Malayalam Script
## 4.2 Malayalam Code Chart

<table>
<thead>
<tr>
<th>OD0</th>
<th>OD1</th>
<th>OD2</th>
<th>OD3</th>
<th>OD4</th>
<th>OD5</th>
<th>OD6</th>
<th>OD7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0D10</td>
<td>0D20</td>
<td>0D30</td>
<td>0D40</td>
<td>0D50</td>
<td>0D60</td>
<td>0D70</td>
</tr>
<tr>
<td>1</td>
<td>0D11</td>
<td>0D21</td>
<td>0D31</td>
<td>0D41</td>
<td>0D51</td>
<td>0D61</td>
<td>0D71</td>
</tr>
<tr>
<td>2</td>
<td>0D12</td>
<td>0D22</td>
<td>0D32</td>
<td>0D42</td>
<td>0D52</td>
<td>0D62</td>
<td>0D72</td>
</tr>
<tr>
<td>3</td>
<td>0D13</td>
<td>0D23</td>
<td>0D33</td>
<td>0D43</td>
<td>0D53</td>
<td>0D63</td>
<td>0D73</td>
</tr>
<tr>
<td>4</td>
<td>0D14</td>
<td>0D24</td>
<td>0D34</td>
<td>0D44</td>
<td>0D54</td>
<td>0D64</td>
<td>0D74</td>
</tr>
<tr>
<td>5</td>
<td>0D15</td>
<td>0D25</td>
<td>0D35</td>
<td>0D45</td>
<td>0D55</td>
<td>0D65</td>
<td>0D75</td>
</tr>
<tr>
<td>6</td>
<td>0D16</td>
<td>0D26</td>
<td>0D36</td>
<td>0D46</td>
<td>0D56</td>
<td>0D66</td>
<td>0D76</td>
</tr>
<tr>
<td>7</td>
<td>0D17</td>
<td>0D27</td>
<td>0D37</td>
<td>0D47</td>
<td>0D57</td>
<td>0D67</td>
<td>0D77</td>
</tr>
<tr>
<td>8</td>
<td>0D18</td>
<td>0D28</td>
<td>0D38</td>
<td>0D48</td>
<td>0D58</td>
<td>0D68</td>
<td>0D78</td>
</tr>
<tr>
<td>9</td>
<td>0D19</td>
<td>0D29</td>
<td>0D39</td>
<td>0D49</td>
<td>0D59</td>
<td>0D69</td>
<td>0D79</td>
</tr>
<tr>
<td>A</td>
<td>0D2A</td>
<td>0D3A</td>
<td>0D4A</td>
<td>0D5A</td>
<td>0D6A</td>
<td>0D7A</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0D2B</td>
<td>0D3B</td>
<td>0D4B</td>
<td>0D5B</td>
<td>0D6B</td>
<td>0D7B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>0D2C</td>
<td>0D3C</td>
<td>0D4C</td>
<td>0D5C</td>
<td>0D6C</td>
<td>0D7C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0D2D</td>
<td>0D3D</td>
<td>0D4D</td>
<td>0D5D</td>
<td>0D6D</td>
<td>0D7D</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>0D2E</td>
<td>0D3E</td>
<td>0D4E</td>
<td>0D5E</td>
<td>0D6E</td>
<td>0D7E</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0D2F</td>
<td>0D3F</td>
<td>0D4F</td>
<td>0D5F</td>
<td>0D6F</td>
<td>0D7F</td>
<td></td>
</tr>
</tbody>
</table>
### 4.2.1 Malayalam Code Chart Details

<table>
<thead>
<tr>
<th>Code</th>
<th>Character</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0D02</td>
<td></td>
<td>Malayalam Sign Anuswaram</td>
</tr>
<tr>
<td>0D03</td>
<td></td>
<td>Malayalam Sign Visargam</td>
</tr>
<tr>
<td>0D05</td>
<td></td>
<td>Malayalam Letter A</td>
</tr>
<tr>
<td>0D06</td>
<td></td>
<td>Malayalam Letter AA</td>
</tr>
<tr>
<td>0D07</td>
<td></td>
<td>Malayalam Letter I</td>
</tr>
<tr>
<td>0D08</td>
<td></td>
<td>Malayalam Letter II</td>
</tr>
<tr>
<td>0D09</td>
<td></td>
<td>Malayalam Letter U</td>
</tr>
<tr>
<td>0D0A</td>
<td></td>
<td>Malayalam Letter UU</td>
</tr>
<tr>
<td>0D0B</td>
<td></td>
<td>Malayalam Letter AA</td>
</tr>
<tr>
<td>0D0C</td>
<td></td>
<td>Malayalam Letter Voc R</td>
</tr>
<tr>
<td>0D0E</td>
<td></td>
<td>Malayalam Letter Voc L</td>
</tr>
<tr>
<td>0D0F</td>
<td></td>
<td>Malayalam Letter AI</td>
</tr>
<tr>
<td>0D11</td>
<td></td>
<td>Malayalam Letter AA</td>
</tr>
<tr>
<td>0D12</td>
<td></td>
<td>Malayalam Letter O</td>
</tr>
<tr>
<td>0D13</td>
<td></td>
<td>Malayalam Letter OO</td>
</tr>
<tr>
<td>0D14</td>
<td></td>
<td>Malayalam Letter AU</td>
</tr>
<tr>
<td>0D15</td>
<td></td>
<td>Malayalam Letter KA</td>
</tr>
<tr>
<td>0D16</td>
<td></td>
<td>Malayalam Letter KHA</td>
</tr>
<tr>
<td>0D17</td>
<td></td>
<td>Malayalam Letter GA</td>
</tr>
<tr>
<td>0D18</td>
<td></td>
<td>Malayalam Letter GHA</td>
</tr>
<tr>
<td>0D19</td>
<td></td>
<td>Malayalam Letter NGA</td>
</tr>
<tr>
<td>0D1A</td>
<td></td>
<td>Malayalam Letter CA</td>
</tr>
<tr>
<td>0D1B</td>
<td></td>
<td>Malayalam Letter CHA</td>
</tr>
<tr>
<td>0D1C</td>
<td></td>
<td>Malayalam Letter JA</td>
</tr>
<tr>
<td>0D1D</td>
<td></td>
<td>Malayalam Letter JHA</td>
</tr>
<tr>
<td>0D1E</td>
<td></td>
<td>Malayalam Letter NYA</td>
</tr>
<tr>
<td>0D1F</td>
<td></td>
<td>Malayalam Letter TTA</td>
</tr>
<tr>
<td>0D20</td>
<td></td>
<td>Malayalam Letter TTHA</td>
</tr>
<tr>
<td>0D21</td>
<td></td>
<td>Malayalam Letter DDA</td>
</tr>
<tr>
<td>0D22</td>
<td></td>
<td>Malayalam Letter DDHA</td>
</tr>
<tr>
<td>0D23</td>
<td></td>
<td>Malayalam Letter NNA</td>
</tr>
<tr>
<td>0D24</td>
<td></td>
<td>Malayalam Letter TA</td>
</tr>
<tr>
<td>0D25</td>
<td></td>
<td>Malayalam Letter THA</td>
</tr>
<tr>
<td>0D26</td>
<td></td>
<td>Malayalam Letter DA</td>
</tr>
<tr>
<td>0D27</td>
<td></td>
<td>Malayalam Letter DHA</td>
</tr>
<tr>
<td>0D28</td>
<td></td>
<td>Malayalam Letter NA</td>
</tr>
<tr>
<td>0D29</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0D2A</td>
<td></td>
<td>Malayalam Letter PA</td>
</tr>
<tr>
<td>0D2B</td>
<td></td>
<td>Malayalam Letter PHA</td>
</tr>
<tr>
<td>0D2C</td>
<td></td>
<td>Malayalam Letter BA</td>
</tr>
<tr>
<td>0D2D</td>
<td></td>
<td>Malayalam Letter BHA</td>
</tr>
<tr>
<td>0D2E</td>
<td></td>
<td>Malayalam Letter MA</td>
</tr>
<tr>
<td>0D2F</td>
<td></td>
<td>Malayalam Letter YA</td>
</tr>
<tr>
<td>0D30</td>
<td></td>
<td>Malayalam Letter RA</td>
</tr>
<tr>
<td>0D31</td>
<td></td>
<td>Malayalam Letter RRA</td>
</tr>
<tr>
<td>0D32</td>
<td></td>
<td>Malayalam Letter LL A</td>
</tr>
<tr>
<td>0D33</td>
<td></td>
<td>Malayalam Letter LL A</td>
</tr>
<tr>
<td>0D34</td>
<td></td>
<td>Malayalam Letter ZHA</td>
</tr>
<tr>
<td>0D35</td>
<td></td>
<td>Malayalam Letter VA</td>
</tr>
<tr>
<td>0D36</td>
<td></td>
<td>Malayalam Letter SHA</td>
</tr>
<tr>
<td>0D37</td>
<td></td>
<td>Malayalam Letter SSA</td>
</tr>
<tr>
<td>0D38</td>
<td></td>
<td>Malayalam Letter SA</td>
</tr>
<tr>
<td>0D39</td>
<td></td>
<td>Malayalam Letter HA</td>
</tr>
<tr>
<td>0D3A</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0D3E</td>
<td></td>
<td>Malayalam Vowel Sign AA</td>
</tr>
<tr>
<td>0D3F</td>
<td></td>
<td>Malayalam Vowel Sign I</td>
</tr>
<tr>
<td>0D40</td>
<td></td>
<td>Malayalam Vowel Sign II</td>
</tr>
<tr>
<td>0D41</td>
<td></td>
<td>Malayalam Vowel Sign U</td>
</tr>
<tr>
<td>0D42</td>
<td></td>
<td>Malayalam Vowel Sign UU</td>
</tr>
<tr>
<td>0D43</td>
<td></td>
<td>Malayalam Vowel Sign Voc R</td>
</tr>
<tr>
<td>0D44</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0D45</td>
<td></td>
<td>Reserved</td>
</tr>
</tbody>
</table>

