

LaTeX book in Examples

LaTeX

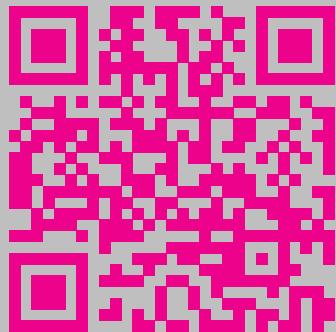
Thanks to me

The book is updated every week

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Contents

1	Math Tips	5
1.1	Auto-resizing equation	5
1.2	Form for simplest calculation	5
1.3	Equation in the form of steps	6
1.4	One number for multiline equation	6
1.5	Matrix in standalone documentclass	6
1.6	Multiple lines, one centered label	7
1.7	Array as a fraction	7
1.8	Aligning equations inbetween text	7
2	Text, Symbols	8
2.1	New section symbol	8
2.2	Wireframe rendering	8
2.3	Justified text	9
2.4	Text under an underline	9
2.5	Various types of underlining	9
2.6	Bullets Style	10
2.7	Change the title of \tableofcontents	10
3	Code, listings, minted ...	11
3.1	Code listing using <code>minted</code> in <u>beamer</u>	11
3.2	"Zebra" style listing	12
3.3	Listing with russian language	12
3.4	Listing with <code>minted</code>	13
4	Tables, boxes and so on	14
4.1	Nice tcolorbox	14
4.2	Color box with yellow border	14
4.3	A drop capital in a tcolorbox	15
4.4	<i>Table with the desired length.</i>	15
4.5	Photo positioning	15
4.6	bclogo – Creating colourful boxes with logos	16
4.7	Warning banner	17

4.8	Absolutely centered cells (vertically and horizontally)	17
4.9	Martix made of table	18
4.10	Centering cells with <code>NiceTabular</code>	18
4.11	Centered cells in <code>longtable</code>	19
4.12	If table is not wide enough	19
4.13	Text next to a table	20
4.14	Text next to a table	21
4.15	Hand Drawn <code>tcolorbox</code>	22
4.16	Halfframed boxes	24
5	Figures	25
5.1	Comment to figure	25
5.2	Positioning 1 2	25
5.3	Placing image <code>anywhere</code> You want	26
5.4	Italic subfigure references	26
5.5	<code>Wrapfigure</code>	27
5.6	Figures in landscape mode	27
5.7	Three figures in a row	28
5.8	Image as a background in a presentation	28
6	Numbering, enumeration, itemizing	29
6.1	Numbering in few columns	29
6.2	Enumeration environment with position number in the format (i, j)	29
6.3	Colored enumeration	30
6.4	Leveled arabic enumeration	30
6.5	Change footnote symbol	31
6.6	Bullets Style	31
7	Plots, tikz, pie charts ...	33
7.1	Simple pie chart	33
7.2	Circled arrows with text	33
7.3	Diamond with text	34
7.4	Levels of skills	34
7.5	Round levels of skills	35
7.6	Huge margin line	35
7.7	Aligning anything to a corer	36
7.8	Family tree	36
7.9	Mindmap	37
8	Highlighting	38
8.1	Words highlighting (1)	38
8.2	Unusual words highlighting	38

8.3	Colored circles	39
8.4	Whole line colored	39
8.5	Circle text in points to other text	39
9	For Fun	41
9.1	LaTeX Coffee Stains	41
9.2	Sticky notes	41
9.3	42
9.4	Single Watermark	43
9.5	Full page of Watermarks	43
9.6	Generating QR code	44
9.7	Gradient QR code	45
9.8	Lobsrets	45
9.9	Watermark over everything	45
10	Animation, videos, interaction	48
10.1	Video in PDF (okular as a .pdf viewer was used)	48

Chapter 1

Math Tips

1.1 Auto-resizing equation

$$\dot{\rho} = \frac{x^3}{45a^9 - 23b}$$

```
\begin{equation*}\label{eq1}
\resizebox{.4\textwidth}{!}{% change .4 to 0.5...
$\dot{\rho}=\frac{x^3}{45a^9-23b}$}
\end{equation*}
```

1.2 Form for simplest calculation

Fill with number
if it doesn't work try another PDF viewer

a:

b:

c:

$\sum =$

```
\documentclass{article}
\usepackage{hyperref}
\begin{document}
\newcommand{\sss}[1]{this.getField("#1").value}
\begin{Form}
\noindent%
Fill with number\\
\TextField[name=a]{a:\\}
\TextField[name=b]{b:\\}
\TextField[name=c]{c:\\}
\noindent%
\$sum = \$ \TextField[name=AvgStat, calculate={\\
event.value = (\\
\sss{a} +\\
\sss{b} +\\
\sss{c}) ;\\
}, readonly, value=0]\\}
\end{Form}
\end{document}
```

1.3 Equation in the form of steps

$$\frac{n_0}{n_1} = q_1 + \frac{1}{q_2 + \frac{1}{q_3 + \frac{1}{q_4 + \dots + \frac{1}{q_{k-1} + \frac{1}{q_k}}}}}$$

```
\documentclass{article}
\usepackage{amsmath}
\def\mywd{35pt}
\begin{document}
\[
\frac{n_0}{n_1} = q_1 + \frac{1}{\makebox[\mywd][1]{\raisebox{-6pt}{$q_2 + \frac{1}{\makebox[\mywd][1]{\raisebox{-12pt}{$q_3 + \frac{1}{\makebox[\mywd][1]{\raisebox{-6pt}{$q_4 + \dots + \frac{1}{\makebox[\mywd][1]{\raisebox{-12pt}{$q_{k-1} + \frac{1}{q_k}$}}$}}$}}$}}$}}$}}$}
\]
\end{document}
```

1.4 One number for multiline equation

$$\begin{aligned} x_{ij} &= d_{ijk} E_k, \\ x_{ij} &= \varsigma_{ijk} H_k, \\ x_{ij} &= s_{ijkl} X_{kl}, \\ x_{ij} &= \xi_{ij} \delta p, \\ x_{ij} &= \alpha_{ij} \delta T \end{aligned} \quad (1.1)$$

```
\documentclass{article}
\usepackage{amsmath}
\begin{document}
\begin{aligned}
x_{ij} &= d_{ijk} E_k, \\
x_{ij} &= \varsigma_{ijk} H_k, \\
x_{ij} &= s_{ijkl} X_{kl}, \\
x_{ij} &= \xi_{ij} \delta p, \\
x_{ij} &= \alpha_{ij} \delta T
\end{aligned}
\end{document}
```

1.5 Matrix in standalone documentclass

$$\begin{matrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{matrix}$$

```
\documentclass[preview,border={-5cm 0cm -5cm -0.1cm}]{standalone}
\usepackage{amsmath}
\begin{document}
\begin{equation*}
\begin{matrix}
a_{11} & a_{12} & a_{13} \\
a_{21} & a_{22} & a_{23} \\
a_{31} & a_{32} & a_{33}
\end{matrix}
\end{equation*}
\end{document}
```

1.6 Multiple lines, one centered label

$$A = \frac{\pi r^2}{2} = \frac{1}{2} \pi r^2 \quad (1.2)$$

```
\begin{equation} \label{eq1}
\begin{aligned}
A &= \frac{\pi r^2}{2} \\
&= \frac{1}{2} \pi r^2
\end{aligned}
\end{equation}
```

1.7 Array as a fraction

$$I - IV - V^{6-4 \atop 4-3 \atop 6-4} - I - \text{cadence}$$

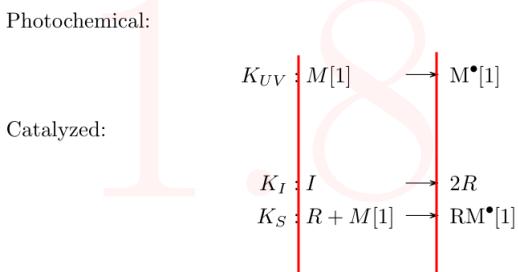
$$I - IV - V^{6-4 \atop 4-3} - I - \text{cadence}$$

$$I - IV - V^{6-4 \atop 4-3} - I - \text{cadence}$$

```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
$ I - IV - V^{6-4 \atop 4-3 \atop 6-4} - I - \text{cadence} $ \\
$ I - IV - V^{6-4 \atop 4-3} - I - \text{cadence} $ \\
$ I - IV - V^{ \begin{array}{c} 6-4 \\ \hline 4-3 \end{array}} - I - \text{cadence} $ \\
\end{document}
```

1.8 Aligning equations inbetween text



```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
\begin{aligned}
&\text{Photochemical:} \\
K_{UV} &: M[1] \& \rightarrow M^\bullet[1] \\
&\text{Catalyzed:} \\
K_I &: I \& \rightarrow 2R \\
K_S &: R + M[1] \& \rightarrow RM^\bullet[1]
\end{aligned}
\end{document}
```

Chapter 2

Text, Symbols

2.1 New section symbol



```
\usepackage[object=vectorian]{pgfornament}
\usepackage{lipsum,tikz}
\newcommand{\sectionlinetwo}[2]{%
\nointerlineskip \vspace{.5\baselineskip}\hspace{\fill}
{\color{#1}\resizebox{0.5\linewidth}{2ex}%
{\{\begin{tikzpicture}
\node (C) at (0,0) {};\node (D) at (9,0) {};
\path (C) to [ornament=#2] (D);
\end{tikzpicture}\}}}}%
\hspace{\fill}\par\nointerlineskip
\vspace{.5\baselineskip}}
\usage---> \sectionlinetwo{orange}{88}
```

2.2 Wireframe rendering



```
\documentclass{article}
\usepackage{xcolor}
\usepackage{roboto}
\usepackage[outline]{contour}
\begin{document}
\roboto\huge\contourlength{.15em}
\contour{gray}{boxed}
\end{document}
```

2.3 Justified text

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list
6. Sixth item in a list
7. Seventh item in a list
8. Eighth item in a list
9. Ninth item in a list
10. Tenth item in a list

```
\documentclass{article}
\usepackage{blindtext}
\newcommand*\justify{%
  \fontdimen2\font=0.4em% interword space
  \fontdimen3\font=0.2em% interword stretch
  \fontdimen4\font=0.1em% interword shrink
  \fontdimen7\font=0.1em% extra space
  \hyphenchar\font='\-% allowing hyphenation
}
\begin{document}
\texttt{\justify\blindenumerate[10]}
\end{document}
```

