

Bắt đầu với L^AT_EX

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— Philosophy —

“Nothing is impossible!” — Anonymous

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Phần I

Cấu trúc tài liệu L^AT_EX

1 Các môi trường soạn thảo

```
\documentclass{article}
\begin{document}
```

Đây là nơi nội dung soạn thảo được xử lý và hiển thị¹.

...

```
\end{document}
```

2 Preamble

2.1 Tiêu đề, tác giả, ngày tháng

```
\title{Beginning with \LaTeX} — Tiêu đề của tài liệu.
\author{xuansamdinh} — Tác giả.
\date{Nov 26, 2011} — Ngày tạo.
```

2.1.1 Lưu ý:

- \LaTeX là cụm từ được định nghĩa trước, và sẽ in ra “**L**A_T**E**X”.
- Bạn có thể viết: `\title{\textbf{Beginning with \LaTeX}}` để in ra tiêu đề có dạng: “**Beginning with L_AT_EX**”

3 Bắt đầu tài liệu

```
\begin{document} <-- Bắt đầu soạn thảo.
\maketitle        <-- Tạo tiêu đề.
\tableofcontents  <-- Tảo bảng mục lục.
\end{document}    <-- Kết thúc soạn thảo.
```

3.1 Tóm tắt nội dung:

```
\renewcommand{\abstractname}{--- Philosophy ---}
\begin{abstract}
... Đây là mục tóm tắt nội dung của tài liệu ...
\end{abstract}
```

Kết quả sẽ tương tự như sau:

— **Philosophy** —

Một tài liệu ngắn về bước đầu tìm hiểu L_AT_EX

¹Một ví dụ về footnote

Sử dụng câu lệnh:

```
\renewcommand{\abstractname}{Tên cần đổi thành}
```

để thay đổi dòng chữ mặc định là:
Tóm tắt nội dung → Tên cần đổi thành

Ngoài ra còn có:

```
\renewcommand{\contentsname}{Nội dung}  
\newcommand{\listtablename}{Danh sách các bảng biểu}  
\renewcommand{\listfigurename}{Danh sách các hình}
```

4 Phần, mục

4.1 Levels

L^AT_EX có 7 cấp để chia phần, mục tài liệu, bao gồm:

```
\part{part}  
\chapter{chapter}  
\section{section}  
\subsection{subsection}  
\subsubsection{subsubsection}  
\paragraph{paragraph}  
\subparagraph{subparagraph}
```

5 Ví dụ: Hello world!

- Hello World! trong C:

```
#include <stdio.h>  
#include <stdlib.h>  
  
int  
main (int argc, char *argv[]) {  
    printf ("Hello world!\n");  
    exit(0);  
}
```

- Hello world! trong bash:

```
#!/usr/bin/env bash  
echo "Hello world!"
```

- Hello world! trong python:

```
>>> print "Hello world!"  
Hello world!
```


Phần II

Lists Structures

Phần III

Tables

6 Tables

In academic writing, tables are common feature, often for summarizing results from research. It is there fore a skill that needs masstering in order to produce quality papers.

However, if there is one area about \LaTeX that is tha least intuitive, then this is it. Basic tables are not too taxing, but you quickly notice that anything more advanced can take a fair bit of construction. So, we start slowly and build up from there.

6.1 The tabular enviroment

The `tabular` enviroment can be used to typeset tables with optional horizontal and vertial lines. \LaTeX determines the width of the columns automatically.

```
\begin{tabular}{pos}{table spec}
```

6.1.1 $\{pos\}$

t	top
c	center (default)
b	bottom

Bảng 1: $\{pos\}$ options

6.1.2 $\{table spec\}$

The *table spec* argument tells \LaTeX the alignemt to be used in each column and the vertical lines to insert.

