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Using colours in LaTeX

There are several elements in \LaTeX whose colour can be changed to improve the appearance of the document. Colours can be manually defined to a desired tone using several models, this article explains how.

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Introduction

The simplest manner to use colours in your \LaTeX document is by importing the package **color** or **xcolor**. Both packages provide a common set of commands for colour manipulation, but the latter is more flexible and supports a larger number of colour models. Below an example:

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage[english]{babel}
```

```
\usepackage{color}
```

```
\begin{document}
```

This example shows different examples on how to use the `\texttt{color}` package to change the colour of elements in \LaTeX .

```
\begin{itemize}
\color{blue}
\item First item
\item Second item
\end{itemize}
```

```
\noindent
{\color{red} \rule{\linewidth}{0.5mm} }
```

```
\end{document}
```

This example shows different examples on how to use the `color` package to change the colour of elements in \LaTeX .

- First item
- Second item

[\(/learn/File:ColoursEx1.png\)](#)

*Note: In all the examples the package **xcolor** can be used instead of **color***

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In this example, the package **color** is imported with

```
\usepackage{color}
```

then the command `\color{blue}` sets the blue colour for the current block of text. In this case for the *itemize* environment.

The colour of a second block of text, delimited by { and }, is set to red with the command `\color{red}`, then a 0.5mm-thick horizontal ruler is inserted by `\rule{\linewidth}{0.5mm}`.

The amount of available colour names depends on the driver, usually the next colours can be used with any driver: white, black, yellow, green, blue, purple cyan and magenta.

See the reference guide for more colours supported by other drivers.

➔ Open an example of the color package in ShareLaTeX
(<https://www.sharelatex.com/project/new/template?zipUrl=/project/536d26a2807a23564c7dc850/download/zip&templateName=Colours1&compiler=pdflatex>)

Basic usage

The colour system provided by the packages **color** and **xcolor** is built around the idea of colour models, the colour mode and the colour names supported by a driver vary.

The model based on colour names is very intuitive, even though the list of available names is limited, usually provides enough options. Below an example:

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage[english]{babel}

\usepackage[usenames, dvipsnames]{color}
```

```
\begin{document}
```

This example shows different examples on how to use the `\texttt{color}` package to change the colour of elements in LaTeX.

```
\begin{itemize}
\color{ForestGreen}
\item First item
\item Second item
\end{itemize}
```

```
\noindent
{\color{RubineRed} \rule{\linewidth}{0.5mm} }
```

The background colour of some text can also be `\textcolor{red}{easily}` set. For instance, you can change to orange the background of `\colorbox{BurntOrange}{this text}` and then continue typing.

```
\end{document}
```

This example shows different examples on how to use the color package to change the colour of elements in LaTeX.

- First item
- Second item

(/learn/File:ColoursEx2.png)

The background colour of some text can also be easily set. For instance, you can change to orange the background of this text and then continue typing.

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There are a few changes in this example compared to the one presented in the introduction. First, the command to import the **color** package has two additional parameters:

- **usenames** Makes the names in the corresponding driver name model available. This option can be omitted in **xcolor**.
- **dvipsnames** Makes the colour names for the driver *dvips* available, if the package **color** is imported, this option must be used in conjunction with **usenames**. From this new set of colour names, the example uses: *ForestGreen*, *RubineRed* and *BurntOrange*. See the reference guide for a complete list of possible colours.

Other possible drivers are: xdvi, dvi_{pdf}, pdftex, dvipsone, dviwin, emtex, truetex and xtex.

Two new commands are also presented in the example:

\textcolor{red}{easily}

Changes the colour of inline text. Takes two parameters, the colour to use and the text whose colour is changed. In the example the word *easily* is printed in red

\colorbox{BurntOrange}{this text}

Changes the background colour of the text passed as second parameter. In the example the words *this text* are printed in BurntOrange.

