

Chapter 1

The TeX Universe

1.1 What is L^AT_EX?

L^AT_EX is a program for writing academic documents in almost every domain: Mathematics, Physics, Computer Science, and more. L^AT_EX lets you typeset your document very easily and produces a beautiful rendering. It is widely used by the scientific community.

1.2 History

T_EX, a program for writing scientific documents, was invented by Donald E. Knuth, a professor at Stanford University, in 1978. T_EX is Free and Open Source Software (FOSS), which means that anyone can use, share, modify, and distribute it.

L^AT_EX is a modified version of T_EX made by Leslie Lamport (the “La” of L^AT_EX) in 1984, which is also FOSS. L^AT_EX gives the user commands that make formatting documents much easier.

1.3 Advantages

L^AT_EX is suitable for building large documents (such as dissertations and theses); it lets you write complex mathematical formulas very easily and produces beautiful results. It produces much smaller documents, and if you encounter problems or do not know how to do something, you are guaranteed to find help on the internet.

1.4 Installation

To use L^AT_EX, you need to install the L^AT_EX distribution and an editor to write the commands that L^AT_EX will execute.

For the editor, you can use any text editor to write L^AT_EX commands, save the file with the `.tex` extension, and then run the L^AT_EX engine on it.

1.4.1 Linux

All standard Linux distributions have L^AT_EX installed by default. If not, you can use your package manager to download and install the T_EX Live package to get L^AT_EX on your local machine. A standard installation of T_EX Live takes around 3.2 GB.

Dedicated editors are almost all free; for example: TeXstudio and Texmaker.

1.4.2 Windows

You can download T_EX Live for Windows or MiKTeX and follow the installation instructions. An installation can take around 1.2 GB.

Many editors are free, like TeXstudio and Texmaker, while some require a paid license, like WinEdt.

1.4.3 MacOS

You need to download MacTeX and follow the installation instructions. An installation takes around 9 GB.

Available editors include TeXShop (free) and Texifier (paid).

1.5 Online Alternative

You can use L^AT_EX online without any local installation via the Overleaf platform. This platform provides you with L^AT_EX and an integrated editor, making it ideal for real-time collaboration.

1.6 Hands-on Exercises

- **Local Setup:** If you own a computer, try installing L^AT_EX, launch your chosen editor, and explore all its components.
- **Online Exploration:** Access the Overleaf platform, create an account, and explore the website—not just the editing tool, but also their comprehensive Help documentation.