LaTeX
by examples

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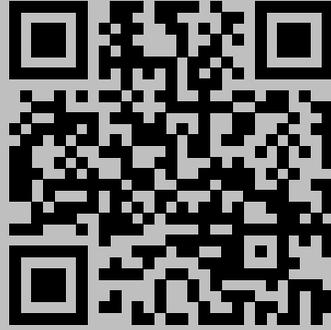
1 Math Tips

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...
$\dot{\rho}=\dfrac{x^3}{45a^9-23b}$}
\end{equation*}
\end{document}
```

1.2 Form for simplest calculation

Fill with number

if it does't work try another PDF viewer

a:

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

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

```
\documentclass{article}
\usepackage{amsmath}
\def\mywd{35pt}

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

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

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

\begin{document}
\begin{equation*}
\begin{matrix}
a_{11} & a_{12} & a_{13} \\
a_{21} & a_{22} & a_{23} \\
a_{31} & a_{32} & a_{33} \\
\end{matrix}
\end{equation*}
\end{document}
```

1.6   Multiple lines, one centered label

$$\begin{split} A & = \frac{\pi r^2}{2} \\ & = \frac{1}{2} \pi r^2 \end{split} \tag{2}$$

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

1.7   Array as a fraction

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

$$I - IV - V^{\genfrac{}{}{0pt}{}{6-4}{4-3}} - I - cadence$$

$$I - IV - V^{\begin{array}{c}6-4 \\ 4-3\end{array}} - I - cadence$$

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

\begin{document}
$I-IV-V^{\substack{6-4\\4-3\\6-4\\4-3}}-I-cadence$ \\

$I-IV-V^{\genfrac{}{}{0pt}{}{6-4}{4-3}}-I-cadence$ \\

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

1.8 Aligning equations inbetween text

TEXT 1

$$K_I : I -> 2R$$
$$K_S : R + M -> RM^*$$

TEXT 2

$$K_I : I -> 2R$$
$$K_S : R + M -> RM^*$$

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

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

1.9 Equation: boxed split inside align

$$A = B + C + D$$

$$\boxed{\begin{aligned} A = \quad & B\_is\_long \\ & + C\_is\_long\_too \\ & + D\_is\_long\_too \end{aligned}}$$
(1)

```latex
\begin{document}
\begin{align}
\begin{split}
A ={}& B + C + D
\end{split}\nonumber\\
\mathrlap{\boxed{\phantom{\begin{gathered}A = {}+ C\_is\
    _long\_too\\A\\A\end{gathered}}}}
\hspace{\dimexpr\fboxsep+\fboxrule-0.4pt}
\begin{split}
A ={}& \phantom{{}+{}} B\_is\_long\\
& + C\_is\_long\_too\\
& + D\_is\_long\_too
\end{split}
\end{align}
\end{document}
```

1.10 Multiline text above arrow or relation symbol

$$\dfrac{x+1}{x} \xrightarrow{\substack{\text{Euclidean}\\\text{division}}} 1 + \dfrac{1}{x}$$

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

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

1.11 Calculating scheme for a particular solution

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

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

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

2 Text, Symbols

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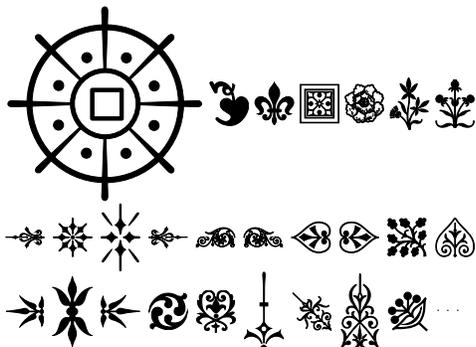
```
\documentclass[varwidth]{standalone}
\usepackage[object=vectorian]{pgfornament}
\usepackage{tikz}

\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

```
\documentclass{article}
\usepackage{xcolor}
\usepackage{roboto}
\usepackage[outline]{contour}

\begin{document}
\roboto\huge\contourlength{.15em}
\contour{gray}{boxed}
\end{document}
```

2.3 Justifyed 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 <u>Some long Text</u> text
<u>text under line</u>

```
\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 <u>important</u> text
Some <u>urgent</u> text
Some <u>boat</u> 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	①	173	②	174	③	175	④
176	⑤	177	⑥	178	⑦	179	⑧	180	⑨	181	⑩	182	❶	183	❷
184	❸	185	❹	186	❺	187	❻	188	❼	189	❽	190	❾	191	❿
192	①	193	②	194	③	195	④	196	⑤	197	⑥	198	⑦	199	⑧
200	⑨	201	⑩	202	❶	203	❷	204	❸	205	❹	206	❺	207	❻
208	❼	209	❽	210	❾	211	❿	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}
\ding{46} \ding{70} \ding{57} \ding{98} \ding{96}
\end{document}
```

2.7 Change the title of `\tableofcontents`

Whatever

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`

```latex
\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}
```

```
Python Code Example
1    import glob
2
```

3.2 "Zebra" style listing

```c
/**
* Prints Hello World.
**/
#include <stdio.h>

int main(void) {
  printf("Hello World!");
  return 0;
}
```

```latex
\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

```
\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}
```

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

3.4   Listing with minted

