

NUMBERTEXT and MONEYTEXT

Spreadsheet Functions¹

OpenOffice.org 3.x Calc

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	László Németh	2009-07-23	Draft
Conforms to	Thai subset of MONEYTEXT is standardized by the ECMA-376 and ISO/IEC 29 500:2008 (Office Open XML) as BAHTTEXT, also by OpenOffice.org (http://specs.openoffice.org/calc/compatibility/bahttext.odt). RuleBasedNumberFormat of IBM ICU is similar, but insufficient tool to spell out numbers with or without currencies.		
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Task ID(s)	i103746		
Category	Feature		

Abstract

- 5 The NUMBERTEXT and MONEYTEXT functions allow to convert numbers to number names. The output of the MONEYTEXT includes the names of the currency units, too. Example: The number 1.5 can be converted to the Thai text “หนึ่งบาทห้าสิบสตางค์” and the English text “One Baht and fifty Satang” by the MONEYTEXT(1.5; "THY"; 2; "th-TH") and MONEYTEXT(1.5; "THY"; 2; "en-US") function calls.

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10 Approved for Implementation

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¹ Note: this specification covers only spreadsheet functions, but it can be extend for number formats, too.

Document Change History

Rev. Level	Change	Initials	Date
1.0	Initial revision	nemeth	2009-07-23

Contents

	Glossary.....	1
1	Motivation.....	1
2	User Scenarios.....	1
3	Goals.....	1
4	Requirements and Dependencies.....	1
4.1	Requirements.....	1
4.2	Technical Dependencies.....	1
5	Competitive Analyses.....	1
6	Detailed Specification.....	1
6.1	G11n.....	2
6.2	Error Conditions.....	2
6.3	Migration.....	2
7	Future Tasks.....	2
8	Notes.....	2
9	References.....	3

Glossary

Term	Description
regex	regular expression (standard)

1 Motivation

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To replace the standardized, but insufficient BAHTTEXT function and the lot of (often bad) solutions for number to number name conversions with a good international standard.

2 User Scenarios

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This feature will solve a frequently required task: to convert numbers to number names (words) in invoices, checks, contracts etc. Ease-of-Use with competitive products (Excel has an on-line solution). It is mandatory that the users finds a comparable functionality within the same feature as in competitive products.

3 Goals

Add a requested feature. Increase compatibility with competitive spreadsheet products. Also help OpenFormula to be top-compliant with the ECMA/ISO BAHTTEXT without degrading its high requirements for an international standard.

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4 Requirements and Dependencies

4.1 Requirements

To meet the needs of users and to add a real innovative/competitive feature, Calc needs NUMBERTEXT and MONEYTEXT.

4.2 Technical Dependencies

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The NUMBERTEXT and MONEYTEXT implementation uses Soros language and resources of NUMBERTEXT.org (see [SorosSpec] and [NUMBERTEXT]).

5 Competitive Analyses

Microsoft has on-line support for Excel spreadsheet only for English number to number name conversion ([MSsup]).

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Apache OFBiz (The Apache Open for Business Project) uses RuleBasedNumberFormat of IBM ICU for this task, but only for English language, because of IBM ICU doesn't offer MONEYTEXT function (see hard-wired English rule set in [Ofbiz]).

IBM ICU contains several inconsistent rule sets for number conversion without currencies ([ICU]), but its RuleBasedNumberFormat class is insufficient for currency handling (also for number handling: [ICU2]).

40 The regex based Soros language [SorosSpec] can handle complex orthography and grammar of number names in a simple way. NUMBERTEXT.org [NUMBERTEXT] has resources for 20 languages with major and country-dependent currency support and it is the dedicated site to extend this database.

The OpenOffice.org NUMBERTEXT extension is a working demonstration of the planned NUMBERTEXT/MONEYTEXT feature of Calc ([NUMext]).

45 6 Detailed Specification

The functions are named NUMBERTEXT and MONEYTEXT. NUMBERTEXT expects one numeric argument (input number) and two optional arguments to set decimal places and target language. MONEYTEXT expects a numeric argument and a currency code before the same two optional arguments. Without the first optional argument, the functions round the input number to two decimal places. Without the language code, the target language is the language of the document. All numerical input values are valid (there is no restricted range of valid values).

=NUMBERTEXT(Value; [Decimals [; Language]])

=MONEYTEXT(Value; Currency; [Decimals [; Language]])

Examples:

55 =NUMBERTEXT(1) returns “one”, when the language of the document is English.

=NUMBERTEXT(3.1415) returns “**drei Komma eins vier**”, when the language of the document is German.

=MONEYTEXT(123.456; "EUR") returns “**one hundred and twenty-three euro and forty-five cents**”, when the language of the document is English.

60 =MONEYTEXT(12.649; "THY"; 2; "th-TH") returns “สิบสองบาทหกสิบห้าสตางค์” which means “**Twelve Baht and sixty five Satang**”.

Tab Order

None.

Key Board Shortcuts

65 None.

6.1 G11n

None.

6.2 Error Conditions

Missing parameter results in Err:511 (missing parameter).

70 Too many parameters results in Err:504 (error in parameter list).

Parameter not a number results in Err:502 (invalid argument).

6.3 Migration

None.

7 Future Tasks

75 None.

8 Notes

None.

9 References

[ICU] ICU rule sets, <https://ssl.icu-project.org/trac/browser/icu/trunk/source/data/rbnf>

80 [ICU2] “Ettusen” problem of Swedish rules, see in <http://icu-project.org/trac/attachment/ticket/6493/sv.txt>

[NUMBERTEXT] NUMBERTEXT.org, <http://www.numbertext.org>

[NUMext] NUMBERTEXT extension, <http://extensions.services.openoffice.org/project/numbertext>

[MSSup] How to convert a numeric value into English words in Excel, Microsoft Help and Support, <http://support.microsoft.com/kb/213360>.

85 [OfBiz] UtilAccounting.java, http://svn.ofbiz.org/viewcvs/*checkout*/trunk/applications/accounting/src/org/ofbiz/accounting/util/UtilAccounting.java?rev=6744

[SorosSpec] Soros Language Specification, <http://www.numbertext.org/sorosspec.odt>