



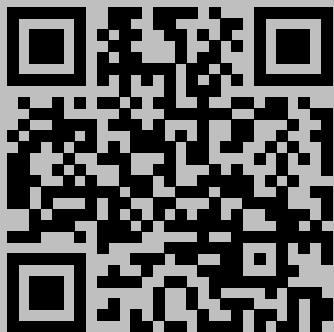
# LaTeX by examples

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# 1 Math Tips

## 1.1 Auto-resizing equation

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

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

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

## 1.2 Form for simplest calculation

Fill with number

if it does't work try another PDF viewer

a:

1.2

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}
\[
\frac{n_0}{n_1} = q_1 + \dfrac{\makebox[\mywd][l]{\$1$}}{\makebox[\mywd][l]{\$q_2 + \dfrac{\makebox[\mywd][l]{\$1$}}{\makebox[\mywd][l]{\$q_3 + \dfrac{\makebox[\mywd][l]{\$1$}}{\makebox[\mywd][l]{\$q_4 + \dots + \dfrac{\raisebox{-6pt}{\$ddots\$}}{\raisebox{-12pt}{+$\dfrac{\makebox[\mywd][l]{\$1$}}{\kern30pt\$}}}}}}}}}
\{q_{k-1} + \dfrac{1}{q_k}\}
\]
\end{document}
```

### 1.4 One number for multiline equation

$$\begin{aligned} x_{ij} &= d_{ijk} E_k, \\ x_{ij} &= \varsigma_{ijk} H_k, \\ x_{ij} &= s_{ijkl} X_{kl}, \\ x_{ij} &= \xi_{ij} \delta p, \\ x_{ij} &= \alpha_{ij} \delta T \end{aligned} \tag{1}$$

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

\begin{document}
\begin{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}
\end{equation}
\end{document}
```

## 1.5 Matrix in standalone documentclass

$$\begin{matrix} 1 & 5 \\ \begin{matrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{matrix} \end{matrix}$$

```
\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

$$\begin{matrix} 1 & 6 \\ A = \frac{\pi r^2}{2} \\ = \frac{1}{2}\pi r^2 \end{matrix} \quad (2)$$

```
\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

$$\begin{matrix} 1 & 7 \\ I - IV - V^{6-4 \atop 4-3 \atop 6-4} - I - cadence \\ I - IV - V^{6-4 \atop 4-3} - I - cadence \\ I - IV - V^{6-4 \atop 4-3} - I - cadence \end{matrix}$$

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

\begin{document}
\$I-IV-V^{\{\substack{6-4 \\ 4-3 \\ 6-4}\}}-I-cadence\$ \\
\$I-IV-V^{\{\genfrac{}{}{0pt}{}{6-4}{4-3}\}}-I-cadence\$ \\
\$I-IV-V^{\{\begin{array}{c}6-4 \\ 4-3\end{array}\}}-I-\\
cadence\$ \\
\end{document}
```

## 1.8 Aligning equations inbetween text

TEXT 1

$$K_I : I \rightarrow 2R \\ K_S : R + M \rightarrow RM^*$$

TEXT 2

$$K_I : I \rightarrow 2R \\ K_S : R + M \rightarrow RM^*$$

```
\documentclass{article}
\usepackage{mathtools}

\begin{document}
\begin{align*}
&\text{\texttt{\intertext{TEXT 1}}}
&K_I : I \rightarrow 2R \\
&K_S : R + M \rightarrow RM^* \\
&\text{\texttt{\intertext{TEXT 2}}}
&K_I : I \rightarrow 2R \\
&K_S : R + M \rightarrow RM^*
\end{align*}
\end{document}
```

## 1.9 Equation: boxed split inside align

$$A = B + C + D \\ A = \boxed{B \text{ is long} \\ + C \text{ is long too} \\ + D \text{ is long too}}$$

(1)

```
\begin{document}
\begin{align}
&\begin{aligned}
&\begin{split}
&A ={}& B + C + D \\
&\end{split} \nonumber \\
&\mathrlap{\boxed{\phantom{\begin{gathered}A = {}+ C \text{ is long too}\end{gathered}}}} \\
&\hspace{\dimexpr\fboxsep+\fboxrule-0.4pt} \\
&\begin{aligned}
&A ={}& \phantom{B + C + D} B \text{ is long} \\
&& + C \text{ is long too} \\
&& + D \text{ is long too}
\end{aligned}
\end{aligned}
\end{align}
\end{document}
```

## 1.10 Multiline text above arrow or relation symbol

$$\frac{x+1}{x} \xrightarrow{\text{Euclidean division}} 1 + \frac{1}{x}$$

```
\documentclass[a4paper, 12pt]{article}
\usepackage{mathtools}
\newcommand{\twoline}[2]{\overset{\textup{\scriptsize\#1}}{\textup{\scriptsize\#2}}}

\begin{document}
\begin{equation*}
\dfrac{x+1}{x} \xrightarrow{\text{\texttt{\twoline{Euclidean}{division}}}} 1 + \dfrac{1}{x}
\end{equation*}
\end{document}
```

## 1.11 Calculating scheme for a particular solution

$$\begin{array}{c|l}
 \begin{matrix} 6 & \times \\ -5 & \times \\ 1 & \times \end{matrix} & y^* = Ate^{2t} + Be^{-2t} \\
 \hline
 e^{2t} & (y^*)' = A(1+2t)e^{2t} - 2Be^{-2t} \\
 e^{-2t} & (y^*)'' = A(4+4t)e^{2t} + 4Be^{-2t} \\
 \hline
 & 1 = 4A - 5A = -A \\
 & 1 = 4B + 10B + 6B = 20B
 \end{array}$$

```

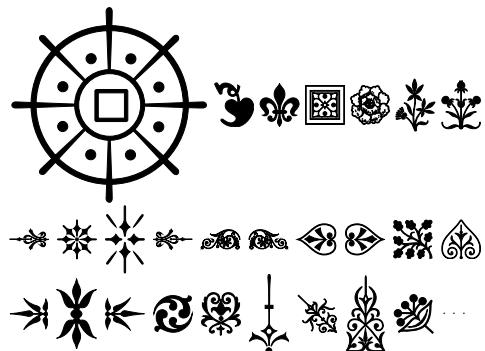
\documentclass{article}
\usepackage{amsmath}
\usepackage{xcolor}
\usepackage{tabulararray}

\begin{document}
\[
\begin{tblr}{colspec={rrrcl},
vline{3} = {magenta},
hline{4} = {magenta},
column{1} = {font=\color{magenta}, rightsep=0pt},
column{2} = {font=\color{magenta}, leftsep=0pt,
rightsep=4pt},
column{3} = {leftsep=4pt, rightsep=0pt},
column{4} = {colsep=2pt},
column{5} = {leftsep=0pt},
row{3} = {belowsep=4pt},
row{4} = {abovesep=4pt}
}
6 & \times & y^* & = & Ate^{2t}+Be^{-2t} \\
-5 & \times & (y^*)' & = & A(1+2t)e^{2t}-2Be^{-2t} \\
1 & \times & (y^*)'' & = & A(4+4t)e^{2t}+4Be^{-2t} \\
& & 1 & = & 4A-5A=-A \\
& & 1 & = & 4B+10B+6B=20B
\end{tblr}
\]
\end{document}

```

## 2 Text, Symbols

### 2.1 Ornaments from \pgfornament



```
\documentclass[varwidth]{standalone}
\usepackage[object=vectorian]{pgfornament}
\usepackage{tikz}

\begin{document}
\pgfornament[width=5cm]{4} \pgfornament[width=1cm]{5}
\pgfornament[width=1cm]{6} \pgfornament[width=1cm]{7}
\pgfornament[width=1cm]{8} \pgfornament[width=1cm]{9}
\pgfornament[width=1cm]{10} \pgfornament[width=1cm]{11}
\pgfornament[width=1cm]{12} \pgfornament[width=1cm]{13}
\pgfornament[width=1cm]{14} \pgfornament[width=1cm]{15}
\pgfornament[width=1cm]{16} \pgfornament[width=1cm]{17}
\pgfornament[width=1cm]{18} \pgfornament[width=1cm]{19}
\end{document}
```

### 2.2 Wireframe rendering

boxed boxed  
boxed

