

Structure of a L^AT_EX Document. Packages*

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1. Building Blocks of a Document

Let us recall the simple document

simple.tex

```
\documentclass[12pt]{article}

\begin{document}

Hello, World!

This is our first document. We would like to tell the world two
interesting facts: first, that  $2 \times 2 = 4$ , and second, that
\begin{equation}
E=mc^2
\end{equation}

\end{document}
```

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1.1. Document Class

The command `\documentclass` sets the *class* of the document. Other standard classes: `report`, `letter`, `book`. There are nonstandard classes: `amsart` for American Mathematical Society, `memoir` (a well typeset report), `beamer` for presentation, etc.

A command may have *options*:

```
\documentclass[11pt]{article}  
\documentclass[12pt]{book}  
\documentclass[landscape]{report}
```

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1.2. Preamble

Everything between `\documentclass` and `\begin{document}` is called *preamble*. It is used for:

1. Loading external packages
2. Change appearance of the document as a whole
3. Definition of new customized commands and environments.

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1.2. Preamble

Everything between `\documentclass` and `\begin{document}` is called *preamble*. It is used for:

1. Loading external packages
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3. Definition of new customized commands and environments.

1.3. Document Text

The commands `\begin{document}` and `\end{document}` delimit an environment. This environment comprises the main text of the document. Everything after `\end{document}` is dropped.

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1.2. Preamble

Everything between `\documentclass` and `\begin{document}` is called *preamble*. It is used for:

1. Loading external packages
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1.3. Document Text

The commands `\begin{document}` and `\end{document}` delimit an environment. This environment comprises the main text of the document. Everything after `\end{document}` is dropped.

The text is separated into Front Matter, Main Matter and Back Matter. Books have all three, articles only first two.

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2. Front Matter, Table of Contents, Lists of Figures & Tables

2.1. Title Page

Title page: who wrote the article, what is their affiliations, what is the title, and when was the article written.

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2. Front Matter, Table of Contents, Lists of Figures & Tables

2.1. Title Page

Title page: who wrote the article, what is their affiliations, what is the title, and when was the article written.

The command `\title{...}` sets the title.

```
\title{Important Observations On Crocodiles}
```

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2. Front Matter, Table of Contents, Lists of Figures & Tables

2.1. Title Page

Title page: who wrote the article, what is their affiliations, what is the title, and when was the article written.

The command `\title{...}` sets the title.

```
\title{Important Observations On Crocodiles}
```

The command `\author{...}` sets the author(s). The authors are separated by the command `\and`. There is special command `\thanks{...}` to set affiliation.

```
\author{%  
A.U.~Thor\thanks{Self-Teaching University}  
\and  
A.N.~Other\thanks{New Whale School Of Law}}
```



The command `\date{...}` sets the date:

```
\date{June 1, 1998}
```

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The command `\date{...}` sets the date:

```
\date{June 1, 1998}
```

All these commands *set* the information, but do not output anything! The command `\maketitle` does the actual job.

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The command `\date{...}` sets the date:

```
\date{June 1, 1998}
```

All these commands *set* the information, but do not output anything! The command `\maketitle` does the actual job.

Most publishers have their own house styles with commands like `\address`, `\email`, etc. The standard commands are obviously not adequate. for serious work.

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2.2. Abstract

To typeset abstract the `abstract` environment is used:

```
\begin{abstract}  
  This is an abstract:  a short resume of the paper.  
\end{abstract}
```

This is typeset as

Abstract

This is an abstract: a short resume of the paper.

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2.3. Table of Contents, List of Figures, List of Tables

L^AT_EX automatically sets the table of contents, lists of figures and tables; just put there

```
\tableofcontents  
  
\listoffigures  
  
\listoftables
```

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3. Sectioning Commands

We already know the command `\section`. Other commands for article:

```
\part{...}  
\section{...}  
\subsection{...}  
\subsubsection{...}  
\paragraph{...}  
\subparagraph{...}
```

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3. Sectioning Commands

We already know the command `\section`. Other commands for article:

```
\part{...}  
\section{...}  
\subsection{...}  
\subsubsection{...}  
\paragraph{...}  
\subparagraph{...}
```

Starred form: `\section*`, `\subsection*`—special units, that do not have number & do not go into table of contents.

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Exercise 1. Typeset the file:

structure.tex

```
\documentclass{article}

\begin{document}

\title{Important Observations On Crocodiles}
\author{A.U.~Thor\thanks{Self-Teaching University}
and A.N.~Other\thanks{New Whale School Of Law}}
\date{June 1, 1998}
\maketitle

\begin{abstract}
  This is an abstract:  a short resume of the paper.
\end{abstract}

\tableofcontents
\clearpage

\section{Introduction}
This is the first section.

\subsection{Crocodiles Are Not Alligators}
This is a subsection

\section{Conclusions}
This is a section.

\end{document}
```



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4. Packages

4.1. Example of a Package

Traditional British & American Typesetting: indentation separates paragraphs. The first paragraph after section beginning is *not* indented.

Exercise 2. Upload and typeset the file:

```

_____ indent1.tex _____

\documentclass{article}

\begin{document}

\section{Introduction}

This is the first paragraph. This is the first paragraph. This is the
first paragraph. This is the first paragraph. This is the first
paragraph. This is the first paragraph. This is the first
paragraph. This is the first paragraph. This is the first paragraph.

This is the second paragraph. This is the second paragraph. This is the
second paragraph. This is the second paragraph. This is the second
paragraph. This is the second paragraph. This is the second
paragraph. This is the second paragraph. This is the second paragraph.

\end{document}
  
```

Some people prefer the first paragraph to be indented as well. Package `indentfirst` is a set of L^AT_EX commands that change L^AT_EX behavior.

Exercise 3. Typeset the file:

```
indent2.tex

\documentclass{article}

\usepackage{indentfirst}

\begin{document}

\section{Introduction}

This is the first paragraph. This is the first paragraph. This is the
first paragraph. This is the first paragraph. This is the first
paragraph. This is the first paragraph. This is the first
paragraph. This is the first paragraph. This is the first paragraph.

This is the second paragraph. This is the second paragraph. This is the
second paragraph. This is the second paragraph. This is the second
paragraph. This is the second paragraph. This is the second
paragraph. This is the second paragraph. This is the second paragraph.

\end{document}
```

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Log file has a new entry:

```
(/usr/share/texmf/tex/latex/tools/indentfirst.sty  
Package: indentfirst 1995/11/23 v1.03 Indent first paragraph (DPC)
```

This shows that the package was loaded, and where it was loaded from.

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5. Including Parts of Document

If a document is long, sometimes it makes sense to separate it into parts.
T_EX has two facilities for this.

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5. Including Parts of Document

If a document is long, sometimes it makes sense to separate it into parts. T_EX has two facilities for this.

The command `\input{file}` adds the file on the spot. Note that the `.tex` extension is omitted: use `file` for `file.tex`.

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5. Including Parts of Document

If a document is long, sometimes it makes sense to separate it into parts. T_EX has two facilities for this.

The command `\input{file}` adds the file on the spot. Note that the `.tex` extension is omitted: use `file` for `file.tex`.

The command `\include{file}` is for including parts or chapters: it starts new page, and L^AT_EX has facilities to include only some of them.

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Exercise 4. Typeset two files, one using the other

main.tex

```
\documentclass{article}

\begin{document}

\input{part}

\section{Conclusions}

Here we discuss conclusions

\end{document}
```

part.tex

```
\section{Introduction}

This is the introduction
```



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