

# How to set up your computer to start using L<sup>A</sup>T<sub>E</sub>X



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Thank you for your interest in L<sup>A</sup>T<sub>E</sub>X typesetting system and this article will help you to get you ready for starting to use L<sup>A</sup>T<sub>E</sub>X on your computer.

Although I would like to write a continuous text on how to install everything on different kinds of OSes (Operating Systems), I believe, that it is not necessary to duplicate any content, if it can be found in a better shape elsewhere. Therefore, I suggest you reading chapters of the book called L<sup>A</sup>T<sub>E</sub>X hosted on the website called wikibooks.org. You can find an on-line version of the book<sup>1</sup> or the PDF<sup>2</sup> version of it, which I think is much more suitable for reading or printing.

The list of the needed software is already there and if you feel very comfortable with your system, no specific directions should be necessary.

## 1 L<sup>A</sup>T<sub>E</sub>X distribution installation

There are several L<sup>A</sup>T<sub>E</sub>X distributions which you can choose from and what choice you make might influence your experience with L<sup>A</sup>T<sub>E</sub>X a lot.

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<sup>1</sup>The URL is <https://secure.wikimedia.org/wikibooks/en/wiki/LaTeX>

<sup>2</sup>The URL is <http://upload.wikimedia.org/wikipedia/commons/2/2d/LaTeX.pdf>

“**T<sub>E</sub>X Live**” distribution is available for Linux/Mac/Windows, but is usually the preferred option on Linux machines.

“**MacT<sub>E</sub>X**” distribution is mainly a compilation of the “T<sub>E</sub>X Live” software specifically tailored for machines running OS X. This should be the preferred way of installing a L<sup>A</sup>T<sub>E</sub>X distribution on a Mac.

“**proT<sub>E</sub>Xt**” distribution is available for Windows machines only and it is designed so that everything is done for the user automatically. It is based on MiK<sub>T</sub><sub>E</sub>X – another T<sub>E</sub>X distribution for Windows OS, but it offers a much more integrated installation and is very suited for beginners as it contains the full T<sub>E</sub>X distribution installation, a good editor and GhostScript installation (program for .ps files) as well. This should be the preferred distribution on Windows OS if you are a beginner, otherwise please research ways of how to install a T<sub>E</sub>X Live distribution as it seems to be more secure and faster in some occasions.

## 1.1 Notes for Linux users

Use your Linux Distribution package manager whenever you can and install “T<sub>E</sub>X Live” only from there. If you do not know how to do it, please refer to your Distribution Wikipedia and search it for ‘LaTeX’ or ‘TeX Live’.

Here is a list of most popular distributions and links to their Wikipedia Pages:

**.deb based** Debian<sup>1</sup>, Ubuntu<sup>2</sup>, and for distributions, which are derived from these two, the same wiki pages can be used. However, for full installation of T<sub>E</sub>X Live you can try these terminal commands (issue them as root):

```
aptitude update
aptitude install texlive-full
```

**.rpm based** For Fedora, RedHat, CentOS and openSUSE distributions, use your package manager and install the full T<sub>E</sub>X Live distribution. The following command executed in terminal as root should work:

```
yum install texlive-full
```

**ArchLinux and derivatives** The following instruction should work on ArchLinux and Chackra distributions. Both use pacman as their packages manager, so the following commands executed as root user will suffice:

```
pacman -S texlive-most texlive-lang
```

NB the second package texlive-lang is for the different languages support and if you use only English language, then you are free to install only the **texlive-most** package

Archlinux has a very good wiki article: [https://wiki.archlinux.org/index.php/TeX\\_Live](https://wiki.archlinux.org/index.php/TeX_Live).

**Gentoo and derivatives** This applies for Gentoo, Funtoo, Sabayon distributions. Things which work will definitely work on the other two distributions, so we will analyse only Gentoo.

For checking the list of functionality for texlive distribution, enter:

```
equery uses texlive
```

and you will get the list of available use flags. You will have to enable the needed flags in the `/etc/portage/package.use` and then just emerge the packages:

```
emerge -av texlive
```

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<sup>1</sup>The URL is <http://wiki.debian.org/Latex>

<sup>2</sup>The URL is <https://help.ubuntu.com/community/LaTeX>

In order to get a newer version of T<sub>E</sub>X Live, just unmask the needed packages via `/etc/portage/package.accept_keywords`.  
Gentoo has a very good Wiki<sup>1</sup> page documenting the installation.

**Others** Install the T<sub>E</sub>X Live distribution via your distributions packet manager. If you do not know how to do that, ask in the forums on your distribution web page.

## 1.2 Notes for Mac users

For easier experience, just install the full MacT<sub>E</sub>X installation which can be found on the following website<sup>2</sup>.

## 1.3 Notes for Windows users

For easier experience, download proT<sub>E</sub>Xt installation files from their website<sup>3</sup>. The installation above will provide you with a T<sub>E</sub>XnicCenter L<sup>A</sup>T<sub>E</sub>X IDE and full T<sub>E</sub>X distribution installation.

