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**TAMIL (தமிழ்) CHARACTER CODE FOR
INFORMATION INTERCHANGE**

SRI LANKA STANDARDS INSTITUTION

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INTERCHANGE

SLS 1326 : 2008

Gr. 14

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FOREWORD

This standard was approved by the Sectoral Committee on Information Technology and was authorised for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2008-xx-xx.

This **SLS 1326** standard provides specifications for the code sequences and keyboard sequences. It also provides a keyboard layout, which in turn is based on the *Rengenathan* typewriter keyboard.

Symbols used in the Tamil language are coded using 128 cells in the half page plane reserved for Tamil characters in **ISO/IEC 10646: 2003** and **Unicode 5.1**

An effort has been made to preserve the alphabetical order of the Tamil language to a great extent. However, specific collation algorithms (not specified in this standard) are required to correctly collate text encoded in this code.

In the preparation of this standard the valuable assistance obtained from the following publications is gratefully acknowledged:

ISO/IEC 10646: 2003 Information Technology – Universal Multiple Octet Coded Character Set.

The Unicode Consortium: **The Unicode Standard Version 5.1, 2008.**

The assistance provided by the Information and Communication Technology Agency of Sri Lanka (ICTA) and the University of Moratuwa in the preparation of this standard is also gratefully acknowledged.

1 SCOPE

This standard provides a coding of Tamil for use in computer and communication media. This standard character code encodes the characters of the Tamil language within 128 code positions of the 16-bit Basic Multilingual Plane (BMP) of **ISO/IEC 10646: 2003**.

In addition to storage, retrieval and machine to machine communication in Tamil, it also includes provisions to co-exist with other languages as specified in **ISO/IEC 10646: 2003**. In particular, English and Sinhala texts may be intermixed with Tamil.

This code set is able to represent contemporary and historical Tamil writings.

This standard defines codes for the vowels, consonants, āytam, vowel modifiers, numerals, and symbols in the Tamil language. Some formations of the language are not represented by individual codes, but are generally constructed as a sequence of one or more consonants followed by a vowel modifier which forms a syllable.

In designing this code set, efforts were taken to retain the ability to incorporate future developments in the language. It does not include editorial characters, subscribes, superscribes and punctuation, but in the keyboard layout, keys are provided for European numerals (Arabic numerals), symbols and punctuation.

2 REFERENCES

- ISO/IEC 10646: 2003** The Universal Character Set (UCS) is defined by the ISO/IEC 10646: 2003, International Standard as a character set on which many encodings are based.
- ISO 15919:2001** Information and Documentation - Transliteration of Devanagari and related Indic scripts into Latin characters.

3 DEFINITIONS

For the purpose of this standard, the following definitions shall apply:

- 3.1 alphabet:** A writing system in which both consonants and vowels are indicated. The term “alphabet” is derived from the first two letters of the Greek script: alpha, beta.
- 3.2 character:** The smallest component of written language that has semantic value; refers to the abstract meaning and/or shape, rather than a specific shape.
- 3.3 code point:** It is a numeral value assigned for characters in a standard encoding.
- 3.4 collation:** A process that orders units of textual information. Collation is usually specific to a particular language and is also known as alphabetizing or alphabetic sorting.

3.5 consonant: Pure-consonant plus an inherent vowel /a/. It represents a speech sound in which the breath is at least partly obstructed and which may combine with a vowel to form a syllable.

3.6 european digits: Forms of decimal digits first used in Europe and now used worldwide. Historically, these digits were derived from the Arabic digits; they are sometimes called “Arabic numerals,” but this nomenclature leads to confusion with the real Arabic digits.

3.7 letter: A symbol representing a simple sound used in speech. A base element of an alphabet.

3.8 pure-consonant: A consonant without an associated vowel, i.e., with a pulli.

3.9 script: A collection of letters and other written signs used to represent textual information in one or more writing systems.

3.10 syllable: An element representing a consonant and a vowel, or in some instances more than one consonant and a vowel.

3.11 vowel: A letter representing a speech sound made with the vibration of the vocal cords, but without audible obstruction.

4 DESCRIPTION OF THE TAMIL (தமிழ்) LANGUAGE

4.1 Introduction

Tamil (தமிழ்) is a *Dravidian* language and it has a literary tradition of over two thousand years. *Tolkāppiyam* by *Tolkāppiyar* is the earliest grammatical treatise now extant in Tamil. Although the exact date is still unascertained, there are strong arguments that the Tamil script first appeared in the early centuries of the Common Era. Tamil was declared as a classical language and was the first Indic language to have been accorded such status.

The Tamil writing system evolved from an ancient South-Indian branch of the *Brahmi* script, but was also influenced by the *Grantha* script.

The Tamil script differs from other Brahmi-derived scripts in a number of ways. Tamil language script does not have signs for voiceless aspirated (/kh/), voiced (/g/), and voiced aspirated stops (/gh/), which explains the relatively small number of signs in the Tamil script compared to other Indic scripts. To write some of these sounds, some signs have grammatically supported multiple sound values: க stands for /ka/, /ha/ and /ga/, ச stands for /ca/, /ja/ and /sa/, ட for /pa/ and /ba/, and so on. This multiple sound values are due to phonology and variations are not reflected in the script.

Further, unlike other Indic scripts, the pure Tamil script does not have combined letters. However, the combined letter க்ஷ (ksh) has been borrowed from Sanskrit through Grantha script in order to write Sanskrit words and other borrowed words.

The contemporary Tamil script contains following elements in its systems, as written or printed (Sub total 326).

உயிர் எழுத்துக்கள் (uyir eluttukkal) – vowel letters	- 12
தமிழ் மெய் எழுத்துக்கள் (mey eluttukkal) – Tamil pure-consonant letters	- 18
கிரந்த மெய் எழுத்துக்கள் (Grantha mey eluttukkal) –	
Grantha pure-consonant letters	- 6
தமிழ் உயிர்-மெய் எழுத்துக்கள் (Tamil uyir-mey eluttukkal) –	
Tamil vowel-consonant syllables	- 216
கிரந்த உயிர்-மெய் எழுத்துக்கள் (Grantha uyir-mey eluttukkal) –	
Grantha vowel-consonant syllables	- 72
ஆய்த எழுத்து (āyta eluttu) – A special letter – ஃ (H)	- 1
கூட்டு எழுத்து (kottu eluttu) – Conjunct syllable – ஸ்ரீ (Sri)	- 1

<Tamil Alphabet>::= < Vowels > < Pure-Consonants > < Vowel-Consonants >
< āytam > < Combined syllable >

Moreover, since Tamil is one of oldest languages it has its own numeral representations and symbols in the writing system.

In naming the letters and syllables in Tamil, the grammatical name of each short letter and syllable is pronounced with the addition of கரம் (karam), e.g. அ-கரம் (a-karam), ம-கரம் (ma-karam), ட்-கரம் (t-karam). In the case of longer letters and syllables, the காரம் (kaaram) is added, e.g. ஆ-காரம் (aa-kaaram), மா-காரம் (maa-kaaram).

NOTES:

1 Although Tamil script system is generally called an alphabet it is in fact an abugida system. An abugida has the segmental writing system in which each vowel-consonant letter represents a pure-consonant accompanied by a specific vowel; the vowels are indicated by modification of the consonant sign, either by means of diacritics or through a change in the form of the consonant.

2 A pure-consonant plus the vowel /a/ is referred to as a consonant, e.g. க (ka), ச (ca), etc.

3 Grantha letters and Grantha syllables are used exclusively for writing words borrowed from Sanskrit, other Indic languages and other languages such as English, Arabic, etc.

4 There are no capital letters in Tamil as in English.

5 By the old school the name of the letter and syllable were pronounced with the addition of ன (na), with the appropriate euphonic syllable inserted, e.g. க-ன (ka-na), கா-வன (kaa-vana), கி-ன (ki-na), கீ-யன (kii-yana). The pure-consonants க் (k), ப் (p), etc were called as இக்கன (kkana), இப்பன (ppana), etc or இக் (ik), இப் (ip), etc.

4.2 Vowels

In Tamil grammar, a vowel letter is called உயிர் எழுத்து (uyir eluttu) – *life-letter*. The twelve vowels, unlike pure-consonants, are generally used only at the beginning of words, e.g. அம்மா (amma), ஆதாயம் (aakaayam), இலை (ilai), ஒளவை (auvai).

In contemporary context, when writing borrowed words from other languages, a vowel may occur in the middle of a word; e.g. குர்ஆன்.

The twelve Tamil vowels are as follows:

TABLE 1 - Tamil Vowels

Vowels	Unicode Notation	ISO 15919
அ	A	A
ஆ	AA	Ā
இ	I	I
ஈ	II	Ī
உ	U	U
ஊ	UU	Ū
எ	E	E
ஏ	EE	Ē
ஐ	AI	Ai
ஒ	O	O
ஔ	OO	Ō
ஓள	AU	Au

NOTES:

1 The vowels ஐ (ai) and ஓள (au) are diphthongs.

2 At present, sometimes the ஐ is written as அய் and ஓள is written as அவ்; which are also grammatically correct.

4.3 Pure-Consonants

Tamil possesses twenty four pure-consonants (eighteen Tamil and six Grantham) as shown below. In grammar the pure-consonant letter is called மெய் எழுத்து (mey eluttu) – *body-letter*, to which a vowel gives ‘life’.

