TAB TO UNICODE CONVERSION

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Introduction:

TAB is the official bilingual Tamil (8 bit) encoding scheme of the Government of Tamilnadu, which has the largest Tamil speaking population in the world. A vast amount of Tamil textual information in digital libraries, online newspapers, magazines etc., is available today in this encoding scheme. As Unicode is fast becoming the encoding by choice, there is a need for conversion from TAB encoded text to Unicode.

TAB encodes the roman script along with the Tamil script. The first 128 code points of the TAB encoding scheme is exactly identical to the ASCII character set. The next 128 code points is a subset of the TAM monolingual Tamil encoding scheme.

TAB is a glyph encoding scheme, while Unicode is a character encoding scheme. Hence there exists a one-to-one, one-to-many, many-to-one or many-to-many relationship between the Tamil alphabets in TAB and those in Unicode.

A tamil alphabet in a TAB encoded text could be made up of a single, two or three code points. The first part of this note describes, in a simple C like pseudo code, how to determine the string sequence in TAB that goes to make a Tamil alphabet. The second part provides a cross mapping table to convert this sequence into the corresponding Unicode string sequence.

Determine a Tamil alphabet:

vowel = { 0xDC, 0xDD, 0xDE, 0xDF, 0xE0, 0xE1, 0xE2, 0xE3, 0xE4, 0xE5, 0xE6 }
consonant = { 0xE8, 0xE9, 0xEA, 0xEB, 0xEC, 0xED, 0xEE, 0xEF, 0xF0, 0xF1, 0xF2, 0xF3, 0xF4, 0xF5,
          0xF6, 0xF7, 0xF8, 0xF9, 0xFA, 0xFB, 0xFC, 0xFD, 0xFE }
grantha = { 0xFA, 0xFB, 0xFC, 0xFD, 0xFE }

```
while (not end of file)
{
     x = read(1)
     case (x = 0xE5)                    // 'O' vowel
         {
               y = read(1)
               if (y = 0xF7)            // 'O' changed to 'AU' vowel
               {
                    string = xy
               }
               else
               {
                    string = x
                    move(-1)
               }
               convert (string to unicode)
               loop
         }
     case (x = 0xAC)                    // 'AI' vowel modifier
         {
               y = read(1)
               if (y is a consonant)    // 'AI' vowel modified consonant
               {
                    string = xy
               }
               else
               {
                    string = x
                    move(-1)
```

```
            }
            convert (string to unicode)
            loop
        }
case (x is a consonant)
        {
            y = read(1)
            if (x is a grantha)
            {
                if (y = 0xA7 or y = 0xA8)   // 'U' or 'UU' modified grantha
                {
                    string = xy
                    convert (string to unicode)
                    loop
                }
            }
            if (y = 0xA2 or y = 0xA3 or y = 0xA4 or y = 0xA6)    // dead, 'AA', 'I' or 'II'  modified consonant
            {
                string = xy
            }
            else
            {
                string = x
                move(-1)
            }
            convert (string to unicode)
            loop
        }
case (x = 0xAA)                          // 'E' vowel modifier
        {
            y = read(1)
            if (y is a consonant)
            {
                z = read(1)
                if (z = 0xA3 or z = 0xF7)   // 'O' or 'AU' vowel modified consonant
                {
                    alphabet = xyz
                }
                else                    // 'E' vowel modified consonant
                {
                    string = xy
                    move(-1)
                }
            }
            else
            {
                string = x
                move(-1)
            }
            convert (string to unicode string)
            loop
        }
case (x = 0xAB)                  // 'EE' vowel modifier
        {
            y = read(1)
            if (y is a consonant)
            {
                z = read(1)
                if (z = 0xA3)               // 'OO' vowel modified consonant
                {
                    alphabet = xyz
                }
                else                    // 'EE' vowel modified consonant
                {
                    string = xy
```

```
                    move(-1)
                }
            }
            else
            {
                string = x
                move(-1)
            }
            convert (string to unicode string)
            loop
        }
    case (otherwise)
        string = x
        convert (string to unicode string)
        loop
}
```

Note :
read(1) means read one byte
move(-1) means move the file pointer back one byte

TAB to UNICODE Mapping table:

```
#===============================================================
#   Contents:   Map from TAB character set to Unicode 2.1 through Unicode 4.0
#
#   Copyright:  © P.Chellappan
#
#   Contact:    chellappan@vsnl.com
#
#   Changes:
#
#
#  TAB - An Introduction:
#  -----------------------------
#
#  TAB is the the official bilingual Tamil (8 bit) encoding scheme of the Government of Tamil Nadu,
#   which has the largest Tamil speaking population in the world.
#  TAB encodes the Roman script along with Tamil script.
#  The first 128 code points of the TAB encoding scheme are exactly identical to the
#  ASCII character set while the next 128 code points, which encodes the Tamil script,
#  is a subset of the TAM monolingual Tamil encoding scheme.
#
#  TAB - Characteristics:
#  ----------------------------
#
#  TAB is essentially a Glyph encoding scheme in which either a single or
#  a string of two or three code points makeup a single Tamil alphabet.
#  Hence while converting from TAB to UNICODE and vice-versa there could be
#  one-to-one, one-to-many, many-to-one and many-to-many relationship between the
#  two character sets.
#
#  UNICODE issues:
#  -------------------------
#  The Tamil digits and numerals are not encoded in TAB
#
#  Format:
#  ----------
#
#   Three tab-separated columns;
#   '#' begins a comment which continues to the end of the line.
#     Column #1 is the TAB code (in hex as 0xNN)
#     Column #2 is the corresponding Unicode (in hex as 0xNNNN)
#     Column #3 is a comment containing the Unicode/Character name
#
```

```
#   The entries in the first section are in TAB code order and contain the
#   one-to-one and one-to-many relationships.
#
# The entries in the second section are in the Tamil alphabetical sequence
# and contain the many-to-one and many-to-many relationships.
# The code points that make up the string are separated by a space.
#
# A range of code points are indicated by a hyphen between the start and the end
# code points
#
# If a TAB code point is not defined or it has no equivalent UNICODE code point
# the UNICODE code point is left blank.
#
#   Control character mappings are not shown in this table, following
#   the conventions of the standard UTC mapping tables. However, the
#   TAB character set uses the standard control characters at
#   0x00-0x1F and 0x7F.
##################
#
# SECTION ONE - (one-to-one and one-to-many relationship)
# ----------------------------------------------------------------------
#
0x20              0x0020                          # SPACE
0x21              0x0021                          # EXCLAMATION MARK
0x22              0x0022                          # QUOTATION MARK
0x23              0x0023                          # NUMBER SIGN
0x24              0x0024                          # DOLLAR SIGN
0x25              0x0025                          # PERCENT SIGN
0x26              0x0026                          # AMPERSAND
0x27              0x0027                          # APOSTROPHE
0x28              0x0028                          # LEFT PARENTHESIS
0x29              0x0029                          # RIGHT PARENTHESIS
0x2A              0x002A                          # ASTERISK
0x2B              0x002B                          # PLUS SIGN
0x2C              0x002C                          # COMMA
0x2D              0x002D                          # HYPHEN-MINUS
0x2E              0x002E                          # FULL STOP
0x2F              0x002F                          # SOLIDUS
0x30              0x0030                          # DIGIT ZERO
0x31              0x0031                          # DIGIT ONE
0x32              0x0032                          # DIGIT TWO
0x33              0x0033                          # DIGIT THREE
0x34              0x0034                          # DIGIT FOUR
0x35              0x0035                          # DIGIT FIVE
0x36              0x0036                          # DIGIT SIX
0x37              0x0037                          # DIGIT SEVEN
0x38              0x0038                          # DIGIT EIGHT
0x39              0x0039                          # DIGIT NINE
0x3A              0x003A                          # COLON
0x3B              0x003B                          # SEMICOLON
0x3C              0x003C                          # LESS-THAN SIGN
