

Variation sequences for combining marks

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Proposal

I propose to update the restrictions on combining marks as initial characters for variation sequences in the Unicode Standard:

- Replace the restriction against variation sequences for nonspacing combining marks with a restriction against variation sequences for combining marks with combining classes other than 0.
- Clarify the status of enclosing marks with respect to these restrictions.
- Add a restriction against variation sequences for variation selectors.

Variation sequences for combining marks and normalization

The current restriction against variation sequences for nonspacing combining marks is described as “necessary to prevent problems in the interpretation of such sequences in normalized text”. The problems that such variation sequences might cause are related to the *Canonical Ordering Algorithm* in section [3.11 Normalization Forms](#) of The Unicode Standard. This phase of the Unicode normalization algorithm looks at uninterrupted sequences of marks with combining classes other than 0 and reorders these marks by their combining classes in ascending order. This is commonly used to erase irrelevant differences in mark sequences in non-Brahmic scripts, e.g., when a base character has one mark on top and another at the bottom. It is less common in Brahmic scripts, whose Unicode encoding usually orders according to a linguistic model, not the visual model underlying canonical ordering.

For the following discussion, let’s use a few sample characters:

- U+1037 ၵ MYANMAR SIGN DOT BELOW, CCC = 7
- U+103A ၶ MYANMAR SIGN ASAT, CCC = 9
- U+108D ၾ MYANMAR SIGN SHAN COUNCIL EMPHATIC TONE, CCC = 220
- U+FE00 VARIATION SELECTOR-1, CCC = 0

The first problem arising from variation sequences in canonical ordering is that variation selectors have CCC = 0, and so would interrupt sequences of marks that otherwise would be treated as reorderable in canonical ordering. For example, the sequence 103A 1037 is reordered to 1037 103A, but if 103A were the initial character in a variation sequence, followed by FE00, then 103A FE00 1037 could no longer be reordered.

The second problem is that canonical ordering is based on code points and does not take variation sequences into consideration. For example, the sequence 108D 103A FE00 would be reordered to 103A 108D FE00, separating the variation selector from the ASAT it belongs to and attaching it to SHAN COUNCIL EMPHATIC TONE, creating an invalid variation sequence.

In the context of these problems, however, the restriction against nonspacing combining marks is both too loose and too restrictive to meet its goal. It's too loose because there are marks that have $ccc \neq 0$ but also $gc \neq Mn$, such as several viramas ($ccc = 9$), Hangul tone marks ($ccc = 224$), and musical symbols ($ccc = 216$). And it's too restrictive because many nonspacing marks, especially in Brahmic scripts, have $ccc = 0$, so that they would block reordering anyway and adding a variation selector wouldn't have any impact on canonical ordering. Hence the proposal to base the restriction on the combining class, not the general category, so that it correctly addresses the two problems.

Variation sequences for combining marks and text segmentation

Variation selectors have $gc = Mn$, and [Unicode text segmentation](#) never separates nonspacing combining marks from preceding characters. Allowing other nonspacing marks to start variation sequences has no impact on text segmentation.

Variation sequences for combining marks and line breaking

Variation selectors have Line_Break value CM (combining mark), and [Unicode line breaking](#) never separates characters of this line break class from preceding characters. Allowing other nonspacing marks to start variation sequences has no impact on line breaking.

Variation sequences for combining marks and rendering

Any new variation sequence requires updates to fonts for the script it belongs to, to map the new sequence to an appropriate glyph – there's no difference between base characters and combining marks in this respect. However, OpenType shaping engines and fonts using Graphite or Apple Advanced Typography technologies for Brahmic scripts also implement validation, checking incoming text against cluster models and inserting dotted circles into character sequences that are malformed according to their cluster models.

The cluster models used by OpenType shaping engines do not currently allow variation sequences for combining marks, so they would have to be updated to accommodate such sequences if any were actually defined. The cluster models implemented by Graphite- or AAT-based fonts are generally not documented, but would likely have to be updated as well.

Variation sequences for enclosing marks

The existing specification is unclear about variation sequences for enclosing marks (gc = Me). The paragraph introducing variation sequences states: “a variation sequence always consists of a base character or a spacing mark (gc = Mc) followed by a single variation selector character”, which would imply that enclosing marks cannot start a variation sequence. On the other hand, the paragraph discussion restrictions only says that “the initial character in a variation sequence is never a nonspacing combining mark (gc = Mn) or a canonical decomposable character”, which would place no restriction on enclosing marks.

As discussed above, the general category of combining marks is irrelevant to normalization; only the combining class matters. The references to “spacing marks” and “gc = Mc” should be replaced with “combining marks”, which includes spacing, nonspacing, and enclosing marks, so that the restriction based on a mark’s combining class becomes the only one.

Variation sequences for variation selectors

Variation selectors have general category Mn and combining class 0. Allowing all combining marks with combining class 0 would allow variation selectors as first characters of variation sequences. While this doesn’t cause problems for normalization, it obviously doesn’t make sense, so there needs to be a separate restriction against them.

There are other characters with general category Mn that have no inherent visual representation, such as U+034F COMBINING GRAPHEME JOINER, and for which therefore variation sequences would be inappropriate. However, there’s no good way to categorize them based on Unicode data (the derived property Default_Ignorable_Code_Point covers some but not all of them), so I don’t propose any formal restriction, and instead leave it to the UTC to reject any proposals to standardize variation sequences for such characters.

Suggested wording

- In section [23.4 Variation Selectors](#) of The Unicode Standard, change the paragraph introducing variation sequences to remove the discussion of restrictions:

Variation Sequence. A variation sequence always consists of a base character or a ~~spacing combining~~ mark (~~gc = Mc~~) followed by a single variation selector character. That two-element sequence is referred to as a variant of the base character or ~~spacing combining~~ mark. For simplicity of exposition, the following discussion only mentions

base characters; variation sequences involving ~~spacing~~ combining marks are uncommon, but otherwise behave similarly.

- In the same section, change the paragraph discussing restrictions on initial characters in variation sequences:

The initial character in a variation sequence is never a ~~nonspacing~~ combining mark (~~gc~~ ~~= Mn~~) with a combining class other than 0, or a canonical decomposable character.

These restrictions on the initial character of a variation sequence are necessary to prevent problems in the interpretation of such sequences in normalized text. The initial character in a variation sequence is also never a variation selector.

Acknowledgments

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Affected characters

This section describes the impact of the proposed changes on characters assigned in Unicode 13.

