List of Corrections

LaTeX Bluemark template_

A rookie's first project

Sarphiv A. Name S123456

DTU Compute
Department of Applied Mathematics and Computer Science

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Sarphiv A. Name S123456

Template

2020-07-03

DTU Compute

Department of Applied Mathematics and Computer Science
Technical University of Denmark

Matematiktorvet
Building 303B
2800 Kongens Lyngby, Denmark
Phone +45 4525 3031
compute@compute.dtu.dk
www.compute.dtu.dk

Abstract

Preface

Acknowledgements

Contents

1 Chapter

The following texts are instructions and examples on how to use this template. This template is made by github.com/sarphiv via various examples from tex.stackexchange.com and its structure is inspired by `Laursen's XeLaTeX thesis template`. It is not advised to use this template as this is literally sarphiv's first LaTeX project - a mess and major bugs should therefore be expected.

1.1 Section

If chapters such as the preface, colophon, and/or acknowledgments are unnecessary they can be commented out in `main.tex`.

The headings above and below are examples of the different depths that have been defined.

Go into the `settings.tex` file now and setup appropriate document metadata and properties. A lot of the values in there are placeholders and should therefore never make it into the final draft.

1.1.1 Subsection

Below you can find the most commonly used files/locations.

- `main.tex`
- `settings.tex`
- `bibliography.bib`
- `chapters/`
- `appendices/`
- `media/`

Subsubsection

The above list was generated with the `itemize` environment. Use the `enumerate` environment to enumerate items. Each item needs to be prefixed with `\item XXXX` where `XXXX` is the item.

1. First
2. Second item with enumerated subitems
    a) First subitem
    b) Second subitem with a really long text that should break this line at some point so we can see what that looks like
3. Third item with itemized subitems
    - Some item
    - Some other item

An empty line break after `\end` statement will cause the text after a list to be treated as a new paragraph.

Lists can have their label style changed by supplying optional argument e.g. `[label=\roman*]` for enumerations.

Paragraph Arbitrary text can be generated with `\lipsum[x][y]` where `x` is the lorem ipsum paragraph (index or range) you want. And where `y` is the sentence you want (index or range) e.g. `\lipsum[1][1-7]`

Subparagraph 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.

1.2 More examples

The following are more examples and instructions on how to use various features.

1.2.1 Text styles and families

Text can have different styles and families.

The italic font style is used to hint at a different meaning and can be enabled with `\textit{...}`.

The bold font style is used for emphasis and can be enabled with `\textbf{...}`.

The sans serif family is used for document related markers and can be enabled with `\textsf{...}`.

`The monospace (typewriter) family is used for code and external references` and can be enabled with `\texttt{...}`. The monospace font does not break at lines correctly when used this way.

The normal font style (medium series) is the default font style and can be enabled with `\textmd{...}`

Enabling locally for an environment

To locally enable a font style or family within an environment use `\XXYY`, where `XX` is the two letter code for the style or family you want, and where `YY` is either `series` for styles or `family` for families. An example could be `\bfseries` for the bold style.

1.2.2 Math $\frac{\pi}{2} = \int_{-1}^{1} \sqrt{1-x^2}dx$

Math in headings need to be surrounded by `\texorpdfstring{XXXX}{YYYY}`, where `XXXX` is the math equation and `YYYY` is the replacement to go into the PDF metadata table of contents.

Inline math can be input with `$1+2$`. While standalone math equations can be input with the `equation`, `multline`, `align`, and `gather` environments. Adding an asterisk removes equation numbering e.g. `align*`. Nest the `split` environment inside the others to group equations into one number.

$$x = \mathcal{X}, \mathrm{x}, \mathbf{x}, x, x_{1_2}^{1^2} \cdot var \times \text{string},\ x \in \{y \in \mathbb{R} \mid y^2 = 0\} \tag{1.1}$$

$$\begin{aligned} p(x) = 3x^6 + 14x^5y + 590x^4y^2 + 19x^3y^3 \\ - 12x^2y^4 - 12xy^5 + 2y^6 \\ + 3x^6 + 14x^5y + 590x^4y^2 \end{aligned} \tag{1.2}$$

$$\begin{aligned} x^{23} &= y + 97410 \\ 0 &= x - y + \frac{c}{\sqrt{x}} \end{aligned} \tag{1.3}$$

$$f(x) = \int_b^a c + y dx,\ \text{aligned on } y \tag{1.4}$$

$$\begin{aligned} 2x - 5y &= 8 \\ 3x^2 + 9y &= 3a + c \\ P(\vec{k}) &= \int_a^b e^{i\vec{k}\cdot\vec{R}} P(\vec{R}) d\vec{R} \end{aligned}$$

Equations were displayed in the order introduced. The `split` environment was nested for eq. (1.3). The `gather*` environment was used for the last equations to demonstrate unnumbered equations. Beware of blank lines when formatting text and equations.