### Independent Vowels

- Malayalam Letter A
- Malayalam Letter AA
- Malayalam Letter I
- Malayalam Letter II
- Malayalam Letter U
- Malayalam Letter UU
- Malayalam Letter Voc R

### Consonants

- Malayalam Letter KA
- Malayalam Letter KHA
- Malayalam Letter GA
- Malayalam Letter GHA
- Malayalam Letter NGA
- Malayalam Letter CA
- Malayalam Letter CHA
- Malayalam Letter JA
- Malayalam Letter JHA
- Malayalam Letter NYA
- Malayalam Letter TTA
- Malayalam Letter TTHA

### Dependent Vowel Signs

- Malayalam Vowel Sign AA
- Malayalam Vowel Sign I
- Malayalam Vowel Sign II
- Malayalam Vowel Sign U
- Malayalam Vowel Sign UU
- Malayalam Vowel Sign Voc R
### Vowel Signs

- **E** 0D46: stands to the left of the consonant
- **EE** 0D47: stands to the left of the consonant
- **AI** 0D48: stands to the left of the consonant
- **O** 0D49: pieces on both sides of the consonant
- **OO** 0D4B: pieces on both sides of the consonant

### Vowel Length Mark
- **AU** 0D4C: Not in present use

### Generic Additions

- **RR** 0D60: Not in present use
- **LL** 0D61: Not in present use

### Digits

- **ZERO** 0D66: Not in present use
- **ONE** 0D67: Not in present use
- **TWO** 0D68: Not in present use
- **THREE** 0D69: Not in present use
- **FOUR** 0D6A: Not in present use
- **FIVE** 0D6B: Not in present use
- **SIX** 0D6C: Not in present use
- **SEVEN** 0D6D: Not in present use
- **EIGHT** 0D6E: Not in present use
- **NINE** 0D6F: Not in present use

### Various Signs

- **CANDRAKKALA/HALANT** 0D4D: Not in present use
- **N** 0D7A: Not in present use
- **NN** 0D7B: Not in present use
- **RR** 0D7C: Not in present use
- **L** 0D7D: Not in present use
- **LL** 0D7E: Not in present use

[Note: Code points 0D00 - 0D4F of Malayalam Code set have one-to-one phonetic correspondence for vowels, consonants and vowel modifiers with 0900 - 094F of Devanagari Code Set]
4.2.2 Malayalam Script Details

A. Explanations for Revised Malayalam Code Chart

1. Encoding principles

The Malayalam writing system is mostly syllabic. The predominant orthographic unit is a vowel ending syllable with the canonical structure (C)V. The obligatory V represents a short or long vowel. The optional C represents one or more consonants. Except in a few instances the system follows the principles of phonology and mostly corresponds to the pronunciation. The system involves the following distinct character types:

(i) Signs representing a single consonant followed by the inherent short vowel /a/. e.g. \(\text{I} (0D15)\) represents the consonant /k/ followed by /a/.

(ii) Seven signs representing pure consonants (i.e. without any inherent /a/). Five (\(\text{c} \quad \text{o} \quad \text{C} \quad \text{O} \quad \text{S}\)) of these are referred to as chillu, one anusvaaram (\(\text{O}\)) (0D02) and the remaining one visargam (\(\text{O}\)) (0D03).

(iii) Signs representing certain consonants in consonant clusters: eg: signs for /g/ and /m/ in \(\text{G}((0D17) + (0D4D) + (0D2E))\); those for /n/ and /c/ in \(\text{N}((0D1E) + (0D4D) + (0D1A))\) etc.

(iv) Signs representing independent vowels. e.g. \(\text{A}(0D05)/\text{a}/, \text{C}(0D07)/\text{i}/, \text{D}(0D09)/\text{u}/\) etc.

(v) Signs representing dependent vowels. e.g. \(\text{II}(0D3F)/\text{i}/, \text{II}(0D41)/\text{u}/\) etc.

Principles of the Malayalam Script

Appearance of the characters in the Malayalam script is affected by the following factors: (1) Ordering of the concerned character with respect to other characters (2) The font employed and (3) The application or system environment. These variables can cause the appearance of the Malayalam characters to differ from their nominal glyphs (used in Unicode charts).

Consonant Letters

Each consonant letter represents a single consonant sound followed by the inherent vowel /a/ thereby making an orthographic syllable.

Consonant letters may also be rendered as half forms which go into the constitution of consonant conjuncts. Only those half forms which represent the final member of a consonant conjunct has an inherent /a/.

4. Independent Vowel Letters

Independent vowels in Malayalam are signs that stand on their own. These are used to write syllables, which start with a vowel.