The number of columns does not need to be specified as it is inferred by looking at the number of arguments provided. It is also possible to add vertical lines between the columns here. The following symbols are available to describe the table columns (some of them require that package *array* has been loaded):

<code>l</code>	left-justified column
<code>c</code>	center column
<code>r</code>	right-justified column
<code>p{width}</code>	paragraph column with text vertically aligned at the top
<code>m{width}</code>	paragraph column with text vertically aligned at the middle
<code>b{width}</code>	paragraph column with text vertically aligned at the bottom
<code> </code>	vertical line
<code> </code>	double vertical line

Bảng 2: *{table spec}* options.

6.1.3 Commands

<code>&</code>	column separator
<code>\\</code>	start new row. Additional space may be specified like this: <code>\\[10pt]</code>
<code>\hline</code>	horizontal line
<code>\newline</code>	start a new line within a cell
<code>\cline</code>	partial horizontal line beginning in column <i>i</i> and ending in column <i>j</i>

Bảng 3: List of *commands*.

6.1.4 Basic examples

Example 1:

```
\begin{tabular}{||l | c | r||}
1 & 2 & 3 \\
4 & 5 & 6 \\
7 & 8 & 9 \\
\end{tabular}
```

1	2	3
4	5	6
7	8	9

Bảng 4: Basic example 1

Example 2:

```

\begin{tabular}{|l|l|c|l|r|}
\hline
1 & 2 & 3 & \\ \hline
4 & 5 & 6 & \\ \hline
7 & 8 & 9 & \\ \hline
\end{tabular}

```

1	2	3
4	5	6
7	8	9

Bảng 5: Basic example 2

Example 3:

```

\begin{tabular}{|r|l|}
\hline
7C0 & hexadecimal \\
3700 & octal \\
\cline{2-2}
11110000 & binary \\
\hline
1990 & decimal \\
\hline
\end{tabular}

```

7C0	hexadecimal
3700	octal
11110000	binary
1990	decimal

Bảng 6: Basic example 3

Example 4:

```

\begin{tabular}{|c|p{5cm}|}
\hline
c & center \\
\hline
t & top
\end{tabular}

```

```

\hline
b & bottom \\
\hline
\end{tabular}

```

c	center
t	top
b	bottom

Bảng 7: Basic example 4

6.2 Column specification

Column specification using `>\cmd` and `<\cmd`.

6.3 Text wrapping in tables

L**A****T****E****X**'s algorithms for formatting tables have a few shortcomings. One is that it will not automatically wrap text in cells, even if it overruns the width of the page.

For columns that you know will contain a certain amount of text, then it is recommended that you use the *p* attribute and specify the desired width of the column (although it may take some trial-and-error to get the result you want). Use the *m* attribute to have the lines aligned toward middle of the box and the *b* attribute to align along the bottom of the box.

Examples

6.4 Text justification in tables

The `tabular` environment helps control where lines should break, but cannot justify the text, which leads to ragged right edges.

The `eqparbox` package provides the command `\eqmakebox` which is like `\makebox` but instead of a `width` argument, it takes a tag.

6.5 Other environments inside tables

To resolve the problems which occur when using other environments such as `verbatim` or `enumerate` inside table cells: change column specifier - *{table specs}*, to “*paragraph*” (*p*, *m* or *b*), i.e:

```

\begin{tabular}{| c | m{5cm} |}

```

6.6 Defining multiple columns

It is possible to define many identical columns at once using the `*{num}{ptr}` syntax.

I.e. A table contains 6 centered columns:

```
\begin{tabular}{| l | *{6}{c} | r |}
```

Team	P	W	D	L	F	A	Points
MU	6	4	0	2	10	5	12

Bảng 8: Multiple column

6.7 @-expressions

The column separator can be specified with the `@{. .}` construct. This command replaces the symbol “|” by the `@{symbol}` that was defined.

To add space, use `@{\hspace{width}}`

6.8 Spanning

6.8.1 Rows spanning multiple columns

Command: `\multicolumn{num_cols}{alignment}{contents}`.

num_cols: number of subsequent columns to merge.

alignment: l, c, b or p{width} and so on.

contents: actual data.

```
\begin{tabular}{| l | l |}
\hline
\multicolumn{2}{| c |}{List of Words}\\ \hline
n2i & nothing is impossible \\
xsd & xuansamdinh \\
vnuser & vietnam linux user \\ \hline
\end{tabular}
```

6.8.2 Columns spanning multiple rows

The first thing to do: `\usepackage{multirow}`.

