

Thai and Lao collation weighting rules

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Introduction

The collation rules for Thai, and probably also Lao, in the 14651 CTT (and the UTS 10 data files) do not follow the (informal) collation rules given in annex C.2, Thai string ordering, of ISO/IEC 14651. The following text is a quote from ISO/IEC 14651 beginning of annex C.2:

The widely accepted standard for Thai lexicographical ordering is defined in the Royal Institute Dictionary 2525 B.E. Edition (1982 A.D.), the official standard Thai dictionary. The ordering principles are:

- Words are ordered alphabetically, not phonetically. Consonants order is:

ก ข ค ฉ ง จ ฉ ช ซ ฌ ญ ณ ฎ ฏ ฐ ท ฒ น
บ ป ผ ฝ พ ฟ ภ ม ย ร ถ กา ล ภา ว ศ ษ ส ห ฬ อ ฮ

(ရ ရာ ရှ ရာ are vowels and ligatures, but put in the order according to the sounds they represent.)

- Vowels are also ordered by written forms, not by sounds. Vowels order is:

๕ ๖ ๗ ๘ ๙ ๑๐ ๑๑ ๑๒ ๑๓ ๑๔ ๑๕ ๑๖ ๑๗ ๑๘ ๑๙ ๒๐ ๒๑ ๒๒ ๒๓ ๒๔ ๒๕ ๒๖ ๒๗ ๒๘ ๒๙ ๓๐ ๓๑ ๓๒ ๓๓ ๓๔ ๓๕ ๓๖ ๓๗ ๓๘ ๓๙ ๔๐ ๔๑ ๔๒ ๔๓ ๔๔ ๔๕ ๔๖ ๔๗ ๔๘ ๔๙ ๕๐ ๕๑ ๕๒ ๕๓ ๕๔ ๕๕ ๕๖ ๕๗ ๕๘ ๕๙ ๖๐ ๖๑ ๖๒ ๖๓ ๖๔ ๖๕ ๖๖ ๖๗ ๖๘ ๖๙ ๗๐ ๗๑ ๗๒ ๗๓ ๗๔ ๗๕ ๗๖ ๗๗ ๗๘ ๗๙ ๘๐ ๘๑ ๘๒ ๘๓ ๘๔ ๘๕ ๘๖ ๘๗ ๘๘ ๘๙ ๙๐ ๙๑ ๙๒ ๙๓ ๙๔ ๙๕ ๙๖ ๙๗ ๙๘ ๙๙ ๑๐๐

(๑ ๒ ๓ are always ordered as consonants, although they sometimes act as vowels.)

- String comparison is performed from left to right, but considering initial consonants before vowels in the same syllable.
- Tones and diacritics are ignored at level 1, at level 2 the order is:

๑ ๒ ๓ ๔ ๕

And later:

- Leading vowels (๑- ๒- ๓- ๔- ๕-, corresponding to characters U+0E40-U+0E44), which are written before consonants, must be considered after the initial consonant. Therefore, the rearrangement is needed before comparison.
- Diacritics and tone marks (๑ ๒ ๓ ๔ ๕ ๖ ๗ ๘) must be ignored in the first pass, and be considered at later pass if the first pass yields equality.

Even later:

When punctuation marks (๑ ๒ ๓ ๔ ๕ ๖ ๗ ๘) are concerned, another level of weights is required for them.

Note that, even though Thai and Lao are Brahmic based scripts (Indic scripts), the Thai virama (THAI CHARACTER PHINTHU) appears to have lost its “conjuncting” quality, and is not even handled as a silent vowel, but a mark ignored at level 1 of the collation weighting. This appears to be so because the virama is most often not written out explicitly, even though the inherent vowel is made silent in pronunciation. The resulting ambiguities (in pronunciation and semantics) have to be resolved by context. However, resolving that does not affect collation. Dependent vowels (and would-be dependent vowels) are still, in this proposal, ordered like dependent vowels for Indic scripts, at the very end of the weighting scale for level 1, along with Hangul vowels.

Note also that PAIYANNOI is regarded as a punctuation mark.

In the following section, formal ordering rules that attempt to follow the informal description in that annex are given. Digits and currency symbols are not covered below. However, NIKHAHIT is not covered above, but is below regarded as significant on level 2.