```
\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

text Some long Text text  
text under line

```
\documentclass{standalone}
\usepackage{array}
%\setlength\extrarowheight{2pt}
\newcommand{\mycommand}[2]{\begin{tabular}[t]{@{} c @{}}
#1\\ \hline
#2
\end{tabular}}
\begin{document}
text \mycommand{Some long Text}{text under line} text
\end{document}
```

## 2.5 Various types of underlining

Some important text  
Some urgent text  
Some boat text  
Some wrong text  
Some removed text  
Some dashing text  
Some dotty text

```
Some \uline{important} text\\
Some \uuline{urgent} text\\
Some \uwave{boat} text\\
Some \sout{wrong} text\\
Some \xout{removed} text\\
Some \dashuline{dashing} text\\
Some \dotuline{dotty} text
```

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

\begin{document}
\uline{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	121	122	123	124	125	126	
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

\subsection{\hll{Section}}
\subsection{\hll{Subsection}}
\end{document}
```

### 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.  
        south west)  
rectangle ([xshift=5mm]frame.north west);\end{  
    tcbclipinterior}},  
#2,  
\begin{document}  
\begin{frame}[fragile]  
    \frametitle{Premature Optimization}  
    \begin{pythoncode}[linenos=true,]{title=Python Code  
        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}}%  
        \begingroup  
        \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
```

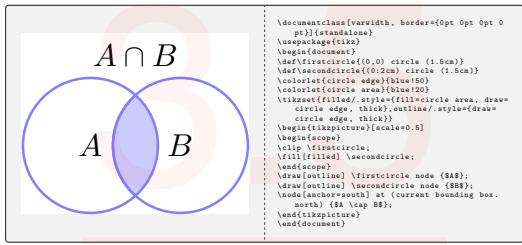
```
\documentclass{article}  
\usepackage[T2A]{fontenc}  
\usepackage[utf8]{inputenc}  
\usepackage[russian]{babel}  
\usepackage{listings}  
\usepackage{xcolor}  
  
\begin{document}  
\lstset{ keepspaces=true,  
backgroundcolor=\color{blue},  
showstringspaces=false,  
language=C,  
extendedchars=\true,  
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}
```

### 3.5 Run LaTeX code inside and show result



```
\documentclass[varwidth, border={0pt 0pt 0pt 0pt}]{standalone}
\usepackage{tikz}
\begin{document}
\begin{tikzpicture}[scale=0.5]
\def\firstcircle{(0,0) circle (1.5cm)}
\def\secondcircle{(0:2cm) circle (1.5cm)}
\colorlet{circle edge}{blue!50}
\colorlet{circle area}{blue!20}
\tikzset{filled/.style={fill=circle area, draw=circle edge, thick}, outline/.style={draw=circle edge, thick}}
\begin{scope}[local bounding box=A]
\clip \firstcircle;
\fill[filled] \secondcircle;
\end{scope}
\draw[outline] \firstcircle node {$A$};
\draw[outline] \secondcircle node {$B$};
\node[anchor=south] at (current bounding box.north) {$A \cap B$};
\end{tikzpicture}
\end{document}
```

```
\documentclass{standalone}
\usepackage[most]{tcolorbox}
\tcbset{sidebyside, width = 21cm, listing options={
    basicstyle=\small\ttfamily, breaklines=true}}
\begin{document}
\begin{tcblisting}[comment and listing, pdf comment,
freeze pdf, compilable listing, run pdflatex, comment
style={frame hidden,scale=2}]
\documentclass[varwidth, border={0pt 0pt 0pt 0pt}]{standalone}
\usepackage{tikz}
\begin{document}
\def\firstcircle{(0,0) circle (1.5cm)}
\def\secondcircle{(0:2cm) circle (1.5cm)}
\colorlet{circle edge}{blue!50}
\colorlet{circle area}{blue!20}
\tikzset{filled/.style={fill=circle area, draw=circle edge, thick}, outline/.style={draw=circle edge, thick}}
\begin{scope}[local bounding box=A]
\clip \firstcircle;
\fill[filled] \secondcircle;
\end{scope}
\draw[outline] \firstcircle node {$A$};
\draw[outline] \secondcircle node {$B$};
\node[anchor=south] at (current bounding box.north) {$A \cap B$};
\end{tikzpicture}[scale=0.5]
\begin{scope}
\clip \firstcircle;
\fill[filled] \secondcircle;
\end{scope}
\draw[outline] \firstcircle node {$A$};
\draw[outline] \secondcircle node {$B$};
\node[anchor=south] at (current bounding box.north) {$A \cap B$};
\end{tikzpicture}
\end{document}
\end{tcblisting}
\end{document}
```

### 3.6 Breaking code lines in a tcolorbox

Code Snippet .1:

```
<?php  
  
function abc($file_name){  
  
    header('Content-Type: application/vnd.  
        ↪ openxmlformats-officedocument.  
        ↪ spreadsheetml.sheet');  
    header('Content-Disposition: attachment;  
        ↪ filename="'. $file_name.'"');  
    header('Cache-Control: max-age=0');  
    $writer->save('php://output');  
}
```

```
\documentclass{book}  
\usepackage{hyperref}  
\usepackage[table]{xcolor}  
\usepackage{listings}  
\usepackage[most]{tcolorbox}  
\usepackage[inconsolata]  
\usepackage[graphicx]  
\tcbuselibrary{breakable}  
  
\newtcblisting[auto counter,number within=chapter]{  
    sourcecode}[2] []{sharp corners, breakable,  
    fonttitle=\bfseries, colframe=gray, listing only,  
    listing options={basicstyle=\ttfamily,language=php,  
        showstringspaces=false,  
        breaklines=true, postbreak={\raisebox{0ex}{\textcolor{red}{\hookrightarrow}}\space  
            }}, tabsize=4  
}, title=Code Snippet \thetcbcounter: #2, #1}  
  
\begin{document}  
\begin{sourcecode}{}  
<?php  
  
function abc($file_name){  
  
header('Content-Type: application/vnd.openxmlformats-  
        officedocument.spreadsheetml.sheet');  
header('Content-Disposition: attachment;filename="'.  
        $file_name.'");  
header('Cache-Control: max-age=0');  
$writer->save('php://output');  
}  
\end{sourcecode}  
\end{document}
```



### 3.7

## Modern code listing using minted

paraiso-dark

```
public class ClassName {
    public static void main(String[] args) {
        System.out.println(args);
    }
}
```

emacs

```
public class ClassName {
    public static void main(String[] args) {
        System.out.println(args);
    }
}
```

vim

```
public class ClassName {
    public static void main(String[] args) {
        System.out.println(args);
    }
}
```

perldoc

```
public class ClassName {
    public static void main(String[] args) {
        System.out.println(args);
    }
}
```

monokai

```
1  public class ClassName {
2      public static void main(String[] args) {
3          System.out.println(args);
4      }
5 }
```

```
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{listings}
\usepackage{minted}
\usepackage{xcolor}
\usepackage{tcolorbox}
\tcbuselibrary{listings, minted, skins}
\tcbset{listing engine=minted}
\newtcblisting[javalst]{listing only, minted language=
    java, minted style=paraiso-dark,
    colback=bg, enhanced, frame hidden, minted options={%
        fontfamily=fm,
        fontsize=\footnotesize, tabsize=2, breaklines,
        autogobble}}
\definecolor{inline}{RGB}{187,57,82}
\definecolor{bg}{RGB}{22,43,58}
\setminted[java]{bgcolor=bg, fontfamily=fm, fontsize=\footnotesize}
\begin{document}
\begin{javalst}
    public class ClassName {
        public static void main(String[] args) {
            System.out.println(args);
        }
    }
\end{javalst}
\end{document}
```

