2 Basic structures

If the quick-start exercise in section 1.3 on page 7 was enough to show you how a LaTeX document works, then this is where you get the rest of the basic information. If you skipped Chapter 1 starting on page 1 then be prepared to go back to some of the sections in it, because I'll be referring to things you might not have come across yet.

What's what

All you need to do in LaTeX is to say what's what by labelling things as what they are. If you want a list, you say so. It's *not* a bunch of paragraphs prefixed with bullets, as in a wordprocessor, it's a *list*.

One of the small mind-shifts needed to work with a markup system like LaTeX is that you need to be *explicit*. Unlike a wordprocessor, where the WYSIWYG display is the only way of communicating your intentions, with LaTeX you can actually *tell* it what to do.

LaTeX's approach to formatting is to aim for *consistency*. This means that as long as you identify each component element of your document correctly, it will be typeset in the same way as all the other elements like it, so that you achieve a consistent finish with minimum effort.

Consistency helps make documents easier to read and understand, as well as making them more visually attractive. Consistency is also

what editors, reviewers, and publishers look for. Publishers have a house style, and often a reputation to keep, so they rightly insist that if you do something a certain way once, you should do it the same way each time.

'Elements' are the component parts of a document: all the pieces which make up the whole. Almost everyone who reads books, newspapers, magazines, reports, articles, and other classes of documents will be familiar with the common elements: parts, chapters, sections, subsections, subsubsections, headings, titles, subtitles, paragraphs, lists, tables, figures, and so on, even if they don't consciously think about them.

2.1 The Document Class Declaration

In order to set things up correctly, LaTeX needs to know up front what type of document you are going to be writing. There are probably lots of different types of document you deal with: in LaTeX they are called 'classes' of documents — 'class' is just the computing science word for 'type'.

2.1.1 Document classes

To tell LaTeX what class of document you are going to create, the first line of your file MUST identify it.[1] To start a report, for example, you would type the `\documentclass` command like this as the first line of your document:

```
\documentclass{report}
```

There are four built-in classes provided, and many others that you can download (some may already be installed for you):

report for business, technical, legal, academic, or scientific reports; theses[2], dissertations;

[1] Readers familiar with SGML, HTML, and XML will recognise the concept as similar to the Document Type Declaration (it's still called a 'type' there, not a 'class').

[2] Theses and dissertations may require an Abstract, which is provided in the report class but not in the book class. Many universities provide a special **thesis** class of their own.

article for white papers, magazine or journal articles, reviews, conference papers, essays, or research notes;

book for books, booklets, or whole journals;

letter for letters.[3]

These default classes are fairly basic in terms of layout and design, in order to make them easier to customise by adding ***packages***, which are the style and layout plug-ins that LaTeX uses to let you automate formatting.

The **article** class in particular can be used (some would say 'abused') for almost any short piece of typesetting by simply omitting the titling and layout (see section 2.3 on page 42) and adding the relevant packages — like we saw in section 1.3 on page 7.

2.1.2 Extending the default classes

The built-in classes are intended as starting-points, especially for drafts, and for compatibility when exchanging documents with other LaTeX users, as they come built into every installation of LaTeX and are therefore guaranteed to format identically everywhere. They are *not* intended as final-format publication-quality layouts unmodified, and should never be used as such. For most other purposes, especially for publication, you use LaTeX packages to extend these classes to do what you need. The most common ways to do this are:

- The memoir package and the komascript bundle contain more sophisticated replacements for all the built-in classes, as well as additional ones;
- Many academic and scientific publishers provide their own special class files for articles and books (on their Web sites for download);
- Conference organisers may also provide class files for authors to write papers for presentations;
- Many universities provide their own thesis document class files in order to ensure exact fulfilment of their formatting requirements (many of these are on CTAN);

[3] The built-in **letter** class is rather idiosyncratic: there are much better ones you can use which you will find in the memoir package and the komascript bundle.

- Businesses and other organisations can provide their users with corporate classes on a central server and configure LaTeX installations to look there first for packages, fonts, etc (not usually available to the public, of course);
- There are over 195 document classes on CTAN (see www.ctan.org/topic/class).