717 characters *become eligible* for variation sequences because they are nonspacing marks with combining class 0 and are not affected by other restrictions:

- 034F COMBINING GRAPHEME JOINER
- 07A6 THAANA ABAFILI
- 07A7 THAANA ABAAFILI
- 07A8 THAANA IBIFILI
- 07A9 THAANA EEBEFILI
- 07AA THAANA UBUFILI
- 07AB THAANA OBOOFILI
- 07AC THAANA EBEFILI
- 07AD THAANA EYBEFILI
- 07AE THAANA OBOFILI
- 07AF THAANA OABOAFILI
- 07B0 THAANA SUKUN
- 0900 DEVANAGARI SIGN INVERTED CANDRABINDU
- 0901 DEVANAGARI SIGN CANDRABINDU
- 0902 DEVANAGARI SIGN ANUSVARA
- 093A DEVANAGARI VOWEL SIGN OE
- 0941 DEVANAGARI VOWEL SIGN U

- 0942 DEVANAGARI VOWEL SIGN UU
- 0943 DEVANAGARI VOWEL SIGN VOCALIC R
- 0944 DEVANAGARI VOWEL SIGN VOCALIC RR
- 0945 DEVANAGARI VOWEL SIGN CANDRA E
- 0946 DEVANAGARI VOWEL SIGN SHORT E
- 0947 DEVANAGARI VOWEL SIGN E
- 0948 DEVANAGARI VOWEL SIGN AI
- 0955 DEVANAGARI VOWEL SIGN CANDRA LONG E
- 0956 DEVANAGARI VOWEL SIGN UE
- 0957 DEVANAGARI VOWEL SIGN UUE
- 0962 DEVANAGARI VOWEL SIGN VOCALIC L
- 0963 DEVANAGARI VOWEL SIGN VOCALIC LL
- 0981 BENGALI SIGN CANDRABINDU
- 09C1 BENGALI VOWEL SIGN U
- 09C2 BENGALI VOWEL SIGN UU
- 09C3 BENGALI VOWEL SIGN VOCALIC R
- 09C4 BENGALI VOWEL SIGN VOCALIC RR
- 09E2 BENGALI VOWEL SIGN VOCALIC L
- 09E3 BENGALI VOWEL SIGN VOCALIC LL
- 0A01 GURMUKHI SIGN ADAK BINDI
- 0A02 GURMUKHI SIGN BINDI
- 0A41 GURMUKHI VOWEL SIGN U
- 0A42 GURMUKHI VOWEL SIGN UU
- 0A47 GURMUKHI VOWEL SIGN EE
- 0A48 GURMUKHI VOWEL SIGN AI
- 0A4B GURMUKHI VOWEL SIGN OO
- 0A4C GURMUKHI VOWEL SIGN AU
- 0A51 GURMUKHI SIGN UDAAT
- 0A70 GURMUKHI TIPPI
- 0A71 GURMUKHI ADDAK
- 0A75 GURMUKHI SIGN YAKASH
- 0A81 GUJARATI SIGN CANDRABINDU
- 0A82 GUJARATI SIGN ANUSVARA
- 0AC1 GUJARATI VOWEL SIGN U
- 0AC2 GUJARATI VOWEL SIGN UU
- 0AC3 GUJARATI VOWEL SIGN VOCALIC R
- 0AC4 GUJARATI VOWEL SIGN VOCALIC RR
- 0AC5 GUJARATI VOWEL SIGN CANDRA E
- 0AC7 GUJARATI VOWEL SIGN E
- 0AC8 GUJARATI VOWEL SIGN AI
- 0AE2 GUJARATI VOWEL SIGN VOCALIC L

- 0AE3 GUJARATI VOWEL SIGN VOCALIC LL
- 0AFA GUJARATI SIGN SUKUN
- 0AFB GUJARATI SIGN SHADDA
- 0AFC GUJARATI SIGN MADDAH
- 0AFD GUJARATI SIGN THREE-DOT NUKTA ABOVE
- 0AFE GUJARATI SIGN CIRCLE NUKTA ABOVE
- 0AFF GUJARATI SIGN TWO-CIRCLE NUKTA ABOVE
- 0B01 ORIYA SIGN CANDRABINDU
- 0B3F ORIYA VOWEL SIGN I
- 0B41 ORIYA VOWEL SIGN U
- 0B42 ORIYA VOWEL SIGN UU
- 0B43 ORIYA VOWEL SIGN VOCALIC R
- 0B44 ORIYA VOWEL SIGN VOCALIC RR
- 0B55 ORIYA SIGN OVERLINE
- 0B56 ORIYA AI LENGTH MARK
- 0B62 ORIYA VOWEL SIGN VOCALIC L
- 0B63 ORIYA VOWEL SIGN VOCALIC LL
- 0B82 TAMIL SIGN ANUSVARA
- 0BC0 TAMIL VOWEL SIGN II
- 0C00 TELUGU SIGN COMBINING CANDRABINDU ABOVE
- 0C04 TELUGU SIGN COMBINING ANUSVARA ABOVE
- 0C3E TELUGU VOWEL SIGN AA
- 0C3F TELUGU VOWEL SIGN I
- 0C40 TELUGU VOWEL SIGN II
- 0C46 TELUGU VOWEL SIGN E
- 0C47 TELUGU VOWEL SIGN EE
- 0C4A TELUGU VOWEL SIGN O
- 0C4B TELUGU VOWEL SIGN OO
- 0C4C TELUGU VOWEL SIGN AU
- 0C62 TELUGU VOWEL SIGN VOCALIC L
- 0C63 TELUGU VOWEL SIGN VOCALIC LL
- 0C81 KANNADA SIGN CANDRABINDU
- 0CBF KANNADA VOWEL SIGN I
- 0CC6 KANNADA VOWEL SIGN E
- 0CCC KANNADA VOWEL SIGN AU
- 0CE2 KANNADA VOWEL SIGN VOCALIC L
- 0CE3 KANNADA VOWEL SIGN VOCALIC LL
- 0D00 MALAYALAM SIGN COMBINING ANUSVARA ABOVE
- 0D01 MALAYALAM SIGN CANDRABINDU
- 0D41 MALAYALAM VOWEL SIGN U
- 0D42 MALAYALAM VOWEL SIGN UU

- 0D43 MALAYALAM VOWEL SIGN VOCALIC R
- 0D44 MALAYALAM VOWEL SIGN VOCALIC RR
- 0D62 MALAYALAM VOWEL SIGN VOCALIC L
- 0D63 MALAYALAM VOWEL SIGN VOCALIC LL
- 0D81 SINHALA SIGN CANDRABINDU
- 0DD2 SINHALA VOWEL SIGN KETTI IS-PILLA
- 0DD3 SINHALA VOWEL SIGN DIGA IS-PILLA
- 0DD4 SINHALA VOWEL SIGN KETTI PAA-PILLA
- 0DD6 SINHALA VOWEL SIGN DIGA PAA-PILLA
- 0E31 THAI CHARACTER MAI HAN-AKAT
- 0E34 THAI CHARACTER SARA I
- 0E35 THAI CHARACTER SARA II
- 0E36 THAI CHARACTER SARA UE
- 0E37 THAI CHARACTER SARA UEE
- 0E47 THAI CHARACTER MAITAIKHU
- 0E4C THAI CHARACTER THANTHAKHAT
- 0E4D THAI CHARACTER NIKHAHIT
- 0E4E THAI CHARACTER YAMAKKAN
- 0EB1 LAO VOWEL SIGN MAI KAN
- 0EB4 LAO VOWEL SIGN I
- 0EB5 LAO VOWEL SIGN II
- 0EB6 LAO VOWEL SIGN Y
- 0EB7 LAO VOWEL SIGN YY
- 0EBB LAO VOWEL SIGN MAI KON
- 0EBC LAO SEMIVOWEL SIGN LO
- 0ECC LAO CANCELLATION MARK
- 0ECD LAO NIGGAHITA
- 0F77 TIBETAN VOWEL SIGN VOCALIC RR
- 0F79 TIBETAN VOWEL SIGN VOCALIC LL
- 0F7E TIBETAN SIGN RJES SU NGA RO
- 0F8D TIBETAN SUBJOINED SIGN LCE TSA CAN
- 0F8E TIBETAN SUBJOINED SIGN MCHU CAN
- 0F8F TIBETAN SUBJOINED SIGN INVERTED MCHU CAN
- 0F90 TIBETAN SUBJOINED LETTER KA
- 0F91 TIBETAN SUBJOINED LETTER KHA
- 0F92 TIBETAN SUBJOINED LETTER GA
- 0F94 TIBETAN SUBJOINED LETTER NGA
- 0F95 TIBETAN SUBJOINED LETTER CA
- 0F96 TIBETAN SUBJOINED LETTER CHA
- 0F97 TIBETAN SUBJOINED LETTER JA
- 0F99 TIBETAN SUBJOINED LETTER NYA