For lines numbering (last example):

```
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{listings}
\usepackage{minted}
\usepackage{xcolor}
\usepackage{tcolorbox}
\tcbuselibrary{listings, minted, skins}
\tcbset{listing engine=minted}
\renewcommand{\theFancyVerbLine}{\textcolor[rgb]{1,1,1}{\scriptsize\arabic{FancyVerbLine}}}
\newtcblisting[javalst]{listing only, minted language=java, minted
    style=paraiso-dark, colback=bg, enhanced, frame hidden,
    minted options={fontsize=\scriptsize, tabsize=2, breaklines,
        autogobble, linenos, numbersep=5pt, fontsize=\small, },
    overlay={\begin{tcbclipinterior}\fill[bg](frame.south west)rectangle([
        xshift=5mm]frame.north west);\end{tcbclipinterior}}}
\definecolor{inline}{RGB}{187,57,82}
\definecolor{bg}{RGB}{22,43,58}
\setminted[java]{bgcolor=bg, fontfamily=fm, fontsize=\scriptsize}
\begin{document}
\begin{javalst}
    public class ClassName {
        public static void main(String[] args) {
            System.out.println(args);
        }
    }
\end{javalst}
\end{document}
```

## 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=0.5
cm, 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

#### Remarque

Some text inside

```
\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 do-  
lor sit amet, consectetur  
adipiscing elit.

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

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

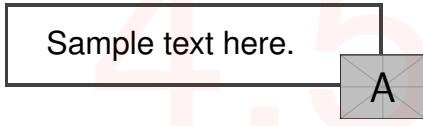
## 4.4 Table with the desired length.

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

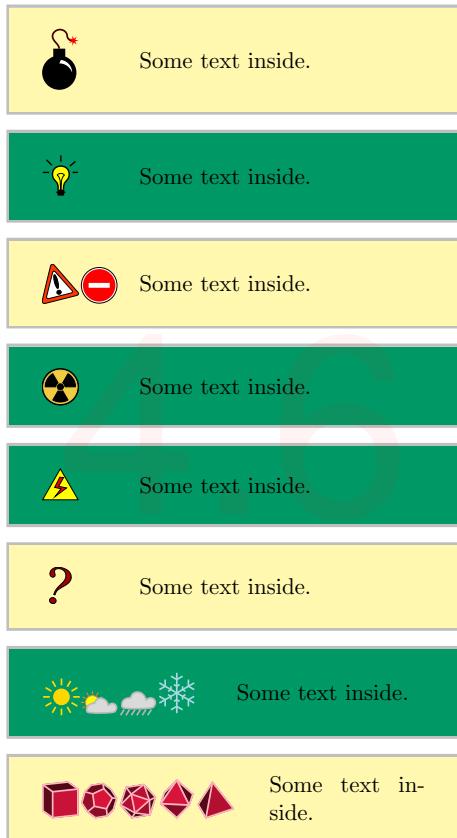
```
\usepackage{graphicx}
\usepackage{tabularx}
\newcolumntype{Y}{>{\centering\arraybackslash}X}
\begin{document}
\begin{table}[h!]
\begin{center}
\caption{\textbf{Caption}}
\begin{tabularx}{14cm}{|Y|Y|c|Y|Y|}
\hline
Variant & res & Veriaty of waters $f_0$, res & C, res & L, res\\
\hline
5 & 1 & 2 &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

## 4.5 Photo positioning



```
\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[
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,
lighthand width=1cm,
sidebyside gap=0.5cm,
sidebyside,#1}

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

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

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

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

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

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

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

\begin{framedd}[lighthand width=3cm]
\bc cube \bc dodecaedre \bc icosaedre \bc octaedre \bc tetraedre \
\tc blower
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
}[1][]{%
enhanced jigsaw,colback=white,colframe=orang,coltitle=
orang,
fonttitle=\bfseries\sffamily,
sharp corners,
detach title,
leftrule=10mm,
% What you need %%%%%%%%%%%%%%
underlay unbroken and first={\node[below,text=black,
anchor=east]
at ([xshift=-5.5pt]interior.base west) {\Huge \textbf{%
}!};},
%%%%%%%%%%%%%
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	$\Sigma$

```
\documentclass{article}
\usepackage{float}
\usepackage{array, makecell}
\setcellgapes{5pt}

\begin{document}
\begin{table}[H]
\center
\makegapedcells
\begin{tabular}{|c|c|c|c|} \hline
&&& \\ \hline
&&& \\ \hline
&&& \\ \hline
\end{tabular}
\end{table}
\end{document}
```

## 4.9 Martix made of table

	$a_{1,1}$	$\dots$	$a_{1,n}$	$0$
	$a_{1,1}$	$\dots$	$a_{1,n}$	$0$
.....				
$d_{n+1}$	$a_{1,1}$	$\dots$	$a_{1,n}$	$0$
	$a_{1,1}$	$\dots$	$a_{1,n}$	$0$
	$a_{1,1}$	$\dots$	$a_{1,n}$	$0$
.....				
	$a_{1,1}$	$\dots$	$a_{1,n}$	$0$

```
\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|}{\dotfill} & \\
& $a_{1,1}$ & $\dots$, $a_{1,n}$ & 0 & \\
$d_{n+1}$ & & & = $\pm 2ad_n$ & = 0 \\
& $a_{1,1}$ & $\dots$, $a_{1,n}$ & 0 & \\
& $a_{1,1}$ & $\dots$, $a_{1,n}$ & 0 & \\
& \multicolumn{3}{l|}{\dotfill} & \\
& $a_{1,1}$ & $\dots$, $a_{1,n}$ & 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|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 Hand Drawn tcolorbox

Theorem 1  
some text

```
\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}
```

## 4.15 Text next to a table

without shadow

with shadow

with shadow

with shadow

with shadow

without pattern

\*\*\*\*\*

```
\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
hatch}{%
    \pgfqpoint{-1pt}{-1pt}%
    \pgfqpoint{\hatchdistance}{\hatchdistance}%
    \pgfqpoint{\hatchdistance-1pt}{\hatchdistance-1pt}%
    \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=#1,
        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}
```

## 4.16 Halfframed boxes

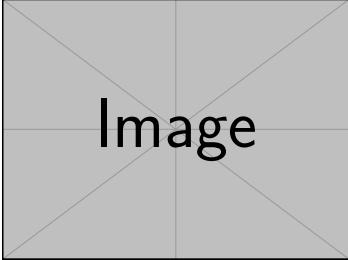
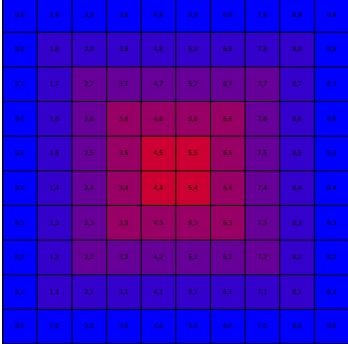
<b>Title 1</b>	<b>Title 2</b>	<b>Title 3</b>
some text in the first box some text in the first box	some text in the second box some text in the first box	some text in the third box blabla some text in the first box some text in the first box

```
\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)--(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 (frame.north west){#1};},
    code={\setbox\z@=\color@hbox{\color@endbox\tcbbdimto \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}
```

## 4.17 Vertically and horizontally align image inside table

Num.	Images
Nr. 1	
Nr. 2	

```
\documentclass{article}
\usepackage{graphicx}
\usepackage[export]{adjustbox}

\begin{document}
\begin{table}[htbp]
\centering
\caption{My caption}
\label{tab:mytab}
\begin{tabular}{|p{1.5cm}|c|}
\hline
\textbf{Num.} & \textbf{Images} \\
\hline
Nr. 1 & \includegraphics[width=0.8\textwidth,margin=0pt]{example-image} \\
\hline
Nr. 2 & \includegraphics[width=0.8\textwidth,margin=0pt]{example-grid-100x100pt} \\
\hline
\end{tabular}
\end{table}
\end{document}
```

## 4.18 Box with nice gradient text

Normal text Normal text

We wanted to make  
sure everyone was  
recognized for their  
contributions to this  
incredible human  
achievement.