5. Dependent vowel signs

These occur only in combination with a base consisting of a sign for a single consonant or a consonant cluster. When the vowel quality of the syllable is different from that of the inherent /a/, it is represented by the respective dependent vowel sign. Explicit appearance of a dependent vowel in a syllable overrides the inherent vowel of the consonant/ consonant cluster. eg. \(\text{c} \quad \text{o} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{S}\)

6. Adding dependent vowel signs to consonant sign bases

In the traditional writing system dependent non-spacing signs for the short and long varieties of /u/ were attached to the respective consonant sign base. But the present day Malayalam writing system uses spacing for all the dependent vowel signs. These belong to the following three types:

(i) There is a set of eight signs which follow the base representing a consonant or a consonant cluster. Among them \(\text{c} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O}\) respectively correspond and are phonetically equivalent to the following independent vowel signs: \(\text{c} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O}\) and \(\text{c} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O}\) respectively correspond and have the same phonetic value as the independent sign for the vocalic R \(\text{r}(0D08)\) and that for the diphthong /au/ \(\text{r}(0D14)\). The eighth dependent sign, chandrakaka \(\text{c} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{O}\) representing the central vowel or /u/ with spread lips does not have any corresponding independent vowel since none
is required by the code of Malayalam orthography as the concerned vowel never occurs in utterance initially.

(ii) Three signs which precede the consonant base:  (0D 46),  ô (0D 47), and  ö (0D 48). These signs respectively correspond and are phonetically equivalent to the independent vowel signs:  ø (0D 0E),  ø (0D 0F) and ø (0D 10).

(iii) Two signs which have the first glyph component preceding the consonant base and the second following it:  œ (0D 4A),  eo (0D 4B). These are equivalent to the independent vowels ø (0D 12) and ø (0D 13) respectively.

7. Vowel omission sign

A crescent mark  ৷ (0D 4D) called chandrakkala, placed on the right top of the base sign of the respective consonant or consonant cluster, indicates that the quality of the inherent vowel /a/ is to be omitted from the value of the orthographic syllable, thereby making the remaining consonant ‘dead’. Note that in utterance final position as has already been stated (6) the same sign represents the central vowel, pronounced with spread lips. As no dead consonant can occur as final utterance in Malayalam, this dual value associated with the same sign leads to no ambiguity.

8. Consonant conjuncts

Malayalam has a large number of consonant conjunct forms, which serve as orthographic abbreviations of two or more adjacent letter forms. A consonant cluster is depicted with a conjunct glyph if available in the current font(s). In the absence of a conjunct glyph, the conjunct is depicted with the nominal Consonant forms with chandrakkala in between.

The following types of consonant conjunct formations are present.

(i) Signs for ‘strong’ (or the so called ‘duplicate’) consonants:

   (a) Glyphs involving duplication of the signs, repetition of the basic sign being effected at its bottom or to its right:  ö,  ø,  ø,  ø,  ø, ö, ö, ö

(b) Subscribing a half form to the consonant base:  ş,  ş

(c) Duplicating the basic sign to its right:  ø,  ø,  ø

(d) Post-posing a half form to the consonant base:  ø,  ø,  ø,  ø

(e) Pre-posing a half form to the consonant base:  ø,  ø

(f) Subscribing a special sign to the consonant base:  ø,  ø,  ø,  ø,  ø

(g) Subscribing the sign of an aspirated consonant to that of an un-aspirated one:  ø,  ø

(ii) Signs for complex consonant conjuncts:

They are of the following types:

(a) Those consisting of a consonant sign followed by a spacing half form or a special sign which represent the final ‘live’ consonant:  ø,  ø

(b) Those consisting of a consonant sign representing a dead consonant and a subscripted dependent consonant sign which represents the final live consonant.

(c) Those consisting of a consonant sign and a special sign; they represent the dead consonant and the final live consonant respectively:  ø,  ø,  ø,  ø,  ø

The special sign representing either ø or ø depending on the context is separated from the consonant letter and appears to be preposed to (ø, ø) it thereby resulting in the reversal of the sequence of elements in pronunciation.

Ligatures for complex consonant conjuncts involve the following types of combination:

(a) The signs of the concerned consonants are ligated in one stroke:  ø,  ø

(b) The consonant sign and the pre-posed partial form represents respectively the live and dead consonants:  ø,  ø,  æ,  ø,  ø,  ø,  ø
The consonant sign and the post-posed partial form represent respectively the dead and live consonants: _release9, release10, release11. There are a few instances of misfit between the visual sign and the pronunciation: release12, release13, release14. Here the phonetic value of the ligature differs from that of the combination of the usual value of the component signs.

9. Rendering

Rules for Rendering

These rules describe the mapping between the Unicode characters and the Glyphs in a Malayalam font. It also describes the combining and ordering of those Glyphs.

It is important to note that in a font that is capable of rendering Malayalam, the set of glyphs is greater than the number of fonts in the Malayalam Unicode characters.

Notations

The following notation applies to the description that follows.

- \( C_n \): Nominal glyph form of a consonant \( C \) as it appears in the code charts.
- \( C_l \): A live consonant, depicted identically to \( C_n \).
- \( C_d \): Glyph depicting the dead consonant form of the consonant \( C \).
- \( L_n \): Nominal glyph form of a conjunct ligature consisting of two or more component consonants.
- \( V_v \): Glyph depicting the dependent vowel sign form of a vowel \( V \).
- \( CH_n \): The nominal glyph form of the vowel omission sign chandrakkala.
- \( YAKAR \): Dependent sign for the consonant YA.
- \( RAKAR \): Dependent sign for the consonant RA or RRA.
- \( LAKAR \): Dependent sign for the Consonant LA.
- \( VAKAR \): Dependent sign for the Consonant VA.

### Dead Consonant Rule

When a consonant \( C_n \) precedes a chandrakkala \( CH_n \), it is considered to be a dead consonant \( C_d \). A consonant \( C_n \) that does not precede a chandrakkala is considered to be a live consonant \( C_l \).

\[ KA_n + CH_n = KA_d \]

\[ \text{release15} + \text{release16} = \text{release17} \]

**Rule for YAKAR:** YAKAR is formed when Malayalam letter YA (OD 2F) is at the end of a consonant/ consonant cluster. The special sign (\( \text{release18} \)) is post posed to the consonant in such cases.

\[ KA_d + YA_i \]

\[ KA_d + YA + YAKAR \]

Displayed output: \[ \text{release19} + \text{release20} + \text{release21} \]

This rule does not apply to a strong consonant of \( \text{release22} \). Note that when \( \text{release23} \) is added to \( \text{release24} \), \( \text{release25} \) is formed \( (\text{release26} + \text{release27} = \text{release28}) \).

**Rule for RAKAR:** RAKAR is formed when Malayalam letter RA (OD 30) or RRA (OD 31) is at the end of a consonant/ consonant cluster, a special sign (\( \text{release29} \)) is preposed to the consonant.

\[ KA_d + RRA_i \]

\[ KA_d + RRA + RAKAR \]

Displayed output: \[ \text{release30} + \text{release31} + \text{release32} \]

This rule does not apply to a strong consonant of \( \text{release33} \). Note that when \( \text{release34} \) is added to \( \text{release35} \), \( \text{release36} \) (ttā) is formed.

\[ \text{release37} + \text{release38} + \text{release39} = \text{release40} \]

**Rule for LAKAR:** LAKAR is formed when the Malayalam letter LA (OD 32) is at the end of a consonant/ consonant cluster. A special sign (\( \text{release41} \)) is put at the bottom of the consonant/ consonant cluster.

\[ KA_d + LA_i \]

\[ KA_d + LA + LAKAR \]

Displayed output: \[ \text{release42} + \text{release43} + \text{release44} \]

**Rule for VAKAR:** VAKAR is formed when the Malayalam letter VA (OD 35) is at the end of a consonant cluster. The special sign (\( \text{release45} \)) is post posed to the consonant/consonant cluster.

\[ KA_d + VA_i \]

\[ KA_d + VA + VAKAR \]

Displayed output: \[ \text{release46} + \text{release47} + \text{release48} \]
Certain rules governing formation of ligatures in Malayalam is given below. The precise application of these rules depends on the availability of glyphs in the current font(s) being used to display the text.

