

# LaTeX Crash Course: Time-saving Tips

May 18, 2021

## Why do we (really) need to save time?

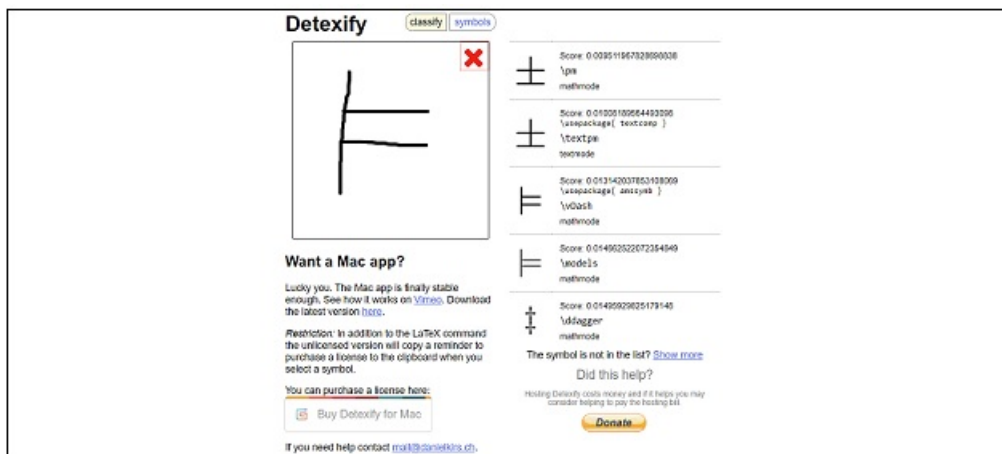
Ideally, it is better to *enjoy* the coding, understand the logic behind it and write a piece of work just relying on one's own means and patience for coding. However, sometimes it would be convenient to have some tools that *do the work on our behalf*. For instance, imagine you need to include in your document a huge table with many columns and rows; you perfectly know how to write the code for such a table and you also know it will be very time consuming and it will add nothing to your knowledge of coding. You may wish to have some assistant who does the work for you and saves your precious time. In the following, you can find an overview of some time-saving L<sup>A</sup>T<sub>E</sub>X-assistants and tips.

## Detexify

*Detexify* is a funny website (<https://detexify.kirelabs.org/classify.html>) that allows you to rapidly search for a symbol and its corresponding L<sup>A</sup>T<sub>E</sub>X-command. Sometimes, you might need to type down a symbol (or a letter or whatever) and you don't know the command for it. Going through the lists of L<sup>A</sup>T<sub>E</sub>X-symbols like this <https://ctan.math.illinois.edu/info/symbols/comprehensive/symbols-letter.pdf> or this <https://ctan.math.utah.edu/ctan/tex-archive/info/symbols/comprehensive/symbols-a4.pdf> might be very time consuming. Detexify will save you time! Its interface is very intuitive and clean; here is a picture of how it looks like:



You can *Draw (t)here*, as indicated, in the white square box. You can draw any symbol and Detexify will return the corresponding command and **package** that you need for that symbol<sup>1</sup>. Here is an example:



In the square box, on the left, I drew the symbol of logical consequence; on the right, Detexify has returned the corresponding:

1. package required, e. g. `\usepackage{amssymb}`;
2. the command, e.g. `\vDash`;
3. the mode required for the symbol, e. g. **mathmode**, that is the command works in the mathmode, between two \$'s.

<sup>1</sup>In principle, you can draw whatever you want, Detexify will try to interpret your drawing anyway.

