

LABORATORY01: Installation and Configuration of TeX Live

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1 Installing TeX Live - General Information

Installing the distribution TeXlive.

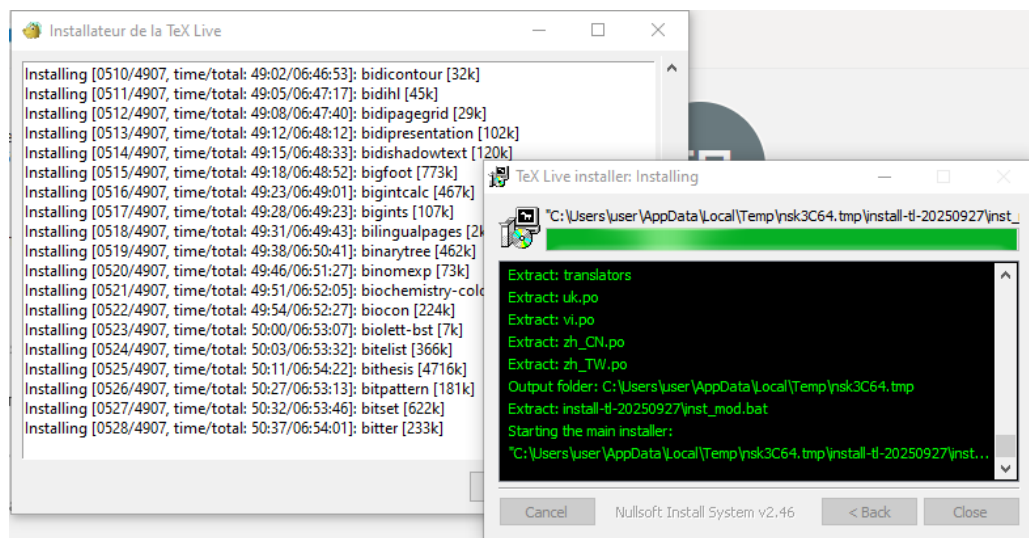
1.1.1 General information

- TeXLive - the most complete LaTeX distribution supported by the TeX community.
- Supports a large number of operating systems.
- Developed since 1996.
- Based on the teTeX distribution.
- MacTeX - a variant for MacOS.
- Main page: <https://www.tug.org/texlive/>
- TeXLive is a distribution with continuous updates as part of the annual version of the distribution.

Generated figure (simulation)

General information about TeX Live distribution.

Screenshot



Key Information Summary

Feature	Description
Distribution Name	TeX Live
Type	Complete LaTeX distribution
First Release	1996
Based on	teTeX distribution
Mac Variant	MacTeX
Official Website	https://www.tug.org/texlive/
Update Model	Continuous updates, annual releases

2 Installation from Distribution Packages

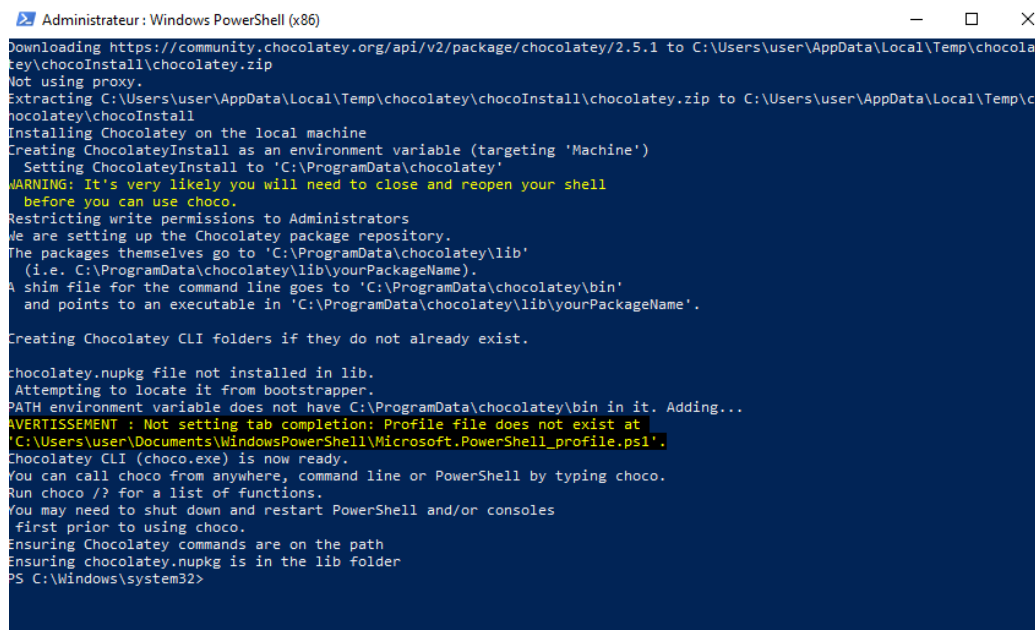
1.1.2 Installation from distribution packages

- Ubuntu:
apt install texlive-full
- Windows. Use the Chocolatey package manager.
choco install texlive

Generated figure (simulation)

Package manager installation commands.