0x3D              0x003D                          # EQUALS SIGN
0x3E              0x003E                          # GREATER-THAN SIGN
0x3F              0x003F                          # QUESTION MARK
0x40              0x0040                          # COMMERCIAL AT
0x41              0x0041                          # LATIN CAPITAL LETTER A
0x42              0x0042                          # LATIN CAPITAL LETTER B
0x43              0x0043                          # LATIN CAPITAL LETTER C
0x44              0x0044                          # LATIN CAPITAL LETTER D
0x45              0x0045                          # LATIN CAPITAL LETTER E
0x46              0x0046                          # LATIN CAPITAL LETTER F
0x47              0x0047                          # LATIN CAPITAL LETTER G
0x48              0x0048                          # LATIN CAPITAL LETTER H
0x49              0x0049                          # LATIN CAPITAL LETTER I
0x4A              0x004A                          # LATIN CAPITAL LETTER J
```

```
0x4B        0x004B              # LATIN CAPITAL LETTER K
0x4C        0x004C              # LATIN CAPITAL LETTER L
0x4D        0x004D              # LATIN CAPITAL LETTER M
0x4E        0x004E              # LATIN CAPITAL LETTER N
0x4F        0x004F              # LATIN CAPITAL LETTER O
0x50        0x0050              # LATIN CAPITAL LETTER P
0x51        0x0051              # LATIN CAPITAL LETTER Q
0x52        0x0052              # LATIN CAPITAL LETTER R
0x53        0x0053              # LATIN CAPITAL LETTER S
0x54        0x0054              # LATIN CAPITAL LETTER T
0x55        0x0055              # LATIN CAPITAL LETTER U
0x56        0x0056              # LATIN CAPITAL LETTER V
0x57        0x0057              # LATIN CAPITAL LETTER W
0x58        0x0058              # LATIN CAPITAL LETTER X
0x59        0x0059              # LATIN CAPITAL LETTER Y
0x5A        0x005A              # LATIN CAPITAL LETTER Z
0x5B        0x005B              # LEFT SQUARE BRACKET
0x5C        0x005C              # REVERSE SOLIDUS
0x5D        0x005D              # RIGHT SQUARE BRACKET
0x5E        0x005E              # CIRCUMFLEX ACCENT
0x5F        0x005F              # LOW LINE
0x60        0x0060              # GRAVE ACCENT
0x61        0x0061              # LATIN SMALL LETTER A
0x62        0x0062              # LATIN SMALL LETTER B
0x63        0x0063              # LATIN SMALL LETTER C
0x64        0x0064              # LATIN SMALL LETTER D
0x65        0x0065              # LATIN SMALL LETTER E
0x66        0x0066              # LATIN SMALL LETTER F
0x67        0x0067              # LATIN SMALL LETTER G
0x68        0x0068              # LATIN SMALL LETTER H
0x69        0x0069              # LATIN SMALL LETTER I
0x6A        0x006A              # LATIN SMALL LETTER J
0x6B        0x006B              # LATIN SMALL LETTER K
0x6C        0x006C              # LATIN SMALL LETTER L
0x6D        0x006D              # LATIN SMALL LETTER M
0x6E        0x006E              # LATIN SMALL LETTER N
0x6F        0x006F              # LATIN SMALL LETTER O
0x70        0x0070              # LATIN SMALL LETTER P
0x71        0x0071              # LATIN SMALL LETTER Q
0x72        0x0072              # LATIN SMALL LETTER R
0x73        0x0073              # LATIN SMALL LETTER S
0x74        0x0074              # LATIN SMALL LETTER T
0x75        0x0075              # LATIN SMALL LETTER U
0x76        0x0076              # LATIN SMALL LETTER V
0x77        0x0077              # LATIN SMALL LETTER W
0x78        0x0078              # LATIN SMALL LETTER X
0x79        0x0079              # LATIN SMALL LETTER Y
0x7A        0x007A              # LATIN SMALL LETTER Z
0x7B        0x007B              # LEFT CURLY BRACKET
0x7C        0x007C              # VERTICAL LINE
0x7D        0x007D              # RIGHT CURLY BRACKET
0x7E        0x007E              # TILDE
#
0x80-0x90                       # NOT DEFINED
0x91        0x2018              # LEFT SINGLE QUOTATION MARK
0x92        0x2019              # RIGHT SINGLE QUOTATION MARK
0x93        0x201C              # LEFT DOUBLE QUOTATION MARK
0x94        0x201D              # RIGHT DOUBLE QUOTATION MARK
0x95        0x2022              # BULLET
0x96-0x9F                       # NOT DEFINED
0xA0        0x00A0              # NO-BREAK SPACE
0xA1                            # NOT DEFINED