2.4 Text under an underline

This is short text
(some text)

```
\documentclass[12pt]{article}
\usepackage{amsmath, soul}
\usepackage{soulpos}
\ulposdef{\ulnumaux}{%
$ \underset{\rule[-.7ex]{\ulwidth}{.4pt}}{\ulnum}[2]{\def\ulnum{\#1}}%
\ulnumaux{\#2}%
}

\begin{document}
\ulnum{(some text)}{This is short text}
\end{document}
```

2.5 Various types of underlining

\underline{important}
\uuline{urgent}
\uwave{boat}
\sout{wrong}
\xout{removed}
\dashuline{dashing}
\dotuline{dotty}

underlined text like important
double-underlined text like urgent
wavy underline like boat
line struck through word like wrong
marked over like wrong
dashed underline like dashing
dotted underline like dotty

```
\documentclass[14pt]{extreport}
\usepackage{ulem}

\begin{document}
\underline{important} \uuline{urgent}
\uwave{boat} \sout{wrong}
\xout{removed} \dashuline{dashing}
\dotuline{dotty}
\end{document}
```

2.6 Bullets Style

32	33	34	35	36	37	38	39
40 →	41 ◻	42 ◉	43 ◊	44 ◇	45 ◆	46 ◇	47 ◉
48 ◇	49 ◆	50 ◉	51 ◇	52 ◆	53 ◇	54 ◇	55 ◉
56 ✕	57 ✖	58 ✖	59 ✖	60 ✖	61 ✖	62 ✖	63 ✖
64 ✖	65 ✖	66 ✖	67 ✖	68 ✖	69 ✖	70 ✖	71 ✖
72 ★	73 ◆	74 ◇	75 ◆	76 *	77 ★	78 *	79 *
80 ◇	81 *	82 *	83 *	84 *	85 *	86 *	87 *
88 *	89 *	90 *	91 *	92 *	93 *	94 *	95 *
96 *	97 ◆	98 ◇	99 *	100 *	101 *	102 *	103 *
104 ✖	105 ✖	106 *	107 *	108 ◆	109 ◇	110 ■	111 □
112 □	113 □	114 □	115 ▲	116 ▼	117 ◆	118 ✖	119 ▶
120 I	121 I	122 I	123 •	124 *	125 ✖	126 *	127 *
161 §	162 ♦	163 ♦	164 ♦	165 ♦	166 ♦	167 ♦	168 ♦
169 ♦	170 ♦	171 ♦	172 ◊	173 ◊	174 ◊	175 ◊	176 ◊
177 ◊	178 ◊	179 ◊	180 ◊	181 ◊	182 ◊	183 ◊	184 ◊
185 ◊	186 ◊	187 ◊	188 ◊	189 ◊	190 ◊	191 ◊	192 ◊
193 ◊	194 ◊	195 ◊	196 ◊	197 ◊	198 ◊	199 ◊	200 ◊
201 ◊	202 ◊	203 ◊	204 ◊	205 ◊	206 ◊	207 ◊	208 ◊
209 ◊	210 ◊	211 ◊	212 ◊	213 ◊	214 ◊	215 ◊	216 ◊
217 ◊	218 ◊	219 ◊	220 ◊	221 ◊	222 ◊	223 ◊	224 ◊
225 ◊	226 ◊	227 ◊	228 ◊	229 ◊	230 ◊	231 ◊	232 ◊
233 ◊	234 ◊	235 ◊	236 ◊	237 ◊	238 ◊	239 ◊	241 ◊
242 ◊	243 ◊	244 ◊	245 ◊	246 ◊	247 ◊	248 ◊	249 ◊
250 ◊	251 ◊	252 ◊	253 ◊	254 ◊			

```
\documentclass{article}
\usepackage{pifont}

\begin{document}
\begin{itemize}
\item[\ding{51}] Code 51
\item[\ding{56}] Code 56
\item[\ding{43}] Code 43
\item[\ding{118}] Code 118
\item[\ding{170}] Code 170
\end{itemize}
\end{document}
```

2.7 Change the title of \tableofcontents

Whatever

1 Section			1
1.1 Subsection			1
1 Section			
1.1 Subsection			

```
\documentclass{article}
\renewcommand{\contentsname}{Whatever}

\begin{document}
\tableofcontents
\section{Section}
\subsection{Subsection}
\end{document}
```

Chapter 3

Code, listings, minted . . .

3.1 Code listing using `minted` in `beamer`

Python Code Example
1 import glob
2

```
\documentclass{beamer}
\usepackage{tcolorbox}
\tcbuselibrary{minted,skins,breakable}
\newtcblisting[pythoncode][2][]{%
    listing engine=minted, breakable, colback=bg,
    colframe=black!70, listing only,
    minted style=colorful, minted language=python,
    minted options={numbersep=3mm,texcl=true,#1},
    left=5mm,enhanced,
    overlay={\begin{tcbclipinterior}\fill[black!25] (frame.
        \hspace{-1.5mm} south west)
    rectangle ([xshift=5mm]frame.north west);\end{%
        \hspace{-1.5mm} tcbclipinterior}},%
#2,}
\begin{document}
\begin{frame}[fragile]
\frametitle{Premature Optimization}
\begin{pythoncode}[linenos=true,]{title=Python Code
    \hspace{-1.5mm} Example}
import glob
\end{pythoncode}
\end{frame}
\end{document}
```

3.2 "Zebra" style listing

```
/**  
 * Prints Hello World.  
 **/  
#include <stdio.h>  
  
int main(void) {  
    printf("Hello World!");  
    return 0;  
}
```

```
\documentclass{article}  
\usepackage[T1]{fontenc}  
\usepackage{beramono}  
\usepackage{listings}  
\usepackage{xcolor}  
\newcommand{\realnumberstyle}[1]{}  
\makeatletter  
\newcommand{\zebra}[3]{%  
    {\realnumberstyle{#3}}%  
    \begin{group}  
        \lst@basicstyle  
        \ifodd\value{lstnumber}{%  
            \color{#1}%  
        }  
        \else  
            \color{#2}%  
        \fi  
        \rlap{\hspace*{\lst@numbersep}}%  
        \color@block{\linewidth}{\ht\strutbox}{\dp\strutbox}%  
    }%  
    \endgroup  
\makeatother  
\begin{document}  
\begin{lstlisting}[language=C,basicstyle=\ttfamily,  
numberstyle=\zebra{green!35}{yellow!35},numbers=left]  
/*  
 * Prints Hello World.  
 **/  
#include <stdio.h>  
int main(void) {  
    printf("Hello World!");  
    return 0;  
}  
\end{lstlisting}  
\end{document}
```

3.3 Listing with russian language

```
print("English comment"); // English comment  
print("Russian comment"); // Русский комментарий
```

```
\documentclass{article}  
\usepackage[T2A]{fontenc}  
\usepackage[utf8]{inputenc}  
\usepackage[russian]{babel}  
\usepackage{listings}  
\usepackage{xcolor}  
  
\begin{document}  
\lstset{ keepspaces=true,  
backgroundcolor=\color{blue},  
showstringspaces=false,  
language=C,  
extendedchars=\true,  
framexrightmargin=0pt,  
framexleftmargin=0pt,  
framextopmargin=15pt,  
framexbottommargin=15pt,  
frame=tb, framerule=0pt,  
basicstyle=\color{yellow}\ttfamily\small}  
  
\begin{lstlisting}% <<<<<< add "/"  
print("English comment"); // English comment  
print("Russian comment"); // %here can be russian words  
\end{lstlisting}% <<<<<< add "/"  
\end{document}
```

3.4 Listing with **minted**

```
1 int main(int ac, char *av[])
2 {
3     printf("Hello, World");
4     return 0;
5 }
```

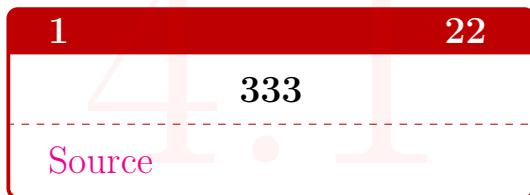
```
\documentclass{article}
\usepackage[many]{tcolorbox}
\tcbuselibrary{minted}
\newtcblisting{mylisting}[
    colframe=cyan,
    colback=cyan!10,
    listing only,
    listing engine=minted,
    minted language=cpp,
    minted options={fontsize=\small,linenos,numbersep=3mm},
]

\begin{document}
\begin{mylisting}
some code
\end{mylisting}
\end{document}
```

Chapter 4

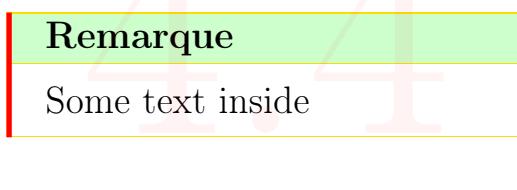
Tables, boxes and so on

4.1 Nice tcolorbox



```
\PassOptionsToPackage{svgnames}{xcolor}
\documentclass[twocolumn,a4paper]{article}
\usepackage{tcolorbox}
\tcbuselibrary{skins,breakable}
\usetikzlibrary{shadings,shadows} %preamble
\begin{tcolorbox}[colback=white!100,colframe=red!75!black,width=7cm,
    righttitle=0.5cm, subtitle style={boxrule=0.4pt,colback=yellow!50!red
    !25!white},title= \bf{1}\hfill \bf{22}]
\begin{center}\bf{333}\end{center}
\tcblower
\href{https://tools.ietf.org/doc/texlive-doc/latex/tcolorbox/tcolorbox.pdf}{URL}
\end{tcolorbox}
```

4.2 Color box with yellow border



```
\documentclass[border=2mm]{standalone}
\usepackage[most]{tcolorbox}
\usepackage{lipsum}

\newtcolorbox{mycolorbox}[1]{
    enhanced, breakable,
    title=#1, colback=white,
    colbacktitle=green!20!white,
    coltitle=black,
    fonttitle=\bfseries,
    boxrule=.5pt, arc=0pt,
    outer arc=0pt,
    colframe=yellow!80!orange,
    borderline west={2pt}{0pt}{red} }

\begin{document}
\begin{mycolorbox}{Remarque}
\lipsum[1]
\end{mycolorbox}
\end{document}
```

4.3 A drop capital in a tcolorbox

SOME text. Lorem ipsum dolor sit amet, consec-tetuer adipiscing elit.

```
\documentclass{article}
\usepackage{lettrine}
\usepackage{tcolorbox}
\usepackage{lipsum}

\begin{document}
\begin{tcolorbox}
\lettrine[S]{ome} text. \lipsum[1]
\end{tcolorbox}
\end{document}
```

