A Template for the Article Class
An Informal Guide

Version 2.0

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Abstract

This is a template for the LaTeX article class. It provides examples of the most commonly–used features, with some explanations. The output (PDF) document should be read in parallel with the source (LaTeX) document since not all the commands used in the source are described in the output. To create this abstract, I used the **abstract** *command*, but I could also have placed it between **begin{abstract}** and **end{abstract}** (an abstract *environment*).

1 A Section

If this document had the **report** class, we could also have a **chapter**. (In the source file, note that the **backslash** command has to be surrounded by dollar symbols.)

If we want to change the spacing between lines, we use the **doublespacing** command.

We could also use the **renewcommand** command to change the values of **baselinestretch** and **linespread** to give the same effect, but they affect everything in the document, including tables and footnotes!

LaTeX starts a new paragraph where it finds a blank line in the source (or with the **par** command, which is optional — I leave it out for simplicity). Normally, LaTeXindents the first line of each paragraph. However, the first paragraph after any break in the flow of paragraphs, say after a new section, or figure is not indented, but all the following paragraphs are until the next break.

To return to single–spaced lines, we use the **singlespacing** command. But note that we need to place a blank like between the command and its preceding paragraph, otherwise the single–spacing would be applied to its preceding paragraph.

And now we are back to the default single–spacing.

Because of the general structure of this document, the indentation applied to each paragraph spoils its appearance. We can prevent this indentation by reducing it to zero with

setlength{\parindent}{0pt}

But if we do this, the text becomes cramped vertically, so we increase the gap between paragraphs with

\setlength{\parskip}{2ex plus 0.5ex minus 0.5ex}

The **plus** and **minus** values tell latex how much it can vary the gap to fit things on the page. Note that this also affects the space after headings. We can use a variety of measures for values like this, such as **mm** (millimetres), **in** (inches), **pt** (points), and **ex** (height of the letter x in the current font), and so on.

We can force a new line to be started in the middle of some text, say just after this line
by using two backslashes (\\). Note that this does not start a new paragraph and that the space between the truncated line and the following one is not large like the gap between the real paragraphs in this document (well, since we increased the gap).

To show two backslashes in the actual document (and not have them treated as a new–line command, use the text **$\backslash\backslash$**

We use the **footnote** command to create a footnote so just after this[1] there should be a little superscript marker referring you to the footnote, which should appear at the bottom of this page.

1.1 A subsection

This is a subsection, created using the **subsection** command. And this is a reference (i.e. citation) [1] to the bibliography, created using the **cite** command, in combination with the **bibitem** command that is used in the bibliography.

And by using **pageref**, you can find some pictures on page 7, and by using a **ref**, I can show you that they can be found in *section* 7. These links are referenced to the corresponding **label** command.

These are references to Figures 2, and 3. Notice, in the source file, that there is a tilde character after the word "Figures", this is used to prevent a line–break after the word, and to prevent the space being widened by LaTeX's justification process.

If you keep getting messages along the lines of "Citation xxxx undefined" (or a broken–reference message), don't be fooled into thinking that it's actually the **cite**, **ref**, or **bibitem** command(s) that is/are broken. It's possible that there is an error elsewhere in your latex source that is preventing LaTeX from creating the document properly (e.g. the picture file referred to in an **includegraphics** command is missing). If LaTeX can't create the document properly, the citations/references can't be completed, giving rise to this misleading error message!

To investigate the true source of these errors, check the full list of errors and warning returned by LaTeX , and perhaps comment–out the lines containing the **cite**, **pageref**, or **ref** command(s) and run LaTeX again.

[1] This is the footnote I refer to above

Again in the source file, notice that the previous **LaTeX** command is followed by a space, yet the apostrophe is placed immediately after the LaTeX symbol without an intervening space. This is because LaTeX treats the space as merely the end of the command (and it allows me to place the apostrophe in its proper position). Where we really want a space after the LaTeX symbol, we end the LaTeX command with a backslash and a space, thus: "there will be a space after this **LaTeX**\ command".

2 Lists

- An itemised list
- Second item

1. A numbered list
2. Second item

3 Fonts

emph = *Emphasised text*

it = *Text in italics*

tt = `Typewriter text (fixed-width)`

bf = **Bold font**

Note that the emph font command occurs outside the curly braces, unlike the tt and it fonts. If we put any of the it, tt or bf commands outside the braces, they would affect all text from then on until the next font command.

4 Text Symbols

A short dash (hyphen) -

A medium dash –

A long dash —

Quotes must be written as two apostrophes (in each direction), e.g. "left, right".

5 Misc Symbols

If you want to print a symbol that LaTeX would normally treat as part of a command, etc., you must tell LaTeX that it is merely to be printed literally.

For example, to print a curly brace, it must be prefixed with a backslash, and to print a backslash, the word "backslash" must prefixed with a backslash symbol, and both must be surrounded by dollar symbols, i.e. **\{** and **$\backslash$**.