0xA2        0x0BCD              # TAMIL SIGN VIRAMA
0xA3        0x0BBE              # TAMIL VOWEL SIGN AA
0xA4        0x0BBF              # TAMIL VOWEL SIGN I
```

0xA5	0x2022	# BULLET
0xA6	0x0BC0	# TAMIL VOWEL SIGN II
0xA7	0x0BC1	# TAMIL VOWEL SIGN U
0xA8	0x0BC2	# TAMIL VOWEL SIGN UU
0xA9	0x00A9	# COPYRIGHT SIGN
0xAA	0x0BC6	# TAMIL VOWEL SIGN E
0xAB	0x0BC7	# TAMIL VOWEL SIGN EE
0xAC	0x0BC8	# TAMIL VOWEL SIGN AI
0xAD		# NOT DEFINED
0xAE	0x0B9F 0x0BBF	# TAMIL LETTER TTI
0xAF	0x0B9F 0x0BC0	# TAMIL LETTER TTII
0xB0	0x0B95 0x0BC1	# TAMIL LETTER KU
0xB1	0x0B99 0x0BC1	# TAMIL LETTER NGU
0xB2	0x0B9A 0x0BC1	# TAMIL LETTER CU
0xB3	0x0B9E 0x0BC1	# TAMIL LETTER NYU
0xB4	0x0B9F 0x0BC1	# TAMIL LETTER TTU
0xB5	0x0BA3 0x0BC1	# TAMIL LETTER NNU
0xB6	0x0BA4 0x0BC1	# TAMIL LETTER TU
0xB7	0x2022	# BULLET
0xB8	0x0BA8 0x0BC1	# TAMIL LETTER NU
0xB9	0x0BAA 0x0BC1	# TAMIL LETTER PU
0xBA	0x0BAE 0x0BC1	# TAMIL LETTER MU
0xBB	0x0BAF 0x0BC1	# TAMIL LETTER YU
0xBC	0x0BB0 0x0BC1	# TAMIL LETTER RU
0xBD	0x0BB2 0x0BC1	# TAMIL LETTER LU
0xBE	0x0BB5 0x0BC1	# TAMIL LETTER VU
0xBF	0x0BB4 0x0BC1	# TAMIL LETTER LLLU
0xC0	0x0BB3 0x0BC1	# TAMIL LETTER LLU
0xC1	0x0BB1 0x0BC1	# TAMIL LETTER RRU
0xC2	0x0BA9 0x0BC1	# TAMIL LETTER NNNU
0xC3	0x0B95 0x0BC2	# TAMIL LETTER KUU
0xC4	0x0B99 0x0BC2	# TAMIL LETTER NGUU
0xC5	0x0B9A 0x0BC2	# TAMIL LETTER CUU
0xC6	0x0B9E 0x0BC2	# TAMIL LETTER NYUU
0xC7	0x0B9F 0x0BC2	# TAMIL LETTER TTUU
0xC8	0x0BA3 0x0BC2	# TAMIL LETTER NNUU
0xC9	0x0BA4 0x0BC2	# TAMIL LETTER TUU
0xCA	0x00A0	# NO-BREAK SPACE
0xCB	0x0BA8 0x0BC2	# TAMIL LETTER NUU
0xCC	0x0BAA 0x0BC2	# TAMIL LETTER PUU
0xCD	0x0BAE 0x0BC2	# TAMIL LETTER MUU
0xCE	0x0BAF 0x0BC2	# TAMIL LETTER YUU
0xCF	0x0BB0 0x0BC2	# TAMIL LETTER RUU
0xD0		# NOT DEFINED
0xD1		# NOT DEFINED
0xD2	0x201C	# LEFT DOUBLE QUOTATION MARK
0xD3	0x201D	# RIGHT DOUBLE QUOTATION MARK
0xD4	0x2018	# LEFT SINGLE QUOTATION MARK
0xD5	0x2019	# RIGHT SINGLE QUOTATION MARK
0xD6	0x0BB2 0x0BC2	# TAMIL LETTER LUU
0xD7	0x0BB5 0x0BC2	# TAMIL LETTER VUU
0xD8	0x0BB4 0x0BC2	# TAMIL LETTER LLLUU
0xD9	0x0BB3 0x0BC2	# TAMIL LETTER LLUU
0xDA	0x0BB1 0x0BC2	# TAMIL LETTER RRUU
0xDB	0x0BA9 0x0BC2	# TAMIL LETTER NNNUU
0xDC	0x0B85	# TAMIL LETTER A
0xDD	0x0B86	# TAMIL LETTER AA
0xDE	0x0B87	# TAMIL LETTER I
0xDF	0x0B88	# TAMIL LETTER II
0xE0	0x0B89	# TAMIL LETTER U
0xE1	0x0B8A	# TAMIL LETTER UU
0xE2	0x0B8E	# TAMIL LETTER E
0xE3	0x0B8F	# TAMIL LETTER EE
0xE4	0x0B90	# TAMIL LETTER AI
0xE5	0x0B92	# TAMIL LETTER O

```
0xE6                    0x0B93                          # TAMIL LETTER OO
0xE7                    0x0B83                          # TAMIL SIGN VISARGA
0xE8                    0x0B95                          # TAMIL LETTER KA
0xE9                    0x0B99                          # TAMIL LETTER NGA
0xEA                    0x0B9A                          # TAMIL LETTER CA
0xEB                    0x0B9E                          # TAMIL LETTER NYA
0xEC                    0x0B9F                          # TAMIL LETTER TTA
0xED                    0x0BA3                          # TAMIL LETTER NNA
0xEE                    0x0BA4                          # TAMIL LETTER TA
0xEF                    0x0BA8                          # TAMIL LETTER NA
0xF0                    0x0BAA                          # TAMIL LETTER PA
0xF1                    0x0BAE                          # TAMIL LETTER MA
0xF2                    0x0BAF                          # TAMIL LETTER YA
0xF3                    0x0BB0                          # TAMIL LETTER RA
0xF4                    0x0BB2                          # TAMIL LETTER LA
0xF5                    0x0BB5                          # TAMIL LETTER VA
0xF6                    0x0BB4                          # TAMIL LETTER LLLA
0xF7                    0x0BB3                          # TAMIL LETTER LLA
0xF8                    0x0BB1                          # TAMIL LETTER RRA
0xF9                    0x0BA9                          # TAMIL LETTER NNNA
0xFA                    0x0BB8                          # TAMIL LETTER SA
0xFB                    0x0BB7                          # TAMIL LETTER SSA
0xFC                    0x0B9C                          # TAMIL LETTER JA
0xFD                    0x0BB9                          # TAMIL LETTER HA
0xFE                    0x0B95 0x0BCD 0x0BB7            # TAMIL LETTER KSHA
0xFF                    0x0BB8 0x0BCD 0x0BB0 0x0BC0     # TAMIL LETTER SRI