4.4 Table with the desired length.

Table 1: Caption

Variant	res	Veriaty of waters f_0 , res	C, res	L, res
5	1	2	1.26	5

a command was also created to make a new cell view in the table

```
\usepackage{graphicx}
\usepackage{tabularx}
\newcolumntype{Y}{>{\centering\arraybackslash}X}
\begin{document}
\begin{table}[h!]
\begin{center}
\caption{\textbf{Caption}}
\begin{tabularx}{14cm}{|Y|Y|c|Y|Y|}
\hline
Variant & res & Veriaty of waters $f_0$, res & C, res & L, res\\
\hline
5 & 1 & 2 & 1.26 & 5\\
\hline
\end{tabularx}
\end{center}
\end{table}

```

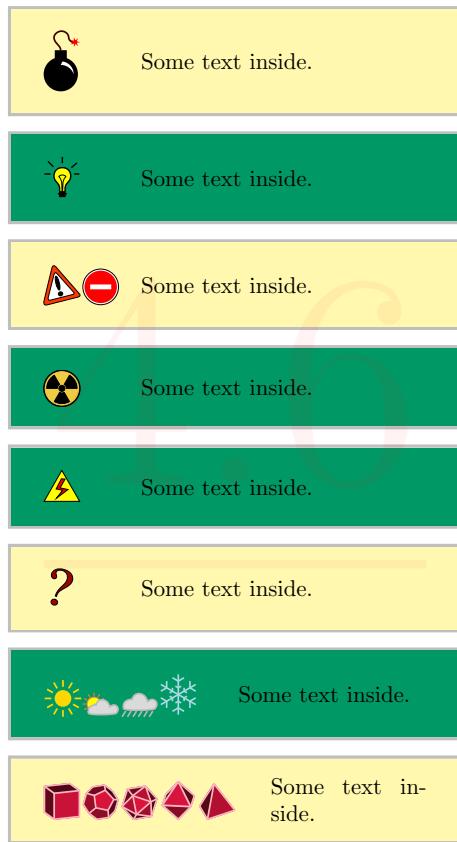
4.5 Photo positioning

Sample text here.



```
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{graphicx}
\begin{document}
\begin{tcolorbox}[enhanced, sharp corners,
width={5cm},
colback=white,
overlay={\node at (frame.south east) {\includegraphics[
    \rightarrow scale=0.1]{example-image-a}};}] ]
Sample text here.
\end{tcolorbox}
\end{document}
```

4.6 bclogo – Creating colourful boxes with logos



```
\documentclass{article}
\usepackage{geometry}
\geometry{
paperwidth=8cm,
paperheight=14cm,
margin=0.5cm
}
\usepackage{xcolor}
\usepackage[most]{tcolorbox}
\usepackage[tikz]{bclogo}

\newtcolorbox{framedd}[1][]{%
colframe=lightgray,
colback=yellow!40!white,
enhanced jigsaw,
sharp corners,
lower separated=false,
llefthand width=1cm,
sidebyside gap=0.5cm,
sidebyside,#1}

\begin{document}
\begin{framedd}
\bc bombe \tcblower Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green]
\bc lampe \tcblower Some text inside.
\end{framedd}

\begin{framedd}
\bc attention \bc interdit \tcblower
Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green]
\bc nucleaire \tcblower
Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green]
\bc danger \tcblower
Some text inside.
\end{framedd}

\begin{framedd}
\bc question \tcblower
Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green, llefthand width=2.5cm]
\bc soleil \bc claircie \bc pluie \bc neige \tcblower
Some text inside.
\end{framedd}

\begin{framedd}[lefthand width=3cm]
\bc cube \bc dodecaedre \bc icosaedre \bc octaedre \bc tetraedre \tcblower
Some text inside.
\end{framedd}
\end{document}
```

4.7 Warning banner



warning

Here is some text

```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[most]{tcolorbox}
\definecolor{orang}{RGB}{255,155,0}
\newtcolorbox[auto counter,number within=section]{caja
    \rightarrow }[1][]{%
enhanced jigsaw,colback=white,colframe=orang,coltitle=orang
    \rightarrow ,
fonttitle=\bfseries\sffamily,
sharp corners,
detach title,
leftrule=10mm,
% What you need %%%%%%%%%%%%%%
underlay unbroken and first={\node[below, text=black, anchor=
    \rightarrow east]
at ([xshift=-5.5pt]interior.base west) {\Huge \textbf
    \rightarrow \{};},
%%%%%%%%%%%%%
breakable,pad at break=1mm,
#1,
code={\ifempty{\tcbtitle}{\tcbset{before upper={\tcbtitle\par\medskip}}}},}
\begin{document}
\begin{caja}[title=warning]
The vertical alignment settings
\end{caja}
\end{document}
```

4.8 Absolutely centered cells (vertically and horizontally)

all	in	cells
are	centered	vertically
and	horizontally	Σ

4.9 Martix made of table

$$\begin{array}{ccc|c}
 a_{1,1} & \dots & a_{1,n} & 0 \\
 a_{1,1} & \dots & a_{1,n} & 0 \\
 \dots & \dots & \dots & \dots \\
 a_{1,1} & \dots & a_{1,n} & 0 \\
 a_{1,1} & \dots & a_{1,n} & 0 \\
 \dots & \dots & \dots & \dots \\
 a_{1,1} & \dots & a_{1,n} & 0
 \end{array} = 0$$

```
\documentclass[a4paper,14pt]{extreport}
\begin{document}
\begin{table}[]
\begin{tabular}{l|l c r|l}
& $a_{1,1}$ & $\dots$, & $a_{1,n}$ & $0$ & \\
& $a_{1,1}$ & $\dots$, & $a_{1,n}$ & $0$ & \\
& \multicolumn{3}{l|}{\dots} & & \\
& $a_{1,1}$ & $\dots$, & $a_{1,n}$ & $0$ & \\
\$d_{n+1}$ & & & & $= 0$ \\
& $a_{1,1}$ & $\dots$, & $a_{1,n}$ & $0$ & \\
& $a_{1,1}$ & $\dots$, & $a_{1,n}$ & $0$ & \\
& \multicolumn{3}{l|}{\dots} & & \\
& $a_{1,1}$ & $\dots$, & $a_{1,n}$ & $0$ & \\
\end{tabular}
\end{table}
\end{document}
```

4.10 Centering cells with `NiceTabular`

1	1	EVERY
1	1	CELL
1	1	CENTERED

```
\documentclass{article}
\usepackage[table]{xcolor}
\usepackage{nicematrix}
\NiceMatrixOptions{cell-space-top-limit=5pt,cell-space-
    ↪ bottom-limit=5pt}

\begin{document}
\begin{table}[htbp]
\centering
\begin{NiceTabular}{|c|c|c|} \hline
\cellcolor{red}1& \cellcolor{green}1 & 1 \\ \hline
\cellcolor{orange}1 & \cellcolor{red!35}1 & 1 \\ \hline
\cellcolor{green!35}1 & \cellcolor{blue!45}1 & 1 \\ \hline
\end{NiceTabular}
\end{table}
\end{document}
```

4.11 Centered cells in `longtable`

Enum	Example	Description
1	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.
2a	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.
2b	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.

```
\documentclass{article}
\usepackage[left=1.5cm,right=1.5cm,
top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{float}
\usepackage{array, makecell}
\usepackage[utf8]{inputenc}
\usepackage{lipsum}
\usepackage{booktabs}
\usepackage{multirow}
\usepackage{pdflscape}
\usepackage{longtable, array}

\begin{document}
\begin{landscape}
\begin{longtable} {@{} *{2}{m{.15\paperwidth}} *{1}{m{.40\paperwidth}} @{}}
\endfirsthead
\endhead
\toprule
\textbf{Enum} & \textbf{Example} & \textbf{Description} \\
\midrule
1 & test & \lipsum[50]\\
\midrule
2a & test & \lipsum[50]\\
2b & test & \lipsum[50]\\
\bottomrule
\end{longtable}
\end{landscape}
\end{document}
```

4.12 If table is not wide enough

	Item1	Item2	Item3
Group1	0.8	0.1	0.1
Group2	0.1	0.8	0.1
Group3	0.1	0.1	0.8
Group4	0.34	0.33	0.33

```
\documentclass{article}
\usepackage[left=1.5cm,right=1.5cm,
top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{graphicx}
\usepackage{booktabs}
\usepackage{tabularx}

\begin{document}
\begin{table} [!ht]
\caption{Vertical and lateral stresses of mortar.}
\vspace{0.5cm}
\begin{tabularx}{\textwidth}{X X X X}
& Item1 & Item2 & Item3 \\
\midrule
Group1 & 0.8 & 0.1 & 0.1 \\
Group2 & 0.1 & 0.8 & 0.1 \\
Group3 & 0.1 & 0.1 & 0.8 \\
Group4 & 0.34 & 0.33 & 0.33 \\
\bottomrule
\end{tabularx}
\label{c}
\end{table}
\end{document}
```

4.13 Text next to a table

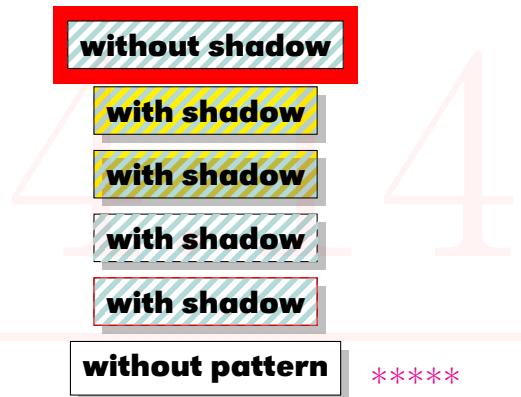
text text text

1	22	333

```
\documentclass[a4paper,14pt]{extreport}
\usepackage[left=1.5cm,right=1.5cm,top=1.5cm,bottom=2cm,
           bindingoffset=0cm]{geometry}
\usepackage{lipsum}

\begin{document}
\begin{minipage}[m]{0.58\textwidth}
text text text
\end{minipage}
\hspace{0.2cm}
\begin{minipage}[m]{0.40\textwidth}
\begin{tabular}{|c|c|c|}
\hline
1 & 22 & 333 & \\
& & & \hline
& & & \hline
& & & \hline
& & & \hline
\end{tabular}
\end{minipage}
\end{document}
```