Normal text Normal text

```
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{gradient-text}
\usepackage[many]{tcolorbox}
\definecolor{backgroundd}{HTML}{232629}
\definecolor{myblue}{HTML}{1B1F23}
\newtcbox{\cooltextbox}[1][myblue]{
  tcbox width=auto limited,
  fontupper=\Large\sffamily\bfseries,
  colback=#1,colframe=#1,boxsep=0pt,
  size=small,arc=2mm,boxrule=10.4pt,
  top=2mm,bottom=2mm,right=2mm,left=2mm,
}
\newcommand{\cooltext}[1]{%
\cooltextbox{%
\gradientRGB{#1}{72,107,234}{60,214,112}}%
}

\begin{document}
Normal text
\cooltext{We wanted to make sure everyone was recognized
for their
contributions to this incredible human achievement.}
Normal text
\end{document}
```

## 4.19 One side dashed border

This is

the box

and what comes next.

This is the same box but on line

and what comes next.

Variant based on `\newtcolorbox`:

  Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

```
\documentclass{article}
\usepackage{kantlipsum} % for sample text
\usepackage{tcolorbox}
\tcbuselibrary{skins}
\newtcbox{\mybox}[1][]{%
  enhanced, frame hidden, borderline west = {0.5pt}{0pt}{red,dashed}, #1
}
\newtcolorbox{myleftlinebox}[1][]{%
  enhanced, frame hidden, borderline west = {0.5pt}{0pt}{red,dashed}, #1
}
\begin{document}
This is \mybox{the box} and what comes next.

\bigskip
This is \mybox[on line]{the same box but \texttt{on line}} and what comes
next.

\bigskip \noindent
Variant based on \verb|\newtcolorbox|:
\begin{myleftlinebox}
\kant[1]
\end{myleftlinebox}
\end{document}
```

## 4.20 Multilevel Colored Boxes (multi) \tcbblower

My nice heading

This is another **tcolorbox**.

Here, you see the lower part of the box.

and some more

```
\documentclass{report}
\usepackage{tikz,tcolorbox}
\makeatletter
\newcommand{\DrawLine}{%
\begin{tikzpicture}
\path [use as bounding box] (0,0) -- (\linewidth,0);
\draw [color=red!75!black,dashed,dash phase=2pt]
(0-\kvtcb@leftlower-\kvtcb@boxsep,0)--
(\linewidth+\kvtcb@rightlower+\kvtcb@boxsep,0);
\end{tikzpicture}%
}
\makeatother

\begin{document}
\begin{tcolorbox}[colback=red!5,colframe=red!75!black,
title=My nice heading]
This is another \textbf{tcolorbox}.
\tcbblower
Here, you see the lower part of the box.

\DrawLine
and some more
\end{tcolorbox}
\end{document}
```

# 5 Figures

## 5.1 Comment to figure

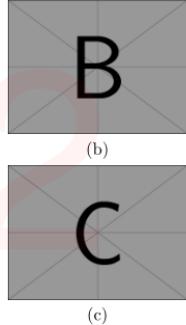
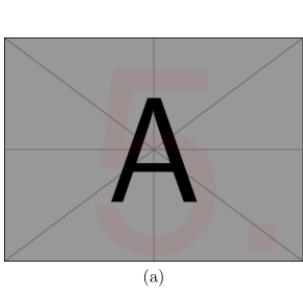


This is an example.

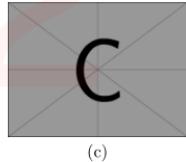
```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{shapes.callouts}

\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



(b)



(c)

```
\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)}\\
\subfloat[\quad\quad\quad some space]{(b)}\\
\subfloat[\includegraphics[width=0.3\linewidth]{example-image-b.png}\quad\quad\quad (c)]{\quad\quad\quad}\\
\end{tabular}
\caption{Caption.}
\end{figure}
\end{document}
```

## 5.3 Placing image anywhere You want



```
\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

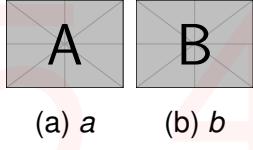


Fig. 1a ← a in *italic* style

```
\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}
Fig. \ref{1a} $\leftarrow$ a in \textbf{\textit{italic}} style
\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 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 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 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 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 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[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

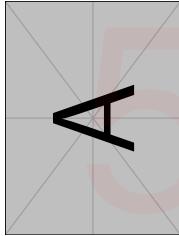


Table 2

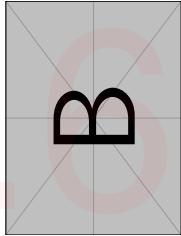


Table 3

```
\documentclass[12pt]{report}
\usepackage{graphicx}
\usepackage{lipsum}
\begin{document}
qqqqqqq
\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



Figure 1: Caption



Figure 2: Caption



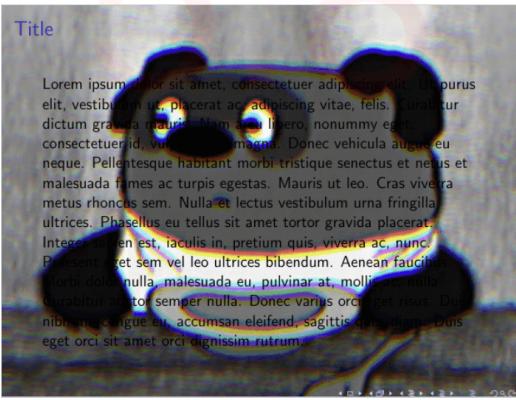
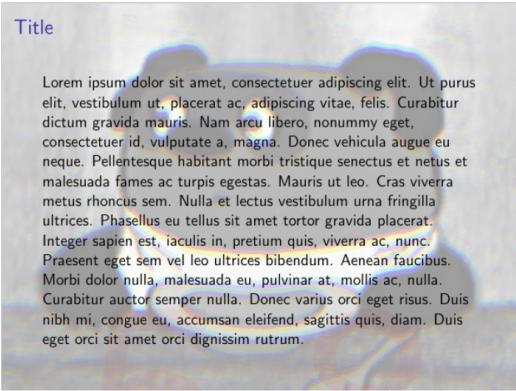
Figure 3: Caption

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}[^!htb]
\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,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}
```

# 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

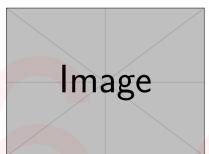
6)

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{arylidyellow}{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,arylidyellow,asparagus,atomictangerine,bananayellow,
brightgreen,cambridgeblue,capri}
\newcommand{\SebastianoItem}[1]{\foreach \X [count=\Y] in \ClaudioList
{\ifnum\Y=1\relax
\xdef\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 Change footnote symbol

Sample frame title



Just by changing the value of the number you can insert the symbol of your choice.

1. asterisk \*
2. dagger †
3. double dagger ‡
4. section symbol §
5. paragraph ¶
6. parallel lines ||
7. two asterisks \*\*

```
\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
description}
\end{figure}
\end{frame}
\end{document}
```

## 6.5 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}
```

## 6.6 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	168

✓ Code 51

✗ Code 56

☛ Code 43

❖ Code 118

♥ Code 170

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	255	256

```
\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}
```

## 6.7 Split itemize into multiple columns

Two columns:

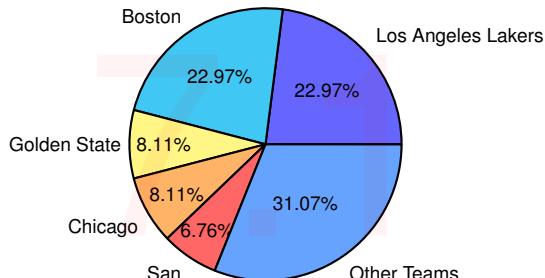
- item 1
- item 2
- item 3
- item 4
- item 5
- item 6