The Tamil pure-consonants are classified into three categories: வல்லினம் (vallinam) - hard consonants, மெல்லினம் (mellinam) - soft consonants, including all nasals, and இடையினம் (idayinam) - medium consonants.

TABLE 2 - Tamil Pure-Consonants

Tamil Pure-Consonants	Unicode Notation	ISO 15919	Category
க்	K	K	Vallinam
ங்	NG	ṅ	Mellinam
ச்	C	C	Vallinam
ஞ்	NY	ṇ	Mellinam
ட்	TT	ṭ	Vallinam
ண்	NN	ṇ	Mellinam
த்	T	T	Vallinam
ந்	N	N	Mellinam
ப்	P	P	Vallinam
ம்	M	M	Mellinam
ய்	Y	Y	Idaiyinam
ர்	R	R	Idaiyinam
ல்	L	L	Idaiyinam
வ்	V	V	Idaiyinam
ழ்	LLL	z, ɻ, ɹ	Idaiyinam
ள்	LL	ɻ	Idaiyinam
ற்	RR	ɽ, R	Vallinam
ண்	NNN	ṇ, N	Mellinam

TABLE 3 - Grantha Pure-Consonants

Grantham Pure-Consonants	Unicode Notation	ISO 15919
ஜ்	J	J
ஷ்	SS	s
ஸ்	S	S
ஹ்	H	H
க்ஷ்	KSH	kʂ
ஸ்	SH	ʂ

NOTES:

- 1 The pure-consonants have a *புள்ளி* (pulli), which is a circle or dot at the top.
- 2 There is no separate Pure-Consonant to represent the 'F' sound, which is alien to the Tamil language. The combined form ஃபி (f) is widely used in Tamil to represent the 'F' sound.

4.4 Vowel-Consonant Syllables

When a vowel modifies a pure-consonant the pulli is omitted and a vowel-consonant syllable is formed. The shape of the syllable depends on the vowel which modifies the pure-consonant.

18 Tamil pure-consonants x 12 Vowels	= 216 Tamil vowel-consonant syllables
6 Grantha pure-consonants x 12 Vowels	= 72 Grantha vowel-consonant syllables
Sub Total (216 + 72)	= 288 Syllables

The vowel is indicated by a modification of the consonant sign, either (a) by means of addition of a vowel sign or (b) through a change in the shape of the consonant.

a) The vowel signs are graphical symbols used in conjunction with consonants in the *separated* form or *attached* form.

<Vowel Signs> :: = <Separated><Attached>

The vowel signs of ஆ, எ, ஏ, ஐ, ஒ, ஓ and ஔ are separate from the consonant. These graphical symbols may be positioned *before*, *after* or *before and after* the consonant, as follows:

Before - ெ, ே, ை (e.g. கெ, பே, மை)

After - ா (e.g. ணா)

Before and after - ொ, ோ, ௌ (e.g. வொ, தோ, கௌ)

The vowel signs of இ, and ஈ are attached to the consonant.

e.g. கி, கீ, மி, மீ, யி, யீ, டி, டீ, etc.

b) When உ and ஊ vowels modify the pure-consonants, the vowels are indicated through a change in the shape of the consonant. e.g. சு, சூ, மு, மூ, ஜு, ஜூ, etc.

The change in the shape of a few consonants shows variations.

உ - 4 types

ங, சு, வு, யு, பு

று, நு, லு, ளு, னு, து, ணு

ரு, மூ. ளு, கு, மு, டு

ஸு, ஷு, ஜு, ஹு, ஸுஷு, ஸு

ஊ - 5 types

நூ, சூ, வூ, யூ, பூ

ரூ, மூ. ளூ, மு, டூ

றூ, நூ, லூ, ளூ, னூ, தூ, ணூ

சூ

ஸூ, ஷூ, ஜூ, ஹூ, ஸுஷூ, ஸூ

In this standard the glyphs given in the Table 4 are used to represent each *vowel modifier*.

TABLE 4 - Vowel Modifiers

Vowel	Vowel Modifier
அ	puḷḷi is removed
ஆ	஁
இ	ி
ஈ	ீ
உ	ு
ஊ	ூ
எ	ெ
ஏ	ே
ஐ	ை
ஓ	ொ
ஔ	ோ
ஓள	ௌ

NOTES:

1. Even ி, ி, and ி are the logical signs; these are written as ி, ி, and ி in the contemporary use.

2. As regards the உ and ஊ vowel signs written in Grantha script, originally the vowel signs did not touch the consonant's body. When it is written in Tamil, it is usually presented in connected forms, e.g. ஸு, ஸு, etc.

3. Vowel modifiers are generally named as follows:

஁ - அரவு (aravu)

ி and ி - விசிறி (visiri)

ெ - ஒற்றைக் கொம்பு (otraik kombu)

ே - இரட்டைக் கொம்பு (irattai kombu)

ை - சங்கிலிக் கொம்பு (sangilik kombu)

4. In 1978 the Tamil Nadu Government introduced some changes in Tamil syllables. Vowel signs change for some consonants which get modified with ஆ, ஐ, ஓ, and ஔ (See Appendix A).

4.5 Special Character - āytam (ஆய்தம்)

The special letter āytam ஃ is not used by itself. It is pronounced like English 'h' or Grantham 'ஹ'. This is the thirteenth letter of the Tamil alphabet occurring only after a short initial letter and before a hard consonant and not at the beginning or end of words. It is sometime pronounced as a vowel and sometimes a pure-consonant.

e.g. எஃகு, கஃசு, கஃடு, கஃது, கஃறு, அஃது, இஃது, உஃது, etc.

However in contemporary use, to represent 'f' and 'ph' sounds in Tamil, the ஃ combined form has been used. In these situations it may occur at the beginning of the words e.g. ஃபக்ஸ் (Fax). Here the letter "PA" is modified as "FA" when āytam precedes the "PA". Here it functions as a symbol to indicate that "PA" sound has been modified.

ஃபக்ஸ் (Fax), ஃபிலடெல்ஃபியா (Philadelphia), ஃபைனான்ஸ் (Finance)
ஃபோன் (Phone)

NOTES: The āytam is called VISARGA in the Unicode standard.

4.6 Conjunct Grantham syllable - ஸ்ரீ/ ஸ்ரீ

ஸ்ரீ/ ஸ்ரீ conjunct syllable is borrowed from Sanskrit. The theoretical formation is shown below.

ஸ் + ரீ = ஸ்ரீ

e.g. ஸ்ரீராம், ஸ்ரீதேவி, ஜெயஸ்ரீ, சிவஸ்ரீ, பிரம்மஸ்ரீ

ஸ்ரீ and ஸ்ரீ are two different shapes for this syllable and both have been used for more than one hundred years.

ஸ்ரீ/ஸ்ரீ may also be treated as being formed by ஸ் + ரீ.

4.7 Tamil Numerals

Tamil has a distinct set of digits. These digit representations were commonly used in the early twentieth century but these are not frequently used now. Presently the European digits have replaced the Tamil numerals in usage. Most of the Tamil numerals cannot be distinguished from some of the Tamil vowels, consonants, syllables and other symbols.

TABLE 5 - Tamil Digits

European Digits	Tamil Digits	Lack in distinction with
0	௦	European Digit 0
1	௧	Tamil consonant க
2	௨	Tamil vowel உ
3	௩	
4	௪	
5	௫	Tamil syllable ழ
6	௬	
7	௭	Tamil vowel எ
8	௮	Tamil vowel அ
9	௯	
10	௩	Tamil syllable ய
100	௩	Tamil syllable ள
1000	௩	

Two systems were used to write the Tamil numerals. While one system does not have the Tamil digit 0 the other does have it. Both systems were commonly used until the early twentieth century. Both systems are acceptable.

TABLE 6 - Tamil Digit Systems

European Digits	Without 0	With 0
10	௧௦	௧௦
20	௨௦	௨௦
100	௧௦௦	௧௦௦
110	௧௧௦	௧௧௦
200	௨௦௦	௨௦௦
1000	௧௦௦௦	௧௦௦௦

4.8 Tamil Symbols

Tamil has a distinct set of symbols. These symbols were frequently used in the early twentieth century, but present usage is rare. However, the astrologers use some of these symbols even at present. Especially the symbols ௨, ௧௦ and ௧௦௦ are very commonly used in பஞ்சாங்கம் (Panchangam), i.e. almanac.

TABLE 7 - Tamil Symbols

Tamil Number Sign	௧
Tamil Rupee Sign	௧௦௦
Tamil Debit Sign	௧௦௦௦
Tamil Credit Sign	௧௦௦௦௦
Tamil Day Sign and Pillayar Chuzhi	௨
Tamil Month Sign	௧௦
Tamil Year Sign	௧௦௦
Tamil As Above Sign	௧௦௦௦
Tamil Om Sign	௧௦௦௦௦

NOTE: The Hindu religious symbol ௧௦௦ may be written as ௧௦௦ as well. In this context these two are equivalent in meaning. However, if ௧௦௦ is written in a text, it is not equivalent to the ௧௦௦ symbol used otherwise; ௧௦௦ is used to represent the “yes” meaning as well.

