

The `numspell` package

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1 Introduction

The aim of the `numspell` package is to spell the cardinal and ordinal numbers from 0 to $10^{67} - 1$ (i.e. maximum 66 digits).

Currently, the supported languages are English, French, German, Hungarian and Italian. The spelling will happen in the current language.

The `numspell` package requires the services of the following packages: `xstring`, `etoolbox`, `pdftexcmds`.

Load the package as usual, with

```
\usepackage{numspell}
```

2 Commands

```
\numspell[<zeros>]{<num>}
```

Spelling the cardinal number $n = \langle num \rangle \cdot 10^{\langle zeros \rangle}$, where $0 \leq n \leq 10^{67} - 1$. The default value of *<zeros>* is 0. For example

```
\numspell{12000} → twelve thousand  
\numspell[3]{12} → twelve thousand  
\numspell[6]{12} → twelve million  
\numspell[63]{1} → one vigintillion
```

```
\thenumspell
```

The `\numspell` stores the result in this command. For example

```
\numspell{12000}; \thenumspell → twelve thousand; twelve thousand  
\numspell{1}; \numspell{2}; \thenumspell → one; two; two
```

```
\numspellsave{<name>}
```

It generates the `\thenumspell<name>` command, which saves the current `\thenumspell`. For example

```
\numspell{1};  
\numspellsave{MyNum}  
\numspell{2};  
\thenumspell;  
\thenumspellMyNum
```

one; two; two; one

```
\numspelledashspace{<length>}
```

In the number spelling, the spaces around the dashes are flexibility for the optimal hyphenation. Its value is `Opt` plus *<length>*. The default value of *<length>* is 2pt. For example

```

\selectlanguage{magyar}
\numspell{6512312354762547162546254756}\ [2mm]
\numspelledashspace{10pt}
\numspell{6512312354762547162546254756}

```

hatkvadrilliárd-ötszáztizenkétkvadrillió-háromszáztizenkéttrilliárd-háromszázötvennégytrillió-hétszázhatvankétbilliárd-ötszáznegyvenhétbillió-egyszázhatvankétmilliárd-ötszáznegyvenhatmillió-kétszázötvennégyezer-hétszázötvenhat

hatkvadrilliárd - ötszáztizenkétkvadrillió - háromszáztizenkéttrilliárd - háromszázötvennégytrillió - hétszázhatvankétbilliárd-ötszáznegyvenhétbillió-egyszázhatvankétmilliárd-ötszáznegyvenhatmillió-kétszázötvennégyezer-hétszázötvenhat

`\numspell*[\langle zeros \rangle]{\langle num \rangle}`

It works like `\numspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```

\numspell[\langle zeros \rangle]{\langle num \rangle}
\numspell*[\langle zeros \rangle]{\langle num \rangle}\thenumspell

```

For example

```

\numspell*{1}
\numspellsave{MyNum}
\numspell*{2}
\thenumspell;
\thenumspellMyNum

```

two; one

`\Numspell[\langle zeros \rangle]{\langle num \rangle}`

It works like `\numspell`, but the first letter will be capital. For example

```

\Numspell{12000} → Twelve thousand
\Numspell[3]{12} → Twelve thousand
\Numspell[6]{12} → Twelve million
\Numspell[63]{1} → One vigintillion

```

`\Numspell*[\langle zeros \rangle]{\langle num \rangle}`

It works like `\Numspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```

\Numspell[\langle zeros \rangle]{\langle num \rangle}
\Numspell*[\langle zeros \rangle]{\langle num \rangle}\thenumspell

```

For example

```

\Numspell*{1}
\numspellsave{MyNum}
\Numspell*{2}
\thenumspell;
\thenumspellMyNum

```

Two; One

`\ordnumspell[\langle zeros \rangle]{\langle num \rangle}`

Spelling the ordinal number $n = \langle num \rangle \cdot 10^{\langle zeros \rangle}$, where $0 \leq n \leq 10^{67} - 1$. The default value of `\langle zeros \rangle` is 0. For example

```
\ordnumspell{12000} → twelve thousandth
\ordnumspell[3]{12} → twelve thousandth
\ordnumspell[6]{12} → twelve millionth
\ordnumspell[63]{1} → one vigintillionth
```

`\ordnumspell*[\langle zeros \rangle]{\langle num \rangle}`

It works like `\ordnumspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```
\ordnumspell[\langle zeros \rangle]{\langle num \rangle}
\ordnumspell*[\langle zeros \rangle]{\langle num \rangle}\thenumspell
```

For example

```
\ordnumspell*{1}
\numspellsave{MyNum}
\ordnumspell*{2}
\thenumspell;
\thenumspellMyNum
```

second; first

`\Ordnumspell[\langle zeros \rangle]{\langle num \rangle}`

It works like `\ordnumspell`, but the first letter will be capital. For example

```
\Ordnumspell{12000} → Twelve thousandth
\Ordnumspell[3]{12} → Twelve thousandth
\Ordnumspell[6]{12} → Twelve millionth
\Ordnumspell[63]{1} → One vigintillionth
```

`\Ordnumspell*[\langle zeros \rangle]{\langle num \rangle}`

It works like `\Ordnumspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```
\Ordnumspell[\langle zeros \rangle]{\langle num \rangle}
\Ordnumspell*[\langle zeros \rangle]{\langle num \rangle}\thenumspell
```