The rules below also contain a number of contractions. These are not explicitly declared below, even though that need be made for a complete 14651 style set of ordering rules; the contractions are easily inferred by the names of the contractions. Using these contractions as below, special prehandling for Thai and Lao in prehandling (which is now specified in UTS 10) is no longer needed (if it is decided to accept this part of this proposal). This method works also with ISO/IEC 14651, which does not require that there is any prehandling at all.

There are a number of unclear points. E.g.: How should LAKKHANGYAO best be handled? As a vowel? Would MAITAIKHU and PHINTHU be better handled as dependent vowels (despite the text in ISO/IEC 14651 quoted above)? Are vowels applied to RU, RU-LAKKHANGYAO, LU, LU-LAKKHANGYAO, in particular vowels that need be reordered (see contractions below for these)? How should LAO HO NO and LAO HO MO be handled, especially when combined with a prewritten vowel?

Suggestion for the CTT for Thai and Lao scripts

%% Thai/Lao punctuation:

%%<U0E45> IGNORE; IGNORE; IGNORE; <U0E45> % THAI CHARACTER LAKKHANGYAO	Lo	used with 0E24 and 0E26 (vowel??)
<U0E46> IGNORE; IGNORE; IGNORE; <U0E46> % THAI CHARACTER MAIYAMOK	Lm	repetition (not modifier letters, more)
<U0EC6> IGNORE; IGNORE; IGNORE; <U0EC6> % LAO KO LA	Lm	repetition (like apostrophe and hyphen)
<U0E4F> IGNORE; IGNORE; IGNORE; <U0E4F> % THAI CHARACTER FONGMAN	Po	bullet
<U0E2F> IGNORE; IGNORE; IGNORE; <U0E2F> % THAI CHARACTER PAIYANNOI	Lo	danda (not a letter!)
<U0EAF> IGNORE; IGNORE; IGNORE; <U0EAF> % LAO ELLIPSIS	Lo	danda (not a letter!)
<U0E5A> IGNORE; IGNORE; IGNORE; <U0E5A> % THAI CHARACTER ANGKHANKHU	Po	double danda
<U0E5A_U0E30> IGNORE; IGNORE; IGNORE; <U0E5A_U0E30> % THAI CHARACTER ANGKHANKHU, THAI CHARACTER SARA A		end mark
<U0E5B> IGNORE; IGNORE; IGNORE; <U0E5B> % THAI CHARACTER KHOMUT	Po	end mark

%% Thai/Lao tone marks and other diacritics. Placed after a consonant and after any dependent vowel:

<U0E4E> IGNORE;<D0E4E>;<MIN>;<U0E4E>	% THAI CHARACTER YAMAKKAN	Mn	above
<U0E3A> IGNORE;<D0E3A>;<MIN>;<U0E3A>	% THAI CHARACTER PHINTHU	Mn	below, virama, silent vowel (??)
<U0E4C> IGNORE;<D0E4C>;<MIN>;<U0E4C>	% THAI CHARACTER THANTHAKHAT	Mn	above cancellation mark
<U0ECC> IGNORE;<D0E4C>;<MIN>;<U0ECC>	% LAO CANCELLATION MARK	Mn	above cancellation mark
<U0E47> IGNORE;<D0E47>;<MIN>;<U0E47>	% THAI CHARACTER MAITAIKHU	Mn	above (vowel??)
<U0E48> IGNORE;<D0E48>;<MIN>;<U0E48>	% THAI CHARACTER MAI EK	Mn	above
<U0EC8> IGNORE;<D0E48>;<MIN>;<U0EC8>	% LAO TONE MAI EK	Mn	above
<U0E49> IGNORE;<D0E49>;<MIN>;<U0E49>	% THAI CHARACTER MAI THO	Mn	above
<U0EC9> IGNORE;<D0E49>;<MIN>;<U0EC9>	% LAO TONE MAI THO	Mn	above
<U0E4A> IGNORE;<D0E4A>;<MIN>;<U0E4A>	% THAI CHARACTER MAI TRI	Mn	above
<U0ECA> IGNORE;<D0E4A>;<MIN>;<U0ECA>	% LAO TONE MAI TI	Mn	above
<U0E4B> IGNORE;<D0E4B>;<MIN>;<U0E4B>	% THAI CHARACTER MAI CHATTAWA	Mn	above
<U0ECB> IGNORE;<D0E4B>;<MIN>;<U0ECB>	% LAO TONE MAI CATAWA	Mn	above
<U0E4D> IGNORE;<D0E4D>;<MIN>;<U0E4D>	% THAI CHARACTER NIKHAHIT	Mn	above * final nasal
<U0ECD> IGNORE;<D0E4D>;<MIN>;<U0ECD>	% LAO NIGGAHITA	Mn	above * final nasal

