


GNU Emacs and AUCTEX for L^AT_EX

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Emacs and GNU Emacs

Emacs is an acronym for Editor MACroS.

- One of its ancestors is TECO, used in the 70's at the Massachusetts Institute of Technology.
- At that time Emacs was based on contributions by Richard Stallman and Guy Steele.
- First implementation for Unix: Gosling Emacs.
- In 1984, when project GNU starts, Richard Stallman begins to write GNU Emacs, the free software Emacs implementation.
- The most recent Emacs version is 21.4, released on 6 February 2005.
- XEmacs is another Emacs implementation, born from the forking of the original Emacs project.

Fundamentals of GNU Emacs

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- *Buffer*: the memory area of GNU Emacs.
- The GNU Emacs tutorial is the first source to learn about the program.

Fitting GNU Emacs to L^AT_EX

- The `.emacs` file is used to customize GNU Emacs.
- The Emacs Lisp programming language (a Lisp dialect) is used to write extensions to Emacs and to customize the program.

The AUCTEX extension

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- AUCTEX is a “sophisticated T_EX environment for GNU Emacs”.
- Available for Unix (Linux, FreeBSD), Windows, MAC OS X and some other operating systems.

Features in AUCTEX

- Fast T_EX and L^AT_EX macros handling.
- Writing mathematical symbols via keyboard shortcuts.
- Special highlighting and formatting for macros and environments.
- Execution of T_EX and L^AT_EX from inside GNU Emacs.
- Execution of DVI, Postscript and PDF viewers.

Basic use of AUCTEX

The AUCTEX module allows the user to start a new L^AT_EX document just by a few keystrokes, obtaining for example

```
\documentclass[a4paper,11pt]{article}  
\begin{document}  
  
\end{document}
```

The L^AT_EX menu in AUCTEX

- *Section*
- *Macro, Complete Macro*
- *Insert, Change, Close Environment*
- *Insert, Replace, Delete Font*
- *Comment, Uncomment Region*
- *Formatting and Marking*
- *Show/Hide*
- *Math Mode*
- *Multifile/Parsing*
- *Customize AUCTEX*

Section, Macro and Complete Macro

- Using the *Section* item makes possible to reduce typing when sectioning the document.
- By selecting *Macro* menu item one can insert macros or complete macro names by clicking the `TAB` key.

Insert, Change, Close Environment

- *Insert Environment*: simply lets you insert the environment you like without too much typing.
- *Change Environment*: it changes environment, if one wants to transform an `array` into a `tabular`, for example.
- *Close Environment*: sometimes one need just to put a

```
\end{environment}
```

and this is the command to obtain that.

Insert, Replace, Delete Font

These menu commands are used just to avoid to type \LaTeX commands for font attributes, such the ones for bold, italic, small capitals and so on.

Comment or Uncomment Region, Paragraph

Simply used to put a comment character % before every line of a region of the GNU Emacs buffer, selected with the mouse or the C-SPC (Ctrl+space) command, used to mark a region.
The same can be done for a paragraph.

Formatting and Marking

These commands are used to format the text buffer in a more readable way, for example by indenting environments or highlighting the macros and commands.

Show/Hide

A very good feature is the *Fold Mode*, useful to hide footnotes or to hide macros like `\texttt` which would make the code harder to read.

Math Mode

One of the points of strength in AUCTEX. When selecting this menu command you can put mathematical symbols just by typing some shortcuts; for example the ‘D shortcut would produce a Δ symbol.

Symbols are reported in the AUCTEX Reference card, available at

<ftp://ftp.gnu.org/pub/gnu/auctex/11.82-extra/tex-ref.pdf>

Multifile/Parsing

Designed to control a multifile document by switching to the main file or by saving every file in the project with just one click.

Customize AUCTEX and the remaining items

- *Customize AUCTEX* is the easy way to customize the AUCTEX module. . . at least easier than writing Elisp code to put in the `.emacs` file.
- *Read The AUCTEX manual* is a shortcut to read the manual in TeXinfo format.
- *Report AUCTEX Bug* is used to report bugs, of course.

The preview-latex module

The preview-latex module is designed to give the preview of the final document embedded in the GNU Emacs buffer. It is useful to see how mathematical formulas or environments or sectioning titles will be shown in the document.

The preview-latex submenus

- The first submenu refers to the generation of previews for environments, paragraphs or for the entire document.
- The *Turn Preamble Cache* submenu turns on and off the feature by which the document preamble is cached to obtain faster access in the next preview renderings.

Using mouse to handle previews

The user can work with previews by using the mouse. The central mouse key removes the preview (if the mouse is on a preview area), while the right key opens a menu which allows to choose among disabling or removing or regenerate the preview.

Conclusion

- The goal of my article is to make the reader aware of the chance to write in T_EX or L^AT_EX in a fast and effective way. Emacs and AUCT_EX together can be seen as geeky, but the user –mainly in the scientific world, where L^AT_EX is widely used, doesn't always need eye-candy features; I find however this software eye-candy too, in some sense. . . for how strange it might seem.
- The reader may decide if GNU Emacs and AUCT_EX are a good way to write, control and view on the screen all that code which allows to obtain the beautiful documents made with prof. Donald Knuth's typesetting system.

Thanks for your attention. Any question?