cells) click the right mouse button and choose the menu item: Insert New Cell → TeX:*name*.

In practice, it is best if each paragraph of written LaTeX appears in its own TeX:Text cell, because then any LaTeX errors that you make are caught as soon as the cell is evaluated. If there are LaTeX errors, then a pop-up message window will show the relevant output from the attempted compilation by `pdflatex`.

TeX:Pure cells are similar to TeX:Text cells but they lack several conveniences that typing in a Mathematica notebook permits. Typing in a TeX:Pure cell is the same as typing in a plain text editor. The contents of a TeX:Pure cell must be a complete fragment of valid LaTeX code and is processed by `pdflatex` as is. On the other hand, the contents of a TeX:Text cell is allowed to (but need not) contain Mathematica's special characters (β, ∂, $\otimes$, etc.), so it might *look* very different to the same code in a TeX:Pure cell, but that is where the difference ends. The required syntax is the same (after replacing character β by string `\beta`, etc.).

In addition to the completely general TeX:Text and TeX:Pure cells, the **EnableTeX** stylesheet provides special cell styles TeX:Title, TeX:Section, TeX:Subsection, TeX:Subsubsection, and TeX:Verbatim. When a cell in one of these styles is evaluated its contents are wrapped within a corresponding LaTeX command before being processed. For example, typing `abc` into a TeX:Section cell and then evaluating this cell results in `\section{abc}` being appended to the .tex file that is processed to generate the PDF.

The purpose of the special styles is not to save on key strokes (by typing `abc` rather than `\section{abc}`), but to allow nice formatting of the notebook. In particular, the special styles (with the exception of TeX:Verbatim) are based on the Default Mathematica stylesheet. Cells in these styles can therefore double as headings in the notebook as well as headings in the PDF. Moreover, the **EnableTeX** stylesheet specifies that heading cells have group opener arrows so that if cells are appropriately grouped then sections, subsections, etc., can be easily collapsed and expanded. More about cell grouping can be found in `Examples/HelloWorld-fancy.nb`.

[2] Mathematica cells are evaluated by typing Shift+Enter while the cursor is in the cell, or while the cell is selected. Selections are indicated by highlighted cell brackets at the right edge of the notebook.

5.2 Keyboard shortcuts via Mathematica [Esc]-aliases

Mathematica notebooks provide [Esc]-aliases for Greek characters and mathematical symbols. When typing in a TeX:*name* cell these aliases are defined as keyboard shortcuts for typing the equivalent LaTeX command. For example, if one types `[Esc]b[Esc]` within a TeX:Pure cell then this character sequence is replaced by `\beta`. In a TeX:Text cell, the same LaTeX command (`\beta`) will be generated, but it is displayed in the cell as the character β.

The main difference between a TeX:Pure and a TeX:Text cell is how cell contents are able to display in the notebook. Whereas in a TeX:Pure cell you might have an inline formula

```
$\tensor{X}{^\alpha_,_\beta} = \partial X^\alpha /\partial x^\beta$,
```

in a TeX:TeX cell the same formula could (but need not) be written as

```
$\tensor{X}{^α_,_β} = ∂X^α/∂x^β$,
```

where [Esc]a[Esc], [Esc]b[Esc] and [Esc]pd[Esc] are used to insert α, β and ∂. Both inputs generate exactly the same LaTeX, and in either case one gets ${X^{\alpha}}_{,\beta} = \partial X^\alpha/\partial x^\beta$ in the PDF.

The other difference between TeX:Pure and TeX:Text is that quotes and double quotes are automatically curly in TeX:Text, whereas in TeX:Pure they must be typed as proper LaTeX (e.g., two backticks for an opening double quote).

The [Esc]-aliases for TeX:*name* header cells are defined as they are for TeX:Text. For TeX:Verbatim, no [Esc]-aliases are defined.

5.3 Automatic LaTeX generation: Eqn[*label*] = *expr*

EqnLabel is a stand-alone Mathematica package that encourages an equation-focused calculation style that closely resembles how calculations are done in mathematical publications. In Mathematica, an equation is an expression (with head Equal) of the form *lefteqn* == *righteqn*. To easily manipulate such expressions the **EqnLabel** package provides the Eqn[*label*] function, which is little more than a container for *label* together with a few simplification rules that make Eqn[*label*] suitable as an equation identifier. For example, if Eqn[a], Eqn[b] and Eqn[c] have been assigned expressions of the form

$$\text{Eqn}[\textit{label}] = \textit{lefteqn} == \textit{righteqn}$$

then evaluating the input Eqn[ans] = (Eqn[a] + 2Eqn[b])/Eqn[c] will assign the value

$$(\text{LEqn[a]} + 2\text{LEqn[b]})\,/\,\text{LEqn[c]} == (\text{REqn[a]} + 2\text{REqn[b]})\,/\,\text{REqn[c]}\,,$$

to Eqn[ans], where LEqn[*label*] and REqn[*label*] are the left and right sides of Eqn[*label*].