%% Thai consonants:

<U0E01> <S0E01>;<BASE>;<MIN>;<U0E01>	% THAI CHARACTER KO KAI
<U0E40_U0E01> "<S0E01><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E01>	% E, KO KAI
<U0E41_U0E01> "<S0E01><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E01>	% AE, KO KAI
<U0E42_U0E01> "<S0E01><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E01>	% O, KO KAI
<U0E43_U0E01> "<S0E01><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E01>	% AI MAIMUAN, KO KAI
<U0E44_U0E01> "<S0E01><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E01>	% AI MAIMALAI, KO KAI
<U0E02> <S0E02>;<BASE>;<MIN>;<U0E02>	% THAI CHARACTER KHO KHAI
<U0E40_U0E02> "<S0E02><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E02>	% E, KHO KHAI
<U0E41_U0E02> "<S0E02><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E02>	% AE, KHO KHAI
<U0E42_U0E02> "<S0E02><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E02>	% O, KHO KHAI
<U0E43_U0E02> "<S0E02><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E02>	% AI MAIMUAN, KHO KHAI
<U0E44_U0E02> "<S0E02><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E02>	% AI MAIMALAI, KHO KHAI
<U0E03> <S0E03>;<BASE>;<MIN>;<U0E03>	% THAI CHARACTER KHO KHUAT
<U0E40_U0E03> "<S0E03><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E03>	% E, KHO KHUAT
<U0E41_U0E03> "<S0E03><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E03>	% AE, KHO KHUAT
<U0E42_U0E03> "<S0E03><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E03>	% O, KHO KHUAT