5 CHARACTER ENCODING

5.1 Tamil Code Block

The Unicode encoding of the Tamil character set into 128 cells of 16-bit code units is shown in Figure 1. This encoding uses hexadecimal codes in the range of 0B80 to 0BFF. This range is located in the Unicode General Script Area which is in *BMP* (Basic Multilingual Plane); referred to as *plane 0* as well.

In the Tamil code block (Refer Figure 1), the characters are allocated in similar locations, as is the case in most other Indic scripts. Indic scripts are encoded according to a common plan, so that comparable characters are in the same order and relative location. e.g. Tamil vowel ‘A’ code point is 0B85 and Kannada vowel ‘A’ code point is 0C85. This structural arrangement which facilitates transliteration to some degree is based on the Indian national standard (ISCII) encoding. The unused positions in the range shall not be utilised.

Vowels, consonants, āytam, Tamil digits, Tamil numerics and the Tamil symbols are base characters, and may stand alone. There are code positions reserved after the consonants range, vowel sign range and Tamil symbols range to accommodate future developments of the language.

5.1.1 Vowels

Twelve vowels are in the range of 0B85-0B94. Each vowel is represented by one code point in the code block.

e.g. அ = 0B85, ஓ = 0B94.

5.1.2 Pure-Consonants

Tamil and Grantha consonants are in the range of 0B95-0BB9. Pure-Consonant plus the inherent vowel /A/ is encoded, not the actual pure-consonant.

e.g. க (KA) is encoded, not the க் (k), ஸ (SA) is encoded, not the ஸ் (S).

Further, pulli (0BCD) is encoded separately for the purpose of generating the pure-consonants. The pure-consonants are formed by code point sequences. Any consonant followed by 0BCD gives the code sequence to the pure-consonant.

e.g.

க்	=	0B95 0BCD	(க ஃ)
ஜ்	=	0B9C 0BCD	(ஜ ஃ)

The Grantha consonant க்ஷ does not have a separate code point in the Unicode. It is treated as conjunct and formed by code point sequences.

க்ஷ = 0B95 0BCD 0BB7 0BCD (க ஃ ஷ ஃ)

5.1.3 Vowel-Consonant Syllable

Pure-Consonant plus the inherent vowel /A/ vowel-consonant syllables (consonants) are encoded in the range of 0B95-0BB9. The vowel-consonant syllables are formed by code point sequences.

Except vowel அ, all other eleven vowels are mapped with individual vowel signs (Refer Table 4), and encoded in the range of 0BBE-0BCC. Consonant followed by a vowel-sign will produce the relevant vowel-consonant syllable.

e.g.	கா	=	0B95 0BBE	(க ா)
	ஹு	=	0BB9 0BC1	(ஹ ு)
	ஹோ	=	0BB9 0BCB	(ஹ ோ)
	கைஷ	=	0B95 0BCD 0BB7 0BC8	(க ை ஷ ை)

5.1.4 āytam

Named as TAMIL SIGN VISARGA in Unicode and the code point is 0B83.

5.1.5 Grantham Conjunct syllable - ஸ்ரீ

It is not separately encoded; formed by code point sequences.

ஸ்ரீ	=	0BB6 0BCD 0BB0 0BC0	(ஸ ் ர ீ)
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5.1.6 Tamil Numerals

Tamil digits are encoded in the range of 0BE6-0BEF and Tamil numerics (ௐ, ஈ, தூ) are encoded in the range of 0BF0-0BF2.

5.1.7 Tamil Symbols

Tamil symbols are encoded in the range of 0BF3-0BFA. The Hindu religious symbol ஓ is encoded in the location of 0BD0 in tune with the other Indic scripts. (e.g. for Gujarati 0AD0 is encoded).

NOTES:

1. In addition, the Anusvara (◌̣) and AU length mark (ௌ) are encoded in 0B82 and 0BD7 respectively to map along with the other Indic scripts. However, the Anusvara is not used in contemporary Tamil and AU length mark should not be used to form any Tamil text. Although the vowel ஓ can be represented in ஒ (0B92) + ஌ (0BD7), this form of sequence shall not be used. One shall use the single code point 0B94 for ஓ.

2. The representation of a syllable such as கௌ by a consonant character (க) followed by more than one vowel signs (ௌ + ஌) are permitted in Unicode, but is discouraged in this standard. One vowel sign must be used to form the syllables.

e.g. க + ஌ௌ, க + ஌ோ, etc

3. This standard does not specify codes for the European numerals, punctuation marks and symbols. These are specified in the other code ranges in ISO/IEC 10646: 2003 and Unicode Version 5.1.

4. The ஓ may get decomposed to “ஓம்” and the canonical decomposition is 0BD0 = 0B93 0BAE 0BCD. On the other hand, the inverse canonical composition is not always true. The Tamil character encoding represented in Figure 1 is identical to ISO/IEC 10646: 2003 and Unicode Version 5.1.

5. *Specific collation algorithms (not specified herein) are needed for sorting text stored using this character encoding.*

6. *When the sequence of 0B95 0BCD 0BB7 is specified by default, ~~சை~~ will be formed by the Unicode engine. In case ~~சை~~ is needed, the following sequence should be specified with the zero-width non-joiner (ZWNJ) 0B95 0BCD 200C 0BB7.*

7. ~~ஸ்ரீ~~ may also be formed from the ஸ் letter as follows:

~~ஸ்ரீ~~ = 0BB8 0BCD 0BB0 0BC0 (ஸ் ஃ ரீ – Not allowed)

However, only the following sequence shall be used to form ~~ஸ்ரீ~~

~~ஸ்ரீ~~ = 0BB6 0BCD 0BB0 0BC0 (ஸ ஃ ரீ)

8. *The code sequences are only the internal representations and not the keyboard sequences.*

5.2 Code Point(s) for Tamil Language

Each element in the Tamil system is represented by one code point or sequence of code points. A Tamil element may be a vowel (e.g. இ), a pure-consonant (e.g. ட), a consonant (e.g. ப), or a consonant with a vowel sign (e.g. பி). Further, it consists of Tamil numerals and Tamil symbols. Table 8 gives code point(s) value for the all possible representations in the language.

	0B8	0B9	0BA	0BB	0BC	0BD	0BE	0BF
0		ஐ 0B90		ர 0BB0	ீ 0BC0	ஐ 0BD0		ஓ 0BF0
1				ற 0BB1	ீ 0BC1			ள 0BF1
2	ஃ 0B82	ஓ 0B92		ல 0BB2	ஃ 0BC2			க 0BF2
3	ஃ 0B83	ஓ 0B93	ண 0BA3	ள 0BB3				உ 0BF3
4		ஓள 0B94	த 0BA4	ழ 0BB4				மீ 0BF4
5	அ 0B85	க 0B95		வ 0BB5				ஓ 0BF5
6	ஆ 0B86			ய 0BB6	ெ 0BC6		ஓ 0BE6	யு 0BF6
7	இ 0B87			ஷ 0BB7	ே 0BC7	ள 0BD7	க 0BE7	ஔ 0BF7
8	ஈ 0B88		ந 0BA8	ஸ 0BB8	ை 0BC8		உ 0BE8	ஹை 0BF8
9	உ 0B89	ங 0B99	ன 0BA9	ஹ 0BB9			ந 0BE9	ஹீ 0BF9
A	உள 0B8A	ச 0B9A	ப 0BAA		ொ 0BCA		ச 0BEA	நீ 0BFA
B					ோ 0BCB		ஹ 0BEB	
C		ஐ 0B9C			ெள 0BCC		க 0BEC	
D					ஃ 0BCD		எ 0BED	
E	எ 0B8E	ஹ 0B9E	ம 0BAE	ா 0BBE			அ 0BEE	
F	ஏ 0B8F	ஹ 0B9F	ய 0BAF	ி 0BBF			க 0BEF	

FIGURE 1 - Tamil Character Encoding

TABLE 8 - Name and Code Point(s)