Books and journals are not usually printed on office-size paper. Although for draft purposes LaTeX's layouts fit on the standard A4 or Letter stationery in your printer, it makes them look odd: the margins are too wide and the font size is too small, because the finished job will normally be trimmed to a completely different size entirely — try trimming the margins of the PDF version of this book to make it 188 mm × 235 mm (the same as the *Companion* series) and you'll be amazed at how it changes the appearance.

The four default built-in document classes are therefore adequate for drafts or for sending to a colleague to edit, but they are not really usable for final-format publishing. For this you need to add packages or to use a class file designed by your publisher or institution (or yourself!) to fit the type of publication. Quite often these are based on the default classes for compatibility, but typeset quite different output.

2.1.3 Document class options

The default layouts were originally designed to fit as drafts on US 'Letter' size paper.[4] To create documents with similar margins for A4 paper, you need to specify the paper size in an optional argument in square brackets before the document class name, eg

```
\documentclass[a4paper]{report}
```

Many TeX systems now install the *a4paper* option as the default, so this may not be needed; on the contrary, North American users may

[4] 'Letter' size is 8½″ × 11″, which is the trimmed size of the long-obsolete Demy Quarto, still in use in North America. Other common US office sizes are 'Legal', which is 8½″ × 14″, a 'bastard' (variant) cutting close to the old Foolscap (8¼″ × 13¼″); Ledger or Tabloid (11″ × 17″, which is exactly twice 'Letter', in the same way that A3 is twice A4); and 'Executive' (7″ × 10″). ISO standard 'A', 'B', and 'C' paper sizes, used everywhere else, are still largely unknown in most parts of North America.

now need to specify the *letterpaper* option instead. The geometry package, which we will see later, lets you specify other bigger and smaller paper sizes.[5]

The other default settings are for:

1. 10pt type (all document classes);
2. two-sided printing (books and reports) or one-sided (articles and letters);
3. separate title page (books and reports only).

These can be modified with the following document class options which you can add in the same set of square brackets, separated by commas (the *10pt* option is the default):

11pt to specify 11pt type (headings, footnotes, etc get scaled up or down in proportion);

12pt to specify 12pt type (again, headings etc get scaled to match);

oneside to format one-sided printing for books and reports;

twoside to format articles for two-sided printing;

titlepage to force articles to have a separate title page;

draft makes LaTeX indicate hyphenation and justification problems with a small square in the right-hand margin of the problem line so they can be located quickly by a human. This option also sets graphics to print as an empty outline (rectangle) containing just the filename of the image, so that image-heavy documents will print more quickly and use less ink or toner.

[5] Note that the standard built-in document classes (book, article, report, or letter) only use the paper size to adjust the margins: they do not embed the paper size name in the PostScript or PDF output. For this you need the geometry package. If you are using *PDFLaTeX*, or you intend creating PostScript output, and you want to change the default paper size, you MUST specify it *both* in the Document Class option *and* as an option to the geometry package (see section 3.1.3 on page 60), in order to ensure that the paper size name gets embedded correctly in the output, otherwise printers may select the wrong paper tray, or reject the job.

If you were using LaTeX for a report to be in 12pt type on Letter paper, but printed one-sided in draft mode, you would use:

```
\documentclass[12pt,letterpaper,oneside,draft]{report}
```

The 10pt, 11pt, and 12pt settings cover between them probably 99% of all common text-document typesetting. There are extra options for other body type sizes in the extsizes bundle of document classes (extarticle, extbook, extreport, etc), and various national and international organisations supporting the visually-impaired have special large-type document class options.

Global options

In addition to any options specific to the document class, it is also possible to put package options in the `\documentclass` options argument *instead of* in the `\usepackage` command (see section 3.1.2 on page 57), provided they are not implemented by more than one package. Packages which do not implement the named option at all are supposed to silently ignore it.

Exercise 1. Create a new document

1. Use your editor to create a new, empty document
   If your editor insists on filling your new document with template material, delete it all so that the file is empty;
2. Type in a Document Class Declaration as shown above;
3. Add a font size option if you wish;
4. In North America, omit the *a4paper* option or change it to *letterpaper*;
5. Save the file (make up a name) ensuring the name ends with `.tex`.

Picking suitable filenames

Never, *never*, NEVER create directories (folders) or file names which contain spaces or non-printing, non-ASCII characters. Although your operating system may support them, some don't, and they will only cause grief and tears, especially in automation software like document builders, web scripts, and app-based remote compilers.

