

LATEX 101

El editor de textos científicos

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26 de junio de 2019

THE
NINJA PROJECT



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- 1 Introducción
- 2 Empezar a usar L^AT_EX
- 3 Estructura del documento
- 4 Consejos y buenas prácticas
- 5 Bibliografía y recursos



Código del taller

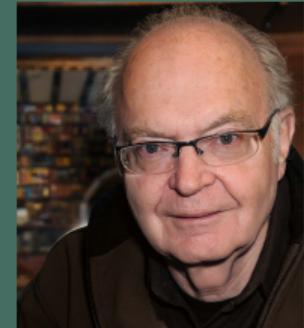


<https://github.com/next-security-lab/latex-101>



¿Qué es TEX?

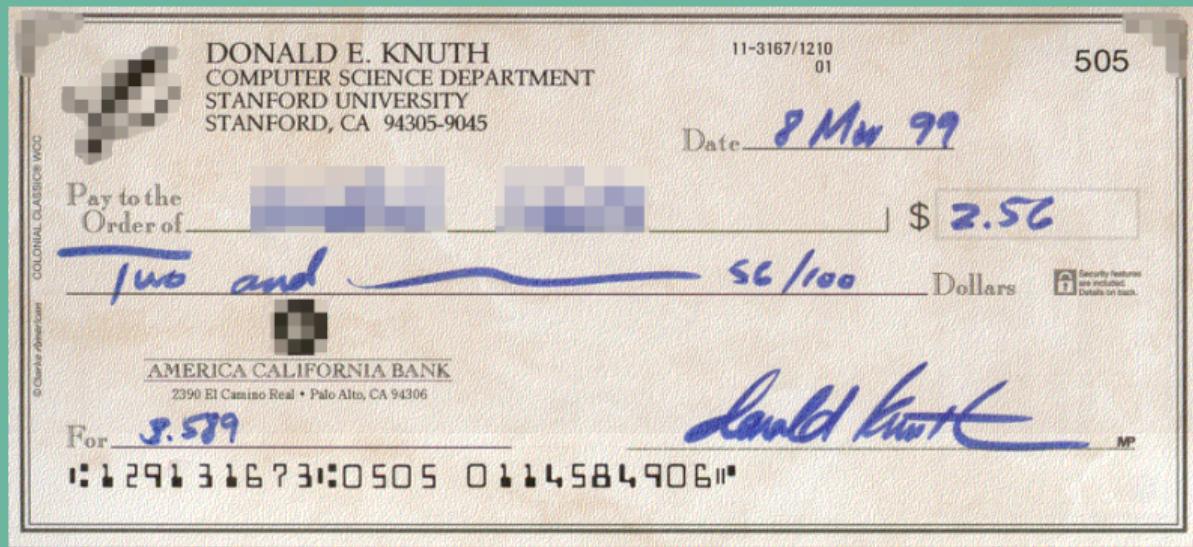
En mayo de 1977, Donald Knuth de la universidad de Stanford comenzó a trabajar en un **sistema para procesar textos** llamado TEX, que desarrolló y publicó de manera libre. Si el sistema tuviera un coste, podría valer varios cientos de miles de dólares.



<https://www-cs-faculty.stanford.edu/~knuth>

¿Qué es TEX?

<http://wiki.c2.com/?SoftwareMasterpiece>



¿Qué es TEX?

- **Primero las malas noticias:** TEX es un programa **grande y complicado** que hace un esfuerzo extraordinario para producir un **material atractivo** para la **composición tipográfica**.
- **Ahora las buenas noticias:** el texto es muy **fácil de maquetar** usando TEX. Así que es posible empezar con un texto más fácil y trabajar en situaciones más complicadas.



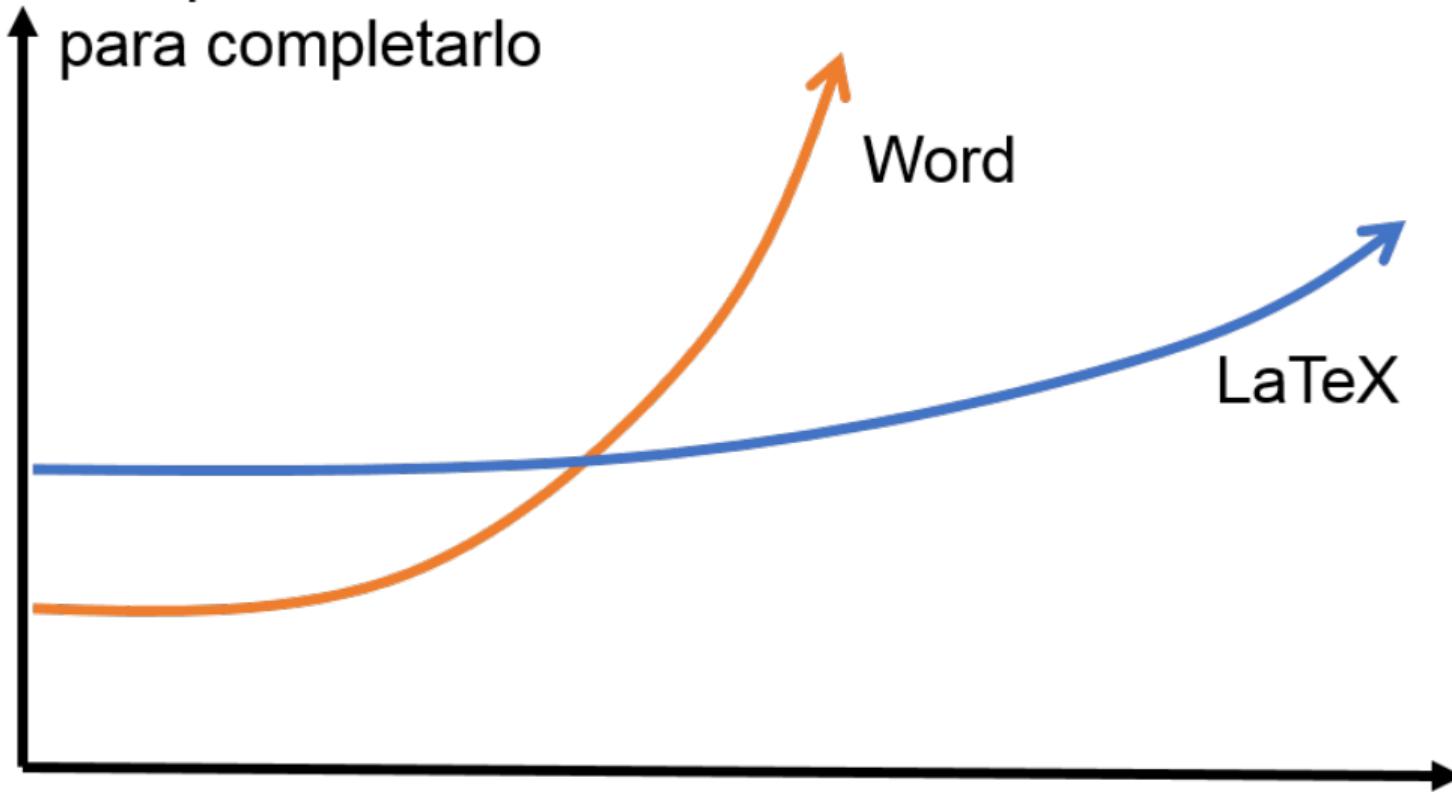
- LATEX es una herramienta utilizada para crear documentos de aspecto profesional. Se basa en la idea de **WYSIWYM** (lo que ves es lo que quieras decir), lo que significa que sólo tienes que centrarte en el contenido de tu documento y el ordenador se encargará del formateo.
- En lugar de espaciar el texto en una página para controlar el formato, como con Microsoft Word o LibreOffice Writer, los usuarios pueden ingresar texto plano y dejar que LATEX se encargue del resto.



