Title: Proposal to encode tally marks

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Abstract

Tally marks, which form a unary numeral system, have been used for thousands of years as a method of counting or keeping score through the use of stroke clusters. Tally marks also predate modern digits, and in some cases, served as their basis for some scripts. Most tally mark systems represent five digits, which correspond to the number of digits on a single human hand, but there is one system in this proposal that can represent ten digits. This proposal introduces four "tally mark" systems, and provides evidence that suggests that they require a "plain text" representation, and should thus be encoded.

Introduction

Wikipedia's very brief Tally marks article describes four tally mark systems, which serve as the basis for this proposal.

The most common tally mark system, which is widely used in Europe, North America, and elsewhere, uses one to four parallel vertical strokes to represent the digits one through four, respectively, along with a horizontal or diagonal stroke that crosses over the four previous vertical strokes—completing the tally cluster—to represent the digit five. This tally mark system is sometimes referred to as the *Barred-Gate Tally Mark System*, because the four vertical strokes represent a gate, and the fifth stroke represents a bar that closes the gate. **In this proposal, this system uses character names that begin with TALLY DIGIT.**

Another tally mark system, which is used in some French- and Spanish-speaking regions and particularly in South America, uses four strokes to form a box or square, with the number of successive strokes representing the digits one through four, respectively, along with a 45-degree diagonal stroke—completing the tally cluster—to represent the digit five. This tally mark system is sometimes referred to as the *South American Tally Mark System*, because of its widespread use in South America. **In this proposal, this system uses character names that begin with BOX TALLY DIGIT.**

A tally mark system that is widespread throughout East Asia uses the five strokes of the ideograph 正 (U+6B63) to represent the digits one through five. Once all five strokes are written, which completes the tally cluster, the resulting character looks like the ideograph 正. This system is called 正の字 (*sei-no ji*) in Japanese, and 正字 (*zhèng zi*) in Chinese. **In this proposal, this system uses character names that begin with IDEOGRAPHIC TALLY DIGIT.**

A fourth tally mark system, used in the field of forestry to count trees or timber, uses dots and dashes to represent the digits one through ten. Four successive dots in each corner of a box pattern represent the digits one through four; four successive dashes that join the dots on

the perimeter of the box pattern represent the digits five through eight; and two 45-degree diagonal slash-like dashes represent the digits nine and ten, which complete the tally cluster. Although modern usage suggests that the four dots and four dashes begin from the upper-left corner and continue in a clockwise fashion, in practice there is no fixed principle. This tally mark system is sometimes referred to as the *Dot-and-Dash Tally Mark System*. **In this proposal, this system uses character names that begin with DOT AND DASH TALLY DIGIT.**

Examples

The following tables illustrates how these four tally mark systems are used to represent the numbers 1 through 20:

1	2	3	4	5	6	7	8	9	10
𝍠	𝍡	𝍢	𝍣	𝍤	𝍤𝍠	𝍤𝍡	𝍤𝍢	𝍤𝍣	𝍤𝍤
𝍥	𝍦	𝍧	𝍨	𝍩	𝍩𝍥	𝍩𝍦	𝍩𝍧	𝍩𝍨	𝍩𝍩
𝍪	𝍫	𝍬	𝍭	𝍮	𝍮𝍪	𝍮𝍫	𝍮𝍬	𝍮𝍭	𝍮𝍮
𝍯	𝍰	𝍱	𝍲	𝍳	𝍳𝍯	𝍳𝍰	𝍳𝍱	𝍳𝍲	𝍳𝍳

11	12	13	14	15	16	17	18	19	20
𝍤𝍤𝍠	𝍤𝍤𝍡	𝍤𝍤𝍢	𝍤𝍤𝍣	𝍤𝍤𝍤	𝍤𝍤𝍤𝍠	𝍤𝍤𝍤𝍡	𝍤𝍤𝍤𝍢	𝍤𝍤𝍤𝍣	𝍤𝍤𝍤𝍤
𝍩𝍩𝍥	𝍩𝍩𝍦	𝍩𝍩𝍧	𝍩𝍩𝍨	𝍩𝍩𝍩	𝍩𝍩𝍩𝍥	𝍩𝍩𝍩𝍦	𝍩𝍩𝍩𝍧	𝍩𝍩𝍩𝍨	𝍩𝍩𝍩𝍩
𝍮𝍳𝍪	𝍮𝍳𝍫	𝍮𝍳𝍬	𝍮𝍳𝍭	𝍮𝍳𝍮	𝍮𝍳𝍮𝍪	𝍮𝍳𝍮𝍫	𝍮𝍳𝍮𝍬	𝍮𝍳𝍮𝍭	𝍮𝍳𝍮𝍮
𝍳𝍯	𝍳𝍰	𝍳𝍱	𝍳𝍲	𝍳𝍳	𝍳𝍳𝍯	𝍳𝍳𝍰	𝍳𝍳𝍱	𝍳𝍳𝍲	𝍳𝍳𝍳

Representative Glyphs

The representative glyphs for the characters in this proposal are used in the tables of this document, reflect the forms that are in common or modern use, and are also provided in the OpenType font that is attached to this PDF file whose glyphs are encoded from the tentative code points in this proposal. All but the TALLY DIGIT characters are expected to use monospaced glyphs.