And then using the command:

`\multirow{num_rows}{width}{contents}`.

{*} for the **{width}** means the contents’ natural width.

List of Words	
n2i	nothing is impossible
xsd	xuansamdinh
vnluser	vietnam linux user

Bảng 9: Rows spanning multi cols

Note: The blank entry must be inserted fo each appropriate cell in each subsequent row to be spanned.

6.8.3 Spanning in both directions simultaneously

```
\begin{tabular}{cc | c | c | c | c | l}
\cline{3-6}
& & \multicolumn{4}{| c |}{Primes} \\
\cline{3-6}
& & 2 & 3 & 5 & 7 \\
\cline{1-6}
\multicolumn{1}{| c |}{\multirow{2}{*}{Powers}} & & & & & \\
\multicolumn{1}{| c |}{504} & & & & & \\
3 & 2 & 0 & 1 & & \\
\cline{2-6}
\multicolumn{1}{| c |}{} & & & & & \\
\multicolumn{1}{| c |}{540} & & & & & \\
2 & 3 & 1 & 0 & & \\
\cline{1-6}
\multicolumn{1}{| c |}{\multirow{2}{*}{Powers}} & & & & & \\
\multicolumn{1}{| c |}{gcd} & & & & & \\
2 & 2 & 0 & 0 & min & \\
\cline{2-6}
\multicolumn{1}{| c |}{} & & & & & \\
\multicolumn{1}{| c |}{lcm} & & & & & \\
3 & 3 & 1 & 1 & max & \\
\cline{1-6}
\end{tabular}
```

6.9 Resize tables

Require: The *graphicx* package.

Command: `\resizebox{width}{height}{object}`.

`\resizebox{10cm}{!}{\begin{tabular} . . . \end{tabular}}`

		Primes				
		2	3	5	7	
Powers	504	3	2	0	1	
	540	2	3	1	0	
Powers	gcd	2	2	0	0	min
	lcm	3	3	1	1	max

Bảng 10: Columns multiple rows

Alternatively: `\scalebox{ratio}{object}`. Using in the same way, but use *ratio* instead of *fixed width*.

```
\scalebox{1.5cm}{ \begin{tabular} . . . \end{tabular} }
```

Tweak space between columns. `\setlength{\tabcolsep}{5pt}`. The L^AT_EX's default value is *6pt*.

6.10 Sideways tables

Package: *rotating*.

Environment: *sideawaystable*.

```
\begin{sideawaystable}
\begin{tabular}
. . .
\end{tabular}
\end{sideawaystable}
```

Alternatively: *rotfloat* package provides the ‘H’ options for *sideawaystable* environment.

```
\begin{sideawaystable}[H]
```

6.11 Alternate rows color in tables

Require: *xcolor* with *table* option.

```
\usepackage[table]{xcolor}
```

Command: `\rowcolor{starting row}{odd color}{even color}`.

```
\rowcolor{1}{red}{blue}
\begin{tabular}{| c | c | c |}
\hline
1 & 2 & 3 \\ \hline
```

```

4 & 5 & 6 \\ \hline
7 & 8 & 9 \\ \hline
\end{tabular}

```

Other commands:

- `\hidecolor`: deactivate highlighting color of a specified row.
- `\showcolor`: reactive highlighting color of a specified row.

6.12 Color of individual cells

Require: `xcolor` with `table` option.

Command: `\cellcolor[gray]{0.9}`

- `gray`: denotes *grayscale* colorscheme, not the color *grey*.
- `0.9`: denotes how dark the grey is.

Color the cell: `\cellcolor{blue}`.