Shape	Category	Unicode Name	Code Point(s) Sequence
அ	Tamil uyir letter	TAMIL LETTER A	0B85
ஆ	Tamil uyir letter	TAMIL LETTER AA	0B86
இ	Tamil uyir letter	TAMIL LETTER I	0B87
ஈ	Tamil uyir letter	TAMIL LETTER II	0B88
உ	Tamil uyir letter	TAMIL LETTER U	0B89
ஊ	Tamil uyir letter	TAMIL LETTER UU	0B8A
எ	Tamil uyir letter	TAMIL LETTER E	0B8E
ஏ	Tamil uyir letter	TAMIL LETTER EE	0B8F
ஐ	Tamil uyir letter	TAMIL LETTER AI	0B90
ஒ	Tamil uyir letter	TAMIL LETTER O	0B92
ஔ	Tamil uyir letter	TAMIL LETTER OO	0B93
ஐ	Tamil uyir letter	TAMIL LETTER AU	0B94
ஃ	Special letter	TAMIL SIGN VISARGA	0B83
க்	Tamil mey letter	TAMIL CONSONANT K	0B95 0BCD
க	Tamil uyir-mey syllable	TAMIL LETTER KA	0B95
கா	Tamil uyir-mey syllable	TAMIL SYLLABLE KAA	0B95 0BBE
கி	Tamil uyir-mey syllable	TAMIL SYLLABLE KI	0B95 0BBF
கீ	Tamil uyir-mey syllable	TAMIL SYLLABLE KII	0B95 0BC0
கு	Tamil uyir-mey syllable	TAMIL SYLLABLE KU	0B95 0BC1
கூ	Tamil uyir-mey syllable	TAMIL SYLLABLE KUU	0B95 0BC2
கெ	Tamil uyir-mey syllable	TAMIL SYLLABLE KE	0B95 0BC6
கே	Tamil uyir-mey syllable	TAMIL SYLLABLE KEE	0B95 0BC7
கை	Tamil uyir-mey syllable	TAMIL SYLLABLE KAI	0B95 0BC8
கொ	Tamil uyir-mey syllable	TAMIL SYLLABLE KO	0B95 0BCA
கோ	Tamil uyir-mey syllable	TAMIL SYLLABLE KOO	0B95 0BCB
கௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE KAU	0B95 0BCC
ங்	Tamil mey letter	TAMIL CONSONANT NG	0B99 0BCD
ங	Tamil uyir-mey syllable	TAMIL LETTER NGA	0B99
ஙா	Tamil uyir-mey syllable	TAMIL SYLLABLE NGAA	0B99 0BBE
ஙி	Tamil uyir-mey syllable	TAMIL SYLLABLE NGI	0B99 0BBF
ஙீ	Tamil uyir-mey syllable	TAMIL SYLLABLE NGII	0B99 0BC0
ஙு	Tamil uyir-mey syllable	TAMIL SYLLABLE NGU	0B99 0BC1
கூ	Tamil uyir-mey syllable	TAMIL SYLLABLE NGUU	0B99 0BC2
கெ	Tamil uyir-mey syllable	TAMIL SYLLABLE NGE	0B99 0BC6
கே	Tamil uyir-mey syllable	TAMIL SYLLABLE NGEE	0B99 0BC7
கை	Tamil uyir-mey syllable	TAMIL SYLLABLE NGAI	0B99 0BC8
கொ	Tamil uyir-mey syllable	TAMIL SYLLABLE NGO	0B99 0BCA
கோ	Tamil uyir-mey syllable	TAMIL SYLLABLE NGOO	0B99 0BCB
கௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE NGAU	0B99 0BCC
ச்	Tamil mey letter	TAMIL CONSONANT C	0B9A 0BCD
ச	Tamil uyir-mey syllable	TAMIL LETTER CA	0B9A
சா	Tamil uyir-mey syllable	TAMIL SYLLABLE CAA	0B9A 0BBE
சி	Tamil uyir-mey syllable	TAMIL SYLLABLE CI	0B9A 0BBF
சீ	Tamil uyir-mey syllable	TAMIL SYLLABLE CII	0B9A 0BC0

(Continued)

சு	Tamil uyir-mey syllable	TAMIL SYLLABLE CU	0B9A 0BC1
சூ	Tamil uyir-mey syllable	TAMIL SYLLABLE CUU	0B9A 0BC2
செ	Tamil uyir-mey syllable	TAMIL SYLLABLE CE	0B9A 0BC6
சே	Tamil uyir-mey syllable	TAMIL SYLLABLE CEE	0B9A 0BC7
சை	Tamil uyir-mey syllable	TAMIL SYLLABLE CAI	0B9A 0BC8
சொ	Tamil uyir-mey syllable	TAMIL SYLLABLE CO	0B9A 0BCA
சோ	Tamil uyir-mey syllable	TAMIL SYLLABLE COO	0B9A 0BCB
சௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE CAU	0B9A 0BCC
ஞ்	Tamil mey letter	TAMIL CONSONANT NY	0B9E 0BCD
ஞ	Tamil uyir-mey syllable	TAMIL LETTER NYA	0B9E
ஞா	Tamil uyir-mey syllable	TAMIL SYLLABLE NYAA	0B9E 0BBE
ஞி	Tamil uyir-mey syllable	TAMIL SYLLABLE NYI	0B9E 0BBF
ஞீ	Tamil uyir-mey syllable	TAMIL SYLLABLE NYII	0B9E 0BC0
ஞு	Tamil uyir-mey syllable	TAMIL SYLLABLE NYU	0B9E 0BC1
ஞூ	Tamil uyir-mey syllable	TAMIL SYLLABLE NYUU	0B9E 0BC2
ஞெ	Tamil uyir-mey syllable	TAMIL SYLLABLE NYE	0B9E 0BC6
ஞே	Tamil uyir-mey syllable	TAMIL SYLLABLE NYEE	0B9E 0BC7
ஞை	Tamil uyir-mey syllable	TAMIL SYLLABLE NYAI	0B9E 0BC8
ஞொ	Tamil uyir-mey syllable	TAMIL SYLLABLE NYO	0B9E 0BCA
ஞோ	Tamil uyir-mey syllable	TAMIL SYLLABLE NYOO	0B9E 0BCB
ஞௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE NYAU	0B9E 0BCC
ட்	Tamil mey letter	TAMIL CONSONANT TT	0B9F 0BCD
ட	Tamil uyir-mey syllable	TAMIL LETTER TTA	0B9F
டா	Tamil uyir-mey syllable	TAMIL SYLLABLE TTAA	0B9F 0BBE
டி	Tamil uyir-mey syllable	TAMIL SYLLABLE TTI	0B9F 0BBF
டீ	Tamil uyir-mey syllable	TAMIL SYLLABLE TTII	0B9F 0BC0
டு	Tamil uyir-mey syllable	TAMIL SYLLABLE TTU	0B9F 0BC1
டூ	Tamil uyir-mey syllable	TAMIL SYLLABLE TTUU	0B9F 0BC2
டெ	Tamil uyir-mey syllable	TAMIL SYLLABLE TTE	0B9F 0BC6
டே	Tamil uyir-mey syllable	TAMIL SYLLABLE TTEE	0B9F 0BC7
டை	Tamil uyir-mey syllable	TAMIL SYLLABLE TTAI	0B9F 0BC8
டொ	Tamil uyir-mey syllable	TAMIL SYLLABLE TTO	0B9F 0BCA
டோ	Tamil uyir-mey syllable	TAMIL SYLLABLE TTOO	0B9F 0BCB
டௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE TTAU	0B9F 0BCC
ண்	Tamil mey letter	TAMIL CONSONANT NN	0BA3 0BCD
ண	Tamil uyir-mey syllable	TAMIL LETTER NNA	0BA3
ணா	Tamil uyir-mey syllable	TAMIL SYLLABLE NNAA	0BA3 0BBE
ணி	Tamil uyir-mey syllable	TAMIL SYLLABLE NNI	0BA3 0BBF
ணீ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNII	0BA3 0BC0
ணு	Tamil uyir-mey syllable	TAMIL SYLLABLE NNU	0BA3 0BC1
ணூ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNUU	0BA3 0BC2
ணெ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNE	0BA3 0BC6
ணே	Tamil uyir-mey syllable	TAMIL SYLLABLE NNEE	0BA3 0BC7
ணை	Tamil uyir-mey syllable	TAMIL SYLLABLE NNAI	0BA3 0BC8
ணொ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNO	0BA3 0BCA
ணோ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNOO	0BA3 0BCB
ணௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNAU	0BA3 0BCC
த்	Tamil mey letter	TAMIL CONSONANT T	0BA4 0BCD
த	Tamil uyir-mey syllable	TAMIL LETTER TA	0BA4

(Continued)