#
#  SECTION TWO - (many-to-one and many-to-many relationship)
#  --------------------------------------------------------------------
#
0xE5 0xF7              0x0B94                          # TAMIL LETTER AU
#
0xE8 0xA2             0x0B95 0x0BCD                    # TAMIL LETTER K
0xE9 0xA2             0x0B99 0x0BCD                    # TAMIL LETTER NG
0xEA 0xA2             0x0B9A 0x0BCD                    # TAMIL LETTER C
0xEB 0xA2             0x0B9E 0x0BCD                    # TAMIL LETTER NY
0xEC 0xA2             0x0B9F 0x0BCD                    # TAMIL LETTER TT
0xED 0xA2             0x0BA3 0x0BCD                    # TAMIL LETTER NN
0xEE 0xA2             0x0BA4 0x0BCD                    # TAMIL LETTER T
0xEF 0xA2             0x0BA8 0x0BCD                    # TAMIL LETTER N
0xF0 0xA2             0x0BAA 0x0BCD                    # TAMIL LETTER P
0xF1 0xA2             0x0BAE 0x0BCD                    # TAMIL LETTER M
0xF2 0xA2             0x0BAF 0x0BCD                    # TAMIL LETTER Y
0xF3 0xA2             0x0BB0 0x0BCD                    # TAMIL LETTER R
0xF4 0xA2             0x0BB2 0x0BCD                    # TAMIL LETTER L
0xF5 0xA2             0x0BB5 0x0BCD                    # TAMIL LETTER V
0xF6 0xA2             0x0BB4 0x0BCD                    # TAMIL LETTER LLL
0xF7 0xA2             0x0BB3 0x0BCD                    # TAMIL LETTER LL
0xF8 0xA2             0x0BB1 0x0BCD                    # TAMIL LETTER RR
0xF9 0xA2             0x0BA9 0x0BCD                    # TAMIL LETTER NNN
0xFA 0xA2             0x0BB8 0x0BCD                    # TAMIL LETTER S
0xFB 0xA2             0x0BB7 0x0BCD                    # TAMIL LETTER SS
0xFC 0xA2             0x0B9C 0x0BCD                    # TAMIL LETTER J
0xFD 0xA2             0x0BB9 0x0BCD                    # TAMIL LETTER H
0xFE 0xA2             0x0B95 0x0BCD 0x0BB7 0x0BCD      # TAMIL LETTER KSH
#
0xE8 0xA3             0x0B95 0x0BBE                    # TAMIL LETTER KAA
0xE9 0xA3             0x0B99 0x0BBE                    # TAMIL LETTER NGAA
0xEA 0xA3             0x0B9A 0x0BBE                    # TAMIL LETTER CAA
0xEB 0xA3             0x0B9E 0x0BBE                    # TAMIL LETTER NYAA
0xEC 0xA3             0x0B9F 0x0BBE                    # TAMIL LETTER TTAA
0xED 0xA3             0x0BA3 0x0BBE                    # TAMIL LETTER NNAA
0xEE 0xA3             0x0BA4 0x0BBE                    # TAMIL LETTER TAA
0xEF 0xA3             0x0BA8 0x0BBE                    # TAMIL LETTER NAA
0xF0 0xA3             0x0BAA 0x0BBE                    # TAMIL LETTER PAA
```

```
0xF1 0xA3          0x0BAE 0x0BBE               # TAMIL LETTER MAA
0xF2 0xA3          0x0BAF 0x0BBE               # TAMIL LETTER YAA
0xF3 0xA3          0x0BB0 0x0BBE               # TAMIL LETTER RAA
0xF4 0xA3          0x0BB2 0x0BBE               # TAMIL LETTER LAA
0xF5 0xA3          0x0BB5 0x0BBE               # TAMIL LETTER VAA
0xF6 0xA3          0x0BB4 0x0BBE               # TAMIL LETTER LLLAA
0xF7 0xA3          0x0BB3 0x0BBE               # TAMIL LETTER LLAA
0xF8 0xA3          0x0BB1 0x0BBE               # TAMIL LETTER RRAA
0xF9 0xA3          0x0BA9 0x0BBE               # TAMIL LETTER NNNAA
0xFA 0xA3          0x0BB8 0x0BBE               # TAMIL LETTER SAA
0xFB 0xA3          0x0BB7 0x0BBE               # TAMIL LETTER SSAA
0xFC 0xA3          0x0B9C 0x0BBE               # TAMIL LETTER JAA
0xFD 0xA3          0x0BB9 0x0BBE               # TAMIL LETTER HAA
0xFE 0xA3          0x0B95 0x0BCD 0x0BB7 0x0BBE # TAMIL LETTER KSHAA
#
0xE8 0xA4          0x0B95 0x0BBF               # TAMIL LETTER KI
0xE9 0xA4          0x0B99 0x0BBF               # TAMIL LETTER NGI
0xEA 0xA4          0x0B9A 0x0BBF               # TAMIL LETTER CI
0xEB 0xA4          0x0B9E 0x0BBF               # TAMIL LETTER NYI
0xED 0xA4          0x0BA3 0x0BBF               # TAMIL LETTER NNI
0xEE 0xA4          0x0BA4 0x0BBF               # TAMIL LETTER TI
0xEF 0xA4          0x0BA8 0x0BBF               # TAMIL LETTER NI
0xF0 0xA4          0x0BAA 0x0BBF               # TAMIL LETTER PI
0xF1 0xA4          0x0BAE 0x0BBF               # TAMIL LETTER MI
0xF2 0xA4          0x0BAF 0x0BBF               # TAMIL LETTER YI
0xF3 0xA4          0x0BB0 0x0BBF               # TAMIL LETTER RI
0xF4 0xA4          0x0BB2 0x0BBF               # TAMIL LETTER LI
0xF5 0xA4          0x0BB5 0x0BBF               # TAMIL LETTER VI