6.13 Partial vertical lines

6.14 The table environment - captioning

Form: `\begin{table}[placement]`

placements: default is `[tbp]`

- h*:** here.
- t*:** top of page.
- b*:** bottom of page.
- p*:** float.
- !*:** float.

Commands:

- `\centering`: centering sub element.
- `\caption`: set caption of the table.
- `\label`: set *label* to reference.

Example:

```
\begin{table}[htbp]
\centering
\begin{tabular}{|l|p{10cm}|}
\hline
hmm & Something is here. \\ \hline
\end{tabular}
\caption{table example}
\label{table_examp}
```

hmm	Something is here.
-----	--------------------

Bảng 11: table example

Other examples are [1], [2], [3].

6.15 The tabular* environment - controlling table width

6.15.1 Example 1

```
\begin{tabular*}{0.7\textwidth}{|c|c|c|r|}
\hline
\textbf{Midname} & \textbf{Firstname} & & \\
\textbf{Lastname} & \textbf{YoB} & & \\
\hline
xuan & sam & dinh & 1990 \\
\hline
\end{tabular*}
```

6.15.2 Example 2

```
\begin{tabular*}{0.75\textwidth}
{@{\extracolsep{\fill}}|c|c|c|r|}
\hline
\textbf{Midname} & \textbf{Firstname} & & \\
\textbf{Lastname} & \textbf{YoB} & & \\
\hline
xuan & sam & dinh & 1990 \\
\hline
\end{tabular*}
```

Midname	Firstname	Lastname	YoB
xuan	sam	dinh	1990

Bảng 12: Controlling table width - 2

6.16 The tabularx package - simple column stretching

6.17 Vertically centered images

Inserting images into a table row will align it at the top of the cell. By using the *array* package this problem can be solved. Defining a new column type will keep the image vertically centered.

```
\newcolumnntype{V}
{>{\centering\arraybackslash} m{.4\linewidth}}
```

Or use a parbox to center the image:

```
\parbox[c]{1em}{\includegraphics{image.png}}
```

A raisebox works as well, also allowing to manually fine-tune the alignment with its first parameter:

```
\raisebox{-.5\height}{\includegraphics{image.png}}
```

6.18 Professional tables

Many professionally typeset books and journals feature simple tables, which have appropriate spacing above and below lines, and almost *never* use vertical rules.

Many examples of L^AT_EX tables showcase the use of vertical rules (using “|”), and double-rules (using “\hline\hline” or “||”), which are regarded as unnecessary and distracting in a professionally published form. The *booktabs* package is useful for easily providing this professionalism in L^AT_EX tables, and documentation also provides guidelines on what constitutes a “good” table.

In brief, the package uses `\toprule` for the uppermost rule (or line), `\midrule` for the rules appearing in the middle of the table (such as under the header), and `\bottomrule` for the lowermost rule.

This ensures that the rule weight and spacing are acceptable. In addition, `\cmidrule` can be used for mid-rules that span specified columns.

The following example contrasts the use of *booktabs* and to equivalent normal L^AT_EX implementations (the second example requires *array* or *dcolumn*, and the third example requires *booktabs* package).

6.18.1 Normal L^AT_EX

Code:

```
\begin{tabular}{|l l r |}  
\hline  
\multicolumn{2}{c}{Item} \\  
\cline{1-2} Animal & Description & Price (\$) \\  
\hline  
Gnat & per gram & 13.65 \\  
& each & 0.01 \\  
Gnu & stuffed & 92.50 \\  
Emu & stuffed & 33.33 \\  
Armadillo & frozen & 8.99 \\  
\hline  
\end{tabular}
```

Item		
Animal	Description	Price (\$)
Gnat	per gram	13.65
	each	0.01
Gnu	stuffed	92.50
Emu	stuffed	33.33
Armadillo	frozen	8.99