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

\begin{document}
Three columns:
\begin{multicols}{3}
\begin{itemize}
\item item 1
\item item 2
\item item 3
\item item 4
\item item 5
\item item 6
\end{itemize}
\end{multicols}
\end{document}
```

# 7 Plots, tikz, pie charts ...

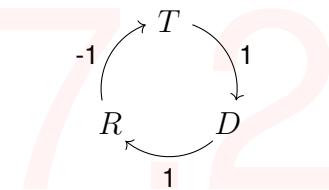
## 7.1 Simple pie chart



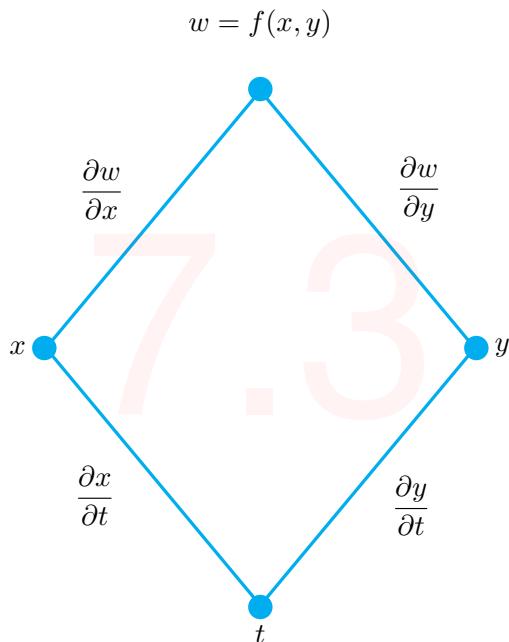
```
\documentclass [border=0.2cm]{standalone}
\usepackage{pgf-pie}

\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



## 7.3 Diamond with text



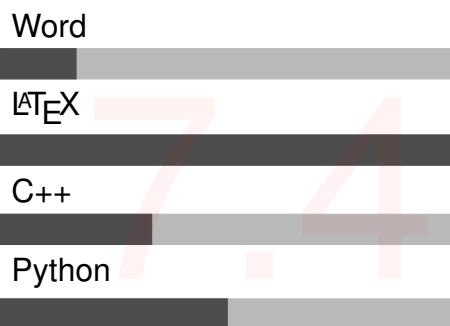
```

\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}

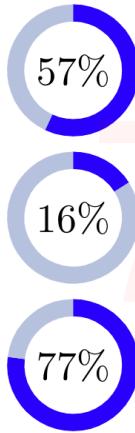
\definecolor{white}{RGB}{255,255,255}
\definecolor{gray}{HTML}{4D4D4D}
\definecolor{maingray}{HTML}{B9B9B9}

\newcommand\skills[1]{
    \begin{tikzpicture}
        \foreach [count=\i] \x/\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) {\x};
        }
    \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];
}}]\%}

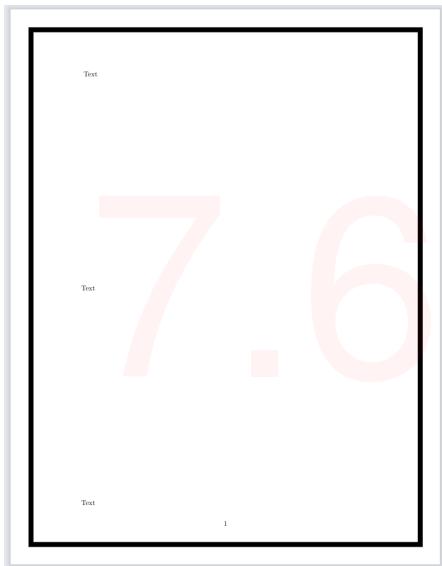
\newlist{achievements}{itemize}{1}
\setlist[achievements]{%
before=\let\item\percentageItem,%make \item = \percentageItem
leftmargin=*,%
label={},%
itemsep=3mm,%
}

\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

Find me

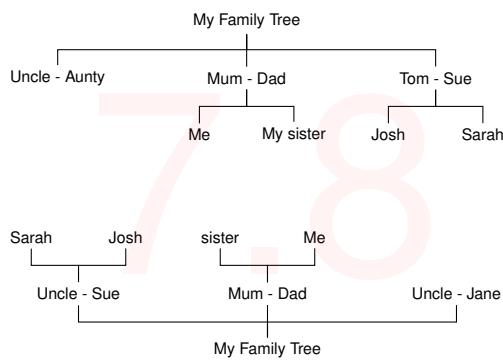
```
\documentclass[14pt]{extreport}
\usepackage{tikz}
\usepackage{qrcode}

\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 anything
};
\end{tikzpicture}
\end{document}
```

OR the rainbow variant (see example 9.7)

```
\begin{tikzpicture}[remember picture,overlay]
\node at ($(current page.north west)+(.70cm,-.75cm)$)
  {\fadingtext[scale=0.5]{path picture shading=rainbow}
  \qrcode[height=3cm]{https://github.com/AnMnv/eBook}};
\end{tikzpicture}
```

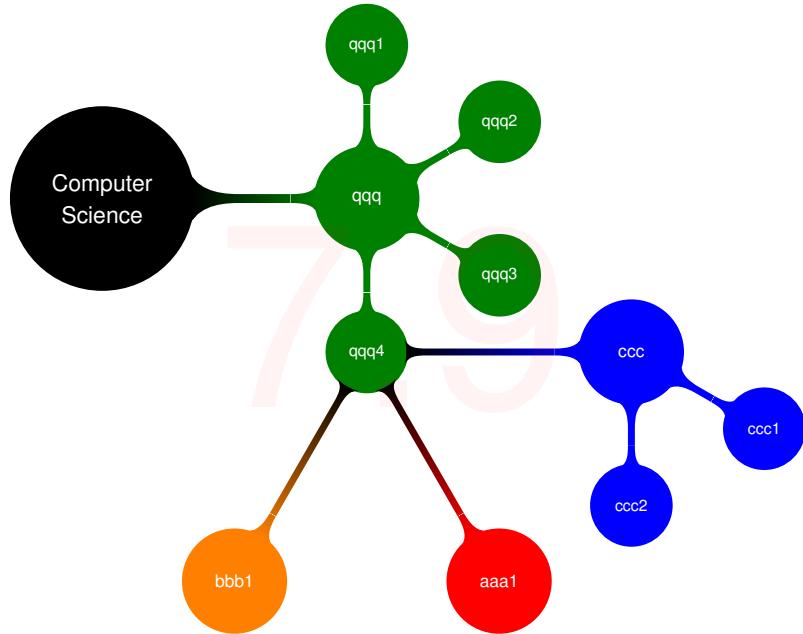
## 7.8 Family tree



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

\begin{document}
\begin{tikzpicture}[level 1/.style={sibling distance=5cm},level 2/.
style={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 Mind map



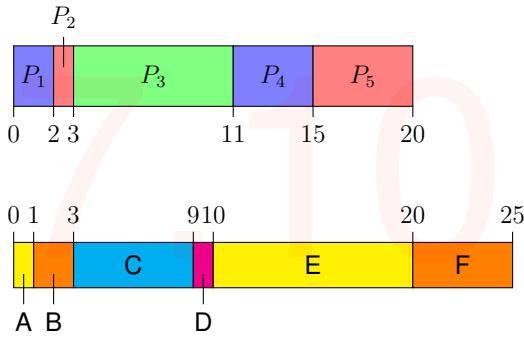
```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{tikz}
\usetikzlibrary{mindmap}
\usetikzlibrary[mindmap]

\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[concept] {algorithms}
    child[concept] {data structures}
    child[concept] {pro\-gramming languages}
    child[concept] {software engineer\-ing}
}
% note that the `concept color` is passed to the `child`(!)
child[concept color=blue] {
    node[concept] {applied}
    [clockwise from=-30]
    child[concept] {databases}
    child[concept] {WWW}
}
child[concept color=red] { node[concept] {technical} }
child[concept color=orange] { node[concept] {theoretical} };
\end{tikzpicture}

