

# Tables in L<sup>A</sup>T<sub>E</sub>X

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## Floats

1 Floats

2 Simple Tables

3 More about Tables



# Floats

- some parts of document in  $\LaTeX$  are *float*, e.g. `figure` & `table` environments
- $\LaTeX$  tries to put floats in a proper position automatically, usually at the top or bottom of the page, instead of putting them in the middle of texts
- the following positioning options are available:
  - `t` top
  - `b` bottom
  - `h` approximately here
  - `p` float-only page
  - `!` override internal parameters  $\LaTeX$  uses for determining *good* float positions
  - `H` precisely here ..... requires `float` package
- a combination of options is acceptable, too  
 e.g. when using `ht`  $\LaTeX$  will try to put the float at the insertion point, then on the top of the next page if it happens to violate its typesetting rules  
 consider using `[!htb]` if you want not to use `float` package



# Cross-Reference

- labels can be created using `\label{key}` command, usually after caption or section
- `\ref{key}` & `\pageref{key}` can be used to refer to labels
- *keys* traditionally are like *type:name*, when *type* is one of `fig`, `tab`, `chap`, `sec`, `eq`, and `fn`
- `\nameref{key}` from `nameref` package can be used to automatically add prefix to references



# Simple Tables

- 1 Floats
- 2 Simple Tables
- 3 More about Tables



# Simple Tables

- `\begin{tabular}{cols}cnt\end{tabular}` environment can be used to add tables
- `cols` describes the columns of the table, by a combination of the following symbols:
  - l left-justified column
  - c centred column
  - r right-justified column
  - $p\{width\}$  vertically aligned paragraph at top
  - $m\{width\}$  vertically aligned paragraph at middle . . . . . requires array package
  - $b\{width\}$  vertically aligned paragraph at bottom . . . . . requires array package
  - | vertical line
  - || double vertical line
- usually, the inserted table is put in a `table` environment, making it float
- it has got an optional argument for positioning
- you may want to use `\centering` declaration at the beginning of figure
- it's possible to add a caption to the float by the `\caption{title}` command
- caption usually should be placed at the top of the table in the scientific documents



# Simple Tables

Cont.

- each row of table consists of fields (up to the number of columns described in the first argument of `tabular` environment)
- fields of each row should be separated by `&`
- at the end of each row, except perhaps last row, `\\` should be used
- rows *could* be separated by one or more `\hlines`



# Simple Tables

Example

```
\begin{table}[h]
\centering
\caption{List of universities}
\label{tab:universities}
\begin{tabular}{cc}
\hline
\textbf{University} &
\textbf{City}\\
\hline
\hline
Tehran & Tehran\\
Sharif & Tehran\\
Ferdowsi & Mashad\\
Isfahan & Isfahan\\
\hline
\end{tabular}
\end{table}
```

Table: List of universities

<b>University</b>	<b>City</b>
Tehran	Tehran
Sharif	Tehran
Ferdowsi	Mashad
Isfahan	Isfahan



# More about Tables

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- 3 More about Tables



# Tweak Partitioning

- `\cline{i-j}` could be used to draw partial horizontal line
- `\multicolumn{ncols}{cols}{text}` allows drawing fields with more than one filed width, or justification of contents a single field
- `\multirow{nrows}{cols}{text}` from `multirow` package allows drawing fields with more than one filed height
- `@{sep}` can be used in column definition to use customs column separation
- e.g. `@{.}` can be used to align floating-point numbers by their decimal points
- `\arrayrulewidth` is the length variable of table line width, and can be customized
- `\arrayrulecolor{colour}` can be used to customize table line colour
- the starred version of `table` environment can be used to create floats as wide as the page in the two-sided documents



# Long Tables

- `longtable` package provides facilities to insert multi-page long tables
- it modifies the output routine, and consequently won't work in a multicolumn environment or two-column pages
- older `supertabular` package may be useful in such situations



# Long Tables

## Example

```

\begin{center}\begin{longtable}{cc}
  \caption{List of
    universities}\label{tab:universities}\\
  \hline
  \textbf{University} & \textbf{City}\\
  \hline\hline
\endfirsthead
  \hline
  \textbf{University} & \textbf{City}\\
  \hline\hline
\endhead
  \hline
\endfoot
  \hline
\endlastfoot
  Tehran & Tehran\\
  Sharif & Tehran\\
  Ferdowsi & Mashad\\
  Isfahan & Isfahan\\
\end{longtable}\end{center}





```

Table 1: List of universities

University	City
Tehran	Tehran
Sharif	Tehran
Ferdowsi	Mashad
Isfahan	Isfahan



# References

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