Screenshot - Chocolatey Installation

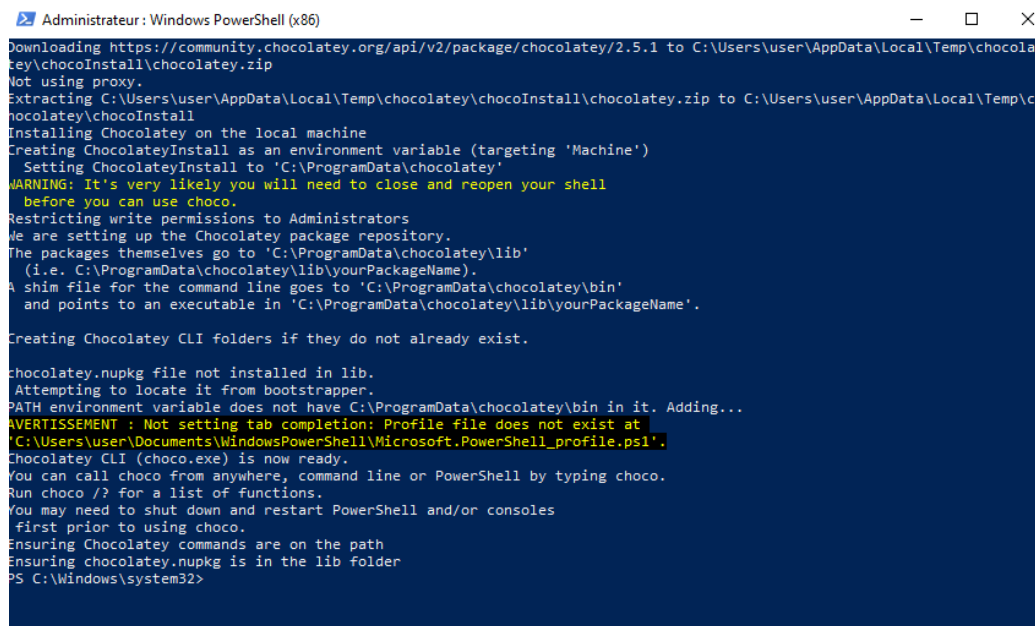


```
Administrateur : Windows PowerShell (x86)
Downloading https://community.chocolatey.org/api/v2/package/chocolatey/2.5.1 to C:\Users\user\AppData\Local\Temp\chocola
tey\chocoInstall\chocolatey.zip
Not using proxy.
Extracting C:\Users\user\AppData\Local\Temp\chocolatey\chocoInstall\chocolatey.zip to C:\Users\user\AppData\Local\Temp\c
hocolatey\chocoInstall
Installing Chocolatey on the local machine
Creating ChocolateyInstall as an environment variable (targeting 'Machine')
Setting ChocolateyInstall to 'C:\ProgramData\chocolatey'
WARNING: It's very likely you will need to close and reopen your shell
before you can use choco.
Restricting write permissions to Administrators
We are setting up the Chocolatey package repository.
The packages themselves go to 'C:\ProgramData\chocolatey\lib'
(i.e. C:\ProgramData\chocolatey\lib\yourPackageName).
A shim file for the command line goes to 'C:\ProgramData\chocolatey\bin'
and points to an executable in 'C:\ProgramData\chocolatey\lib\yourPackageName'.

Creating Chocolatey CLI folders if they do not already exist.

chocolatey.nupkg file not installed in lib.
Attempting to locate it from bootstrapper.
PATH environment variable does not have C:\ProgramData\chocolatey\bin in it. Adding...
AVERTISSEMENT : Not setting tab completion: Profile file does not exist at
'C:\Users\user\Documents\WindowsPowerShell\Microsoft.PowerShell_profile.ps1'.
Chocolatey CLI (choco.exe) is now ready.
You can call choco from anywhere, command line or PowerShell by typing choco.
Run choco /? for a list of functions.
You may need to shut down and restart PowerShell and/or consoles
first prior to using choco.
Ensuring Chocolatey commands are on the path
Ensuring chocolatey.nupkg is in the lib folder
PS C:\Windows\system32>
```

