

LaTeX book in Examples

LaTeX

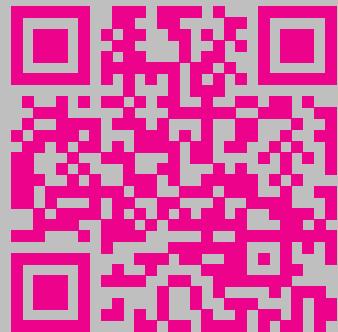
Thanks to me

The book is updated every week

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Chapter 1

Math Tips

1.1 Auto-resizing equation

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

```
\begin{equation*}\label{eq1}
\begin{array}{l} \text{\scriptsize \textcolor{blue}{\% change .4 to 0.5...}} \\ \text{\scriptsize \textcolor{blue}{\$dot{\rho}=dfrac{x^3}{45a^{9-23b}}\$}} \end{array}
\end{equation*}
```

1.2 Form for simplest calculation

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

a:

b:

6

$\sum =$

```
\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

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

```

\documentclass{article}
\usepackage{amsmath}
\def\mywd{35pt}
\begin{document}
\[
\frac{n_0}{n_1} = q_1 + \frac{\text{makebox}[\mywd][l]{\rightarrow \$1$}}{q_2 + \frac{\text{makebox}[\mywd][l]{\rightarrow \$1$}}{q_3 + \frac{\text{makebox}[\mywd][l]{\rightarrow \$1$}}{q_4 + \frac{\text{raisebox}[-6pt]{\ddots}}{\text{raisebox}[-12pt]{+$\frac{\text{makebox}[\mywd][l]{\$1\rightarrow kern30pt$}}{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{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

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

```
\documentclass[preview,border={-5cm 0cm -5cm -0.1cm}]{  
    \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

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

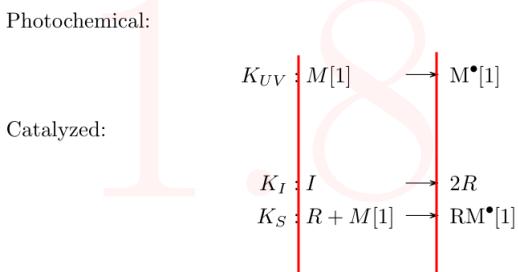
$$I - IV - V^{6-4 \atop 4-3} - I - cadence$$

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

```
\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 \\ \hookrightarrow \\ 4-3\end{array}}-I-cadence\$ \\
\end{document}
```

1.8 Aligning equations inbetween text



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

\begin{document}
\begin{aligned}
&\text{\textbackslash begin\{document\}} \\
&\text{\textbackslash begin\{alignat*\}\{2\}} \\
&\text{\textbackslash intertext\{Photochemical:\}} \\
&K_{UV} \&: M[1] \& \text{\textbackslash ch\{-\>} M^\bullet[*]\}[1] \\
&\text{\textbackslash intertext\{Catalyzed:\}} \\
&K_I \&: I \& \text{\textbackslash ch\{-\>} 2R \\\& \\
&K_S \&: R + M[1] \& \text{\textbackslash ch\{-\>} RM^\bullet[*]\}[1]
\end{aligned}
\end{document}
```

Chapter 2

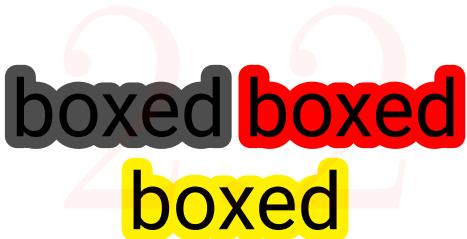
Text, Symbols

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	121	122	123	124	125	126	127
161	162	163	164	165	166	167	168
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
248	249	250	251	252	253	254	255

```
\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}
\ding{46} \ding{70} \ding{57} \ding{98} \ding{96}
\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.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
    \hookrightarrow 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

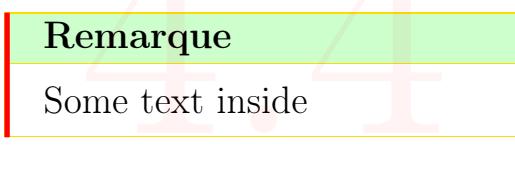
Tables, boxes and so on

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}