Bảng 13: Table using normal L^AT_EX's commands

6.18.2 Using *array*

Code:

```
% usepackage booktabs or dcolumn.  
\begin{tabular}{l l r }  
\firsthline  
\multicolumn{2}{c}{Item} \\  
\cline{1-2} Animal & Description & Price (\$) \\  
\hline Gnat & per gram & 13.65 \\  
& each & 0.01 \\  
gnu & stuffed & 92.50 \\  
Emu & stuffed & 33.33 \\  
Armadillo & frozen & 8.99 \\  
\lasthline  
\end{tabular}
```

Item		
Animal	Description	Price (\$)
Gnat	per gram	13.65
	each	0.01
gnu	stuffed	92.50
Emu	stuffed	33.33
Armadillo	frozen	8.99

Bảng 14: Table using the *array* package

6.18.3 Using *booktabs*

Code:

```
\begin{tabular}{l l r }
\toprule
\multicolumn{2}{c}{Item} \\
\cmidrule(r){1-2} Animal & Description & Price (\$) \\
\midrule Gnat & per gram & 13.65 \\
& each & 0.01 \\
gnu & stuffed & 92.50 \\
Emu & stuffed & 33.33 \\
Armadillo & frozen & 8.99 \\
\bottomrule
\end{tabular}
```

Item		
Animal	Description	Price (\$)
Gnat	per gram	13.65
	each	0.01
gnu	stuffed	92.50
Emu	stuffed	33.33
Armadillo	frozen	8.99

Bảng 15: Table using the *booktabs* package

Usually the need arises for footnotes under a table (and not at the bottom of the page), with a caption properly spaced above the table. These are addressed by the *ctable* package.

It provides the option of a short caption given to be inserted in the list of tables, instead of the actual caption (which may be quite long and inappropriate for the list of tables). The *ctable* package uses the *booktabs* package.

6.18.4 Adding rule space above or below `\hline` and `\cline` commands

An alternative way to adjust the rule spacing is to add `\noalign{\smallskip}` before or after the `\hline` and `\cline{i-j}` commands:

Example:

```
\begin{tabular}{l l r }
\hline\noalign{\smallskip}
\multicolumn{2}{c}{Item} \\\
\cline{1-2}\noalign{\smallskip}
Animal & Description & Price (\$) \\\
\noalign{\smallskip}\hline\noalign{\smallskip}
Gnat & per gram & 13.65 \\\
each & 0.01 \\\
Gnu & stuffed & 92.50 \\\
Emu & stuffed & 33.33 \\\
Armadillo & frozen & 8.99 \\\
\noalign{\smallskip}\hline
\end{tabular}
```

Item		
Animal	Description	Price (\$)
Gnat	per gram	13.65
	each	0.01
Gnu	stuffed	92.50
Emu	stuffed	33.33
Armadillo	frozen	8.99

Bảng 16: Adding rule space

You may also specify the skip after a line explicitly using glue after the line terminator.

```
\begin{tabular}{| l | l |}
\hline
Mineral & Color \\\ [1cm]
Ruby & red \\\
Sapphire & blue \\\
\hline
\end{tabular}
```

Minaral	Color
Ruby	red
Sapphire	blue

Bảng 17: Skip after a line

6.19 Tables with different font size

A table can be globally switched to a different font size by simply adding the desired size command (here: `\footnotesize`) after the `\begin{table}...` statement:

```
begin{table}[h] \footnotesize
\caption{Performance at peak F-measure}
\begin{tabular}{| r | r || c | c | c|}
\ldots
\end{tabular}
\end{table}
```

The table caption font size is not affected. To control the caption font size, see Caption Styles.

6.20 Table with legend

To add a legend to a table the *caption* package can be used. With the *caption* package a `\caption*{. . .}` statement can be added besides the normal `\caption{. . .}`.