```
\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}
```

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

3.5 Run LaTeX code inside and show result
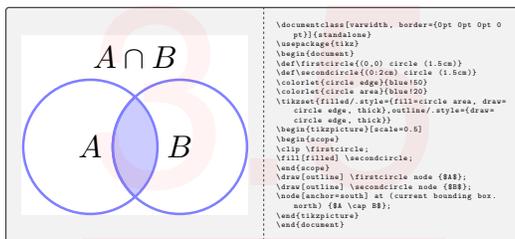

```
\documentclass{standalone}
\usepackage[most]{tcolorbox}
\tcbset{sidebyside,width = 21cm,listing options={
    basicstyle=\small\ttfamily,breaklines=true}}

\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{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
<?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');
}
```

```latex
\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}[0ex][0ex
        ]{\ensuremath{\color{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

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

emacs

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

vim

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

perldoc

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

monokai

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

```latex
\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=fdm
      ,
  fontsize=\footnotesize, tabsize=2, breaklines, autogobble}}
\definecolor{inline}{RGB}{187,57,82}
\definecolor{bg}{RGB}{22,43,58}
\setminted[java]{bgcolor=bg, fontfamily=fdm, 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):

```latex
\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=fdm, fontsize=\scriptsize}

\begin{document}
\begin{javalst}
    public class ClassName {
        public static void main(String[] args) {
            System.out.println(args);
        }
    }
\end{javalst}
\end{document}
```
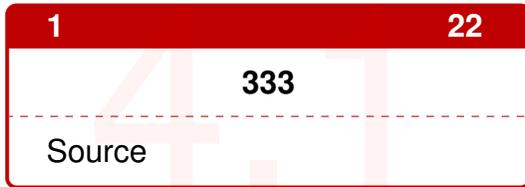
4 Tables, boxes and so on

4.1 Nice tcolorbox

1	22

333

Source

```
\PassOptionsToPackage{svgnames}{xcolor}
\documentclass[twocolumn,a4paper]{article}
\usepackage{tcolorbox}
\tcbuselibrary{skins,breakable}
\usetikzlibrary{shadings,shadows}%preambule
\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
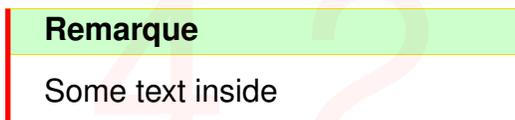
```
\documentclass[border=2mm]{standalone}
\usepackage[most]{tcolorbox}
\usepackage{lipsum}

\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, consectetuer
adipiscing elit.
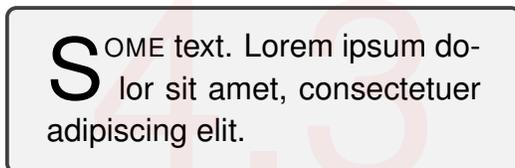
```
\documentclass{article}
\usepackage{lettrine}
\usepackage{tcolorbox}
\usepackage{lipsum}

\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.

A

```
\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}
```
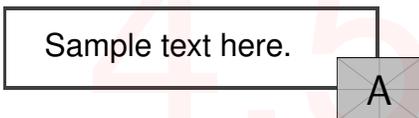
4.6 bclogo – Creating colourful boxes with logos
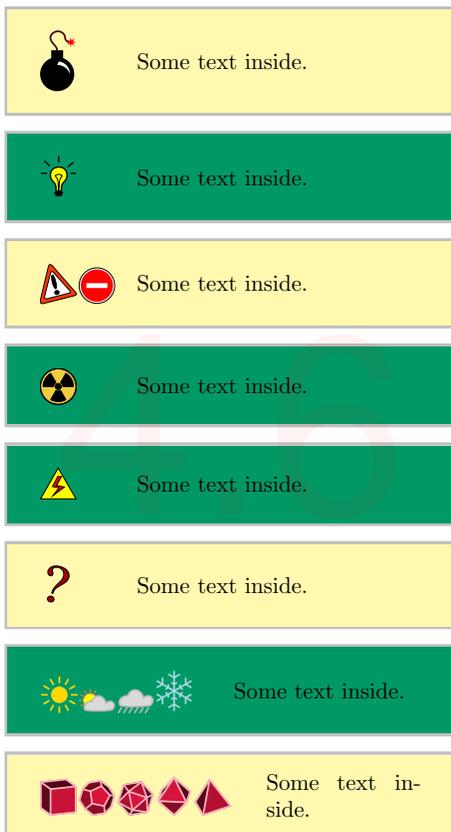

```latex
\documentclass{article}
\usepackage{geometry}
\geometry{
paperwidth=8cm,
paperheight=14cm,
margin=0.5cm
}
\usepackage{xcolor}
\usepackage[most]{tcolorbox}
\usepackage[tikz]{bclogo}

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

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

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

\begin{framedd}
  \bcattention \bcinterdit \tcblower
  Some text inside.
\end{framedd}

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

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

\begin{framedd}
  \bcquestion \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green, lefthand width=2.5cm]
  \bcsoleil \bceclaircie \bcpluie \bcneige \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}[lefthand width=3cm]
  \bccube \bcdodecaedre \bcicosaedre \bcoctaedre \bctetraedre \
      tcblower
  Some text inside.
\end{framedd}
\end{document}
```