The **EqnLabel** package includes various other functions for making substitutions and simplifications. Documentation for the package is available via `help["EqnLabel"]`. With a little practice, one soon finds that calculations that make use of an equation-focused style (rather than numerous assignments to intermediate variables) are usually cleaner and often simpler.

EnableTeX makes use of the **EqnLabel** package as follows. Whenever an assignment Eqn[*label*] = *expr* is detected as having been made, **EnableTeX** automatically generates LaTeX for the resulting *expr*. Typically, *expr* is an equation, but it could be any expression or relation. Moreover, the *label* argument in the assigned Eqn[*label*] is used to make a LaTeX label for *expr*. In other words, `(\ref{`*label*`})` and `\eqref{`*label*`}` can be used to reference this equation in your LaTeX text. Returning to the above example, one could say that `(\ref{ans})` was obtained by adding 2 times `(\ref{b})` to `(\ref{a})` and then dividing the result by `(\ref{c})`.

Automatic LaTeX generation can be suppressed by the `//notex` command,

$$\text{Eqn}[\textit{label}] = \textit{lefteqn} == \textit{righteqn}\ //\ \text{notex}\ .$$

Similarly, `//nonumber` can be used to suppress generation of an equation number.

5.4 Greek characters in *label*

In section 5.2 it was said that if Mathematica's special characters (α, β, ∂, etc.) are used in a TeX:Text cell, then they generate the corresponding LaTeX code (`\alpha`, `\beta`, `\partial`, etc.). However, this rule has one exception, which is made so that Mathematica's Greek characters can be used in labels.

An assignment of the form Eqn[θ] = ..., will automatically generate LaTeX for an equation that can be referenced in a TeX:Text cell as `\ref{`θ`}`, where θ is typed as [Esc]q[Esc]. This feature would not work without some change to the generated code (since `\ref{\theta}` causes a compilation error). For this reason, if the character θ appears within `\ref{}`, `\eqref{}`, or `\label{}`, then it is replaced by the string `[theta]`, not `\theta` as would normally be the case. Of course, the same applies for all of Mathematica's special characters.

It should be noted that using Greek characters in labels is not particularly convenient if one prefers to use TeX:Pure cells. For example, to reference Eqn[$\alpha\beta\gamma$] from text in a TeX:Pure cell, one would have to type `\ref{[alpha][beta][gamma]}`.

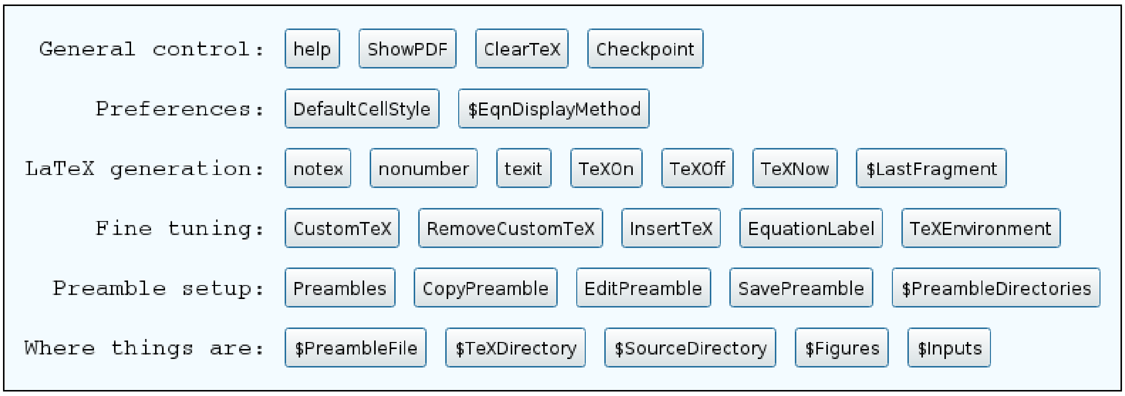
5.5 Documentation

A table of all symbols in context `EnableTeX`` is returned by the command,

```
? EnableTeX`*
```

Clicking on a function's name in the table will show the *name*`::usage` documentation for that function (also available via `?`*name* and `Information[`*name*`]`).