Example:

```
\begin{table}[htbp]
\centering
\begin{tabular}{| r | r || l | l |}
%\hline
\toprule
UID & GID & Login & Comment \\ \ % \hline
\midrule
0 & 0 & root & admin \\ \hline
1000 & 1000 & n2i & xuansamdinh \\ \ % \hline
\bottomrule
\end{tabular}
\caption{A normal caption}
\caption*{A legend, even a table can be used}
```



```

\begin{tabular}{@{} l l @{}}
\hline
user: & xuansamdinh \\ \hline
\end{tabular} }
\end{table}

```

UID	GID	Login	Comment
0	0	root	admin
1000	1000	n2i	xuansamdinh

Bảng 18: A normal caption

Bảng 19: *

A legend, even a table can be used

user:	xuansamdinh
-------	-------------

The normal caption is needed for label and references.

6.21 More features

Have a look at one of the following packages:

hhline: do whatever you want with horizontal lines

array: gives you more freedom on how to define column

colortbl: make your table more colorful

supertabular: for tables that need to stretch over several pages

longtable: similar to *supertabular*

Note: footnotes do not work properly in a normal tabular environment. If you replace it with a longtable environment, footnotes work properly.

xtab: Yet another package for tables that need to span many pages

tabulary: modified *tabular** allowing width of columns set for equal heights

arydshln: creates dashed horizontal and vertical lines

ctable: allows for footnotes under table and properly spaced caption above (incorporates *booktabs* package)

slashbox: create 2D tables

dcolumn: decimal point alignment of numeric cells with rounding

rccol: advanced decimal point alignment of numeric cells with rounding

speadtab: spread sheets allowing the use formulae

6.22 Summary

Phần IV

Title Creation

7 Title Creation

7.1 Standard title pages

The commands are placed in the top matter:

```
\title: set document title
        \title{Beginning with \LaTeX{}}

\author: list of document's author

\and: multiple author
        \author{Linus \and Stallman}

\date: set the date, default is \today
        \date{Nov 28, 2011}

\thank: can be used in the \title
        \author{xuansamdinh \thank{vnluser sns!}}
```

The command to generate the title for document:

```
\maketitle: using to make title

        \begin{document}
        \maketitle
        . . .
        \end{document}
```

These commands are depended on what document class which is used.

7.2 Custom title pages

7.2.1 Create the title

Preamble

```
\documentclass[pdf,12pt,a4paper]{article}
\usepackage[pdftex]{graphicx}
\newcommand{\Hrule}{\rule{\linewidth}{0.5mm}}

\begin{document}
\input{title.tex}

\end{document}
```

Create new file named *title.tex* in the same directory which is contained:

```
\begin{titlepage}  
<anything else is here>  
\end{titlepage}
```

Here is what you need to know to write your title:

Alignment: using `center`, `flushleft`, or `flushright` environment.

Images: include images. Remember to *graphicx* package.

```
\includegraphics[width=0.15\textwidth]{./logo}
```

Text size: Following commands:

- `\Huge`
- `\huge`
- `\LARGE`
- `\Large`
- `\large`
- `\small`
- `\footnotesize`
- `\tiny`
- `\normalsize`

New line: `\\`. Addition space: `\\ [1cm]`

Date - Time: `\date{Nov 30, 2011}` `\today`

Filling the page: `\vfill` (like `\hfill`)

Example:

College of Information Technology

UDN

2011 - 2012

FINAL SUBJECT PROJECT

Linux Operating System



Student:

Dinh Xuan Sam

Teacher:

Huynh Ngoc Tho

Ngày 16 tháng 1 năm 2012

7.2.2 Intergrating the title page

`\input{title.tex}`

7.2.3 Addition documentation and packages

The *titlepages* packages.

Phần V

Pages Layout

8 Pages Layout

L^AT_EX and the document class will normally take care of page layout issues for you. For submission to an academic publication, this entire topic will be out of your hands, as the publishers want to control the presentation.

However, for your own documents, there are some obvious settings that you may wish to change: margins, page orientation and columns, to name but three.

The purpose of this tutorial is to show you how to configure your pages.

8.1 Page dimensions

8.1.1 Top margin above Chapter

8.1.2 Page size issues

8.2 Page orientation

8.3 Page styles

8.3.1 Standard page styles

Commands:

`\pagestyle{style}`: set global pages style.

`\thispagestyle{style}`: set this page style.