0xF6 0xA4          0x0BB4 0x0BBF               # TAMIL LETTER LLLI
0xF7 0xA4          0x0BB3 0x0BBF               # TAMIL LETTER LLI
0xF8 0xA4          0x0BB1 0x0BBF               # TAMIL LETTER RRI
0xF9 0xA4          0x0BA9 0x0BBF               # TAMIL LETTER NNNI
0xFA 0xA4          0x0BB8 0x0BBF               # TAMIL LETTER SI
0xFB 0xA4          0x0BB7 0x0BBF               # TAMIL LETTER SSI
0xFC 0xA4          0x0B9C 0x0BBF               # TAMIL LETTER JI
0xFD 0xA4          0x0BB9 0x0BBF               # TAMIL LETTER HI
0xFE 0xA4          0x0B95 0x0BCD 0x0BB7 0x0BBF # TAMIL LETTER KSHI
#
0xE8 0xA6          0x0B95 0x0BC0               # TAMIL LETTER KII
0xE9 0xA6          0x0B99 0x0BC0               # TAMIL LETTER NGII
0xEA 0xA6          0x0B9A 0x0BC0               # TAMIL LETTER CII
0xEB 0xA6          0x0B9E 0x0BC0               # TAMIL LETTER NYII
0xED 0xA6          0x0BA3 0x0BC0               # TAMIL LETTER NNII
0xEE 0xA6          0x0BA4 0x0BC0               # TAMIL LETTER TII
0xEF 0xA6          0x0BA8 0x0BC0               # TAMIL LETTER NII
0xF0 0xA6          0x0BAA 0x0BC0               # TAMIL LETTER PII
0xF1 0xA6          0x0BAE 0x0BC0               # TAMIL LETTER MII
0xF2 0xA6          0x0BAF 0x0BC0               # TAMIL LETTER YII
0xF3 0xA6          0x0BB0 0x0BC0               # TAMIL LETTER RII
0xF4 0xA6          0x0BB2 0x0BC0               # TAMIL LETTER LII
0xF5 0xA6          0x0BB5 0x0BC0               # TAMIL LETTER VII
0xF6 0xA6          0x0BB4 0x0BC0               # TAMIL LETTER LLLII
0xF7 0xA6          0x0BB3 0x0BC0               # TAMIL LETTER LLII
0xF8 0xA6          0x0BB1 0x0BC0               # TAMIL LETTER RRII
0xF9 0xA6          0x0BA9 0x0BC0               # TAMIL LETTER NNNII
0xFA 0xA6          0x0BB8 0x0BC0               # TAMIL LETTER SII
0xFB 0xA6          0x0BB7 0x0BC0               # TAMIL LETTER SSII
0xFC 0xA6          0x0B9C 0x0BC0               # TAMIL LETTER JII
0xFD 0xA6          0x0BB9 0x0BC0               # TAMIL LETTER HII
0xFE 0xA6          0x0B95 0x0BCD 0x0BB7 0x0BC0 # TAMIL LETTER KSHII
#
0xFA 0xA7          0x0BB8 0x0BC1               # TAMIL LETTER SU
0xFB 0xA7          0x0BB7 0x0BC1               # TAMIL LETTER SSU
0xFC 0xA7          0x0B9C 0x0BC1               # TAMIL LETTER JU
0xFD 0xA7          0x0BB9 0x0BC1               # TAMIL LETTER HU
```

```
0xFE 0xA7          0x0B95 0x0BCD 0x0BB7 0x0BC1          # TAMIL LETTER KSHU
#
0xFA 0xA8          0x0BB8 0x0BC2                        # TAMIL LETTER SUU
0xFB 0xA8          0x0BB7 0x0BC2                        # TAMIL LETTER SSUU
0xFC 0xA8          0x0B9C 0x0BC2                        # TAMIL LETTER JUU
0xFD 0xA8          0x0BB9 0x0BC2                        # TAMIL LETTER HUU
0xFE 0xA8          0x0B95 0x0BCD 0x0BB7 0x0BC2          # TAMIL LETTER KSHUU
#
0xAA 0xE8          0x0B95 0x0BC6                        # TAMIL LETTER KE
0xAA 0xE9          0x0B99 0x0BC6                        # TAMIL LETTER NGE
0xAA 0xEA          0x0B9A 0x0BC6                        # TAMIL LETTER CE
0xAA 0xEB          0x0B9E 0x0BC6                        # TAMIL LETTER NYE
0xAA 0xEC          0x0B9F 0x0BC6                        # TAMIL LETTER TTE
0xAA 0xED          0x0BA3 0x0BC6                        # TAMIL LETTER NNE
0xAA 0xEE          0x0BA4 0x0BC6                        # TAMIL LETTER TE
0xAA 0xEF          0x0BA8 0x0BC6                        # TAMIL LETTER NE
0xAA 0xF0          0x0BAA 0x0BC6                        # TAMIL LETTER PE
0xAA 0xF1          0x0BAE 0x0BC6                        # TAMIL LETTER ME
0xAA 0xF2          0x0BAF 0x0BC6                        # TAMIL LETTER YE
0xAA 0xF3          0x0BB0 0x0BC6                        # TAMIL LETTER RE
0xAA 0xF4          0x0BB2 0x0BC6                        # TAMIL LETTER LE
0xAA 0xF5          0x0BB5 0x0BC6                        # TAMIL LETTER VE
0xAA 0xF6          0x0BB4 0x0BC6                        # TAMIL LETTER LLLE
0xAA 0xF7          0x0BB3 0x0BC6                        # TAMIL LETTER LLE
0xAA 0xF8          0x0BB1 0x0BC6                        # TAMIL LETTER RRE
0xAA 0xF9          0x0BA9 0x0BC6                        # TAMIL LETTER NNNE
0xAA 0xFA          0x0BB8 0x0BC6                        # TAMIL LETTER SE
0xAA 0xFB          0x0BB7 0x0BC6                        # TAMIL LETTER SSE