➔ Open an example of the color package in ShareLaTeX

([https://www.sharelatex.com/project/new/template?](https://www.sharelatex.com/project/new/template?zipUrl=/project/536d26a2807a23564c7dc850/download/zip&templateName=Colours1&compiler=pdflatex)

[zipUrl=/project/536d26a2807a23564c7dc850/download/zip&templateName=Colours1&compiler=pdflatex](https://www.sharelatex.com/project/new/template?zipUrl=/project/536d26a2807a23564c7dc850/download/zip&templateName=Colours1&compiler=pdflatex))

Creating your own colours

It is possible to define your own colours, the manner in which the colour is defined depends on the preferred model. Below an example using the 4 colour models typically supported by any driver.

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage[english]{babel}

\usepackage[usenames, dvipsnames]{color}

\definecolor{mypink1}{rgb}{0.858, 0.188, 0.478}
\definecolor{mypink2}{RGB}{219, 48, 122}
\definecolor{mypink3}{cmyk}{0, 0.7808, 0.4429, 0.1412}
\definecolor{mygray}{gray}{0.6}

\begin{document}
User-defined colours with different colour models:

\begin{enumerate}
\item \textcolor{mypink1}{Pink with rgb}
\item \textcolor{mypink2}{Pink with RGB}
\item \textcolor{mypink3}{Pink with cmyk}
\item \textcolor{mygray}{Gray with gray}
\end{enumerate}

\end{document}
```

User-defined colours with different colour models:

1. *Pink with rgb*

2. *Pink with RGB*

3. *Pink with cmyk*

4. *Gray with gray*

(/learn/File:ColoursEx3.png)

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The command `\definecolor` takes three parameters: the name of the new colour, the model, and the colour definition. Roughly speaking, each number represent how much of each colour you add to the mix that makes up the final colour.

- **rgb**: Red, Green, Blue. Three comma-separated values between 0 and 1 define the components of the colour.
- **RGB**: The same as **rgb**, but the numbers are integers between 0 and 255.
- **cmyk**: Cyan, Magenta, Yellow and black. Comma-separated list of four numbers between 0 and 1 that determine the colour according to the additive model used in most printers.
- **gray**: Grey scale. A single number between 0 and 1.

In the example, *mypink1*, *mypink2* and *mypink3* define the same colour but for different models. You can actually see that the one defined by **cmyk** is slightly different.

Colours defined by either model can later be used within your document not only to set the colour of the text, but for any other element that takes a colour as parameter, for instance tables (/learn/Tables#Colouring_a_table_.28cells.2C_rows.2C_columns_and_lines.29) (you must add the parameter `table` to the preamble), graphic elements created with TikZ (/learn/TikZ_package), plots (/learn/Pgfplots_package), vertical rulers in multicolumn documents (/learn/Multiple_columns#Inserting_vertical_rulers) and code listings (/learn/Code_listing#Code_styles_and_colours).

➔ Open an example of the color package in ShareLaTeX

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xcolor-only colour models

There are some additional commands that are only available with the package **xcolor**, these enable support for more colour models and friendly colour mixing.

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage[english]{babel}

\usepackage[dvipsnames]{xcolor}
\colorlet{LightRubineRed}{RubineRed!70!}
\colorlet{Mycolor1}{green!10!orange!90!}
\definecolor{Mycolor2}{HTML}{00F9DE}

\begin{document}

This document present several examples on how to use the \texttt{color}
package
to change the colour of elements in \LaTeX.

\begin{itemize}
\item \textcolor{Mycolor1}{First item}
\item \textcolor{Mycolor2}{Second item}
\end{itemize}

\noindent
{\color{LightRubineRed} \rule{\linewidth}{1mm} }

\noindent
{\color{RubineRed} \rule{\linewidth}{1mm} }
```

This document present several examples on how to use the `color` package to change the colour of elements in \LaTeX .

- **First item**
- **Second item**

(/learn/File:ColoursEx5.png)

Three new colours are defined in this example, each one in a different manner.

```
\colorlet{LightRubineRed}{RubineRed!70!}
```

A new colour named *LightRubineRed* is created, this colour has 70% the intensity of the original *RubineRed* colour. You can think of it as a mixture of 70% RubineRed and 30% white. Defining colours in this way is great to obtain different tones of a main colour, common practice in corporate brands. In the example, you can see the original *RubineRed* and the new *LightRubineRed* used in two consecutive horizontal rulers.

```
\colorlet{Mycolor1}{green!10!orange!90!}
```

A colour named *Mycolor1* is created with 10% green and 90% orange. You can use any number of colours to create new ones with this syntax.

```
\definecolor{Mycolor2}{HTML}{00F9DE}
```

The colour *Mycolor2* is created using the HTML model. Colours in this model must be created with 6 hexadecimal digits, the characters A,B,C,D,E and F must be upper-case.