தா	Tamil uyir-mey syllable	TAMIL SYLLABLE TAA	0BA4 0BBE
தி	Tamil uyir-mey syllable	TAMIL SYLLABLE TI	0BA4 0BBF
தீ	Tamil uyir-mey syllable	TAMIL SYLLABLE TII	0BA4 0BC0
து	Tamil uyir-mey syllable	TAMIL SYLLABLE TU	0BA4 0BC1
தூ	Tamil uyir-mey syllable	TAMIL SYLLABLE TUU	0BA4 0BC2
தெ	Tamil uyir-mey syllable	TAMIL SYLLABLE TE	0BA4 0BC6
தே	Tamil uyir-mey syllable	TAMIL SYLLABLE TEE	0BA4 0BC7
தை	Tamil uyir-mey syllable	TAMIL SYLLABLE TAI	0BA4 0BC8
தொ	Tamil uyir-mey syllable	TAMIL SYLLABLE TO	0BA4 0BCA
தோ	Tamil uyir-mey syllable	TAMIL SYLLABLE TOO	0BA4 0BCB
தௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE TAU	0BA4 0BCC
ந்	Tamil mey letter	TAMIL CONSONANT N	0BA8 0BCD
ந	Tamil uyir-mey syllable	TAMIL LETTER NA	0BA8
நா	Tamil uyir-mey syllable	TAMIL SYLLABLE NAA	0BA8 0BBE
நி	Tamil uyir-mey syllable	TAMIL SYLLABLE NI	0BA8 0BBF
நீ	Tamil uyir-mey syllable	TAMIL SYLLABLE NII	0BA8 0BC0
நு	Tamil uyir-mey syllable	TAMIL SYLLABLE NU	0BA8 0BC1
நூ	Tamil uyir-mey syllable	TAMIL SYLLABLE NUU	0BA8 0BC2
நெ	Tamil uyir-mey syllable	TAMIL SYLLABLE NE	0BA8 0BC6
நே	Tamil uyir-mey syllable	TAMIL SYLLABLE NEE	0BA8 0BC7
நை	Tamil uyir-mey syllable	TAMIL SYLLABLE NAI	0BA8 0BC8
நொ	Tamil uyir-mey syllable	TAMIL SYLLABLE NO	0BA8 0BCA
நோ	Tamil uyir-mey syllable	TAMIL SYLLABLE NOO	0BA8 0BCB
நௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE NAU	0BA8 0BCC
ப்	Tamil mey letter	TAMIL CONSONANT P	0BAA 0BCD
ப	Tamil uyir-mey syllable	TAMIL LETTER PA	0BAA
பா	Tamil uyir-mey syllable	TAMIL SYLLABLE PAA	0BAA 0BBE
பி	Tamil uyir-mey syllable	TAMIL SYLLABLE PI	0BAA 0BBF
பீ	Tamil uyir-mey syllable	TAMIL SYLLABLE PII	0BAA 0BC0
பு	Tamil uyir-mey syllable	TAMIL SYLLABLE PU	0BAA 0BC1
பூ	Tamil uyir-mey syllable	TAMIL SYLLABLE PUU	0BAA 0BC2
பெ	Tamil uyir-mey syllable	TAMIL SYLLABLE PE	0BAA 0BC6
பே	Tamil uyir-mey syllable	TAMIL SYLLABLE PEE	0BAA 0BC7
பை	Tamil uyir-mey syllable	TAMIL SYLLABLE PAI	0BAA 0BC8
பொ	Tamil uyir-mey syllable	TAMIL SYLLABLE PO	0BAA 0BCA
போ	Tamil uyir-mey syllable	TAMIL SYLLABLE POO	0BAA 0BCB
பௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE PAU	0BAA 0BCC
ம்	Tamil mey letter	TAMIL CONSONANT M	0BAE 0BCD
ம	Tamil uyir-mey syllable	TAMIL LETTER MA	0BAE
மா	Tamil uyir-mey syllable	TAMIL SYLLABLE MAA	0BAE 0BBE
மி	Tamil uyir-mey syllable	TAMIL SYLLABLE MI	0BAE 0BBF
மீ	Tamil uyir-mey syllable	TAMIL SYLLABLE MII	0BAE 0BC0
மு	Tamil uyir-mey syllable	TAMIL SYLLABLE MU	0BAE 0BC1
மூ	Tamil uyir-mey syllable	TAMIL SYLLABLE MUU	0BAE 0BC2
மெ	Tamil uyir-mey syllable	TAMIL SYLLABLE ME	0BAE 0BC6
மே	Tamil uyir-mey syllable	TAMIL SYLLABLE MEE	0BAE 0BC7
மை	Tamil uyir-mey syllable	TAMIL SYLLABLE MAI	0BAE 0BC8
மொ	Tamil uyir-mey syllable	TAMIL SYLLABLE MO	0BAE 0BCA
மோ	Tamil uyir-mey syllable	TAMIL SYLLABLE MOO	0BAE 0BCB

(Continued)

மௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE MAU	0BAE 0BCC
ய்	Tamil mey letter	TAMIL CONSONANT Y	0BAF 0BCD
ய	Tamil uyir-mey syllable	TAMIL LETTER YA	0BAF
யா	Tamil uyir-mey syllable	TAMIL SYLLABLE YAA	0BAF 0BBE
யி	Tamil uyir-mey syllable	TAMIL SYLLABLE YI	0BAF 0BBF
யீ	Tamil uyir-mey syllable	TAMIL SYLLABLE YII	0BAF 0BC0
யு	Tamil uyir-mey syllable	TAMIL SYLLABLE YU	0BAF 0BC1
யூ	Tamil uyir-mey syllable	TAMIL SYLLABLE YUU	0BAF 0BC2
யெ	Tamil uyir-mey syllable	TAMIL SYLLABLE YE	0BAF 0BC6
யே	Tamil uyir-mey syllable	TAMIL SYLLABLE YEE	0BAF 0BC7
யை	Tamil uyir-mey syllable	TAMIL SYLLABLE YAI	0BAF 0BC8
யொ	Tamil uyir-mey syllable	TAMIL SYLLABLE YO	0BAF 0BCA
யோ	Tamil uyir-mey syllable	TAMIL SYLLABLE YOO	0BAF 0BCB
யௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE YAU	0BAF 0BCC
ர்	Tamil mey letter	TAMIL CONSONANT R	0BB0 0BCD
ர	Tamil uyir-mey syllable	TAMIL LETTER RA	0BB0
ரா	Tamil uyir-mey syllable	TAMIL SYLLABLE RAA	0BB0 0BBE
ரி	Tamil uyir-mey syllable	TAMIL SYLLABLE RI	0BB0 0BBF
ரீ	Tamil uyir-mey syllable	TAMIL SYLLABLE RII	0BB0 0BC0
ரு	Tamil uyir-mey syllable	TAMIL SYLLABLE RU	0BB0 0BC1
ரூ	Tamil uyir-mey syllable	TAMIL SYLLABLE RUU	0BB0 0BC2
ரெ	Tamil uyir-mey syllable	TAMIL SYLLABLE RE	0BB0 0BC6
ரே	Tamil uyir-mey syllable	TAMIL SYLLABLE REE	0BB0 0BC7
ரை	Tamil uyir-mey syllable	TAMIL SYLLABLE RAI	0BB0 0BC8
ரொ	Tamil uyir-mey syllable	TAMIL SYLLABLE RO	0BB0 0BCA
ரோ	Tamil uyir-mey syllable	TAMIL SYLLABLE ROO	0BB0 0BCB
ரௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE RAU	0BB0 0BCC
ல்	Tamil mey letter	TAMIL CONSONANT L	0BB2 0BCD
ல	Tamil uyir-mey syllable	TAMIL LETTER LA	0BB2
லா	Tamil uyir-mey syllable	TAMIL SYLLABLE LAA	0BB2 0BBE
லி	Tamil uyir-mey syllable	TAMIL SYLLABLE LI	0BB2 0BBF
லீ	Tamil uyir-mey syllable	TAMIL SYLLABLE LII	0BB2 0BC0
லு	Tamil uyir-mey syllable	TAMIL SYLLABLE LU	0BB2 0BC1
லூ	Tamil uyir-mey syllable	TAMIL SYLLABLE LUU	0BB2 0BC2
லெ	Tamil uyir-mey syllable	TAMIL SYLLABLE LE	0BB2 0BC6
லே	Tamil uyir-mey syllable	TAMIL SYLLABLE LEE	0BB2 0BC7
லை	Tamil uyir-mey syllable	TAMIL SYLLABLE LAI	0BB2 0BC8
லொ	Tamil uyir-mey syllable	TAMIL SYLLABLE LO	0BB2 0BCA
லோ	Tamil uyir-mey syllable	TAMIL SYLLABLE LOO	0BB2 0BCB
லௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE LAU	0BB2 0BCC
வ்	Tamil mey letter	TAMIL CONSONANT V	0BB5 0BCD
வ	Tamil uyir-mey syllable	TAMIL LETTER VA	0BB5
வா	Tamil uyir-mey syllable	TAMIL SYLLABLE VAA	0BB5 0BBE
வி	Tamil uyir-mey syllable	TAMIL SYLLABLE VI	0BB5 0BBF
வீ	Tamil uyir-mey syllable	TAMIL SYLLABLE VII	0BB5 0BC0
வு	Tamil uyir-mey syllable	TAMIL SYLLABLE VU	0BB5 0BC1
வூ	Tamil uyir-mey syllable	TAMIL SYLLABLE VUU	0BB5 0BC2
வெ	Tamil uyir-mey syllable	TAMIL SYLLABLE VE	0BB5 0BC6
வே	Tamil uyir-mey syllable	TAMIL SYLLABLE VEE	0BB5 0BC7

(Continued)