- 0F9A TIBETAN SUBJOINED LETTER TTA
- 0F9B TIBETAN SUBJOINED LETTER TTHA
- 0F9C TIBETAN SUBJOINED LETTER DDA
- 0F9E TIBETAN SUBJOINED LETTER NNA
- 0F9F TIBETAN SUBJOINED LETTER TA
- 0FA0 TIBETAN SUBJOINED LETTER THA
- 0FA1 TIBETAN SUBJOINED LETTER DA
- 0FA3 TIBETAN SUBJOINED LETTER NA
- 0FA4 TIBETAN SUBJOINED LETTER PA
- 0FA5 TIBETAN SUBJOINED LETTER PHA
- 0FA6 TIBETAN SUBJOINED LETTER BA
- 0FA8 TIBETAN SUBJOINED LETTER MA
- 0FA9 TIBETAN SUBJOINED LETTER TSA
- 0FAA TIBETAN SUBJOINED LETTER TSHA
- 0FAB TIBETAN SUBJOINED LETTER DZA
- 0FAD TIBETAN SUBJOINED LETTER WA
- 0FAE TIBETAN SUBJOINED LETTER ZHA
- 0FAF TIBETAN SUBJOINED LETTER ZA
- 0FB0 TIBETAN SUBJOINED LETTER -A
- 0FB1 TIBETAN SUBJOINED LETTER YA
- 0FB2 TIBETAN SUBJOINED LETTER RA
- 0FB3 TIBETAN SUBJOINED LETTER LA
- 0FB4 TIBETAN SUBJOINED LETTER SHA
- 0FB5 TIBETAN SUBJOINED LETTER SSA
- 0FB6 TIBETAN SUBJOINED LETTER SA
- 0FB7 TIBETAN SUBJOINED LETTER HA
- 0FB8 TIBETAN SUBJOINED LETTER A
- 0FBA TIBETAN SUBJOINED LETTER FIXED-FORM WA
- 0FBB TIBETAN SUBJOINED LETTER FIXED-FORM YA
- 0FBC TIBETAN SUBJOINED LETTER FIXED-FORM RA
- 102D MYANMAR VOWEL SIGN I
- 102E MYANMAR VOWEL SIGN II
- 102F MYANMAR VOWEL SIGN U
- 1030 MYANMAR VOWEL SIGN UU
- 1032 MYANMAR VOWEL SIGN AI
- 1033 MYANMAR VOWEL SIGN MON II
- 1034 MYANMAR VOWEL SIGN MON O
- 1035 MYANMAR VOWEL SIGN E ABOVE
- 1036 MYANMAR SIGN ANUSVARA
- 103D MYANMAR CONSONANT SIGN MEDIAL WA
- 103E MYANMAR CONSONANT SIGN MEDIAL HA

- 1058 MYANMAR VOWEL SIGN VOCALIC L
- 1059 MYANMAR VOWEL SIGN VOCALIC LL
- 105E MYANMAR CONSONANT SIGN MON MEDIAL NA
- 105F MYANMAR CONSONANT SIGN MON MEDIAL MA
- 1060 MYANMAR CONSONANT SIGN MON MEDIAL LA
- 1071 MYANMAR VOWEL SIGN GEBA KAREN I
- 1072 MYANMAR VOWEL SIGN KAYAH OE
- 1073 MYANMAR VOWEL SIGN KAYAH U
- 1074 MYANMAR VOWEL SIGN KAYAH EE
- 1082 MYANMAR CONSONANT SIGN SHAN MEDIAL WA
- 1085 MYANMAR VOWEL SIGN SHAN E ABOVE
- 1086 MYANMAR VOWEL SIGN SHAN FINAL Y
- 109D MYANMAR VOWEL SIGN AITON AI
- 1712 TAGALOG VOWEL SIGN I
- 1713 TAGALOG VOWEL SIGN U
- 1732 HANUNOO VOWEL SIGN I
- 1733 HANUNOO VOWEL SIGN U
- 1752 BUHID VOWEL SIGN I
- 1753 BUHID VOWEL SIGN U
- 1772 TAGBANWA VOWEL SIGN I
- 1773 TAGBANWA VOWEL SIGN U
- 17B4 KHMER VOWEL INHERENT AQ
- 17B5 KHMER VOWEL INHERENT AA
- 17B7 KHMER VOWEL SIGN I
- 17B8 KHMER VOWEL SIGN II
- 17B9 KHMER VOWEL SIGN Y
- 17BA KHMER VOWEL SIGN YY
- 17BB KHMER VOWEL SIGN U
- 17BC KHMER VOWEL SIGN UU
- 17BD KHMER VOWEL SIGN UA
- 17C6 KHMER SIGN NIKAHIT
- 17C9 KHMER SIGN MUUSIKATOAN
- 17CA KHMER SIGN TRIISAP
- 17CB KHMER SIGN BANTOC
- 17CC KHMER SIGN ROBAT
- 17CD KHMER SIGN TOANDAKHIAT
- 17CE KHMER SIGN KAKABAT
- 17CF KHMER SIGN AHSDA
- 17D0 KHMER SIGN SAMYOK SANNYA
- 17D1 KHMER SIGN VIRIAM
- 17D3 KHMER SIGN BATHAMASAT