4.14 Text next to a table



```
\documentclass[tikz,border=5mm]{standalone}
\usepackage{tikz}
\usetikzlibrary{chains,patterns,shadows,fit,backgrounds}

\makeatletter
\tikzset{%
    % customization of pattern
    % based on <m.wibrow@gm...> - 2013-03-24 07:20:
    hatch distance/.store in=\hatchdistance,
    hatch distance=5pt,
    hatch thickness/.store in=\hatchthickness,
    hatch thickness=5pt
}
\pgfdeclarepatternformonly[\hatchdistance,\hatchthickness]{north east
    \rightarrow hatch}{%
    {\pgfqpoint{-1pt}{-1pt}}% below left
    {\pgfqpoint{\hatchdistance}{\hatchdistance}}% above right
    {\pgfqpoint{\hatchdistance-1pt}{\hatchdistance-1pt}}%
    {
        \pgfsetcolor{\tikz@pattern@color}
        \pgfsetlinewidth{\hatchthickness}
        \pgfpathmoveto{\pgfqpoint{0pt}{0pt}}
        \pgfpathlineto{\pgfqpoint{\hatchdistance}{\hatchdistance}}
        \pgfusepath{stroke}
    }
}
\makeatother

\begin{document}
\begin{tikzpicture}[
    start chain=going below,
    node distance=2mm,
    Node/.style = {minimum width=1cm,
                  shape=rectangle,
                  draw, fill=white,
                  on chain},
    Pattern/.style = {pattern=north east hatch,
                      pattern color=teal!30,
                      hatch distance=7pt,
                      hatch thickness=2pt},
    font=\small\sffamily]
%-----
\node[Node=24mm, Pattern,
      preaction={fill=white}] (a) {without shadow};
\begin{scope}[on background layer]
    \node[fit=(a),fill=red] {};
\end{scope}

\node[Node=24mm, drop shadow,
      preaction={fill=yellow}, Pattern] (b) {with shadow};

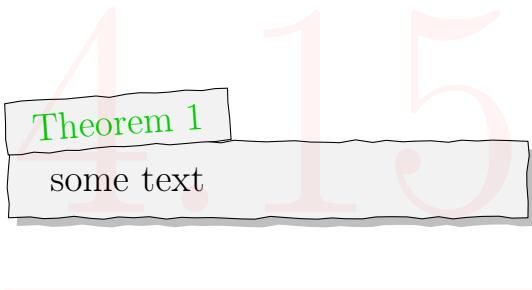
\node[Node=24mm, preaction={fill=yellow},
      drop shadow, Pattern] (b) {with shadow};

\node[Node=24mm, postaction={Pattern},
      drop shadow] (b) {with shadow};

\node[Node=24mm, postaction={draw=red, Pattern},
      drop shadow] (b) {with shadow};

\node[Node=24mm, drop shadow] (c) {without pattern};
%---
\end{tikzpicture}
\end{document}
```

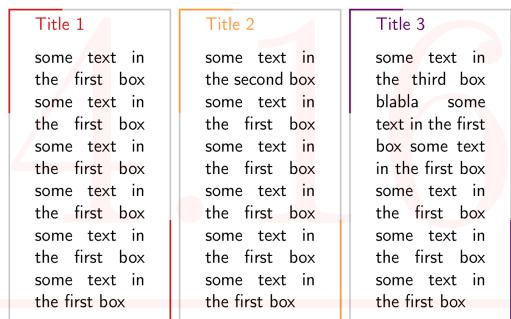
4.15 Hand Drawn tcolorbox



```
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{emerald}
\usetikzlibrary{decorations.pathmorphing}
\usetikzlibrary{shadows}
\tikzset{decoration={random steps,segment length=2mm,
    → amplitude=0.6pt}}
\newtcboxtheorem{mytheo}{Theorem}[
  coltitle=green!80!black,
  colback=lightgray!20,
  colbacktitle=lightgray!20,
  fonttitle=\bfseries\ECFAugie,
  enhanced,
  attach boxed title to top left={yshift=-0.18cm,xshift
    → =-0.5mm},
  boxed title style={
    tikz={rotate=4,transform shape},
    frame code={
      \draw[decorate,fill=lightgray!20] (frame.south west)
        → rectangle (frame.north east);
    } },
  frame code={
    \draw[decorate,fill=lightgray!20,drop shadow] (frame.
      → north east) rectangle (frame.south west);
  },}{th}

\begin{document}
\begin{mytheo}{}{theoexample}
content...
\end{mytheo}
\end{document}
```


4.16 Halfframed boxes



```
\documentclass{beamer}
\usepackage[english]{babel}
\usepackage[T1]{fontenc}
\usepackage[utf8]{inputenc}
\usepackage{tikz}
\usepackage{tcolorbox}
\usetikzlibrary{calc}
\tcbuselibrary{skins,breakable,raster}
\makeatletter
\definecolor{myred}{RGB}{209,23,23}
\definecolor{myorange}{RGB}{255,153,51}
\definecolor{mypurple}{RGB}{102,0,102}
\definecolor{mygrey}{RGB}{200,200,200}

\newtcolorbox{mybox}[2]{%
empty,
coltitle = #1,
title = #2,
overlay ={
\draw[mygrey,line width=1pt]
(frame.north west)--(frame.north east)--(frame.south east)
\qquad \rightarrow --(frame.south west)--(frame.north west);
\draw[#1,line width=1pt]
($(frame.north west)!0.33!(frame.south west)$)
--(frame.north west)
--($(frame.north west)!0.33!(frame.north east)$);
\draw[#1,line width=1pt]
($(frame.south east)!0.33!(frame.south west)$)
--(frame.south east)
--($(frame.south east)!0.33!(frame.north east)$);}

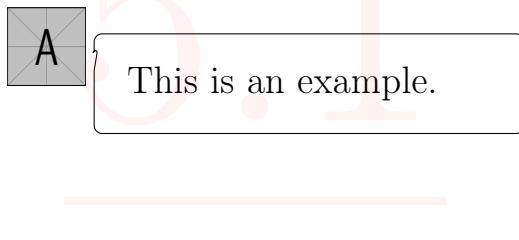
\tcbset{marktext/.style={%
overlay={\node[rotate=90,text=black,anchor=north east] at
\qquad \rightarrow (frame.north west){#1};},
code={\setbox\z@=\color@hbox{\color@endbox\tcbdimto\qquad \rightarrow myheight{\wd\z@+3mm}},%
minimum for equal height group=\tcb@ehgid:\myheight, }}}
\makeatother

\begin{document}
\begin{frame}
\begin{tcbraster}[% 
raster columns=3,
raster equal height=rows
]
\begin{mybox}{myred}{Title 1}
some text in the first box
\end{mybox}
\begin{mybox}{myorange}{Title 2}
some text in the second box
\end{mybox}
\begin{mybox}{mypurple}{Title 3}
some text in the third box blabla
\end{mybox}
\end{tcbraster}
\end{frame}
\end{document}
```

Chapter 5

Figures

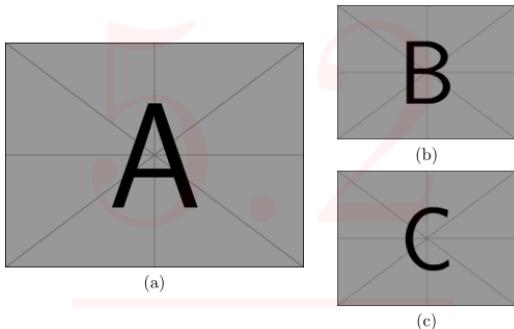
5.1 Comment to figure



```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{shapes.callouts}

\begin{document}
\begin{tikzpicture}
\node [anchor=south west] at (0, 0) (cartoon) {\includegraphics[width=.15\textwidth,height=.15\textwidth]{example-image-a}};
\node [anchor=north west,rectangle callout,draw=black,
callout absolute pointer=(cartoon.east),
rounded corners=3pt,text width=0.7\textwidth, inner sep=2ex] at (.19\
\textwidth,.125\textwidth) {This is an example.};
\end{tikzpicture}
\end{document}
```

5.2 Positioning 1 | 2



```
\documentclass{article}
\usepackage{graphicx}
\usepackage{subfig}
\begin{document}
\begin{figure}[htp]
\centering
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.5\linewidth]{example-image-a.png}}\\ (a)
\end{tabular} \qquad % some space
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-b.png}}\\ (b)
\end{tabular} \\
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-c.png}}\\ (c)
\end{tabular}
\caption{Caption.}
\end{figure}
\end{document}
```

5.3 Placing image anywhere You want



3

```
\usepackage{graphicx}
\usepackage{tikz}
\begin{document}
\begin{tikzpicture}[overlay, remember picture]
\node[anchor=north west,xshift=4cm,yshift=-11cm]
at (current page.north west)
{\includegraphics[width=5.5cm]{example-image-a.png}};
\end{tikzpicture}
\end{document}
```

5.4 Italic sabfigure references



(a) *a* (b) *b*

Fig. 1a ← *a* in ***italic*** style

```
\documentclass{article}
\usepackage{graphicx}
\usepackage{subcaption}
\renewcommand\thesubfigure{{\itshape\alph{subfigure}}} %<--- added

\begin{document}
\begin{figure}
\centering
\begin{subfigure}{.25\textwidth}
\centering
\includegraphics[width=.6\linewidth]{example-image-a}
\caption{ \textit{a} }
\label{1a}
\end{subfigure}%
\begin{subfigure}{.25\textwidth}
\centering
\includegraphics[width=.715\linewidth]{example-image-b}
\caption{ \textit{b} }
\label{1b}
\end{subfigure}
\caption{ }
\label{fig1}
\end{figure}
\end{document}
```

5.5 Wrapfigure

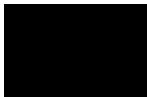


Figure 1: FIG 1

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefbun"? Kjift - not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.



Figure 2: FIG 2

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information?

Is there a difference between this text and some nonsense like "Huardest gefbun"? Kjift - not at all!

A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no

need for special content, but the length of words should match the language.

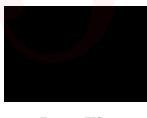


Figure 3: FIG 3

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information?

Is there a difference between this text and some nonsense like "Huardest gefbun"? Kjift - not at all!

A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no

need for special content, but the length of words should match the language.

