

**A Guide to**  
**L<sup>A</sup>T<sub>E</sub>X**  
**Installation and Usage**

**Written By**  
**Lance A. Endres**

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Compiled on August 14, 2023

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# Introduction

## 1.1 About LeLaTeX

LeLaTeX is the author's customize L<sup>A</sup>T<sub>E</sub>X classes and styles combined with some additional processing commands. It has been developed through the years to create a standardized way of generating documents.

While it is open-source and anyone is free to use it, the library was never intended as a general library; it was created for personal use. As such, it does not have extensive documentation. It also may change without notification or regards to backwards compatibility.

For most users, it may be most beneficial as a reference library or to select particular style files and customize them as needed.

## 1.2 About this Document

This document serves many purposes. They include:

- Provide installation instructions.
- Provide an example documented that can be used as a template.
- Provide a reference for the syntax used by the author.

While these are not topics that would typically be combined, they are all somewhat short. Therefore, the decision was made to combine them into a single document.

# Installation

These instructions are based on *MiKTeX* for *Windows*. Support for *Linux* or other operating systems or  $\text{\LaTeX}$  installations is not available.

## 2.1 Prerequisites

### 2.1.1 $\text{\LaTeX}$

You can download a *Windows* version as part of the *MiKTeX* ([www.miktex.org](http://www.miktex.org)) project.

### 2.1.2 Ghostscript and Ghostview

Historically, it was required to install *Ghostscript* and *Ghostview* [4] in order to view **.eps** files and convert them to **.pdfs**. However, it seems this requirement has been rendered obsolete by advances in *MiKTeX*.

It still can be useful to install these packages to allow viewing of **.eps** files. *Ghostscript* and *Ghostview* can be downloaded at <http://www.cs.wisc.edu/~ghost/>.

### 2.1.3 *WinEdt*

A useful interface to  $\text{\LaTeX}$ /*MiKTeX* is provided by *WinEdt* ([www.winedt.com](http://www.winedt.com)). *WinEdt* is highly customizable. User interface features can be added to work with  $\text{\LaTeX}$ . For more information see the *Installation Notes* in the repository <https://github.com/lendres/WinEdt-Customizations>.

## 2.2 $\text{\LaTeX}$

To completely install  $\text{\LaTeX}$  takes several steps. In the images that follow, **C:\Custom Program Files\LaTeX** is the folder the  $\text{\LaTeX}$  library was downloaded to.

- 1 Download the library from <https://github.com/lendres/LaTeX> or your forked repository.
- 2 Add  $\text{\LaTeX}$  as a TEXMF directory.
  - 2.1 Open the *MiKTeX* Console.
  - 2.2 Go to *Settings*→*Directories*
  - 2.3 Add the directory to as a TEXMF directory in the *MiKTeX* Console (see Figure 2.1).
  - 2.4 Close the *MiKTeX* Console.
- 3 Add the **Processing Support** directory to the **Path** environmental variable.
  - 3.1 Open Windows System properties.
  - 3.2 Go to *Advanced*→*Environmental Variables* to open the environmental variables dialog box (see Figure 2.2). You may need admin rights to edit the environmental variables.
  - 3.3 Edit the environmental variables and add the **./Processing Support** directory to the **Path** variable.
  - 3.4 Add the path the **.\Processing Support\** directory to the path.

