

# Introduction to L<sup>A</sup>T<sub>E</sub>X

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&  
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## What is $\LaTeX$ ? [1]

- It is a macro package based on  $\TeX$  [2].
- Its purpose is to simplify  $\TeX$  typesetting, especially for documents containing mathematical formulae.
- Its document processing is essentially programming: you create a text file in  $\LaTeX$  markup and the  $\LaTeX$  compiler reads this in order to produce the final document.
- It is widely used in academia.

# A First Document

```
\documentclass[12pt]{article}
\newcommand{\Editor}{\textbf{emacs}} % define macros!

\title{A Sample \LaTeX\ Report} % used by \maketitle
\author{Frej Knutar Lewander} % used by \maketitle
\date{\today} % used by \maketitle

\begin{document}
\maketitle % generates the title page

\section{Revisiting  $n$ -Queens}
I typed this file with a plain-text editor.
(I used \Editor.)

\end{document}
```

# A First Document: Result of Compilation

## A Sample L<sup>A</sup>T<sub>E</sub>X Report

Frej Knutar Lewander

August 23, 2021

### 1 Revisiting $n$ -Queens

I typed this file with a plain-text editor. (I used `emacs`.)

## A Table in L<sup>A</sup>T<sub>E</sub>X (from the Demo Report)

```
\begin{tabular}{rrrrrrrrrrrr} % right [r] for decimal-point alignment
  \input{res-M4CO.tex}
\end{tabular}
```

## The run\_backends Output is in L<sup>A</sup>T<sub>E</sub>X

Direct the output of our run\_backends experiment script into the mentioned included file res-M4CO.tex:

```
Backend & \multicolumn{2}{c}{Gecode} & \multicolumn{2}{c}{CP-SAT} & \multicolumn{2}{c}{CP-PRISM} & \multicolumn{2}{c}{CP-PRISM} \\ \cmidrule(lr){2-3} \cmidrule(lr){4-5} \cmidrule(lr){6-7} \cmidrule(lr){8-9} \cmidrule(lr){10-11} \\ \texttt{n} & \texttt{obj} & time & \texttt{obj} & time & \texttt{obj} & time & \texttt{obj} & time & \texttt{obj} \\ \midrule \\ $3$ & $\mathbf{20}$ & $\mathbf{422}$ & $\mathbf{20}$ & $954$ & $\mathbf{20}$ & $\mathbf{20}$ & $\mathbf{20}$ & $\mathbf{20}$ & $\mathbf{20}$ \\ $4$ & $\mathbf{34}$ & $\mathbf{372}$ & $\mathbf{34}$ & $680$ & $\mathbf{34}$ & $\mathbf{34}$ & $\mathbf{34}$ & $\mathbf{34}$ & $\mathbf{34}$ \\ $5$ & $\mathbf{26}$ & $68100$ & $\mathbf{26}$ & t/o & $\mathbf{26}$ & $\mathbf{26}$ & $\mathbf{26}$ & $\mathbf{26}$ & $\mathbf{26}$ \\ $6$ & -- & t/o & -- & t/o & $\mathbf{26}$ & $\mathbf{65681}$ & -- & t/o & $39$
```

Automatically formatting output is very useful when one runs experiments several times.

**HINT:** Always use a script to run experiments!

## A Table in $\text{\LaTeX}$ : Result of Compilation

Backend	Gecode		CP-SAT		Gurobi		Yuck		PicatSAT	
	n	obj	time	obj	time	obj	time	obj	time	obj
3	<b>20</b>	<b>422</b>	<b>20</b>	954	<b>20</b>	1268	<b>20</b>	t/o	<b>20</b>	1262
4	<b>34</b>	<b>372</b>	<b>34</b>	680	<b>34</b>	1210	<b>34</b>	t/o	<b>34</b>	8297
5	<b>26</b>	68100	<b>26</b>	t/o	<b>26</b>	<b>46645</b>	36	t/o	27	t/o
6	–	t/o	–	t/o	<b>26</b>	<b>65681</b>	–	t/o	39	t/o

# The Demo Report

- The course website has a  $\text{\LaTeX}$  demo source file with the imposed structure for the assignment & project reports, and with indications on how to proceed.  
**USE IT! It saves your time and our time.**
- You focus on the **content** in order to generate a professional-looking document **without** thinking about formatting.
- We will **not** accept reports spread over multiple PDF files:  
write into separate files and use `\input{filename}`.
- You can share-edit using Overleaf.



## Online Resources

- Download  $\text{\LaTeX}$ : <https://www.latex-project.org/get>
- General help: <https://en.wikibooks.org/wiki/LaTeX>
- Detexify:  $\text{\LaTeX}$  handwritten symbol recognition  
<https://detexify.kirelabs.org/classify.html>
- Two of the best websites to find answers to  $\text{\LaTeX}$  questions are  
<https://tex.stackexchange.com> and  
<https://stackoverflow.com/questions>
- Share editing: <https://www.overleaf.com>
- Demo source file:  
<https://user.it.uu.se/~pierref/courses/COCP/demoReport>

## References

- [1] LaTeX.  $\text{\LaTeX}$ . <https://en.wikipedia.org/wiki/LaTeX>.
- [2] TeX.  $\text{\TeX}$ . <https://en.wikipedia.org/wiki/TeX>.

Questions?