\end{document}
```

## 7.10 Gantt chart



```
\documentclass[border=10pt]{standalone}
\usepackage{tikz}

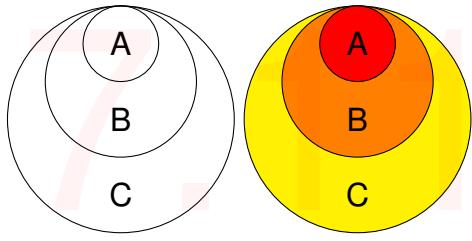
\newif\ifsimplegantttickpositionbelow
\tikzset{
  pics/simple gantt/.style={
    code={
      \ifsimplegantttickpositionbelow
        \path[/tikz/simple gantt/tick] (0,0) --
          +(0,{1*\pgfkeysvalueof{/tikz/simple gantt/tick length}}) node[/tikz/simple gantt/tick label] {\pgfmathprintnumber{0}};
      \else
        \path[/tikz/simple gantt/tick] (0,\pgfkeysvalueof{/tikz/simple gantt/height}) --
          +(0,{\pgfkeysvalueof{/tikz/simple gantt/tick length}}) node[/tikz/simple gantt/tick label] {\pgfmathprintnumber{0}};
      \fi
      \foreach \n/\x [count=\i, remember=\x as \lastx (initially 0)] in {#1} {
        \ifsimplegantttickpositionbelow
          \path[/tikz/simple gantt/tick] ({(\x*\pgfkeysvalueof{/tikz/simple gantt/width unit}),0} --
            +(0,{1*\pgfkeysvalueof{/tikz/simple gantt/tick length}}) node[/tikz/simple gantt/tick label] {\pgfmathprintnumber{\x}};
        \else
          \path[/tikz/simple gantt/tick] ({(\x*\pgfkeysvalueof{/tikz/simple gantt/width unit}},\pgfkeysvalueof{/tikz/simple gantt/height}) --
            +(0,{\pgfkeysvalueof{/tikz/simple gantt/tick length}}) node[/tikz/simple gantt/tick label] {\pgfmathprintnumber{\x}});
        \fi
        \pgfmathparse{int(mod(\i - 1, \pgfkeysvalueof{/tikz/simple gantt/color cycle length}) + 1)}
        \global\pgfkeyslet{/tikz/simple gantt/color cycle step}{\pgfmathresult}
        \path[
          /tikz/simple gantt/box,
          fill={simple gantt color \pgfkeysvalueof{/tikz/simple gantt/color cycle step}},
        ]
        ({(\lastx*\pgfkeysvalueof{/tikz/simple gantt/width unit}),0} rectangle
        ({(\x*\pgfkeysvalueof{/tikz/simple gantt/width unit}},\pgfkeysvalueof{/tikz/simple gantt/height})
        )
      \pgfextra{\pgfmathparse{\x - \lastx}
      \ifdim\pgfmathresult pt < \pgfkeysvalueof{/tikz/simple gantt/label as pin if value below} pt\
        relax
          node[/tikz/simple gantt/label, pin={[/tikz/simple gantt/label pin]\pgfkeysvalueof{/tikz/simple gantt/label pin angle}: \n}] {}
      \else
        node[/tikz/simple gantt/label] {\n}
      \fi ;}),
      simple gantt/color cycle length/.initial={0},
      simple gantt/color cycle step/.initial={1},
      simple gantt/color cycle/.code={
        \foreach \c [count=\i] in {#1} {
          \xglobal\colorlet{simple gantt color \i}{\c}
          \global\pgfkeyslet{/tikz/simple gantt/color cycle length}{\i},
          simple gantt/height/.initial={1cm},
          simple gantt/width unit/.initial={1cm},
          simple gantt/box/.style={},
          simple gantt/label/.style={pos=0.5},
          simple gantt/label pin/.style={above, pin edge={black, thin}, pin distance=0.5cm},
          simple gantt/label pin angle/.initial={90},
          simple gantt/label as pin if value below/.initial={1.5},
          simple gantt/tick/.style={draw},
          simple gantt/tick label/.style={below},
          simple gantt/tick position/.is choice,
          simple gantt/tick position/above/.code={\simplegantttickpositionbelowfalse},
          simple gantt/tick position/below/.code={\simplegantttickpositionbelowtrue},
          simple gantt/tick position={below},
          simple gantt/tick length/.initial={5pt},
          simple gantt/color cycle={blue!50, red!50, green!50},}
      }
    }
  }
}

\begin{document}
\begin{tikzpicture}
\tikzset{simple gantt/.cd, width unit=0.33cm, box/.style={draw}}
\pic at (0,0) {simple gantt={$P_1$/2, $P_2$/3, $P_3$/11, $P_4$/15, $P_5$/20}};

\tikzset{simple gantt/.cd, height=0.75cm, color cycle={yellow, orange, cyan, magenta},
label pin angle={270}, label pin/.append style={below}, tick position={above},
tick label/.append style={above}, label as pin if value below={4}}
\pic at (0,-3) {simple gantt={A/1, B/3, C/9, D/10, E/20, F/25}};

\end{tikzpicture}
\end{document}
```

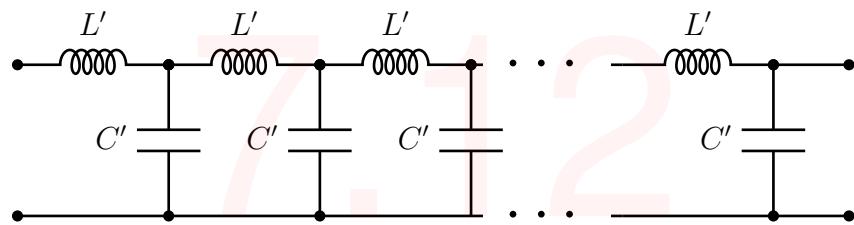
## 7.11 Drawing a stacked venn diagram



```
\documentclass[border=10pt]{standalone}
\usepackage{tikz}

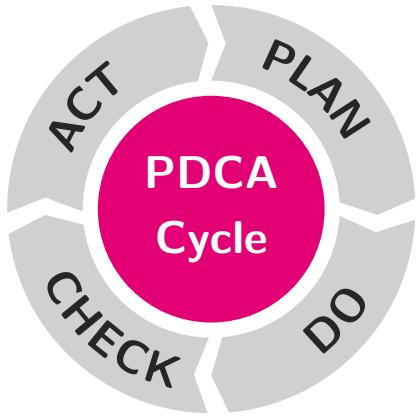
\begin{document}
\begin{tikzpicture}[scale=0.5]
\foreach \x [count=\y] in {A,B,C} {
    \draw (0,-\y) circle[radius=\y];
    \node at (0,-2*\y+1) {\x};
}
\end{tikzpicture}
\begin{tikzpicture}[scale=0.5]
\foreach \x/\z [count=\y] in {C/yellow,B/orange,A/red} {
    \draw[fill=\z] (0,\y-4) circle[radius={4-\y}];
    \node at (0,-2*(4-\y)+1) {\x};
}
\end{tikzpicture}
\end{document}
```

## 7.12 Ellipsis in Circuitikz



```
\documentclass{article}
\usepackage{circuitikz}
\ctikzset{bipoles/thickness = 1}
\begin{document}
\begin{circuitikz}[line width=1pt]
\draw (0,2) to[L,l=$L'$,*--*] (2,2)
(2,0) to[C,l=$C'$,-*] (2,2)
(2,0) to[short,-*] (0,0);
;
\begin{scope}[xshift=2cm]
\draw (0,2) to[L,l=$L'$,*--*] (2,2)
(2,0) to[C,l=$C'$,-*] (2,2)
(2,0) to[short,-*] (0,0);
;
\end{scope}
\begin{scope}[xshift=4cm]
\draw (0,2) to[L,l=$L'$,*--*] (2,2)
(2,0) to[C,l=$C'$,-*] (2,2)
(2,0) to[short,-*] (0,0);
;
\end{scope}
\begin{scope}[xshift=6cm]
\draw (0,2) -- (2,2) node[midway,scale=2,fill=white]{\cdots};
\draw (0,0) -- (2,0) node[midway,scale=2,fill=white]{\cdots};
\end{scope}
\draw (8,2) to[L,l=$L'$,-*] (10,2) to[short,-*] (11,2)
(10,0) to[C,l=$C'$,-*] (10,2)
(11,0) to[short,-*] (10,0) to[short,-*] (8,0);
;
\end{circuitikz}
\end{document}
```

## 7.13 A cycle diagram