- 1885 MONGOLIAN LETTER ALI GALI BALUDA
- 1886 MONGOLIAN LETTER ALI GALI THREE BALUDA
- 1920 LIMBU VOWEL SIGN A
- 1921 LIMBU VOWEL SIGN I
- 1922 LIMBU VOWEL SIGN U
- 1927 LIMBU VOWEL SIGN E
- 1928 LIMBU VOWEL SIGN O
- 1932 LIMBU SMALL LETTER ANUSVARA
- 1A1B BUGINESE VOWEL SIGN AE
- 1A56 TAI THAM CONSONANT SIGN MEDIAL LA
- 1A58 TAI THAM SIGN MAI KANG LAI
- 1A59 TAI THAM CONSONANT SIGN FINAL NGA
- 1A5A TAI THAM CONSONANT SIGN LOW PA
- 1A5B TAI THAM CONSONANT SIGN HIGH RATHA OR LOW PA
- 1A5C TAI THAM CONSONANT SIGN MA
- 1A5D TAI THAM CONSONANT SIGN BA
- 1A5E TAI THAM CONSONANT SIGN SA
- 1A62 TAI THAM VOWEL SIGN MAI SAT
- 1A65 TAI THAM VOWEL SIGN I
- 1A66 TAI THAM VOWEL SIGN II
- 1A67 TAI THAM VOWEL SIGN UE
- 1A68 TAI THAM VOWEL SIGN UUE
- 1A69 TAI THAM VOWEL SIGN U
- 1A6A TAI THAM VOWEL SIGN UU
- 1A6B TAI THAM VOWEL SIGN O
- 1A6C TAI THAM VOWEL SIGN OA BELOW
- 1A73 TAI THAM VOWEL SIGN OA ABOVE
- 1A74 TAI THAM SIGN MAI KANG
- 1B00 BALINESE SIGN ULU RICEM
- 1B01 BALINESE SIGN ULU CANDRA
- 1B02 BALINESE SIGN CECEK
- 1B03 BALINESE SIGN SURANG
- 1B36 BALINESE VOWEL SIGN ULU
- 1B37 BALINESE VOWEL SIGN ULU SARI
- 1B38 BALINESE VOWEL SIGN SUKU
- 1B39 BALINESE VOWEL SIGN SUKU ILUT
- 1B3A BALINESE VOWEL SIGN RA REPA
- 1B3C BALINESE VOWEL SIGN LA LENGA
- 1B42 BALINESE VOWEL SIGN PEPET
- 1B80 SUNDANESE SIGN PANYECEK
- 1B81 SUNDANESE SIGN PANGLAYAR

- 1BA2 SUNDANESE CONSONANT SIGN PANYAKRA
- 1BA3 SUNDANESE CONSONANT SIGN PANYIKU
- 1BA4 SUNDANESE VOWEL SIGN PANGHULU
- 1BA5 SUNDANESE VOWEL SIGN PANYUKU
- 1BA8 SUNDANESE VOWEL SIGN PAMEPET
- 1BA9 SUNDANESE VOWEL SIGN PANEULEUNG
- 1BAC SUNDANESE CONSONANT SIGN PASANGAN MA
- 1BAD SUNDANESE CONSONANT SIGN PASANGAN WA
- 1BE8 BATAK VOWEL SIGN PAKPAK E
- 1BE9 BATAK VOWEL SIGN EE
- 1BED BATAK VOWEL SIGN KARO O
- 1BEF BATAK VOWEL SIGN U FOR SIMALUNGUN SA
- 1BF0 BATAK CONSONANT SIGN NG
- 1BF1 BATAK CONSONANT SIGN H
- 1C2C LEPCHA VOWEL SIGN E
- 1C2D LEPCHA CONSONANT SIGN K
- 1C2E LEPCHA CONSONANT SIGN M
- 1C2F LEPCHA CONSONANT SIGN L
- 1C30 LEPCHA CONSONANT SIGN N
- 1C31 LEPCHA CONSONANT SIGN P
- 1C32 LEPCHA CONSONANT SIGN R
- 1C33 LEPCHA CONSONANT SIGN T
- 1C36 LEPCHA SIGN RAN
- A802 SYLOTI NAGRI SIGN DVISVARA
- A80B SYLOTI NAGRI SIGN ANUSVARA
- A825 SYLOTI NAGRI VOWEL SIGN U
- A826 SYLOTI NAGRI VOWEL SIGN E
- A8C5 SAURASHTRA SIGN CANDRABINDU
- A8FF DEVANAGARI VOWEL SIGN AY
- A926 KAYAH LI VOWEL UE
- A927 KAYAH LI VOWEL E
- A928 KAYAH LI VOWEL U
- A929 KAYAH LI VOWEL EE
- A92A KAYAH LI VOWEL O
- A947 REJANG VOWEL SIGN I
- A948 REJANG VOWEL SIGN U
- A949 REJANG VOWEL SIGN E
- A94A REJANG VOWEL SIGN AI
- A94B REJANG VOWEL SIGN O
- A94C REJANG VOWEL SIGN AU
- A94D REJANG VOWEL SIGN EU

- A94E REJANG VOWEL SIGN EA
- A94F REJANG CONSONANT SIGN NG
- A950 REJANG CONSONANT SIGN N
- A951 REJANG CONSONANT SIGN R
- A980 JAVANESE SIGN PANYANGGA
- A981 JAVANESE SIGN CECAK
- A982 JAVANESE SIGN LAYAR
- A9B6 JAVANESE VOWEL SIGN WULU
- A9B7 JAVANESE VOWEL SIGN WULU MELIK
- A9B8 JAVANESE VOWEL SIGN SUKU
- A9B9 JAVANESE VOWEL SIGN SUKU MENDUT
- A9BC JAVANESE VOWEL SIGN PEPET
- A9BD JAVANESE CONSONANT SIGN KERET
- A9E5 MYANMAR SIGN SHAN SAW
- AA29 CHAM VOWEL SIGN AA
- AA2A CHAM VOWEL SIGN I
- AA2B CHAM VOWEL SIGN II
- AA2C CHAM VOWEL SIGN EI
- AA2D CHAM VOWEL SIGN U
- AA2E CHAM VOWEL SIGN OE
- AA31 CHAM VOWEL SIGN AU
- AA32 CHAM VOWEL SIGN UE
- AA35 CHAM CONSONANT SIGN LA
- AA36 CHAM CONSONANT SIGN WA
- AA43 CHAM CONSONANT SIGN FINAL NG
- AA4C CHAM CONSONANT SIGN FINAL M
- AA7C MYANMAR SIGN TAI LAING TONE-2
- AAEC MEETEI MAYEK VOWEL SIGN UU
- AAED MEETEI MAYEK VOWEL SIGN AAI
- ABE5 MEETEI MAYEK VOWEL SIGN ANAP
- ABE8 MEETEI MAYEK VOWEL SIGN UNAP
- 10A01 KHAROSHTHI VOWEL SIGN I
- 10A02 KHAROSHTHI VOWEL SIGN U
- 10A03 KHAROSHTHI VOWEL SIGN VOCALIC R
- 10A05 KHAROSHTHI VOWEL SIGN E
- 10A06 KHAROSHTHI VOWEL SIGN O
- 10A0C KHAROSHTHI VOWEL LENGTH MARK
- 10A0E KHAROSHTHI SIGN ANUSVARA
- 11001 BRAHMI SIGN ANUSVARA
- 11038 BRAHMI VOWEL SIGN AA
- 11039 BRAHMI VOWEL SIGN BHATTIPROLU AA