0xAA 0xFC          0x0B9C 0x0BC6                        # TAMIL LETTER JE
0xAA 0xFD          0x0BB9 0x0BC6                        # TAMIL LETTER HE
0xAA 0xFE          0x0B95 0x0BCD 0x0BB7 0x0BC6          # TAMIL LETTER KSHE
#
0xAB 0xE8          0x0B95 0x0BC7                        # TAMIL LETTER KEE
0xAB 0xE9          0x0B99 0x0BC7                        # TAMIL LETTER NGEE
0xAB 0xEA          0x0B9A 0x0BC7                        # TAMIL LETTER CEE
0xAB 0xEB          0x0B9E 0x0BC7                        # TAMIL LETTER NYEE
0xAB 0xEC          0x0B9F 0x0BC7                        # TAMIL LETTER TTEE
0xAB 0xED          0x0BA3 0x0BC7                        # TAMIL LETTER NNEE
0xAB 0xEE          0x0BA4 0x0BC7                        # TAMIL LETTER TEE
0xAB 0xEF          0x0BA8 0x0BC7                        # TAMIL LETTER NEE
0xAB 0xF0          0x0BAA 0x0BC7                        # TAMIL LETTER PEE
0xAB 0xF1          0x0BAE 0x0BC7                        # TAMIL LETTER MEE
0xAB 0xF2          0x0BAF 0x0BC7                        # TAMIL LETTER YEE
0xAB 0xF3          0x0BB0 0x0BC7                        # TAMIL LETTER REE
0xAB 0xF4          0x0BB2 0x0BC7                        # TAMIL LETTER LEE
0xAB 0xF5          0x0BB5 0x0BC7                        # TAMIL LETTER VEE
0xAB 0xF6          0x0BB4 0x0BC7                        # TAMIL LETTER LLLEE
0xAB 0xF7          0x0BB3 0x0BC7                        # TAMIL LETTER LLEE
0xAB 0xF8          0x0BB1 0x0BC7                        # TAMIL LETTER RREE
0xAB 0xF9          0x0BA9 0x0BC7                        # TAMIL LETTER NNNEE
0xAB 0xFA          0x0BB8 0x0BC7                        # TAMIL LETTER SEE
0xAB 0xFB          0x0BB7 0x0BC7                        # TAMIL LETTER SSEE
0xAB 0xFC          0x0B9C 0x0BC7                        # TAMIL LETTER JEE
0xAB 0xFD          0x0BB9 0x0BC7                        # TAMIL LETTER HEE
0xAB 0xFE          0x0B95 0x0BCD 0x0BB7 0x0BC7          # TAMIL LETTER KSHEE
#
0xAC 0xE8          0x0B95 0x0BC8                        # TAMIL LETTER KAI
0xAC 0xE9          0x0B99 0x0BC8                        # TAMIL LETTER NGAI
0xAC 0xEA          0x0B9A 0x0BC8                        # TAMIL LETTER CAI
0xAC 0xEB          0x0B9E 0x0BC8                        # TAMIL LETTER NYAI
0xAC 0xEC          0x0B9F 0x0BC8                        # TAMIL LETTER TTAI
0xAC 0xED          0x0BA3 0x0BC8                        # TAMIL LETTER NNAI
0xAC 0xEE          0x0BA4 0x0BC8                        # TAMIL LETTER TAI
0xAC 0xEF          0x0BA8 0x0BC8                        # TAMIL LETTER NAI
0xAC 0xF0          0x0BAA 0x0BC8                        # TAMIL LETTER PAI
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0xAC 0xF1          0x0BAE 0x0BC8                    # TAMIL LETTER MAI
0xAC 0xF2          0x0BAF 0x0BC8                    # TAMIL LETTER YAI
0xAC 0xF3          0x0BB0 0x0BC8                    # TAMIL LETTER RAI
0xAC 0xF4          0x0BB2 0x0BC8                    # TAMIL LETTER LAI
0xAC 0xF5          0x0BB5 0x0BC8                    # TAMIL LETTER VAI
0xAC 0xF6          0x0BB4 0x0BC8                    # TAMIL LETTER LLLAI
0xAC 0xF7          0x0BB3 0x0BC8                    # TAMIL LETTER LLAI
0xAC 0xF8          0x0BB1 0x0BC8                    # TAMIL LETTER RRAI
0xAC 0xF9          0x0BA9 0x0BC8                    # TAMIL LETTER NNNAI
0xAC 0xFA          0x0BB8 0x0BC8                    # TAMIL LETTER SAI
0xAC 0xFB          0x0BB7 0x0BC8                    # TAMIL LETTER SSAI
0xAC 0xFC          0x0B9C 0x0BC8                    # TAMIL LETTER JAI
0xAC 0xFD          0x0BB9 0x0BC8                    # TAMIL LETTER HAI
0xAC 0xFE          0x0B95 0x0BCD 0x0BB7 0x0BC8      # TAMIL LETTER KSHAI
#
0xAA 0xE8 0xA3     0x0B95 0x0BCA                    # TAMIL LETTER KO
0xAA 0xE9 0xA3     0x0B99 0x0BCA                    # TAMIL LETTER NGO
0xAA 0xEA 0xA3     0x0B9A 0x0BCA                    # TAMIL LETTER CO
0xAA 0xEB 0xA3     0x0B9E 0x0BCA                    # TAMIL LETTER NYO
0xAA 0xEC 0xA3     0x0B9F 0x0BCA                    # TAMIL LETTER TTO
0xAA 0xED 0xA3     0x0BA3 0x0BCA                    # TAMIL LETTER NNO
0xAA 0xEE 0xA3     0x0BA4 0x0BCA                    # TAMIL LETTER TO
0xAA 0xEF 0xA3     0x0BA8 0x0BCA                    # TAMIL LETTER NO
0xAA 0xF0 0xA3     0x0BAA 0x0BCA                    # TAMIL LETTER PO