வை	Tamil uyir-mey syllable	TAMIL SYLLABLE VAI	0BB5 0BC8
வொ	Tamil uyir-mey syllable	TAMIL SYLLABLE VO	0BB5 0BCA
வோ	Tamil uyir-mey syllable	TAMIL SYLLABLE VOO	0BB5 0BCB
வௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE VAU	0BB5 0BCC
ழ்	Tamil mey letter	TAMIL CONSONANT LLL	0BB4 0BCD
ழ	Tamil uyir-mey syllable	TAMIL LETTER LLLA	0BB4
ழா	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLAA	0BB4 0BBE
ழி	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLI	0BB4 0BBF
ழீ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLII	0BB4 0BC0
ழு	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLU	0BB4 0BC1
ழு	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLUU	0BB4 0BC2
ழெ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLE	0BB4 0BC6
ழே	Tamil uyir-mey syllable	TAMIL SYLLABLE LLEE	0BB4 0BC7
ழை	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLAI	0BB4 0BC8
ழொ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLO	0BB4 0BCA
ழோ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLOO	0BB4 0BCB
ழௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLAU	0BB4 0BCC
ள்	Tamil mey letter	TAMIL CONSONANT I.I.	0BB3 0BCD
ள	Tamil uyir-mey syllable	TAMIL LETTER LLA	0BB3
ளா	Tamil uyir-mey syllable	TAMIL SYLLABLE LLAA	0BB3 0BBE
ளி	Tamil uyir-mey syllable	TAMIL SYLLABLE LLI	0BB3 0BBF
ளீ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLII	0BB3 0BC0
ளு	Tamil uyir-mey syllable	TAMIL SYLLABLE LLU	0BB3 0BC1
ளு	Tamil uyir-mey syllable	TAMIL SYLLABLE LLUU	0BB3 0BC2
ளெ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLE	0BB3 0BC6
ளே	Tamil uyir-mey syllable	TAMIL SYLLABLE LLEE	0BB3 0BC7
ளை	Tamil uyir-mey syllable	TAMIL SYLLABLE LLAI	0BB3 0BC8
ளொ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLO	0BB3 0BCA
ளோ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLOO	0BB3 0BCB
ளௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE LLLAU	0BB3 0BCC
ற்	Tamil mey letter	TAMIL CONSONANT RR	0BB1 0BCD
ற	Tamil uyir-mey syllable	TAMIL LETTER RRA	0BB1
றா	Tamil uyir-mey syllable	TAMIL SYLLABLE RRAA	0BB1 0BBE
றி	Tamil uyir-mey syllable	TAMIL SYLLABLE RRI	0BB1 0BBF
றீ	Tamil uyir-mey syllable	TAMIL SYLLABLE RRII	0BB1 0BC0
று	Tamil uyir-mey syllable	TAMIL SYLLABLE RRU	0BB1 0BC1
று	Tamil uyir-mey syllable	TAMIL SYLLABLE RRUU	0BB1 0BC2
றெ	Tamil uyir-mey syllable	TAMIL SYLLABLE RRE	0BB1 0BC6
றே	Tamil uyir-mey syllable	TAMIL SYLLABLE RREE	0BB1 0BC7
றை	Tamil uyir-mey syllable	TAMIL SYLLABLE RRAI	0BB1 0BC8
றொ	Tamil uyir-mey syllable	TAMIL SYLLABLE RRO	0BB1 0BCA
றோ	Tamil uyir-mey syllable	TAMIL SYLLABLE RROO	0BB1 0BCB
றௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE RRAU	0BB1 0BCC
ன்	Tamil mey letter	TAMIL CONSONANT NNN	0BA9 0BCD
ன	Tamil uyir-mey syllable	TAMIL LETTER NNNA	0BA9
னா	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNA	0BA9 0BBE
னி	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNI	0BA9 0BBF
னீ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNII	0BA9 0BC0
னு	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNU	0BA9 0BC1

(Continued)

யூ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNUU	0BA9 0BC2
யெ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNE	0BA9 0BC6
யே	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNEE	0BA9 0BC7
யை	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNAI	0BA9 0BC8
யொ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNO	0BA9 0BCA
யோ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNOO	0BA9 0BCB
யௌ	Tamil uyir-mey syllable	TAMIL SYLLABLE NNNAU	0BA9 0BCC
ஜ்	Grantham mey letter	TAMIL CONSONANT J	0BA9 0BCD
ஜு	Grantham uyir-mey syllable	TAMIL LETTER JA	0BA9
ஜா	Grantham uyir-mey syllable	TAMIL SYLLABLE JAA	0BA9 0BBE
ஜி	Grantham uyir-mey syllable	TAMIL SYLLABLE JI	0BA9 0BBF
ஜீ	Grantham uyir-mey syllable	TAMIL SYLLABLE JII	0BA9 0BC0
ஜு	Grantham uyir-mey syllable	TAMIL SYLLABLE JU	0BA9 0BC1
ஜு	Grantham uyir-mey syllable	TAMIL SYLLABLE JUU	0BA9 0BC2
ஜெ	Grantham uyir-mey syllable	TAMIL SYLLABLE JE	0BA9 0BC6
ஜே	Grantham uyir-mey syllable	TAMIL SYLLABLE JEE	0BA9 0BC7
ஜை	Grantham uyir-mey syllable	TAMIL SYLLABLE JAI	0BA9 0BC8
ஜொ	Grantham uyir-mey syllable	TAMIL SYLLABLE JO	0BA9 0BCA
ஜோ	Grantham uyir-mey syllable	TAMIL SYLLABLE JOO	0BA9 0BCB
ஜௌ	Grantham uyir-mey syllable	TAMIL SYLLABLE JAU	0BA9 0BCC
ஸ்	Grantham mey letter	TAMIL CONSONANT SH	0BB6 0BCD
ஸு	Grantham uyir-mey syllable	TAMIL LETTER SHA	0BB6
ஸா	Grantham uyir-mey syllable	TAMIL SYLLABLE SHAA	0BB6 0BBE
ஸி	Grantham uyir-mey syllable	TAMIL SYLLABLE SHI	0BB6 0BBF
ஸீ	Grantham uyir-mey syllable	TAMIL SYLLABLE SHII	0BB6 0BC0
ஸு	Grantham uyir-mey syllable	TAMIL SYLLABLE SHU	0BB6 0BC1
ஸு	Grantham uyir-mey syllable	TAMIL SYLLABLE SHUU	0BB6 0BC2
ஸெ	Grantham uyir-mey syllable	TAMIL SYLLABLE SHE	0BB6 0BC6
ஸே	Grantham uyir-mey syllable	TAMIL SYLLABLE SHEE	0BB6 0BC7
ஸை	Grantham uyir-mey syllable	TAMIL SYLLABLE SHAI	0BB6 0BC8
ஸொ	Grantham uyir-mey syllable	TAMIL SYLLABLE SHO	0BB6 0BCA
ஸோ	Grantham uyir-mey syllable	TAMIL SYLLABLE SHOO	0BB6 0BCB
ஸௌ	Grantham uyir-mey syllable	TAMIL SYLLABLE SHAU	0BB6 0BCC
ஷ்	Grantham mey letter	TAMIL CONSONANT SS	0BB7 0BCD
ஷு	Grantham uyir-mey syllable	TAMIL LETTER SSA	0BB7
ஷா	Grantham uyir-mey syllable	TAMIL SYLLABLE SSAA	0BB7 0BBE
ஷி	Grantham uyir-mey syllable	TAMIL SYLLABLE SSI	0BB7 0BBF
ஷீ	Grantham uyir-mey syllable	TAMIL SYLLABLE SSII	0BB7 0BC0
ஷு	Grantham uyir-mey syllable	TAMIL SYLLABLE SSU	0BB7 0BC1
ஷு	Grantham uyir-mey syllable	TAMIL SYLLABLE SSUU	0BB7 0BC2
ஷெ	Grantham uyir-mey syllable	TAMIL SYLLABLE SSE	0BB7 0BC6
ஷே	Grantham uyir-mey syllable	TAMIL SYLLABLE SSEE	0BB7 0BC7
ஷை	Grantham uyir-mey syllable	TAMIL SYLLABLE SSAI	0BB7 0BC8
ஷொ	Grantham uyir-mey syllable	TAMIL SYLLABLE SSO	0BB7 0BCA
ஷோ	Grantham uyir-mey syllable	TAMIL SYLLABLE SSOO	0BB7 0BCB
ஷௌ	Grantham uyir-mey syllable	TAMIL SYLLABLE SSAU	0BB7 0BCC
ஸ்	Grantham mey letter	TAMIL CONSONANT S	0BB8 0BCD
ஸு	Grantham uyir-mey syllable	TAMIL LETTER SA	0BB8
ஸா	Grantham uyir-mey syllable	TAMIL SYLLABLE SAA	0BB8 0BBE

(Continued)

