Writing Greek with the **greek** option of the **babel** package

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Abstract

This document describes the use of the Latin transliteration for Greek that is defined by the LGR font encoding. Today, all modern LaTeX distributions support literal input of Greek characters, which is the preferred method for new documents. [G. Milde 2013/12/02]

1 Overview

The `greek` option of the `babel` package is an attempt to make it possible for someone to write Greek text with LaTeX. The current version of the `greek` option supports the μονοτονικό and πολυτονικό accentual systems of the Greek language. Moreover, there is now support for Greek numerals. One can produce easily valid Greek numerals both in uppercase and lowercase forms, e.g, ͵αλϛζ΄ and ͵ΑλϛΖ΄. The labels in second and fourth level enumerations are lowercase and uppercase Greek numerals correspondingly.

2 Typing Greek Text

By default, TeX understands only 7-bit ASCII characters, so it is not possible to enter directly Greek letters.[1] Instead, someone enters Latin letters which are mapped to their Greek "counterparts" by TeX. The following table shows the transliteration employed:

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[1]Literal input of Greek characters is possible with XeTeX, LuaTeX, or the greek-inputenc LaTeX package. G. Milde, 2013/07/19

α	β	γ	δ	ε	ζ	η	ϑ	ι	κ	λ	μ	ν
a	b	g	d	e	z	h	j	i	k	l	m	n
ξ	o	π	ρ	σ	τ	υ	φ	χ	ψ	ω	ς	
x	o	p	r	s	t	u	f	q	y	w	c	

Please, note that in order to produce the letter σ in isolation one has to type `sv`. This feature is due to the strong ligature that TEX employs. In the "modern" μονοτονικό accentual system only one accent is used— οξεία (acute). In the traditional πολυτονικό accentual system we need more accents and breathing signs. We can produce an accented letter by prefixing the letter with he symbol that denotes the accent, e.g., `>a'erac` produces the word ἀέρας.[2] Here are the symbols that are recognized:

Accent	Symbol	Example	Output
acute	'	g'ata	γάτα
grave	`	dad`i	δαδὶ
circumflex	~	ful~hc	φυλῆς
rough breathing	<	<'otan	ὅταν
smooth breathing	>	>'aneu	ἄνευ
subscript	|	>anate'ilh|	ἀνατείλη
dieresis	"	qa"ide'uh|c	χαΐδεύης

Note that the subscript symbol is placed **after** the letter. The last thing someone must know in order to be able to write normal Greek text is the punctuation marks used in the language:

Punctuation Sign	Symbol	Output
period	.	.
semicolon	;	·
exclamation mark	!	!
comma	,	,
colon	:	:
question mark	?	;
left apostrophe	` `	‘
right apostrophe	' '	’
right apostrophe (alias)	"	’
left quotation mark	((	«
right quotation mark	))	»

Using these conventions it is a straightforward exercise to write Greek πολυτονικο text. For example the following excerpt from Δύσκολος of Μένανδρος

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[2]For the technically inclined reader, we must say that TEX uses the ligature table of the font in order to determine the character that corresponds to the input character sequence.

Τί φήις; Ἰδὼν ἐνθέδε παῖδ' ἐλευθέραν
τὰς πλησίον Νύμφας στεφανοῦσαν, Σώστρατε,
ἐρῶν ἀπῆλθες εὐθύς;

can be produced by the following LaTeX code:

```
T'i f'hic? <Id'wn >enj'ede pa~id'' >eleuj'eran
t'ac plhs'ion N'umfac stefano~usan, S'wstrate,
>er~wn 'ap~hljec e>uj'uc?
```

3   Producing Greek Text

Once the Greek language is selected with the command

$$\text{\selectlanguage\{greek\}}$$

whatever we type will be typeset with the Greek fonts. The command \ensureascii can be used for short passages in some language that uses the Latin alphabet. However, all words will be hyphenated by following the Greek hyphenation rules! Therefore it is better to switch to the other language with \foreignlanguage. The commands \lgrfont and \greektext switch to the Greek LGR font encoding. For example, the word Μίμης has been produced with the command \lgrfont{M'imhc}. Please note that Greek hyphenation and upcasing rules are not applied and certain symbols cannot have their expected result for Greek text, unless someone has selected the Greek language, e.g., ~ is such a symbol.

As we have mentioned above this version of the greek option of the babel package supports the use of Greek numerals. The commands \greeknumeral and \Greeknumeral produce the lowercase and the uppercase Greek numeral, e.g.,

Command	Output
\Greeknumeral{9999}	͵ΘϞ͵Θ′
\greeknumeral{9999}	͵ϑϞ͵ϑ′

In order to correctly typeset the greek numerals the greek option file uses the following commands:

Command	Output
\textdexiakeraia	′
\textaristerikeraia	͵
\textkoppa	ϟ
\textsampi	ϡ
\textstigma	ϛ
\textKoppa	Ϟ
\textSampi	Ϡ
\textStigma	Ϛ

Additional symbols are available:

Command	Output
\textDigamma	Ϝ
\textdigamma	ϝ
\textQoppa	Ϙ
\textqoppa	ϙ
\textvarstigma	ς
\texteuro	€
\textperthousand	‰

In traditional Greek typography the first paragraph after a header is always indented, contrary to the habit of, say, American typography. This effect can be achieved by using the package `indentfirst`.

The package `athnum` provides the command `\athnum`, with which one can produce the so called *Athenian numerals*:

Command	Output
\athnum{1997}	X⏖HHHH⏈ΔΔΔΔΠΙΙ

The package `grmath` renames the basic log-like functions with their greek counterparts:

Command	Output
$\sin^{2}x+\cos^{2}x=1$	$ημ^2 x + συν^2 x = 1$