1

```
\documentclass[11pt]{scrartcl}
\usepackage[english]{babel}
\usepackage[utf8]{inputenc}
\usepackage{blindtext}
\usepackage[demo]{graphicx}
\usepackage{wrapfig}
\setlength{\parindent}{0pt}

\begin{document}
\begin{wrapfigure}[11]{l}{0.4\textwidth}
\centering
\includegraphics[scale=0.1]{Bild}
\caption{FIG 1}
\end{wrapfigure}
\blindtext

\begin{wrapfigure}[11]{r}{0.4\textwidth}
\centering
\includegraphics[scale=0.1]{Bild}
\caption{FIG 2}
\end{wrapfigure}
\blindtext

\begin{wrapfigure}[11]{l}{0.4\textwidth}
\centering
\includegraphics[scale=0.1]{Bild}
\caption{FIG 3}
\end{wrapfigure}
\blindtext
\blindtext
\end{document}
```

5.6 Figures in landscape mode

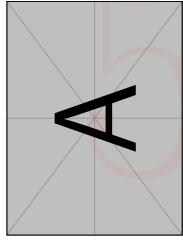


Table 5.2

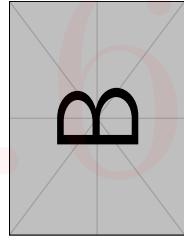


Table 5.3

```
\documentclass[12pt]{report}
\usepackage{graphicx}
\usepackage{lipsum}
\begin{document}
qqqqqq
\begin{figure}[htb]
\hfill
\rotatebox{90}{%
\begin{minipage}{0.45\linewidth}
\includegraphics[width=\linewidth]{example-image-a}
\caption{Caption1}
\label{fig:First}
\end{minipage}
}\hfill
\rotatebox{90}{%
\begin{minipage}{0.45\linewidth}
\includegraphics[width=\linewidth]{example-image-b}
\caption{Caption2}
\label{fig:First}
\end{minipage}
}\hfill\strut
\end{figure}
\end{document}
```

5.7 Three figures in a row

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.



Figure 1: Caption



Figure 2: Caption



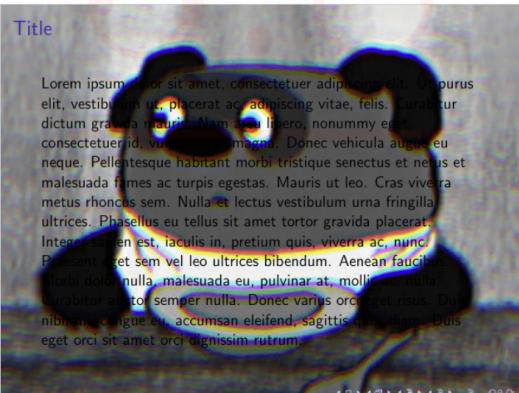
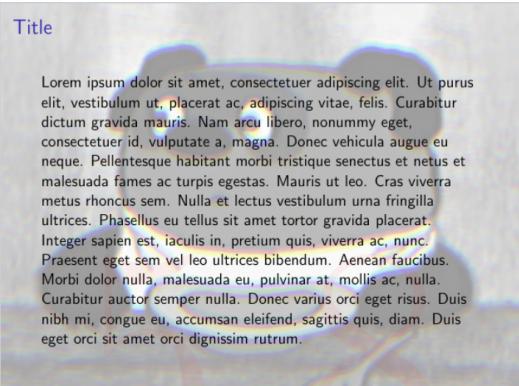
Figure 3: Caption

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

```
\documentclass[english]{article}
\usepackage[demo]{graphicx}
\usepackage{babel,blindtext}

\begin{document}
\blindtext
\begin{figure}[]
\minipage{0.32\textwidth}
\includegraphics[width=\linewidth]{delete_gesture.png}
\caption{Caption}\label{fig:awesome_image1}
\endminipage\hfill
\minipage{0.32\textwidth}
\includegraphics[width=\linewidth]{ok_gesture.png}
\caption{Caption}\label{fig:awesome_image2}
\endminipage\hfill
\minipage{0.32\textwidth}%
\includegraphics[width=\linewidth]{settings_gesture.png}
\caption{Caption}\label{fig:awesome_image3}
\endminipage
\end{figure}
\blindtext
\end{document}
```

5.8 Image as a background in a presentation



```
\documentclass{beamer}
\usepackage{transparent}
\usepackage{lipsum}

\begin{document}
\usebackgroundtemplate{\transparent{0.4}\includegraphics[width=\paperwidth
\rightarrow ,height=\paperheight]{example-image-a}}
\begin{frame}{Title}
\lipsum[1]
\end{frame}
\usebackgroundtemplate{\includegraphics[width=\paperwidth,height=\paperheight]{example-image-a}}
\begin{frame}{Title}
\lipsum[1]
\end{frame}
\end{document}
```

Chapter 6

Numbering, enumeration, itemizing

6.1 Numbering in few columns

1. c 3. d
2. g 4. f

```
\documentclass{article}
\usepackage{multicol}

\begin{document}
\begin{multicols}{2}%change to have more columns
\begin{enumerate}
\item c
\item g
\item d
\item f
\end{enumerate}
\end{multicols}
\end{document}
```

6.2 Enumeration environment with position number in the format (i, j)

- (1) First level-one item
- (1,1) First level-two item
 - (1,2) Second level-two item
- (2) Second level-one item
- (2,1) Still another level-two item

```
\documentclass{article}
\renewcommand{\theenumi}{(\arabic{enumi})}
\renewcommand{\theenumii}{(\arabic{enumi}),\arabic{enumii})
\renewcommand{\labelenumi}{\theenumi}
\renewcommand{\labelenumii}{\theenumii}
\makeatletter \renewcommand{\p@enumii}{} \makeatother

\begin{document}
\begin{enumerate}
\item First level-one item
\begin{enumerate}
\item First level-two item
\item Second level-two item
\end{enumerate}
\item Second level-one item
\begin{enumerate}
\item Still another level-two item
\end{enumerate}
\end{enumerate}
\end{document}
```

6.3 Colored enumeration

- 1) item
- 2)
- 3) item
- 4)
- 5) special item
- 6)
- 7) item

```
\documentclass{article}
\usepackage{tikz}
\definecolor{amethyst}{rgb}{0.6, 0.4, 0.8}
\definecolor{applegreen}{rgb}{0.55, 0.71, 0.0}
\definecolor{arylideyellow}{rgb}{0.91, 0.84, 0.42}
\definecolor{asparagus}{rgb}{0.53, 0.66, 0.42}
\definecolor{atomictangerine}{rgb}{1.0, 0.6, 0.4}
\definecolor{bananayellow}{rgb}{1.0, 0.88, 0.21}
\definecolor{brightgreen}{rgb}{0.4, 1.0, 0.0}
\definecolor{cambridgeblue}{rgb}{0.64, 0.76, 0.68}
\definecolor{capri}{rgb}{0.0, 0.75, 1.0}
\definecolor{carnationpink}{rgb}{1.0, 0.65, 0.79}
\newcommand{\ClaudioList}{red,applegreen,amethyst,carnationpink,blue!50!
    ↪ cyan,arylideyellow,asparagus,atomictangerine,bananayellow,
    ↪ brightgreen,cambridgeblue,capri}
\newcommand{\SebastianoItem}[1]{\foreach \X [count=\Y] in \ClaudioList
{\ifnum\Y=1\relax
\edef\SebastianoColor{\X}
\fi}
\tikz[baseline=(\SebastianoItem.base),remember
picture]{%
\node[fill=\SebastianoColor,inner sep=4pt,font=\sffamily,fill opacity=0.5]
    ↪ (\SebastianoItem.#1);}}
\newcommand{\SebastianoHighlight}{\tikz[overlay,remember picture]{%
\fill[\SebastianoColor,fill opacity=0.5] ([yshift=4pt,xshift=-\pgflinewidth]\SebastianoItem.east) -- ++(4pt,-4pt)
-- ++(-4pt,-4pt) -- cycle;}}
```

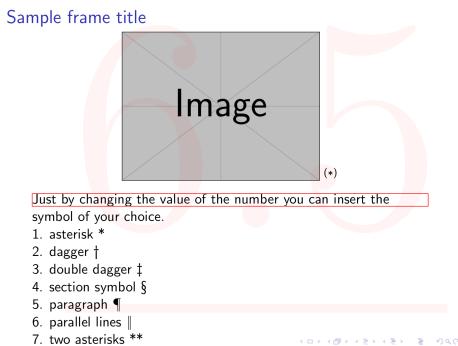
```
\begin{document}
\renewcommand{\labelenumi}{\SebastianoItem{\arabic{enumi}}}
\begin{enumerate}
\item item
\item special item \SebastianoHighlight
\item item
\end{enumerate}
\end{document}
```

6.4 Leveled arabic enumeration

- (1) First level-one item
- (1,1) First level-two item
- (1,2) Second level-two item
- (2) Second level-one item
- (2,1) Still another level-two item

```
\documentclass{article}
\renewcommand{\theenumi}{(\arabic{enumi})}
\renewcommand{\theenumii}{(\arabic{enumi}),\arabic{enumii})
\renewcommand{\labelenumi}{\theenumi}
\renewcommand{\labelenumii}{\theenumii}
\makeatletter
\renewcommand{\p@enumii}{}
\makeatother
\begin{document}
\begin{enumerate}
\item First level-one item
\begin{enumerate}
\item First level-two item
\item Second level-two item
\end{enumerate}
\item Second level-one item
\begin{enumerate}
\item Still another level-two item
\end{enumerate}
\end{enumerate}
\end{document}
```

6.5 Change footnote symbol



```
\documentclass{beamer}
\renewcommand{\thefootnote}{ (\fnsymbol{footnote})}

\begin{document}
\begin{frame}
\frametitle{Sample frame title}
\begin{figure}
\includegraphics[width=0.5\linewidth]{example-image}\footnote[1]{image
\hookrightarrow description}
\end{figure}
\end{frame}
\end{document}
```

6.6 Bullets Style

32	33	✗	34	✗	35	✗	36	✗	37	✗	38	✗	39	✗	
40	→	41	✗	42	✗	43	✗	44	✗	45	✗	46	✗	47	✗
48	✗	49	✗	50	✗	51	✓	52	✓	53	✗	54	✗	55	✗
56	✗	57	✗	58	✗	59	✗	60	✗	61	†	62	✗	63	✗
64	✗	65	✗	66	✗	67	✗	68	✗	69	✗	70	✗	71	✗
72	★	73	✗	74	✗	75	★	76	*	77	★	78	★	79	*
80	✗	81	*	82	*	83	*	84	*	85	*	86	*	87	*
88	*	89	*	90	*	91	*	92	*	93	*	94	*	95	*
96	*	97	*	98	*	99	*	100	*	101	*	102	*	103	*
104	✗	105	*	106	*	107	*	108	●	109	○	110	■	111	□
112	□	113	□	114	□	115	▲	116	▼	117	◆	118	✗	119	►
120	!	121	!	122	!	123	•	124	*	125	◆	126	■	127	□
		161	§	162	‡	163	■	164	♥	165	♦	166	✗	167	✗