The following characters in this proposal may have alternate forms or metrics, depending on the font or the preference of the typeface designer:

TALLY DIGIT ONE through TALLY DIGIT FOUR—The vertical strokes can be left-justified (except for TALLLY DIGIT FOUR) or centered in the em-box, or use proportional metrics. *The representative glyphs in this proposal use proportional metrics.*

TALLY DIGIT FIVE—The fifth stroke, which completes the tally cluster, can be a perfectly horizontal stroke or a diagonal stroke with a positive or negative slope. *The representative glyph in this proposal uses a diagonal stroke with a positive slope.*

BOX TALLY DIGIT FIVE—The fifth stroke can be a 45-degree diagonal stroke with a positive or negative slope. *The representative glyph in this proposal uses a negative slope.*

IDEOGRAPHIC TALLY DIGIT FIVE—Depending on the font, this character may be indistinguishable from CJK Unified Ideograph 正 (U+6B63), but its use as a tally digit may allow it to take on a form that is unique from that ideograph in the same font. *The representative*

glyph in this proposal uses a sans serif (aka heiti or gothic) design to distinguish it from the corresponding CJK Unified Ideograph in the code charts.

DOT AND DASH TALLY DIGIT ONE through DOT AND DASH TALLY DIGIT THREE—The number of dots must match the corresponding digit, and must be at the corner of an imaginary square, but the position of the dots is not important, except that the additional dot for DOT AND DASH TALLY DIGIT TWO must be on the same side of the square as DOT AND DASH TALLY DIGIT ONE, and not at opposite corners. *The representative glyphs in this proposal begin with a single dot in the upper-left corner of the em-box, and add dots in a clockwise fashion.*

DOT AND DASH TALLY DIGIT FIVE through DOT AND DASH TALLY DIGIT SEVEN—The number of dashes, when added to the number of dots, must match the corresponding digit, and must connect the dots, but the position of the dashes is not important, except that the additional dash for DOT AND DASH TALLY DIGIT SIX must be perpendicular to the dash for DOT AND DASH TALLY DIGIT FIVE, and not on opposite sides. *The representative glyphs in this proposal begin with a single dash that connects the two upper dots, and adds dashes in a clockwise fashion.*

DOT AND DASH TALLY DIGIT NINE—The 45-degree diagonal dash can have a positive or negative slope. *The representative glyph in this proposal uses a negative slope.*

Similar Characters

Two of the characters in this proposal, TALLY DIGIT ONE and BOX TALLY DIGIT ONE, have very similar shapes in that both are represented by a vertical stroke, but it is preferred to keep them as separate characters because they are used for completely different tally mark systems. In addition, depending on how font developers implement these glyphs, a single character may not work properly for both tally mark systems, in terms of their height, weight, metrics, placement within the em-box, or other glyph attributes.

The table in the following section includes a “Similar Characters” column that draws attention to other characters in Unicode that have a *similar* semantic or shape, but are not deemed suitable because 1) it is preferred to keep the characters for these tally mark systems in contiguous ranges for easier implementation; 2) because they have distinct usage or semantics; and, perhaps more importantly, 3) to ensure that their representative glyphs remain compatible.

Proposed Block Name, Character Names & Code Points

The characters do not fit into an existing block, both in terms of available space and their unique usage paradigm, though the closest fit would be “Counting Rod Numerals” (1D360..1D37F) in the “Notational systems” zone (1D000..1DFFF). A new block, named “Tally Marks,” in the same zone is proposed, specifically 1D380..1D39F.

The table below provides representative glyphs, suggested code points, proposed character names, and the code points of similar—in shape or meaning—characters:

Glyph	Code Point	Character Name	Similar Characters
𝍠	U+1D380	TALLY DIGIT ONE	U+2160 U+1D360 U+1D369

Glyph	Code Point	Character Name	Similar Characters
	U+1D381	TALLY DIGIT TWO	U+2161 U+1D361 U+1D36A
	U+1D382	TALLY DIGIT THREE	U+2162 U+1D362 U+1D36B
	U+1D383	TALLY DIGIT FOUR	U+1D36C
	U+1D384	TALLY DIGIT FIVE	
	U+1D385	BOX TALLY DIGIT ONE	
	U+1D386	BOX TALLY DIGIT TWO	
	U+1D387	BOX TALLY DIGIT THREE	U+2293
	U+1D388	BOX TALLY DIGIT FOUR	U+25A1
	U+1D389	BOX TALLY DIGIT FIVE	U+2342 U+29C5 U+303C
	U+1D38A	IDEOGRAPHIC TALLY DIGIT ONE	U+4E00
	U+1D38B	IDEOGRAPHIC TALLY DIGIT TWO	U+4E01 U+4E05
	U+1D38C	IDEOGRAPHIC TALLY DIGIT THREE	U+4E0B
	U+1D38D	IDEOGRAPHIC TALLY DIGIT FOUR	
	U+1D38E	IDEOGRAPHIC TALLY DIGIT FIVE	U+6B63
	U+1D390	DOT AND DASH TALLY DIGIT ONE	
	U+1D391	DOT AND DASH TALLY DIGIT TWO	
	U+1D392	DOT AND DASH TALLY DIGIT THREE	

Glyph	Code Point	Character Name	Similar Characters
	U+1D393	DOT AND DASH TALLY DIGIT FOUR	U+2237
	U+1D394	DOT AND DASH TALLY DIGIT FIVE	
	U+1D395	DOT AND DASH TALLY DIGIT SIX	
	U+1D396	DOT AND DASH TALLY DIGIT SEVEN	
	U+1D397	DOT AND DASH TALLY DIGIT EIGHT	
	U+1D398	DOT AND DASH TALLY DIGIT NINE	
	U+1D399	DOT AND DASH TALLY DIGIT TEN	