ஸி	Grantham uyir-mey syllable	TAMIL SYLLABLE SI	0BB8 0BBF
ஸீ	Grantham uyir-mey syllable	TAMIL SYLLABLE SII	0BB8 0BC0
ஸு	Grantham uyir-mey syllable	TAMIL SYLLABLE SU	0BB8 0BC1
ஸு	Grantham uyir-mey syllable	TAMIL SYLLABLE SUU	0BB8 0BC2
ஸெ	Grantham uyir-mey syllable	TAMIL SYLLABLE SE	0BB8 0BC6
ஸே	Grantham uyir-mey syllable	TAMIL SYLLABLE SEE	0BB8 0BC7
ஸை	Grantham uyir-mey syllable	TAMIL SYLLABLE SAI	0BB8 0BC8
ஸொ	Grantham uyir-mey syllable	TAMIL SYLLABLE SO	0BB8 0BCA
ஸோ	Grantham uyir-mey syllable	TAMIL SYLLABLE SOO	0BB8 0BCB
ஸௌ	Grantham uyir-mey syllable	TAMIL SYLLABLE SAU	0BB8 0BCC
ஸௌ	Grantham uyir-mey syllable	TAMIL SYLLABLE SSAU	0BB7 0BCC
ஹ	Grantham mey letter	TAMIL CONSONANT H	0BB9 0BCD
ஹ	Grantham uyir-mey syllable	TAMIL LETTER HA	0BB9
ஹா	Grantham uyir-mey syllable	TAMIL SYLLABLE HAA	0BB9 0BBE
ஹி	Grantham uyir-mey syllable	TAMIL SYLLABLE HI	0BB9 0BBF
ஹீ	Grantham uyir-mey syllable	TAMIL SYLLABLE HII	0BB9 0BC0
ஹு	Grantham uyir-mey syllable	TAMIL SYLLABLE HU	0BB9 0BC1
ஹு	Grantham uyir-mey syllable	TAMIL SYLLABLE HUU	0BB9 0BC2
ஹெ	Grantham uyir-mey syllable	TAMIL SYLLABLE HE	0BB9 0BC6
ஹே	Grantham uyir-mey syllable	TAMIL SYLLABLE HEE	0BB9 0BC7
ஹை	Grantham uyir-mey syllable	TAMIL SYLLABLE HAI	0BB9 0BC8
ஹொ	Grantham uyir-mey syllable	TAMIL SYLLABLE HO	0BB9 0BCA
ஹோ	Grantham uyir-mey syllable	TAMIL SYLLABLE HOO	0BB9 0BCB
ஹௌ	Grantham uyir-mey syllable	TAMIL SYLLABLE HAU	0BB9 0BCC
க்ச	Grantham conjunct mey letter	TAMIL CONSONANT KSS	0B95 0BCD 0BB7 0BCD
க்ச	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSA	0B95 0BCD 0BB7
க்சா	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSAA	0B95 0BCD 0BB7 0BBE
க்சி	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSI	0B95 0BCD 0BB7 0BBF
க்சீ	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSII	0B95 0BCD 0BB7 0BC0
க்சு	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSU	0B95 0BCD 0BB7 0BC1
க்சு	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSUU	0B95 0BCD 0BB7 0BC2
க்செ	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSE	0B95 0BCD 0BB7 0BC6
க்சே	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSEE	0B95 0BCD 0BB7 0BC7
க்சை	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSAI	0B95 0BCD 0BB7 0BC8
க்சொ	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSO	0B95 0BCD 0BB7 0BCA
க்சோ	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSOO	0B95 0BCD 0BB7 0BCB
க்சௌ	Grantham conjunct uyir-mey syllable	TAMIL SYLLABLE KSSAU	0B95 0BCD 0BB7 0BCC
ஃ	Represents F		0B83 0BAA 0BCD
ஃ	Represents FA		0B83 0BAA
ஃ	Represents FAA		0B83 0BAA 0BBE
ஃ	Represents FI		0B83 0BAA 0BBF
ஃ	Represents FII		0B83 0BAA 0BC0
ஃ	Represents FU		0B83 0BAA 0BC1
ஃ	Represents FUU		0B83 0BAA 0BC2
ஃ	Represents FE		0B83 0BAA 0BC6
ஃ	Represents FEE		0B83 0BAA 0BC7
ஃ	Represents FAI		0B83 0BAA 0BC8
ஃ	Represents FO		0B83 0BAA 0BCA

(Concluded)

ஃபூ	Represents FOO	0B83 0BAA 0BCB	
ஃபௌ	Represents FAU	0B83 0BAA 0BCC	
ஸ்ரீ	Grantham conjunct syllable	TAMIL SYLLABLE SHRII	0BB6 0BCD 0BB0 0BC0
ஓம்	Tamil Symbol	TAMIL OM	0BD0
௦	Tamil Digit	TAMIL DIGIT ZERO	0BE6
௧	Tamil Digit	TAMIL DIGIT ONE	0BE7
௨	Tamil Digit	TAMIL DIGIT TWO	0BE8
௩	Tamil Digit	TAMIL DIGIT THREE	0BE9
௪	Tamil Digit	TAMIL DIGIT FOUR	0BEA
௫	Tamil Digit	TAMIL DIGIT FIVE	0BEB
௬	Tamil Digit	TAMIL DIGIT SIX	0BEC
௭	Tamil Digit	TAMIL DIGIT SEVEN	0BED
௮	Tamil Digit	TAMIL DIGIT EIGHT	0BEE
௯	Tamil Digit	TAMIL DIGIT NINE	0BEF
௧௦	Tamil numerics	TAMIL NUMBER TEN	0BF0
௧௦௦	Tamil numerics	TAMIL NUMBER ONE HUNDRED	0BF1
௧௦௦௦	Tamil numerics	TAMIL NUMBER ONE THOUSAND	0BF2
௨௦	Tamil Symbol	TAMIL DAY SIGN	0BF3
௨௦௦	Tamil Symbol	TAMIL MONTH SIGN	0BF4
௨௦௦௦	Tamil Symbol	TAMIL YEAR SIGN	0BF5
யு	Tamil Symbol	TAMIL DEBIT SIGN	0BF6
௭௯	Tamil Symbol	TAMIL CREDIT SIGN	0BF7
௨௦௨	Tamil Symbol	TAMIL AS ABOVE SIGN	0BF8
௫௦	Tamil Symbol	TAMIL RUPEE SIGN	0BF9
௫௦௦	Tamil Symbol	TAMIL NUMBER SIGN	0BFA

6 KEYBOARD INPUT

The text encoded as specified in this standard may serve as an input to a computer system in many ways, e.g. text recognition, 10-key keypad, etc. However, most of the text is input using standard computer keyboards (e.g. 101-key). This section provides guidelines on how the Tamil text may be entered using such a keyboard.

Each Tamil character, (such as represented by a sequence of code points) is input by a sequence of keys on the keyboard. Thus there is a many-to-many relation between keys and code points.

The set of symbols which appear on the keyboard and the key sequences to generate each character are independent of the mapping of symbols to keys. The same key sequences may be used by several keyboard layouts.

This section specifies the standard key sequences for generating Tamil characters on a standard computer keyboard. A standard keyboard layout, based on the *Renganathan* keyboard, is specified in Clause 7.

Key sequences are defined on the principle “type as you write”. Each symbol is typed in the order it is written in, which may be different from the encoding sequence or the display order. For an example if we wish to write கொடை we write in the following order:

கெ + க + ா + டை + டை = கொடை

The word gets typed in the same order.

NOTE: *This standard does not specify the symbols that are displayed during the intermediate stages in the construction and deletion of letters.*

6.1 Keyboard Symbols

A Tamil standard keyboard must have the following symbols. Each physical key may have several symbols assigned to it, one for each shift-state. Only the symbols of the unshifted and the normal shift states will be depicted on the physical keyboard.

Keys must be assigned to the following:

6.1.1 Consonants (With inherent vowel அ)

க	ங	ச	ஞ	ட	ண	த	ந	ப
ம	ய	ர	ல	வ	ழ	ள	ற	ன

6.1.2 Grantham Consonants (With inherent vowel அ)

ஸ ஷ ஜ ஹ கஷ ஸ்

6.1.3 Vowels

அ ஆ இ ஈ உ ஊ எ ஏ ஐ ஒ ஓ
ஒள

6.1.4 āytam

ஃ

6.1.5 Grantham Conjunct Syllable

ஸ்ரீ

6.1.6 *Pu//i*

•

6.1.7 Vowel Signs

Vowel signs comprise the leading signs: ெ, ே, ை

Vowel signs comprise the trailing signs: ०π

Vowel signs comprise the attached signs: ि, ई

Since the u vowel modifier takes four different forms and əu vowel modifier takes five different forms, there are no distinct symbols to represent them on the physical keyboard. Similar symbols have been recommended as shown in Appendix B.

NOTES:

1. འ, ཡ, འཱ symbols are not expected to be printed on the physical keyboard and can be produced by a key sequence.
2. AU length mark (འཱ) should not be printed on the physical keyboard.

6.1.8 Symbols

The keys for non-Tamil symbols such as European numerals, punctuation marks and standard symbols must be printed on the keyboard.

NOTE: Anusvara (ँ) should not be printed on the physical keyboard.

6.1.9 Tamil Numeral and Tamil Symbols

Due to lack of distinction discussed in the section 4.7, the Tamil numerals should not be printed on the keyboard.

Since Tamil symbols are not very much used at present, they should not be printed on the keyboard.

6.2 Key Sequences

Each character is entered by one or more key sequences as specified in 6.2.1 to 6.2.7.

6.2.1 Vowels

The twelve Tamil vowels are entered either with one key or one key with shift state.

ஒவ்வொரு vowel can also be generated by two keys which are ஒ vowel assigned key followed by consonant assigned key.

6.2.2 Consonants

A consonant is entered with a single key.

