Chapter 1

Getting Acquainted

Chapter 2

Getting Started

Chapter 3

Carrying On

Three modes [1] :

1. **paragraph mode** input as a sequence of words and sentences to be broken into lines, paragraphs and pages.
2. **math mode** Math mode begins with a command like $ or \(or \[or \begin{equation}, and leaves when finding the corresponding command that ends the formula.
3. **left-to-right mode or LR mode** LR mode consisers your input to be a string of words with spaces between them. It keeps going from left to right; it never starts a new line.

3.1 Changing the Type Style

Type style is used to indicate logical structure. In this book, emphasized text appears in *italic* style type and LaTeX input in `typewriter` style. In LaTeX, a type style is specified by three components: shape, series, and family.

Shapes

- Upgright shape (default). \textup{Upgright shape...}
- *Italic shape*. \textit{Italic shape...}
- *Slanted shape*. \textsl{Slanted shape...}
- Small Caps Shape. \textsc{Small caps shape...}

Series

- Medium series (default). \textmd{Medium series...}
- **Boldface series**. \textbf{Boldface series...}

Family

- Roman family (default). \textrm{Roman family...}
- Sans serif family. \textsf{Sans serif family....}
- `Typewriter family`. \texttt{Typewriter family...}

These commands can be combined in a logical fashion to produce a wide vaiety of type styles.

Who on **Earth** is ***ever*** going to use boldface sans serif or an italic typewriter type style?

[1] Paragraph mode corresponds to the vertical and ordinary horizontal modes in *The TeXbook*, and LR mode is called restricted horizontal mode there. LaTeX also has a restricted form of LR mode called *picture* mode that is described in Section 7.1.

Each of the text-style commands described above has a corresponding declaration. Boldface text can be obtained with either the \textbf text-producing command or the \bfseries declaration.

More and **more** armadillos are crossing the road.

The declarations corresponding to the text-producing commands are:

- **cmd decl**
- \textup \upshape
- \textit \itshape
- \textsl \slshape
- \textsc \scshape
- \textmd \upshape
- \textbf \upshape
- \textrm \upshape
- \textsf \upshape
- \texttt \upshape
- \textup \upshape

None of test text-producing commands or declarations can be used in math mode. Section 3.3.8 explains how to change type style in a mathematical formula.

Type style is a visual property. Commands to specify visual properties belong not in the text, but in the definitions of commands that describe logical structure. LaTeX provides the **\emph** command for emphaiszed text; Section 3.4 explains how to define your own commands for the logical structure in your document.

3.2 Symbols from Other Languages

The `babel` package allows you to produce documents in languages other than English, as well as multilanguage documents.

3.2.1 Accents

Note: While LaTeX accents annotations work, .tex files also support Unicode. This file is UTF-8.

El señor está bien, garçon.

El señor está bien, garçon.

The letters i and j need special treatment because they should lose their dots when accented. The commands \i and \j produce a dotless i and j, respectively.

Él está aquí.

3.2.2 Symbols

The commands in Table 3.2 can appear only in paragraph and LR modes; use an command to put one inside a mathematical formula.

The following six special punctuation symbosl can be used in amy mode:

- †\dag
- ‡\ddag
- §\S
- ¶\P
- ©\copyright
- £\pounds

3.3 Mathematical Formulas

A formula that appears in the running text, called an *in-text* formula, is produced by the **math** environment. This environment can be invoked with either of the two shortforms \(... \) or $...$ as well as by the usual **begin** ... **end** construction.

The **displaymath** enviornment, which has the short form \[...\], produces an unnumbered displayed formula. The short forms $...$, \(...\), and \[...\] act as full-fledged environments. A numbered displayed formula is produced by the **equation** environment. Section 4.2 describes commands for assigning names to equation numbers and referring to the numbers by name, so you don't have to keep track of the actual numbers.

The **math**, **displaymath**, and **equation** environments put TEX in math mode. TEX ignores spaces in the input when it's in math mode (but space characters ma still be needed to mark the end of a command name). Section 3.3.7 describes how to add and remove space in formulas. Remember that TEX is in LR mode, where spaces in the input generate space in the output, when it begins processing the argument of an \mbox command–even one that appears inside a formula.

All the commands introduced in this section can be used only in math mode, unless it is explicitly stated that they can be used elsewhere. Except as noted, they are all robust. However, \begin, \end, \(, \), \[, and \] are fragile commands.

3.3.1 Some Common Structures

Subscripts and Superscripts

Subscripts and superscripts are made with the _ and ^ commands.

- x^{2y} – x^{2y}
- x_{2y} – x_{2y}
- x^{y^2}
- x^{y_1}
- x_1^y
- x_1^y

Fractions

Fractions denoted by the / symbol are made in the obvious way.

Multiplying by $n/2$ gives $(m+n)/n$.

Most fractions in the running text are written this way. The \frac command is used for large fractions in displayed formulas; it has two arguments: the numerator and the denominator.

$$x = \frac{y + z/2}{y^2 + 1}$$

$$x = \frac{(y+z)/2}{y^2+1}$$

$$\frac{x+y}{1+\frac{y}{z+1}}$$

The \frac command can be used in an in-text formula to produce a fraction like $\frac{1}{2}$ (by typing $\frac{1}{2}), but this is seldom done.

Roots

The \sqrt command produces the square root of its argument; it has an optional first argument for other roots. It is a fragile command.

A square root $\sqrt{x+y}$ and an nth root $\sqrt[n]{2}$.

Ellipsis

The commands \ldots between commas produce two different kinds of ellipsis.

A low ellipsis: $x_1, \ldots, x_n$.

A centered ellipsis: $a + \cdots + z$.

Use \ldots between commas and between juxtaposed symbols like $a \ldots z$; use \cdots between symbols like +, -, and =. TEX can also produce verticaland diagonal ellipsis, which are used mainly in arrays.

$\vdots$ \vdots

$\ddots$ \ddots