4.7 Warning banner

!   **warning**   Here is some text
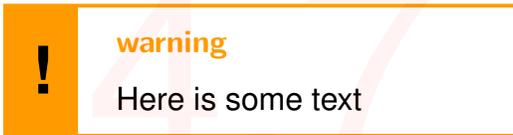
```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[most]{tcolorbox}
\definecolor{orang}{RGB}{255,155,0}
\newtcolorbox[auto counter,number within=section]{caja
    }[1][]{
enhanced jigsaw,colback=white,colframe=orang,coltitle=
    orang,
fonttitle=\bfseries\sffamily,
sharp corners,
detach 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={\ifdefempty{\tcbtitletext}{}{\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 horisontally)

all	in	cells
are	centered	vertically
and	horisontally	$\sum$

```
\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

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

```
\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 & \\
 & \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|}
\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.

```latex
\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

```latex
\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}
```
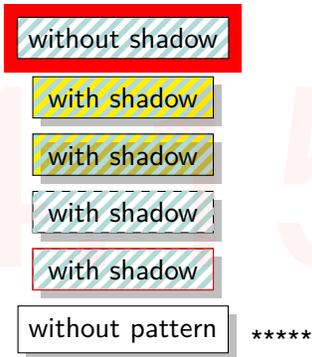
4.14 Hand Drawn tcolorbox

Theorem 1

some text

```latex
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{emerald}
\usetikzlibrary{decorations.pathmorphing}
\usetikzlibrary{shadows}
\tikzset{decoration={random steps,segment length=2mm,
    amplitude=0.6pt}}
\newtcbtheorem{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}
```

without shadow

with shadow

with shadow

with shadow

with shadow

without pattern   *****

```
\documentclass[tikz,border=5mm]{standalone}
\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}% name
   {\pgfqpoint{-1pt}{-1pt}}% below left
   {\pgfqpoint{\hatchdistance}{\hatchdistance}}% above right
   {\pgfpoint{\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}
```
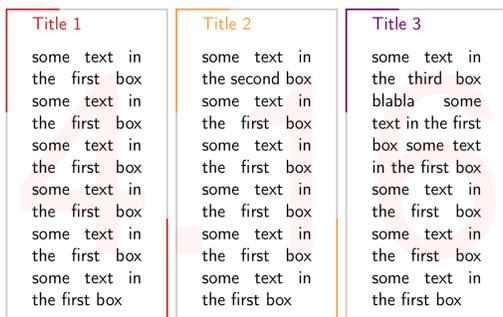
4.16   Halfframed boxes

| Title 1	Title 2	Title 3
some text in the first box some text in the first box some text in the first box some text in the first box 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 first box some text in the first box some text in the first 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 some text in the first box some text in the first box some text in the first box

```latex
\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#1\color@endbox\tcbdimto
    \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
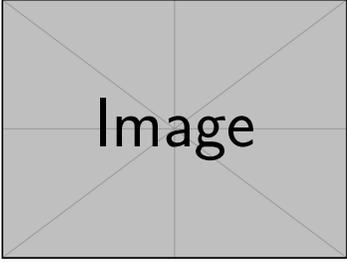
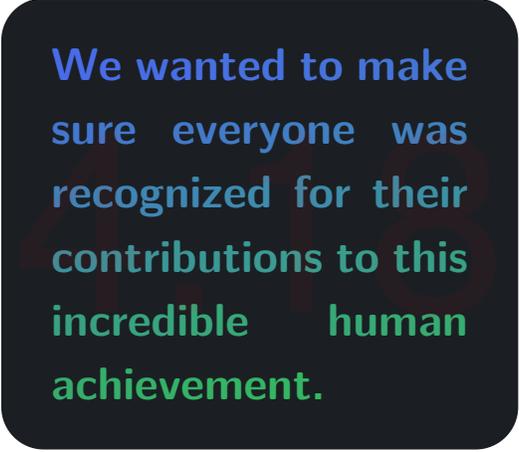| Num.	Images
Nr. 1	
Nr. 2	
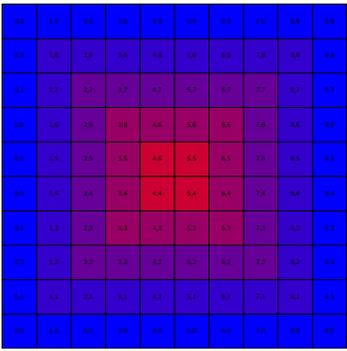
```
\documentclass{article}
\usepackage{graphicx}
\usepackage[export]{adjustbox}

\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
    1ex 0pt 1ex,valign=m]{example-image} \\
\hline
Nr. 2 & \includegraphics[width=0.8\textwidth,margin=0pt
    1ex 0pt 1ex,valign=m]{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, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer 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.

```latex
\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) `\tcblower`

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}.

\tcblower

Here, you see the lower part of the box.

\DrawLine

and some more
\end{tcolorbox}
\end{document}
```
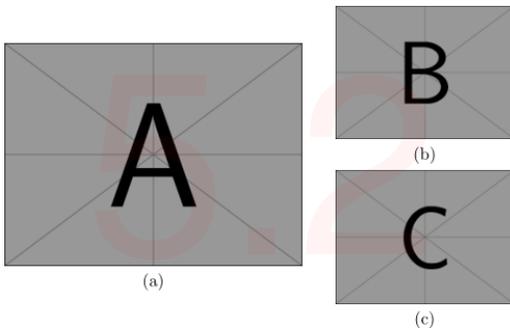
5 Figures