```

\documentclass[tikz,border=10pt]{standalone}
\usepackage{tikz}
\definecolor{mygray}{RGB}{208,208,208}
\definecolor{mymagenta}{RGB}{226,0,116}
\newcommand*\mytextstyle{\sffamily\Large\bfseries\color{black!85}}
\newcommand{\arcarrow}[3]{%
% inner radius, middle radius, outer radius, start angle,
% end angle, tip protusion angle, options, text
\pgfmathsetmacro{\rin}{1.7}
\pgfmathsetmacro{\rmid}{2.2}
\pgfmathsetmacro{\rout}{2.7}
\pgfmathsetmacro{\astart}{#1}
\pgfmathsetmacro{\aend}{#2}
\pgfmathsetmacro{\atip}{5}
\fill[mygray, very thick] (\astart+\atip:\rin)
arc (\astart+\atip:\aend:\rin)
-- (\aend-\atip:\rmid)
-- (\aend:\rout) arc (\aend:\astart+\atip:\rout)
-- (\astart:\rmid) -- cycle;
\path[
decoration = {
text along path,
text = {|\mytextstyle|#3},
text align = {align = center},
raise = -1.0ex
},
decorate
](\astart+\atip:\rmid) arc (\astart+\atip:\aend+\atip:\rmid);
}
\begin{document}
\begin{tikzpicture}
\fill[even odd rule,mymagenta] circle (1.5);
\node at (0,0) [
font = \mytextstyle,
color = white,
align = center
]{PDCA\cycle};
\arcarrow{85}{3}{PLAN}
\arcarrow{270}{357}{DO}
\arcarrow{182}{269}{CHECK}
\arcarrow{176}{96}{ACT}
\end{tikzpicture}
\end{document}

```

# 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 TYP 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][]{\savebox{\mybox}{\vphantom{WL1
    /}#1}\setlength{\mylength}{\dimexpr\CircleFactor\dimexpr\ht\mybox
    +\dp\mybox\relax\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

some text  
some text  
some text

```
\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=1pt,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}
```

## 8.6 Keybutton

Press **alt** + **F4** for help !

```
\documentclass[10pt]{article}
\usepackage{tikz}
\usetikzlibrary{shadows}
\tikzstyle{buttonstyle} = [rectangle, fill = black!30, draw = black
    !80, drop shadow, font=\sffamily\bfseries, text=white]
\newcommand*\button[1]{\tikz{\node[buttonstyle] {#1};}}
\begin{document}
Press \button{F5} for help !
\end{document}
```

8.7 Colorful \tableofcontents

Press **alt** + **F4** for help !

```

\documentclass{article}
\usepackage{tocloft}
\usepackage{xcolor}
\usepackage{tikz}
\usetikzlibrary{backgrounds}
\usetikzlibrary{calc}
\newcounter{seccntr}
\setcounter{seccntr}{-1}
\newcommand*\hnode[1]{%
\tikz[remember picture] \node[minimum size=0pt,inner sep=0pt,outer sep
=4.5pt] (#1) {};}
\renewcommand{\cftsecfont}{\hnode{P1}\bfseries\Large
\stepcounter{seccntr}%
\ifcase\value{seccntr}%
\tikz[remember picture,overlay] \draw (P1.north west) [line width={17
pt}, red,opacity=0.3] -- ++($(\textwidth,0) + (1ex,0)$);
\or\tikz[remember picture,overlay] \draw (P1.north west) [line width
={17pt}, green,opacity=0.4] -- ++($(\textwidth,0) + (1ex,0)$);
\or\tikz[remember picture,overlay] \draw (P1.north west) [line width
={17pt}, yellow,opacity=1] -- ++($(\textwidth,0) + (1ex,0)$);
\or\tikz[remember picture,overlay] \draw (P1.north west) [line width
={17pt}, blue,opacity=0.6] -- ++($(\textwidth,0) + (1ex,0)$);
\or\tikz[remember picture,overlay] \draw (P1.north west) [line width
={17pt}, orange,opacity=0.7] -- ++($(\textwidth,0) + (1ex,0)$);
\else\tikz[remember picture,overlay] \draw (P1.north west) [line width
={17pt}, gray,opacity=0.8] -- ++($(\textwidth,0) + (1ex,0)$);%--
default
\fi %
}
\renewcommand{\cftsecpagefont}{\bfseries}

\begin{document}
\tableofcontents
\section{First Section}\subsection{\hll{A} su
bsubsection}\subsection{\hll{A} su
bsubsection}
\section{Second Section}\subsection{\hll{A} su
bsubsection}
\section{Third Section}
\end{document}

```

# 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}
\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{fancyvrb}
\usetikzlibrary{calc,shadows}
\NewDocumentCommand{\StickyNoteP}{O{6cm}mO{6cm}}{%
\begin{tikzpicture}[remember picture]
\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]{%
\Large first\Large second }}[6.5cm]
\end{document}
```

# 9.3

```

\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{fadings, shadings}
\newcounter{fadcnt}\setcounter{fadcnt}{0}
\newcommand\fadingtext[3][]{\fadingtext{#1}{#2}{#3}}
\stepcounter{fadcnt}
\begin{tikzfadingfrompicture}[name=fading letter\thefadcnt]
\node[text=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 0
      pt
      \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, 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
=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



9.7

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

## 9.8 Lobsrets



```
\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}

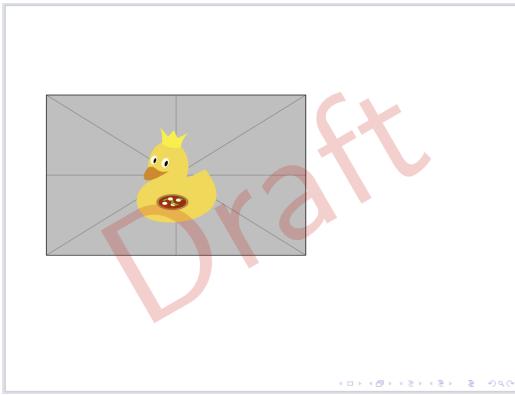
\lobwatermark
\end{document}
```

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.

## 9.9 Watermark over everything



```
\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}
```

## 9.10 Simple Emoji by dilippuri

- ☞ copy [latexemoji.sty] file where your [\* .tex] is stored
- ☞ copy [latex\_emoji] folder where your [\* .tex] is stored
- ☞ include package by
  - \usepackage{latexemoji}

☞ To use any emoji just type \latexemoji{pray} that will print → ☩

emoji	Name	emoji	Name	emoji	Name
😡	angry	😊	anguished	🙏	bow
💔	broken.heart	👏	clap	♣	club
💦	cold.sweat	😢	confused	♦	diamond
😔	disappointed	😌	disappointed.relieved	😎	expressionless
😱	fearful	😌	fist	😳	flushed
👧	girl	😍	grinningacing	😁	grin
Ǫ	hand	❤️	heart	😍	heart.eyes
😈	imp	👶	innocent	🤣	joy
😘	kiss	😗	kissing	😘	kissing.heart
😂	laughing	MASK	mask	💪	muscle
😐	neutral.face	😶	no.mouth	👌	ok.hand
👋	open.hands	👄	open.month	🤔	pensive
⬇️	point.down	👈	point.left	👉	point.right
⬆️	point.up	👉	point.up.2	🙏	pray
👊	punch	😡	rage	🙌	raised.hands
😌	relaxed	😌	relieved	😢	sad
😱	scream	😊	simple.smile	😴	sleep
😴	sleepy	😊	smile	😉	smirk
😭	sob	♠	spade	😛	stuck.out.tongue
😅	stuck.out.tongue.closed.eyes	😅	stuck.out.tongue.wink.eye	😎	sunglasses
😅	sweat.smile	👉	thumbdown	😎	thumbsup
😫	tired.face	🏆	triumph	✌️	victory.v
👋	wave	😴	wearily	😉	wink
😟	worried	😋	yum	-	-