```

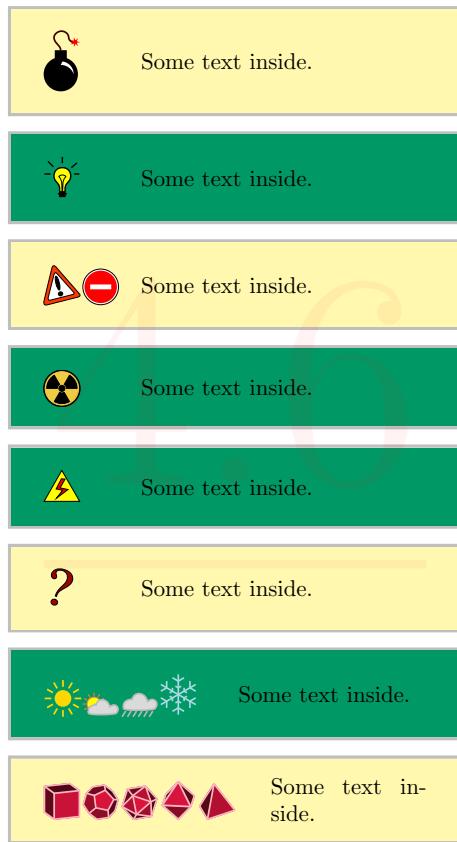
4.5 Photo positioning

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[scale=0.1]{
\rightarrow 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}

\newtcbox{\framedd}[1]{
colframe=lightgray,
colback=yellow!40!white,
enhanced jigsaw,
sharp corners,
lower separated=false,
lethand 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, lethand width=2.5cm]
\bc soleil \bc claircie \bc pluie \bc neige \tc blower
Some text inside.
\end{framedd}

\begin{framedd}[lethand 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=-5pt]interior.base west) {\Huge \textbf{!}}};,
%%%%%%%%%%%%%
breakable,pad at break=1mm,
#1,
code={\ifdefempty{\tcbtitletext}{}{\tcbset{before upper={\color{orang}\begin{document}\begin{caja}[title=warning]\color{black}The vertical alignment settings\end{caja}\end{document}}}}},}
\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

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

\begin{document}
\begin{table}[H]
\center
\makegapedcells
\begin{tabular}{|c|c|c|c|} \hline
1&1&1&1\\\hline
1&1&1&1\\\hline
1&1&1&1\\\hline
\end{tabular}
\end{table}
\end{document}
```

4.9 Martix made of table

$$d_{n+1} \begin{vmatrix} a_{1,1} & \dots, a_{1,n} & 0 \\ a_{1,1} & \dots, a_{1,n} & 0 \\ \dots & \dots & \dots \\ a_{1,1} & \dots, a_{1,n} & 0 \\ \dots & \dots & \dots \\ a_{1,1} & \dots, a_{1,n} & 0 \end{vmatrix} = 0$$

```
\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 \\
& $\dots$ & $\dots$ & $\dots$ & $\dots$ \\
& $a_{1,1}$ & $\dots$ & $a_{1,n}$ & 0 \\
& $\dots$ & $\dots$ & $\dots$ & $\dots$ \\
& $a_{1,1}$ & $\dots$ & $a_{1,n}$ & 0 \\
\multicolumn{3}{l}{\dotfill} & $a_{1,n}$ & 0 \\
& $a_{1,1}$ & $\dots$ & $a_{1,n}$ & 0 \\
& $a_{1,1}$ & $\dots$ & $a_{1,n}$ & 0 \\
& $\dots$ & $\dots$ & $\dots$ & $\dots$ \\
& $a_{1,1}$ & $\dots$ & $a_{1,n}$ & 0 \\
\end{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-
    \rightarrow 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}} @{}}
\hline
\endfirsthead
\endhead
\toprule
\textbf{Enum} & \textbf{Example} & \textbf{Description} \\
\midrule
1 & test & \\[50pt]
\midrule
2a & test & \\[50pt]
\midrule
2b & test & \\[50pt]
\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 \\[0.5ex]
\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
\end{tabularx}
\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