Screenshot - Chocolatey Success



```
Administrateur : Windows PowerShell (x86)
Downloading https://community.chocolatey.org/api/v2/package/chocolatey/2.5.1 to C:\Users\user\AppData\Local\Temp\chocola
tey\chocoInstall\chocolatey.zip
Not using proxy.
Extracting C:\Users\user\AppData\Local\Temp\chocolatey\chocoInstall\chocolatey.zip to C:\Users\user\AppData\Local\Temp\c
hocolatey\chocoInstall
Installing Chocolatey on the local machine
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WARNING: It's very likely you will need to close and reopen your shell
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Creating Chocolatey CLI folders if they do not already exist.

chocolatey.nupkg file not installed in lib.
Attempting to locate it from bootstrapper.
PATH environment variable does not have C:\ProgramData\chocolatey\bin in it. Adding...
AVERTISSEMENT : Not setting tab completion: Profile file does not exist at
'C:\Users\user\Documents\WindowsPowerShell\Microsoft.PowerShell_profile.ps1'.
Chocolatey CLI (choco.exe) is now ready.
You can call choco from anywhere, command line or PowerShell by typing choco.
Run choco /? for a list of functions.
You may need to shut down and restart PowerShell and/or consoles
first prior to using choco.
Ensuring Chocolatey commands are on the path
Ensuring chocolatey.nupkg is in the lib folder
PS C:\Windows\system32>
```

Installation Commands

Ubuntu/Debian (Linux):

```
sudo apt update
sudo apt install texlive-full
```

Windows (with Chocolatey):

```
choco install texlive
```

Note: The `texlive-full` package installs the complete TeX Live distribution including all packages, fonts, and documentation. This can take significant disk space (several gigabytes) and time to download.

Advantages of Package Manager Installation

- Easy installation with single command
- Automatic dependency resolution
- Integrated with system package management
- Easy updates via system package manager

Disadvantages

- May not be the latest version
 - Limited to distribution's repository version
 - Less control over installation components
-

3 Manual Installation - Unix/Linux

1.1.3 Manual installation

- Links on the site are to mirrors. The mirror is selected automatically.
- Download the installer:
 - Unix: <https://mirror.ctan.org/systems/texlive/tlnet/install-tl-unx.tar.gz>

```
cd /tmp/
wget https://mirror.ctan.org/systems/texlive/tlnet/install-tl-unx.tar.gz
```

- For Linux
 - Unpack the downloaded file:

```
tar xzvf install-tl-unx.tar.gz
```
 - Go to the unpacked directory and run the installer:

```
cd install-tl-[0-9]*
sudo ./install-tl
```
 - It is recommended to create links to executable files in the `/usr/local/bin` directory. To do this, in the console version of the utility, select the `0` option, and then `L`. To return to the previous menu, use `R`.

Generated figure (simulation)

Manual installation process for Unix/Linux systems.

Screenshot

```
Writing Profile using Passed Parameters.
TeX Live Profile will be written to C:\tools\texlive.profile
Extracting C:\ProgramData\chocolatey\lib\texlive\tools\install-tl.zip to C:\tools\install-tl-27092522...
C:\tools\install-tl-27092522
Automated TeX live installation using profile: C:/tools/texlive.profile
Loading https://mirror.macomnet.net/pub/CTAN/systems/texlive/tlnet/tlpkg/texlive.tlpdb
Installing TeX Live 2025 from: https://mirror.macomnet.net/pub/CTAN/systems/texlive/tlnet (not verified)
Platform: windows => 'Windows (64-bit)'
Distribution: net (downloading)
Using URL: https://mirror.macomnet.net/pub/CTAN/systems/texlive/tlnet
Directory for temporary files: C:\Users\User\AppData\Local\Temp\eyjwYMMN
Installing to: C:\texlive\2025
Installing [1/6, time/total: ??:??:??]: hyphen-base [23k]
Installing [2/6, time/total: 00:02:24:23]: kpathsea [1042k]
Installing [3/6, time/total: 00:05:01:16]: luatex [1957k]
Installing [4/6, time/total: 00:09:00:48]: texlive-scripts [556k]
Installing [5/6, time/total: 00:11:00:49]: texlive.infra [610k]
Installing [6/6, time/total: 00:15:00:57]: tlpkg.windows [11991k]
Time used for installing the packages: 00:43
Installing [001/131, time/total: ??:??:??]: ae [84k]
Installing [002/131, time/total: 00:04:02:05:45]: amscs [1437k]
Installing [003/131, time/total: 00:08:13:45]: amsfons [4725k]
Installing [004/131, time/total: 00:19:07:56]: amsmath [2427k]
Installing [005/131, time/total: 00:27:08:07]: atbegshi [409k]
Installing [006/131, time/total: 00:30:08:37]: atveryend [281k]
Installing [007/131, time/total: 00:33:09:12]: auxhook [286k]
Installing [008/131, time/total: 00:36:09:44]: babel [2289k]
Installing [009/131, time/total: 00:46:10:04]: babel-english [137k]
Installing [010/131, time/total: 00:49:10:36]: babelbib [1251k]
Installing [011/131, time/total: 00:53:10:23]: bibtex [405k]
```