- 1103A BRAHMI VOWEL SIGN I
- 1103B BRAHMI VOWEL SIGN II
- 1103C BRAHMI VOWEL SIGN U
- 1103D BRAHMI VOWEL SIGN UU
- 1103E BRAHMI VOWEL SIGN VOCALIC R
- 1103F BRAHMI VOWEL SIGN VOCALIC RR
- 11040 BRAHMI VOWEL SIGN VOCALIC L
- 11041 BRAHMI VOWEL SIGN VOCALIC LL
- 11042 BRAHMI VOWEL SIGN E
- 11043 BRAHMI VOWEL SIGN AI
- 11044 BRAHMI VOWEL SIGN O
- 11045 BRAHMI VOWEL SIGN AU
- 11080 KATHI SIGN CANDRABINDU
- 11081 KATHI SIGN ANUSVARA
- 110B3 KATHI VOWEL SIGN U
- 110B4 KATHI VOWEL SIGN UU
- 110B5 KATHI VOWEL SIGN E
- 110B6 KATHI VOWEL SIGN AI
- 11127 CHAKMA VOWEL SIGN A
- 11128 CHAKMA VOWEL SIGN I
- 11129 CHAKMA VOWEL SIGN II
- 1112A CHAKMA VOWEL SIGN U
- 1112B CHAKMA VOWEL SIGN UU
- 1112D CHAKMA VOWEL SIGN AI
- 11130 CHAKMA VOWEL SIGN OI
- 11131 CHAKMA O MARK
- 11132 CHAKMA AU MARK
- 11180 SHARADA SIGN CANDRABINDU
- 11181 SHARADA SIGN ANUSVARA
- 111B6 SHARADA VOWEL SIGN U
- 111B7 SHARADA VOWEL SIGN UU
- 111B8 SHARADA VOWEL SIGN VOCALIC R
- 111B9 SHARADA VOWEL SIGN VOCALIC RR
- 111BA SHARADA VOWEL SIGN VOCALIC L
- 111BB SHARADA VOWEL SIGN VOCALIC LL
- 111BC SHARADA VOWEL SIGN E
- 111BD SHARADA VOWEL SIGN AI
- 111BE SHARADA VOWEL SIGN O
- 111C9 SHARADA SANDHI MARK
- 111CB SHARADA VOWEL MODIFIER MARK
- 111CC SHARADA EXTRA SHORT VOWEL MARK

- 111CF SHARADA SIGN INVERTED CANDRABINDU
- 1122F KHOJKI VOWEL SIGN U
- 11230 KHOJKI VOWEL SIGN E
- 11231 KHOJKI VOWEL SIGN AI
- 11234 KHOJKI SIGN ANUSVARA
- 11237 KHOJKI SIGN SHADDA
- 1123E KHOJKI SIGN SUKUN
- 112DF KHUDAWADI SIGN ANUSVARA
- 112E3 KHUDAWADI VOWEL SIGN U
- 112E4 KHUDAWADI VOWEL SIGN UU
- 112E5 KHUDAWADI VOWEL SIGN E
- 112E6 KHUDAWADI VOWEL SIGN AI
- 112E7 KHUDAWADI VOWEL SIGN O
- 112E8 KHUDAWADI VOWEL SIGN AU
- 11300 GRANTHA SIGN COMBINING ANUSVARA ABOVE
- 11301 GRANTHA SIGN CANDRABINDU
- 11340 GRANTHA VOWEL SIGN II
- 11438 NEWA VOWEL SIGN U
- 11439 NEWA VOWEL SIGN UU
- 1143A NEWA VOWEL SIGN VOCALIC R
- 1143B NEWA VOWEL SIGN VOCALIC RR
- 1143C NEWA VOWEL SIGN VOCALIC L
- 1143D NEWA VOWEL SIGN VOCALIC LL
- 1143E NEWA VOWEL SIGN E
- 1143F NEWA VOWEL SIGN AI
- 11443 NEWA SIGN CANDRABINDU
- 11444 NEWA SIGN ANUSVARA
- 114B3 TIRHUTA VOWEL SIGN U
- 114B4 TIRHUTA VOWEL SIGN UU
- 114B5 TIRHUTA VOWEL SIGN VOCALIC R
- 114B6 TIRHUTA VOWEL SIGN VOCALIC RR
- 114B7 TIRHUTA VOWEL SIGN VOCALIC L
- 114B8 TIRHUTA VOWEL SIGN VOCALIC LL
- 114BA TIRHUTA VOWEL SIGN SHORT E
- 114BF TIRHUTA SIGN CANDRABINDU
- 114C0 TIRHUTA SIGN ANUSVARA
- 115B2 SIDDHAM VOWEL SIGN U
- 115B3 SIDDHAM VOWEL SIGN UU
- 115B4 SIDDHAM VOWEL SIGN VOCALIC R
- 115B5 SIDDHAM VOWEL SIGN VOCALIC RR
- 115BC SIDDHAM SIGN CANDRABINDU

- 115BD SIDDHAM SIGN ANUSVARA
- 115DC SIDDHAM VOWEL SIGN ALTERNATE U
- 115DD SIDDHAM VOWEL SIGN ALTERNATE UU
- 11633 MODI VOWEL SIGN U
- 11634 MODI VOWEL SIGN UU
- 11635 MODI VOWEL SIGN VOCALIC R
- 11636 MODI VOWEL SIGN VOCALIC RR
- 11637 MODI VOWEL SIGN VOCALIC L
- 11638 MODI VOWEL SIGN VOCALIC LL
- 11639 MODI VOWEL SIGN E
- 1163A MODI VOWEL SIGN AI
- 1163D MODI SIGN ANUSVARA
- 11640 MODI SIGN ARDHACANDRA
- 116AB TAKRI SIGN ANUSVARA
- 116AD TAKRI VOWEL SIGN AA
- 116B0 TAKRI VOWEL SIGN U
- 116B1 TAKRI VOWEL SIGN UU
- 116B2 TAKRI VOWEL SIGN E
- 116B3 TAKRI VOWEL SIGN AI
- 116B4 TAKRI VOWEL SIGN O
- 116B5 TAKRI VOWEL SIGN AU
- 1171D AHOM CONSONANT SIGN MEDIAL LA
- 1171E AHOM CONSONANT SIGN MEDIAL RA
- 1171F AHOM CONSONANT SIGN MEDIAL LIGATING RA
- 11722 AHOM VOWEL SIGN I
- 11723 AHOM VOWEL SIGN II
- 11724 AHOM VOWEL SIGN U
- 11725 AHOM VOWEL SIGN UU
- 11727 AHOM VOWEL SIGN AW
- 11728 AHOM VOWEL SIGN O
- 11729 AHOM VOWEL SIGN AI
- 1172A AHOM VOWEL SIGN AM
- 1182F DOGRA VOWEL SIGN U
- 11830 DOGRA VOWEL SIGN UU
- 11831 DOGRA VOWEL SIGN VOCALIC R
- 11832 DOGRA VOWEL SIGN VOCALIC RR
- 11833 DOGRA VOWEL SIGN E
- 11834 DOGRA VOWEL SIGN AI
- 11835 DOGRA VOWEL SIGN O
- 11836 DOGRA VOWEL SIGN AU
- 11837 DOGRA SIGN ANUSVARA