If a dead consonant immediately precedes another dead consonant or a live consonant, then the first dead consonant may join the subsequent element to form a two part conjunct ligature form.

The different types of consonant conjunct formations are given in section 8.

Rule for strong or ‘duplicate’ consonant.

Conjunct ligatures formed by repetition of basic sign (slightly smaller in size) being affected at its bottom.

\[
\begin{align*}
d + v + d &= Ì \\
\text{K} + v + K &= Å \\
U + v + U &= Æ \\
W + v + W &= fi \\
\text{X} + v + X &= ' \\
\text{Y} + v + Y &= ¨ \\
\text{K} + v + \text{K} &= ˚ \\
\text{D} + v + \text{D} &= ä \\
\end{align*}
\]

When the same combination \( v + \text{K} + \text{K} \) is added to dead \( \text{K} \) then the resulting complex conjunct glyph will be as shown below.

\[
\text{K} + v + \text{K} + \text{K} + v + \text{K} = Ì
\]

(a) Conjuncts formed by subscripting a half/partial form to the consonant base.

\[
\begin{align*}
\text{S} + \text{K} + \text{S} &= Ì \\
\text{S} + \text{S} + \text{S} &= Ì \\
\end{align*}
\]

(b) Duplicating the basic sign to its right.

\[
\begin{align*}
d + v + d &= Ì \\
d + v + \text{K} &= Ì \\
\text{S} + \text{S} + \text{S} &= Ì \\
\end{align*}
\]

(c) Post posing a half form/partial to the consonant base.

\[
\text{K} + \text{K} + d + \text{K} + \text{K} + v + \text{K} = Ì
\]

(d) Pre posing a half form to the consonant base.

\[
\begin{align*}
\text{K} + v + \text{K} &= Å \\
\text{K} + v + \text{K} &= Å \\
\text{K} + v + \text{K} &= Å \\
\text{X} + v + \text{X} &= ' \\
\text{Y} + v + \text{Y} &= ' \\
\text{M} + v + \text{M} &= ' \\
\end{align*}
\]

(e) Subscripting a special sign to the consonant base.

\[
\begin{align*}
\text{S} + \text{K} + \text{S} &= Ì \\
\text{Z} + \text{K} + \text{Z} &= Å \\
\text{X} + \text{K} + \text{X} &= ' \\
\text{a} + \text{K} + \text{a} &= ' \\
\text{f} + \text{K} + \text{f} &= ' \\
\text{P} + \text{K} + \text{P} &= Ö \\
\text{R} + \text{K} + \text{R} &= Å \\
\text{L} + \text{K} + \text{L} &= Å \\
\text{N} + \text{K} + \text{N} &= Å \\
\text{b} + \text{K} + \text{b} &= Å \\
\text{e} + \text{K} + \text{e} &= Å \\
\text{N} + \text{K} + \text{O} &= Ñ \\
\text{O} + \text{K} + \text{O} &= Ñ \\
\text{b} + \text{K} + \text{b} &= Å \\
\text{e} + \text{K} + \text{e} &= Å \\
\end{align*}
\]

Complex Consonant Conjuncts

Ligature formations for complex consonant are given below.

(g) The signs of concerned consonants are legated in one stroke.

\[
\begin{align*}
\text{s} + \text{S} + \text{s} &= Ì \\
\text{s} + \text{S} + \text{s} &= Ì \\
\end{align*}
\]

(h) The consonant sign and the pre-posed partial form represents respectively the live and dead consonants.

\[
\begin{align*}
\text{s} + \text{S} + \text{s} &= Ì \\
\text{s} + \text{S} + \text{s} &= Ì \\
\text{s} + \text{S} + \text{s} &= Ì \\
\text{K} + \text{v} + \text{a} &= Ò \\
\text{L} + v + \text{a} &= Ò \\
\text{I} + v + \text{I} &= Ò \\
\text{M} + v + \text{M} &= Ò \\
\text{N} + v + \text{N} &= Ò \\
\text{b} + v + \text{b} &= Ò \\
\text{e} + v + \text{e} &= Ò \\
\text{N} + v + \text{O} &= Ñ \\
\text{O} + v + \text{O} &= Ñ \\
\text{b} + v + \text{b} &= Ò \\
\text{e} + v + \text{e} &= Ò \\
\end{align*}
\]

(i) The consonant sign and the post posed partial form represent respectively the dead and the live consonants.

\[
\begin{align*}
\text{s} + \text{S} + \text{s} &= Ì \\
\text{s} + \text{S} + \text{s} &= Ì \\
\text{s} + \text{S} + \text{s} &= Ì \\
\text{K} + \text{v} + \text{a} &= Ò \\
\text{L} + v + \text{a} &= Ò \\
\text{I} + v + \text{I} &= Ò \\
\text{M} + v + \text{M} &= Ò \\
\text{N} + v + \text{N} &= Ò \\
\text{b} + v + \text{b} &= Ò \\
\text{e} + v + \text{e} &= Ò \\
\end{align*}
\]
The commonly used conjuncts and their formation sequence is given below.

<table>
<thead>
<tr>
<th>Conjunct</th>
<th>Component</th>
<th>Unicode representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D15 + 0D4D + 0D15</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D1A + 0D4D + 0D1A</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D1F + 0D4D + 0D1F</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D24 + 0D4D + 0D24</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D2A + 0D4D + 0D2A</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D17 + 0D4D + 0D17</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D1C + 0D4D + 0D1C</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D21 + 0D4D + 0D21</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D26 + 0D4D + 0D26</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D2C + 0D4D + 0D2C</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D19 + 0D4D + 0D19</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D1E + 0D4D + 0D1E</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D23 + 0D4D + 0D23</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D28 + 0D4D + 0D28</td>
<td></td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>0D2E + 0D4D + 0D2E</td>
<td></td>
</tr>
</tbody>
</table>

Rule for alternate representation of conjuncts

Conjuncts can also be shown with the chandrakala in between the constituent consonants, without formatting the conjunct. This can be achieved by typing chandrakala twice.

<table>
<thead>
<tr>
<th>Glyph</th>
<th>Alternate formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
<tr>
<td>ꮕ + ꮜ + ꮜ</td>
<td>ꮕ + ꮜ + ꮜ + ꮜ</td>
</tr>
</tbody>
</table>

Rule:

YAKAR, RAKAR, VAKAR, and LAKAR combinations wouldn’t come after chillu characters.

| ꮕ + ꮜ = ꮕ + ꮜ | ꮕ + ꮜ + ꮜ + ꮜ |
| ꮕ + ꮜ = ꮕ + ꮜ + ꮜ + ꮜ |
| ꮕ + ꮜ = ꮕ + ꮜ + ꮜ + ꮜ |
| ꮕ + ꮜ = ꮕ + ꮜ + ꮜ + ꮜ |

However the Malayalam letter ‘RRA’ (0D31) when combined with chillu ‘‡’ (0D5C) will give rise to the soft conjunct ꮕ (nda).