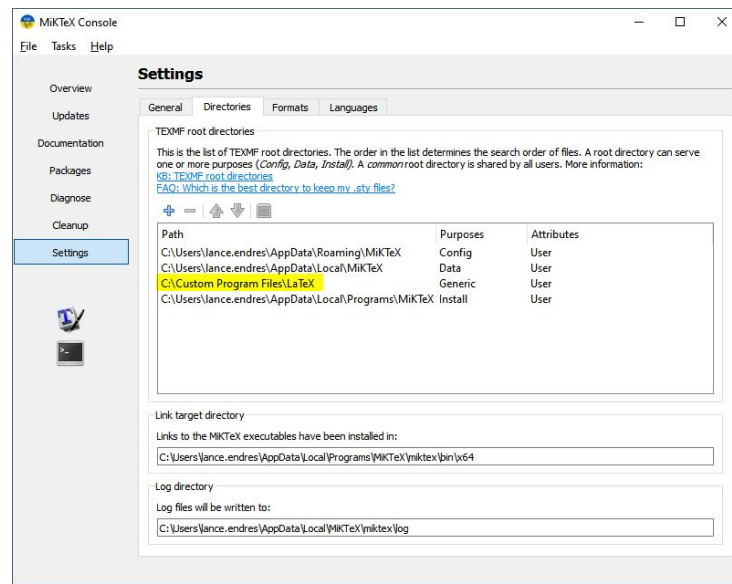


Figure 2.1: Adding the library as a TEXMF root directory.

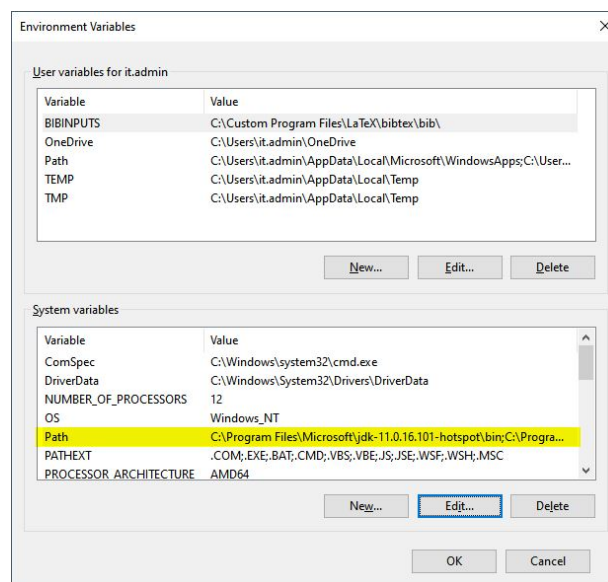


Figure 2.2: The environmental variable dialog box.

#### 4 Install *Strawberry Perl*

- 4.1 Download the installer from <https://strawberryperl.com/>.
- 4.2 Run the installer.
- 4.3 Restart the computer.



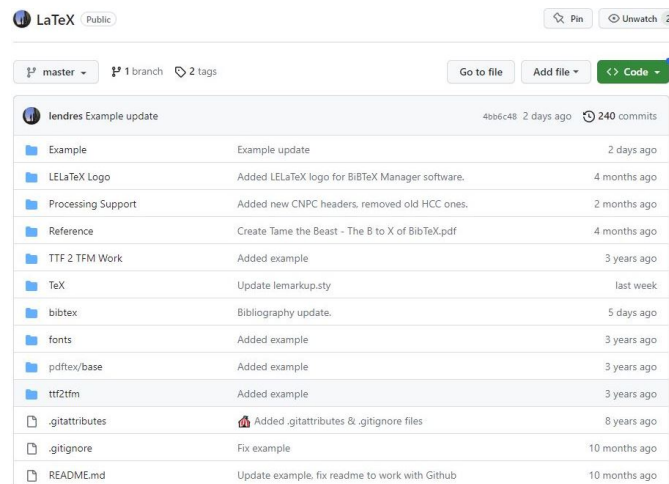


Figure 2.3:

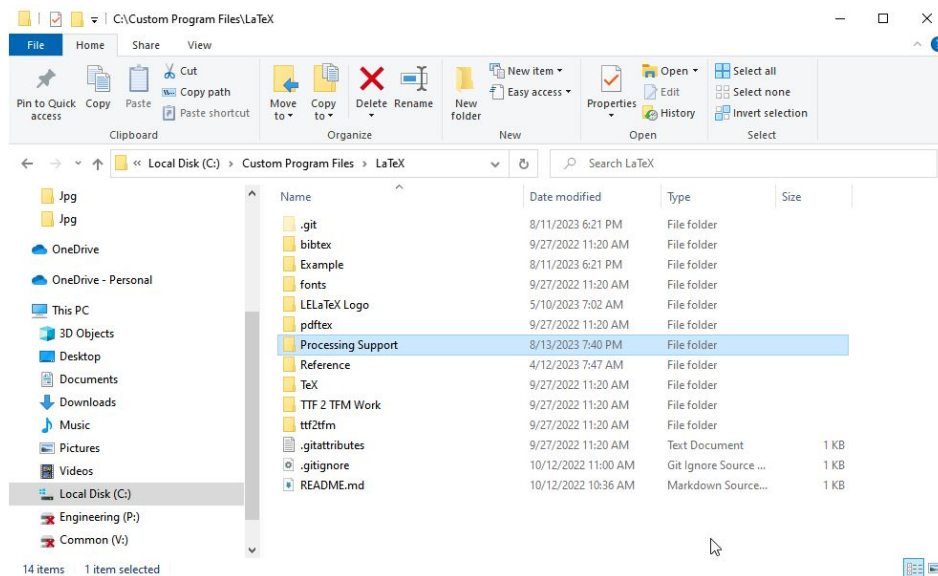


Figure 2.4:

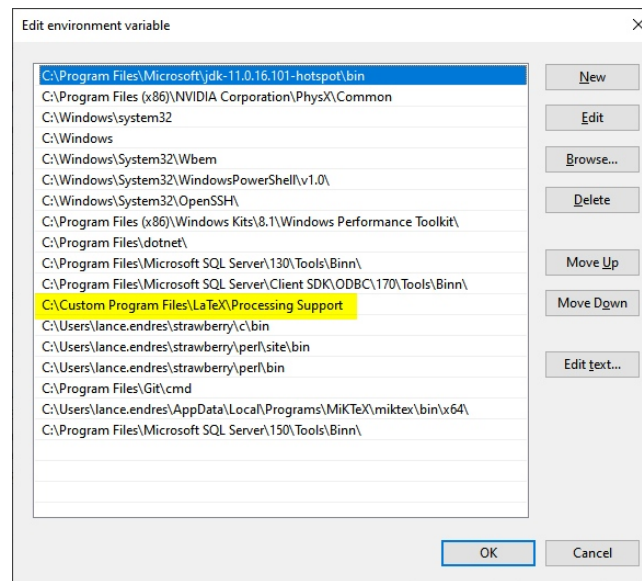


Figure 2.5:

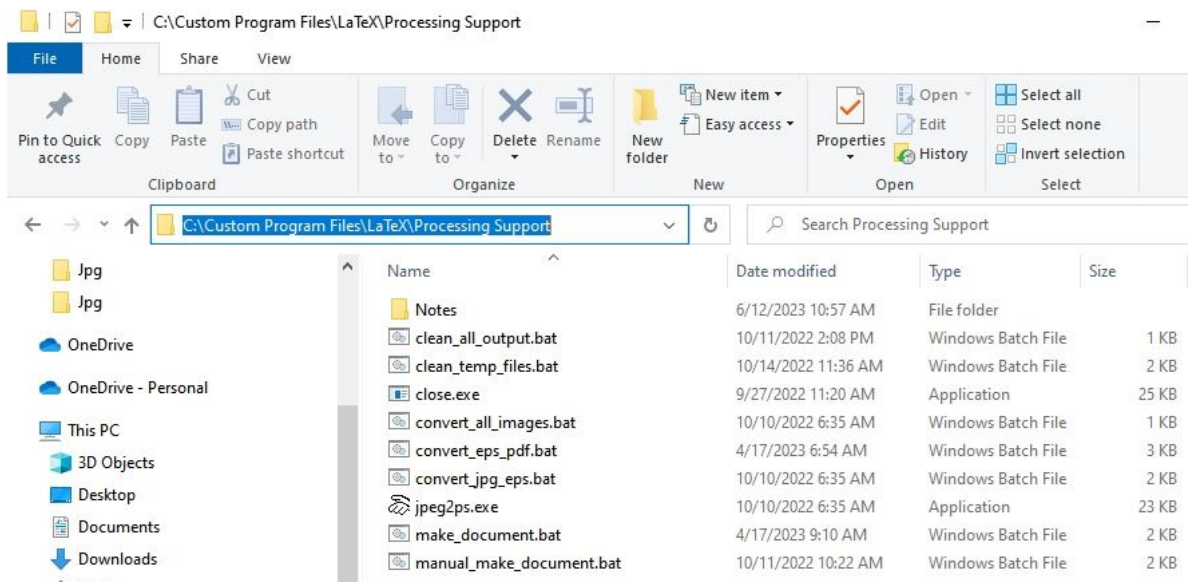


Figure 2.6:

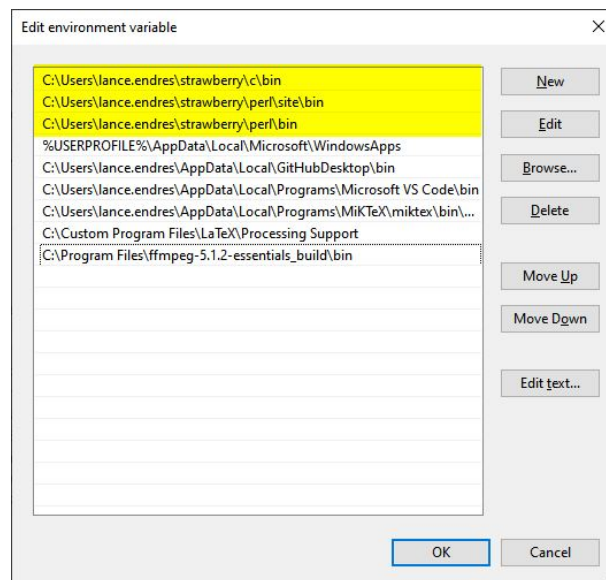


Figure 2.7:

## Working with L<sup>A</sup>T<sub>E</sub>X

### 3.1 Graphics

L<sup>A</sup>T<sub>E</sub>X has been set up to produce both **.dvi** and **.pdf** formats as output.

#### 3.1.1 Historical Use

There are a few issues that are associated with using graphics with both **.dvi** and **.pdf** files. The graphics used to generate the **.pdf** format must be in either **.pdf** or **.jpg** format. Some figures are of the **.eps** format (they are small, in vector format, and work well with L<sup>A</sup>T<sub>E</sub>X) and as a result need to be converted to work in the **.pdf** output file. Versions of the **.eps** files in **.pdf** format can be created the batch file

**manual\_convert\_all\_images.bat**

located in the same directory as the figures. See the batch file itself for more details.

#### 3.1.2 Current Use

Advances in either L<sup>A</sup>T<sub>E</sub>X and/or *MiKTeX* seem to have

#### 3.1.3 Figures

You can add figures in either JPG or EPS format.

1. Add the figure in the appropriate folder.

**.\Figures\Image Sources\Eps**

**.\Figures\Image Sources\Jpg**

2. Then run **.\Figures\Image Sources>manual\_convert\_all\_images.bat**.

### 3.2 Notes on Running

#### 3.2.1 Compiling

- To compile use **run\_manual\_make\_document.bat**.

### 3.3 Batch Files

The "Processing Support" directory contains a series of files to help with processing L<sup>A</sup>T<sub>E</sub>X files. It provides a few features that are not provided by WinEdt. Mostly it works like "Texify" but allows for glossary support. It also allows for additional customization like opening or closing files.

These support files are designed to work with WinEdt or stand alone. To use with WinEdt, custom buttons or menu items are needed. See the "Custom Program Files\WinEdt" directory for information about how to do this.

To use, copy the project files (found in the "Examples" directory) into the document working directory (with the LaTeX files).

A short description of the files is below. Additional comments and instructions can be found inside the individual files.

File in this directory: - makedocument.bat Main processing file. The root file name and additional arguments are passed to this file.

- clean\*.bat Clean up batch files used to delete temporary and output files.

- close.exe A small app that can close a Window (running software application) based on its name in the title bar. Useful for forcing Adobe Reader to close, for example.

Project files: - runmakedocument.bat A small batch file used to call "makedocument.bat" with the specific arguments required for a specific document. Used by WinEdt. WinEdt passes the document name to this file. That is passed along with the additional arguments to "makedocument." This file must be edited to set the additional arguments.