The **UsageTable** package provides a similar but more flexible alternative. **UsageTable** is automatically loaded when **EnableTeX** is loaded. This package is used to define the command `help["EnableTeX"]` which outputs the usage table shown in Figure 1. If **EnableTeX** was the last package loaded then this table is also available via `help[]` (with no argument).



General control: help ShowPDF ClearTeX Checkpoint
Preferences: DefaultCellStyle $EqnDisplayMethod
LaTeX generation: notex nonumber texit TeXOn TeXOff TeXNow $LastFragment
Fine tuning: CustomTeX RemoveCustomTeX InsertTeX EquationLabel TeXEnvironment
Preamble setup: Preambles CopyPreamble EditPreamble SavePreamble $PreambleDirectories
Where things are: $PreambleFile $TeXDirectory $SourceDirectory $Figures $Inputs

Figure 1: **EnableTeX**'s usage table, returned as the value of `help["EnableTeX"]`. Clicking on *name* prints the *name*`::usage` documentation.

5.5.1 List of functions

For full descriptions of **EnableTeX**'s functions, see the documentation available via `help[]`. The following list is only a brief overview of the available functions:

ShowPDF[ ] Open, re-open, or raise the PDF viewer window. With argument "body" or "fragment", set the PDF viewer mode.

DefaultCellStyle[***style***] Set the cell style for any cells that are automatically created while typing. The default for a Mathematica notebook is `"Input"`, but a default of `"TeX:Text"` or `"TeX:Pure"` can sometimes be more convenient. The value set applies only to the current notebook, and is saved with the notebook.

ClearTeX[ ] Clear any previous LaTeX output. The PDF viewer will display an empty document.

Checkpoint[ ] Create a time-stamped checkpoint directory containing copies of all files required to generate the document (e.g., for journal submission).

***eqn* // notex** Suppress automatic generation of LaTeX for an *eqn* of the form `Eqn[`*label*`] = `*left* `==` *right.* Typical use: in a final draft, directly followed by `InsertTeX[`*eqn, label*`]`, to replace the generated LaTeX for *eqn* by hand-coded LaTeX.

***eqn* // nonumber** Do not number the LaTeX equation that is automatically generated for an *eqn* of the form `Eqn[`*label*`] = `*left* `==` *right.* In this case, *label* is used only to identify the Mathematica expression `Eqn[`*label*`]`, and can not (of course) be used in `\ref{}`.

***expr* // texit** Send expression *expr* to the PDF. The preferred way is `Eqn[`*label*`] = `*expr*`//nonumber`, especially if *expr* is an equation, because functionality of the `EqnLabel` package may then be used.

***expr* // texit[*label*]** As above, but *expr* is numbered and can be referred to with `\ref{`*label*`}`.

TeXOn[ ] Restore **EnableTeX** to its normal state after `TeXOff[]`.

TeXOff[ ] Disable all LaTeX generation and processing. Useful for "commenting out" large sections of a document (with a closing `TeXOn[]`). Also useful for not having to specify `//notex` throughout a long calculation that makes use of `Eqn[`*label*`]` identifiers but should not appear in the PDF.

TeXNow[ ] Compile the document using `pdflatex` and update the PDF. This is useful for forcing an additional compilation when evaluating an entire notebook as one selection. It's effect is otherwise equivalent to evaluating an empty TeX:Text cell (but without adding a blank line to the .tex file).

InsertTeX[***x***] Insert a TeX:Text cell that is pre-filled with the LaTeX code for expression x.

CustomTeX[***symbol, string***] Define a custom translation for Mathematica *symbol* to LaTeX *string.*

RemoveCustomTeX[***symol***] Remove any custom LaTeX for the Mathematica *symbol.*

Preambles[ ] Return a list of available preamble files.

CopyPreamble[***f***] Copy a preamble file *f* into the document's ./*name*`_tex` directory, for use as the preamble for the document. If no argument *f* is given, copy **EnableTeX**'s default preamble.

EditPreamble[***f***] Edit preamble file *f* in an editable cell (the edited cell contents are saved back to file *f* by evaluating the cell). If no argument is given, edit the document's preamble file.

SavePreamble[***f***] Save the document's preamble file to file *f* (for later re-use in other documents).

5.6 Preamble files

A preamble file contains the first part of the .tex source file for a LaTeX document, up to and including the command `\begin{document}`. In order to save and re-use preamble files the variable `$PreambleDirectories` will first need to be defined in the user's `init.m` file.

The example notebooks (cf., section 2) can be run without setting a value for `$PreambleDirectories` because they either use **EnableTeX**'s default preamble, or the example notebook defines its own preamble using the function `EditPreamble[]`. For how to set a value for `$PreambleDirectories`, please read the documentation available via `help["EnableTeX"]`.