Step-by-Step Installation Guide

Complete Unix/Linux Installation Procedure:

1. Download the installer:

```
cd /tmp/
wget https://mirror.ctan.org/systems/texlive/tlnet/install-tl-unx.tar.gz
```

2. Extract the archive:

```
tar xzvf install-tl-unx.tar.gz
```

3. Navigate to the installer directory:

```
cd install-tl-*
```

4. Run the installer with root privileges:

```
sudo ./install-tl
```

5. Configure installation options (optional):

- Select **O** for options menu
- Select **L** to create symbolic links in `/usr/local/bin`
- Press **R** to return to previous menu
- Press **I** to begin installation

Installation Options Explained

Option	Description
O	Opens options menu for configuration
L	Creates symbolic links in system directories
R	Returns to previous menu
I	Starts the installation process

4 Manual Installation - Windows

- Windows: <https://mirror.ctan.org/systems/texlive/tlnet/install-tl-windows.exe>
- For Windows: run the executable file and install.

Generated figure (simulation)

Windows installer executable.

Screenshot - Installation Progress 1

```
Installing [066/131, time/total: 03:51/16:16]: l3backend [883k]
Installing [067/131, time/total: 03:56/16:14]: l3kernel [12689k]
Installing [068/131, time/total: 04:10/12:54]: l3packages [1471k]
Installing [069/131, time/total: 04:14/12:44]: latex [37488k]
Installing [070/131, time/total: 04:47/08:22]: latex-bin [56k]
Installing [071/131, time/total: 04:49/08:25]: latex-bin.windows [4k]
Installing [072/131, time/total: 04:51/08:29]: latex-fonts [19k]
Installing [073/131, time/total: 04:54/08:34]: latex-lab [5112k]
Installing [074/131, time/total: 05:06/08:26]: latexconfig [3k]
Installing [075/131, time/total: 05:07/08:27]: letltxmacro [292k]
Installing [076/131, time/total: 05:11/08:32]: lm [14118k]
Installing [077/131, time/total: 05:32/07:56]: ltxcmds [414k]
Installing [078/131, time/total: 05:34/07:57]: ltxmisc [16k]
Installing [079/131, time/total: 05:38/07:59]: lua-alt-getopt [6k]
Installing [080/131, time/total: 05:37/08:02]: lua-uni-algos [88k]
Installing [081/131, time/total: 05:40/08:05]: luahtbx [32k]
Installing [082/131, time/total: 05:42/08:08]: luahtbx.windows [1903k]
Installing [083/131, time/total: 05:45/08:04]: lualibs [228k]
Installing [084/131, time/total: 05:48/08:07]: luaotfload [1243k]
Installing [085/131, time/total: 05:53/08:09]: luaotfload.windows [3k]
Installing [086/131, time/total: 05:54/08:10]: luatex.windows [2062k]
Installing [087/131, time/total: 05:58/08:07]: makeindex [469k]
Installing [088/131, time/total: 06:00/08:08]: makeindex.windows [21k]
Installing [089/131, time/total: 06:02/08:10]: metafont [62k]
Installing [090/131, time/total: 06:04/08:13]: metafont.windows [184k]
Installing [091/131, time/total: 06:06/08:15]: mflgo [242k]
Installing [092/131, time/total: 06:09/08:18]: mfnfss [458k]
Installing [093/131, time/total: 06:13/08:21]: mfware [109k]
Installing [094/131, time/total: 06:15/08:23]: mfware.windows [67k]
Installing [095/131, time/total: 06:17/08:26]: modes [298k]
Installing [096/131, time/total: 06:19/08:27]: mptopdf [53k]
Installing [097/131, time/total: 06:21/08:30]: mptopdf.windows [3k]
Installing [098/131, time/total: 06:22/08:31]: natbib [493k]
Installing [099/131, time/total: 06:25/08:33]: oberdiek [7354k]
Installing [100/131, time/total: 06:37/08:18]: pagella [324k]
Installing [101/131, time/total: 06:40/08:20]: pdfscape [347k]
Installing [102/131, time/total: 06:44/08:24]: pdftex [3180k]
Installing [103/131, time/total: 06:49/08:17]: pdftex.windows [816k]
Installing [104/131, time/total: 06:52/08:18]: pdftexcmds [391k]
Installing [105/131, time/total: 06:56/08:21]: plain [29k]
Installing [106/131, time/total: 06:57/08:22]: pslatex [7k]
Installing [107/131, time/total: 06:59/08:25]: psnfss [275k]
Installing [108/131, time/total: 07:03/08:28]: pspicture [68k]
Installing [109/131, time/total: 07:07/08:33]: refcount [329k]
```