Properties

The following are the proposed properties for the 25 characters in this proposal:

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1D380;TALLY DIGIT ONE;No;0;L;;;;1;N;;;;;
1D381;TALLY DIGIT TWO;No;0;L;;;;2;N;;;;;
1D382;TALLY DIGIT THREE;No;0;L;;;;3;N;;;;;
1D383;TALLY DIGIT FOUR;No;0;L;;;;4;N;;;;;
1D384;TALLY DIGIT FIVE;No;0;L;;;;5;N;;;;;
1D385;BOX TALLY DIGIT ONE;No;0;L;;;;1;N;;;;;
1D386;BOX TALLY DIGIT TWO;No;0;L;;;;2;N;;;;;
1D387;BOX TALLY DIGIT THREE;No;0;L;;;;3;N;;;;;
1D388;BOX TALLY DIGIT FOUR;No;0;L;;;;4;N;;;;;
1D389;BOX TALLY DIGIT FIVE;No;0;L;;;;5;N;;;;;
1D38A;IDEOGRAPHIC TALLY DIGIT ONE;No;0;L;;;;1;N;;;;;
1D38B;IDEOGRAPHIC TALLY DIGIT TWO;No;0;L;;;;2;N;;;;;
1D38C;IDEOGRAPHIC TALLY DIGIT THREE;No;0;L;;;;3;N;;;;;
1D38D;IDEOGRAPHIC TALLY DIGIT FOUR;No;0;L;;;;4;N;;;;;
1D38E;IDEOGRAPHIC TALLY DIGIT FIVE;No;0;L;;;;5;N;;;;;
1D390;DOT AND DASH TALLY DIGIT ONE;No;0;L;;;;1;N;;;;;
1D391;DOT AND DASH TALLY DIGIT TWO;No;0;L;;;;2;N;;;;;
1D392;DOT AND DASH TALLY DIGIT THREE;No;0;L;;;;3;N;;;;;
1D393;DOT AND DASH TALLY DIGIT FOUR;No;0;L;;;;4;N;;;;;
1D394;DOT AND DASH TALLY DIGIT FIVE;No;0;L;;;;5;N;;;;;
1D395;DOT AND DASH TALLY DIGIT SIX;No;0;L;;;;6;N;;;;;
1D396;DOT AND DASH TALLY DIGIT SEVEN;No;0;L;;;;7;N;;;;;
1D397;DOT AND DASH TALLY DIGIT EIGHT;No;0;L;;;;8;N;;;;;
1D398;DOT AND DASH TALLY DIGIT NINE;No;0;L;;;;9;N;;;;;
1D399;DOT AND DASH TALLY DIGIT TEN;No;0;L;;;;10;N;;;;;
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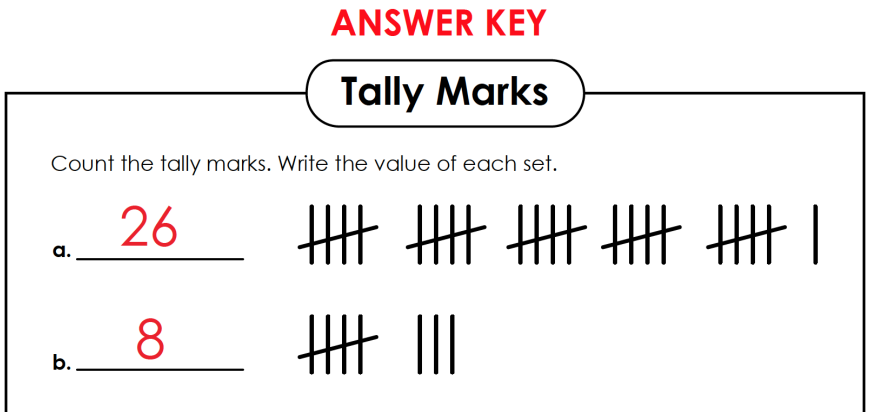
Emoji Representation

The characters in this proposal, particularly the ones for TALLY DIGIT, BOX TALLY DIGIT, and IDEOGRAPHIC TALLY DIGIT, are candidates for taking on *emoji style*, such as to use glyphs that appear hand-written, or even animated via the new OpenType 'SVG ' table.

References, Evidence & Attestation

This section will provide references, evidence, and attestation of the tally mark systems that are proposed in this document. Links to the references that correspond to the evidence are provided when available.

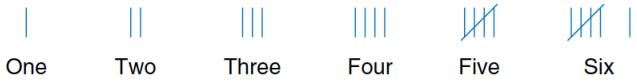
The following excerpt from a worksheet illustrates the use of TALLY DIGIT characters in educational materials:



Below is an excerpt from page 54 of *Saxon Math 6/5, Third Edition, Student Edition* (Saxon Publishers, 2004) that describes the same tally mark system using all five TALLY DIGIT characters:

Tally marks

Tally marks are used to keep track of a count. Each tally mark counts as one. Here we show the tallies for the numbers one through six.