<U0E43_U0E03>	"<S0E03><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E03>	% AI MAIMUAN, KHO KHUAT
<U0E44_U0E03>	"<S0E03><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E03>	% AI MAIMALAI, KHO KHUAT
<U0E04>	<S0E04>;	<BASE>;	<MIN>;	<U0E04>	% THAI CHARACTER KHO KHWAI
<U0E40_U0E04>	"<S0E04><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E04>	% E, KHO KHWAI
<U0E41_U0E04>	"<S0E04><S0E41>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E41_U0E04>	% AE, KHO KHWAI
<U0E42_U0E04>	"<S0E04><S0E42>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E42_U0E04>	% O, KHO KHWAI
<U0E43_U0E04>	"<S0E04><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E04>	% AI MAIMUAN, KHO KHWAI
<U0E44_U0E04>	"<S0E04><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E04>	% AI MAIMALAI, KHO KHWAI
<U0E05>	<S0E05>;	<BASE>;	<MIN>;	<U0E05>	% THAI CHARACTER KHO KHON
<U0E40_U0E05>	"<S0E05><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E05>	% E, KHO KHON
<U0E41_U0E05>	"<S0E05><S0E41>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E41_U0E05>	% AE, KHO KHON
<U0E42_U0E05>	"<S0E05><S0E42>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E42_U0E05>	% O, KHO KHON
<U0E43_U0E05>	"<S0E05><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E05>	% AI MAIMUAN, KHO KHON
<U0E44_U0E05>	"<S0E05><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E05>	% AI MAIMALAI, KHO KHON
<U0E06>	<S0E06>;	<BASE>;	<MIN>;	<U0E06>	% THAI CHARACTER KHO RAKHANG
<U0E40_U0E06>	"<S0E06><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E06>	% E, KHO RAKHANG
<U0E41_U0E06>	"<S0E06><S0E41>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E41_U0E06>	% AE, KHO RAKHANG
<U0E42_U0E06>	"<S0E06><S0E42>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E42_U0E06>	% O, KHO RAKHANG
<U0E43_U0E06>	"<S0E06><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E06>	% AI MAIMUAN, KHO RAKHANG
<U0E44_U0E06>	"<S0E06><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E06>	% AI MAIMALAI, KHO RAKHANG
<U0E07>	<S0E07>;	<BASE>;	<MIN>;	<U0E07>	% THAI CHARACTER NGO NGU
<U0E40_U0E07>	"<S0E07><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E07>	% E, NGO NGU
<U0E41_U0E07>	"<S0E07><S0E41>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E41_U0E07>	% AE, NGO NGU
<U0E42_U0E07>	"<S0E07><S0E42>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E42_U0E07>	% O, NGO NGU
<U0E43_U0E07>	"<S0E07><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E07>	% AI MAIMUAN, NGO NGU
<U0E44_U0E07>	"<S0E07><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E07>	% AI MAIMALAI, NGO NGU
<U0E08>	<S0E08>;	<BASE>;	<MIN>;	<U0E08>	% THAI CHARACTER CHO CHAN
<U0E40_U0E08>	"<S0E08><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E08>	% E, CHO CHAN
<U0E41_U0E08>	"<S0E08><S0E41>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E41_U0E08>	% AE, CHO CHAN
<U0E42_U0E08>	"<S0E08><S0E42>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E42_U0E08>	% O, CHO CHAN
<U0E43_U0E08>	"<S0E08><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E08>	% AI MAIMUAN, CHO CHAN
<U0E44_U0E08>	"<S0E08><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E08>	% AI MAIMALAI, CHO CHAN
<U0E09>	<S0E09>;	<BASE>;	<MIN>;	<U0E09>	% THAI CHARACTER CHO CHING
<U0E40_U0E09>	"<S0E09><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E09>	% E, CHO CHING
<U0E41_U0E09>	"<S0E09><S0E41>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E41_U0E09>	% AE, CHO CHING
<U0E42_U0E09>	"<S0E09><S0E42>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E42_U0E09>	% O, CHO CHING
<U0E43_U0E09>	"<S0E09><S0E43>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E43_U0E09>	% AI MAIMUAN, CHO CHING
<U0E44_U0E09>	"<S0E09><S0E44>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E44_U0E09>	% AI MAIMALAI, CHO CHING
<U0E0A>	<S0E0A>;	<BASE>;	<MIN>;	<U0E0A>	% THAI CHARACTER CHO CHANG
<U0E40_U0E0A>	"<S0E0A><S0E40>"	"<BASE><BASE>"	"<MIN><MIN>"	<U0E40_U0E0A>	% E, CHO CHANG
<U0E					