✓ Code 51

✗ Code 56

✗ Code 43

❖ Code 118

♥ Code 170

♣	♦	♥	♦	♦	+	+	✿	✿
168	♣	169	♦	170	♥	171	♣	172
176	⑤	177	⑥	178	⑦	179	⑧	180
184	⑨	185	⑩	186	⑪	187	⑫	188
192	⑬	193	⑭	194	⑮	195	⑯	196
200	⑰	201	⑱	202	⑲	203	⑳	204
208	⑳	209	⑳	210	⑲	211	⑲	212
216	✗	217	→	218	✗	219	→	220
224	→	225	→	226	✗	227	✗	228
232	✗	233	→	234	✗	235	✗	236
241	↔	242	↔	243	↔	244	↔	245
248	↔	249	✗	250	→	251	↔	252

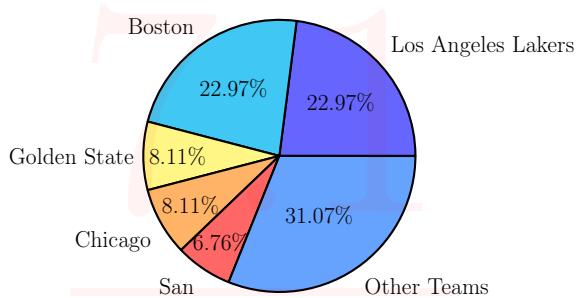
```
\documentclass{article}
\usepackage{pifont}

\begin{document}
\begin{itemize}
\item[\ding{51}] Code 51
\item[\ding{56}] Code 56
\item[\ding{43}] Code 43
\item[\ding{118}] Code 118
\item[\ding{170}] Code 170
\end{itemize}
\par
\ding{46} \ding{70} \ding{57} \ding{98} \ding{96}
\end{document}
```

Chapter 7

Plots, tikz, pie charts ...

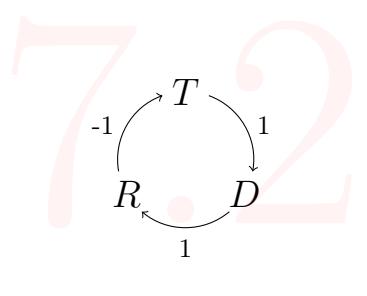
7.1 Simple pie chart



```
\documentclass[border=0.2cm]{standalone}
\usepackage{pgf-pie}

\begin{document}
\begin{tikzpicture}
\pie{22.97/Los Angeles Lakers,
22.97/Boston Celtics,
8.11/Golden State Warriors,
8.11/Chicago Bulls,
6.76/San Antonio Spurs,
31.07/Other Teams}
\end{tikzpicture}
\end{document}
```

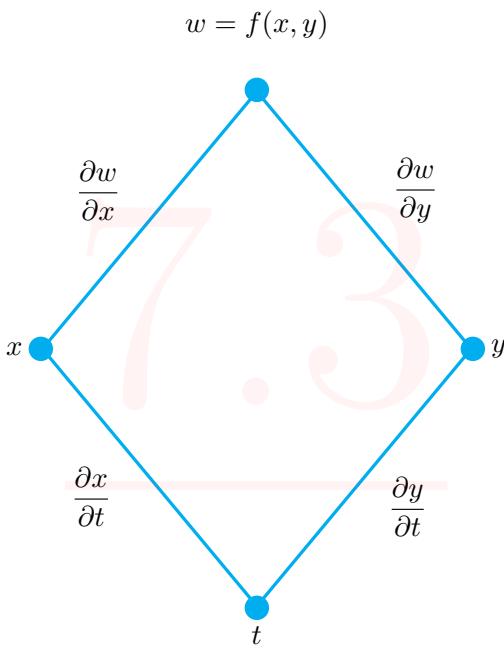
7.2 Circled arrows with text



```
\documentclass{article}
\usepackage{tikz}

\begin{document}
\begin{tikzpicture}[->, scale=.7]
\node (i) at (90:1cm) {$T$};
\node (j) at (-30:1cm) {$D$};
\node (k) at (210:1cm) {$R$};
\draw (70:1cm) arc (70:-10:1cm) node[midway, right] {{\footnotesize 1}};
\draw (-50:1cm) arc (-50:-130:1cm) node[midway, below] {{\footnotesize 1}};
\draw (190:1cm) arc (190:110:1cm) node[midway, left] {{\footnotesize 1}};
\end{tikzpicture}
\end{document}
```

7.3 Diamond with text



```
\documentclass[a4paper,14pt]{extreport}
\usepackage[left=1.5cm,right=1.5cm,top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{amsmath}
\usepackage{tikz}
\usetikzlibrary{shapes.geometric}

\begin{document}
\begin{tikzpicture}
\node[diamond,font=\small, line width=0.4mm,scale=0.7, draw = cyan, minimum width = 7.5cm, %text = red, minimum height = 9cm] (d) at (0,0) { };
\node [above=0.5cm] (a) at (d.90) {$w = f(x,y)$};
\node [above=0.5cm,right=0.1cm] (b) at (d.45) {$\frac{\partial w}{\partial y}$};
\node [above=0.5cm,left=0.1cm] (c) at (d.135) {$\frac{\partial w}{\partial x}$};
\node [left=0.1cm] (dd) at (d.180) {$\frac{\partial x}{\partial t}$};
\node [right=0.1cm] (e) at (d.0) {$\frac{\partial y}{\partial t}$};
\node [below=0.1cm] (f) at (d.270) {$t$};
\node [below=0.9cm,right=-0.3cm] (g) at (d.-30) {$\frac{\partial y}{\partial t}$};
\node [below=0.5cm,left=0.1cm] (h) at (d.220) {$\frac{\partial x}{\partial t}$};
\node at (d.90) [cyan,circle,fill,inner sep=3pt]{};
\node at (d.180) [cyan,circle,fill,inner sep=3pt]{};
\node at (d.0) [cyan,circle,fill,inner sep=3pt]{};
\node at (d.270) [cyan,circle,fill,inner sep=3pt]{};
\end{tikzpicture}
\end{document}
```

7.4 Levels of skills



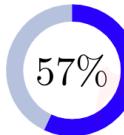
```
\documentclass{report}
\usepackage[T1]{fontenc}
\usepackage{tikz}
\usepackage{xcolor}

\definecolor{white}{RGB}{255,255,255}
\definecolor{gray}{HTML}{4D4D4D}
\definecolor{maingray}{HTML}{B9B9B9}

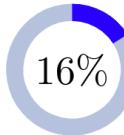
\newcommand\skills[1]{
\begin{tikzpicture}
\foreach [count=\i] \y in {#1} {
\draw[fill=maingray,maingray] (0,\i) rectangle (6,\i + 0.4);
\draw[fill=white,gray](0,\i) rectangle (\y,\i+0.4);
\node[above right] at (0,\i+0.4) {\y};
}
\end{tikzpicture}
}

\begin{document}
\skills{{b/2}}
\skills{{a/1}}
\end{document}
```

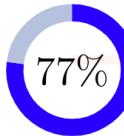
7.5 Round levels of skills



Skill #1
info



Skill #2
info



Skill #3
info

```
\documentclass[svgnames]{article}
\usepackage{tikz}
\usetikzlibrary{calc}
\usepackage{siunitx}% only to force percentages to be integers
\usepackage{enumitem}

\let\realItem\item% save for later use
\newcommand\percentageItem[1][10]{%
\realItem[\smash{\tikz[baseline]{%
\node[minimum width=4em] at (0,0) {\num[round-mode=places,round-
→ precision=0]{#1}\%};%
\draw[thick, line width=1.5mm,Blue](90:5mm)
arc [radius=5mm, start angle=90, delta angle=-#1*3.6];
\draw[thick, line width=1.5mm,LightSteelBlue](90-#1*3.6:5mm)
arc [radius=5mm, start angle=90-#1*3.6, end angle=-270];
}}]}%
}

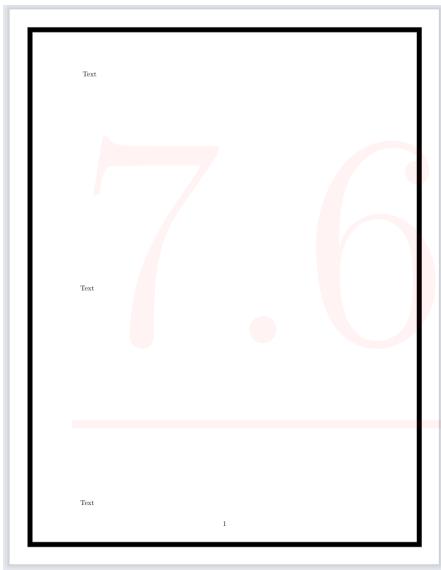
\newlist{achievements}{itemize}{1}
\setlist[achievements]{
before=\let\item\percentageItem,%make \item = \percentageItem
leftmargin=*,%
label={},%
itemsep=3mm,
}

\begin{document}

\begin{achievements}
\item[57]\textbf{Skill \#1}\textbf{\textbackslash}info
\item[16]\textbf{Skill \#2}\textbf{\textbackslash}info
\item[77]\textbf{Skill \#3}\textbf{\textbackslash}info
\end{achievements}

\end{document}
```

7.6 Huge margin line



```
\documentclass{article}
\usepackage[margin=3cm]{geometry}
\usepackage{tikz}

\begin{document}
\tikz[overlay, remember picture] \draw[line width=2.5mm] ([xshift=1cm,
→ yshift=-1cm]current page.north west) rectangle ([xshift=-1cm,
→ yshift=1cm]current page.south east);
Text
\vfill
Text
\vfill
Text
\end{document}
```



7.7 Aligning anything to a corner



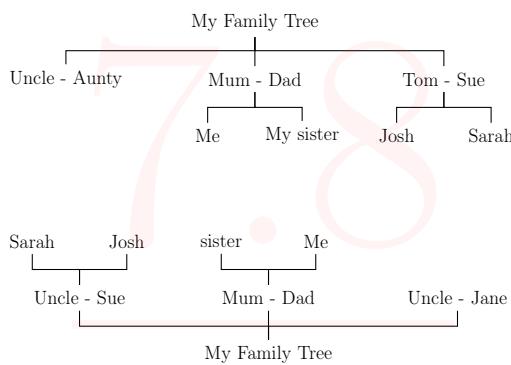
```
\documentclass[14pt]{extreport}
\usepackage{tikz}
\usepackage{qrcode}

\begin{document}
\begin{tikzpicture}[remember picture,overlay]
\node[anchor=north west,yshift=0pt,xshift=0pt]%
at (current page.north west)
{\qrcode[height=0.5cm]{https://github.com/AnMnv/eBook}%; --- put here
\rightarrow anything
};
\end{tikzpicture}
\end{document}

OR the rainbow variant (see example 9.7)

\begin{tikzpicture}[remember picture,overlay]
\node at ($(current page.north west)+(0.70cm,-.75cm)$)
{\fadingtext[scale=0.5]{path picture shading=rainbow}
\qrcode[height=3cm]{https://github.com/AnMnv/eBook}{}};
\end{tikzpicture}
```