Diferencia entre \TeX y \LaTeX

- \TeX es una mezcla entre **procesador de textos** y **lenguaje de programación** usado fundamentalmente para escribir documentos de contenido científico y gran calidad de impresión.
- \LaTeX es un **conjunto generalizado de macros** que te permite hacer multitud de cosas. La mayoría de la gente no quiere tener que programar \TeX , especialmente para configurar cosas como secciones, páginas de título, bibliografías, etc. \LaTeX proporciona todo eso: estas son las “macros” que lo componen.

Tiempo necesario
para completarlo



“Complejidad” del documento



Word vs L^AT_EX

Características	Word	L ^A T _E X
Velocidad pequeños documentos	★★★	★★
Velocidad grandes documentos con gráficos	★	★★★
Facilidad de uso	★★★	★★
Calidad del documento	★★	★★★
Características científicas	★	★★★
Precio y disponibilidad	★	★★★
Compatibilidad	★★	★★



Le premier livre de Moïse,

Dict Genese.



ARGUMENT.

Ce premier livre comprend l'origine & causes de toutes choses, principalement la creation de l'homme, qu'il a esté du commencement, sa chute & relevement : comment d'en tous ont esté procreés, & pour leurs enormes pechés Dieu les a consignés, par le deluge, refermé huilé, dont la semence a rempli toute la terre. Puis il descrit les rues, faufts, religion, & lignées des saints Patriarches, qui ont reçu devant la Loy. Les bénédictons, promesses, & alliances du Seigneur faites aux hommes : Comment de la terre de Chanaan fous descendus en Egypte. Aucuns ont appellé ce livre, le livre des Juifs. Toutefois ceci a obtenu entre nos predececeurs & nous, qu'il est appellé Genese, qui est un mot Grec, signifiant generation & origine : d'autant qu'en icelui est descripte l'origine & procreation de toutes choses : & nommement des Peres anciens, qui ont esté tant devant qu'après le deluge, & en regard à Iesus CHRIST descendent d'yeux selon la chair.

¹Ce premier chapitre est fort difficile : & pour cette cause, il estoit defendu entre les Hebreux de le lire & interpréter devant l'assemblée des hommes.

²Fut de rien, & sans aucune matière.

³Iob 38.4, Pjaco. 33.6, & 39.12, 35.5. Ecclésiast. 13.3. Alt. 14.7, & 17.14

⁴Tout premièrement, & aussi qu'il y eut aucune création, Zeph. 1.3.

⁵Hebre. 11.3.

⁶Le ciel & la terre, les eaux, les abysses, le prennent ici pour une matière chose : sié, pour une matière cohue de sans forme, q dieu forma & agensa après par sa Parole.

⁷Ou, se mouvoit. Cest, foulonnent et conservant en son être cette matière confuse. Car il est impossible, q aucune chose après avoir été faite, puisse subsister en son état immobile, si Dieu ne la

⁸Creation du ciel & de la terre, II, 10. & de tout ce qui y est compris. 3.14. De la lumiere aussi, 26 & de l'homme, 18. A quel tout est assubiecti. 2.2. 18 Dieu bénit toutes ses œuvres, 31 q il a accomplies en six jours.

CHAPITRE I.



1 Ieu ^acrea
^bau com
mence -
ment ^cle
ciel & la
terre.
2 Or la
terre es-
toit sans
forme, &
vuide, & les tenebres estoient sur les
abysses : & l'Esprit de Dieu ^destoit
espandu par dessus les eaux.

3 Adonc Dieu dit, ^eQu'il y ait lumie-

les eaux, qui estoient sous l'estendue,
d'aucelles, qui estoient sur l'estendue. Et fut ainsi fait.

8 Et Dieu appela l'estendue, Ciel. Lors
fut fait le soir & le matin du second
jour.

9 ¶ Puis Dieu dit, ^fQue les eaux, qui
sont sous le ciel, soyent assemblées en
vn lieu, & que le sec apparoisse. Et fut
ainsi fait.

10 Et Dieu appella sec, Terre, & l'assem-
blee des eaux, mers. Et Dieu vid que
celà estoit bon.

11 Et Dieu dit, Que la terre produise
verdure, herbe produisant semence, &
arbre fruitier, faisant fruit selon son
espece, lequel ait sa semence en soy-mes-
me sur la terre. Et fut ainsi fait.

pourquoy les Hebreux omettent
la voix naturel le soir avec le Soleil
descendant.

⁸Ce mot d'illé
dieu, comprend tout
ce q'il le voit par
dessus nous, car ce
la region céleste,
spécialement.

⁹Pjaco. 33.7.

¹⁰Il est ici parlé
de deux manières
deux : aquante,
celle q sont lori
l'ellendue, comme
la mer, les fleuves,
& autres qui font
sur la terre de celles
qui sont sur
l'ellendue, comme
sont les mers plu-
ies deau q sont
en sur par dessus
nous. Dieu a mis
entre ces deux for-
ces deux voix grâ-
de ellendue, qu'on
appelle le ciel : de
la nous appellen-
t les cielins du ciel.

¹¹Ceux appartenent au
feuille tout auquel
Dieu regne, & fit approuver la terre du
mieux des eaux.