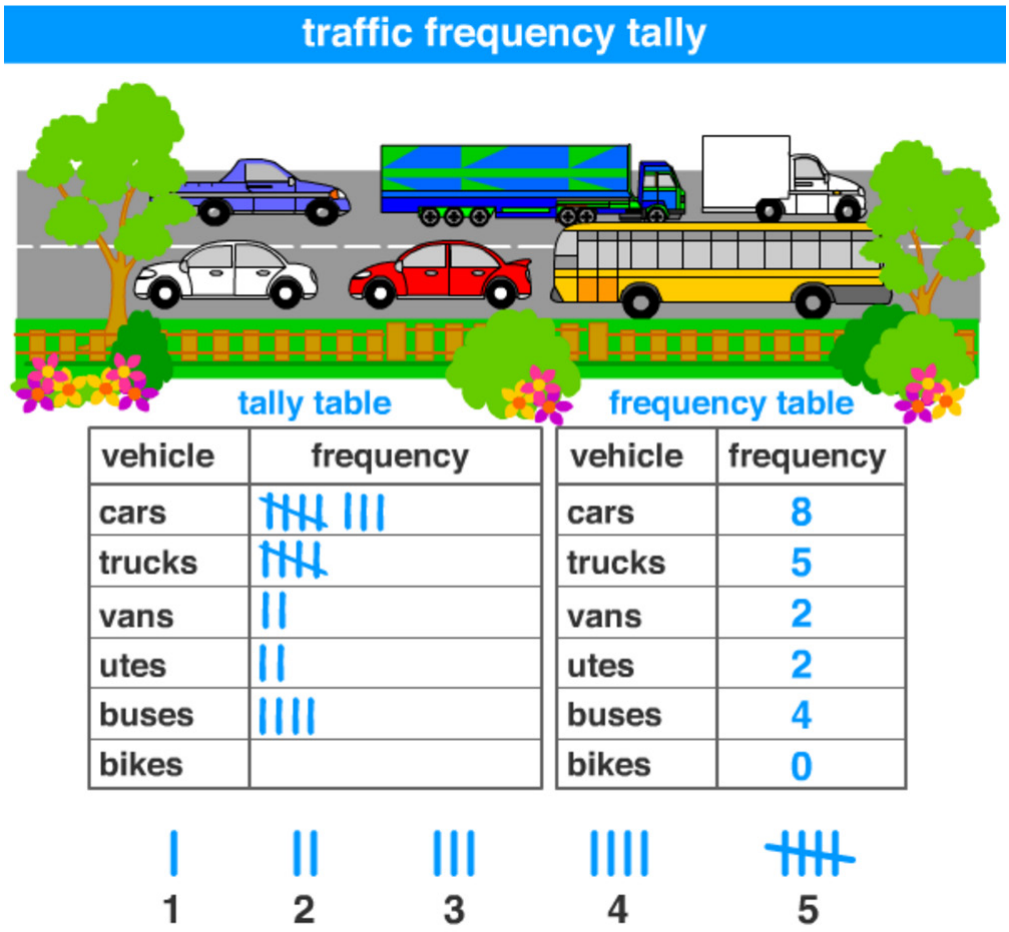


Notice that the tally mark for five is a diagonal mark crossing four vertical marks.

A Maths Dictionary for Kids website shows the two alternate forms of TALLY DIGIT FIVE (interestingly, the first example uses four instances of U+007C to which a *strikeThrough* style is applied to simulate the TALLY DIGIT FIVE character):

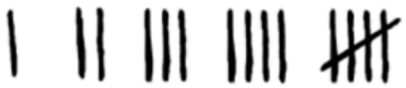
tally

- a record of an amount.
- using tally marks to record counting,
- count by 5's to get the total, for example,
- 𝍸 𝍸 ||| = 13.



An [excerpt](#) from *The Big Questions: Mathematics* by Tony Crilly (Quercus Publishing, 2011) refers to the TALLY DIGIT characters as *Barred-Gate*, and also shows the BOX TALLY DIGIT characters, described as a *South American* system:

with the act of counting. Tally sticks were still being used in England for the purposes of tax collection in the 13th century, and surprisingly this traditional system lasted until the 1820s, when paper records took over. Today, tally marks still serve a purpose when the aim is to record a continually rising quantity, such as the number of points scored in a game or data for statistical investigations. The familiar method involves counting to five to form an inscription resembling a barred gate, and it seems to have very early origins.