Make filenames as short or as long as you wish, but strictly avoid spaces. Stick to upper- and lower-case letters *without* accents (A–Z and a–z), the digits 0–9, the hyphen (–), the underscore (_), and the dot (full point or period: `.`) — similar to the conventions for a Web URI: it will let you refer to TEX files over the Web more easily, make your files more portable, and make it easier to use standard system utilities and applications, as well as those distributed with TEX

2.2 The document environment

After the Document Class Declaration, the text of your document is enclosed between two commands we saw in section 1.4 on page 9 which identify the beginning and end of the actual document (in the example below, you would put your text where the dots are):

```
\documentclass[11pt,a4paper,oneside]{report}
\begin{document}
...
\end{document}
```

The reason for marking the beginning of your document text is that LATEX allows you to insert extra setup specifications before it (where the blank line is in the example above: we'll be using this soon). The reason for marking the end of your document text is to provide a place for LATEX to be programmed to do extra stuff automatically at the end of the document, like making an index.

A useful side-effect of marking the end of the document text is that you can store comments or temporary text underneath the `\end{document}` in the knowledge that LATEX will never see them and never try to typeset them (they don't even need to be preceded by

the % comment character), but they will remain in your document for you to see in your editor, or maybe to copy and paste in a later edit.

```
...
\end{document}
Don't forget to get the extra chapter from Jim!
```

This \begin…\end pair of commands is an example of a common LaTeX structure called an ***environment***. Environments enclose text which is to be handled in a particular way. All environments start with \begin{...} and end with \end{...} (putting the name of the environment in the curly braces each time).

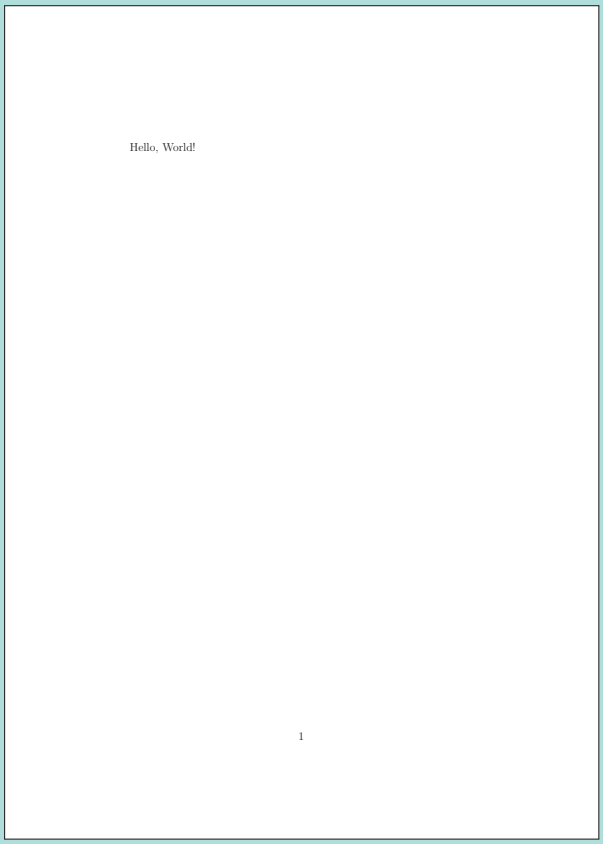
If you're familiar with HTML, SGML, or XML you'll recognise this technique: it's just like start-tags and end-tags.

Exercise 2. Add the document environment

1. Add the `document` environment to your new file;
2. **If you are using PDFLaTeX (NOT if you are using XeLaTeX)...**
   In between the Document Class Declaration and the `\begin{document}`, add the two lines we saw in section 1.8 on page 19 which allow the use of UTF-8 in *PDFLaTeX*:

```
\usepackage[utf8x]{inputenc}
\usepackage[T1]{fontenc}
```

3. In the `document` environment, type the phrase `Hello, World!`
4. Save the file and typeset it; you should get some output like this:



2.3 Titling

The first thing you actually put in the `document` environment is almost always the document title, the author's name, and the date (except in letters, which have a special set of commands for addressing). The title, author, and date are all examples of ***metadata*** (information *about* information).