¹²Il influe un
nouvel ordre en
nature, quand il
faut de ordonne le

GENERALIZED MODEL OF THE IDEAL GAS

2

When generalizing the model of an ideal gas, the first step is to determine whether a parametric⁸ or an explicit notation⁹ is desirable. Later in the exercise, explicit notations are used exclusively, suggesting the use of an explicit answer. Since the unit axis \mathbf{v}_x in velocity space can be chosen arbitrarily in three dimensions, we can for instance state for the velocity distribution along the y -axis¹⁰

$$g(v_y) \propto e^{-mv_y^2/2k_B T}.$$

The above expression is a velocity distribution of molecules, with for each value of the length of vector \mathbf{v}_y . The expression defines a proportion of the number of molecules corresponding to that condition. To calculate this proportion, we can take an piece of the velocity distribution of width dv_y , to consequently multiply it thereto. The small size of the infinitesimal causes $g(v)dv$ to not change in value across such a small part of the x -axis. As such, the expression can be visualized as a bar of height $g(v_y)$ and width dv_y . When integrating across multiple dimensions, the area which is between the limits v_x and $v_x + dv_x$, v_y and $v_y + dv_y$, and v_z and $v_z + dv_z$, then encloses the region in velocity space of v and $v + dv$. Multiplication of each bar so to say ‘filters’ the right volume in velocity y -space¹¹. Translating this to an expression, we can derive the proportionality in velocity y -space to be

$$g(v)dv \propto g(v_x)g(v_y)g(v_z)dv_x \cdot dv_y \cdot dv_z.$$

Filling in the relation given in the exercise description, we find

$$g(v)dv \propto e^{-m(v_x^2+v_y^2+v_z^2)/2k_B T} dv_x \cdot dv_y \cdot dv_z.$$

By virtue of the pythagorean theorem, we may use relation $v^2 = v_x^2 + v_y^2 + v_z^2$ to rewrite common terms, for a final relation of

$$g(v)dv \propto e^{-mv^2/2k_B T} dv. \quad (1)$$

A

⁸ A notation of the form $g(\mathbf{v}) = (g(v_x), g(v_y), g(v_z))$.

⁹ This is a single expression for $g(v) = \dots$, which can be integrated as is.

¹⁰ Since the x - and y -axes can be interchanged arbitrarily. Furthermore, the same goes for the velocity distribution along the z -axis.



Figure 1: The velocity distribution and the corresponding bar of width dv .

¹¹ This is the process of multiple integration.

- ¹⁰ The volume of a sphere is $V = \frac{4}{3}\pi r^3$, which is already an integrand.

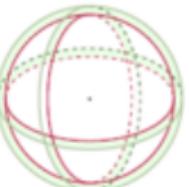


Figure 2: Each of the spheres has a volume V corresponding to respectively $r = v + dv$ (green) and $r = v$ (purple). The element dV is the region in space enclosed by these two spheres.

¹² The binomial expansion here is $(v + dv)^3 = v^3 + 3v^2dv + 3v(dv)^2 + (dv)^3$.

¹³ That is, to set $(dv)^2 \approx 0$ and $(dv)^3 \approx 0$.

C

obtained by evaluating the well-known formula for the volume of a sphere, between lower limit v and upper limit $v + dv$. Evaluating the upper and lower limit, we find that one term cancels. First, we subtract the upper limit from the lower limit of our known formula¹²,

$$V = \frac{4}{3}\pi [(v + dv)^3 - v^3].$$

Using the binomial theorem¹³, the expression for volume after cancellation of terms is given by

$$V = \frac{4}{3}\pi [3v^2dv + 3v(dv)^2 + (dv)^3].$$

Since in real case scenarios the infinitesimal approaches zero, within the limit of $\lim_{dv \rightarrow 0}$, we may pose that powers of these infinitesimals equal zero in this limit¹⁴, for our expression of volume to become

$$V = 4\pi v^3 dv. \quad (2)$$

When considering the fraction of molecules travelling in any direction in space, the expression $g(v)$ previously calculated can be interpreted as a weighting factor for each infinitesimal unit of volume dV . Interpreting this shell, it contains a set of vectors about v and $v + dv$, but the amount of molecules N corresponding with that speed varies with how large a given v is. The size of N for a particular v is then described by our expression $g(v)$. When we want to know what amount of molecules corresponds to a particular element dV in v -space, we must evaluate

$$dN = g(v) \cdot dV.$$

To combine our previously calculated result from equation 1, we must first cancel the infinitesimals on both sides of the proportionality sign. Observing that volume V from equation 7 is already an integrand, we may denote the desired expression to be

$$dN \propto 4\pi v^2 e^{-mv^2/2k_B T} dv,$$

where dN is the non-normalized fraction $f(v)dv$. The desired expression for $f(v)dv$ is the same as the expression above, with an equals sign rather than a proportionality sign. To obtain this result, simply add in a constant on the right hand side of the relation,

$$f(v)dv = 4\pi C v^2 e^{-mv^2/2k_B T} dv,$$





Canoe who?



Canoe help me with my homework?

Fri @ 12:03 PM



please I'm gonna fail

viața noastră, lui Hristos, Dumnezeu să o dăm.

and all our life to Christ our God.



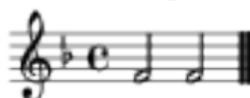
Ti-e Doam - ne.

Credinciosii: Tie, Doamne.

Preotul: Că Tie se cuvine toată slava, cinstea și
închinăciunea, Tatălui și Fiului și Sfântului Duh,
acum și pururea și în vecii vecilor.

People: To You, O Lord.

Priest: For to You belong all glory, honor, and
worship to the Father and the Son and the Holy
Spirit, now and forever and to the ages of ages.



A-min.

Credinciosii: Amin.

People: Amen.

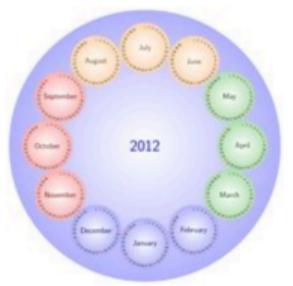
ANTIPONUL ÎNTÂI²



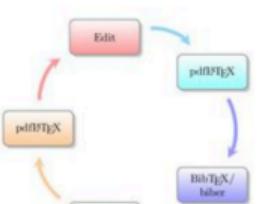
Mă-ri-re Ta-tă-lui și Fi-u-lui și Sfân-tu-lui Duh, și a-cum și pu-ru-re-a și în ve-cii

THE FIRST ANTIKHN²

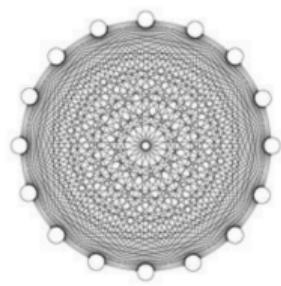
[https://tex.stackexchange.com/questions/1319/
showcase-of-beautiful-typography-done-in-tex-friends](https://tex.stackexchange.com/questions/1319/showcase-of-beautiful-typography-done-in-tex-friends)



A calendar of circles
[PDF] [TEX] [Open in Overleaf]