- 1193B DIVES AKURU SIGN ANUSVARA
- 1193C DIVES AKURU SIGN CANDRABINDU
- 119D4 NANDINAGARI VOWEL SIGN U
- 119D5 NANDINAGARI VOWEL SIGN UU
- 119D6 NANDINAGARI VOWEL SIGN VOCALIC R
- 119D7 NANDINAGARI VOWEL SIGN VOCALIC RR
- 119DA NANDINAGARI VOWEL SIGN E
- 119DB NANDINAGARI VOWEL SIGN AI
- 11A01 ZANABAZAR SQUARE VOWEL SIGN I
- 11A02 ZANABAZAR SQUARE VOWEL SIGN UE
- 11A03 ZANABAZAR SQUARE VOWEL SIGN U
- 11A04 ZANABAZAR SQUARE VOWEL SIGN E
- 11A05 ZANABAZAR SQUARE VOWEL SIGN OE
- 11A06 ZANABAZAR SQUARE VOWEL SIGN O
- 11A07 ZANABAZAR SQUARE VOWEL SIGN AI
- 11A08 ZANABAZAR SQUARE VOWEL SIGN AU
- 11A09 ZANABAZAR SQUARE VOWEL SIGN REVERSED I
- 11A0A ZANABAZAR SQUARE VOWEL LENGTH MARK
- 11A33 ZANABAZAR SQUARE FINAL CONSONANT MARK
- 11A35 ZANABAZAR SQUARE SIGN CANDRABINDU
- 11A36 ZANABAZAR SQUARE SIGN CANDRABINDU WITH ORNAMENT
- 11A37 ZANABAZAR SQUARE SIGN CANDRA WITH ORNAMENT
- 11A38 ZANABAZAR SQUARE SIGN ANUSVARA
- 11A3B ZANABAZAR SQUARE CLUSTER-FINAL LETTER YA
- 11A3C ZANABAZAR SQUARE CLUSTER-FINAL LETTER RA
- 11A3D ZANABAZAR SQUARE CLUSTER-FINAL LETTER LA
- 11A3E ZANABAZAR SQUARE CLUSTER-FINAL LETTER VA
- 11A51 SOYOMBO VOWEL SIGN I
- 11A52 SOYOMBO VOWEL SIGN UE
- 11A53 SOYOMBO VOWEL SIGN U
- 11A54 SOYOMBO VOWEL SIGN E
- 11A55 SOYOMBO VOWEL SIGN O
- 11A56 SOYOMBO VOWEL SIGN OE
- 11A59 SOYOMBO VOWEL SIGN VOCALIC R
- 11A5A SOYOMBO VOWEL SIGN VOCALIC L
- 11A5B SOYOMBO VOWEL LENGTH MARK
- 11A8A SOYOMBO FINAL CONSONANT SIGN G
- 11A8B SOYOMBO FINAL CONSONANT SIGN K
- 11A8C SOYOMBO FINAL CONSONANT SIGN NG
- 11A8D SOYOMBO FINAL CONSONANT SIGN D
- 11A8E SOYOMBO FINAL CONSONANT SIGN N

- 11A8F SOYOMBO FINAL CONSONANT SIGN B
- 11A90 SOYOMBO FINAL CONSONANT SIGN M
- 11A91 SOYOMBO FINAL CONSONANT SIGN R
- 11A92 SOYOMBO FINAL CONSONANT SIGN L
- 11A93 SOYOMBO FINAL CONSONANT SIGN SH
- 11A94 SOYOMBO FINAL CONSONANT SIGN S
- 11A95 SOYOMBO FINAL CONSONANT SIGN -A
- 11A96 SOYOMBO SIGN ANUSVARA
- 11A98 SOYOMBO GEMINATION MARK
- 11C30 BHAISUKI VOWEL SIGN I
- 11C31 BHAISUKI VOWEL SIGN II
- 11C32 BHAISUKI VOWEL SIGN U
- 11C33 BHAISUKI VOWEL SIGN UU
- 11C34 BHAISUKI VOWEL SIGN VOCALIC R
- 11C35 BHAISUKI VOWEL SIGN VOCALIC RR
- 11C36 BHAISUKI VOWEL SIGN VOCALIC L
- 11C38 BHAISUKI VOWEL SIGN E
- 11C39 BHAISUKI VOWEL SIGN AI
- 11C3A BHAISUKI VOWEL SIGN O
- 11C3B BHAISUKI VOWEL SIGN AU
- 11C3C BHAISUKI SIGN CANDRABINDU
- 11C3D BHAISUKI SIGN ANUSVARA
- 11C92 MARCHEN SUBJOINED LETTER KA
- 11C93 MARCHEN SUBJOINED LETTER KHA
- 11C94 MARCHEN SUBJOINED LETTER GA
- 11C95 MARCHEN SUBJOINED LETTER NGA
- 11C96 MARCHEN SUBJOINED LETTER CA
- 11C97 MARCHEN SUBJOINED LETTER CHA
- 11C98 MARCHEN SUBJOINED LETTER JA
- 11C99 MARCHEN SUBJOINED LETTER NYA
- 11C9A MARCHEN SUBJOINED LETTER TA
- 11C9B MARCHEN SUBJOINED LETTER THA
- 11C9C MARCHEN SUBJOINED LETTER DA
- 11C9D MARCHEN SUBJOINED LETTER NA
- 11C9E MARCHEN SUBJOINED LETTER PA
- 11C9F MARCHEN SUBJOINED LETTER PHA
- 11CA0 MARCHEN SUBJOINED LETTER BA
- 11CA1 MARCHEN SUBJOINED LETTER MA
- 11CA2 MARCHEN SUBJOINED LETTER TSA
- 11CA3 MARCHEN SUBJOINED LETTER TSHA
- 11CA4 MARCHEN SUBJOINED LETTER DZA

- 11CA5 MARCHEN SUBJOINED LETTER WA
- 11CA6 MARCHEN SUBJOINED LETTER ZHA
- 11CA7 MARCHEN SUBJOINED LETTER ZA
- 11CAA MARCHEN SUBJOINED LETTER RA
- 11CAB MARCHEN SUBJOINED LETTER LA
- 11CAC MARCHEN SUBJOINED LETTER SHA
- 11CAD MARCHEN SUBJOINED LETTER SA
- 11CAE MARCHEN SUBJOINED LETTER HA
- 11CAF MARCHEN SUBJOINED LETTER A
- 11CB0 MARCHEN VOWEL SIGN AA
- 11CB2 MARCHEN VOWEL SIGN U
- 11CB3 MARCHEN VOWEL SIGN E
- 11CB5 MARCHEN SIGN ANUSVARA
- 11CB6 MARCHEN SIGN CANDRABINDU
- 11D31 MASARAM GONDI VOWEL SIGN AA
- 11D32 MASARAM GONDI VOWEL SIGN I
- 11D33 MASARAM GONDI VOWEL SIGN II
- 11D34 MASARAM GONDI VOWEL SIGN U
- 11D35 MASARAM GONDI VOWEL SIGN UU
- 11D36 MASARAM GONDI VOWEL SIGN VOCALIC R
- 11D3A MASARAM GONDI VOWEL SIGN E
- 11D3C MASARAM GONDI VOWEL SIGN AI
- 11D3D MASARAM GONDI VOWEL SIGN O
- 11D3F MASARAM GONDI VOWEL SIGN AU
- 11D40 MASARAM GONDI SIGN ANUSVARA
- 11D41 MASARAM GONDI SIGN VISARGA
- 11D43 MASARAM GONDI SIGN CANDRA
- 11D47 MASARAM GONDI RA-KARA
- 11D90 GUNJALA GONDI VOWEL SIGN EE
- 11D91 GUNJALA GONDI VOWEL SIGN AI
- 11D95 GUNJALA GONDI SIGN ANUSVARA
- 11EF3 MAKASAR VOWEL SIGN I
- 11EF4 MAKASAR VOWEL SIGN U
- 16F4F MIAO SIGN CONSONANT MODIFIER BAR
- 16F8F MIAO TONE RIGHT
- 16F90 MIAO TONE TOP RIGHT
- 16F91 MIAO TONE ABOVE
- 16F92 MIAO TONE BELOW
- 16FE4 KHITAN SMALL SCRIPT FILLER
- 1BC9D DUPLOYAN THICK LETTER SELECTOR
- 1DA00 SIGNWRITING HEAD RIM