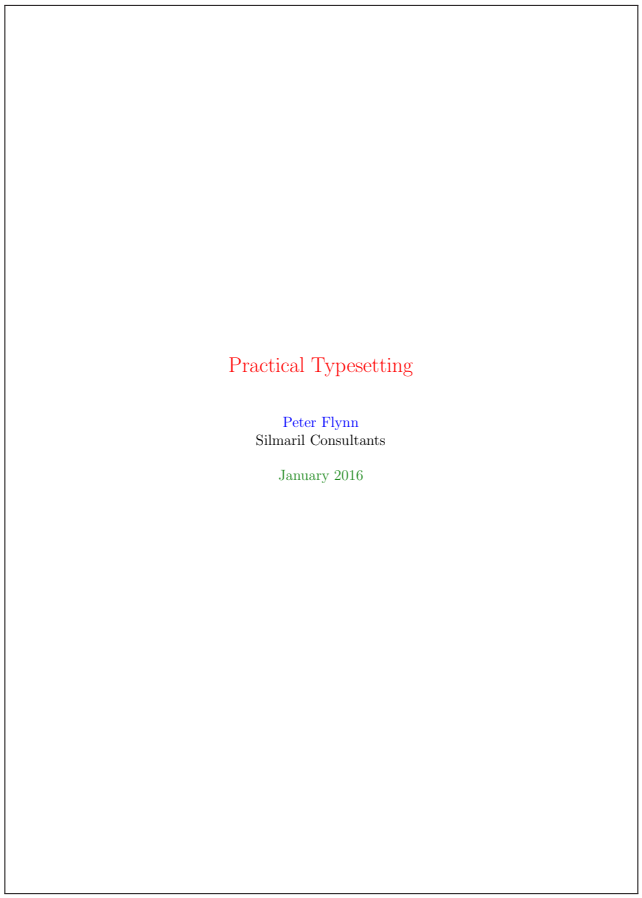
```
\documentclass[11pt,a4paper,oneside]{report}
\begin{document}
\title{Practical Typesetting}
\author{Peter Flynn\\Silmaril Consultants}
\date{January 2016}
\maketitle
\end{document}
```

The `\title`, `\author`, and `\date` commands are self-explanatory. You put the title, author name, and date in curly braces after the relevant command. The title and author are compulsory; if you omit the `\date` command, LaTeX uses today's date by default.

You MUST finish the metadata with the `\maketitle` command, which tells LaTeX that it's complete and it can typeset the titling information at this point. If you omit `\maketitle`, the titling will never be typeset. This command is reprogrammable so you can alter the appearance of titles (like I did for the printed version of this document). It also means publishers can create new commands like `\datesubmitted` in their own document classes, in the knowledge that anything like that done before the `\maketitle` command will be honoured.

One extra command show here is the double backslash (`\\`), which is the LaTeX command for a premature (forced) linebreak. LaTeX normally decides by itself where to break lines, and it's usually right, but sometimes you need to cut a line short, like here, and start a new one. I could have left it out and just used a comma, so the name and company would all appear on the one line, but I just decided that I wanted the company name on a separate line. In some publishers' document classes, they provide a special `\affiliation` command to put your company or institution name in instead.

Figure 2.1: Titling information typeset on the title page



The most common use of the double backslash in the `\author` command is for separating multiple authors, so I don't recommend that you do what I did here except for draft or experimental purposes.

When this file is typeset, you get something like Figure 2.1 (I've cheated and done it in colour for fun — yours will be in black and white for the moment). This is a report, so the title appears all by itself on a single page.

The order of the first three commands is not important, but the `\maketitle` command must come last.

If you have mistyped a command, you may get an error message: see section C.3 on page 249 to resolve this.

Exercise 3. Adding the metadata

1. Add the `\title`, `\author`, `\date`, and `\maketitle` commands to your file.
2. Use your own name, make up a title, and give a date.
3. Typeset the document.