1.2.3 Columns

The body can be split into columns with the `multicols` environment. This environment requires an argument specifying the amount of columns e.g. `\begin{multicols}{2}` for two columns.

An asterisk version of the environment also exists. This version will disable a feature that makes both columns the same height e.g. first column being 100% of the page height and second column 50% of the page height, instead of **both** being 75% of the page height.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

1.2.4 Notes

Footnotes[1] can be made with `\footnote{...}`. Footnotes can also be really long[2]. If the footnote source code is placed on a new line, a comment mark `%` should be placed at the end of the original line to ensure the footnote reference is placed the close to the source. The comment mark causes the new line character to be ignored.

Sources[3] can be cited with `\footcite[PPPP]{XXXX}` where `PPPP` is the optional page number in the source, and `XXXX` is the source key/label/ID[4].

1.2.5 References

Labels can be used to mark areas that can be referenced. The label should be somewhere after the area that should be referenced e.g. a caption for a figure. Labels can be placed with `\label{XXXX}`, where `XXXX` is the label ID. To

[1] Letters like æ, ø, å can be used in the document.
[2] This is a really long footnote that will encounter a line break to show how footnotes wrap. The wrap should be happening about now
[3] John Doe. *First Book Title*. Unknown Publisher, 2020, p. 23.
[4] Jane Doe. *Better Book than that Other Guy*. Unknown Publisher, 2021, p. 11.

reference a label such as section 1.2.4 use `\cref{XXXX}`, where `XXXX` is the label ID. The area type referenced will automatically be inferred.

1.2.6 Markup

External or inline code `references` can be made with `\rawref{XXXX}` where `XXXX` is the reference. Brackets like `[` and `]` should **NOT** be escaped with '\', the brackets can be specified literally.

Highlighted box

Highlight boxes are also supported and can be accessed via the two environments `highlightbox` and `highlightbox*`.

The asterisk version requires a title argument e.g. `\begin{highlightbox*}{XXXX}` where `XXXX` is the title of the box.

The highlight boxes can also be used to highlight equations.

$$1 + 2 \neq 4 \tag{1.5}$$

1.2.7 Figures

Graphics can be included with code such as

```
\begin{figure}
    \centering
    \includegraphics[width=0.9\textwidth]
   ↪ {media/missing-graphic-rectangle.pdf}

    \caption{Demonstration of missing graphic}
    \label{missing-graphic-rectangle-example}
\end{figure}

```

Figure 1.1 Code example for missing graphic example

Figure 1.2 Demonstration of missing graphic

(a) First subfigure (b) Second subfigure (c) Third subfigure

(d) Fourth subfigure

Figure 1.3 Demonstration of missing graphic subfigures with a really long caption that should cause a line break

The output of the code in fig. 1.1 is shown in fig. 1.2. Subfigures can be created via the example shown in appendix A.1. The `\label` can be omitted if unnecessary. To create todo/(fix me) figures the right way, read section 1.2.11.

Code examples and graphics can be used without figures. Although, figures help organize, reference, and describe media, so please use them.

1.2.8 Tikz

Figure 1.4 Picture drawn with tikz

Pictures can be drawn with the `tikz` package. To generate the above masterpiece fig. 1.4 the following code was used

```
\begin{figure}
    \centering
    \begin{tikzpicture}
        \draw [red-base, dashed] (-2.5, 2.5)
            rectangle (-1.5, 0)
            node [grey-dark, above] {hi there};
        \draw [green-base, thick]
            (0, 0)
            to [out=-45, in=-180] (3, 0)
            to [out=0, in=-80] (4, 2)
            to [out=100, in=135] (0, 0);
    \end{tikzpicture}

    \caption{Picture drawn with tikz
\end{figure}
```

The `out` key describes the angle going *out* of a point, such as in the example going out of $(0, 0)$ The `in` key describes the angle going *in* to a point, such as in the example going in to $(3, 0)$