The colour models that only **xcolor** support are:

- **cm**y cyan, magenta, yellow
- **h**s**b** hue, saturation, brightness
- **HTML** RRGGBB
- **Gray** Grey scale, a number between 1 and 15.
- **w**ave Wave length. Between 363 and 814.

➡ Open an example of the xcolor package in ShareLaTeX

([https://www.sharelatex.com/project/new/template?](https://www.sharelatex.com/project/new/template?zipUrl=/project/536e8d70807a23564c7ddc51/download/zip&templateName=Colours2&compiler=pdflatex)

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Setting the page background colour

The background colour of the entire page can be easily changed with `\pagecolor`. See the next example:

```
\pagecolor{black}
\color{white}
```

This document present several examples on how to use the `color` package to change the colour of elements in L^AT_EX.

- First item
- Second item

Not only blocks, such as environments, can be set to a determined colour, but some **special words** too. You can even use your own user-defined colours. Below the same colour with different models:

1. Pink with `rgb`
2. Pink with `RGB`
3. Pink with `cmyk`
4. Gray with `gray`

The background colour of some text can also be easily set. For instance, you can change to orange the background of `this text` and then continue typing.

(/learn/File:ColoursEx4.png)

The command `\pagecolor{black}` set the page colour to *black*. This is a switch command, meaning it will take effect in the entire document unless another switch command is used to revert it. `\nopagecolor` will change the background back to normal.

➔ Open an example of the color package in ShareLaTeX

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Reference guide

Basic colour names available in L^AT_EX

white, black, red, green, blue, cyan, magenta, yellow



(/learn/File:BasicColours.png)

Colour names available with the dvipsnames option

Apricot		Emerald		OliveGreen		RubineRed	
Aquamarine		ForestGreen		Orange		Salmon	
Bittersweet		Fuchsia		OrangeRed		SeaGreen	
Black		Goldenrod		Orchid		Sepia	
Blue		Gray		Peach		YellowOrange	
BlueGreen		Green		Periwinkle		SkyBlue	
BlueViolet		GreenYellow		PineGreen		SpringGreen	
BrickRed		JungleGreen		Plum		Tan	
Brown		Lavender		ProcessBlue		TealBlue	
BurntOrange		LimeGreen		Purple		Thistle	
CadetBlue		Magenta		RawSienna		Turquoise	
CarnationPink		Mahogany		Red		Violet	
Cerulean		Maroon		RedOrange		VioletRed	
CornflowerBlue		Melon		RedViolet		White	
Cyan		MidnightBlue		Rhodamine		WildStrawberry	
Dandelion		Mulberry		RoyalBlue		Yellow	
DarkOrchid		NavyBlue		RoyalPurple		YellowGreen	

(/learn/File:ColoursEx6.png)

Other drivers have more colour names available, links to documentations in the further reading section.

➔ Open an example of the xcolor package in ShareLaTeX

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[zipUrl=/project/536e8d70807a23564c7ddc51/download/zip&templateName=Colours2&compiler=pdflatex](https://www.sharelatex.com/project/new/template?zipUrl=/project/536e8d70807a23564c7ddc51/download/zip&templateName=Colours2&compiler=pdflatex))





Further reading

For more information see:

- Lengths in LaTeX (/learn/Lengths_in_LaTeX)
- Font sizes, families, and styles (/learn/Font_sizes_families_and_styles)
- Font typefaces (/learn/Font_typefaces)
- Supporting modern fonts with XeLaTeX (/learn/XeLaTeX)
- Tables (/learn/Tables)
- Inserting Images (/learn/Inserting_Images)

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- The **color** package documentation
(<http://repositorios.cpai.unb.br/ctan/macros/latex/required/graphics/grfguide.pdf>)
- The **xcolor** package documentation
(<http://repositorios.cpai.unb.br/ctan/macros/latex/contrib/xcolor/xcolor.pdf>)

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