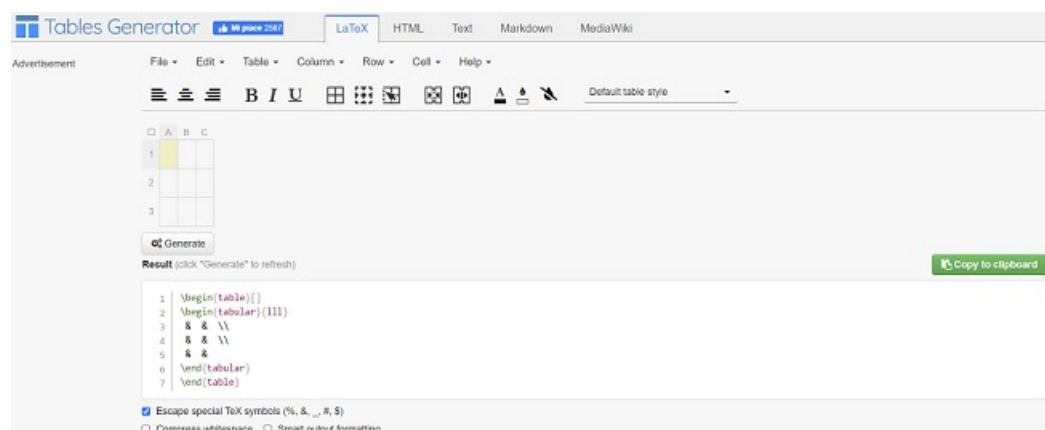
Hence, for instance, if I want to write  $A \vDash B$  in my document, I would type the following:

```
...
\usepackage{amssymb}
...
...
$A \vDash A$
```

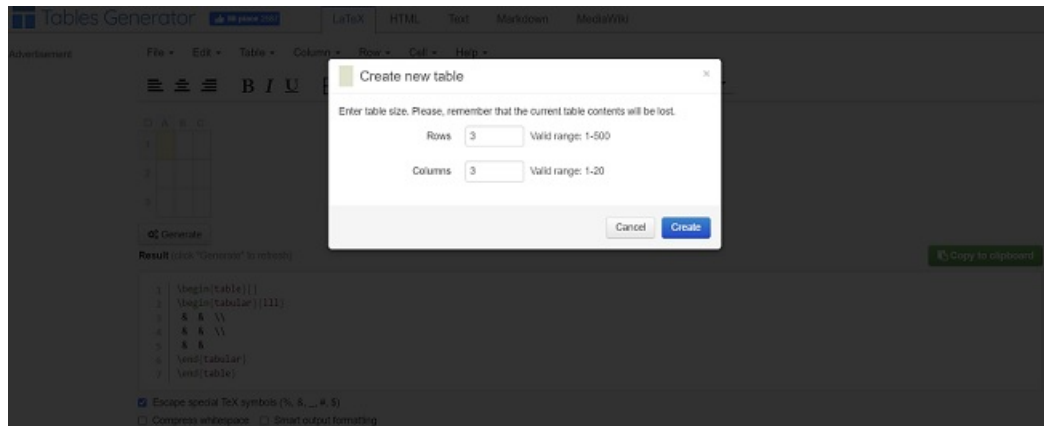
and get  $A \vDash B$  as a result.