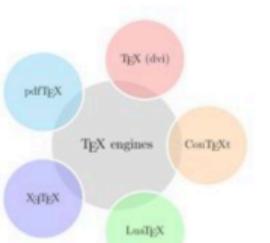
A circular diagram of a TeX workflow
[PDF] [TEX] [Open in Overleaf]



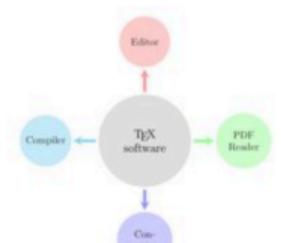
A complete graph
[PDF] [TEX] [Open in Overleaf]



A descriptive diagram of TikZ tasks
[PDF] [TEX] [Open in Overleaf]



A diagram of TeX engines
[PDF] [TEX] [Open in Overleaf]



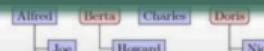
A diagram of TeX software
[PDF] [TEX] [Open in Overleaf]

Spy library	5
Styles	36
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Trees	16

Tags

3D	34
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<http://texexample.net/tikz/examples/all>



PGF 2.0
PGF 3.0

10
5

Empezar a usar L^AT_EX

Es necesario tener instalado

- El motor de L^AT_EX.
- Un editor de textos (sea especializado o no en L^AT_EX).



Instalación

En primer lugar es necesario descargar el motor de L^AT_EX, que varía según el sistema operativo.

Motor			
Miktex	✓*	✓	✓
TexLive	✗	✓	✓*
MacTex	✗	✓*	✗

Getting MiKTeX

MiKTeX is available for selected operating systems. Please check the [prerequisites](#) in order to find out whether your system is supported.

If your system is not (yet) supported: it is not too difficult to [build MiKTeX](#).

 Windows

 Mac

 Linux

 Docker

[All downloads](#)

Install on Windows

[Installer](#)

[Portable Edition](#)

[Command-line installer](#)

Installer

To install a basic TeX/LaTeX system on Windows, download and run this installer.

Please

<https://miktex.org/download>

File name: basic-miktex-2.9.7100-x64.exe



[TWG](#) | [MacTeX](#) | [Donate](#) | [FAQ](#) | [Fonts](#) | [Help](#) | [References](#) | [Support](#) | [Acknowledgments](#) | [TUG](#)

The MacTeX-2019 Distribution

Policy on Supported-Systems

Please Read

The current distribution is MacTeX-2019

This distribution requires Mac OS 10.12, Sierra, or higher and runs on Intel processors.

To download, click [MacTeX Download](#).

You can also install TeX Live 2019 using the TeX Live Unix Install Script.

This method supports MacOS 10.6, Snow Leopard, and higher and runs on Intel processors.

To download, click [Unix Download](#).

To download the smaller BasicTeX, click [Smaller Download](#).

For suggestions on keeping TeX up to date, go to [Update Schedule](#).

To Obtain Older Versions of MacTeX If You Are Running Mac OS 10.3 through 10.11, [click here](#)

<https://tug.org/mactex>

TeX Live

TeX Live is an easy way to get up and running with the [TeX document production system](#). It provides a comprehensive TeX system with binaries for most flavors of Unix, including GNU/Linux, [macOS](#), and also Windows. It includes all the major TeX-related programs, macro packages, and fonts that are free software, including support for many languages around the world.

- **How to acquire TeX Live:** [download](#), [on DVD](#), [other methods](#).
- [Quick install for Unix](#); [installation and release notes for Windows](#); for MacOSX, see the [MacTeX distribution](#).
- [Documentation](#)
- [Contact and mailing lists](#).
- [Known issues](#) and [highlights of changes](#) in the current release (details for [LuaTeX](#), [pdfTeX](#), [XeTeX](#)).
- [Portable \(USB and DVD\) usage](#) of TeX Live.
- [Installing/updating packages after installation](#) and [full upgrade from previous years](#).
- [TeX Live licensing](#), and [integration with operating system distributions](#).
- [Development source repository](#), and [building the sources](#).
- [How you can help](#).
- Current release: TeX Live 2019 is [available over the Internet](#) and [on DVD](#). It was released on 29 April 2019, and [ongoing updates are available](#).

Some starting points for actually using TeX are in this [introduction to the TeX world](#).

TeX Live has been developed since 1996 by collaboration between the [TeX user groups](#). TeX Live was originally perpetrated by Sebastian Rahtz. Present miscreants include Akira Kakuto, Karl Berry, Luigi Scarso, Mojca Miklavec, Norbert Preining, Reinhard Kotucha, Siep Kroonenberg, and [a cast of thousands](#).

\$Date: 2019/05/31 16:11:00 \$;

[TUG home](#)

<https://tug.org/texlive>

Ubuntu

```
sudo apt-get install texlive-latex-base  
# OR  
sudo apt-get install texlive-latex-full
```

IDEs

- Lyx: <https://www.lyx.org>
- TexShop: <https://pages.uoregon.edu/koch/texshop>
- TeXworks: <http://www.tug.org/texworks>
- WinEdt: <http://www.winedt.com>

https://en.wikipedia.org/wiki/Comparison_of_TeX_editors

/home/tim/Dokumente/testtex/texstudio.tex - TeXstudio

untitled texstudio.tex

```
\documentclass[a4paper]{article}
\usepackage{graphicx}
%opening
\title{TeXstudio \ An integrated writing environment for \LaTeX}
\author{Tim Hoffmann}

\begin{document}

\maketitle

\begin{abstract}
TeXstudio is an integrated writing environment for creating LaTeX documents. It integrates editing, building and viewing into a single front end. Our goal is to make writing LaTeX as easy and comfortable as possible. This is achieved through a rich feature set.
\end{abstract}

\section{The Logo}

\begin{figure}[h]
\centering
\includegraphics[width=0.4\linewidth]{logo128}
\caption{This is the TeXstudio logo.}
\label{fig:logo128}
\end{figure}

\section{Mission statement}

Line: 16 Column: 0 INSERT
```

Messages Log Preview Search Results

Process started: pdflatex -synctex=1 -interaction=nonstopmode "texstudio".tex

Process exited normally.

TeXstudio
An integrated writing environment for L^AT_EX

Tim Hoffmann
June 12, 2014

Abstract

TeXstudio is an integrated writing environment for creating LaTeX documents. It integrates editing, building and viewing into a single front end. Our goal is to make writing LaTeX as easy and comfortable as possible. This is achieved through a rich feature set.