Another option would be to install either the MiK<sub>T</sub><sub>E</sub>X distribution directly instead of the proT<sub>E</sub>Xt distribution. It can be downloaded from this web site<sup>4</sup> and there are two options of installation:

**Install everything** Although this might be very convenient as one will not have to worry about missing packages, but it takes space. On the other hand, slightly more than 1GB of occupied space on modern computers will not make a difference.

**Install a base system** This is the alternative, which would take less space. What is more, one can select an option where necessary packages could be installed on the fly without any user intervention. However, it might need some more configuration afterwards as it seems that this method sometimes does not work “automagically”.

And yet the last option would be to install the T<sub>E</sub>X Live distribution. This might be the preferred way for people who want to have the same environment across all Operating Systems they use. What is more, sometimes it may compile the documents faster and it is thought to be a more secure distribution. For ways how to install this distribution, please use google.

# 2 Editing a .tex file

Mainly there are two choices:

- Integrated Development Environment IDE<sup>5</sup>
- Just a text editor.

While IDEs generally will provide a user with much more integrated environment, this does not necessarily mean, that producing L<sup>A</sup>T<sub>E</sub>X documents with an IDE is faster. There are many very powerful text editors, which might have a steep learning curve, but once mastered, they are very fast. What is more, some text editors might be better in some tasks than other, so there is no such thing as “the best” IDE or text editor for L<sup>A</sup>T<sub>E</sub>X.

The most important projects are mentioned bellow:

**VIM & Emacs** VIM is the best editor, in my opinion. It is very fast, lightweight and it can be customized a lot. Although it has a steep learning curve, it is very rewarding afterwards and reading any of the books on VIM would help a lot.

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<sup>1</sup>The URL is <http://www.gentoo.org/proj/en/tex/texlive-migration-guide.xml>

<sup>2</sup>The URL is <http://www.tug.org/mactex/>

<sup>3</sup>The URL is <http://www.tug.org/protext/>

<sup>4</sup>The URL is <http://www.miktex.org/2.9/setup>

<sup>5</sup>The URL is [https://secure.wikimedia.org/wikipedia/en/wiki/Integrated\\_development\\_environment](https://secure.wikimedia.org/wikipedia/en/wiki/Integrated_development_environment)

This being said, everybody admit, that Emacs is also good, and many argue that it is better than VIM. This has much to do with so-called editor wars<sup>1</sup>.

Since both are very advanced editors, you will find that they have very powerful L<sup>A</sup>T<sub>E</sub>X plug-ins, which might make the work faster than with most of the IDEs. On the other hand, both editors present a user some difficulties while learning the commands as the learning curve is somewhat steep(ish).

**LyX** This is a project, that aims the user to give a word-processor, which would use L<sup>A</sup>T<sub>E</sub>X internally. Although one can achieve really good results with it, technically you do not write L<sup>A</sup>T<sub>E</sub>X and it will not help you at all with L<sup>A</sup>T<sub>E</sub>X if you want to learn it. However, since it does a lot of automatic things, it might be a very good reference tool for searching hints how to achieve some things with L<sup>A</sup>T<sub>E</sub>X (e.g. searching for symbols, remembering commands).

That said, I would like to strongly advice you **AGAINST USING THIS WORD PROCESSOR, OTHER THAN FOR REFERENCE MATTERS!** The reason is because publishers do not accept LyX files and once you export them to L<sup>A</sup>T<sub>E</sub>X, it becomes a mess. What is more, it will be easier to collaborate with colleagues if you use L<sup>A</sup>T<sub>E</sub>X. And sometimes, it tries to do more, than you want, or ask it to do and then you get errors, and spend so much precious time debugging instead of writing your thesis.

**T<sub>E</sub>XShop** This is probably the first good L<sup>A</sup>T<sub>E</sub>X IDE for Mac, which was highly successful when it first came out. However, it is still being widely used and most of Mac people will suggest it first.

**T<sub>E</sub>XnicCenter** T<sub>E</sub>XnicCenter is probably the best choice for Windows users, as it has a lot of functionality. If you choose this IDE, then you won't have to worry about anything as there are a lot of resources on the internet on how to get various features working and etc. What is also good about it, is that the user has complete control over the majority of its settings and it is very easy for sophisticated users to get what they want.

**T<sub>E</sub>Xworks** A cross-platform IDE which was inspired by **T<sub>E</sub>XShop**. Note, that it is very useful as it comes with every L<sup>A</sup>T<sub>E</sub>X distribution by default (except for T<sub>E</sub>X Live). Thus you can start using it very quickly.

**T<sub>E</sub>XMaker** A good cross-platform IDE using Qt toolkit. This might be an alternative to T<sub>E</sub>Xworks, although there are better alternatives listed above, so it is here just for completeness.

Other projects, which can be still very well used to achieve good results, but are somewhat less popular:

**Kile** This is an IDE for Linux, mostly suited for KDE users.

**Geany** This is an IDE for Linux, built with the GTK+ widget set and might be the primary choice for those people who want an IDE, but don't want to install Qt, or have other strong opinions towards the Qt library.