If ‘ño’ and ‘ö’ are to be separately displayed as in name ꮕꮕꮕꮕ (Henry) then ꮕ and ꮕ has to be separated by ‘#v’.
Memory Representation and Rendering Order

The order for storage of plain text in Malayalam follows the phonetic order. A CV syllable with a dependent vowel is always encoded as a consonant letter C followed by a vowel sign V in the memory representation if the dependent vowel is one to depicted at the right side of the consonant. This order is employed by the ISCII standard and corresponds with both the phonetic and keying order of the textual data.

Rendering Order

Character Order

\[ KA_n + AA_{vs} = KAA_n \]
\[ \text{O} + \text{O} = \text{O} \]

Since some of the dependent Malayalam vowel signs must be depicted to the left side of the consonant letter, and some others on both sides, the software that renders the Malayalam script must be able to reorder elements in mapping from the logical (character) store to the presentational (glyph) rendering.

Dependent vowels on the left side of the consonant sign

When the dependent vowel signs \( E_{vs} (\text{O}) \), \( EE_{vs} (\text{O} \text{O}) \), and \( AI_{vs} (\text{O} \text{O} \text{O}) \) are used to override the inherent vowel of a syllable it is always written to the extreme left of the orthographic syllable. If the orthographic syllable contains a consonant cluster then this vowel sign is always depicted to the left side of that cluster.

\[ KA_n + E_{vs} = KE_n (\text{Displayed output}) \]
\[ \text{O} + \text{O} = \text{O} \]
\[ KA_n + AI_{vs} = KA_{II} \]
\[ \text{O} + \text{O} = \text{O} \]

Two part vowel

Two of the dependent vowel signs in Malayalam consist of two discontinuous elements as in other cases of discontinuous elements, two sequences of Unicode values can be used to express the component elements.

\[ O_{vs} = \text{E}_{vs} + \text{AA}_{vs} \]
\[ \text{O} \text{O} (\text{OD} 4A) = \text{O} (\text{OD} 46) + \text{O} (\text{OD} 3E) \]

Rule:

When the dependent vowel \( O \) \( \text{O} \text{O} \text{O} (\text{OD} 4A) = \text{O} \text{O} \text{O} (\text{OD} 46) + \text{O} (\text{OD} 3E) \) and \( O \text{O} \text{O} (\text{OD} 4B) = \text{O} \text{O} \text{O} (\text{OD} 47) + \text{O} (\text{OD} 3E) \) are used to override the inherent vowel of the syllable, it pieces on both sides of the syllable. The first sign \( \text{O} \text{O} \text{O} \) corresponding to \( E \) \( (\text{OD} 46) \) and \( EE \) \( (\text{OD} 47) \) is placed on the left side of the syllable and the last sign \( \text{O} \text{O} \text{O} \) (corresponding to \( 0D 3E \) ) is placed at the right side of the syllable.

\[ KA_n + O_{vs} = KO_n \ (\text{Displayed output}) \]
\[ \text{O} + \text{O} = \text{O} \]
\[ KA_n + O\ O_{vs} = KO\ O_n \ (\text{Displayed output}) \]
\[ \text{O} + \text{O} = \text{O} \]

(Courtesy: Shri R. Ravindra Kumar
ER & DCI, Vellayambalam,
Thiruvananthapuram 695 033
Tel. 0471-723333 Fax: 0471-723456
E-mail: ravi@erdcitvm.org)
B. Malayalam Design Guide

Introduction

Kerala

Kerala is an enchantingly beautiful, emerald green sliver of land, flanked by the Western Ghats on one side, the Arabian Sea on the other, and strewn with rivers, lagoons, backwaters and rich vegetation in between.

Kerala is one of the smallest states in the Republic of India, and was formed in 1956. It has an area of 15,005 sq. miles [38,863 sq. km.] about one percent of the total land area of India.

The state stretches for about 360 miles along the Malabar coast on the western side of the Indian peninsula; its width varies from 20 to 75 miles. It is bordered by the states of Karnataka on the north, Tamil Nadu to the east and the Arabian sea to the west. The state has 14 districts and the capital is Trivandrum [now Thiruvananthapuram].

Kerala is one of the ten ‘Paradises Found’ by the National Geographic Traveler, for its diverse geography and overwhelming greenery.

Area 38,863 sq km
Capital Thiruvananthapuram
Language Malayalam
Districts 14
Population 29,011,237
Males 14,218,167
Female 14,793,070
Increase (1981-91): 3,557,557
Growth Rate (per cent) 1981-91: 13.98
Density (persons per sq.km.) 747
Urban Population 26.31%
SexRatio (females per 1040) 1040
Literacy 90.59%
Males 94.45
Females 86.93
Percapita income(92-93) Rs.5,065
1991 Census final population total 29,698,518
Languages 95.2% of the people of Kerala speak Malayalam. Malayalam and English are the official languages of the state. The other languages used and the percentage of people using these languages is given below.

<table>
<thead>
<tr>
<th>Language</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil</td>
<td>2.37 %</td>
</tr>
<tr>
<td>Tulu</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Konkani</td>
<td>0.40 %</td>
</tr>
<tr>
<td>Kannada</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Telegu</td>
<td>0.24 %</td>
</tr>
</tbody>
</table>

History of Malayalam Language

Malayalam is one of the four major languages of the Dravidian Language Family. Malayalam has a strong literary history, which is centuries old. The language grew, developed and established its individuality in the 9th Century A.D. Prior to this individuation, one and the same language, except for some dialects, was spoken all over the region, comprising the present day Kerala and Tamil Nadu. The famous Sangham Period of Literature can be considered to be a common literary ancestor of Malayalam as well as Tamil.

The evolution of Malayalam was a continuous process, going on for centuries. During the initial stages of development, Malayalam was greatly influenced by Tamil, which was then used in literary works. During the same time the land had to go through a turbulent period, when it had to face internal conflicts and invasion from outside. This resulted in the land being politically isolated. During this time, the Aryan Brahmin settlers started establishing themselves in Kerala. The native Dravidians began imbibing the culture and language of the settlers. As a result, Sanskrit and Prakrit started having an overwhelming influence in the hitherto stage of development. Very soon, Sanskrit began to gain prominence and started attracting scholars. Sanskrit was unintelligible, and hence a great hindrance to learning. In order to solve the problem a mixed language of Sanskrit and Malayalam, known as Manipravalam was invented. The treatise Ledatilakam written in the 14th century describes the Manipravalam form in detail.

After this stage, around the 15th century, the gatha type of poetry came into being. The most important representative work of the period is Krishnagatha written by Cherusseri. This is the first proper literary work in Malayalam. Sanskrit words used in the work are fewer and Sanskrit case endings have been avoided.
In the 17th century there lived a famous poet called Thunchath Ramanujan Ezhuthachan. His work Adhyatma Ramayanam marked the beginning of the modern stage of Malayalam, and the final de-linking of Malayalam and Tamil.

The spoken language of the ordinary Keralite entered into the realm of prose, only later. This relatively late entry was because of the dominance of Tamil and Sanskrit in intellectual discourses and political and economic transactions. There were prose inscriptions that were meant for the common man. But they too were not free from the dominating influence of Sanskrit. Art forms like Koodiyattam and Chakyar Koothu helped in bringing into prose, the language of the ordinary man.

With the advent of the European Missionaries, the spoken language began to gain importance. The language in the literary works written by them was largely a representative of the spoken language of the time.