5.1 Comment to figure

A This is an example.
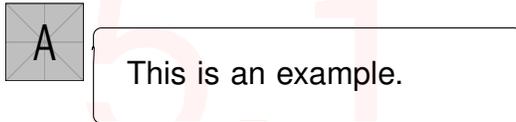
```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{shapes.callouts}

\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

A (a)

B (b)

C (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)
\end{tabular}\qquad % some space
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-b.png}}\\ (b)\\[0.1cm]
\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

A

```
\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}
```
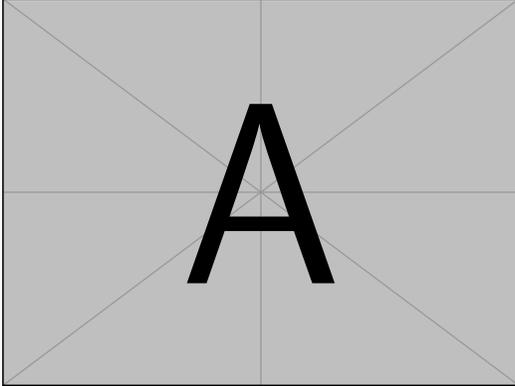
5.4 Italic sabfigure references

Fig. 1*a* ← 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


```
\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


```latex
\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.
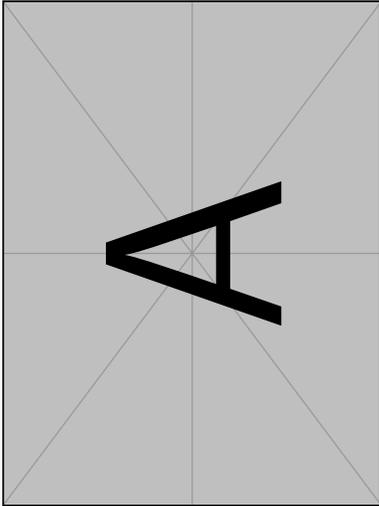

Figure 1: Caption   Figure 2: Caption   Figure 3: Caption

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.

```latex
\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
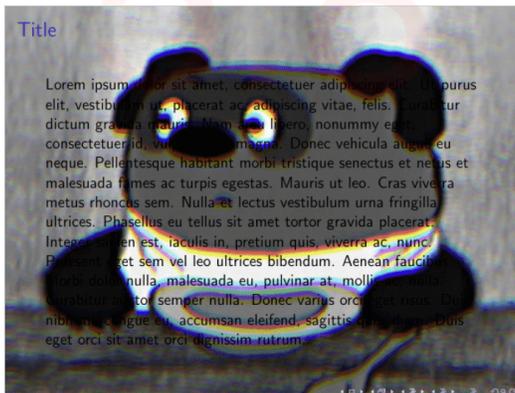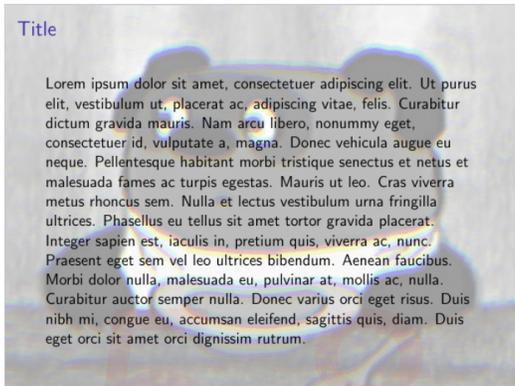

```
\documentclass{beamer}
\usepackage{transparent}
\usepackage{lipsum}

\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

```latex
\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

```latex
\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

```latex
\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
\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 **

```latex
\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

```latex
\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	❞		
		161	❡	162	❢	163	❣	164	❤	165	❥	166	❦	167	❧

✓ Code 51

✗ Code 56

☞ Code 43

❖ Code 118

♥ Code 170

168	♣	169	♦	170	♥	171	♠	172	①	173	②	174	③	175	④
176	⑤	177	⑥	178	⑦	179	⑧	180	⑨	181	⑩	182	❶	183	❷
184	❸	185	❹	186	❺	187	❻	188	❼	189	❽	190	❾	191	❿
192	①	193	②	194	③	195	④	196	⑤	197	⑥	198	⑦	199	⑧
200	⑨	201	⑩	202	❶	203	❷	204	❸	205	❹	206	❺	207	❻
208	❼	209	❽	210	❾	211	❿	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	➾		

```latex
\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
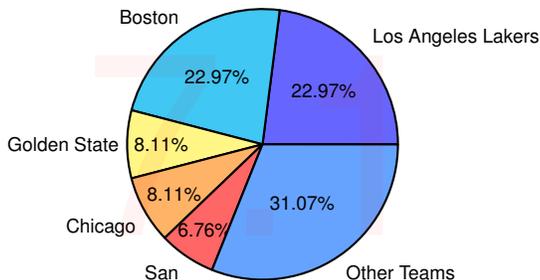
Two columns:

- 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}
```
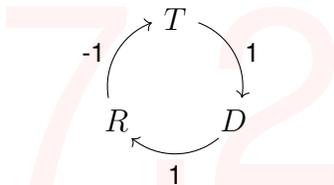
7 Plots, tikz, pie charts ...