0xAA 0xF1 0xA3     0x0BAE 0x0BCA                    # TAMIL LETTER MO
0xAA 0xF2 0xA3     0x0BAF 0x0BCA                    # TAMIL LETTER YO
0xAA 0xF3 0xA3     0x0BB0 0x0BCA                    # TAMIL LETTER RO
0xAA 0xF4 0xA3     0x0BB2 0x0BCA                    # TAMIL LETTER LO
0xAA 0xF5 0xA3     0x0BB5 0x0BCA                    # TAMIL LETTER VO
0xAA 0xF6 0xA3     0x0BB4 0x0BCA                    # TAMIL LETTER LLLO
0xAA 0xF7 0xA3     0x0BB3 0x0BCA                    # TAMIL LETTER LLO
0xAA 0xF8 0xA3     0x0BB1 0x0BCA                    # TAMIL LETTER RRO
0xAA 0xF9 0xA3     0x0BA9 0x0BCA                    # TAMIL LETTER NNNO
0xAA 0xFA 0xA3     0x0BB8 0x0BCA                    # TAMIL LETTER SO
0xAA 0xFB 0xA3     0x0BB7 0x0BCA                    # TAMIL LETTER SSO
0xAA 0xFC 0xA3     0x0B9C 0x0BCA                    # TAMIL LETTER JO
0xAA 0xFD 0xA3     0x0BB9 0x0BCA                    # TAMIL LETTER HO
0xAA 0xFE 0xA3     0x0B95 0x0BCD 0x0BB7 0x0BCA      # TAMIL LETTER KSHO
#
0xAB 0xE8 0xA3     0x0B95 0x0BCB                    # TAMIL LETTER KOO
0xAB 0xE9 0xA3     0x0B99 0x0BCB                    # TAMIL LETTER NGOO
0xAB 0xEA 0xA3     0x0B9A 0x0BCB                    # TAMIL LETTER COO
0xAB 0xEB 0xA3     0x0B9E 0x0BCB                    # TAMIL LETTER NYOO
0xAB 0xEC 0xA3     0x0B9F 0x0BCB                    # TAMIL LETTER TTOO
0xAB 0xED 0xA3     0x0BA3 0x0BCB                    # TAMIL LETTER NNOO
0xAB 0xEE 0xA3     0x0BA4 0x0BCB                    # TAMIL LETTER TOO
0xAB 0xEF 0xA3     0x0BA8 0x0BCB                    # TAMIL LETTER NOO
0xAB 0xF0 0xA3     0x0BAA 0x0BCB                    # TAMIL LETTER POO
0xAB 0xF1 0xA3     0x0BAE 0x0BCB                    # TAMIL LETTER MOO
0xAB 0xF2 0xA3     0x0BAF 0x0BCB                    # TAMIL LETTER YOO
0xAB 0xF3 0xA3     0x0BB0 0x0BCB                    # TAMIL LETTER ROO
0xAB 0xF4 0xA3     0x0BB2 0x0BCB                    # TAMIL LETTER LOO
0xAB 0xF5 0xA3     0x0BB5 0x0BCB                    # TAMIL LETTER VOO
0xAB 0xF6 0xA3     0x0BB4 0x0BCB                    # TAMIL LETTER LLLOO
0xAB 0xF7 0xA3     0x0BB3 0x0BCB                    # TAMIL LETTER LLOO
0xAB 0xF8 0xA3     0x0BB1 0x0BCB                    # TAMIL LETTER RROO
0xAB 0xF9 0xA3     0x0BA9 0x0BCB                    # TAMIL LETTER NNNOO
0xAB 0xFA 0xA3     0x0BB8 0x0BCB                    # TAMIL LETTER SOO
0xAB 0xFB 0xA3     0x0BB7 0x0BCB                    # TAMIL LETTER SSOO
0xAB 0xFC 0xA3     0x0B9C 0x0BCB                    # TAMIL LETTER JOO
0xAB 0xFD 0xA3     0x0BB9 0x0BCB                    # TAMIL LETTER HOO
0xAB 0xFE 0xA3     0x0B95 0x0BCD 0x0BB7 0x0BCB      # TAMIL LETTER KSHOO
#
0xAA 0xE8 0xF7     0x0B95 0x0BCC                    # TAMIL LETTER KAU
0xAA 0xE9 0xF7     0x0B99 0x0BCC                    # TAMIL LETTER NGAU
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0xAA 0xEA 0xF7      0x0B9A 0x0BCC                    # TAMIL LETTER CAU
0xAA 0xEB 0xF7      0x0B9E 0x0BCC                    # TAMIL LETTER NYAU
0xAA 0xEC 0xF7      0x0B9F 0x0BCC                    # TAMIL LETTER TTAU
0xAA 0xED 0xF7      0x0BA3 0x0BCC                    # TAMIL LETTER NNAU
0xAA 0xEE 0xF7      0x0BA4 0x0BCC                    # TAMIL LETTER TAU
0xAA 0xEF 0xF7      0x0BA8 0x0BCC                    # TAMIL LETTER NAU
0xAA 0xF0 0xF7      0x0BAA 0x0BCC                    # TAMIL LETTER PAU
0xAA 0xF1 0xF7      0x0BAE 0x0BCC                    # TAMIL LETTER MAU
0xAA 0xF2 0xF7      0x0BAF 0x0BCC                    # TAMIL LETTER YAU
0xAA 0xF3 0xF7      0x0BB0 0x0BCC                    # TAMIL LETTER RAU
0xAA 0xF4 0xF7      0x0BB2 0x0BCC                    # TAMIL LETTER LAU
0xAA 0xF5 0xF7      0x0BB5 0x0BCC                    # TAMIL LETTER VAU
0xAA 0xF6 0xF7      0x0BB4 0x0BCC                    # TAMIL LETTER LLLAU
0xAA 0xF7 0xF7      0x0BB3 0x0BCC                    # TAMIL LETTER LLAU
0xAA 0xF8 0xF7      0x0BB1 0x0BCC                    # TAMIL LETTER RRAU
0xAA 0xF9 0xF7      0x0BA9 0x0BCC                    # TAMIL LETTER NNNAU
0xAA 0xFA 0xF7      0x0BB8 0x0BCC                    # TAMIL LETTER SAU
0xAA 0xFB 0xF7      0x0BB7 0x0BCC                    # TAMIL LETTER SSAU
0xAA 0xFC 0xF7      0x0B9C 0x0BCC                    # TAMIL LETTER JAU
0xAA 0xFD 0xF7      0x0BB9 0x0BCC                    # TAMIL LETTER HAU
0xAA 0xFE 0xF7      0x0B95 0x0BCD 0x0BB7 0x0BCC      # TAMIL LETTER KSHAU
#
# END
#
```