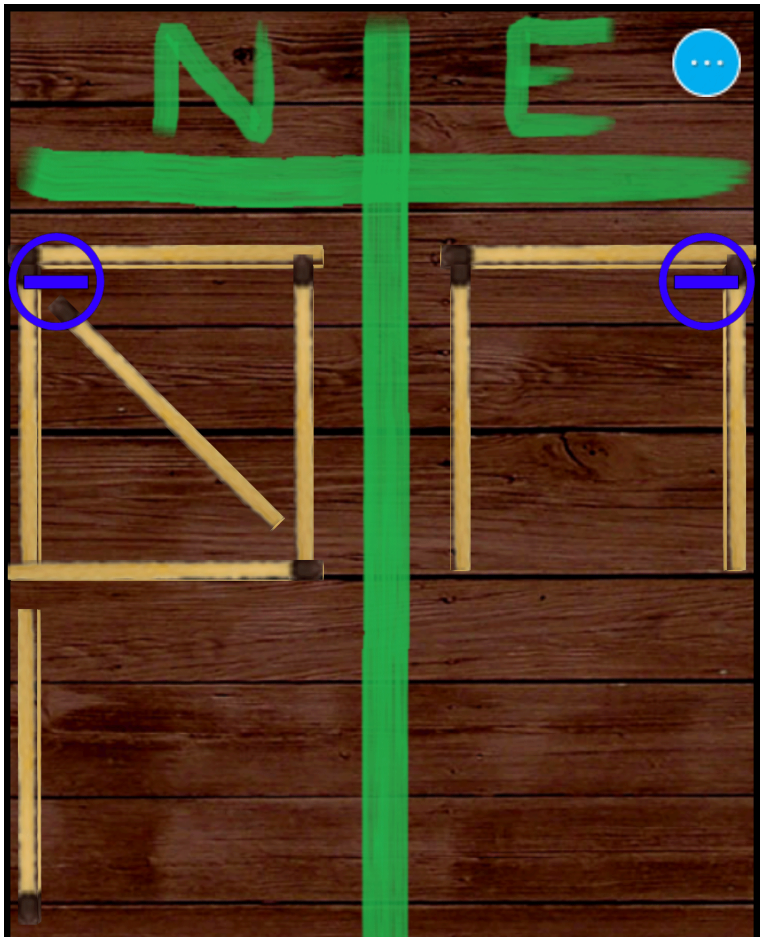


THE BARRED-GATE TALLY SYSTEM

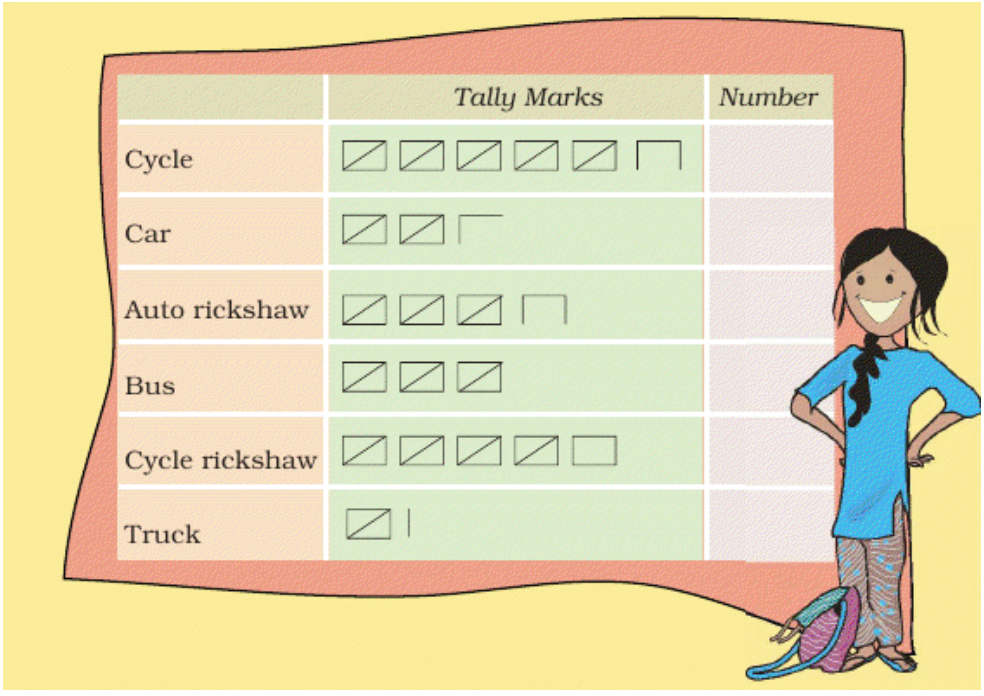
A SOUTH AMERICAN TALLY SCHEME

Tally methods are found all over the world. One scheme, from South America, also adopts a system of five lines, albeit producing a different shape.

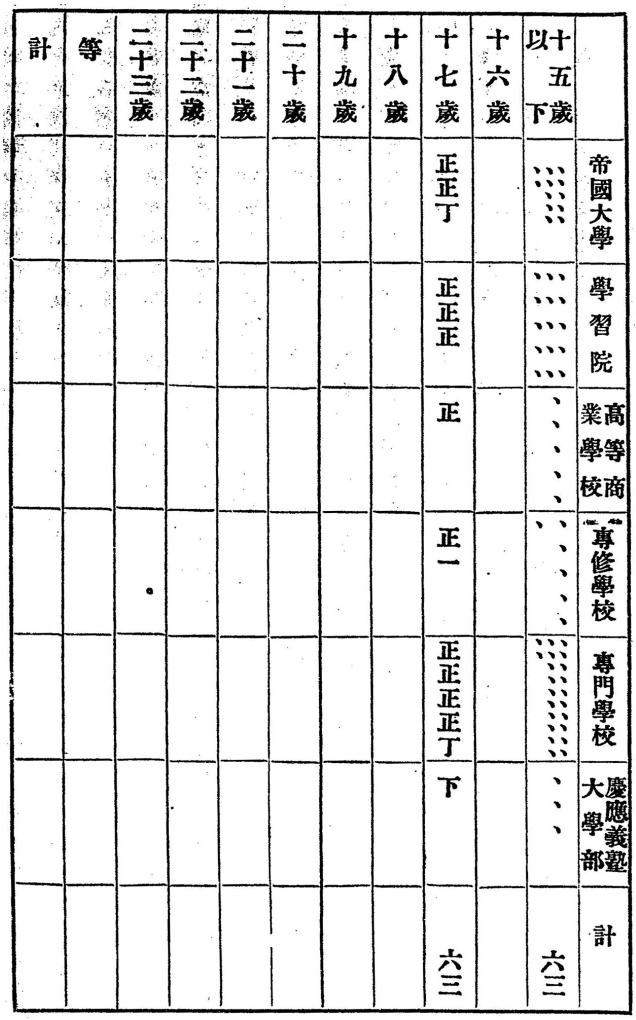
The Trucometro (Truco Score Track) Android app uses match sticks to form BOX TALLY DIGIT characters:



The explanatory text and graphics on this website suggests that the BOX TALLY DIGIT characters are also used in some parts of India:



One of the earliest examples of IDEOGRAPHIC TALLY DIGIT characters can be found on page 136 of 理論統計学：訂正 (*Riron Tōkeigaku: Teisei*) by 呉文聰 (*KURE Ayatoshi*), published in 1895 by 富山房 (*Fuzanbō*), an excerpt of which is shown below:

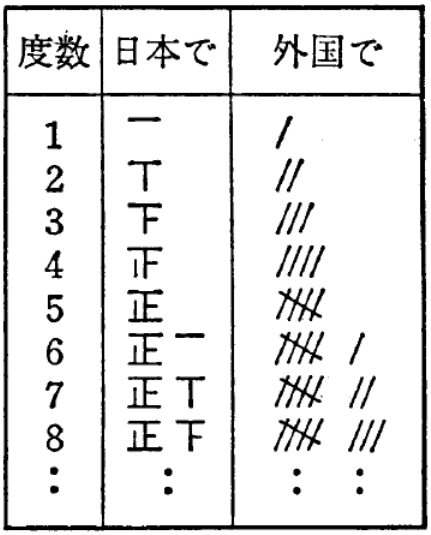


	十五歳以下	十六歳	十七歳	十八歳	十九歳	二十歳	二十一歳	二十二歳	二十三歳	等	計
帝國大學	〃〃〃		正正丁								
學習院	〃〃〃〃		正正正								
高等商業學校	、、、、		正								
專修學校	、、、、		正一								
專門學校	〃〃〃〃		正正正正丁								
慶應義塾大學部	、、、		下								
計	六三		六三								

In particular, note how the CJK Unified Ideographs 一 (U+4E00), 丁 (U+4E01), and 下 (U+4E0B) are used to represent IDEOGRAPHIC TALLY DIGIT ONE, IDEOGRAPHIC TALLY DIGIT TWO, and IDEOGRAPHIC TALLY DIGIT THREE, respectively.

The following modern excerpt from a Shizuoka Prefecture (静岡県) website describes the system for the IDEOGRAPHIC TALLY DIGIT characters:

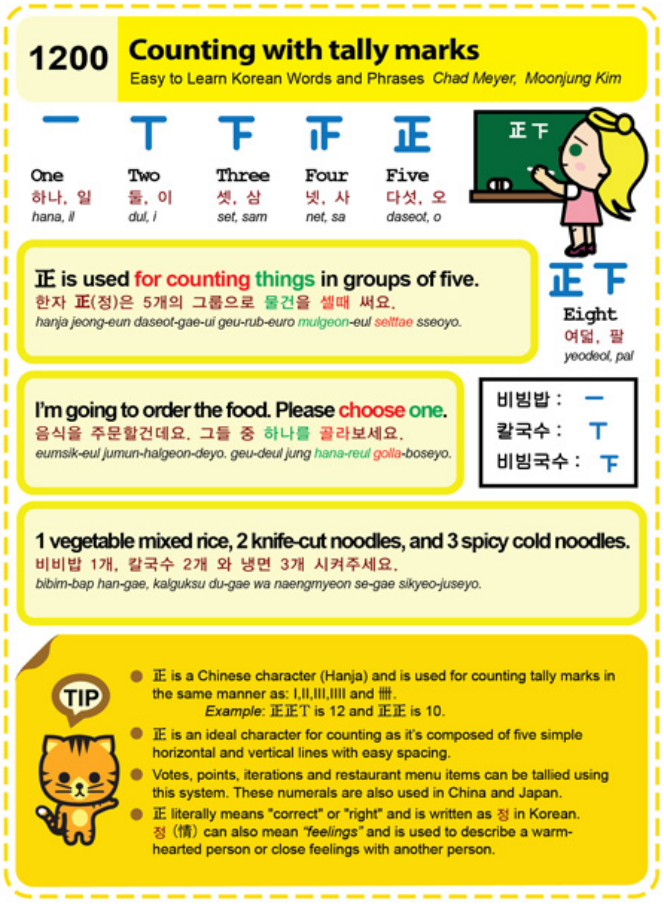
Figure 5.1 on page 105 of a paper in Japanese contrasts the IDEOGRAPHIC TALLY DIGIT characters with the TALLY DIGIT ones, showing an alternate form of the latter that uses slightly diagonal vertical strokes with a negative-sloping diagonal stroke:



度数	日本で	外国で
1	一	/
2	丅	//
3	下	///
4	丆	////
5	正	⫻
6	正一	⫻/
7	正丅	⫻//
8	正下	⫻///
⋮	⋮	⋮ ⋮

図 5.1　内外の画線法

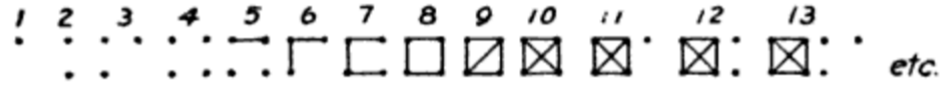
A modern English-language page that teaches how to count in Korean using the IDEOGRAPHIC TALLY DIGIT characters provides usage examples:



There was another tally mark system in use in Japan that instead used the five ideographs 一 (U+4E00), 二 (U+4E8C), 三 (U+4E09), 王 (U+738B), and 玉 (U+7389), which formed 玉 though not in the correct stroke sequence, to represent the numerals one through five.