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


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

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

7.3   Diamond with text
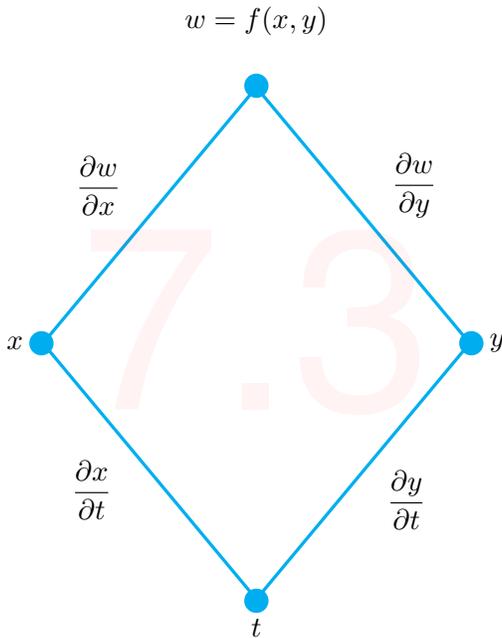
$$w = f(x,y)$$

$$\frac{\partial w}{\partial x} \qquad \frac{\partial w}{\partial y}$$

$$x \qquad y$$

$$\frac{\partial x}{\partial t} \qquad \frac{\partial y}{\partial t}$$

$$t$$

```latex
\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) {$\dfrac{\partial
        w}{\partial y}$};
    \node [above=0.5cm,left=0.1cm] (c) at (d.135) {$\dfrac{\partial
        w}{\partial x}$};
    \node [left=0.1cm] (dd) at (d.180) {$x$};
    \node [right=0.1cm] (e) at (d.0) {$y$};
    \node [below=0.1cm] (f) at (d.270) {$t$};
    \node [below=0.9cm,right=-0.3cm] (g) at (d.-30) {$\dfrac{\
        partial y}{\partial t}$};
    \node [below=0.5cm,left=0.1cm] (h) at (d.220) {$\dfrac{\partial
        x}{\partial t}$};
    \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}
```
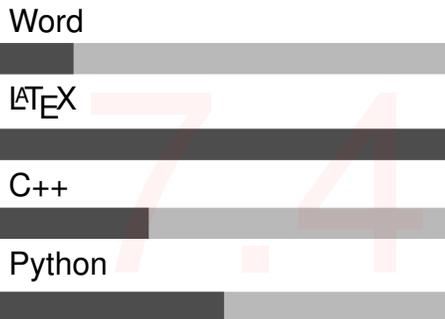
7.4   Levels of skills

Word

LaTeX

C++

Python

```latex
\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}
```
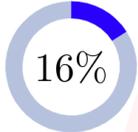
7.5 Round levels of skills

57% **Skill #1**
info

16% **Skill #2**
info

77% **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}\\info
  \item[16]\textbf{Skill \#2}\\info
  \item[77]\textbf{Skill \#3}\\info
\end{achievements}

\end{document}
```

7.6 Huge margin line
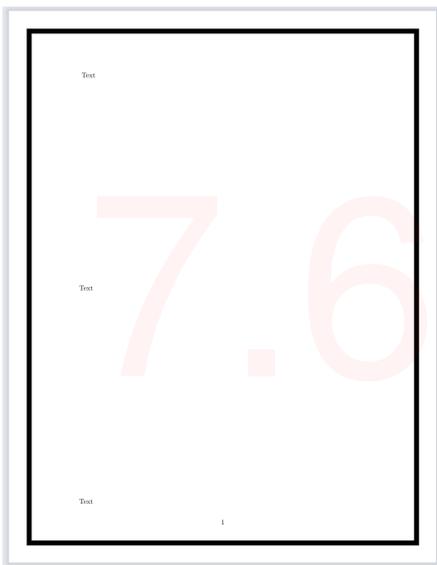
Text

Text

Text