Arabic also has influenced Malayalam considerably. This variety of Malayalam was an admixture of Tamil, Malayalam and Arabic.

The present day Malayalam is fully developed and has a very rich literature. Throughout its development it has undergone many changes, thereby absorbing a lot from Tamil, Sanskrit and English.

Modern Malayalam is highly influenced by English. English, being the language of the elite has connotations of education and refinement. It has become a part of the modern spoken Malayalam, that it is used widely, both knowingly and unknowingly.

**Technical Characteristics**

The Malayalam writing system is mostly syllabic. The predominant orthographic unit is a vowel ending syllable with the canonical structure (C)V. The obligatory V represents a short or long vowel. The optional C represents one or more consonants. Except in a few instances the system follows the principles of phonology and mostly corresponds to the pronunciation. The system involves the following distinct character types:

(i) Signs representing a single consonant followed by the inherent short vowel /a/. e.g. (0D15) represents the consonant /k/ followed by /a/.

(ii) Seven signs representing pure consonants (i.e. without any inherent /a/). Five (0D 0D 0D 0D 0D) of these are referred to as chillu, one anusvaaram (0D 02) and the remaining one visargam (0D 03).

(iii) Signs representing certain consonants in consonant clusters:
    eg: signs for /g/ and /m/ in (0D 17)+(0D 4D)+(0D 2E); those for /h/ and /c/ in (0D 1E)+(0D 4D)+(0D 1A) etc.

(iv) Signs representing independent vowels:
    e.g. (0D 05)/a/, (0D 07)/i/, (0D 09)/u/ etc.

(v) Signs representing dependent vowels:
    e.g. (0D 3F)/i/, (0D 41)/u/ etc.

**Principles of the Malayalam Script**

Appearance of the characters in the Malayalam script is affected by the following factors:

1. Ordering of the concerned character with respect to other characters
2. The font employed
3. The application or system environment

These variables can cause the appearance of the Malayalam characters to differ from their nominal glyphs (used in Unicode charts).

**Consonant Letters**

Each consonant letter represents a single consonant sound followed by the inherent vowel /a/ thereby making an orthographic syllable.

Consonant letters may also be rendered as half forms which go into the constitution of consonant conjuncts. Only those half forms which represent the final member of a consonant conjunct has an inherent /a/.

**Independent Vowel Letters**

Independent vowels in Malayalam are signs that stand on their own. These are used to write syllables, which start with a vowel.

**Dependent vowel signs**

These occur only in combination with a base consisting of a sign for a single consonant or a consonant cluster. When the vowel quality of the syllable is different from that of the inherent /a/, it is represented by the respective dependent vowel sign. Explicit appearance of a dependent vowel in a syllable overrides the inherent vowel of the consonant/
Adding dependent vowel signs to consonant sign bases

In the traditional writing system dependent non-spacing signs for the short and long varieties of /u/ were attached to the respective consonant sign base. But the present day Malayalam writing system uses spacing for all the dependent vowel signs. These belong to the following three types:

(i) There is a set of eight signs which follow the base representing a consonant or a consonant cluster. Among them oda (0D3E), oda (0D40), oda (0D41) and oda (0D42) respectively correspond and are phonetically equivalent to the following independent vowel signs: b (0D06), g (0D07), go (0D08), go (0D09) and go (0D0A) whereas oda (0D43) and oda (0D47) respectively correspond and have the same phonetic value as the independent sign for the vocalic R R (0D0B) and that for the diphthong /au/ H (0D14). The eighth dependent sign, chandrakkala  (0D4D) representing the central vowel or /u/ with spread lips does not have any corresponding independent vowel since none is required by the code of Malayalam orthography as the concerned vowel never occurs utterance initially.

(ii) Three signs which precede the consonant base: oda (0D46), oda (0D47), and oda (0D48). These signs respectively correspond and are phonetically equivalent to the independent vowel signs: oda (0D0E), oda (0D0F) and oda (0D10).

(iii) Two signs which have the first glyph component preceding the consonant base and the second following it: oda (0D4A), oda (0D4B). These are equivalent to the independent vowels oda (0D12) and oda (0D13) respectively.

Vowel omission sign

A crescent mark  (0D4D) called chandrakkala, placed on the right top of the base sign of the respective consonant or consonant cluster, indicates that the quality of the inherent vowel /a/ is to be omitted from the value of the orthographic syllable, thereby making the remaining consonant ‘dead’.

Consonant conjuncts

Malayalam has a large number of consonant conjunct forms, which serve as orthographic abbreviations of two or more adjacent letter forms. A consonant cluster is depicted with a conjunct glyph if available in the current font(s). In the absence of a conjunct glyph, the conjunct is depicted with the nominal consonant forms with chandrakkala in between.

The following types of consonant conjunct formations are present.

(i) Signs for ‘strong’ (or the so called ‘duplicate’) consonants:

(a) Glyphs involving duplication of the signs, repetition of the basic sign being effected at its bottom or to its right: b, g, go, go, go, go, go, go, go /go/

(b) Subscripting a half form to the consonant base: g, g

(c) Duplicating the basic sign to its right: m, m, m

(d) Post-posing a half form to the consonant base: m, m, m, m

(e) Pre-posing a half form to the consonant base: m, m, m, m

(f) Subscripting a special sign to the consonant base: m, m, m, m

(g) Subscripting the sign of an aspirated consonant to that of an un-aspirated one: m

(ii) Signs for complex consonant conjuncts:

They are of the following types:

(a) Those consisting of a consonant sign followed by a spacing half form or a special sign, which represent the final ‘live’ consonant: m, m

(b) Those consisting of a consonant sign representing a dead consonant and a subscripted dependent consonant sign, which represents the final live consonant.
Those consisting of a consonant sign and a special sign; they represent the dead consonant and the final live consonant respectively: ꞁ, ꞃ, ꞵ, ꞷ, ꞹ, Ꞹ

The special sign representing either Ꞃ or Ꞅ depending on the context is separated from the consonant letter and appears to be pre-posed to ꞈ, ꞩ it thereby resulting in the reversal of the sequence of elements in pronunciation.

Numerals

The Malayalam Script has its own Numerals but they are seldom used in present day Malayalam writing. The International numerals are used almost everywhere.

Punctuation Marks

All punctuation marks in Malayalam are borrowed from English.

Ligatures for complex consonant conjuncts involve the following types of combination:

(a) The signs of the concerned consonants are ligated in one stroke: Ꞅ, Ɥ
(b) The consonant sign and the pre-posed partial form represents respectively the live and dead consonants: ꞇ, ꞈ, ꞉, ꞊, Ꞌ, ꞌ
(c) The consonant sign and the post-posed partial form represent respectively the dead and live consonants: Ɥ, ꞎ, ꞏ, Ꞑ

There are a few instances of misfit between the visual sign and the pronunciation:

皤, ὧ, ὦ

Here the phonetic value of the ligature differs from that of the combination of the usual value of the component signs.

Fonts

Character Cell Size

Character cell size of all characters in Malayalam are given in the table below:

It is represented in em units. The height is the same and width of individual characters vary from 20 to 1819 em units.
Recently the Govt. of Kerala has approved the new keyboard layout shown below:

In the new keyboard 5 “chillu” characters have been added. These are ೙, ೚, ೛, ೝ & ೞ. ೙ and ೚ have been removed from this keyboard as they are not needed.

Character Composition

The commonly used conjuncts and their composition is given below.