1 The logo

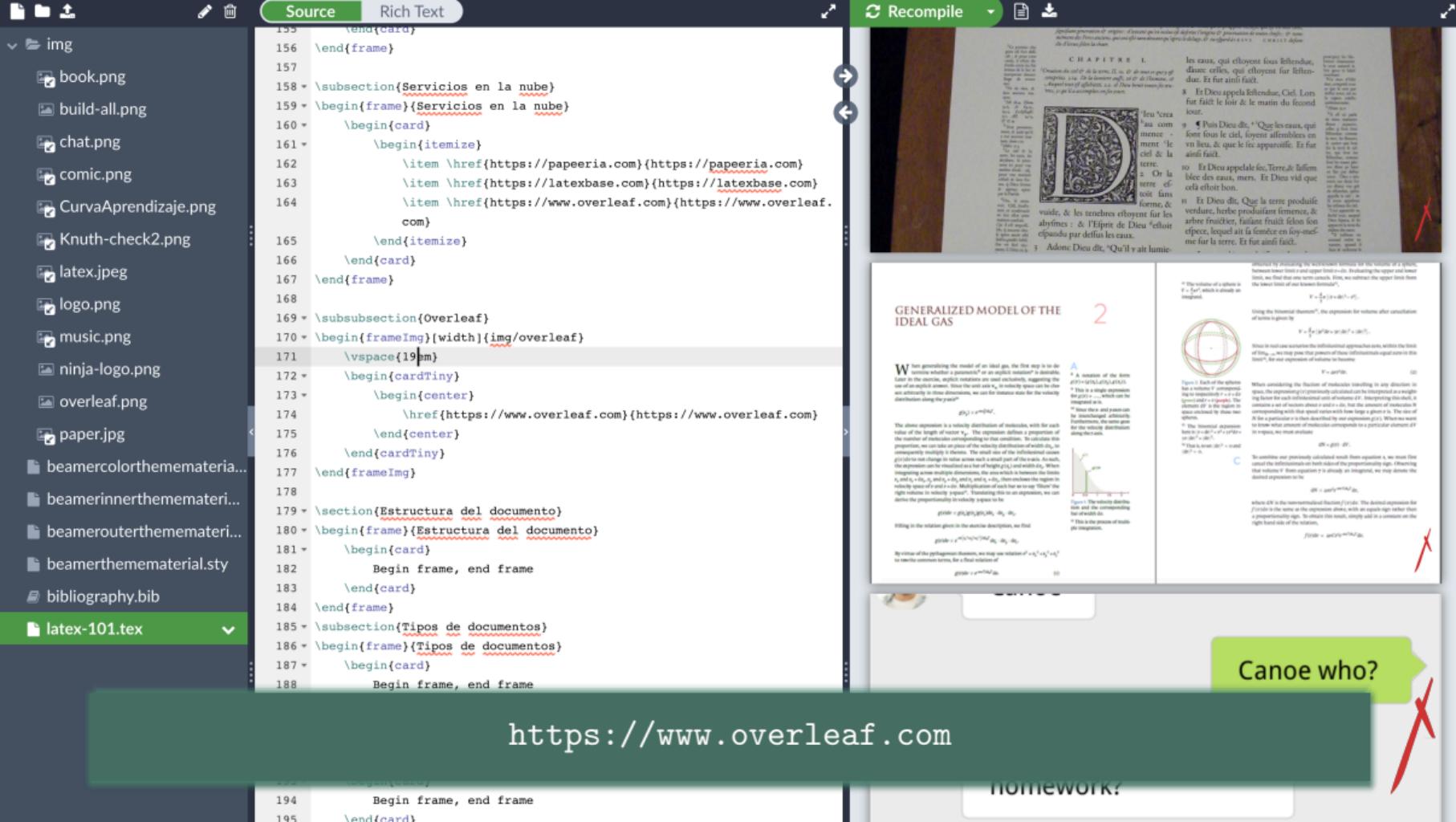


<https://www.texstudio.org>

en_GB UTF-8 Ready Normal Mode

Servicios en la nube

- Papeeria: <https://papeeria.com>
- L^AT_EX Base: <https://latexbase.com>
- Authorea: <https://www.authorea.com>
- L^AT_EX Online Editor: <https://latexonlineeditor.net>
- OverLeaf: <https://www.overleaf.com>



Estructura del documento

```
\documentclass[options]{class}  
  
\usepackage[options]{package}  
...  
  
\begin{document}  
...  
\end{document}
```

Clases de documentos

Clase	Uso
article	Artículos en revistas científicas, informes cortos
report	Informes con capítulos, libros pequeños, tesis
book	Libros
beamer	Presentaciones
IEEEtran	Artículos con el formato IEEE Transactions
letter	Cartas
slides	Presentaciones (con letra sans serif)
memoir	Variante de book



Clases de documentos (opciones)

Opción	Descripción
10pt, 11pt, 12pt	Tamaño de la fuente principal
a4paper, letterpaper, ...	Tamaño del papel
twocolumns	Cambia el texto a dos columnas
landscape	Documento apaisado



Dividiendo el documento

Comando	Comentario
\part	No disponible en letter
\chapter	Sólo en book y report
\section	No disponible en letter
\subsection	No disponible en letter
\subsubsection	No disponible en letter
\paragraph	No disponible en letter
\ subparagraph	No disponible en letter

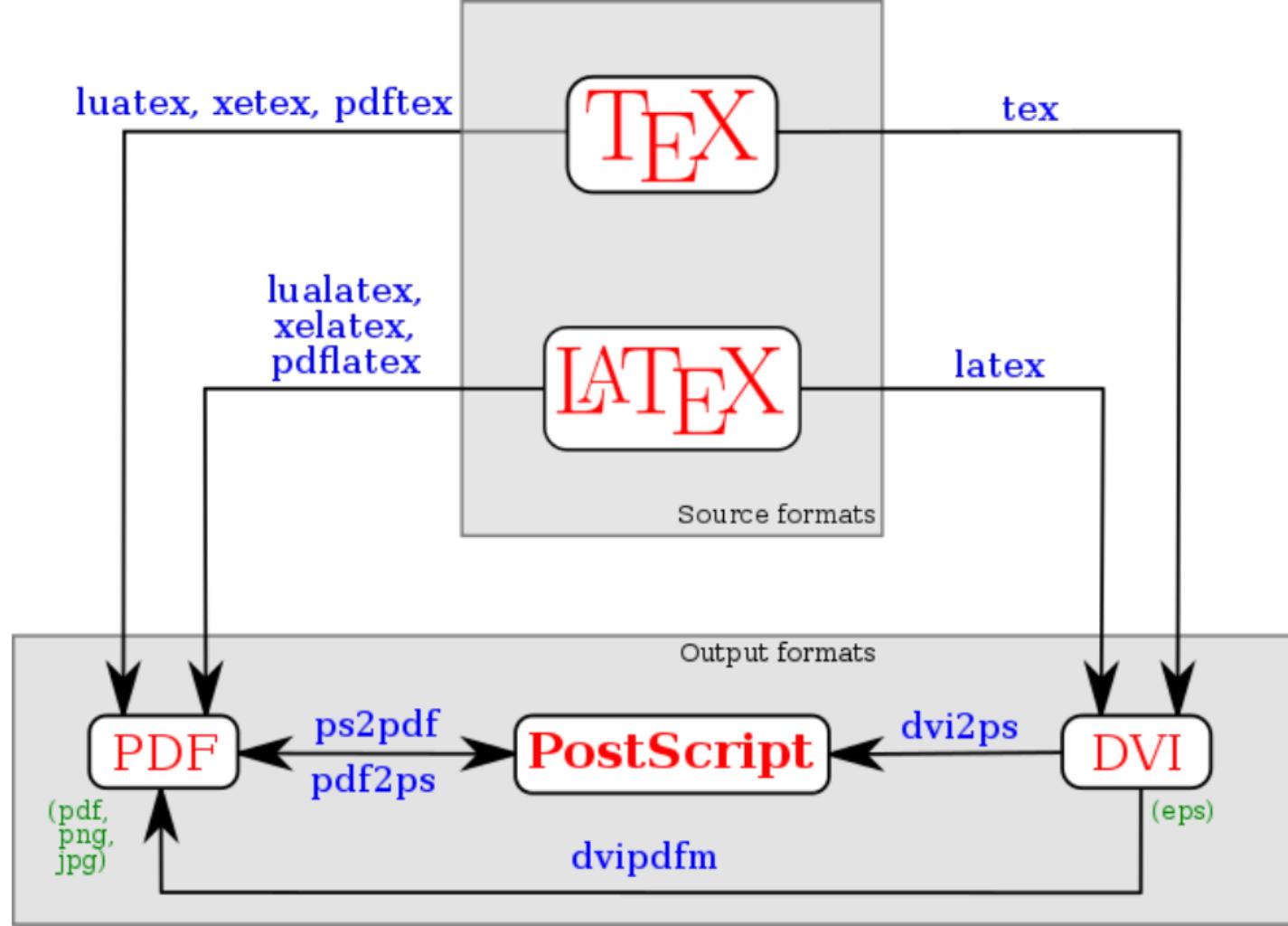


Hello World

```
\documentclass{article}
\usepackage[utf8]{inputenc}

\title{Taller \LaTeX}
\author{Miguel Hernández \and José Ignacio Escribano}
\date{26 de junio de 2019}

\begin{document}
    \maketitle
    \section{Hello World!}
    Hello World!
\end{document}
```



Paquetes útiles

- `amsmath, amsfonts`: recursos matemáticos.
- `TikZ/Pgf`: gráficos de alta calidad.
- `pgfplots`: gráficos de alta calidad.
- `geometry`: control de las dimensiones en la página.
- `xcolor`: definición de colores y esquemas de colores predefinidos.
- `booktabs`: tablas atractivas.
- `fancyhdr`: control de los encabezados y pies de página.
- `hyperref`: hiperenlaces en el documento.
- `subcaption`: subfiguras en el documento.
- `babel`: cambio de idioma del documento.



Ejercicio 1



SOLUCIÓN

[https://github.com/next-security-lab/latex-101/tree/
master/ejercicios/ejercicio-1](https://github.com/next-security-lab/latex-101/tree/master/ejercicios/ejercicio-1)





Packages

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Banner



*Initiation
à LATEX*

<https://ctan.org/pkg>

Modos de L^AT_EX

- Modo texto.
- Modo matemático. Permite añadir ecuaciones, fórmulas, etc.
Se puede entrar usando $\$...$$, $\$\$...$$$, $\backslash(...\backslash)$ o $\backslash[...\backslash]$.
Algunos símbolos sólo se pueden usar en determinados modos.

Modo matemático (fracciones y raíces)

```
\frac{num}{den}
```

$$\frac{\text{num}}{\text{den}}$$

```
\dfrac{num}{den}
```

```
\sqrt{n}
```

$$\sqrt{n}$$

```
\sqrt[p]{n}
```

$$\sqrt[p]{n}$$


Modo matemático (superíndices y subíndices)

$a^{\wedge}\{b\}$

a^b

$a_{\wedge}\{b\}$

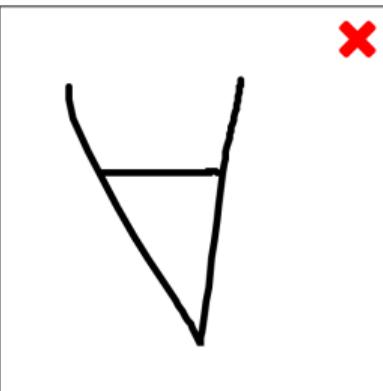
a_b



Modo matemático (algunos símbolos útiles)

Símbolos	Código L ^A T _E X	Ejemplos
Letras griegas	\alpha, \beta, \Gamma, \Delta, ...	$\alpha, \beta, \Gamma, \Delta \dots$
Operadores binarios	\times, \otimes, \cup, \cap, ...	$\times, \otimes, \cup, \cap, \dots$
Operadores de relación	<, >, \subset, \supset, \subseteq, ...	$<, >, \subset, \supset, \subseteq, \dots$
Otros	\int, \oint, \sum, \prod, ...	$\int, \oint, \sum, \prod, \dots$

Detexify

[classify](#)[symbols](#)

Want a Mac app?

Lucky you. The Mac app is finally stable enough. See how it works on [Vimeo](#). Download the latest version [here](#).

Restriction: In addition to the LaTeX command the unlicensed version will copy a reminder to purchase a license to the clipboard when you select a symbol.

You can purchase a license here:

 [Buy Detexify for Mac](#)



Score: 0.05292299771700715

\forall

mathmode



Score: 0.05658562661451297

\usepackage{ amssymb }

\veebar

mathmode



Score: 0.0798106354082458

\usepackage{ textcomp }

\texttwon

textmode



Score: 0.12031805501397745

\usepackage{ tipa }

\textbaru

textmode



Score: 0.1555685260100239

\usepackage{ tipa }

\textcrlambda

textmode

The symbol is not in the list? [Show more](#)

Did this help?

<http://detexify.kirelabs.org/classify.html>



Ejercicio 2



SOLUCIÓN

[https://github.com/next-security-lab/latex-101/tree/
master/ejercicios/ejercicio-2](https://github.com/next-security-lab/latex-101/tree/master/ejercicios/ejercicio-2)



Formato y elementos del documento

- Negrita, cursiva y subrayado.
- Listas numeradas y no numeradas.
- Imágenes.
- Figuras.
- Tablas.
- Bibliografía y citas.



Negrita, cursiva y subrayado

Tipo	Modo texto	Modo matemático
Negrita	<code>\textbf{...}</code>	<code>\mathbf{...}</code>
Cursiva	<code>\textit{...}</code>	<code>\mathit{...}</code>
Subrayado	<code>\underline{...}</code>	<code>\underline{...}</code>



Listas numeradas y no numeradas

```
\begin{enumerate}
    \item A
    \item B
    \item C
\end{enumerate}
```



```
\begin{itemize}
    \item A
    \item B
    \item C
\end{itemize}
```

- 1 A
- 2 B
- 3 C

- A
- B
- C



Imágenes

```
\usepackage{graphicx}
```

- **NOTA:** no soporta el formato SVG.

```
\includegraphics[width=3cm]{<ruta al fichero>}
```



Figuras

```
\begin{figure}[htbp!]
    \centering
    \includegraphics[width=3cm]{<ruta
    → al fichero>}
    \caption{Logo de BBVA Next}
    \label{fig:logo_next}
\end{figure}
```

...

El logo de BBVA Next se puede ver la
→ Figura~\ref{fig:logo_next}.



Figura 1: Logo de BBVA Next

El logo de BBVA Next se
puede ver la Figura 1.





Ejercicio 3



SOLUCIÓN

[https://github.com/next-security-lab/latex-101/tree/
master/ejercicios/ejercicio-3](https://github.com/next-security-lab/latex-101/tree/master/ejercicios/ejercicio-3)



Tablas

```
\usepackage{booktabs}
```

```
\begin{table}[htbp!]
\begin{tabular}{@{}ll@{}}
\toprule
\textrm{\textbf{Col 1}} & \textrm{\textbf{Col 2}} \\
\midrule
A & B \\
C & D \\
\bottomrule
\end{tabular}
\end{table}
```

Col 1	Col 2
A	B
C	D



LaTeX Table Generator



File ▾ Edit ▾ Table ▾ Column ▾ Row ▾ Cell ▾ Help ▾

Show an example table



Booktabs table style ▾

	A	B
1	Columna 1	Columna 2
2	A	B
3	C	D

Generate

Result (click "Generate" to refresh)

Copy to clipboard

```
1 % Please add the following required packages to your document preamble:  
2 % \usepackage{booktabs}  
3 % \usepackage{graphicx}  
4 \begin{table}[]
```

<https://www.tablesgenerator.com>

```
9 \textbf{Columna 1} & \textbf{Columna 2} \\ \midrule  
10 A & B \\
```

Bibliografía y citas

- Normalmente se usa un fichero externo que contiene la bibliografía.
- Fichero con formato bib.
- Formado por entradas con título, autor, revista, año de publicación, etc.

```
@online{knuthwebsite,  
    author = "Donald Knuth",  
    title = "Knuth: Computers and Typesetting",  
    url = "http://www-cs-faculty.stanford.edu/~uno/abcde.html",  
    addendum = "(accessed: 01.09.2016)",  
    keywords = "latex,knuth"  
}
```



Ejercicio 4



SOLUCIÓN

[https://github.com/next-security-lab/latex-101/tree/
master/ejercicios/ejercicio-4](https://github.com/next-security-lab/latex-101/tree/master/ejercicios/ejercicio-4)



Bibliografía y citas

```
% Para citar una referencia
```

La página web de Donald Knuth se puede encontrar
→ en~\cite{knuthwebsite}.

```
% Se puede cambiar. Ver
```

```
% https://tinyurl.com/y3y38rwv
```

```
\bibliographystyle{plain}
```

```
% No es necesaria la extensión bib
```

```
\bibliography{bibliography}
```



Ejercicio 5



SOLUCIÓN

[https://github.com/next-security-lab/latex-101/tree/
master/ejercicios/ejercicio-5](https://github.com/next-security-lab/latex-101/tree/master/ejercicios/ejercicio-5)



Consejos y buenas prácticas

- No utilizar todo código de internet. La mayoría está desactualizado.
- No reinventar la rueda. Buscar paquetes con la funcionalidad deseada en CTAN.
- Usar Git (u otro sistema de control de versiones).
- No usar paquetes desactualizados.

- Are there any coding style guidelines for LaTeX?
- \LaTeX Best Practices: Lessons Learned from Writing a PhD Thesis
- Una guía esencial para el correcto uso de \LaTeX



Errores comunes

- Olvidar cerrar paréntesis, llaves, corchetes, etc.
- Usar símbolos de modo texto en modo matemático y viceversa.
- Olvidar borrar los ficheros auxiliares tras compilar varias veces un proyecto. En TexStudio, menú Edit > Clean Auxiliary Files.

Bibliografía I

-  G. Grätzer.
Practical LaTeX.
Computer Science. Springer International Publishing, 2014.
-  Donald E. Knuth.
The TeXbook.
Addison-Wesley Professional, 1986.
-  H. Kopka and P.W. Daly.
Guide to LaTeX (Adobe Reader).
Tools and Techniques for Computer Typesetting. Pearson Education, 2003.
-  S. Kottwitz.
LaTeX Beginner's Guide.
Learn by doing : less theory, more results. Packt Pub., 2011.

Bibliografía II

-  S. Kottwitz.
LaTeX Cookbook.
Packt Publishing, 2015.
-  L. Lamport.
LaTeX: A Document Preparation System, 2/E.
Pearson Education, 1994.
-  Frank Mittelbach, Michel Goossens, Johannes Braams, David Carlisle, and Chris Rowley.
The LaTeX Companion (Tools and Techniques for Computer Typesetting).
Addison-Wesley Longman Publishing Co., Inc., Boston, MA, USA, 2nd edition, 2004.

Recursos

- texblog: because \LaTeX matters
- Miniejercicios con \LaTeX
- Documentation – Overleaf
- \LaTeX – Wikibooks, open books for an open world
- StackExchange – \TeX

LaTeX 2ε Cheat Sheet

Document classes

`book` Default is two-sided.
`report` No `\part` divisions.
`article` No `\part` or `\chapter` divisions.
`letter` Letter (?).
`slides` Large sans-serif font.
Used at the very beginning of a document:
`\documentclass{class}`. Use `\begin{document}` to start contents and `\end{document}` to end the document.

Common documentclass options

`10pt/11pt/12pt` Font size.
`letterpaper/a4paper` Paper size.
`twocolumn` Use two columns.
`twoside` Set margins for two-sided.
`landscape` Landscape orientation. Must use `dvips -t landscape`.
`draft` Double-space lines.
Usage: `\documentclass[opt,opt]{class}`.