## Table Generator

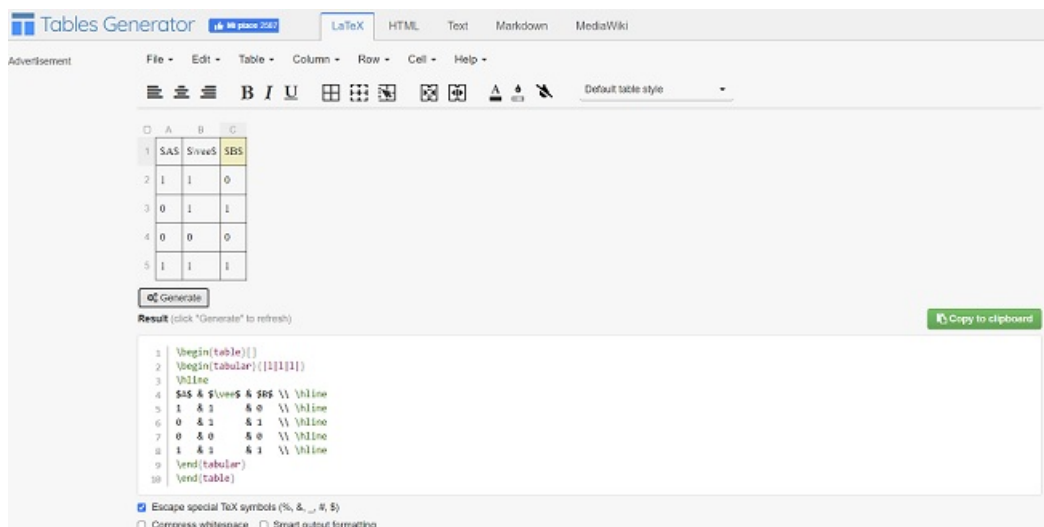
You can find many table generators online, I will refer to this: <https://www.tablesgenerator.com/>. The idea behind a table generator is very simple: you draw your table and it will output the corresponding code. The interface of the table generator is the following:



You find the tool bar on the top, the picture of the table in the middle, and a square box for the code below. If you want to draw a new table, click on **File**  $\Rightarrow$  **New Table** and select the number of rows and columns, and then **Create** (you can add new columns or rows at any time by using the tool bar):



Once you have created your table, you can write in the cells of the draft table in the middle of the page; you can use the buttons in the tool bar for many things (e. g. add the borders to the table, merge cells etc.). The commands are all very intuitive. For example, let's draw the truth-table for disjunction  $\vee$ . We would need 3 columns and five rows; I also added the borders to the table. Once you have drawn your table, just click on the button **Generate** and it will generate the code of you table inside the square box. Then, just click on the button **Copy to clipboard** to copy the code and paste it in your document. N.B. The code begins with `\begin{table}[]`, don't forget to specify the position in the squared brackets, e.g. `\begin{table}[H]` if you want the table to be right *here* (H) where you pasted the code.



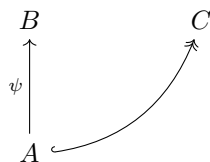
This is the result:

$A$	$\vee$	$B$
1	1	0
0	1	1
0	0	0
1	1	1

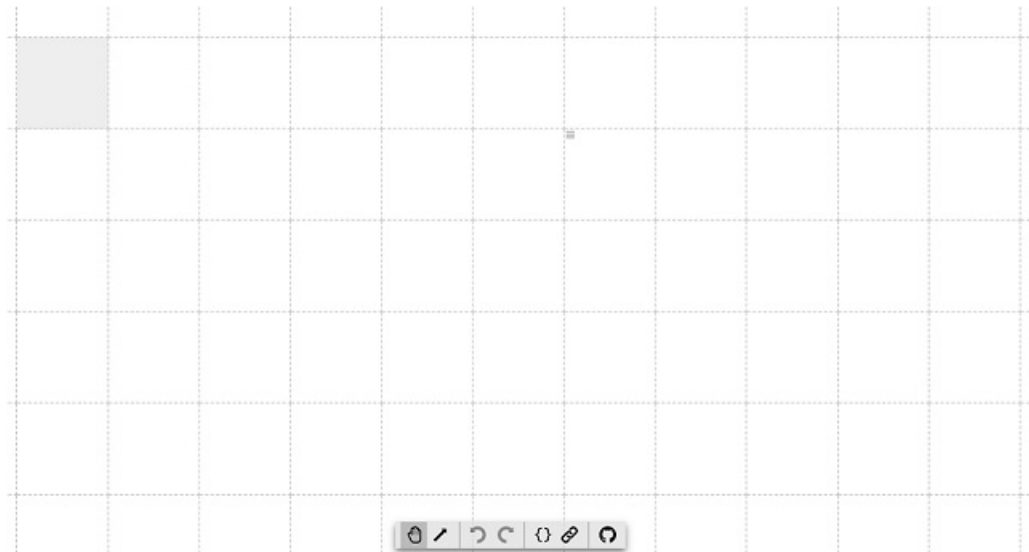
This is just a simple example. The table generator is very intuitive: by practicing and navigating through it, you will discover all the tools and nice functionalities it can offer.