<table>
<thead>
<tr>
<th>Conjunct glyph</th>
<th>Component characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>೙</td>
<td>೙ + ೙ + ೙</td>
</tr>
<tr>
<td>೚</td>
<td>೚ + ೚ + ೚</td>
</tr>
<tr>
<td>೛</td>
<td>೛ + ೛ + ೛</td>
</tr>
<tr>
<td>ೝ</td>
<td>ೝ + ೝ + ೝ</td>
</tr>
<tr>
<td>ೞ</td>
<td>ೞ + ೞ + ೞ</td>
</tr>
</tbody>
</table>

Rule for YAKAR: YAKAR is formed when Malayalam letter YA is at the end of a consonant / consonant cluster. The special sign (ං)is post posed to the consonant in such cases.

This rule does not apply to a strong consonant of ೟. Note that when ೟ is added to ೟, ೟ං is formed (ං + ೟ = ೟ං).

Rule for RAKAR: RAKAR is formed when Malayalam letter RA or RRA is at the end of a consonant/ consonant cluster, a special sign ’{’ is preposed to the consonant.

This rule does not apply to a strong consonant of ೟. Note that when ೟ is added to ೟, ೟ (tt) is formed. ೟ + ೟ = ೟ (tt)

Rule for LAKAR: LAKAR is formed when the Malayalam letter LA is at the end of a consonant/ consonant cluster. A special sign ’ ‘ is put at the bottom of the consonant/ consonant cluster.

KAd + RAI KAl+ RAKAR displayed output ೙ + ೙ + ೙
GAd + RAI GAl+ RAKAR displayed output ೙ + ೙ + ೙
Rule for VAKAR: VAKAR is formed when the Malayalam letter VA (0D35) is at the end of a consonant cluster. The special sign ‘z’ is post posed to the consonant/consonant cluster.

KAd + VAl KAd + VAKAR displayed output: I + #v + h I + z Iz

(Rule does not apply to a strong/duplicate consonant of h. Note that when h is added to h, ˘ is formed)

There is a set of eight signs which follow the base representing a consonant or a consonant cluster. Among them #m, #n, #o, #p and #q respectively correspond and are phonetically equivalent to the following independent vowel signs: B, C, Cu, D and Du whereas #r and #u respectively correspond and have the same phonetic value as the independent sign for the vocalic R and that for the diphthong /au/ øo. The eighth dependent sign, chandrakkala ‘representing the central vowel or /U/ with spread lips does not have any corresponding independent vowel since none is required by the code of Malayalam orthography as the concerned vowel never occurs utterance initially.

(i) Three signs which precede the consonant base: ø, ø, and ø. These signs respectively correspond and are phonetically equivalent to the independent vowel signs: ø, ø, øø. These are equivalent to the independent vowels ø and øø respectively.

(ii) Two signs which have the first glyph component preceding the consonant base and the second following it: øø, øø. These are equivalent to the independent vowels ø and øø respectively.

The Specific Linguistic Features Of Malayalam – An Overview

1. The utterance final articulation is voiced.
2. A euphonic vowel, phonetically realised as [u] occurs utterance finally after consonants excepting [m]. Example kālu ‘leg’ pālu ‘milk’.
3. The tendency to pronounce voiced aspirated plosives as voiceless aspirated plosives.
4. The presence of two lateral sounds || and ||
5. The presence of two flapped consonants.

Formats of Units

<table>
<thead>
<tr>
<th>Calendar</th>
<th>pañcām</th>
<th>ുകാമ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week</td>
<td>aYuc</td>
<td>ുകഓ</td>
</tr>
<tr>
<td>Date</td>
<td>divasam</td>
<td>ുജനപുർണ</td>
</tr>
<tr>
<td>Time</td>
<td>samayam</td>
<td>ുസലകം</td>
</tr>
<tr>
<td>Number</td>
<td>samkhyā</td>
<td>ുസാക്ഷിയ</td>
</tr>
<tr>
<td>Currency</td>
<td>nāṇayam</td>
<td>ുനാനയാം</td>
</tr>
</tbody>
</table>

Calendars & Eras

The Malayalam calendar is known as Kollam era. The months of the year are Ciññam, Kanni, tulām, Vṛścikam, Dhānu, Makaram, Kumbham, Minam, Mētam, ītavam, Mithunam and Karkiṭakam. The running Kollam era is 1177, starting from the month of Ciññam. The Malayalam months and the corresponding English months are listed below. The correspondence, however will not be exact and there could be a variation of a day or two for each month depending on various factors based on how a day is calculated.

<table>
<thead>
<tr>
<th>Malayalam Months</th>
<th>Corresponding English Months (Approximation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciññam</td>
<td>August 15th to September 15th</td>
</tr>
<tr>
<td>Kanni</td>
<td>September 15th to October 15th</td>
</tr>
<tr>
<td>tulām</td>
<td>October 15th to November 15th</td>
</tr>
<tr>
<td>Vṛścikam</td>
<td>November 15th to December 15th</td>
</tr>
<tr>
<td>Dhānu</td>
<td>December 15th to January 15th</td>
</tr>
<tr>
<td>Makaram</td>
<td>January 15th to February 15th</td>
</tr>
<tr>
<td>Kumbham</td>
<td>February 15th to March 15th</td>
</tr>
<tr>
<td>Minam</td>
<td>March 15th to April 15th</td>
</tr>
<tr>
<td>Mētam</td>
<td>April 15th to May 15th</td>
</tr>
<tr>
<td>ītavam</td>
<td>May 15th to June 15th</td>
</tr>
<tr>
<td>Mithunam</td>
<td>June 15th to July 15th</td>
</tr>
<tr>
<td>Karkiṭakam</td>
<td>July 15th to August 15th</td>
</tr>
</tbody>
</table>

The days of the week are:

<table>
<thead>
<tr>
<th>Day</th>
<th>Malayalam</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>ḥyary</td>
<td>ുഅയര</td>
<td>Sunday</td>
</tr>
<tr>
<td>tīṅkaḷ</td>
<td>ുണകർ</td>
<td>Monday</td>
</tr>
<tr>
<td>cova</td>
<td>ുവനാട്</td>
<td>Tuesday</td>
</tr>
<tr>
<td>budhan</td>
<td>ുബുധൻ</td>
<td>Wednesday</td>
</tr>
<tr>
<td>vyāYam</td>
<td>ുവിയമ</td>
<td>Thursday</td>
</tr>
<tr>
<td>veḷḷi</td>
<td>ുവെളി</td>
<td>Friday</td>
</tr>
<tr>
<td>śaṇi</td>
<td>ുശനി</td>
<td>Saturday</td>
</tr>
</tbody>
</table>
Lexicographic ordering of Malayalam characters (Sorting Order)

The following order of characters is recommended for the lexicographic ordering of Malayalam words.