[Add more detail?](#)

**Others** There are probably more ways to create .tex documents than I have mentioned here and if you feel, that none of the solutions works for you, please research the web and you'll find alternatives.

### 3 Bibliography management

Bibliography in L<sup>A</sup>T<sub>E</sub>X can be managed in several ways and information on how it is done is given in the Bibliography Tutorial. [Here I will just flick through different software which can act as a front-end to BibT<sub>E</sub>X.](#) Those front-ends can be categorized as follows:

[Link to it!](#)

<sup>1</sup>The URL is [http://en.wikipedia.org/wiki/Editor\\_war](http://en.wikipedia.org/wiki/Editor_war)

**L<sup>A</sup>T<sub>E</sub>X IDEs** Some L<sup>A</sup>T<sub>E</sub>X IDEs are known to be able to manage `.bib` files (native BibT<sub>E</sub>X format), however, to check whether your is capable of doing that, you should refer to the documentation of the software you use or just quick-check on web-search engines like Google<sup>1</sup>, Bing<sup>2</sup> or others.

**Text Editor** You can manage the bibliography manually, by using just your text editor. For this job I would suggest only the more advanced one like VIM or Emacs, however, you can create the `.bib` file with anything you want, as long as it supports ASCII encoding (which should be the case for all text editors). The templates can be found on the L<sup>A</sup>T<sub>E</sub>X wikibook<sup>3</sup>.

**BibT<sub>E</sub>X GUIs** This is the third category and probably the most suited for the job. There are wonderful bibliography managers, which can export the database as `.bib` files and, thus, can be easily used with L<sup>A</sup>T<sub>E</sub>X. The list of software can be found either on Wikipedia<sup>4</sup> or L<sup>A</sup>T<sub>E</sub>X wikibook<sup>5</sup>.

## 4 PDF viewers

Good PDF viewers are different across different platforms. I believe, that you might want say, that Adobe's PDF viewer is very good, but the truth is that it is slow and not as reliable as others, so please be sure, that you check, or at least are aware of alternatives.

A much better alternative might look **Foxit** PDF reader, which is available for both Linux and Windows operating systems. However, by no means it is the best solution and one should research a bit before settling down with the most appealing PDF viewer.

### 4.1 On Linux

Linux users have a huge variety of PDF viewers to select from. One should search distribution's repositories, but just to mention a few:

**IDE's viewer** If you will be using a fully-fledged IDE for L<sup>A</sup>T<sub>E</sub>X (like T<sub>E</sub>Xworks or similar), then it is very likely that you will not need another PDF viewer for monitoring the changes to the `.tex` file.

**Evince** Default PDF viewer for GNOME. Supports SyncT<sub>E</sub>X, which is very useful for improving the user experience and document creating.

**Okular** Default PDF viewer for KDE. Like Evince, supports SyncT<sub>E</sub>X and might be more feature-full than the former.

**mupdf** This is a PDF rendering library with a very minimalistic viewer. Although it might be very minimalistic, it is very fast and reliable. This library is cross-platform, so the viewer might be available on other platforms as well.

**zathura and apvlf** These are minimalistic and very fast VIM-like PDF viewers suited for geeks.

### 4.2 On Mac

Your IDE is very likely to be bundled with some custom PDF viewer and thus you might not need an extra one. However if you need SyncT<sub>E</sub>X support, which improves the user experience a lot, keep in mind, that not all IDE PDF viewer support it. In case you wanted the support in a external viewer, you should definitely check out **Skim** PDF viewer.

A good choice just to preview files is the native program called **Preview**.

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<sup>1</sup>The URL is <http://www.google.co.uk>

<sup>2</sup>The URL is <http://www.bing.co.uk>

<sup>3</sup>The URL is [https://secure.wikimedia.org/wikibooks/en/wiki/LaTeX/Bibliography\\_Management#Standard\\_templates](https://secure.wikimedia.org/wikibooks/en/wiki/LaTeX/Bibliography_Management#Standard_templates)

<sup>4</sup>The URL is [https://secure.wikimedia.org/wikipedia/en/wiki/Comparison\\_of\\_reference\\_management\\_software](https://secure.wikimedia.org/wikipedia/en/wiki/Comparison_of_reference_management_software)

<sup>5</sup>The URL is [https://secure.wikimedia.org/wikibooks/en/wiki/LaTeX/Bibliography\\_Management#Helpful\\_Tools](https://secure.wikimedia.org/wikibooks/en/wiki/LaTeX/Bibliography_Management#Helpful_Tools)

### 4.3 On Windows

The best choice would be a **Sumatra** PDF viewer. It is based on very stable and fast MuPDF rendering library and it supports lots of other features, of which the most important one is SyncTeX. This viewer launches immediately, which is very useful if you close and open the PDF files often.

Other alternatives either need to be paid for or they are not as reliable/feature-complete as the **Sumatra** PDF viewer.