For example

```
\Ordnumspell*{1}
\numspellsave{MyNum}
\Ordnumspell*{2}
\thenumspell;
\thenumspellMyNum
```

Second; First

3 Commands for English language

`\numspellUS`

By default, the number spelling will happen in British English, if the `english` language is active. This command changes it to American English. For example

```
\numspellUS\numspell{1012345} → one million, twelve thousand, three hundred forty-five
```

`\numspellGB`

Using the `\numspellUS` command, you can rechange it to British English by this command. For example

```
\numspellUS\numspell{1012345} \\
\numspellGB\numspell{1012345}
```

one million, twelve thousand, three hundred forty-five
one million, twelve thousand and three hundred and forty-five

4 Commands for French language

The following commands only work, if `french` language is active.

`\numspellpremiere`

By default, `\ordnumspell{1}` → premier,
but `\numspellpremiere\ordnumspell{1}` → première

`\numspellpremier` (default)

```
\numspellpremiere\ordnumspell{1};  
\numspellpremier\ordnumspell{1}  
première; premier
```

5 Commands for Hungarian language

The following commands only work, if `magyar` language is active.

`\anumspell[⟨zeros⟩]{⟨num⟩}`

It works like `\numspell`, but the number spelling will start with Hungarian definite article. For example

```
\anumspell{1} → az egy  
\anumspell{2} → a kettő
```

`\anumspell*[⟨zeros⟩]{⟨num⟩}`

It works like `\anumspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```
\anumspell[⟨zeros⟩]{⟨num⟩}  
\anumspell*[⟨zeros⟩]{⟨num⟩}\thenumspell
```

For example

```
\anumspell*{1}  
\numspellsave{MyNum}  
\anumspell*{2}  
\thenumspell;  
\thenumspellMyNum
```

a kettő; az egy

`\Anumspell[⟨zeros⟩]{⟨num⟩}`

It works like `\anumspell`, but the first letter will be capital. For example

```
\Anumspell{1} → Az egy  
\Anumspell{2} → A kettő
```

`\Anumspell*[⟨zeros⟩]{⟨num⟩}`

It works like `\Anumspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```
\Anumspell[⟨zeros⟩]{⟨num⟩}  
\Anumspell*[⟨zeros⟩]{⟨num⟩}\thenumspell
```

For example

```

\Anumspell*{1}
\numspellsave{MyNum}
\Anumspell*{2}
\thenumspell;
\thenumspellMyNum

```

A kettő; Az egy

`\aordnumspell[⟨zeros⟩]{⟨num⟩}`

It works like `\ordnumspell`, but the number spelling will start with Hungarian definite article. For example

```

\aordnumspell{1} → az első
\aordnumspell{2} → a második

```

`\aordnumspell*[⟨zeros⟩]{⟨num⟩}`

It works like `\aordnumspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```

\aordnumspell[⟨zeros⟩]{⟨num⟩}
\aordnumspell*[⟨zeros⟩]{⟨num⟩}\thenumspell

```

For example

```

\aordnumspell*{1}
\numspellsave{MyNum}
\aordnumspell*{2}
\thenumspell;
\thenumspellMyNum

```

a második; az első

`\Aordnumspell[⟨zeros⟩]{⟨num⟩}`

It works like `\aordnumspell`, but the first letter will be capital. For example

```

\Aordnumspell{1} → Az első
\Aordnumspell{2} → A második

```

`\Aordnumspell*[⟨zeros⟩]{⟨num⟩}`

It works like `\Aordnumspell`, but the number spelling will not be printed. In other words, the following two lines are equivalent:

```

\Aordnumspell[⟨zeros⟩]{⟨num⟩}
\Aordnumspell*[⟨zeros⟩]{⟨num⟩}\thenumspell

```

For example

```

\Aordnumspell*{1}
\numspellsave{MyNum}
\Aordnumspell*{2}
\thenumspell;
\thenumspellMyNum

```

A második; Az első

6 Commands for Italian language

The following commands only work, if `italian` language is active.

`\numspellitmasculine` (default)

The ordinal numbers will be printed in masculine form. For example
`\ordnumspell{1}` → primo

`\numspellitfeminine`

The ordinal numbers will be printed in feminine form. For example
`\numspellitfeminine\ordnumspell{1}`;
`\numspellitmasculine\ordnumspell{1}`
prima; primo

7 Examples

Example 1

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[magyar,italian,ngerman,french,english]{babel}
\usepackage{numspell}
\usepackage[group-separator={,}]{siunitx}
\begin{document}

\def\mynum{123456789}

\noindent
In American English the spelling of \num{\mynum} is
{\numspellUS\emph{``\numspell{\mynum}'}}.

\smallskip\noindent
In British English the spelling of \num{\mynum} is
\emph{``\numspell{\mynum}'}}.

\smallskip\noindent
In French the spelling of \num{\mynum} is
{\selectlanguage{french}\emph{``\numspell{\mynum}'}}.

\smallskip\noindent
In German the spelling of \num{\mynum} is
{\selectlanguage{ngerman}\emph{``\numspell{\mynum}'}}.

\smallskip\noindent
In Hungarian the spelling of \num{\mynum} is
{\selectlanguage{magyar}\emph{``\numspell{\mynum}'}}.

\smallskip\noindent
In Italian the spelling of \num{\mynum} is
{\selectlanguage{italian}\emph{``\numspell{\mynum}'}}.

\end{document}
```

In American English the spelling of 123,456,789 is “*one hundred twenty-three million, four hundred fifty-six thousand, seven hundred eighty-nine*”.