A B C Cu #vv (kw-hrX DIm-cw) DD u E F G sF H Hm Hu IJ K L M NO P Q R S T U V (‹ W) X Y Z [ (‡ \) ^ _ ' (#w a) b c (À d) (´ e) h i j k (#x l) (˜ f) g

Typing Sequence

a) Vowels and Consonants

The vowels and consonants are to be typed in the sequence of pronunciation eg:

<table>
<thead>
<tr>
<th>Word</th>
<th>Keystroke sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>hS-Ic</td>
<td>h S I c</td>
</tr>
<tr>
<td>ae a e</td>
<td></td>
</tr>
<tr>
<td>B\ B \</td>
<td></td>
</tr>
<tr>
<td>Cc C c</td>
<td></td>
</tr>
<tr>
<td>Cud Cu d</td>
<td></td>
</tr>
<tr>
<td>Dua Du a</td>
<td></td>
</tr>
<tr>
<td>Ge G e</td>
<td></td>
</tr>
<tr>
<td>Hma\ Hm a \</td>
<td></td>
</tr>
<tr>
<td>Huj[ Hu j [</td>
<td></td>
</tr>
</tbody>
</table>

b) Vowel signs attached to Consonants

The vowel sign to be attached to a consonant is to be typed immediately after the consonant/conjunct. eg:

<table>
<thead>
<tr>
<th>Word</th>
<th>Keystroke sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>ame a # m e</td>
<td></td>
</tr>
<tr>
<td>Xnc X # n c</td>
<td></td>
</tr>
<tr>
<td>ioe i # o e</td>
<td></td>
</tr>
<tr>
<td>IpS I # p S</td>
<td></td>
</tr>
<tr>
<td>Nqc N # q c</td>
<td></td>
</tr>
<tr>
<td>IrXn I # r X n</td>
<td></td>
</tr>
<tr>
<td>sNhn N s# h n</td>
<td></td>
</tr>
<tr>
<td>the h t# e</td>
<td></td>
</tr>
<tr>
<td>ssa\ a ss# \</td>
<td></td>
</tr>
<tr>
<td>sXmen X s# m e n</td>
<td></td>
</tr>
<tr>
<td>tImSn I t# m S n</td>
<td></td>
</tr>
<tr>
<td>kuan\ n k # u a n \</td>
<td></td>
</tr>
</tbody>
</table>

b) Anuswaram

Anuswaram to be attached to a consonant or vowel is to be typed immediately after the consonant/vowel. eg: 

If vowel sign is present, anuswaram will follow it (as is the order in which the syllable is pronounced). eg: 

d) Visargam

Visargam is used to indicate an aspiration sound (h) and is to be typed immediately after the consonant/vowel to which it is attached. If vowel sign is present, anuswaram will follow it. eg: 

e) Chandrakkala

Chandrakkala is typed after a consonant/conjunct to indicate omission of inherent A from any non-final consonant or the addition of the central vowel with spread lips to the utterance-final consonant. eg: 

Chandrakkala cannot be attached to vowels, vowel signs, anuswaram and visargam. eg: 

g) Attaching consonant sign y

To attach consonant sign y to consonants/conjuncts, type after consonant and chandrakkala, as shown:

eg: 

However, the characters which are typed will be stored as such and y is used only for the visual representation.

g) Attaching consonant sign j

To get the consonant sign j attached to consonants/conjuncts, type after consonant and chandrakkala, as shown:

eg: 

However, the characters which are typed, will be stored as such and j is used only for the visual representation.
h) Attaching consonant sign ζ

The attachment of ζ to consonant/conjuncts in most of the cases results in appending ο sound to the pure consonant/conjunct. But in some cases, ζ sign denotes the attachment of ο sound to the pure consonant/conjunct. So, the visual representation of the conjunct obtained by attaching ζ ο and ζ ο will be ζ as shown in the following examples:

\[
\text{eg: } \text{Η} \text{Η} \text{Η} \quad \text{Η} \text{Η} \text{Η} \quad \text{Η} \text{Η} \text{Η}
\]

However, the characters which are typed will be stored as such and is used only for the visual representation.

i) Consonants sign w

The attachment of w to consonant /conjuncts in most of the cases results in appending η sound to the pure consonant/conjunct, as shown above. But in some cases, w sign denotes the attachment of η sound to the pure consonant/conjunct. So, the visual representation of the conjunct obtained by attaching ζ η and ζ η will be w as shown in the following examples:

\[
\text{eg: } \text{Η} \text{Η} \text{Η} \quad \text{Η} \text{Η} \text{Η} \quad \text{Η} \text{Η} \text{Η}
\]

However, the characters which are typed will be stored as such and w is used only for the visual representation.

Character, word, line, and sentence break rules.

In Malayalam Characters are split by Syllables. Word, line and sentence break rules are same as that for English.

Weights and Measurements

The metric system is used for weights and measurements.

(Courtesy: Mrs. K.G. Sulochana ER & DCI, Vellayambalam, Thiruvananthapuram 695 033 Tel. 0471-723333 Fax: 0471-723456)
WEATHER

- It is cold
  കടുപ്പാക്കം
  Thanupandu
- It is cool outside
  ബുദ്ധികൾ കടുപ്പാക്കം
  Purathu thanuppanu
- It is hot
  മൃഗാനന്തം
  Choodundu
- It is raining
  അമ്പാട മൃഗാനന്തം
  M aha peyunnu

GENERAL

- What is your name?
  ക്ഷേത്രം അപേക്ഷാന്തരം?
  Thanupalude perenthanu?
- My name is Ranjan
  അപേക്ഷാന്തരം
  Ente peru Ranjan ennunn
- Where do you live?
  ഓരോക്കുള്ള വാസസ്ഥലം
  Njan Ghantahgarinaduthanu hamaikkunnathu
- How old are you?
  താകമായി ഏകദേശം
  Thankalkku ethra vayassayi?
- That building is tall
  ആയ  കുടുംബ വാസസ്ഥലം
  Aa kettidam valuthanu
- She is beautiful
  അമ്പാട സാന്താനാരാധന
  Aval sundariyanu
- I like Bengali sweets
  ഏനിക്ക് ബങ്കില മധുര പലഹരണൊരു
  Enikku Bengali madhura palaharanjai ishtamanu
- I love birds
  ഏനിക്ക് പകിഷ്കല എടുക്കോ ഇന്ത്യ
  Enikku pakshikale ishtamanu
- Where is Railway station?
  ഏനിക്ക് രായ്യാഴ്ച സ്റ്റെഡിനോ?
  Evideyanu railway station?
- How far is the Bus Terminal from here?
  ഏനിക്ക് ബസ് സ്റ്റെഡിനോ എടുക്കോ?
  Ivide ninnu bus stopplekku ethra dooramundu?
- How long will it take to reach the Airport?
  ഏനിക്ക് വിമാനത്താവലിൽ
  Vimanathavalathil ethan ethra samaymedukkum?
- Is Mr. Raghunath there?
  ഏനിക്ക് രാघുനാഥനു?
  Avide Reghunath undo?
Please tell him to call back as soon as he is free.
Dayavayi avanodu thirichu vilikkan parayuka.

How much will it cost?
Athinu ethra vilayakum?

Excuse me.
Kshamikkanam.

From which Platform can I get the train for Chandigarh?
Ethu platformil ninnu enikku Chandigarhilekkulla theevandi kittum?

Does this train stop at Aligarh?
Ee theevandi Aligarhil nirthumo?

How many kids do you have?
Ee sammanam valare nallathanu.

It is really pretty.
Ithu valare manoharamanu.

Food is delicious.
Ee aaharathinu nalla ruchiyundu.

Congratulations
Abhinandanangal!

You look lovely.
Ningale kaanan nannayirikkunnu

Wish you happy new year.
Ningalude vivaham pramanichu abhinandanangal!

Keep your eyes wide open before marriage and half-shut afterwards.
Vivahathinu munpu kannukal nannayi thurannu vaykkuka; athinu sesham pakuthi adachum.

(Courtesy : Shri R. Ravindra Kumar
ER & DCI, Vellayambalam, Thiruvananthapuram 695 033
Tel. 0471-723333
Fax: 0471-723456
E-mail : ravi@erdcitvm.org)