2.4 Abstracts and summaries

In reports and articles it is usual for the author to provide an Summary or Abstract, which describes the content and explains its importance. Abstracts in articles are usually only a few paragraphs long. Summaries in reports or theses can run to several pages, depending on the length and complexity of the document or the readership it's aimed at.

```
\documentclass[11pt,a4paper,oneside]{report}
\begin{document}
\title{Practical Typesetting}
\author{Peter Flynn\\Silmaril Consultants}
\date{January 2016}
\maketitle
\begin{abstract}
This document presents the basic concepts of typesetting
in a form usable by non-specialists. It is aimed at those
who find themselves (willingly or unwillingly) asked to
undertake work previously sent out to a professional
printer, and who are concerned that the quality of work
(and thus their corporate æsthetic) does not suffer.
\end{abstract}
\end{document}
```

In both cases the Abstract or Summary is OPTIONAL (that is, LaTeX doesn't force you to have one), but it's rare to omit it because readers want and expect it, and it's used by web indexing engines to let people find it. In practice, of course, you go back and type the Abstract or Summary *after* having written the rest of the document, but for the sake of the example we'll jump the gun and type it now.

You add the `abstract` environment after the `\maketitle` command, and type your Abstract or Summary there, leaving a blank

line between paragraphs if there's more than one (see section 2.7 on page 49 for this convention).

In business and technical documents, the Abstract is often called a Management Summary, or Executive Summary, or Business Preview, or some similar phrase. LaTeX lets you change the name associated with the `abstract` environment to any kind of title you want.

The heading associated with the `abstract` environment is called the `\abstractname`, and you can use the `\renewcommand` command in your Preamble to give it a new value:

```
\renewcommand{\abstractname}{Summary}
```

This does not change the name of the environment, only its printed heading: you still use `\begin{abstract}` and `\end{abstract}`.

Exercise 4. Using an Abstract or Summary

1. Add the `\renewcommand` as shown above to your Preamble. The Preamble is at the start of the document, in between the `\documentclass` line and the `\begin{document}`: see the panel 'The Preamble' on p. 20).
2. Add an `abstract` environment after the `\maketitle` and type in a paragraph or two of text.
3. Typeset the document.

Notice how the name of the command you are renewing (in this example, the `\abstractname`) goes in the first set of curly braces, and the new value you want it to have goes in the second set of curly braces (this is an example of a command with *two* arguments).

2.5 A little think about structure

It's very easy to sit down at a keyboard with a traditional wordprocessor and just start typing. If it's a very short document, or something transient or relatively unimportant, then you just want to type it in and make it 'look right' by highlighting with the mouse and clicking on font styles and sizes.

In doing so, you may achieve the effect you wanted, but your actions have left no trace behind of *why* you made these changes. This is usually unimportant for trivial or short-term documents, but if you write longer or more complex documents, or if you often write documents to a regular pattern, then making them consistent by manual methods becomes a nightmare. LaTeX's facilities for automation are based on you providing this 'why' information.

If your documents have any of the features below, then you have probably already started thinking about structure.

- ☐ The document naturally divides into sections (parts, chapters, etc).
- ☐ The document is long.
- ☐ There is lots of repetitive formatting in the document.
- ☐ The document is complex (intellectually or visually).
- ☐ There are lots of figures or tables (or examples, exercises, panels, sidebars, etc).
- ☐ Accuracy is important in formatting the document.
- ☐ A master copy is needed for future reference or reprinting.
- ☐ This is a formal or official document needing special care and attention.
- ☐ It's *my* thesis, book, leaflet, pamphlet, paper, article, etc *That*'s why I care.
- ☐ The document (or part of it) may need ongoing or occasional re-editing and republishing.

If you've got that far, you're over half-way done. Using a structural editor — even a simple outliner — can make a huge difference to the quality of your thinking because you are consciously organising your thoughts before setting them down. And it can make just as big a difference to your formatting as well: more consistent, better presented, easier for the reader to navigate through, and more likely to be read and understood — which is presumably why you are writing the document in the first place.

2.6 Sections

LaTeX provides seven levels of division or sectioning for you to use in structuring your text. They are all optional: it is perfectly possible to write a document consisting solely of paragraphs of unstructured text. But even novels are normally divided into chapters, although short stories are often made up just of paragraphs.

Table 2.1: LaTeX's sectioning commands

Depth	Division	Command	Notes
–1	Part	`\part`	Not in letters
0	Chapter	`\chapter`	Books, reports
1	Section	`\section`	Not in letters
2	Subsection	`\subsection`	Not in letters
3	Subsubsection	`\subsubsection`	Not in letters
4	Titled paragraph	`\paragraph`	Not in letters
5	Titled subparagraph	`\subparagraph`	Not in letters

Chapters are only available in the book and report document classes, because they don't have any meaning in articles and letters. Parts are also undefined in letters.[6]

In each case the title of the part, chapter, section, etc goes in curly braces after the command. LaTeX automatically calculates the correct numbering and prints the title in bold. You can turn section numbering off at a specific depth: details in section 2.6.1 on the following page.

There are packages to let you control the typeface, style, spacing, and appearance of section headings: it's much easier to use them than to try and reprogram the headings manually. Two of the most popular are section and sectsty.

```
\section{New recruitment policies}
...
\subsection{Effect on staff turnover}
...
```

[6] It is arguable that chapters also have no place in reports, either, as these are conventionally divided into sections as the top-level division. LaTeX, however, assumes your reports have chapters, but this is only the default, and can be changed very simply (see section 7.6 on page 170).

```
\chapter{Business plan 2010--2020}
```

Headings also get put automatically into the Table of Contents, if you specify one (it's optional). But if you make manual styling changes to your heading, for example a very long title, or some special line-breaks or unusual font-play, this would appear in the Table of Contents as well, which you almost certainly *don't* want. LaTeX allows you to give an optional extra version of the heading text which only gets used in the Table of Contents and any running heads, if they are in effect (see section 6.1.2 on page 135). This alternative heading goes in [square brackets] before the curly braces:

```
\section[Effect on staff turnover]{An analysis of the
effects of the revised corporate recruitment policies
on staff turnover at divisional headquarters}
```

Exercise 5. Start your document text

1. Add a `\chapter` command after your Abstract or Summary, giving the title of your first chapter.
2. If you're planning ahead, add a few more `\chapter` commands for subsequent chapters. Leave a few blank lines between them to make it easier to add paragraphs of text later.
3. Typeset the document.

2.6.1 Section numbering

All document divisions get numbered automatically. Parts get Roman numerals (Part I, Part II, etc); chapters and sections get decimal numbering like this document, and Appendixes (which are just a special case of chapters, and share the same structure) are lettered (A, B, C, etc). You can easily change this default if you want some special scheme.

You can change the depth to which section numbering occurs, so you can turn it off selectively. In this document the depth is set to 3, using the depth column in Table 2.1 on the previous page. If you only want

parts, chapters, and sections numbered, not subsections, subsubsections, or lower levels, you can change the value of the *secnumdepth* counter using the the **\setcounter** command, giving the depth value from Table 2.1 on page 47:

```
\setcounter{secnumdepth}{1}
```

Notice that the **\setcounter** command, like **\renewcommand** which we saw earlier, has two arguments: the name of the counter you want to set, and the number you want to set it to.

A related counter is *tocdepth*, which specifies what depth to take the Table of Contents to. It can be reset independently, in exactly the same way as *secnumdepth*. The setting for this document is 2.

```
\setcounter{tocdepth}{3}
```

To get a one-time (special case) *unnumbered* section heading which does *not* go into the Table of Contents, follow the command name with an asterisk before the opening curly brace:

```
\subsection*{Shopping List}
```

All the divisional commands from **\part*** to **\subparagraph*** have this 'starred' version which can be used in isolated circumstances for an unnumbered heading when the setting of *secnumdepth* would normally mean it would be numbered.

2.7 Ordinary paragraphs

After section headings comes your text. Just type it and leave a blank line between paragraphs. That's all LaTeX needs.

The blank line means 'end the current paragraph here': it does *not* (repeat: ***not***) necessarily mean you get a blank line in the typeset output.

The spacing between paragraphs is an independently definable quantity, a ***dimension*** or ***length*** called ***\parskip***. This is normally zero (no space between paragraphs, because that's how books are normally typeset), but you can easily set it to any size you want with the command **\setlength** in your Preamble: like **\setcounter**

it takes two arguments: the name of the length, and the value to set it to:

```
\setlength{\parskip}{1cm}
```

This will set the space between paragraphs to 1cm. See section 1.9.1 on page 23 for details of the various size units LaTeX can use. *Leaving multiple blank lines between paragraphs in your source document does not create extra space*: all extra blank lines are ignored by LaTeX: the space between paragraphs is controlled *only* by the value of `\parskip`.