- 1DA01 SIGNWRITING HEAD MOVEMENT-WALLPLANE STRAIGHT
- 1DA02 SIGNWRITING HEAD MOVEMENT-WALLPLANE TILT
- 1DA03 SIGNWRITING HEAD MOVEMENT-FLOORPLANE STRAIGHT
- 1DA04 SIGNWRITING HEAD MOVEMENT-WALLPLANE CURVE
- 1DA05 SIGNWRITING HEAD MOVEMENT-FLOORPLANE CURVE
- 1DA06 SIGNWRITING HEAD MOVEMENT CIRCLE
- 1DA07 SIGNWRITING FACE DIRECTION POSITION NOSE FORWARD TILTING
- 1DA08 SIGNWRITING FACE DIRECTION POSITION NOSE UP OR DOWN
- 1DA09 SIGNWRITING FACE DIRECTION POSITION NOSE UP OR DOWN TILTING
- 1DA0A SIGNWRITING EYEBROWS STRAIGHT UP
- 1DA0B SIGNWRITING EYEBROWS STRAIGHT NEUTRAL
- 1DA0C SIGNWRITING EYEBROWS STRAIGHT DOWN
- 1DA0D SIGNWRITING DREAMY EYEBROWS NEUTRAL DOWN
- 1DA0E SIGNWRITING DREAMY EYEBROWS DOWN NEUTRAL
- 1DA0F SIGNWRITING DREAMY EYEBROWS UP NEUTRAL
- 1DA10 SIGNWRITING DREAMY EYEBROWS NEUTRAL UP
- 1DA11 SIGNWRITING FOREHEAD NEUTRAL
- 1DA12 SIGNWRITING FOREHEAD CONTACT
- 1DA13 SIGNWRITING FOREHEAD WRINKLED
- 1DA14 SIGNWRITING EYES OPEN
- 1DA15 SIGNWRITING EYES SQUEEZED
- 1DA16 SIGNWRITING EYES CLOSED
- 1DA17 SIGNWRITING EYE BLINK SINGLE
- 1DA18 SIGNWRITING EYE BLINK MULTIPLE
- 1DA19 SIGNWRITING EYES HALF OPEN
- 1DA1A SIGNWRITING EYES WIDE OPEN
- 1DA1B SIGNWRITING EYES HALF CLOSED
- 1DA1C SIGNWRITING EYES WIDENING MOVEMENT
- 1DA1D SIGNWRITING EYE WINK
- 1DA1E SIGNWRITING EYELASHES UP
- 1DA1F SIGNWRITING EYELASHES DOWN
- 1DA20 SIGNWRITING EYELASHES FLUTTERING
- 1DA21 SIGNWRITING EYEGAZE-WALLPLANE STRAIGHT
- 1DA22 SIGNWRITING EYEGAZE-WALLPLANE STRAIGHT DOUBLE
- 1DA23 SIGNWRITING EYEGAZE-WALLPLANE STRAIGHT ALTERNATING
- 1DA24 SIGNWRITING EYEGAZE-FLOORPLANE STRAIGHT
- 1DA25 SIGNWRITING EYEGAZE-FLOORPLANE STRAIGHT DOUBLE
- 1DA26 SIGNWRITING EYEGAZE-FLOORPLANE STRAIGHT ALTERNATING
- 1DA27 SIGNWRITING EYEGAZE-WALLPLANE CURVED
- 1DA28 SIGNWRITING EYEGAZE-FLOORPLANE CURVED
- 1DA29 SIGNWRITING EYEGAZE-WALLPLANE CIRCLING

- 1DA2A SIGNWRITING CHEEKS PUFFED
- 1DA2B SIGNWRITING CHEEKS NEUTRAL
- 1DA2C SIGNWRITING CHEEKS SUCKED
- 1DA2D SIGNWRITING TENSE CHEEKS HIGH
- 1DA2E SIGNWRITING TENSE CHEEKS MIDDLE
- 1DA2F SIGNWRITING TENSE CHEEKS LOW
- 1DA30 SIGNWRITING EARS
- 1DA31 SIGNWRITING NOSE NEUTRAL
- 1DA32 SIGNWRITING NOSE CONTACT
- 1DA33 SIGNWRITING NOSE WRINKLES
- 1DA34 SIGNWRITING NOSE WIGGLES
- 1DA35 SIGNWRITING AIR BLOWING OUT
- 1DA36 SIGNWRITING AIR SUCKING IN
- 1DA3B SIGNWRITING MOUTH CLOSED NEUTRAL
- 1DA3C SIGNWRITING MOUTH CLOSED FORWARD
- 1DA3D SIGNWRITING MOUTH CLOSED CONTACT
- 1DA3E SIGNWRITING MOUTH SMILE
- 1DA3F SIGNWRITING MOUTH SMILE WRINKLED
- 1DA40 SIGNWRITING MOUTH SMILE OPEN
- 1DA41 SIGNWRITING MOUTH FROWN
- 1DA42 SIGNWRITING MOUTH FROWN WRINKLED
- 1DA43 SIGNWRITING MOUTH FROWN OPEN
- 1DA44 SIGNWRITING MOUTH OPEN CIRCLE
- 1DA45 SIGNWRITING MOUTH OPEN FORWARD
- 1DA46 SIGNWRITING MOUTH OPEN WRINKLED
- 1DA47 SIGNWRITING MOUTH OPEN OVAL
- 1DA48 SIGNWRITING MOUTH OPEN OVAL WRINKLED
- 1DA49 SIGNWRITING MOUTH OPEN OVAL YAWN
- 1DA4A SIGNWRITING MOUTH OPEN RECTANGLE
- 1DA4B SIGNWRITING MOUTH OPEN RECTANGLE WRINKLED
- 1DA4C SIGNWRITING MOUTH OPEN RECTANGLE YAWN
- 1DA4D SIGNWRITING MOUTH KISS
- 1DA4E SIGNWRITING MOUTH KISS FORWARD
- 1DA4F SIGNWRITING MOUTH KISS WRINKLED
- 1DA50 SIGNWRITING MOUTH TENSE
- 1DA51 SIGNWRITING MOUTH TENSE FORWARD
- 1DA52 SIGNWRITING MOUTH TENSE SUCKED
- 1DA53 SIGNWRITING LIPS PRESSED TOGETHER
- 1DA54 SIGNWRITING LIP LOWER OVER UPPER
- 1DA55 SIGNWRITING LIP UPPER OVER LOWER
- 1DA56 SIGNWRITING MOUTH CORNERS