6 Miscellaneous

6.1 Notebook font size

If you are using a high resolution monitor then you may find that Mathematica's default font sizes are too small. Check the font screen resolution using

```
CurrentValue[ $FrontEnd, {FontProperties, "ScreenResolution"}]
```

The default setting of 72 gives fonts that are too small for my liking. You can find out your monitor resolution by

```
SystemInformation["Devices", "ScreenInformation"]
```

For a 27 inch monitor at a resolution of 2560 × 1440, I find that a more suitable value for font screen resolution is about 84. This can be set globally in the Option Inspector under Formatting Options → Font Options → FontProperties → ScreenResolution, or more easily by

```
CurrentValue[ $FrontEnd, {FontProperties, "ScreenResolution"}] = 84
```

This command will save the value in `~/.Mathematica/FrontEnd/init.m`. The advantages of this approach are that notebook magnification can be left at 100% (which is sometimes better for cursor positioning in text), graphics are left at correct physical sizes on the screen, and all fonts scale the same, including those in Mathematica's help pages (which is not the case if you play with font sizes in notebook style files because help pages have their own style).

To choose an appropriate value for font screen resolution one should proceed by viewing help pages at 100% magnification.

Further information can be found in the notebook

```
EnableTeX/Source/StyleSheets/ScreenResolutionAndFontSize.nb
```

6.2 Hardware screen resolution

It is worth noting that `SreenResolution` is also used in Mathematica to refer to hardware screen resolution. This is determined by the monitor and graphics card and is returned by either of the commands,

```
"Resolution" /. SystemInformation["Devices","ScreenInformation"]
```

```
CurrentValue["ScreenResolution"]
```

The returned value refers to the number pixels/inch that the monitor is displaying at. For the monitor that was mentioned in section 6.1, the above two commands both returned 108 pixels/inch.

6.3 CodeFont for Input cells

The font for Input cells is specified by the CodeFont sub-option in StyleHints. It is returned by,

```
StyleHints /. Options[$FrontEnd]
```

Selection of the `FontFamily` for InputForm is implemented in the `Core.nb` stylesheet in the section Format Type Styles → InputForm, using the cell option,

```
FontFamily -> Dynamic[CurrentValue[{StyleHints, "CodeFont"}]]
```

This overrides any direct setting for `FontFamily` as an option for an Input cell in a stylesheet. Therefore, to change the font for Input cells using a stylesheet, one must set a value for the StyleHints cell option.

The `EnableTeX-Default` stylesheet(s) uses default Mathematica fonts for `Input`, `Code`, and `Output` cells. The `EnableTeX-Courier` stylesheet(s) uses the StyleHints cell option to set "Courier" as the font for `Input`, `Code`, and `Output` cells. To see the cell style definitions in a stylesheet, use Ctrl+Shift+Enter to toggle visibility, or use the menu item Cell → Show Expression.

6.4 Line breaks in MiKTeX error messages

The message that **EnableTeX** displays if your LaTeX code has compilation errors is extracted from the last part of the standard output from the `pdflatex` command, saved to file *name*`_tex/stdout.txt`, where *name*.nb is your notebook.

The line length for MiKTeX standard output is unnecessarily short and makes reading some error messages difficult. Changing the value of `max_print_line` in file `MiKTeX 2.9\miktex\config\texmfapp.ini` to about 250 fixes this problem. For further information,

https://tex.stackexchange.com/questions/52988/avoid-linebreaks-in-latex-console-log-output-or-increase-columns-in-terminal

6.5 Importing a LaTeX document

A complete LaTeX document can be imported into an **EnableTeX** notebook as follows:

1. Read the file into a TeX:Text (or TeX:Pure) cell using `InsertTeX[`*file*`]`.
2. Cut-and-paste the preamble, up to and including `\begin{document}`, into a cell generated by `EditPreamble[]`, then evaluate this cell to create the preamble file for the document.
3. Delete the `\end{document}` command, as this is automatically added by **EnableTeX**.
4. Divide the TeX:Text cell that contains the document body into multiple TeX:Text cells (e.g., for section headings and section contents). Cells can be divided by typing Ctrl+Shift+D with the cursor positioned at the desired division point. Cells can be merged by selecting them and then typing Ctrl+Shift+M.
5. For the various section headings, change the cell style from TeX:Text to TeX:Section, etc. This can done by right-clicking on the cell bracket and choosing Style from the menu.

To export a LaTeX file from **EnableTeX**, see the documentation for `Checkpoint[]`.