Screenshot - Installation Progress 2

```
Installing [010/131, time/total: 00:49/10:36]: babelbib [1251k]
Installing [011/131, time/total: 00:53/10:23]: bibtex [405k]
Installing [012/131, time/total: 00:55/10:27]: bibtex.windows [49k]
Installing [013/131, time/total: 00:57/10:48]: bigintcalc [467k]
Installing [014/131, time/total: 01:02/11:22]: bitset [622k]
Installing [015/131, time/total: 01:06/11:35]: bookmark [491k]
Installing [016/131, time/total: 01:09/11:44]: carlisle [85k]
Installing [017/131, time/total: 01:14/12:31]: cm [235k]
Installing [018/131, time/total: 01:18/12:59]: collection-basic [1k]
Installing [019/131, time/total: 01:19/13:00]: collection-latex [1k]
Installing [020/131, time/total: 01:20/13:10]: colorprofiles [113k]
Installing [021/131, time/total: 01:23/13:43]: colortbl [643k]
Installing [022/131, time/total: 01:28/13:59]: dehyph [46k]
Installing [023/131, time/total: 01:29/14:06]: dvipdfmx [3089k]
Installing [024/131, time/total: 01:35/12:40]: dvipdfmx.windows [348k]
Installing [025/131, time/total: 01:37/12:43]: dvips [576k]
Installing [026/131, time/total: 01:39/12:37]: dvips.windows [108k]
Installing [027/131, time/total: 01:40/12:40]: ec [280k]
Installing [028/131, time/total: 01:49/13:38]: enctex [272k]
Installing [029/131, time/total: 01:52/13:50]: epstopdf [44k]
Installing [030/131, time/total: 01:54/14:03]: epstopdf-pkg [362k]
Installing [031/131, time/total: 01:58/14:18]: epstopdf.windows [3k]
Installing [032/131, time/total: 01:59/14:25]: etex [331k]
Installing [033/131, time/total: 02:01/14:26]: etex-pkg [7k]
Installing [034/131, time/total: 02:03/14:40]: etexcmds [302k]
Installing [035/131, time/total: 02:08/15:03]: etoolbox [249k]
Installing [036/131, time/total: 02:10/15:07]: extractbb [30k]
Installing [037/131, time/total: 02:12/15:20]: extractbb.windows [3k]
Installing [038/131, time/total: 02:13/15:27]: fancyhdr [1358k]
Installing [039/131, time/total: 02:19/15:14]: firstaid [289k]
```

Screenshot - Installation Progress 3

```
Installing [038/131, time/total: 02:13/15:27]: fancyhdr [1358k]
Installing [039/131, time/total: 02:19/15:14]: firstaid [289k]
Installing [040/131, time/total: 02:21/15:16]: fix2col [217k]
Installing [041/131, time/total: 02:25/15:33]: geometry [900k]
Installing [042/131, time/total: 02:28/15:19]: gettitlestring [320k]
Installing [043/131, time/total: 02:31/15:26]: glyphlist [25k]
Installing [044/131, time/total: 02:32/15:31]: graphics [2490k]
Installing [045/131, time/total: 02:40/14:53]: graphics-cfg [2k]
Installing [046/131, time/total: 02:43/15:10]: graphics-def [12k]
Installing [047/131, time/total: 02:47/15:32]: grfext [310k]
Installing [048/131, time/total: 02:51/15:43]: grffile [357k]
Installing [049/131, time/total: 02:54/15:48]: hopatch [321k]
Installing [050/131, time/total: 02:57/15:54]: hycolor [380k]
Installing [051/131, time/total: 03:01/16:03]: hypocap [295k]
Installing [052/131, time/total: 03:05/16:14]: hyperref [3926k]
Installing [053/131, time/total: 03:11/14:49]: hyph-utf8 [314k]
Installing [054/131, time/total: 03:15/14:59]: hyphen-english [41k]
Installing [055/131, time/total: 03:18/15:12]: hyphenex [208k]
Installing [056/131, time/total: 03:24/15:34]: ifplatform [156k]
Installing [057/131, time/total: 03:27/15:43]: iftex [228k]
Installing [058/131, time/total: 03:29/15:46]: infwarerr [287k]
Installing [059/131, time/total: 03:32/15:52]: intcalc [431k]
Installing [060/131, time/total: 03:36/15:58]: knuth-lib [30k]
Installing [061/131, time/total: 03:38/16:06]: knuth-local [23k]
Installing [062/131, time/total: 03:39/16:10]: kpathsea.windows [507k]
Installing [063/131, time/total: 03:41/16:05]: kvdefinekeys [297k]
Installing [064/131, time/total: 03:45/16:14]: kvoptions [502k]
Installing [065/131, time/total: 03:48/16:14]: kvsetkeys [396k]
Installing [066/131, time/total: 03:51/16:16]: l3backend [883k]
Installing [067/131, time/total: 03:56/16:14]: l3kernel [12609k]
```

