

Creating Tables with L^AT_EX

CS492 - Senior Project in Computer Science 1



Tables in LaTeX

Tables are created using the “table” environment given below:

```
\begin{table}[position specifier]  
table  
\end{table}
```

In the above syntax, *table* stands for the contents of the ‘tabular’ environment together with a possible `\caption` command.



General rules

The typeset of tables should be based on the following rules^[1]:

- never use vertical lines;
- avoid double lines;
- place the units in the heading of the table (instead of the body);
- do not use quotation marks to repeat the content of cells.
- caption is placed **above** the table.



General rules

D	P_u	u_u	β	G_f
5 in	269.8 lbs	0.000674 in	1.79	0.04089 psi · in
10 in	421.0 lbs	0.001035 in	3.59	"
20 in	640.2 lbs	0.001565 in	7.18	"

Table 1: Table not in agreement of the general typeset rules.



General rules

Table 2: Table in agreement of the general typeset rules.

D (in)	P_u (lbs)	u_u (in)	β	G_f (psi · in)
5	269.8	0.000674	1.79	0.04089
10	421.0	0.001035	3.59	0.04089
20	640.2	0.001565	7.18	0.04089



How to input the code

It is advisable to align the columns (i.e. &) in order to make it easier to modify the code...



How to input the code

```
\begin{table}[tp]%  
\caption{Maximum load and nominal tension.}  
\label{aggiungi}\centering%  
\begin{tabular}{clccc}  
\toprule%  
$D$&&$P_u$&&$\sigma_N$\\  
(in)&&(lbs)&&(psi)\\\otoprule%  
5&test 1&285&&38.00\\  
&test 2&287&&38.27\\  
&test 3&230&&30.67\\\midrule  
10&test 1&430&&28.67\\  
&test 2&433&&28.87\\  
&test 3&431&&28.73\\\bottomrule  
\end{tabular}  
\end{table}
```



How to input the code

Table 3: Maximum load and nominal tension.

D (in)		P_u (lbs)	σ_N (psi)
5	test 1	285	38.00
	test 2	287	38.27
	test 3	230	30.67
10	test 1	430	28.67
	test 2	433	28.87
	test 3	431	28.73



How to create a table

Three environments:

1. `tabular` `\begin{tabular}[position specifier]`
 `rows`
 `\end{tabular}`

2. `tabular*` `\begin{tabular*}{width}[position specifier]`
 `rows`
 `\end{tabular*}`

3. `array` `\begin{array}[position specifier]`
 `rows`
 `\end{array}`



Tables' position in LaTeX

The argument [**position specifier**] specifies the allowed locations for the table. For example, when `\begin{table}[t]` is typed, it means that the table will appear on the top of the page. Could be placed at `\begin{table}` or `\begin{tabular}/tabular*/array}`

position specifier

!	override the default float restrictions
h	where the table is declared (h ere)
t	at the t op of the page
b	at the b ottom of the page
p	on a dedicated p age of floats
H	H ere and starts a new page first if necessary (need <code>\usepackage{float}</code>)

Note: this applicable for any float item (figures or tables)



Table columns

cols Defines the alignment and the borders of each column.

cols alignment

l	the column is aligned to the left;
r	the column is aligned to the right;
c	the column is centered;
p{wth}	the column is justified and its width is wth (the text is inserted into a parbox of width wth);
*{num}{form}	the format form is repeated num times; for example *{3}{ l} is equal to l l l .



Table elements I

- `|` draws a vertical line (not recommended);
- `||` draws a double vertical line (not recommended);
- `rows` represents the content of the cells of the table for each row that is ended by the command `\\`.
- `\hline` can be placed in the first row or at the end of a row, it draws an horizontal line as wide as the entire table.
- `\cline{n-m}` draws an horizontal line from the left of column `n` up to the right of the column `m`.
- `\multicolumn{num}{col}{text}` combines the following `num` columns into a single cell that has the same width.