```
\documentclass{article}
\title{This is an example tex file to include emoji in latex}
\author{Dilip Puri}

\begin{document}
\maketitle
Hi, I am (dilippuri) going to include emoji in latex. So I \latexemoji{heart}.\\
I just \latexemoji{stuck_out_tongue_wink_eye}.\\
Good bye! \latexemoji{wave}
\end{document}
```

CONFIDENTIAL

## 9.11 Confidential mark/ribbon top right of frontpage

Look at the top right of the page

```
\documentclass{article}
\documentclass{scrbook}
\usepackage{lmodern}
\usepackage{tikz}
\usetikzlibrary{calc}
\newcommand{\stripskip}{5}
\newcommand{\stripwidth}{3}

\begin{document}
\begin{tikzpicture}[%
    overlay,
    remember picture,
    legend/.style={|<->|, gray, font = {\ttfamily}},
    confidential/.style={anchor=center, rotate = -45, font=\sffamily\scshape}]
]
\coordinate (A) at ($ (current page.north east) + (-\stripskip,0 $);
\coordinate (A') at ($(A) + (-\stripwidth,0) $);
\coordinate (B) at ($ (current page.north east) + (0,-\stripskip) $);
\coordinate (B') at ($(B) + (0,-\stripwidth) $);
\fill [red] (A) -- (A') -- (B') -- (B) -- cycle;
\coordinate (tempA) at ($(A)! .5! (A')$);
\coordinate (tempB) at ($(B)! .5! (B')$);
\node [confidential](text) at ($(tempA)! .5! (tempB)$) {\Huge Confidential};
\end{tikzpicture}
\centering \Huge qqqqqqqq
\end{document}
```

## 9.12 Text in different shapes

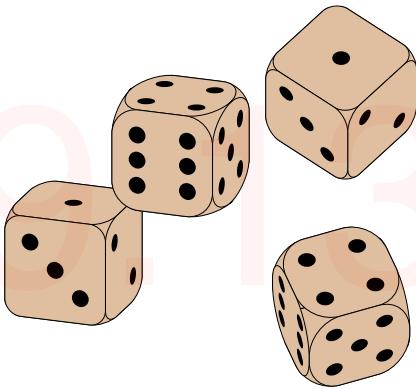
Happy families  
are all alike; every unhappy  
family is unhappy in its own  
way. Happy families are  
all alike; every unhappy  
family is unhappy  
in its own  
way.

Available shapes: hexagonshape,  
heartshape,diamondshape, nutshape,  
starshape

```
\documentclass{article}
\usepackage{blindtext}
\usepackage{shapepar}

\begin{document}
\shapepar{\heartshape}{\blindtext[1]}
\end{document}
```

## 9.13 Drawing 3D dice



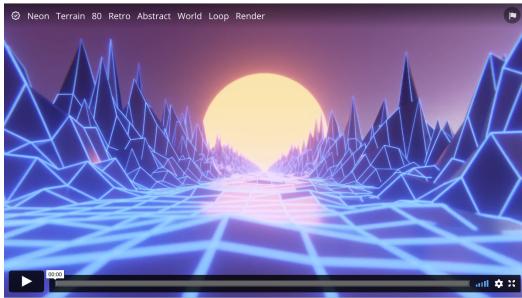
```

\documentclass[tikz, border=1cm]{standalone}
\usepackage{tikz-3dplot}
\begin{document}
\newcommand{\dicenum}[1]{%
\pgfmathparse{#1==2 || #1==4 || #1==5 || #1==6}\ifnum\pgfmathresult
>0\relax%
\fill[black] (0.5,0.5) circle[radius=1/6]; % top left
\fill[black] (-0.5,-0.5) circle[radius=1/6];\fi % bottom right
\pgfmathparse{#1==3 || #1==4 || #1==5 || #1==6}\ifnum\pgfmathresult
>0\relax%
\fill[black] (-0.5,0.5) circle[radius=1/6]; % top right
\fill[black] (0.5,-0.5) circle[radius=1/6];\fi % bottom left
\pgfmathparse{#1==1 || #1==3 || #1==5}\ifnum\pgfmathresult>0\relax%
\fill[black] (0,0) circle[radius=1/6]; \fi % center
\ifnum#1=6\relax%
\fill[black] (0.5,0) circle[radius=1/6]; % middle left
\fill[black] (-0.5,0) circle[radius=1/6];\fi % middle right
}
\newcounter{currnum}
\setcounter{currnum}{1}
\begin{tikzpicture}
\newcommand{\dice}[5]{%
\tdplotsetmaincoords{#3}{#4}
\begin{scope}[shift={(#1,#2)}, tdplot_main_coords, rounded corners
 =#5, fill=brown!50!white]
\begin{scope}[canvas is xy plane at z=-1]
\filldraw (-1,-1) rectangle (1,1);
\end{scope}
\begin{scope}[canvas is xz plane at y=-1]
\filldraw (-1,-1) rectangle (1,1);
\end{scope}
\begin{scope}[canvas is yz plane at x=-1]
\filldraw (-1,-1) rectangle (1,1);
\end{scope}
\begin{scope}[canvas is xy plane at z=1]
\filldraw (-1,-1) rectangle (1,1);
\dicenum{\value{currnum}}
\stepcounter{currnum}
\ifnum\value{currnum}>6\relax\setcounter{currnum}{1}\fi
\end{scope}
\begin{scope}[canvas is xz plane at y=1]
\filldraw (-1,-1) rectangle (1,1);
\dicenum{\value{currnum}}
\stepcounter{currnum}
\ifnum\value{currnum}>6\relax\setcounter{currnum}{1}\fi
\end{scope}
\begin{scope}[canvas is yz plane at x=1]
\filldraw (-1,-1) rectangle (1,1);
\dicenum{\value{currnum}}
\stepcounter{currnum}
\ifnum\value{currnum}>6\relax\setcounter{currnum}{1}\fi
\end{scope}
\end{scope}
\dice{0}{0}{70}{110}{0.3cm};
\dice{2}{2}{70}{110}{0.5cm};
\dice{5}{3}{40}{130}{0.3cm};
\dice{5}{-1}{40}{160}{0.6cm};
\end{tikzpicture}
\end{document}

```

## 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})%%%%%%%%%%%%%
\usepackage[bigfiles]{pdfbase}
\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}{\ignorespaces}{\ignorespaces}}
        \pbs_pdfobj:nnn{}{fstream}{{}\{#3\}}
        \pbs_pdfobj: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_pdfobj:nnn{}(dict){
        /Type/RichMediaInstance/Subtype/Video
        /Asset-\video
        /Params-<</FlashVars (
            source=#3&
            skin=SkinOverAllNoFullNoCaption.swf&
            skinAutoHide=true&
            skinBackgroundColor=0x5F5F5F&
            skinBackgroundAlpha=0
        )>>
    }
    %
    \pbs_pdfobj:nnn{}(dict){
        /Type/RichMediaConfiguration/Subtype/Video
        /Instances-\[\pbs_pdflastobj:]\]
    }
    %
    \pbs_pdfobj:nnn{}(dict){
        /Type/RichMediaContent
        /Assets-<<
            /Names-\[(#3)-\video]
        >>
        /Configurations-\[\pbs_pdflastobj:]\]
    }
    \tl_set:Nx\rmcontent{\pbs_pdflastobj:}
    %
    \pbs_pdfobj: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_tlf{\dim_use:N\box_wd:N\l_tmpa_box}
    \tl_set:Nx\l_box_ht_tlf{\dim_use:N\box_ht:N\l_tmpa_box}
    \tl_set:Nx\l_box_dp_tlf{\dim_use:N\box_dp:N\l_tmpa_box}
    \pbs_pdxform:nnnn{1}{1}{1}{1}\l_tmpa_box
    %
    \pbs_pdfannot:nnnn{\l_box_wd_tlf}{\l_box_ht_tlf}{\l_box_dp_tlf}{1}
    /Subtype/RichMedia
    /BS-<</W-0/S/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}
```