An April 14, 1914 paper entitled *Methods of Determining the Value of Timber in the Farm Woodlot* by John Bentley, Jr. includes a footnote on page 148 that describes the DOT AND DASH TALLY DIGIT characters:

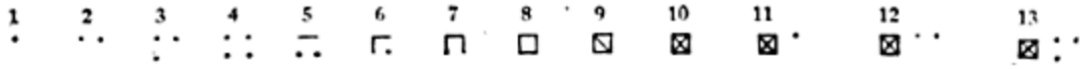
[5] The system of tallying used is called the "dot-and-dash" system. The following symbols show the values corresponding to them:



This method is economical of space and time, and, by its use, it is possible to record a large number of trees on a single sheet. Being arranged in blocks of ten, the tally is quickly and easily read.

An August 1916 paper entitled *Marketing of Woodlot Products* by J.W. Calland also describes the DOT AND DASH TALLY DIGIT characters on page 47:

The "dot and line" system of tallying used here is one which enables the estimator to record a large number of logs on a single sheet. The value of each symbol is shown by the following:



An April 1993 technical bulletin entitled *A Long-Term Study of an Oak Pine Forest Ecosystem: Techniques Manual for the Holt Research Forest* by Jack W. Witham et al. includes a brief description of the DOT AND DASH TALLY DIGIT characters on page 20:

8. A dot and dash tally system will be used for counts: 1–4 are recorded by dots and 5–10 by dashes, e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

An undated but clearly modern paper entitled *Conducting a Simple Timber Inventory* by Jason G. Henning and David C. Mercker shows the DOT AND DASH TALLY DIGIT characters in Figure 3 on page 10:

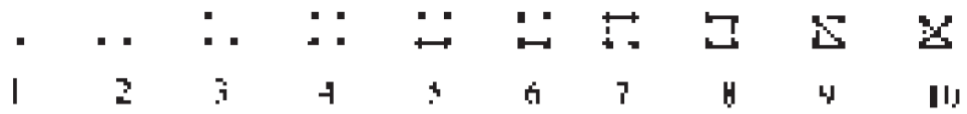
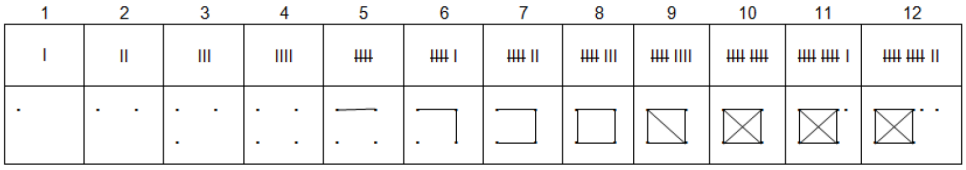


Figure 3. The dot dash tally system. For each "in" tree on your plot, you should add a dot or dash to the appropriate square on your tally sheet.

Page 5 of a PDF entitled *Tools used in Forest Surveys* shows the DOT AND DASH TALLY DIGIT characters:

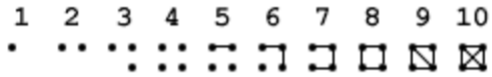
Tallying Methods

There are two systems of recording a tally (or tallying) and these are known as the mill tally and the dot-dash tally method. Where trees are to be tallied (counted by class/size, etc), the standard system is to use the dot-dash method rather than the mill tally stroke. This allows for a greater number of entries per unit of tally space. This dot-dash tally method is very beneficial in times of high counts required such as a regeneration survey, or a down, woody debris survey. The diagram below reveals the mill tally (top), with the dot-dash tally below; with each tally system showing its numeral value on top. Mistakes are usually indicated by circling the tally miscounted, as seen in the diagram below the tally system illustration. Errors are never erased.

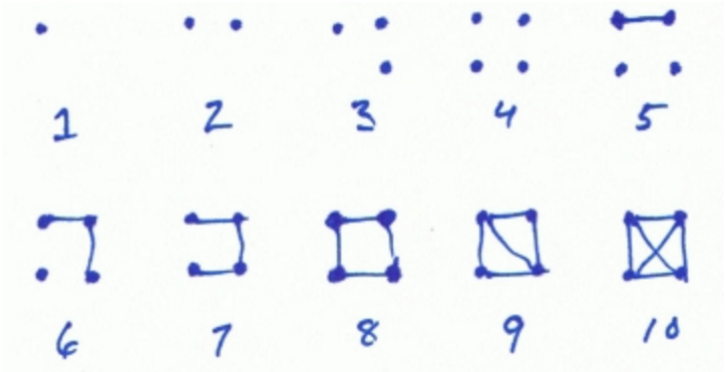


The circled dot represents an error made – this reads as eleven.

