Document Structure

Professional Document Preparation System

Department of Mathematics and Computer Science, RMUTT

Introduction

Documents usually have some form of "logical structure": division into

- ▶ chapters,
- ▶ sections,
- ▶ sub-sections,
- ▶ etc.,

to organize their content.

LaTeX supports the creation of a document structure and also enables customization of sectioning and numbering. The commands available to organize a document depend on the document class being used, although the simplest form of organization, sectioning, is available in all formats.

Sectioning

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

\title{Sectioning}
\author{John Doe}
\date{\today}

\begin{document}
\maketitle
\section{Introduction}
This is the first section. \blindtext

\section{Second Section}
This is the second section. \blindtext
\end{document}
```

Sectioning

John Doe

December 25, 2022

1 Introduction

This is the first section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

2 Second Section

This is the second section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

Level of Sectioning

LaTeX can organize, number, and index chapters and sections of document. There are 7 levels of depth for defining sections depending on the document class:

Level	Command
-1	`\part {PartName}`
0	`\chapter {ChapterName}`
1	`\section {SectionName}`
2	`\subsection {SubSectionName}`
3	`\subsubsection {SubSubSectionName}`
4	`\paragraph {ParagraphName}`
5	`\subparagraph {SubParagraphName}`

Numbered Sections

```
1   \documentclass{article}
2   \usepackage{blindtext}
3
4   \title{Sectioning}
5   \author{John Doe}
6   \date{\today}
7
8   \begin{document}
9
10  \maketitle
11  \section{Introduction}
12  This is the first section. \blindtext
13  \subsection{A Minor Topic}
14  This is a subsection. \blindtext
15
16  \subsection{Another Minor Topic}
17  This is also a subsection. \blindtext
18
19  \section{Second Section}
20  This is the second section. \blindtext
21
22  \end{document}
```

Sectioning

John Doe

December 25, 2022

1 Introduction

This is the first section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

1.1 A Minor Topic

This is a subsection. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

1.2 Another Minor Topic

This is also a subsection. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in

Table of Contents

```latex
1    \documentclass{article}
2    \usepackage{blindtext}
3
4    \title{Sectioning}
5    \author{John Doe}
6    \date{\today}
7
8    \begin{document}
9    \maketitle
10   \tableofcontents
11   \section{Introduction}
12   This is the first section. \blindtext
13   \subsection{A Minor Topic}
14   This is a subsection. \blindtext
15   \subsection{Another Minor Topic}
16   This is also a subsection. \blindtext
17   \section{Second Section}
18   This is the second section. \blindtext
19   \subsection{Second Minor Topic}
20   This is a subsection. \blindtext
21   \subsection{Futher Minor Topic}
22   This is also a subsection. \blindtext
23   \end{document}
```

Output

Sectioning

John Doe

December 25, 2022

Contents

1 Introduction

This is the first section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

Unnumbered Sections

```
1  \tableofcontents
2  \section*{Introduction}
3  This is the first section. \blindtext
4
5  \subsection{A Minor Topic}
6  This is a subsection. \blindtext
7
8  \subsection{Another Minor Topic}
9  This is also a subsection. \blindtext
10
11 \section{Second Section}
12 This is the second section. \blindtext
13
14 \subsection*{Second Minor Topic}
15 This is a subsection. \blindtext
16
17 \subsection{Futher Minor Topic}
18 This is also a subsection. \blindtext
```

Output

Sectioning

John Doe

December 25, 2022

Contents

Introduction

This is the first section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

0.1 A Minor Topic

This is a subsection. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc

The report class

```latex
\documentclass{report}
\usepackage{blindtext}
\title{Sections and Chapters}
\author{John Doe}
\date{\today}
\begin{document}
\maketitle
\tableofcontents

\chapter{An Introduction }
\section{What is it and what makes it so different?}
Here is a first section. \blindtext

\subsection{Explaining: Where to start?}
This is a subsection. \blindtext

\chapter{Background and history}
\section{Background}
This is a section. \blindtext