Screenshot - Installation Completion

```
Sélection Administrateur : Invite de commandes
Installing [109/131, time/total: 07:07/08:33]: refcount [329k]
Installing [110/131, time/total: 07:10/08:35]: rerunfilecheck [333k]
Installing [111/131, time/total: 07:14/08:39]: stringenc [702k]
Installing [112/131, time/total: 07:19/08:42]: symbol [36k]
Installing [113/131, time/total: 07:21/08:44]: tex [46k]
Installing [114/131, time/total: 07:24/08:47]: tex-ini-files [6k]
Installing [115/131, time/total: 07:26/08:50]: tex.windows [153k]
Installing [116/131, time/total: 07:27/08:50]: texlive-common [489k]
Installing [117/131, time/total: 07:30/08:52]: texlive-en [1841k]
Installing [118/131, time/total: 07:33/08:48]: texlive-msg-translations [150k]
Installing [119/131, time/total: 07:35/08:50]: texlive-scripts-extra [215k]
Installing [120/131, time/total: 07:37/08:51]: texlive-scripts-extra.windows [5k]
Installing [121/131, time/total: 07:39/08:53]: texlive-scripts.windows [60k]
Installing [122/131, time/total: 07:40/08:55]: texlive.infra.windows [3014k]
Installing [123/131, time/total: 07:44/08:48]: tlg.windows [8649k]
Installing [124/131, time/total: 07:56/08:29]: tishell [34k]
Installing [125/131, time/total: 07:58/08:21]: tishell.windows [2830k]
Installing [126/131, time/total: 08:01/08:25]: tools [6400k]
Installing [127/131, time/total: 08:10/08:13]: unicode-data [314k]
Installing [128/131, time/total: 08:13/08:15]: uniquecounter [292k]
Installing [129/131, time/total: 08:16/08:17]: ur1 [260k]
Installing [130/131, time/total: 08:20/08:20]: xdv [176k]
Installing [131/131, time/total: 08:23/08:23]: zapfding [46k]
Time used for installing the packages: 08:24
[22:56:18] running mktexlsr C:\texlive\2025\texmf-dist ...
mktexlsr: Updating C:\texlive\2025\texmf-dist\ls-R...
mktexlsr: Updated C:\texlive\2025\texmf-dist\ls-R...
mktexlsr: Done.
Writing fmutil.cnf to C:\texlive\2025\texmf-dist\web2c\fontutil.cnf
Writing upmap.cfg to C:\texlive\2025\texmf-dist\web2c\upmap.cfg
Writing language.dat to C:\texlive\2025\texmf-var\tex\generic\config\language.dat
Writing language.def to C:\texlive\2025\texmf-var\tex\generic\config\language.def
Writing language.dat.lua to C:\texlive\2025\texmf-var\tex\generic\config\language.dat.lua
[22:56:36] running mktexlsr C:\texlive\2025\texmf-var C:\texlive\2025\texmf-config C:\texlive\2025\texmf-dist ...
mktexlsr: Updating C:\texlive\2025\texmf-var\ls-R...
mktexlsr: Updated C:\texlive\2025\texmf-var\ls-R...
mktexlsr: Updating C:\texlive\2025\texmf-config\ls-R...
mktexlsr: Updated C:\texlive\2025\texmf-config\ls-R...
mktexlsr: Updating C:\texlive\2025\texmf-dist\ls-R...
mktexlsr: Updated C:\texlive\2025\texmf-dist\ls-R...
mktexlsr: Done.
[22:56:45] running upmapdms --nohash ...done
[22:57:24] re-running mktexlsr C:\texlive\2025\texmf-var C:\texlive\2025\texmf-config ...
mktexlsr: Updating C:\texlive\2025\texmf-var\ls-R...
```