Available *styles*:

***empty*:** Both header and footer are clear

***plain*:** Header is clear, but the footer contains the page number in the center

***headings*:** Footer is blank, header displays information according to document class (e.g., section name) and page number top right

***myheadings*:** Page number in top right, and it is possible to control the rest of the header. Available commands:

`\markright`: standard document class, book, report, and article

`\markboth`: only in the book class

Example: look at this page's top.

```
\thispagestyle{myheadings}
\markright{xuansamdinh \hfill n2i \hfill}
```

***nopageno* package:** This package will make `\pagestyle{plain}` have the same effect as `\pagestyle{empty}`, effectively suppressing page numbering when it is used.

8.3.2 Customising with fancyhdr package

Add following line to your preamble:

```
\usepackage{fancyhdr}
\setlength{\headheight}{15.2pt}
\pagestyle{fancy}
```

8.3.3 Another approach with fancyhdr

8.3.4 Page n of m

Some people like to put the current page number in context with the whole document. L^AT_EX only provides the current page number. However, you can use the *lastpage* package to find the total number of pages, like this:

```
\usepackage{lastpage}
. . .
\cfoot{\thepage\ of \pageref{LastPage}}
```

Note the capital letters. Also, add a backslash(\) after `\thepage` to ensure adequate space between the page number and ‘of’. And recall, when using references, that you have to run L^AT_EX an extra time to resolve the cross-references.

8.4 Multi-column pages

Simply ways

```
\documentclass[twocolumn]{article}
```

***multicol* package:** much more useful for handling multiple columns. It has several advantages:

- Can support up to ten columns.
- Implements a *muticol*s environment, therefore, it is possible to mix the number of columns within a document.
- Additionally, the environment can be nested inside other environment, such as figure.
- Multicol outputs *balanced* columns, whereby the columns on the final page will be of roughly equal length.

- Vertical rules between columns can be customised.
- Column environment can be easily customised locally or globally.

Floats are not fully supported by this environment. It can only cope if you use the starred form of the float commands (e.g., `\begin{figure*}`) which makes the float span all columns. This is not hugely problematic, since floats of the same width as a column may be too small, and you would probably want to span them anyway.

To create a typical two-column layout:

```
\begin{multicols}{2}
lots of text
\end{multicols}
```

The parameter `\columnseprule` holds the width of the vertical rules. By default, the lines are omitted as this parameter is set to a length of 0pt. Change the horizontal space in between columns which `\columnsep` parameter.

`\columnseprule`: holds the width of the vertical rules, default is 0pt.

```
\setlength{\columnseprule}{1pt}
```

`\columnsep`: horizontal space between columns, default is 10pt.

```
\setlength{\columnsep}{20pt}
```

8.5 Manual page formatting

Commands: List of all command are in the table [20]

number is the priority of the command in range from 0 to 4.

0: it will be easily ignored

4: do it anyway

8.6 Windows and orphans

Put these commands in document preamble:

```
\windowpenalty=300
\clubpenalty=300
```

Try increasing these values if this does not help.

Command	Description
<code>\newline</code>	Breaks the line at the point of the command
<code>\\</code>	Shorter version of the <code>\newline</code> command
<code>*</code>	Breaks the line at the point of the command and additionally prohibits a page break after the forced line break
<code>\linebreak[number]</code>	Breaks the line at the point of the command. <code>number</code> is in range from $0 \rightarrow 4$
<code>\newpage</code>	Ends the current page and starts a new one
<code>\pagebreak[number]</code>	Breaks the current page at the point of the command
<code>\nopagebreak[number]</code>	Stop the page being broken at the point of the command
<code>\clearpage</code>	Ends the current page and causes any floats encountered in the input, but yet to appear, to be printed

Bảng 20: Manually page formatting

Have rubber band values for the space between paragraphs:

```
\setlength{\parskip}{3ex plus 2ex minus 2ex}
```

8.7 Summary

8.8 References

Phần VI

Formatting

Tài liệu

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