without shadow

with shadow

with shadow

with shadow

with shadow

without pattern

```
\documentclass[tikz,border=5mm]{standalone}
\usepackage{tikz}
\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}}%
{
    \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=#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};

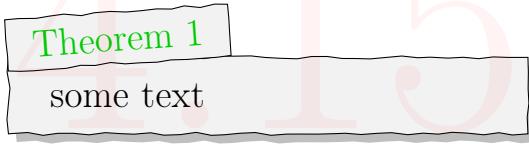
\node[Node=24mm, preaction={fill=yellow},
    drop shadow, Pattern] (b) {with shadow};

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

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

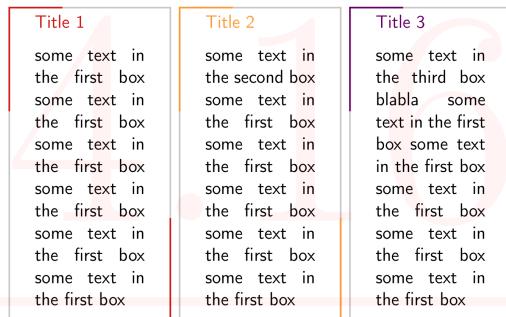
\node[Node=24mm, drop shadow] (c) {without pattern};
%---
\end{tikzpicture}
\end{document}
```

4.15 Hand Drawn tcolorbox



```
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{emerald}
\usetikzlibrary{decorations.pathmorphing}
\usetikzlibrary{shadows}
\tikzset{decoration={random steps,segment length=2mm,
    \rightarrow 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
                \rightarrow (frame.north east);
        }
    },
    frame code={
        \draw[decorate,fill=lightgray!20,drop shadow] (frame.north east
            \rightarrow ) 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)--(frame.
    \textcolor{red}{\textarrow} 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)
--($frame.south east)!0.33!(frame.north east$);}

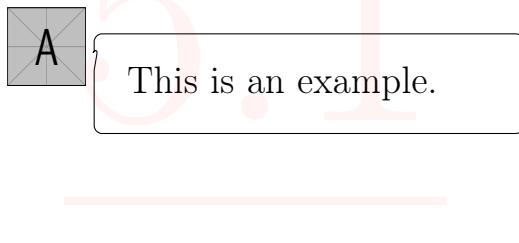
\tcbset{marktext/.style={%
    overlay={\node[rotate=90,text=black,anchor=north east] at (
        \textcolor{red}{\textarrow} frame.north west){#1};},
    code={\setbox\z@=\color@hbox{\color@endbox\tcbdimto\textcolor{red}{\textarrow} myheight{\wd\z@+3mm}},%
    minimum for equal height group=\tcb@ehgid:\myheight,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

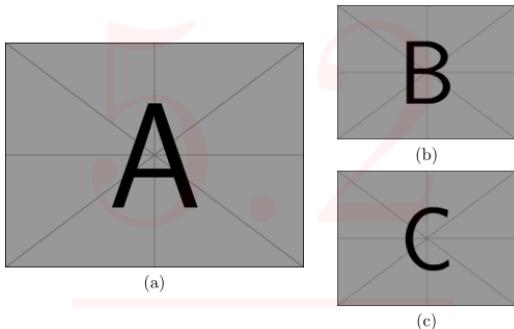
5.1 Comment to figure



```
\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



```
\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 subfigure references

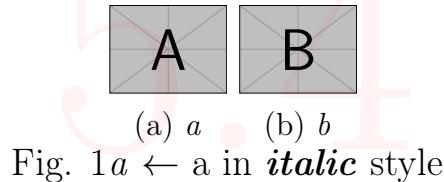


Fig. 1a \leftarrow a in *italic* style

```
\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{\textit{a}}
\label{fig1}
\end{figure}
\end{document}
```

5.5 Wrapfigure

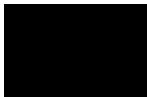


Figure 1: FIG 1

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"? Kjft - 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 the original language. There is no need for special content, but the length of words should match the language.

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"? Kjft - 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 the original language. There is no need for special content, but the length of words should match the language.

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"? Kjft - 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 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"? Kjft - 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 the original language. There is no need for special content, but the length of words should match the language.

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"? Kjft - 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 the original language. There is no need for special content, but the length of words should match the language.



Figure 3: FIG 3

need for special content, but the length of words should match the language. 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"? Kjft - 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 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

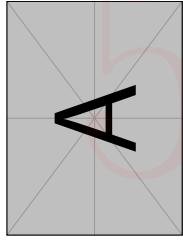


Table 5.2

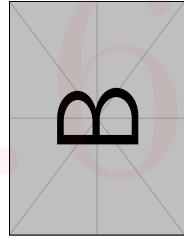


Table 5.3

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

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

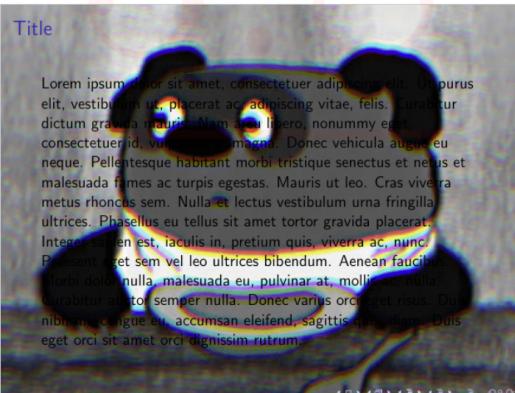
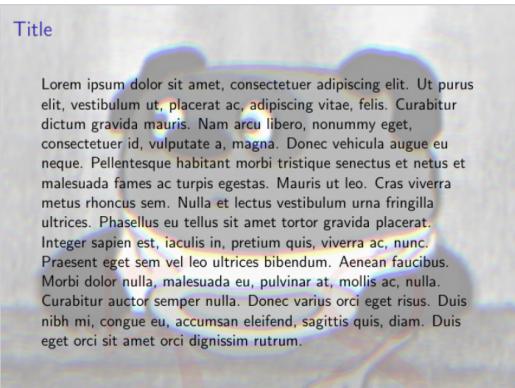
Figure 3: Caption

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}[!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}
```

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;}}
```

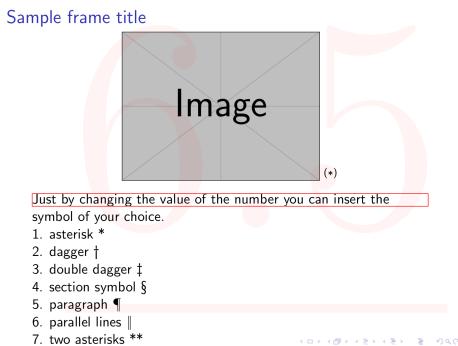
```
\begin{document}
\renewcommand{\labelenumi}{\SebastianoItem{\arabic{enumi}}}
\begin{enumerate}
\item item
\item special item \SebastianoHighlight
\item item
\end{enumerate}
\end{document}
```

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 I	121 I	122 I	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 ♠
176 ⑤	177 ⑥	178 ⑦	179 ⑧
184 ⑨	185 ⑩	186 ⑪	187 ⑫
192 ⑬	193 ⑭	194 ⑮	195 ⑯
200 ⑰	201 ⑱	202 ⑲	203 ⑳
208 ⑳	209 ⑳	210 ⑳	211 ⑳
216 ↘	217 ↛	218 ↗	219 ↘
224 ↚	225 ↛	226 ↗	227 ↗
232 ↚	233 ↛	234 ↗	235 ↗
241 ↛	242 ↗	243 ↗	244 ↗
248 ↗	249 ↗	250 ↗	251 ↗

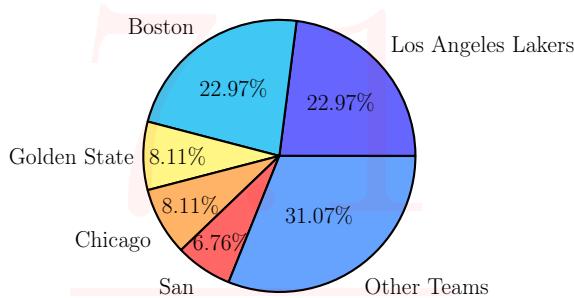
```
\documentclass{article}
\usepackage{pifont}

\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 ...

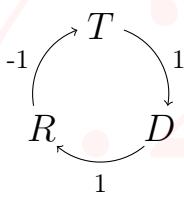
7.1 Simple pie chart



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

\begin{document}
\begin{tikzpicture}[->,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] {\tiny \texttt{\{|\footnotesize 1\}}};
\draw (-50:1cm) arc (-50:-130:1cm) node[midway, below] {\tiny \texttt{\{|\footnotesize 1\}}};
\draw (190:1cm) arc (190:110:1cm) node[midway, left] {\tiny \texttt{\{|\footnotesize -1\}}};
\end{tikzpicture}
\end{document}
```

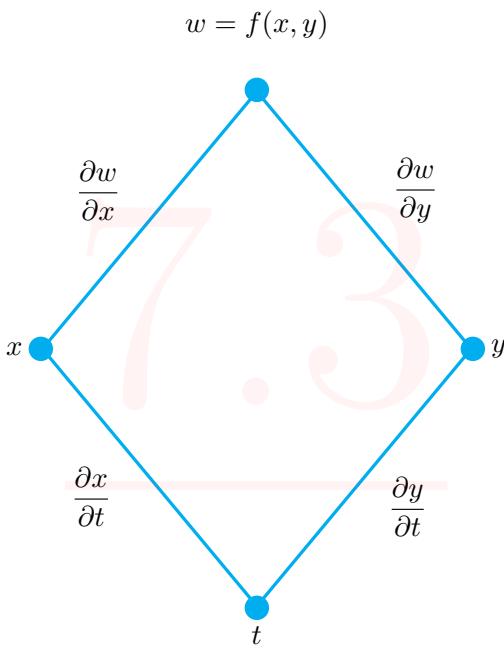
7.2 Circled arrows with text



```
\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] {\tiny \texttt{\{|\footnotesize 1\}}};
\draw (-50:1cm) arc (-50:-130:1cm) node[midway, below] {\tiny \texttt{\{|\footnotesize 1\}}};
\draw (190:1cm) arc (190:110:1cm) node[midway, left] {\tiny \texttt{\{|\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=0
           cm]{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) {$\frac{\partial x}{\partial t}$};
\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) {$\frac{\partial y}{\partial t}$};
\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}

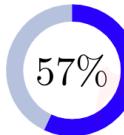
\definecolor{white}{RGB}{255,255,255}
\definecolor{gray}{HTML}{4D4D4D}
\definecolor{maingray}{HTML}{B9B9B9}

\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}
}

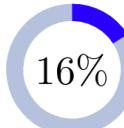
\begin{document}
\skills{{b/2}}
\skills{{a/1}}
\end{document}

```

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-
    \rightarrow 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];
}}}%}

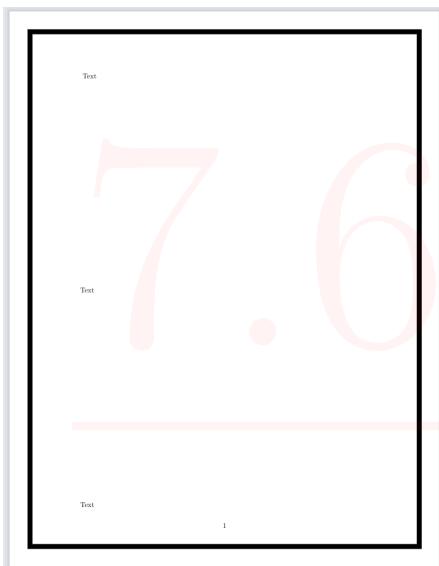
\newlist{achievements}{itemize}{1}
\setlist[achievements]{
before=\let\item\percentageItem,%make \item = \percentageItem
leftmargin=*,%
label={\textbf{\textcolor{blue}{\%}}},%
itemsep=3mm,%
}

\begin{document}

\begin{achievements}
\item[57]\textbf{Skill \#1}\textcolor{blue}{\%} info
\item[16]\textbf{Skill \#2}\textcolor{blue}{\%} info
\item[77]\textbf{Skill \#3}\textcolor{blue}{\%} 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
    \rightarrow =-1cm]current page.north west) rectangle ([xshift=-1cm, yshift=1cm]
    \rightarrow current page.south east);
Text
\vfill
Text
\vfill
Text
\end{document}
```



7.7 Aligning anything to a corner



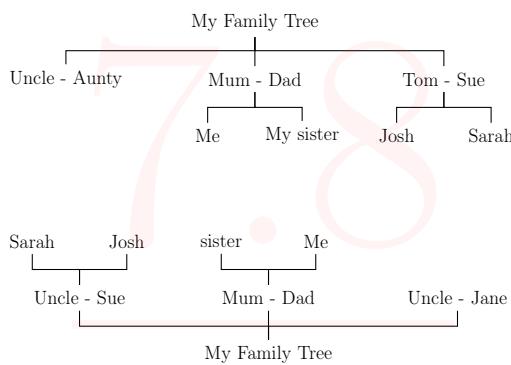
```
\documentclass[14pt]{extreport}
\usepackage{tikz}
\usepackage{qrcode}

\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}
```

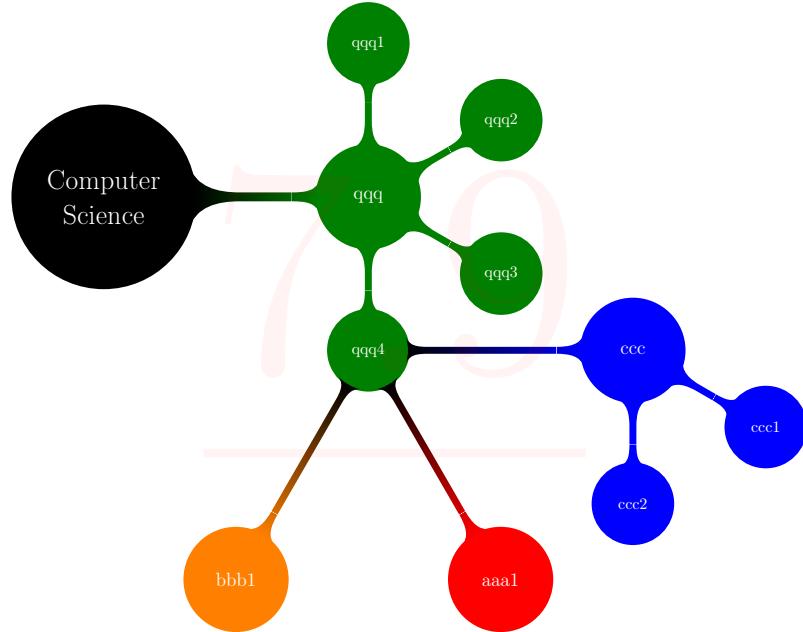
7.8 Family tree



```
\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.

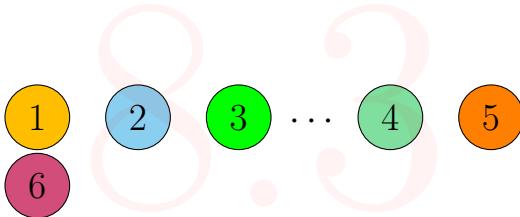
```
\documentclass{article}
\usepackage{tcolorbox}
\newtcbox{\mybox}[1][red]{on line,
arc=0pt,outer arc=0pt,colback=#1!10!white,colframe=#1!50!black,
boxsep=0pt,left=1pt,right=1pt,top=2pt,bottom=2pt,
boxrule=0pt,bottomrule=1pt,toprule=1pt}
\newtcbox{\xmybox}[1][red]{on line,
arc=7pt,colback=#1!10!white,colframe=#1!50!black,
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
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{\vphantom{%
    \text{\textcolor{amber}{WL1}}/\#1}}\setlength{\mylength}{\dimexpr\CircleFactor\dimexpr\ht\%
    \text{\textcolor{amber}{mybox}}+\dp\text{\textcolor{amber}{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



```
\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}
```

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

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}

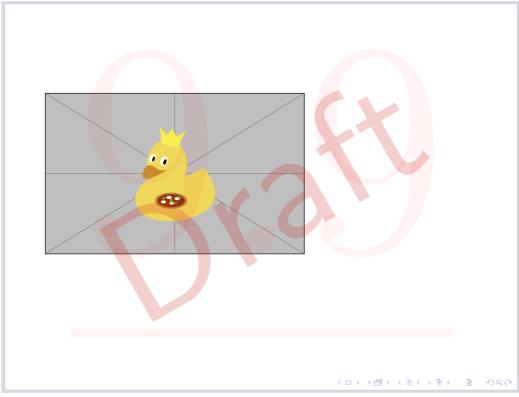
\vspace*{2cm}
\hspace*{-2.8cm}
\definecolor{shadow}{rgb}{0.85,0.85,0.85}
\lob[rotate=-90,shadow,xscale=-1.2,yscale=1.2]{77}

\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
\textcolor{red}{\hookrightarrow}};
\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_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_tl{\dim_use:N\box_wd:N\l_tmpa_box}
    \tl_set:Nx\l_box_ht_tl{\dim_use:N\box_ht:N\l_tmpa_box}
    \tl_set:Nx\l_box_dp_tl{\dim_use:N\box_dp:N\l_tmpa_box}
    \pbs_pdfxform:nnnn{\l_tmpa_box}{\l_tmpa_box}
    %
    \pbs_pdfannot:nnnn{\l_box_wd_tl}{\l_box_ht_tl}{\l_box_dp_tl}{%
        /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
%%%%%%%
% \begin{document}
% \begin{center}
%     \embedvideo{\includegraphics[width=\textwidth]{ANY_IMAGE.jpg}}{
%         ANY_VIDEO.mp4}
% \end{center}
% \end{document}

```