```
\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 corer

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}
```
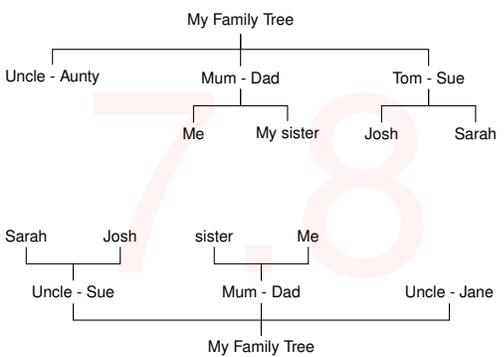
OR the rainbow variant (see example 9.7)

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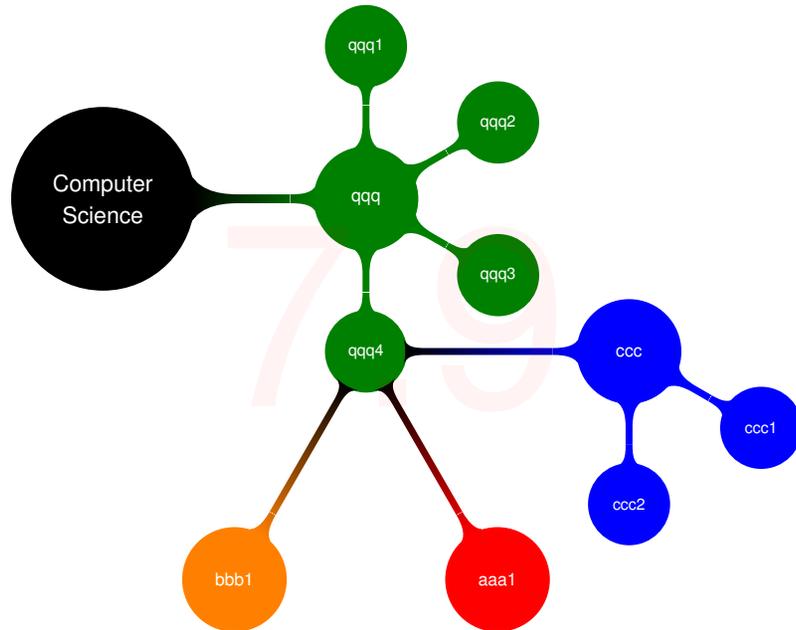
```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{tikz}
\usetikzlibrary{mindmap}
\usetikzlibrary[mindmap]

\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\-gramming languages} }
      child { node[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 { 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}
```
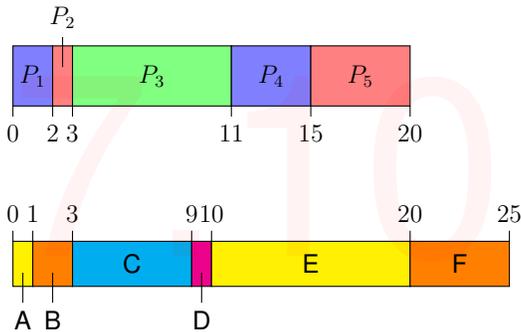
```latex
\documentclass[border=10pt]{standalone}
\usepackage{tikz}

\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}
```
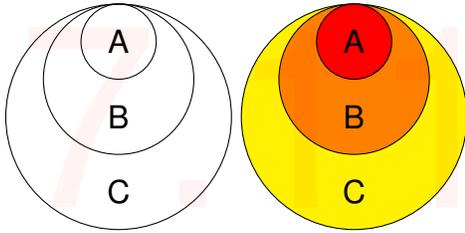
7.11 Drawing a stacked venn diagram


```latex
\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
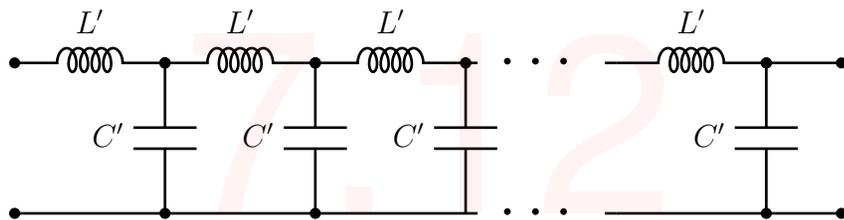

```
\documentclass{article}
\usepackage{circuitikz}
\ctikzset{bipoles/thickness =1}
\begin{document}
\begin{circuitikz}[line width=1pt]
  \draw (0,2) to[L,l=$L'$,*-*] (2,2)
        (2,0) to[C,l=$C'$,-*] (2,2)
        (2,0) to[short,-*] (0,0)
  ;
  \begin{scope}[xshift=2cm]
  \draw (0,2) to[L,l=$L'$,*-*] (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
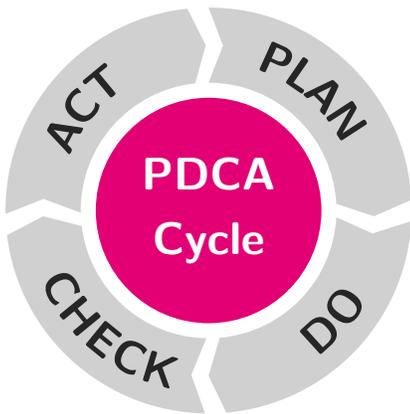

```
\documentclass[tikz,border=10pt]{standalone}
\usetikzlibrary{decorations.text}
\definecolor{mygray}{RGB}{208,208,208}
\definecolor{mymagenta}{RGB}{226,0,116}
\newcommand*{\mytextstyle}{\sffamily\Large\bfseries\color{black!85}}
\newcommand{\arcarrow}[3]{%
% inner radius, middle radius, outer radius, 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

1 2 3 ⋯ 4 5 6

```
\usepackage{tikz}
\usepackage[framemethod=TikZ]{mdframed}
\usepackage{xcolor}
\usetikzlibrary{calc}
\makeatletter
\newlength{\mylength}
\xdef\CircleFactor{1.1}
\setlength\mylength{\dimexpr\f@size pt}
\newsavebox{\mybox}
\newcommand*\circled[2][draw=blue]{\savebox\mybox{\vbox{\vphantom{WL1
    /}#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

your comment here

(This) is just some text that I will re-
peat for this section again and again.
This is just some text that I will repeat
for this section again and again.