\multicolumn Example

```
\begin{tabular}{llc}
\hline%
\multicolumn{2}{c}{Sample} & Roughness  $R_a$  \\
& & (nm) \\
\hline%
A & ring & 385 \\
& plate & 397 \\
\hline%
B & ring & 376 \\
& plate & 390 \\
\hline%
\end{tabular}
```



\multicolumn Example

Table 4: Example of the standard L^AT_EX multicolumn and cline commands.

Sample	Roughness R_a (nm)
A ring	385
plate	397
B ring	376
plate	390



Multi-row cells

The `\multirow` command allows to have cells on more than one row. This command requires the package `multirow`. It can be used in two different ways:

- `\multirow{row}*{text}` creates a cell that contains the text `text` and extends on `row` rows and has an undefined width;
- `\multirow{row}{larg}*{text}` creates a cell that contains the text `text` and extends on `row` rows and has an width equal to `larg`;



Multi-row cells

```

\begin{tabular}{clcc}
\toprule%
\multicolumn{2}{c}{ $D$ } &  $P_u$  &  $\sigma_N$  \\
\multicolumn{2}{c}{(in)} & (lbs) & (psi) \\
\multirow{3}{*}{5} & test 1 & 285 & \\
38.00 \\ \cmidrule(1){2-4}
& test 2 & 287 & 38.27 \\ \cmidrule(1){2-4}
& test 3 & 230 & 30.67 \\ \midrule
\multirow{3}{*}{10} & test 1 & 430 & \\
28.67 \\ \cmidrule(1){2-4}
& test 2 & 433 & 28.87 \\ \cmidrule(1){2-4}
& test 3 & 431 & 28.73 \\ \bottomrule
\end{tabular}

```



Multi-row cells

Table 6: Example of the standard L^AT_EX multicolumn and multirow commands.

	D (in)	P_u (lbs)	σ_N (psi)
5	test 1	285	38.00
	test 2	287	38.27
	test 3	230	30.67
10	test 1	430	28.67
	test 2	433	28.87
	test 3	431	28.73



Latex Online

Many websites, one Example is

<https://www.sharelatex.com>



Latex Online

The screenshot displays the ShareLaTeX web interface for a project named "Project1". The browser address bar shows "sharelatex.com". The interface includes a navigation menu, a file explorer on the left showing "main.tex", "references.bib", and "universe.jpg", and a central code editor with the following LaTeX source code:

```
1 \documentclass{article}
2 \usepackage[utf8]{inputenc}
3
4 \title{Project1}
5 \author{f.arfaj}
6 \date{March 2017}
7
8 \usepackage{natbib}
9 \usepackage{graphicx}
10
11 \begin{document}
12
13 \maketitle
14
15 \section{Introduction}
16 There is a theory which states that if ever anyone
17 discovers exactly what the Universe is for and why it is
18 here, it will instantly disappear and be replaced by
19 something even more bizarre and inexplicable.
20 There is another theory which states that this has
21 already happened.
22
23 \begin{figure}[h!]
24 \centering
25 \includegraphics[scale=1.7]{universe.jpg}
26 \caption{The Universe}
27 \label{fig:univerise}
28 \end{figure}
29
30 \section{Conclusion}
31 "I always thought something was fundamentally wrong
32 with the universe" \cite{adams1995hitchhiker}
33
34 \bibliographystyle{plain}
35 \bibliography{references}
36 \end{document}
```

On the right, a preview window shows the rendered document. It features a title page with "Project1", "f.arfaj", and "March 2017". The main content includes an "Introduction" section with a paragraph of text, a centered image of a galaxy (captioned "Figure 1: The Universe"), a "Conclusion" section with a quote, and a "References" section with a citation: "[1] D. Adams, The Hitchhiker's Guide to the Galaxy, Ser 54, 1995." A "Recompile" button is visible above the preview.