1.2.9 Semantic tabelau

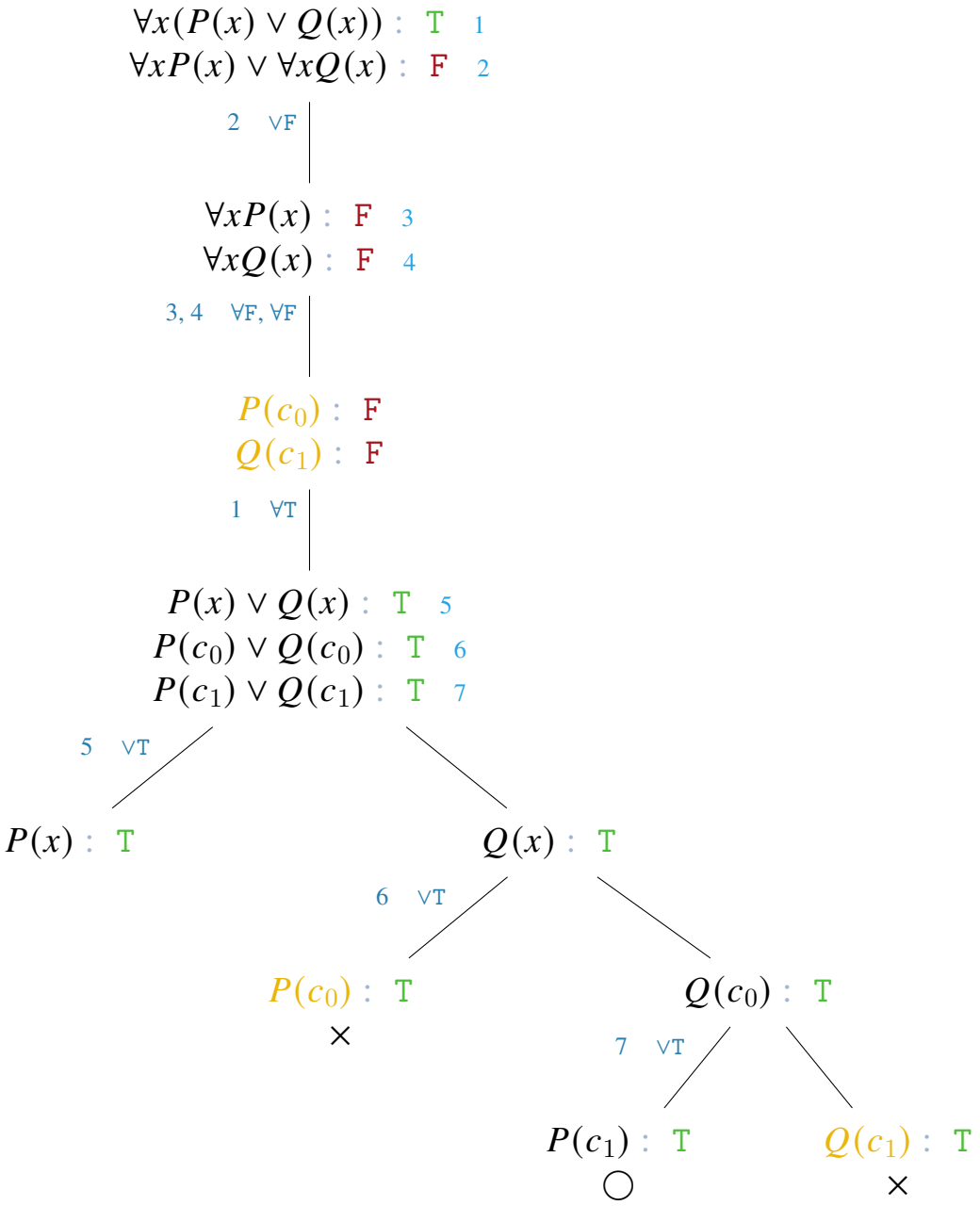

Figure 1.5 Semantic Tableau proving $\forall x(P(x) \vee Q(x)) \nvdash_{ST} \forall xP(x) \vee \forall xQ(x)$

The code for the semantic tableau fig. 1.5 can be seen at appendix A.2. Remember the `=` sign after `,expand` and to have the correct amount of arguments. Empty brackets `[]` are not allowed.

1.2.10 Tables

Tables can be created with the `longtable` environment. This environment is used to enable tables spanning multiple pages if necessary.

Table 1.1 Small table example

First	Second	Third
Alpha	2.102	USD
Bravo	NOTE	
Charlie	213.21	ZERO
Delta	1231	
Echo	132.193	EUR
Foxtrot		ETH
Golf	12 313.424 719	DOGE

As shown, captions can be placed at the top of figures. To see the source code for table 1.1 see appendix A.3.