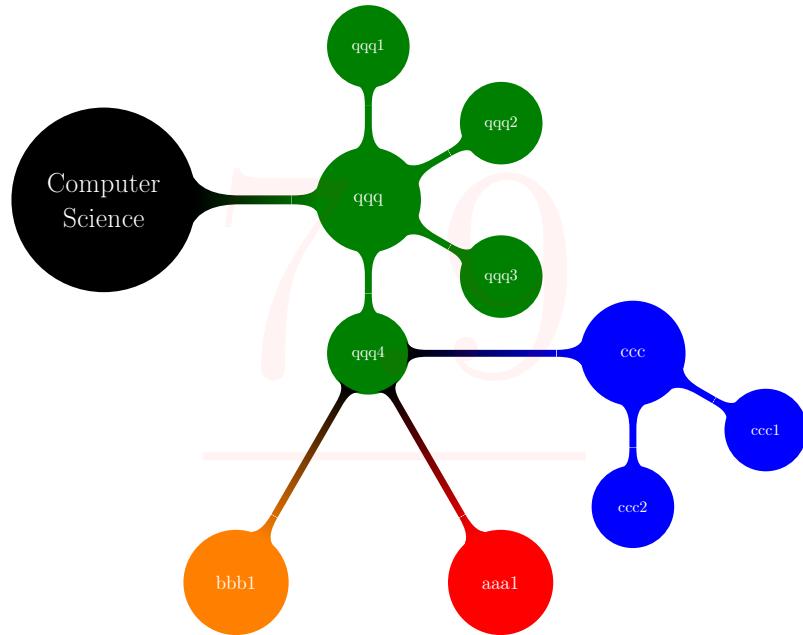
7.8 Family tree



```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{trees}

\begin{document}
\begin{tikzpicture}[level 1/.style={sibling distance=5cm}, level 2/.style={%
\rightarrow sibling distance=2.5cm}]
\node {My Family Tree}[edge from parent fork down]
    child { node {Uncle John - Aunty Jane}}
    child { node {Mum - Dad}
        child {node{Me}}
        child {node{My sister}}}
    }
    child { node {Uncle Tom - Aunty Sue}
        child {node{Cousin Josh}}}
        child {node{Cousin Sarah}}};
\end{tikzpicture}
\end{document}
```

7.9 Mindmap



```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{tikz}
\usetikzlibrary{mindmap}
\usetikzlibrary[mindmap]

\begin{document}

\begin{tikzpicture}
\path[mindmap,concept color=black,text=white]
node[concept] {Computer Science}
[clockwise from=0]
% note that 'sibling angle' can only be defined in
% 'level 1 concept/.append style={}'
child[concept color=green!50!black] {
    node[concept] {practical}
    [clockwise from=90]
    child { node[concept] {algorithms} }
    child { node[concept] {data structures} }
    child { node[concept] {pro\text{-}gramming languages} }
    child { node[concept] {software engineer\text{-}ing} }
}
% note that the 'concept color' is passed to the 'child'(!)
child[concept color=blue] {
    node[concept] {applied}
    [clockwise from=-30]
    child { node[concept] {databases} }
    child { node[concept] {WWW} }
}
child[concept color=red] { node[concept] {technical} }
child[concept color=orange] { node[concept] {theoretical} };
\end{tikzpicture}

\end{document}
```

Chapter 8

Highlighting

8.1 Words highlighting 1

The quick brown fox jumps over
the lazy dog.
The quick brown fox
jumps over the lazy dog.

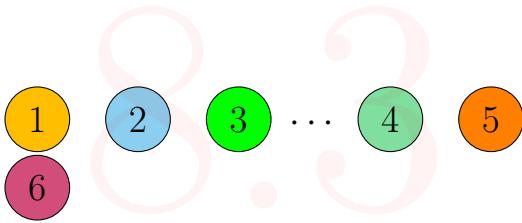
```
\documentclass{article}
\usepackage{tcolorbox}
\newtcbox{\mybox}[1][red]{on line,
arc=0pt,outer arc=0pt,colback=#1!10!white,colframe=#1!50!
    ↪ black,
boxsep=0pt,left=1pt,right=1pt,top=2pt,bottom=2pt,
boxrule=0pt,bottomrule=1pt,toprule=1pt}
\newtcbox{\xmybox}[1][red]{on line,
arc=7pt,colback=#1!10!white,colframe=#1!50!black,
before upper={\rule[-3pt]{0pt}{10pt}},boxrule=1pt,
boxsep=0pt,left=6pt,right=6pt,top=2pt,bottom=2pt}
\begin{document}
The \mybox[green]{quick} brown \mybox{fox}... \par
The \xmybox[green]{quick} brown \xmybox{fox} ...
\end{document}
```

8.2 Unusual words highlighting

Here You can see
more examples
and learn
something new.

```
\usepackage[many]{tcolorbox}
\newtcbox{\mylib}{enhanced,nobeforeafter, tcbox raise base, boxrule=0.4pt,
    ↪ top=0mm, bottom=0mm,
    right=0mm, left=4mm, arc=1pt, boxsep=2pt, before upper={\vphantom{dlg}},
    ↪ colframe=green!50!black, coltext=green!25!black, colback=green
    ↪ !10!white, overlay={\begin{tcbclipinterior} \fill[green!75!blue
    ↪ !50!white] (frame.south west) rectangle node[text=white,font=\
    ↪ sffamily\bfseries\tiny,rotate=90] {TYP} ([xshift=4mm]frame.north
    ↪ west); \end{tcbclipinterior}}}
\begin{document}
\mylib{recieve}
\end{document}
```

8.3 Colored circles



```
\usepackage{tikz}
\usepackage[framemethod=TikZ]{mdframed}
\usepackage{xcolor}
\usetikzlibrary{calc}
\makeatletter
\newlength{\mylength}
\xdef\CircleFactor{1.1}
\setlength{\mylength}{\dimexpr\f@size pt}
\newsavebox{\mybox}
\newcommand*\circled[2][draw=blue]{\savebox\mybox{\vbox{\vphantom{WL1
    \hspace*{\mylength}\relax}\tikzset{mystyle/.style={circle,#1,minimum
    height=\mylength}}\tikz[baseline=(char.base)]\node[mystyle] (char) {#2};}}
\makeatother
\definecolor{amber}{rgb}{1.0, 0.75, 0.0}
\definecolor{babyblue}{rgb}{0.54, 0.81, 0.94}
usage --> \circled[fill=amber,draw=black]{1}
```

8.4 Whole line colored



```
\documentclass{article}
\usepackage{xcolor}
\newcommand{\hly}[2]{\colorbox{#1!80}{\parbox{\textwidth}{#2}}}

\begin{document}
% \hly{YOURcolor}{some text}
\hly{green}{some text}
\hly{yellow}{some text}
\hly{red}{some text}
\end{document}
```

8.5 Circle text in points to other text

This is just some text that I will repeat for this section again and again. This is just some text that I will repeat for this section again and again.

your comment here

```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{tikzmark}

\begin{document}
\tikzset{mynode/.style={inner sep=2pt,fill=cyan!50,draw=blue,line width=1
    → pt,rounded corners}}
This is just some \tikzmarknode[mynode]{A}{text that} I will repeat for
    → this section again and again. This is just some text that I will
    → repeat for this section again and again.

\begin{tikzpicture}[remember picture, overlay]
    \draw[-,line width=1pt,blue] (A) --+(1,1) node[above right] {your
        → comment here};
\end{tikzpicture}
\end{document}
```

Chapter 9

For Fun

9.1 LaTeX Coffee Stains

Download `coffee4.sty` and put in the same directory

```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{arrows, shapes}
\usepackage{coffee4}
\enum{\cofeAm{1}{0.6}{0}{0.cm}{6cm}}
\cofeCm{0.9}{0.5}{180}{-7.cm}{11cm}
\cofeDm{0.4}{0.2}{90}{1.0cm}{3.0cm}
\cofeBm{0.5}{0.5}{0}{-3.cm}{10cm}
%\cofeAm{alpha}{scale}{angle}{xoff}{yoff} <-- usage
\end{document}
```

9.2 Sticky notes

- first
- second

```
\documentclass{article}
\usepackage{xparse}
\usepackage{fancypar}
\usetikzlibrary{calc, shadows}
\NewDocumentCommand{\StickyNoteP}{O{6cm}mO{6cm}}{%
\begin{tikzpicture}
\node[
drop shadow={shadow xshift=3pt, },
inner xsep=0pt,
xslant=-0.1,yslant=0.1,
inner ysep=0pt,
text depth=\the\dimexpr#1+2.5ex\relax
] {\parbox[t][#1][c]{#3}{#2}};
\end{tikzpicture}
}
\begin{document}
\StickyNoteP[2.5cm]{%
\NotebookPar[spiral=false]{%
\textbf{LARGE first}\textbf{ second }}}[6.5cm]
\end{document}
```