Windows Installation Guide

Windows Installation Steps:

1. Download the installer:

- Visit: <https://mirror.ctan.org/systems/texlive/tlnet/install-tl-windows.exe>
- Or use the direct link: <https://mirror.ctan.org/systems/texlive/tlnet/install-tl-windows.exe>

2. Run the installer:

- Double-click the downloaded `install-tl-windows.exe` file
- Allow administrator privileges if prompted

3. Follow the installation wizard:

- Choose installation directory (default: `C:\texlive\[year]`)

- Select installation scheme (recommended: full installation)
- Choose whether to create shortcuts
- Click "Install" to begin

4. Wait for installation to complete:

- Installation may take 30-60 minutes depending on internet speed
- Requires several gigabytes of disk space

5. Verify installation:

- Open Command Prompt or PowerShell
- Type `latex -version` to verify

Windows Installation Requirements

Requirement	Details
Operating System	Windows 7 or later
Disk Space	5-7 GB for full installation
Administrator Rights	Required for installation
Internet Connection	Required for downloading packages

5 MacTeX - MacOS Variant

- MacTeX - a variant for MacOS.

Generated figure (simulation)

MacTeX for MacOS.

MacTeX Information

MacTeX - TeX Live for MacOS:

MacTeX is the MacOS-specific distribution of TeX Live. It includes:

- Complete TeX Live installation
- Mac-specific tools and utilities
- TeXShop editor
- LaTeXiT equation editor
- BibDesk reference manager
- Easy installer package (.pkg)

Installation:

1. Download MacTeX from <https://tug.org/mactex/>
2. Open the downloaded .pkg file
3. Follow the installer instructions
4. Installation takes approximately 5-7 GB

Alternative: BasicTeX (smaller version) for users with limited disk space.

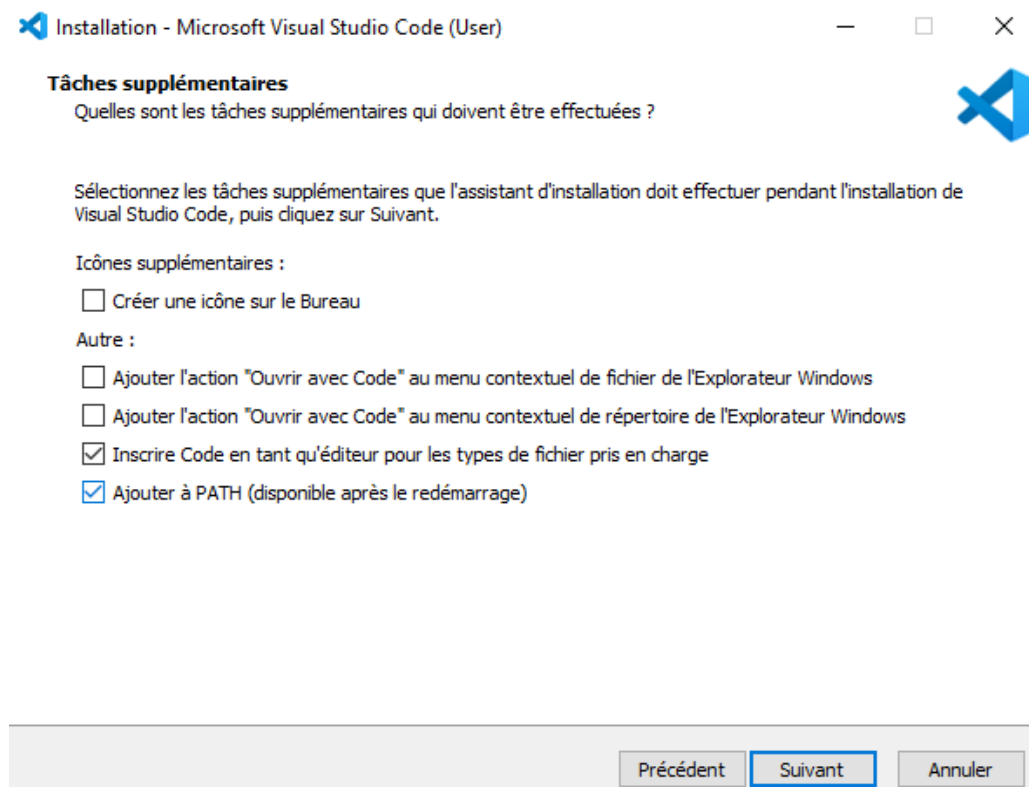
6 Editor Installation - Visual Studio Code

For editing LaTeX documents, Visual Studio Code with LaTeX extensions is recommended.