Table 1.2 Big table example

First	Second
1	Alpha
2	Bravo
3	Charlie
4	Delta
5	Echo
6	Foxtrot
7	Golf

First	Second
8	Hotel
9	India
10	Juliett
11	Kilo
12	Lima
13	Mike
14	November
15	Oscar
16	Quebec
17	Romeo
18	Sierra
19	Tango
20	Uniform
21	Victor
22	Whiskey
23	X-ray
24	Yankee
25	Zulu

The big table example table 1.2 demonstrates table spanning multiple pages. To learn more about setting up headers for such a case, coloring columns, and coloring rows, see appendix A.4.

1.2.11 Todos/fixmes

In the settings file `settings.tex` fix me notes can be enabled/disabled. Remember to disable in the final version of the document.

The first page is a list of fix me notes. A fix me can be placed with `\fxnote{XXXX}` where `XXXX` is the text.

There are four different levels of severity for fix mes. The `note` level is the

lowest priority. The next level up is the `warning` level. The second highest level is the `error` level. The highest level is the `fatal` level, which makes compilation fail if present and fix mes' state is set to `final` mode (a.k.a. `disabled`).

1. `\fxnote{XXXX}`
2. `\fxwarning{XXXX}`
3. `\fxerror{XXXX}`
4. `\fxfatal{XXXX}`

A global fix me note[5] can be placed with `\fxglobalnote{XXXX}` where `XXXX` is the text. These notes should ideally be placed in the preamble.

Figure 1.6 A missing rectangle graphic example

Code examples for placing missing figures can be seen at appendix A.5. Instead of using the `\includegraphics[XXXX]{ZZZZ}` command, use either `\fxgraphicrectnote[XXXX]{YYYY}` or `\fxgraphicsqnote[XXXX]{YYYY}`, where `XXXX` are options for the graphic such as width, `YYYY` is the fix me text, and `ZZZZ` is the graphic location which is not needed. The point mentioned in footnote 5 still stands.

[5] Other severity levels are also supported

A Code examples

The following is a code example included as an appendix. It is referenced just like any other reference described in section 1.2.4.

Hello there

Figure A.1 Small text figure to show figure numbering in appendixes

A.1 Code example for missing graphic subfigures example

```
\begin{figure}
    \centering
    \begin{subfigure}{0.28\textwidth}
        \includegraphics[width=\textwidth]
    ↪ {media/missing-graphic-square.pdf}
        \caption{First subfigure}
    \end{subfigure}
    \begin{subfigure}{0.28\textwidth}
        \includegraphics[width=\textwidth]
    ↪ {media/missing-graphic-square.pdf}
        \caption{Second subfigure}
    \end{subfigure}
    \begin{subfigure}{0.28\textwidth}
        \includegraphics[width=\textwidth]
    ↪ {media/missing-graphic-square.pdf}
        \caption{Third subfigure}
    \end{subfigure}

    \begin{subfigure}{0.855\textwidth}
        \includegraphics[width=\textwidth]
    ↪ {media/missing-graphic-rectangle.pdf}
        \caption{Fourth subfigure}
    \end{subfigure}

    \caption{Demonstration of missing graphic subfigures  with a
    ↪ really long caption that should cause a line break}
    \label{missing-graphic-subfigures-example}
\end{figure}
```

A.2 Code for semantic tableau example

```
\begin{figure}
    \centering

    \semantictableau{
        [
            \formula{\forall x (P(x) \lor Q(x))}{\T}{1}\\
            \formula{\forall x P(x) \lor \forall x Q(x)}{\F}{2}
            [
                \formula{\forall x P(x)}{\F}{3}\\
                \formula{\forall x Q(x)}{\F}{4}
                ,expand={2}{\lorf}{left}
                [
                    \formulahl{P(c_0)}{\F}{}\\
                    \formulahl{Q(c_1)}{\F}{}
                    ,expand={3, 4}{\allf, \allf}{left}
                    [
                        \formula{P(x) \lor Q(x)}{\T}{5}\\
                        \formula{P(c_0) \lor Q(c_0)}{\T}{6}\\
                        \formula{P(c_1) \lor Q(c_1)}{\T}{7}
                        ,expand={1}{\allt}{left}
                        [
                            \formula{P(x)}{\T}{}\\
                            ,expand={5}{\lort}{left}
                        ]
                        [
                            \formula{Q(x)}{\T}{}\\
                            [
                                \formulahl{P(c_0)}{\T}{}\\
                                \closed
                                ,expand={6}{\lort}{left}
                            ]
                            [
                                \formula{Q(c_0)}{\T}{}
                                [
                                    \formula{P(c_1)}{\T}{}\\
                                    \open
                                    ,expand={7}{\lort}{left}
                                ]
                                [
```

```
                                    \formulahl{Q(c_1)}{\T}{}\\
                                    \closed
                                ]
                            ]
                        ]
                    ]
                ]
            ]
        ]
    }

    \caption{Semantic Tableau proving $\forall x (P(x) \lor Q(x))
    ↪ \not\vdash_{ST} \forall x P(x) \lor \forall x Q(x)$}
    \label{semantic-tableau-example}
\end{figure}
```