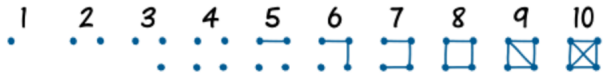
A University of Minnesota Extension website article from 2002 entitled *Sampling and measuring timber in the private woodland* by Charles R. Blinn and Thomas E. Burk describes the DOT AND DASH TALLY DIGIT characters in a way that matches this proposal:

> The dot-dash tally method is a convenient way to record timber cruise data. Each dot or dash represents one tally tree with a specified DBH and merchantable height according to the following convention:
>
> 
>
>
> As an example, a dot indicating one sample tree would be placed in the upper left-hand comer of Table 1 for a tree with a DBH of five inches and one eight-foot bolt of merchantable height. Separate tally forms are frequently used for each species and sample plot.

This 2008 article by John D. Cook entitled *Tukey tallying* falsely claims that John Tukey (born on June 16, 1915) created the DOT AND DASH TALLY DIGIT characters, though he may have simply popularized their use (note that the forms of the characters match those of the representative glyphs in this proposal):



Another website makes a similar claim about John Tukey inventing the DOT AND DASH TALLY DIGIT characters, and the forms of the characters match those of the representative glyphs in this proposal:

> This is a method similar to Tally Marks, but it counts to 10 in one little diagram:
>
> 
>
>
> So, you start with one dot (for 1), then add dots as corners of a square until 4, then join the dots with lines until 8, then draw a diagonal each to make 9 and 10.

This PDF entitled *Conducting a Woodland Inventory* includes forms on pp 15 and 16 that include a legend for the DOT AND DASH TALLY DIGIT characters, which use forms that match those of the representative glyphs in this proposal:

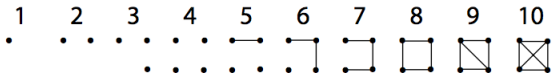
Table 2-4. Sample tally form for recording number of pulpwood trees by DBH and number of eight-foot bolts per tree.

Tract location _____ Tract name _____

Date _____ Species _____ Plot number _____

DBH	Number of eight-foot bolts							
(inches)	1	2	3	4	5	6	7	Totals
5								
6								
7								
8								
9								
10								
Totals								

The dot-dash tally method is a convenient way to record timber cruise data. Each dot or dash represents one tally tree with a specified DBH and merchantable height according to the following convention:



Conclusion

Although tally marks are often written by hand, which is true of tens of thousands of other characters already in Unicode, the printed evidence presented in this proposal demonstrates their use as genuine characters in running text or in tables, and with properties that indicate their numeric values. This strongly suggests a need to represent them as characters in “plain text” environments. All four tally mark systems that are in this proposal are unique, and form well-established systems of counting or keeping score.

Although there appears to be no previous formal proposal to encode tally marks, there was a lengthy discussion on the Unicode mailing list almost nine years ago, back in February and March of 2007, which began with a post from William J. Poser. No particular conclusion was reached.

That is all.

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
Please fill all the sections A, B and C below.
Please read Principles and Procedures Document (P & P) from http://std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html **for guidelines and details before filling this form.**
Please ensure you are using the latest Form from http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html **.**
See also http://std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html **for latest *Roadmaps*.**

A. Administrative

1. **Title:** ***Tally Marks***
2. Requester's name: *Dr. Ken Lunde & Daisuke MIURA*
3. Requester type (Member body/Liaison/Individual contribution): *Individual*
4. Submission date: *2015-11-30*
5. Requester's reference (if applicable):
6. Choose one of the following:
   This is a complete proposal: *X*
   (or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters): *X*
      Proposed name of script: *Tally Marks (in "Notational systems" zone)*
   b. The proposal is for addition of character(s) to an existing block:
      Name of the existing block:
2. Number of characters in proposal: *25*
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary *X* B.1-Specialized (small collection) B.2-Specialized (large collection)
   C-Major extinct D-Attested extinct E-Minor extinct
   F-Archaic Hieroglyphic or Ideographic G-Obscure or questionable usage symbols
4. Is a repertoire including character names provided? *Yes*
   a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? *Yes*
   b. Are the character shapes attached in a legible form suitable for review? *Yes*
5. Fonts related:
   a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?
   Dr. Ken Lunde, Adobe Systems Incorporated
   b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):
   Adobe Systems Incorporated, 345 Park Avenue, San Jose, CA 95110 USA
6. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? *Yes*
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? *Yes*
7. Special encoding issues:
   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)? *No*

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at http://www.unicode.org for such information on other scripts. Also see Unicode Character Database (http://www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

[1] Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? *No*
   If YES explain
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? *Yes*
   If YES, with whom? *See text*
   If YES, available relevant documents: *See text*
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? *Yes*
   Reference: *See text*
4. The context of use for the proposed characters (type of use; common or rare) *common*
   Reference: *See text*
5. Are the proposed characters in current use by the user community? *Yes*
   If YES, where? Reference: *See text*
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? *No*
   If YES, is a rationale provided?
   If YES, reference:
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? *Yes*
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? *No*
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? *No*
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? *Yes*
    If YES, is a rationale for its inclusion provided? *Yes*
    If YES, reference: *See text*
11. Does the proposal include use of combining characters and/or use of composite sequences? *No*
    If YES, is a rationale for such use provided?
    If YES, reference:
    Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?
    If YES, reference:
12. Does the proposal contain characters with any special properties such as control function or similar semantics? *No*
    If YES, describe in detail (include attachment if necessary)
13. Does the proposal contain any Ideographic compatibility characters? *No*
    If YES, are the equivalent corresponding unified ideographic characters identified?
    If YES, reference: