

Data Keying Method

TECHNICAL FIELD

The present invention relates to a method and system for entry of
5 complex language symbols into computer equipment using a conventional
telephone keypad.

BACKGROUND OF THE INVENTION

The invention will be described in relation to its application to the
10 Cambodian or Khmer language but it will be appreciated it may be applied to other
languages having a similar structure and representation.

Cellular telephones have become a common and important
communication device for the people in Cambodia. Thus it is desirable to
provide an efficient way of entering Khmer language characters into the cellular
15 telephone or other similar computer equipment using the limited keypad found in
the cellular telephone.

The alphanumeric telephone keypad matrix is well known in the art. The
universally recognized standard for the push button telephone keypad is a 4 by
3 matrix having four rows and three columns of buttons, or keys. Each key
20 (except the "1" *, # and "0" keys) is preassigned with a single digit or special
symbol as a primary assignment, and with three alphabetic characters as a
secondary functional assignment.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a simple technique for entering symbols representing a language into a telephone keypad.

According to one aspect, the present invention provides a method for
5 entering one of a plurality of symbols of a language into an electronic device using a keypad having a plurality of keys, the method comprising the steps of;
providing a first mode for entry, using said keys, of symbols representing stand alone syllables in the language;
providing a second mode for entry, using said keys, of symbols
10 representing consonant based syllables in said language; and
selecting said first or second mode of entry using at least one of said keys.

Preferably, each mode of entry provides one or more language symbol tables having a plurality of language symbols and each symbol having an
15 associated key indicator representative of one of said keys such that symbols within the table may be selected by depressing a key represented by the associated key indicator.

For preference, said language symbol tables are selectively displayed on a display of said electronic device. Preferably, said tables are selected for
20 display using one or more of said keys.

Preferably, said keypad is a conventional telephone keypad and said keys represented by an associated key indicator are the numeric keys 0-9, the key indicators being the symbols 0-9.

DESCRIPTION OF PREFERRED EMBODIMENT

This embodiment of the invention relates to the Khmer language but as noted above the invention is equally applicable to other languages having a similar structure and representation.

5 As described above there are preferably two modes of input of symbols into the electronic device, in this example, a cellular phone:

- 1) Individual Khmer symbols with a stand alone syllable and
- 2) Consonant based syllables.

Khmer characters of type 1 can be represented by a single Unicode
10 characters. While Khmer syllables of type 2 may consist of multiple Unicode characters. Unicode is a code Standard developed by Unicode, Inc. for representation of various language symbols and characters. Details of the Standard can be found at <http://www.unicode.org>:

Khmer characters of 1st mode of input consist of:

- 15
- 1) Independent vowels, Unicode \u17A3 - \u17B3
 - 2) Various signs, Unicode \u17D4 - \u17DA
 - 3) Currency symbol, Unicode \u17DB
 - 4) Digits, Unicode \u17E0 - \u17E9

Khmer Characters of 2nd mode of input consist of:

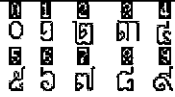
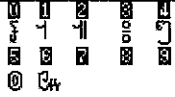
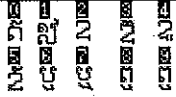
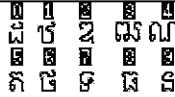
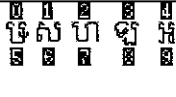
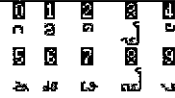
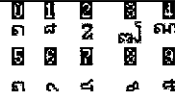
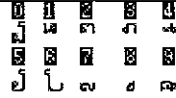
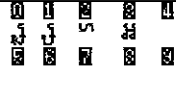
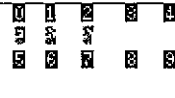
- 20
- 1) Consonants, Unicode \u1780 - \u17A2
 - 2) COENG subscripts of Consonants, prefixed with unicode
\u17D2
 - 3) COENG subscripts of Independent vowels, prefixed with unicode
\u17D2

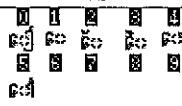
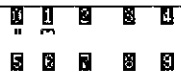
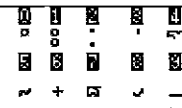
- | | | |
|----|-------------------------|--|
| 4) | Dependent vowels signs | Unicode \u17B6 –
\u17C5 |
| 5) | Dependent Various signs | Unicode \u17C6 - \u17D1,
excluding \u17C9 and
\u17CA |
| 6) | Consonant shifters | Unicode \u17C9 and
\u17CA |

In each mode of input, the numeric keys '0' – '9' choose the Khmer character in the current table to be input. Given, but not restricted to, a conventional telephone keypad consisting of minimal 12 keys, the STAR key, or other keys, may be use to toggle the mode of input. The HASH key, or other keys, may be used to cycle the table of symbol to be input.

That is, in use, the tables for each selected mode are displayed on the device screen with one of the keys, usually the HASH key or an arrow/directional key used to cycle through and display the available tables. Once the correct table is found an appropriate symbol is selected using the numeric keys and the symbol input automatically to the device or using a further key such as the enter key or green key.

An example implementation is as follows:

Table for 1 st mode input			
 Table 1. Digit 0 – 9	 Table 2. Currency Symbol and Various Signs	 Table 3. Independent Vowels 1	 Table 4. Independent Vowels 2
Table for 2 nd mode input			
 Table 5. Consonant 1	 Table 6. Consonant 2	 Table 7. Consonant 3	 Table 8. Consonant 4
 Table 9. Consonant COENG Subscript 1	 Table 10. Consonant COENG Subscript 2	 Table 11. Consonant COENG Subscript 3	 Table 12. Consonant COENG Subscript 4
 Table 13. Independent Vowel COENG Subscript	 Table 14. Independent Vowel COENG Subscript		

1	2		
 Table 15. Dependent Vowels 1	 Table 16. Dependent Vowels 2		
 Table 17. Consonant Shifters	 Table 18. Dependent Various Signs		

Input for 1st mode.

This mode of input is straight forward. Pressing the digit keys '0' – '9'

- 5 inputs the Khmer character in question for the currently selected table

Input for 2nd mode.

For a consonant based syllable, there can be only

- a) One vowel.
- b) One subscript
- 10 c) One Consonant Shifter
- d) One Dependent Various Signs

Thus, for example if a vowel is already attached to the consonant in question, table 9 – 12 need not be cycled through for input selection. For case b), if the COENG subscript attached to the consonant in question is \u179A
15 (Khmer letter RO), another appropriate subscript may be added to the syllable.

There are cases where the Khmer characters be represented by another glyph due to the combinations of input. The software provided in the cellular

phone or computer equipment displays the appropriate table for a valid input of language symbols.

The modern cellular handset today has many more keys than the conventional telephone keypad. Directional keys are commonly provided and
5 these may be used to speed up the table selection.

For instance, the Khmer characters can be grouped into the following categories:

- | | | |
|-------|-------------------------|----------|
| 1) | Consonants, | 4 Tables |
| 2) | COENG subscript, | 6 Tables |
| 10 3) | Dependent vowels signs | 2 Tables |
| 4) | Consonant shifters | 1 Table |
| 5) | Dependent Various signs | 1 Table |

The UP / DOWN keys may be used to cycle the tables in each category while the HASH key may be used to cycle through the input categories.

15 It will be appreciated that further embodiments and exemplifications of the present invention are possible without departing from the spirit or scope of the invention described.

CLAIMS:

1. A method for entering one of a plurality of symbols of a language into an electronic device using a keypad having a plurality of keys, the method
5 comprising the steps of;
 providing a first mode for entry, using said keys, of symbols representing stand alone syllables in the language;
 providing a second mode for entry, using said keys, of symbols representing consonant based syllables in said language; and
10 selecting said first or second mode of entry using at least one of said keys.
2. A method according to claim 1 wherein each mode of entry provides one or more language symbol tables having a plurality of language symbols and
15 each symbol having an associated key indicator representative of one of said keys such that symbols within the table may be selected by depressing a key represented by the associated key indicator.
3. A method according to claim 2 wherein said language symbol tables are
20 selectively displayed on a display of said electronic device.
4. A method according to claim 3 wherein said tables are selected for display using one or more of said keys.

5. A method according to any one of claim 2 to 4 wherein said keypad is a conventional telephone keypad and said keys represented by an associated key indicator are the numeric keys 0-9, the key indicators being the symbols 0-9.

5 6. A method according to any one of the preceding claims wherein the language is Khmer and wherein the tables used in the first mode include elements representing

a) independent vowels

b) signs

10 c) currency symbol

d) numeric digits

7. A method according to claim 6 wherein the tables used in the second mode include elements representing:

15 a) consonants

b) COENG subscripts of consonants

c) COENG subscripts of independent vowels

d) dependent vowel signs

e) dependent signs

20 f) consonant shifters

8. An electronic device comprising a keypad having a plurality of keys for entering one of a plurality of symbols of a language, the device further comprising;

means for providing a first mode for entry, using said keys, of symbols representing stand alone syllables in the language;

means for providing a second mode for entry, using said keys, of symbols representing consonant based syllables in said language; and

5 means for selecting said first or second mode of entry using at least one of said keys.