\subsection{Opening up the black box}
This is a subsection. \blindtext
\end{document}
```

Output: Report

Sections and Chapters

John Doe

December 25, 2022

Output: Report

Contents

Output: Report

Chapter 1

An Introduction

1.1 What is it and what makes it so different?

Here is a first section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

1.1.1 Explaining: Where to start?

This is a subsection. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a d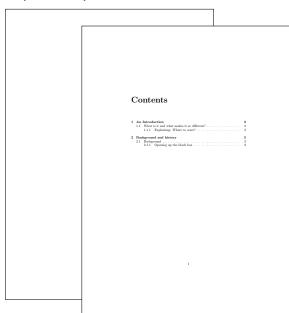ignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

Output: Report

Chapter...

An Int...

1.1 What...

Here is a first sec...
elit. Etiam lobortis...
Praesent imperdiet...
lectus velit ultrices...
sapien. Lorem ipsum...
tristique neque. S...
rutrum augue a leo...
blandit blandit ma...
a, turpis. Mauris ...
accumsen semper.

1.1.1 Explai...

This is a subsectio...
Etiam lobortis faci...
sent imperdiet nu...
lectus velit ultrices...
nunc, molestie ut,...
tristique neque. S...
rutrum augue a le...
blandit blandit ma...
a, turpis. Mauris ...
accumsen semper.

Chapter 2

Background and history

2.1 Background

This is a section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

2.1.1 Opening up the black box

This is a subsection. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

The book class

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\title{Sections and Chapters}
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\date{\today}
\begin{document}
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Here is a first section. \blindtext

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\section{Background}
This is a section. \blindtext

\subsection{Opening up the black box}
This is a subsection. \blindtext
\end{document}
```

Output: Book

Sections and Chapters

John Doe

December 25, 2022

Output: Book

2

Output: Book

Contents

Output: Book

Output: Book

Chapter 1

An Introduction

1.1 What is it and what makes it so different?

Here is a first section. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.
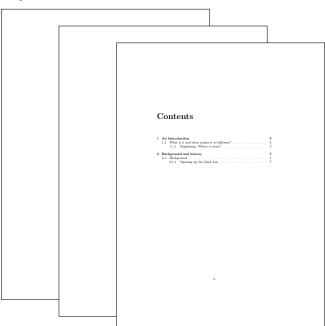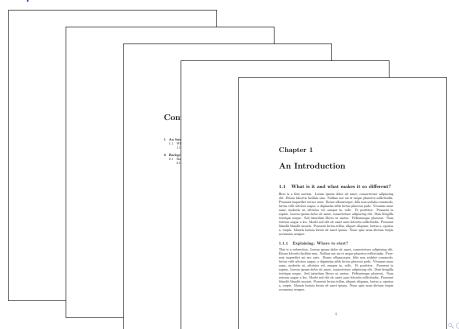
1.1.1 Explaining: Where to start?

This is a subsection. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

Con...

Document Classes: `article` vs. `report` vs. `book`

Differences with regard to **default settings**:

▶ The `book` class uses the twoside class option, while `report` and `article` use oneside.

▶ `book` uses openright, while `report` uses openany. (Note that "right" means an odd page in twoside mode, but any page in oneside mode.) For `article`, the distinction between openright and openany isn't applicable.

▶ `book` uses the headings pagestyle for non-chapter-starting pages, while `report` and `article` always use plain.

▶ `book` and `report` use titlepage, while `article` uses notitlepage.

Document Classes: `article` vs. `report` vs. `book`

Differences with regard to **default settings**:

- ▶ For `book` and `report`, the lowest-level sectioning command which is numbered and incorporated into the table of contents is `\subsection`, while for `article` it is `\subsubsection`.

- ▶ `book` and `report` will use the arguments of `\chapter` and `\section` for running headings, while `article` will use `\section` and `\subsections`.

- ▶ `book` and `report` will number floats (figures, tables etc.), equations, and footnotes per chapter, while `article` will number them continuously.

- ▶ `book` and `report` will use `\bibname` (which defaults to "Bibliography") for the heading of bibliographic references, while `article` will use `\refname` (which defaults to "References").

Document Classes: `article` vs. `report` vs. `book`

Differences with regard to **available commands and environments**:

- ▶ `book` and `report` feature the `\chapter` sectioning command, while `article` doesn't.
- ▶ In `book` and `report`, `\appendix` will cause `\chapters` to be typeset as "Appendix X" instead of "Chapter X". For `article`, this isn't applicable.
- ▶ `book` and `report` will start a new page for `\parts`, while `article` won't.
- ▶ `book` offers the `\frontmatter`, `\mainmatter`, and `\backmatter` commands to control page numbering and numbering of sectioning titles, while `report` and `article` don't.
- ▶ `book` doesn't offer the abstract environment, while `report` and `article` do.