A left curly brace {

The backslash symbol \

The percent symbol: %

The hash symbol #

A dollar symbol: $

The underscore symbol _

6 Maths Symbols

To produce special mathematical symbols, we have to place dollar symbols on either side. For example:

$-$ = A minus sign $-$

The less-than sign $<$

The greather-than sign $>$

For more complicated equations, we create an 'environment' with **\begin{equation}** and **\end{equation}**

We can use the maths dollar symbols to refer to variables such as T and I. To get the little tick (prime) mark, we use the **\prime** command thus D'. An example of an equation is given below.

$$T \times D = F \times D' \tag{1}$$

Where

$T \in \mathbb{N}$ = Number of trials
$D' \notin \mathbb{N}$ = Number of distractors

Here's another example of an equation

$$T = \frac{F \times D'}{D} \tag{2}$$

7 Pictures

Be careful when using 'floats', which are things like figures and tables, and are declared with commands like **begin{figure}** and **begin{table}**. These can cause real headaches when LaTeX places them where you're not expecting. It does this when it can't find enough space on the current page for them — it places them at the next available space. Also, between the current position and the eventual position of the float, LaTeX will place the text that comes *after* the float in your LaTeX source file, which can be confusing for you the writer, and the reader.

It's difficult to explain how the float system works, but you can find more information about it on the web (there's a newsgroup called comp.text.tex, where people discuss the use of LaTeX), and in the online documentation. However, it is usually possible to solve the float problem by experimenting with the document's layout (try using the **newpage** command (which starts a new page at the exact position of the command), or moving the float's entry in the source file.

When giving the picture's filename, do not include the extension. The reason for this is that PdfLatex and LaTeX have different default graphics file formats. latex expects .eps files, whilst pdflatex expects, .pdf, .jpg, or .png files. Thus, you can use the same source with either program, and have them select the appropriate file automatically. You can convert jpeg files to eps format using the program jpeg2ps.

Here is a picture (but it may not appear immediately after this text, if LaTeX cannot fit it onto the page at this point).

Figure 1: A picture on its own

Following are two pictures side by side. Again, LaTeX may not be able to place the pictures directly under this text if they do not fit on the page.

Figure 2: This text appears next to the figure

Figure 3: Figure 2b's Caption

8 Tables

Here is a small table.

Column 1	Column 2	Column 3
Item 1	this and that	and whatever else
Item 2	more of same	and yet more comments

Note that the previous table won't work if it is longer (number of rows) than one page. To have a multi-page table, we need the longtable format.

First, we'll make the font size a lot smaller.

Latin name	Common name
Acer pseudoplatanus	Sycamore
Achillea millefolium	Yarrow
Alliaria petiolata	Garlic Mustard
Alnus glutinosa	Alder
Artemesia vulgaris	Mugwort
Barbarea vulgaris	Winter Cress
Bellis perennis	Daisy
Betula pendula	Silver Birch
Brassica rapa	Wild Turnip
Bryum argenteum	Moss
Buddleja davidii	Buddleja or Butterfly Bush
Calliergon cuspidatum	Moss
Calystegia sepium	Hedge Bindweed
Cardamine pratensis	Cuckoo Flower or Lady's Smock
Carex pendula	Pendulous Sedge
Centaurea nigra	Black/Common Knapweed
Centaurea scabiosa	Greater Knapweed

continued on next page

Table 1: *continued*

Latin name	Common name
Cerastium fontanum	Common Mouse-ear
Chamerion angustifolium	Rosebay Willowherb
Cirsium arvense	Creeping Thistle
Cirsium palustre	Marsh Thistle
Convolvulus arvensis	Field Bindweed
Crataegus monogyna	Hawthorn
Crepis vesicaria	Beaked Hawksbeard
Cynosurus cristatus	Crested Dog's-tail
Cytisus scoparius	Broom
Dactylis glomerata	Cocksfoot
Daucus carota	Wild Carrot
Digitalis purpurea	Foxglove
Dipsacus fullonum	Teasel
Epilobium hirsutum	Great Willowherb
Equisetum arvense	Common Horsetail
Eupatorium cannabinum	Hemp Agrimony
Eurynchium praelongum	Moss
Fallopia japonica	Japanese Knotweed
Festuca ovina	Sheep's Fescue
Filipendula ulmaria	Meadow-sweet
Fraxinus excelsior	Ash
Galium aparine	Common Cleavers
Geranium dissectum	Cut-leaved Cranesbill
Geranium pratense	Meadow Cranesbill
Geranium pyrenaicum	Hedgerow/Mountain Cranesbill
Geranium robertianum	Herb Robert
Glechoma hederacea	Gound Ivy
Heracleum mantegazzianum	Giant Hogweed
Hirschfeldia incana	Hoary Mustard
Holcus lanatus	Yorkshire Fog
Hypericum maculatum	Imperforate St John's Wort
Impatiens glandulifera	Himalayan balsam
Impatiens parviflora	Small Balsam
Juncus conglomeratus	Common Rush
Juncus inflexus	Hard Rush
Lathyrus pratensis	Meadow Vetchling
Leucanthemum vulgare	Oxeye Daisy
Lotus corniculatus	Common Birds-foot-trefoil
Lychnis flos-cuculi	Ragged Robin
Lythrum salicaria	Purple Loosestrife
Malus domestica agg.	Cultivated Apple
Matricaria matricarioides	Pineapple Weed
Medicago lupulina	Black Medic
Melilotus altissima	Tall Meliot
Mentha spicata	Spearmint
Myosotis sylvatica	Field Forget-me-not
Oeanthe crocata	Hemlock Water Dropwort

Table 1: A long table that continues on multiple pages

9 Packages

The setspace package gave us the doublespace and singlespace commands.

The longtable package gave us the longtable (multi-page table) feature.

The graphicx package allowed us to insert pictures with the includegraphics command.

The amsfonts package gave us the mathbb command (for the double-thickness set letters/symbols).

References

[1] Carter, N.; *A typical Reference Title*; Publisher; 2003