## Tikzcd

The TikZ-cd package is used to typeset diagrams and other kinds of mathematical pictures (it can also be used to draw *DAGs* for instance). Here <https://www.ctan.org/pkg/tikz-cd> is a link to some documentation and to the guide to use the package. The following diagram is, for instance, made using TikZ-cd:



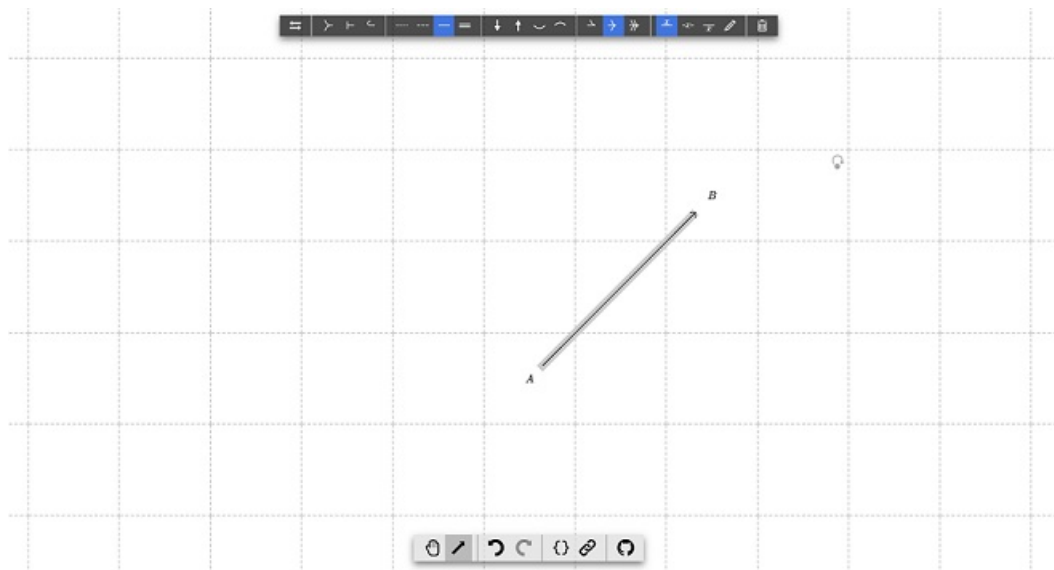
It is not necessary go through the theory of the TikZ-cd package (you can explore it by yourself on the link above). Instead, I will tell you how to save time in drawing your TikZ-cd diagrams. This website: <https://tikzcd.yichuanshen.de/> allows you to draw TikZ-cd in a very easy way. The principle is always the same: you draw your TikZ-cd and it will generate the corresponding code. This is how the website looks like:



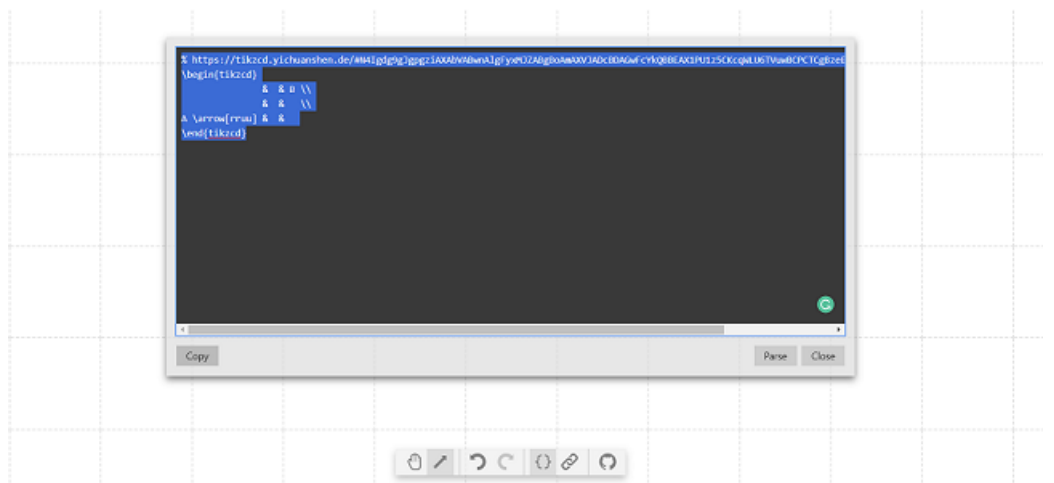
It is just like a big whiteboard with cells and a tool bar at the bottom. Again, the website is very intuitive: explaining its functionalities is much more complicated than just using them. But a quick overview of the basic buttons is maybe needed: from the bottom-left (see the picture)

- The little hand-button is your cursor and it lets you move over the whiteboard;
- The arrow-button lets you draw an arrow from a cell to another (oh, very unexpected!);
- The two rounded arrow-buttons are just like Ctrl-Z and Ctrl-Y;
- The `{ }` is the button that generates the code of your diagram.

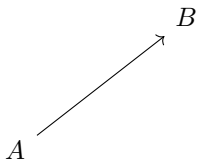
You can write in each cell of the whiteboard. N. B. each cell is set to the mathmode, so writing in a cell is like writing between two `$`'s. The arrow-button allows you to draw an arrow from a cell to another, just like in the following picture:



As you see, by selecting an arrow, a tool bar appears on the top. There you can choose among many options, like adding a label to your arrow, bending you arrow, modifying the shape of your arrow etc. It's easier done than said: just draw an arrow and explore the different options on the tool bar on the top. Once you draw your diagram, you can generate the code by clicking on the {} button:



and copy-paste it in your document. N.B. you need the `TikZ-cd` to draw diagrams, that is you need to type `\usepackage{tikz-cd}` on the top of your document. This is the result (a simple one) of the above drawing:



As you see, the above website makes you save a lot time in drawing your diagrams.

TeX exchange

If you encounter any problem in building your document, TeX-exchange is here to help! TeX-exchange (<https://tex.stackexchange.com/questions>) is a forum of L<sup>A</sup>T<sub>E</sub>X-users that post and answer questions. Here is an example of a discussion in the forum: <https://tex.stackexchange.com/questions/597395/table-resizing-issue>. It can really save your time (and life sometimes!): if you can't get your way out of a problem (for instance you cannot figure out why the document doesn't compile, or why the table is too big, or why this line is not in the center etc.) it is very likely that your problem has been discussed in the forum. Most of the times, you find the code that solves your problem.

## Further Tips

- Sometimes, a command you need might be too long to type down. For instance, you need to refer to the set of natural numbers  $\mathbb{N}$  many times. The command for  $\mathbb{N}$  is  `$\mathbb{N}$` , and it may be annoying to type it down many times. Then, you may want a short command, for instance just  `$\mathbb{N}$` , to make your typing flow smoothly and to reduce the risk of syntax errors. Here is how you can do: on the top of your document, define your own new command in the following way

$$\backslash\mathrm{newcommand}\{\backslash N\}\{\backslash\mathrm{mathbb}\{N\}\}$$

where the first argument is your new command and the second the command to be replaced. From now on, you can just write `\N$` instead of `\mathbb{N}$`. You can find a bit more on the `\newcommand{}{}{}{}` command here <https://it.overleaf.com/learn/latex/Commands>.