Generated figure (simulation)

VS Code installation options.

Screenshot



VS Code Installation Guide

Visual Studio Code Installation:

1. Download VS Code:
 - Visit: <https://code.visualstudio.com/>
 - Download the installer for your operating system

2. Installation options (important):

- Add "Open with Code" action - Recommended for easy file access
- Add to PATH - Essential for command line usage
- Register Code as editor - Associates .tex files with VS Code

3. Recommended LaTeX extensions:

- LaTeX Workshop
- LaTeX Utilities
- LTeX - LanguageTool grammar checker

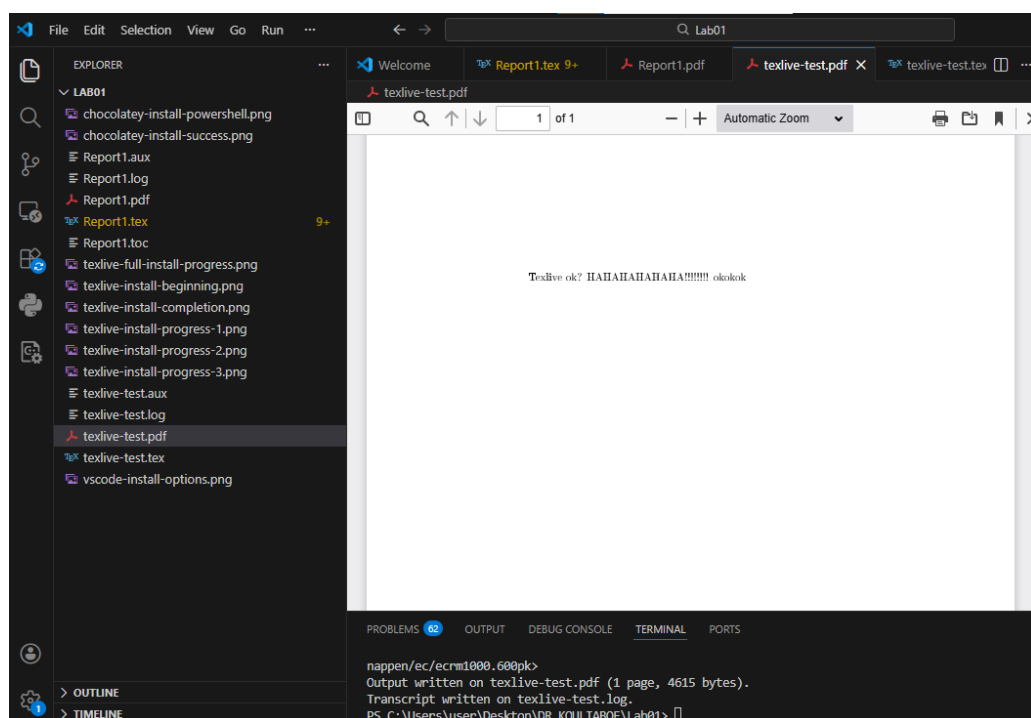
7 Verification and First Test

After installation, verify that TeX Live is properly installed by creating a simple document.

Generated figure (simulation)

Testing the installation.

Screenshot



Test Document

Create a test file test.tex:

```
\documentclass{article}
\begin{document}
Texlive ok? HAHAHAHAHAHA!!!!!!! okokok
\end{document}
```

Compile the document:

```
pdflatex test.tex
```

Expected output:

- test.pdf should be created
- No error messages
- PDF viewer should display "Hello, TeX Live!"

Verification Commands

Command	Purpose
latex -version	Show LaTeX version information
pdflatex -version	Show pdfTeX version
tex -version	Show TeX version
tlmgr -version	Show TeX Live Manager version

Conclusion: TeX Live Installation Methodology

After comprehensive analysis of TeX Live installation methods, here is the structured methodology for successfully installing and configuring TeX Live:

1. Installation Methods Comparison

Method	Platform	Advantages	Disadvantages
Package Manager	Linux, Windows (Choco)	Easy, integrated	May be outdated
Manual Install	All platforms	Latest version, control	Complex, manual steps
MacTeX	MacOS	Optimized, tools included	MacOS only

2. Recommended Installation Workflow

Step : Choose installation method based on OS

- **Linux (Ubuntu/Debian):** `sudo apt install texlive-full`
- **Linux (others):** Manual installation or distribution packages
- **Windows:** Manual installer or Chocolatey
- **MacOS:** MacTeX from official website