A.3 Code for small table example

```
%The second argument describes how many columns there are.
% The 'c' centers the first column,
% the 'l' left aligns the right column ('r' to right align),
% the 'S' aligns numbers by decimal point in the middle column
% the '|' creates a vertical line between two columns,
% and '||' creates a double vertical line between two columns,
% and 'p{NNNN}' where 'NNNN' is the width
% vertically aligns text to the top to use with long text.
\begin{longtable}{c|S|l}
    %The new line is necessary when caption is at the top
    \caption{Small table example}\\
    %Label must be after caption to refer to table
    \label{small-table-example}

    \textbf{First} & \textbf{Second} & \textbf{Third}\\
    \hline
    \endfirsthead

    \textbf{First} & \textbf{Second} & \textbf{Third}\\
    \hline
    \endhead

```

```
    %Normal entry
    Alpha & 2.102 & USD\\

    %Multicolumn centered entry with right vertical line and
    ↪ horizontal lines
    \hline
    Bravo & \multicolumn{2}{c|}{NOTE}\\
    \hline

    %Multi-row entry where '*' specifies to autofit the width of
    ↪ the multiple rows
    Charlie & 213.21 & \multirow{2}{*}{ZERO}\\
    Delta & 1231\\

    %Colored cell with partial horizontal lines above and below
    %(cell/row/column)color
    \cline{2-3}
    Echo & \cellcolor{blue-base}\color{white-pure}132.193 & EUR\\
    \cline{1-2}

    %Multi-column, multi-row seems to need all this to ensure
    ↪ lines are drawn correctly
    \multicolumn{2}{c|}{\multirow{2}{*}{Foxtrot}} &
    ↪ \multirow{2}{*}{ETH}\\
    \multicolumn{2}{c|}{}\\

    %Double horizontal line to make a thicker horizontal line
    \hline
    \hline
    Hotel & 12313.424719 & DOGE
\end{longtable}
```

A.4 Code for big table example

```
%To color a column '>{\columncolor{XXXX}}', where 'XXXX' is the
   ↪ color,
% must be placed before the alignment letter for the column
\begin{longtable}{r|>{\columncolor{white-near}}l}
    \caption{Big table example}\\
    \label{big-table-example}
```

```
%Everything before \endfirsthead is used as the first header
\textbf{First} & \textbf{Second}\\
\hline
\endfirsthead

%Everything after \endfirsthead but before \endhead
% will be used as the headers for when the table reaches a new page.
\textbf{First} & \textbf{Second}\\
\hline
\endhead

1 & Alpha\\
2 & Bravo\\
3 & Charlie\\
4 & Delta\\
%To color a row '\rowcolor{XXXX}', where 'XXXX' is the color, must prefix the row.
\rowcolor{yellow-dark}\color{white-pure}5 & Echo\\
6 & Foxtrot\\
7 & Golf\\
8 & Hotel\\
9 & India\\
10 & Juliett\\
11 & Kilo\\
12 & Lima\\
13 & Mike\\
14 & November\\
15 & Oscar\\
16 & Quebec\\
17 & Romeo\\
18 & Sierra\\
19 & Tango\\
20 & Uniform\\
21 & Victor\\
22 & Whiskey\\
23 & X-ray\\
24 & Yankee\\
25 & Zulu\\
```

```
\end{longtable}
```

A.5 Code for missing graphic fix me example

A.5.1 Missing rectangle graphic

```
\begin{figure}
    \centering
    \fxgraphicrectwarning{Add missing rectangle graphic}

    \caption{A missing rectangle graphic example}
\end{figure}
```

A.5.2 Missing square graphic

```
\begin{figure}
    \centering
    \fxgraphicsqrewarning{Add missing square graphic}

    \caption{A missing square graphic example}
\end{figure}
```

Bibliography

Doe, Jane. *Better Book than that Other Guy*. Unknown Publisher, 2021.
Doe, John. *First Book Title*. Unknown Publisher, 2020.

List of Figures

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