A Grantha consonant is entered with a single key with shift state.

The Grantha சஷ can be generated by one key with shift state.

NOTE: In the context where க்ஷ is needed instead of சஷ , it should be keyed-in with the following sequence:

$\text{க்ஷ} = \text{க} + \text{◌} + \text{ஷ}$ (internal code points sequence must be 0B95 0BCD 200C 0BB7).

6.2.3 Pure-Consonants

A pure consonant is entered with two keys: *consonant + Pulli*

e.g. $\text{க} + \text{◌} = \text{க்}$

$\text{ஹ} + \text{◌} = \text{ஹ்}$

6.2.4 āytam

The special letter āytam ஃ is entered with one key

6.2.5 Grantha Syllable ஸ்ரீ

ஸ்ரீ is entered with one key with shift state

It can also be generated by key sequence

$\text{ஸ} + \text{◌} + \text{ர} + \text{ீ} = \text{ஸ்ரீ}$

6.2.6 Vowel-Consonant Syllables Using Vowel Signs

a) ா

The ா is entered with one key: *consonant + ா*

E.g. $\text{க} + \text{ா} = \text{கா}$

b) ி

The ி is entered with one key: *consonant + ி*

E.g. $\text{க} + \text{ி} = \text{கி}$

Even though Vowel sign ி takes different forms, they are all entered using the same key.

$\text{கி}, \text{மி}, \text{யி}, \text{ரி}$

c) ீ

The ீ is entered with one key: *consonant + ீ*

e.g. க + ீ = கீ

Even though Vowel sign ீ takes different forms, they are all entered using the same key.

கீ, மீ, யீ, டீ

NOTES:

1. Although the ர consonant takes different shape when it is modified by ி and ீ, the vowel signs are used with the same ர consonant. (ரி, ரீ)

2. There are no special keys for டி and டீ

d) உ vowel sign

The உ vowel modifier is entered with one key: *consonant + உ*

e.g. க + உ = கு

e.g. ட + உ = டு

e.g. சஷ + உ = சஷு

e) ஊ vowel sign

The ஊ vowel modifier is entered with one key with shift state: *consonant + ஊ*

e.g. க + ஊ = கூ

e.g. ட + ஊ = டூ

e.g. சஷ + ஊ = சஷூ

NOTE: Although the உ and ஊ vowel signs produce many different forms they are generated by using the same keys.

f) ெ

The ெ is entered with one key: *ெ + consonant*

e.g. ெ + க = கெ

g) ே

The ே is entered with one key: *ே + consonant*

e.g. ே + க = கே

h) ை

The ை is entered with one key: *ை + consonant*

e.g. ை + க = கை

i) ொ

The ொ is entered with 2 keys: *ெ + consonant + ா*

e.g. ெ + க + ா = கொ

j) கோ

The கோ is entered with 2 keys: $\text{கே} + \text{consonant} + \text{ா}$

e.g. $\text{கே} + \text{க} + \text{ா} = \text{கோ}$

k) கௌ

The கௌ is entered with 2 keys: $\text{கௌ} + \text{consonant} + \text{ௌ}$

e.g. $\text{கௌ} + \text{க} + \text{ௌ} = \text{கௌ}$

6.2.7. Tamil Numeral and Tamil Symbols

For Tamil digits the right-alt-state key combination must be used. The key combination is integrated with the European digits 0 to 9 keys to go along with Tamil digits 0 to 9.

e.g. Tamil 0 = right-alt + 0

Tamil ௬ = right-alt + 6

The Tamil numerics are also generated using right-alt-state key combinations.

e.g. ி = right-alt + q

௩ = right-alt + w

௪ = right-alt + e

The Tamil Symbols are also generated using right-alt-state key combinations.

e.g. ற் = right-alt + -

௩ = right-alt + =

௩ = right-alt + r

௩ = right-alt + t

௩ = right-alt + y

௩ = right-alt + u

௩ = right-alt + i

7. KEYBOARD LAYOUT

The keyboard symbols specified in section 6 may be mapped to a keyboard in several ways. The keyboard layout given in Figure 2 is the proposed arrangement. It is a slight modification of the *Renganathan typewriter* layout. Other layouts may be used depending on users' requirements.

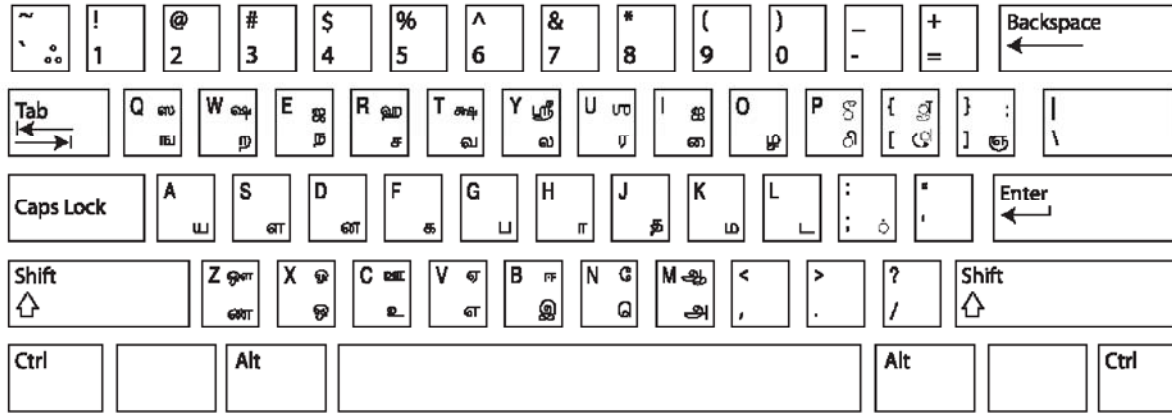






FIGURE 2 - Proposed Layout

NOTES:

1. The symbols  and  are used as the உ and ஊ vowel modifiers. It will produce all required shapes.
2. The vowel modifiers such as  and  in the keyboard layout also stand for other equivalent strokes the shapes of which vary according to the associated consonant. Please refer to section 4.4 for details.

7.1. Keys

A standard computer keyboard has forty eight assignable keys on the main keyboard. Each physical key on a standard computer keyboard can be assigned to up to four symbols, for the following shift states:

- a) unshifted;
- b) shift;
- c) ctrl-alt (alt-gr); and
- d) shift ctrl-alt (shift alt-gr).

Therefore a total of one hundred and ninety six ($48 \times 4 = 196$) keys are available for use. The symbols defined in Clause 6 are assigned to these keys as shown in above layout.

NOTE: The shift-ctrl-alt state is not used in this keyboard layout, but implementers may use it for entering additional symbols, etc.

7.2. Tri-Lingual Keyboard

The recommended Tri-Lingual (Tamil-Sinhala-English) Keyboard layout is given in Figure

3. This layout comprises:

- QWERTY English keyboard layout;
- Renganathan*-based Tamil keyboard layout; and
- Wijesekera*-based Sinhala keyboard layout.

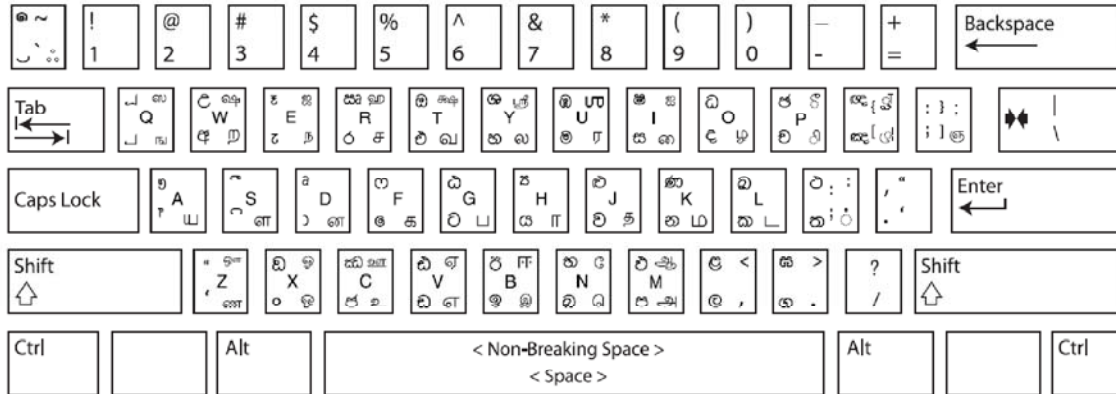




FIGURE 3 - Recommended Tri-Lingual Layout

APPENDIX A

The following information is gathered from Kulandaiswamy, V. C, 2006, ‘*Thamizh Valarchi (Maembadu + Payanpadu = Valarchi)*.’, 1st edn, India, pp 246.

தமிழக அரசு 1978-இல் செய்த மாற்றங்கள்	
முன்பு	தற்போது
ஊ	ணா
றூ	றா
ஊ	னா
ஹே	ஹை
ஹே	ஹை
ஹே	ஹை
ஹே	ஹை
ஹே	ஹை
ஹே	ஹை
ஹே	ஹை

APPENDIX B

உ vowel modifier	ஊ vowel modifier
	

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