

1 Compiling your first document

Create a .tex file in Texmaker and paste the following lines into the empty file:

```
\documentclass{memoir}
\begin{document}
Hello world!
\end{document}
```

Save the file as `main.tex` anywhere on your computer. Try compiling the document. Do you see a pdf file with the words “Hello World!”?

2 Basic text formatting

- Normal text is done by simply writing it as-is
- **Bold** text is done using `\textbf{text}`
- *Italic* (or emphasized) text is done using `\emph{text}`

For anything to show up in your document, it needs to be placed between `\begin{document}` and `\end{document}`! Play around with these commands and ensure that they work.

3 Chapters and sections

To structure your document, use L^AT_EX commands to create chapters and sections. A chapter is created using `\chapter{text}` and a section with `\section{text}`. Chapters start on a new page and are divided into sections and are numbered as such. For more levels of structure, you can use `\subsection{text}` and `\subsubsection{text}`. To prevent a chapter from showing up in the table of contents use `\chapter*{text}` and equivalently for sections etc.

Create three chapters, “Abstract”, “Introduction” and “Theory”. Make sure the abstract isn’t listed in the table of contents. Make some sections in the introduction in order to understand the concepts. Add the line `\tableofcontents*` just after `\begin{document}` to generate a table of contents.

Fill out the document with some text to see how it looks. Use your own or generate some dummy text using <http://www.lipsum.com/>. Your document should look something like this:

```
\documentclass{memoir}
\begin{document}
\tableofcontents*
\chapter*{Abstract}
content of abstract
\chapter{Introduction}
content of introduction
\section{Project structure}
content of the project structure
\chapter{Theory}
content of theory
\end{document}
```

4 Bullet points

To make bullet points, add the following to your document:

```
\begin{itemize}
\item item 1
\item item 2
\item item 3
\end{itemize}
```

To have a numbered list, replace `itemize` with `enumerate`. Try adding a list of bullet points somewhere in your introduction.

5 Adding some formatting

Everything before `\begin{document}` is generally used to define some general characteristics about your document. This part of the document is known as the *preamble*. Try adding the following lines to your document (after `\documentclass` and before `\begin{document}`):

```
\usepackage{geometry}
\usepackage{microtype}
\usepackage[english]{babel}
\chapterstyle{section}
```

Also change the documentclass to `\documentclass[a4paper,oneside]{memoir}`.

The `\usepackage` command loads packages for use in our document. The `geometry` package helps us by setting some good defaults for the geometry of the page – margins etc. The `microtype` package improves the rendering of fonts. The `babel` package offers language support and makes sure that automatically generated words, date/time, hyphenation patterns etc. reflect the language of the document. When writing a danish report, simply change the parameter `english` to `danish`.

The `\chapterstyle` command, unsurprisingly, sets a style for the chapters in our document. Using the style `section` simply makes the chapter headline look like the section headlines (albeit a bit bigger). Try changing this style to `verville` for a different style and see how it affects your document.

The optional parameters `a4paper` and `oneside` in the `\documentclass` tells L^AT_EX to generate the pdf on a4 paper meant to be printed on one-sided paper. If printing on both sides, you can change `oneside` to `twoside`. A two-sided document also makes sure that chapters always start on the right!

6 Paragraphs

Paragraphs in L^AT_EX are separated by *two* line returns. By default, the first paragraph in a chapter, section etc. is not indented, but every following paragraph is. The behaviour of this indentation can be changed in the *preamble* using the following two commands:

```
\setlength\parskip{0.1 cm}
\setlength\parindent{0pt}
```

Changing the length of `\parskip` changes the distance between paragraphs. Lengths in L^AT_EX accept a variety of units and in this case we simply use centimetres. The length of `\parindent` changes the indentation of the paragraphs. In this case I simply removed it.

7 Adding a title

Add the following lines to the *preamble*:

```
\title{Your title}
\author{Your name}
```

And add the command `\maketitle` just after `\begin{document}`. If you want the title to be on its own page, add `\clearpage` after `\maketitle`

8 Collaborative work

In order to comfortably collaborate on a report, it can be advantageous to split the document up in a number of files, so people can work on different things without interrupting each other. A great way to do this is by using the `subfile` package. First load the package by adding `\usepackage{subfiles}` to the preamble. We now want to load the three chapters from earlier into three separate files. Create `abstract.tex`, `intro.tex`, `theory.tex`. These *subfiles* are structured in the following way:

```
\documentclass[main.tex]{subfiles}
\begin{document}
Content here
\end{document}
```

In `main.tex`, our original file, the subfiles are then loaded using the `\subfile` command. The resulting `main.tex` should now look like this:

```
\documentclass[a4paper, oneside]{memoir}
\usepackage{geometry}
\usepackage{microtype}
\usepackage{subfiles}
\usepackage[english]{babel}
\setlength\parskip{0.1 cm}
\setlength\parindent{0pt}
\title{Your title}
\author{Your name}
\chapterstyle{section}

\begin{document}
```

```

\maketitle
\tableofcontents*
\subfile{abstract.tex}
\subfile{intro.tex}
\subfile{theory.tex}
\end{document}

```

If you build `main.tex` you will get a `.pdf` of the entire document. If you build any of the subfiles, you will get a `.pdf` with the contents of the given chapter. Try it out!

9 Introduction to references

We will go into more detail with references later on, but the basics are actually quite simple! Lets say you want to reference a section called “Thermodynamics” in the “Theory” chapter. Label the section by writing

```
\section{Thermodynamics}\label{sec:thermo}
```

Our section now has the label `sec:thermo`. When you want to reference this section, you simply use the command `\ref{sec:thermo}` to get the numerical value of that section. Usually you would write something like:

...as shown in section `\ref{sec:thermo}` ...

Try adding some labels and references to your document. You may have to build the document twice in order for the references to work correctly. The \LaTeX interpreter will usually warn you if this is the case.