```
\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

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

\begin{document}
\StickyNoteP[2.5cm]{%
\NotebookPar[spiral=false]{
\LARGE first\\ second }}[6.5cm]
\end{document}
```

```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{fadings, shadings}
\newcounter{fadcnt}\setcounter{fadcnt}{0}
\newcommand\fadingtext[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}
```

9.4   Single Watermark

```
\documentclass[a4paper]{article}
\usepackage[T1]{fontenc}
\usepackage[utf8]{inputenc}
\usepackage[pages=some]{background}% change "some" to "all" to see WM
    on all pages
\usepackage{lipsum}
\backgroundsetup{color=green, opacity=0.3, scale=10, contents={A n M n
    V}}

\begin{document}
\lipsum[1-5]
\BgThispage
\lipsum[1-5]
\end{document}
```

9.5   Full page of Watermarks

```
\documentclass[12pt]{book}
\usepackage{graphicx}
\usepackage[pages=some]{background}
\usepackage{lipsum}
\newcommand\DupImage{%
    \includegraphics[width=5cm]{logo.jpeg}\hfill% YOUR IMAGE
    \includegraphics[width=5cm]{logo.jpeg}\hfill% YOUR IMAGE
    \includegraphics[width=5cm]{logo.jpeg}\hfill% YOUR IMAGE
    \includegraphics[width=5cm]{logo.jpeg}\hfill% YOUR IMAGE
    \includegraphics[width=5cm]{logo.jpeg}\hfill% YOUR IMAGE
    \includegraphics[width=5cm]{logo.jpeg}\hfill% YOUR IMAGE
    \includegraphics[width=5cm]{logo.jpeg}\hfill}
\newlength{\drop}
\backgroundsetup{ scale=1, angle=45, opacity=.3,
  contents={%
    \begin{minipage}{1.5\paperheight}
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage\\[2ex]
    \DupImage \end{minipage} } }

\begin{document}
\drop=0.1\textheight \BgThispage \lipsum[1-8]
\end{document}
```
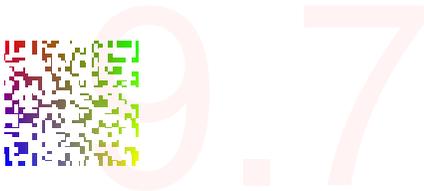
9.6 Generating QR code


```
\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

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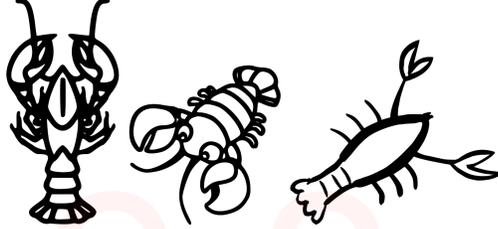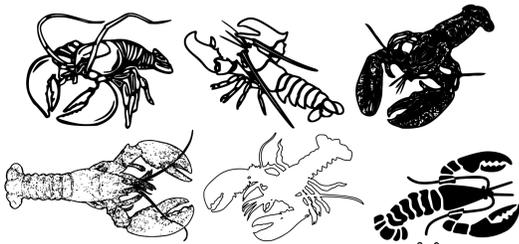
```
\documentclass[14pt]{extreport}
\usepackage[left=1.5cm,right=3cm,top=1.5cm,
bottom=1.5cm,bindingoffset=0cm]{geometry}
\usepackage{loblib}

\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}
```
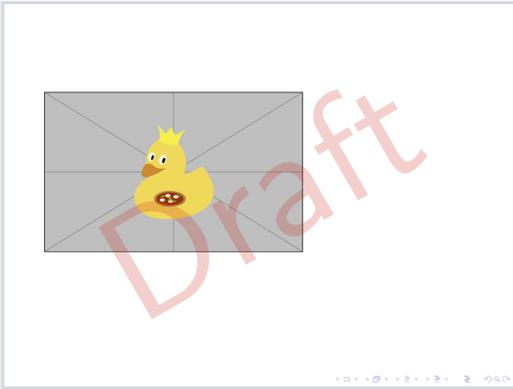
LobLib documentation on GitHub in LobLib-package folder.

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


```latex
\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		dimond
	disappointed		disappointed_relieved		expressionless
	fearful		fist		flushed
	girl		grimacing		grin
	hand		heart		heart_eyes
	imp		innocent		joy
	kiss		kissing		kissing_heart
	laughing		mask		muscle
	neutral_face		no_mouth		ok_hand
	open_hands		open_mouth		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		weary		wink
	worried		yum	-	-

```latex
\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} \LaTeX.\\
I just \latexemoji{stuck_out_tongue_wink_eye}.\\