- manualakedocument.bat A small batch file used to manually call "makedocument.bat." It passes the file name to "runmakedocument.bat." This file has an option automatically detect the main L<sup>A</sup>T<sub>E</sub>X file. To work, the L<sup>A</sup>T<sub>E</sub>X file must have the same root file name as WinEdt project. If the file name is different, this file must be edited to manually enter the file name. Technically, this file can actually be called anything as it is not externally referenced.

# Style and Syntax

Introduction text.

## 4.1 Fonts

The class file `lebook.cls` which contains common formatting.

Arial font test.

Courier New font test.

**Courier New Bold font test.**

Times New Roman font test.

**Times New Roman Bold font test.**

Bauh Heavy font test.

## 4.2 Prefixes

Prefix	L <sup>A</sup> T <sub>E</sub> X Element
ch	chapter
sec	section, subsection
ap	appendix
eq	equation
fig	figure
tab	table

Table 4.1: Prefixes used for different types of L<sup>A</sup>T<sub>E</sub>X elements.



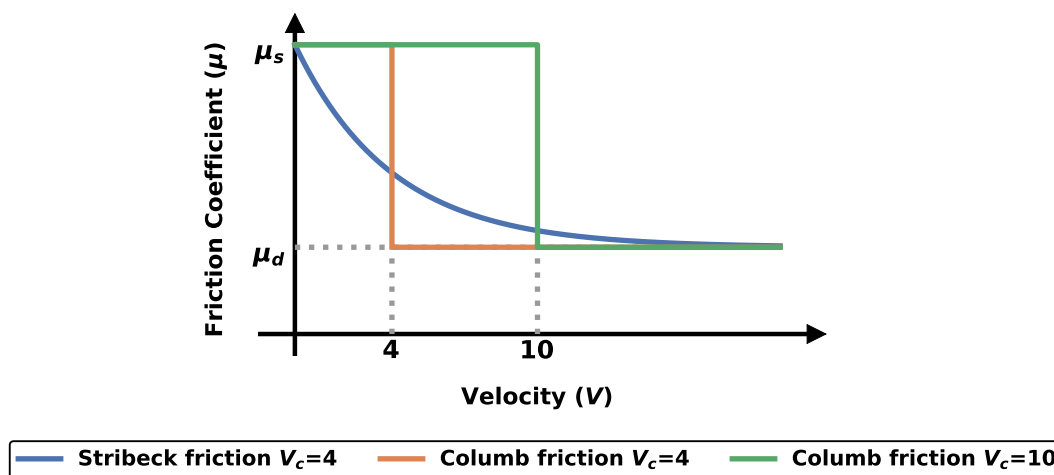


Figure 5.2: An example EPS image used as a figure.

## 5.5 MATH

The (fake) calculation can be done using Equation 5.1

$$\alpha = 2\beta \sum \left( \frac{\gamma}{\sigma} \right) \quad (5.1)$$

where

- $\alpha$  = the first variable;
- $\beta$  = the second variable;
- $\gamma$  = the third variable;
- $\sigma$  = the final variable.

This example demonstrates specially written **mathwhere** environment define the variables. The **mathwhere** environment uses an optional argument to specify where the equal sign is placed. See the source code for more information. The environment takes the form of

```
\begin{mathwhere} [distance]
  \mathdefitem{math}{definition}
\end{mathwhere}
```

where

- distance = the space allowed for the item being defined (location of the equal sign);
- math = a variable to define;
- definition = the definition of the variable.

## 5.6 Code

```
#pragma message("// TO DO")
new Triangle();
```



## 5.7 Special Commands

Leave a note to finish a section later.

Other commands include the following.

- *important*
- **warning**
- `\note{...}` (doesn't print the argument)

## Bibliography

- [1] Ulf Jakob Aarsnes and Roman Shor. Torsional vibrations with bit off bottom: Modeling, characterization and field data validation. *Journal of Petroleum Science and Engineering*, 163, November 2017.
- [2] Leendert Ammeraal. *C++ for Programmers*. John Wiley & Sons, third edition, 2000.
- [3] John R. Hubbard. *Schaum's Outlines Programming with C++*. McGraw Hill, second edition, 2000.
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