9.3

9.3

```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{fadings, shadings}
\newcounter{fadcnt}\setcounter{fadcnt}{0}
\newcommand\fadingtext[3][]{%
\stepcounter{fadcnt}
\begin{tikzfadingfrompicture}[name=fading letter\thefadcnt]
\node[transparent!0,inner xsep=0pt,outer xsep=0pt,#1]{#3};
\end{tikzfadingfrompicture}%
\begin{tikzpicture}[baseline=(textnode.base)]
\node[inner sep=0pt,outer sep=0pt,#1](textnode){\phantom{#3}};
\shade[path fading=fading letter\thefadcnt,#2,fit fading=false]
(textnode.south west) rectangle (textnode.north east);%
\end{tikzpicture}%
}
\usetikzlibrary{calc}
\newbox\shbox
\tikzset{%
path picture shading/.style={%
path picture={%
%
\pgfpointdiff{\pgfpointanchor{path picture bounding box}{south west}}%
{\pgfpointanchor{path picture bounding box}{north east}}%
\pgfgetlastxy\pathwidth\pathheight%
\pgfinterruptpicture%
\global\setbox\shbox=\hbox{\pgfuseshading{#1}}%
\endpgfinterruptpicture%
\pgftransformshift{\pgfpointanchor{path picture bounding box}{center}}%
\pgftransformxscale{\pathwidth/(\wd\shbox)}%
\pgftransformyscale{\pathheight/(\ht\shbox)}% \dp will (should) be 0pt
\pgftext{\box\shbox}%
%
}
}
\pgfdeclarehorizontalshading{rainbow}{10bp}{color(0bp)=(violet);
color(1.6667bp)=(blue);
color(3.3333bp)=(cyan);
color(5bp)=(green);
color(6.6667bp)=(yellow);
color(8.3333bp)=(orange);
color(10bp)=(red)}
\begin{document}
\fadingtext[scale=10, font=\bfseries]{upper left=red, upper right=green
\rightarrow, lower left=blue,lower right=yellow}{\LaTeX}

\fadingtext[scale=10, font=\bfseries]{path picture shading=rainbow}{\LaTeX}

\noindent\fadingtext[scale=0.7, font=\bfseries]{path picture shading=
\rightarrow rainbow}{\parbox[b]{1.5\linewidth}{\strut\lipsum[1]}}
\end{document}
```


9.6 Generating QR code



```
\documentclass{article}
\usepackage{qrcode}

\begin{document}
\qrcode[height=0.5in]{https://github.com/AnMnv/eBook}
\textcolor{blue}{\qrcode[height=0.5in]{https://github.com/AnMnv/eBook}}
\textcolor{green}{\qrcode[height=0.5in]{https://github.com/AnMnv/eBook}}
\end{document}
```

9.7 Gradient QR code



```
\documentclass{article}
\usepackage{qrcode}[]
\usepackage{tikz}
\usetikzlibrary{fadings, shadings}
\newcounter{fadcnt}\setcounter{fadcnt}{0}
\newcommand\fadingtext[3][]{%
\stepcounter{fadcnt}
\begin{tikzfadingfrompicture}[name=fading letter\thefadcnt]
\node[transparent!0,inner xsep=0pt,outer xsep=0pt,#1]{#3};
\end{tikzfadingfrompicture}%
\begin{tikzpicture}[baseline=(textnode.base)]
\node[inner sep=0pt,outer sep=0pt,#1](textnode){\phantom{#3}};
\shade[path fading=fading letter\thefadcnt,#2,fit fading=false]
(textnode.south west) rectangle (textnode.north east);
\end{tikzpicture}%
\usetikzlibrary{calc}
\newbox\shbox
\tikzset{%
path picture shading/.style={%
path picture={%
\pgfpointdiff{\pgfpointanchor{path picture bounding box}{south west}}{%
\pgfpointanchor{path picture bounding box}{north east}}%
\pgfgetlastxy\pathwidth\pathheight%
\pgfinterruptpicture%
\global\setbox\shbox=\hbox{\pgfuseshading{\#1}}%
\endpgfinterruptpicture%
\pgftransformshift{\pgfpointanchor{path picture bounding box}{center}}%
\pgftransformxscale{\pathwidth/(\wd\shbox)}%
\pgftransformyscale{\pathheight/(\ht\shbox)}% \dp will (should) be 0pt
\pgftext{\box\shbox}%
} } }
\pgfdeclarehorizontalshading{rainbow}{10bp}{color(0bp)=(violet);%
color(1.6667bp)=(blue);%
color(3.3333bp)=(cyan);%
color(5bp)=(green);%
color(6.6667bp)=(yellow);%
color(8.3333bp)=(orange);%
color(10bp)=(red)}
\pgfdeclareverticalshading{rainbow_vertical}{10bp}{color(0bp)=(violet);%
color(1.6667bp)=(blue);%
color(3.3333bp)=(cyan);%
color(5bp)=(green);%
color(6.6667bp)=(yellow);%
color(8.3333bp)=(orange);%
color(10bp)=(red)}

\begin{document}
\fadingtext[scale=0.5]{upper left=red, upper right=green, lower left=blue,
\rightarrow lower right=yellow}{\qrcode[height=5cm]{https://github.com/AnMnv/
eBook}}
\fadingtext[scale=0.5]{path picture shading=rainbow}{\qrcode[height=5cm]{%
\rightarrow https://github.com/AnMnv/eBook}}
\fadingtext[scale=0.5]{path picture shading=rainbow_vertical}{\qrcode[%
\rightarrow height=5cm]{https://github.com/AnMnv/eBook}}
\end{document}
```

9.8 Lobsrets

9.9 Watermark over everything



1



2

```
\documentclass[14pt]{extreport}
\usepackage[left=1.5cm,right=3cm,top=1.5cm,
bottom=1.5cm,bindingoffset=0cm]{geometry}
\usepackage{loblib}

\begin{document}
\lob{1} \lob{12}
\lob{2} \lob{20}
\lob{3} \lob{21}
\lob{4} \lob{22}
\lob{5} \lob{28}
\lob{6} \lob{32}
\lob{7} \lob{33}
\lob{8} \lob{74}
\lob{9} \lob{76}

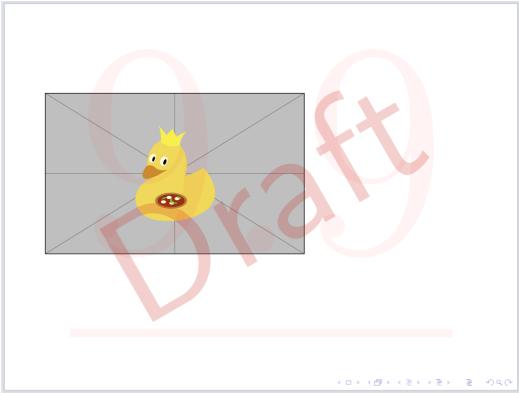
\vspace*{2cm}
\hspace*{-2.8cm}
\definecolor{shadow}{rgb}{0.85,0.85,0.85}
\lob[rotate=-90,shadow,xscale=-1.2,yscale=1.2]{77}

\lobwatermark
\end{document}
```

LobLib documentation on [GitHub](#) in LobLib-package folder.

Origins of the package <https://github.com/bryce-evans/LobLib>

However, to print lobsters put objects folder and loblib.sty from the LobLib-package folder into the same directory with your .tex file.



```
\documentclass{beamer}

\usepackage{tikz}
\AddToHook{shipout/foreground}{%
  \begin{tikzpicture}[remember picture,overlay]
    \node[red,rotate=30,scale=10,opacity=0.2] at (current page.center) {
      ↪ Draft};
  \end{tikzpicture}
}

\begin{document}
\begin{frame}
\includegraphics{example-image-duck}
\end{frame}
\end{document}
```

Chapter 10

Animation, videos, interaction

10.1 Video in PDF (okular as a .pdf viewer was used)



```

\documentclass{article}
%\input{embed_video.tex}
\usepackage{graphicx}
\usepackage[hidelinks]{hyperref}

%%%%%%%%%%%%%This is embed_video.tex (below till \begin{document})%%%%%%%%%%%%%
\ExplSyntaxOn
\NewDocumentCommand\embedvideo{smm}%
{ \group_begin: %
  \leavevmode %
  \tl_if_exist:cTF{file_\file_mdfive_hash:n{#3}}{ %
    \tl_set_eq:Nc\video{file_\file_mdfive_hash:n{#3}}{ %
      \IfFileExists{#3}{}{\GenericError{File~'#3'~not~found}{}}{} %
      \pbs_pdffobj:nnn({fstream}{\{#3\}}) %
      \pbs_pdffobj:nnn({dict}{ %
        /Type/Filespec/F~(#3)/UF~(#3) %
        /EF~<</F~\pbs_pdflastobj:>>} %
      \tl_set:Nx\video{\pbs_pdflastobj:} %
      \tl_gset_eq:cN{file_\file_mdfive_hash:n{#3}}\video %
    } %
  } %
  \pbs_pdffobj:nnn({dict}{ %
    /Type/RichMediaInstance/Subtype/Video %
    /Asset~\video %
    /Params~<</FlashVars { %
      source:#3& %
      skin=SkinOverAllNoFullNoCaption.swf& %
      skinAutoHide=true& %
      skinBackgroundColor=0x5F5F5F& %
      skinBackgroundAlpha=0 %
    }>>} %
  } %
  \pbs_pdffobj:nnn({dict}{ %
    /Type/RichMediaConfiguration/Subtype/Video %
    /Instances~[\pbs_pdflastobj:] %
  } %
  \pbs_pdffobj:nnn({dict}{ %
    /Type/RichMediaContent %
    /Assets~<< %
    /Names~[(#3)\~\video] %
  }>> %
  /Configurations~[\pbs_pdflastobj:] %
  \tl_set:Nx\rmcontent{\pbs_pdflastobj:} %
  \pbs_pdffobj:nnn({dict}{ %
    /Activation~<< %
    /Condition/\IfBooleanTF{#1}{PV}{XA} %
    /Presentation~<</Style/Embedded>>} %
  }>> %
  /Deactivation~<</Condition/PI>>} %
  \hbox_set:Nn\l_tmpa_box{#2} %
  \tl_set:Nx\l_box_wd_t1{\dim_use:N\box_wd:N\l_tmpa_box} %
  \tl_set:Nx\l_box_ht_t1{\dim_use:N\box_ht:N\l_tmpa_box} %
  \tl_set:Nx\l_box_dp_t1{\dim_use:N\box_dp:N\l_tmpa_box} %
  \pbs_pdfxform:nnnn{1}{1}{\l_tmpa_box} %
  \pbs_pdfannot:nnnn{\l_box_wd_t1}{\l_box_ht_t1}{\l_box_dp_t1}{ %
    /Subtype/RichMedia %
    /BS~<</W~0/S~$>> %
    /Contents~(embedded-video-file:#3) %
    /NM~(rma:#3) %
    /AP~<</N~\pbs_pdflastxform:>>} %
    /RichMediaSettings~\pbs_pdflastobj: %
    /RichMediaContent~\rmcontent %
  } %
  \phantom{#2} %
  \group_end: %
\ExplSyntaxOff
%%%%%%%%%%%%%source
%https://gist.github.com/FedericoTartarini/7af4eb6fc13b1cb9cc68b7e8ea823d50

\begin{document}
\begin{center}
\embedvideo{\includegraphics[width=\textwidth]{ANY_IMAGE.jpg}}{ANY_VIDEO.mp4}
\end{center}
\end{document}

```