Good bye! \latexemoji{wave}
\end{document}
```

... ...

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 qqqqqqqqq
\end{document}
```
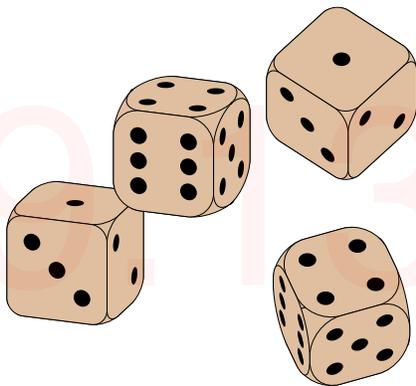
9.12   Text in different shapes

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}
```

9.14 Animals


```
\documentclass{standalone}
\usepackage{tikzlings}
\begin{document}

\begin{tikzpicture}
\marmot
\end{tikzpicture}

\end{document}
```
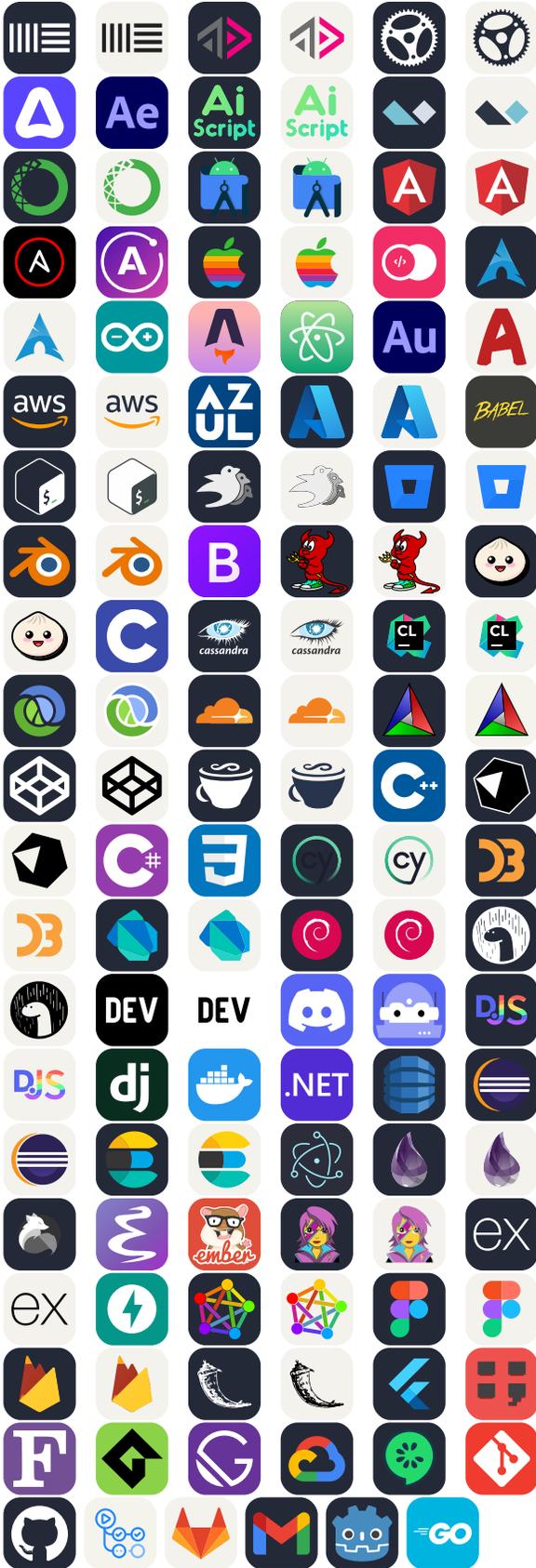
Evailable creacures:

1.	anteater	13.	mole
2.	bat	14.	mouse
3.	bear	15.	owl
4.	bee	16.	panda
5.	bug	17.	penguin
6.	cat	18.	pig
7.	chicken	19.	rhino
8.	coati	20.	sheep
9.	hippo	21.	sloth
10.	elephant	22.	snowman
11.	koala	23.	squirrel
12.	marmot	24.	wolf

https://ctan.org/pkg/tikzlings

Skill icons

```
\documentclass[11pt]{report}
\usepackage{skillicons}
\begin{document}
\begin{itemize}
\item[] \photosymbol{JavaScript} I'm proficient
    in JavaScript.
\item[] \photosymbol{Python-Dark} Python is one
    of my core skills.
\item[] \photosymbol{React-Light} I have
    experience working with React.
\item[] \photosymbol{Java-Dark} Java is one of
    my strong suits.
\item[] \photosymbol{NodeJS-Light} I'm
    proficient in Node.js development.
\item[] \photosymbol{Git} I'm adept at using Git
    for version control.
\item[] \photosymbol{MySQL-Dark} SQL is one of
    the databases languages.
\item[] \photosymbol{Rust} Rust is a language I'
    ve been learning and enjoying lately.
\end{itemize}
\end{document}
```

SEE FULL INSTRUCTION OF USING `skillicons` package here: https://github.com/AnMnv/latex-skill-icons

AND MUCH MORE !

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}{}{}}
    \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:nnnnn{1}{1}{}{}{\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
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%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}
```

Temporary page!

LaTeX was unable to guess the total number of pages correctly. As there was some unprocessed data that should have been added to the final page this extra page has been added to receive it.

If you rerun the document (without altering it) this surplus page will go away, because LaTeX now knows how many pages to expect for this document.