In British English the spelling of 123,456,789 is “*one hundred and twenty-three million, four hundred and fifty-six thousand and seven hundred and eighty-nine*”.

In French the spelling of 123,456,789 is “*cent vingt-trois millions quatre cent cinquante-six mille sept cent quatre-vingt-neuf*”.

In German the spelling of 123,456,789 is “*einhundertdreißig Millionen vierhundertsechundfünfzigtausendsiebenhundertneunundachtzig*”.

In Hungarian the spelling of 123,456,789 is “*százhuszonhárommillió-négyezerötvenhatezer-hétszáznyolcvankilenc*”.

In Italian the spelling of 123,456,789 is “*centoventitré milioni quattrocentocinquantaseimila settecentotantanove*”.

Example 2

```
\documentclass{article}
\usepackage{numspell}
\usepackage[group-separator={,}]{siunitx}
\begin{document}

\def\mynum{123456789012345678901234567890123456789012345678901234567890123456}
\Numspell{\mynum}, that is \num{\mynum}.

\end{document}
```

One hundred and twenty-three vigintillion, four hundred and fifty-six novemdecillion, seven hundred and eighty-nine octodecillion, twelve septendecillion, three hundred and forty-five sexdecillion, six hundred and seventy-eight quidecillion, nine hundred and one quattuordecillion, two hundred and thirty-four tredecillion, five hundred and sixty-seven duodecillion, eight hundred and ninety undecillion, one hundred and twenty-three decillion, four hundred and fifty-six nonillion, seven hundred and eighty-nine octillion, twelve septillion, three hundred and forty-five sextillion, six hundred and seventy-eight quintillion, nine hundred and one quadrillion, two hundred and thirty-four trillion, five hundred and sixty-seven billion, eight hundred and ninety million, one hundred and twenty-three thousand and four hundred and fifty-six, that is 123,456,789,012,345,678,901,234,567,890,123,456,789,012,345,678,901,234,567,890,123,456.

Example 3

```
\documentclass{article}
\usepackage{numspell}
\newcounter{mycount}
\makeatletter
\begin{document}

The
\@whilenum\value{mycount}<51
\do{\ordnumspell{\themycount}\stepcounter{mycount},\ } \dots

\end{document}
```

The zeroth, first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, sixteenth, seventeenth, eighteenth, nineteenth, twentieth, twenty-first, twenty-second, twenty-third, twenty-fourth, twenty-fifth, twenty-sixth, twenty-seventh, twenty-eighth, twenty-ninth, thirtieth, thirty-first, thirty-second, thirty-third, thirty-fourth, thirty-fifth, thirty-sixth, thirty-seventh, thirty-eighth, thirty-ninth, fortieth, forty-first, forty-second, forty-third, forty-fourth, forty-fifth, forty-sixth, forty-seventh, forty-eighth, forty-ninth, fiftieth, . . .

Example 4

```
\documentclass{article}
\usepackage{numspell}
\newcounter{mycount}
\def\themycount{\numspell{\arabic{mycount}}}
\makeatletter
\begin{document}

\Numspell{0},
\@whilenum\value{mycount}<30
\do{\stepcounter{mycount}\themycount,\ } \dots

\end{document}
```

Nought, one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty, twenty-one, twenty-two, twenty-three, twenty-four, twenty-five, twenty-six, twenty-seven, twenty-eight, twenty-nine, thirty, ...

8 Limitations

Do not use the `\numspell`, `\numspell*`, `\Numspell`, `\Numspell*`, etc. commands inside `\MakeUppercase` and sectioning commands. An example for the illustration of the problem:

```
\documentclass{article}
\usepackage{hyperref,numspell}
\pagestyle{headings}
\begin{document}

\section{The \ordnumspell{123} factor}
\MakeUppercase{\numspell{123}}
\newpage
Text

\end{document}
```

The bugs:

1. You can see it on the page 1: “one hundred and twenty-three”
Required: “ONE HUNDRED AND TWENTY-THREE”
2. You can see it on the heading: “*THE one hundred and twenty-third FACTOR*”
Required: “*THE ONE HUNDRED AND TWENTY-THIRD FACTOR*”
3. You can see it on the pdf bookmark: “The 123 factor”
Required: “The one hundred and twenty-third factor”

The solution is very easy:

```
\ordnumspell*{123}
\section{The \thenumspell\ factor}
\numspell*{123}
\MakeUppercase{\thenumspell}
```