Packages

`fullpage` Use 1 inch margins.
`ansizone` Set margins: `\marginsize{0}{r}{t}{b}`.
`multicol` Use *n* columns: `\begin{multicols}{n}`.
`latextsym` Use L^AT_EX symbol font.
`graphicx` Show image: `\includegraphics[width=x]{file}`.
`url` Insert URL: `\url{http://...}`.
Use before `\begin{document}`. Usage: `\usepackage{package}`

Title

`\author{text}` Author of document.
`\title{text}` Title of document.
`\date{text}` Date.
These commands go before `\begin{document}`. The declaration `\maketitle` goes at the top of the document.

Miscellaneous

`\pagestyle{empty}` Empty header, footer and no page numbers.

Document structure

`\part{title}` `\subsubsection{title}`
`\chapter{title}` `\paragraph{title}`
`\section{title}` `\subparagraph{title}`
`\subsection{title}`
Section commands can be followed with an *, like
`\section*(title)`, to suppress heading numbers.
`\setcounter{secnumdepth}{x}` suppresses heading numbers of

Lists

`\begin{enumerate}` Numbered list.
`\begin{itemize}` Bulleted list.
`\begin{description}` Description list.
`\item{text}` Add an item.
`\item[x]{text}` Use *x* instead of normal bullet or number.
Required for descriptions.

References

`\label{marker}` Set a marker for cross-reference, often of the form `\label{sec:item}`.
`\ref{marker}` Give section/body number of marker.
`\pageref{marker}` Give page number of marker.
`\footnote{text}` Print footnote at bottom of page.

Floating bodies

`\begin{table}[place]` Add numbered table.
`\begin{figure}[place]` Add numbered figure.
`\begin{equation}[place]` Add numbered equation.
`\caption{text}` Caption for the body.
The place is a list valid placements for the body. t=top, b=here, b=bottom, p=separate page, f=place even if ugly. Captions and label markers should be within the environment.

Text properties

Font face

Command	Declaration	Effect
<code>\textrm{text}</code>	<code>\rmfamily{text}</code>	Roman family
<code>\textsf{text}</code>	<code>\sfamily{text}</code>	Sans serif family
<code>\texttt{text}</code>	<code>\ttfamily{text}</code>	Typewriter family
<code>\textmd{text}</code>	<code>\mdseries{text}</code>	Medium series
<code>\textbf{text}</code>	<code>\bfseries{text}</code>	Bold series
<code>\textup{text}</code>	<code>\upshape{text}</code>	Upright shape
<code>\textit{text}</code>	<code>\itshape{text}</code>	<i>Italic</i> shape
<code>\textsl{text}</code>	<code>\slshape{text}</code>	Slanted shape
<code>\textsc{text}</code>	<code>\scshape{text}</code>	SMALL CAPS SHAPE
<code>\textemph{text}</code>	<code>\em{text}</code>	Emphasized
<code>\textnormal{text}</code>	<code>\normalfont{text}</code>	Document font
<code>\underline{text}</code>		<u>Underline</u>

The command `(ttt)` form handles spacing better than the declaration `(ttt)` form.

Font size

	<code>\tiny</code>	<code>\tiny</code>	<code>\Large</code>	<code>\Large</code>
<code>\scriptsize</code>	<code>\scriptsize</code>	<code>\scriptsize</code>	<code>\LARGE</code>	<code>\LARGE</code>
<code>\footnotesize</code>	<code>\footnotesize</code>	<code>\footnotesize</code>	<code>\Huge</code>	<code>\Huge</code>
<code>\small</code>	<code>\small</code>	<code>\small</code>	<code>\huge</code>	<code>\huge</code>
<code>\normalsize</code>	<code>\normalsize</code>	<code>\normalsize</code>	<code>\Huge</code>	<code>\Huge</code>
<code>\large</code>	<code>\large</code>	<code>\large</code>	<code>\Huge</code>	<code>\Huge</code>

These are declarations and should be used in the form: `\tiny` etc.

Justification

Environment	Declaration
<code>\begin{center}</code>	<code>\centering</code>
<code>\begin{flushleft}</code>	<code>\raggedright</code>
<code>\begin{flushright}</code>	<code>\raggedleft</code>

Miscellaneous

`\linespread{x}` changes the line spacing by the multiplier *x*.

Text-mode symbols

Symbols

<code>&</code>	<code>\&</code>	<code>-</code>	<code>_</code>	<code>...</code>	<code>\ldots</code>	<code>\textbullet</code>
<code>\$</code>	<code>\\$</code>	<code>-</code>	<code>\^O</code>	<code> </code>	<code>\textbar</code>	<code>\textbackslash</code>
<code>%</code>	<code>\%</code>	<code>-</code>	<code>\^O</code>	<code>#</code>	<code>\#</code>	<code>\\$</code>

Accents

<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>
<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>
<code>\`{c}</code>	<code>\`{c}</code>	<code>\`{c}</code>	<code>\`{c}</code>	<code>\`{c}</code>	<code>\`{c}</code>
<code>\`{B}</code>	<code>\`{B}</code>	<code>\`{B}</code>	<code>\`{B}</code>	<code>\`{B}</code>	<code>\`{B}</code>
<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>	<code>\`{o}</code>
<code>\`{J}</code>	<code>\`{J}</code>	<code>\`{J}</code>	<code>\`{J}</code>	<code>\`{J}</code>	<code>\`{J}</code>

Delimiters

<code>\{</code>	<code>\{</code>	<code>\{</code>	<code>\{</code>	<code>\{</code>	<code>\{</code>
<code>\}</code>	<code>\}</code>	<code>\}</code>	<code>\}</code>	<code>\}</code>	<code>\}</code>

Dashes

Name	Source	Example	Usage
hyphen	-	X-ray	In words.
en-dash	--	1-5	Between numbers.
em-dash	---	Yes—or no?	Punctuation.

Line and page breaks

<code>\`{}</code>	Begin new line without new paragraph.
<code>\`{}</code>	Prohibit pagebreak after linebreak.
<code>\`{}</code>	Don't print current line.
<code>\`{}</code>	Start new page.
<code>\`{}</code>	Do not indent current line.

Miscellaneous

<code>\today</code>	May 29, 2008.
<code>\`{}</code>	Prints ~ instead of <code>\~</code> , which makes ~.
<code>\`{}</code>	Space, disallow linebreak (W.J. "Clinton").
<code>\`{e}</code>	Indicate that the . ends a sentence when following an uppercase letter.
<code>\`{hspace}{l}</code>	Horizontal space of length <i>l</i> (Ex: <i>l</i> = 20pt).
<code>\`{vspace}{l}</code>	Vertical space of length <i>l</i> .
<code>\`{rule}{w}{h}</code>	Line of width <i>w</i> and height <i>h</i> .

¡Gracias por vuestra atención!

¿Preguntas?



LATEX 101

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26 de junio de 2019

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