- 1DA57 SIGNWRITING MOUTH WRINKLES SINGLE
- 1DA58 SIGNWRITING MOUTH WRINKLES DOUBLE
- 1DA59 SIGNWRITING TONGUE STICKING OUT FAR
- 1DA5A SIGNWRITING TONGUE LICKING LIPS
- 1DA5B SIGNWRITING TONGUE TIP BETWEEN LIPS
- 1DA5C SIGNWRITING TONGUE TIP TOUCHING INSIDE MOUTH
- 1DA5D SIGNWRITING TONGUE INSIDE MOUTH RELAXED
- 1DA5E SIGNWRITING TONGUE MOVES AGAINST CHEEK
- 1DA5F SIGNWRITING TONGUE CENTRE STICKING OUT
- 1DA60 SIGNWRITING TONGUE CENTRE INSIDE MOUTH
- 1DA61 SIGNWRITING TEETH
- 1DA62 SIGNWRITING TEETH MOVEMENT
- 1DA63 SIGNWRITING TEETH ON TONGUE
- 1DA64 SIGNWRITING TEETH ON TONGUE MOVEMENT
- 1DA65 SIGNWRITING TEETH ON LIPS
- 1DA66 SIGNWRITING TEETH ON LIPS MOVEMENT
- 1DA67 SIGNWRITING TEETH BITE LIPS
- 1DA68 SIGNWRITING MOVEMENT-WALLPLANE JAW
- 1DA69 SIGNWRITING MOVEMENT-FLOORPLANE JAW
- 1DA6A SIGNWRITING NECK
- 1DA6B SIGNWRITING HAIR
- 1DA6C SIGNWRITING EXCITEMENT
- 1DA75 SIGNWRITING UPPER BODY TILTING FROM HIP JOINTS
- 1DA84 SIGNWRITING LOCATION HEAD NECK
- 1DA9B SIGNWRITING FILL MODIFIER-2
- 1DA9C SIGNWRITING FILL MODIFIER-3
- 1DA9D SIGNWRITING FILL MODIFIER-4
- 1DA9E SIGNWRITING FILL MODIFIER-5
- 1DA9F SIGNWRITING FILL MODIFIER-6
- 1DAA1 SIGNWRITING ROTATION MODIFIER-2
- 1DAA2 SIGNWRITING ROTATION MODIFIER-3
- 1DAA3 SIGNWRITING ROTATION MODIFIER-4
- 1DAA4 SIGNWRITING ROTATION MODIFIER-5
- 1DAA5 SIGNWRITING ROTATION MODIFIER-6
- 1DAA6 SIGNWRITING ROTATION MODIFIER-7
- 1DAA7 SIGNWRITING ROTATION MODIFIER-8
- 1DAA8 SIGNWRITING ROTATION MODIFIER-9
- 1DAA9 SIGNWRITING ROTATION MODIFIER-10
- 1DAAA SIGNWRITING ROTATION MODIFIER-11
- 1DAAB SIGNWRITING ROTATION MODIFIER-12
- 1DAAC SIGNWRITING ROTATION MODIFIER-13

- 1DAAD SIGNWRITING ROTATION MODIFIER-14
- 1DAAE SIGNWRITING ROTATION MODIFIER-15
- 1DAAF SIGNWRITING ROTATION MODIFIER-16

13 characters *will now be clearly eligible* for variation sequences because they are enclosing marks with combining class 0 and are not affected by other restrictions:

- 0488 COMBINING CYRILLIC HUNDRED THOUSANDS SIGN
- 0489 COMBINING CYRILLIC MILLIONS SIGN
- 1ABE COMBINING PARENTHESES OVERLAY
- 20DD COMBINING ENCLOSING CIRCLE
- 20DE COMBINING ENCLOSING SQUARE
- 20DF COMBINING ENCLOSING DIAMOND
- 20E0 COMBINING ENCLOSING CIRCLE BACKSLASH
- 20E2 COMBINING ENCLOSING SCREEN
- 20E3 COMBINING ENCLOSING KEYCAP
- 20E4 COMBINING ENCLOSING UPWARD POINTING TRIANGLE
- A670 COMBINING CYRILLIC TEN MILLIONS SIGN
- A671 COMBINING CYRILLIC HUNDRED MILLIONS SIGN
- A672 COMBINING CYRILLIC THOUSAND MILLIONS SIGN

14 characters *remain ineligible* for variation sequences even though they are nonspacing marks with combining class 0 because they have canonical decompositions:

- 0C48 TELUGU VOWEL SIGN AI
- 0F73 TIBETAN VOWEL SIGN II
- 0F75 TIBETAN VOWEL SIGN UU
- 0F76 TIBETAN VOWEL SIGN VOCALIC R
- 0F78 TIBETAN VOWEL SIGN VOCALIC L
- 0F81 TIBETAN VOWEL SIGN REVERSED II
- 0F93 TIBETAN SUBJOINED LETTER GHA
- 0F9D TIBETAN SUBJOINED LETTER DDHA
- 0FA2 TIBETAN SUBJOINED LETTER DHA
- 0FA7 TIBETAN SUBJOINED LETTER BHA
- 0FAC TIBETAN SUBJOINED LETTER DZHA
- 0FB9 TIBETAN SUBJOINED LETTER KSSA
- 1112E CHAKMA VOWEL SIGN O
- 1112F CHAKMA VOWEL SIGN AU

259 characters *remain ineligible* for variation sequences even though they are nonspacing marks with combining class 0 because they are variation selectors:

- 180B..180D MONGOLIAN FREE VARIATION SELECTOR ONE..MONGOLIAN FREE VARIATION SELECTOR THREE

- FE00..FE0F VARIATION SELECTOR-1..VARIATION SELECTOR-16
- E0100..E01EF VARIATION SELECTOR-17..VARIATION SELECTOR-256

23 characters *become ineligible* for variation sequences because they are spacing marks with a combining class other than 0:

- 1B44 BALINESE ADEG ADEG
- 1BAA SUNDANESE SIGN PAMAAEH
- 1BF2 BATAK PANGOLAT
- 1BF3 BATAK PANONGONAN
- 302E HANGUL SINGLE DOT TONE MARK
- 302F HANGUL DOUBLE DOT TONE MARK
- A953 REJANG VIRAMA
- A9C0 JAVANESE PANGKON
- 111C0 SHARADA SIGN VIRAMA
- 11235 KHOJKI SIGN VIRAMA
- 1134D GRANTHA SIGN VIRAMA
- 116B6 TAKRI SIGN VIRAMA
- 1193D DIVES AKURU SIGN HALANTA
- 16FF0 VIETNAMESE ALTERNATE READING MARK CA
- 16FF1 VIETNAMESE ALTERNATE READING MARK NHAY
- 1D165 MUSICAL SYMBOL COMBINING STEM
- 1D166 MUSICAL SYMBOL COMBINING SPRECHGESANG STEM
- 1D16D MUSICAL SYMBOL COMBINING AUGMENTATION DOT
- 1D16E MUSICAL SYMBOL COMBINING FLAG-1
- 1D16F MUSICAL SYMBOL COMBINING FLAG-2
- 1D170 MUSICAL SYMBOL COMBINING FLAG-3
- 1D171 MUSICAL SYMBOL COMBINING FLAG-4
- 1D172 MUSICAL SYMBOL COMBINING FLAG-5