White-space in LaTeX can also be made flexible (what Lamport calls 'rubber' lengths). This means that values such as `\parskip` can have a default dimension plus an amount of expansion minus an amount of contraction. This is useful on pages in complex documents where not every page may be an exact number of fixed-height lines long, so some give-and-take in vertical space is useful. You can specify this in a `\setlength` command:

```
\setlength{\parskip}{1cm plus4mm minus3mm}
```

Paragraph indentation can also be set with the `\setlength` command, although you would always make it a fixed size, never a flexible one, otherwise you would have very ragged-looking paragraphs.

```
\setlength{\parindent}{6mm}
```

By default, the first paragraph after a chapter or section heading follows the standard Anglo-American publishers' practice of *no* indentation. Subsequent paragraphs are indented by the value of `\parindent` (default 18pt).[7] You can change this in the same way as any other length.

In the printed version of this document, the paragraph indentation is set to 12.0pt and the space between paragraphs is set to 0.0pt plus 1.0pt. These values do not apply in the Web (HTML) version because not all browsers are capable of that fine a level of control, and

[7] Paragraph spacing and indentation are cultural settings. If you are typesetting in a language other than English, you should use the babel package, which alters many things, including the spacing and the naming of sections, to conform with the standards of different countries and languages.

because users can apply their own stylesheets regardless of what this document proposes.

Exercise 6. Start typing!

1. Type some paragraphs of text. Leave a blank line between each. Don't bother about line-wrapping or formatting — LaTeX will take care of all that.
2. If you're feeling adventurous, add a `\section` command with the title of a section within your first chapter, and continue typing text below that.
3. Add one or more `\setlength` commands to your Preamble to experiment with changing paragraph spacing and indentation.

To turn off indentation completely, set it to zero (but you still have to provide units: it's still a measure!).

```
\setlength{\parindent}{0in}
```

If you do this, though, and leave `\parskip` set to zero, your readers won't be able to tell easily where each paragraph begins! If you want to use the popular office-document style of having no indentation with a space between paragraphs, use the parskip package, which does it for you (and makes adjustments to the spacing of lists and other structures which use paragraph spacing, so they don't get too far apart).

2.8 Table of contents

All auto-numbered headings get entered in the Table of Contents (ToC) automatically. You don't have to print a ToC, but if you want to, just add the command `\tableofcontents` at the point where you want it printed (usually after the Abstract or Summary).

Entries for the ToC are recorded each time you typeset your document, and reproduced the *next* time you typeset it, so you need to re-run LaTeX one extra time to ensure that all ToC page-number references are correctly resolved.

The commands `\listoffigures` and `\listoftables` work in exactly the same way as `\tableofcontents` to automatically list all your tables and figures. If you use them, they normally go after the `\tableofcontents` command.

We've already seen in section 2.6 on page 47 how to use the optional argument to the sectioning commands to add text to the ToC which is slightly different from the one printed in the body of the document. It is also possible to add extra lines to the ToC, to force extra or unnumbered section headings to be included.

Exercise 7. Using a Table of Contents

1. Add the `\tableofcontents` command to your document, after the `\maketitle` command but before the Abstract.
2. Typeset the document.

   If you are using your editor's Build to typeset the document, it should re-run LaTeX if necessary, to make sure the Table of Contents is updated to reflect any changes you have made (for example in section numbering, or adding, deleting, or moving sections or chapters around.
3. If the Table of Contents does not reflect your document structure, you need to typeset it one more time, to bring it up to date.

The `\tableofcontents` command normally shows only numbered section headings, and only down to the level defined by the *`tocdepth`* counter (see section 2.6.1 on page 48), but you can add extra entries with the `\addcontentsline` command. For example if you use an unnumbered section heading command to start a preliminary piece of text like a Foreword or Preface, you can write:

```
\subsection*{Preface}
\addcontentsline{toc}{subsection}{Preface}
```

This will format an unnumbered ToC entry for 'Preface' in the 'subsection' style. You can use the same mechanism to add lines to the List of Figures or List of Tables by substituting `lof` or `lot` for `toc`.

There is also a command \addtocontents which lets you add any LaTeX commands to the ToC file. For example, to add a horizontal rule and a 6pt gap, you could say

```
\addtocontents{toc}{\par\hrule\vspace{6pt}}
```

at the place where you want it to occur. You should probably only use this command once you know what you are doing.

There are several packages to help you restyle these lists of contents; perhaps the best-known is tocloft.