<U0E42_U0E0A> "<S0E0A><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E0A> % O, CHO CHANG
 <U0E43_U0E0A> "<S0E0A><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E0A> % AI MAIMUAN, CHO CHANG
 <U0E44_U0E0A> "<S0E0A><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E0A> % AI MAIMALAI, CHO CHANG
 <U0E0B> <S0E0B>;<BASE>;<MIN>;<U0E0B> % THAI CHARACTER SO SO
 <U0E40_U0E0B> "<S0E0B><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E0B> % E, SO SO
 <U0E41_U0E0B> "<S0E0B><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E0B> % AE, SO SO
 <U0E42_U0E0B> "<S0E0B><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E0B> % O, SO SO
 <U0E43_U0E0B> "<S0E0B><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E0B> % AI MAIMUAN, SO SO
 <U0E44_U0E0B> "<S0E0B><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E0B> % AI MAIMALAI, SO SO
 <U0E0C> <S0E0C>;<BASE>;<MIN>;<U0E0C> % THAI CHARACTER CHO CHOE
 <U0E40_U0E0C> "<S0E0C><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E0C> % E, CHO CHOE
 <U0E41_U0E0C> "<S0E0C><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E0C> % AE, CHO CHOE
 <U0E42_U0E0C> "<S0E0C><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E0C> % O, CHO CHOE
 <U0E43_U0E0C> "<S0E0C><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E0C> % AI MAIMUAN, CHO CHOE
 <U0E44_U0E0C> "<S0E0C><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E0C> % AI MAIMALAI, CHO CHOE
 <U0E0D> <S0E0D>;<BASE>;<MIN>;<U0E0D> % THAI CHARACTER YO YING
 <U0E40_U0E0D> "<S0E0D><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E0D> % E, YO YING
 <U0E41_U0E0D> "<S0E0D><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E0D> % AE, YO YING
 <U0E42_U0E0D> "<S0E0D><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E0D> % O, YO YING
 <U0E43_U0E0D> "<S0E0D><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E0D> % AI MAIMUAN, YO YING
 <U0E44_U0E0D> "<S0E0D><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E0D> % AI MAIMALAI, YO YING
 <U0E0E> <S0E0E>;<BASE>;<MIN>;<U0E0E> % THAI CHARACTER DO CHADA
 <U0E40_U0E0E> "<S0E0E><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E0E> % E, DO CHADA
 <U0E41_U0E0E> "<S0E0E><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E0E> % AE, DO CHADA
 <U0E42_U0E0E> "<S0E0E><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E0E> % O, DO CHADA
 <U0E43_U0E0E> "<S0E0E><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E0E> % AI MAIMUAN, DO CHADA
 <U0E44_U0E0E> "<S0E0E><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E0E> % AI MAIMALAI, DO CHADA
 <U0E0F> <S0E0F>;<BASE>;<MIN>;<U0E0F> % THAI CHARACTER TO PATAK
 <U0E40_U0E0F> "<S0E0F><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E0F> % E, TO PATAK
 <U0E41_U0E0F> "<S0E0F><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E0F> % AE, TO PATAK
 <U0E42_U0E0F> "<S0E0F><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E0F> % O, TO PATAK
 <U0E43_U0E0F> "<S0E0F><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E0F> % AI MAIMUAN, TO PATAK
 <U0E44_U0E0F> "<S0E0F><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E0F> % AI MAIMALAI, TO PATAK
 <U0E10> <S0E10>;<BASE>;<MIN>;<U0E10> % THAI CHARACTER THO THAN
 <U0E40_U0E10> "<S0E10><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E10> % E, THO THAN
 <U0E41_U0E10> "<S0E10><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E10> % AE, THO THAN
 <U0E42_U0E10> "<S0E10><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E10> % O, THO THAN
 <U0E43_U0E10> "<S0E10><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E10> % AI MAIMUAN, THO THAN
 <U0E44_U0E10> "<S0E10><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E10> % AI MAIMALAI, THO THAN
 <U0E11> <S0E11>;<BASE>;<MIN>;<U0E11> % THAI CHARACTER THO NANGMONTHO
 <U0E40_U0E11> "<S0E11><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E11> % E, THO NANGMONTHO

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<U0E1F> <S0E1F>;<BASE>;<MIN>;<U0E1F> % THAI CHARACTER FO FAN
<U0E40_U0E1F> "<S0E1F><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E1F> % E, FO FAN
<U0E41_U0E1F> "<S0E1F><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E1F> % AE, FO FAN
<U0E42_U0E1F> "<S0E1F><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E1F> % O, FO FAN
<U0E43_U0E1F> "<S0E1F><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E1F> % AI MAIMUAN, FO FAN
<U0E44_U0E1F> "<S0E1F><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E1F> % AI MAIMALAI, FO FAN
<U0E20> <S0E20>;<BASE>;<MIN>;<U0E20> % THAI CHARACTER PHO SAMPHAO
<U0E40_U0E20> "<S0E20><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E20> % E, PHO SAMPHAO
<U0E41_U0E20> "<S0E20><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E20> % AE, PHO SAMPHAO
<U0E42_U0E20> "<S0E20><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E20> % O, PHO SAMPHAO
<U0E43_U0E20> "<S0E20><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E20> % AI MAIMUAN, PHO SAMPHAO
<U0E44_U0E20> "<S0E20><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E20> % AI MAIMALAI, PHO SAMPHAO
<U0E21> <S0E21>;<BASE>;<MIN>;<U0E21> % THAI CHARACTER MO MA
<U0E40_U0E21> "<S0E21><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E21> % E, MO MA
<U0E41_U0E21> "<S0E21><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E21> % AE, MO MA
<U0E42_U0E21> "<S0E21><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E21> % O, MO MA
<U0E43_U0E21> "<S0E21><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E21> % AI MAIMUAN, MO MA
<U0E44_U0E21> "<S0E21><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E21> % AI MAIMALAI, MO MA
<U0E22> <S0E22>;<BASE>;<MIN>;<U0E22> % THAI CHARACTER YO YAK
<U0E40_U0E22> "<S0E22><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E22> % E, YO YAK
<U0E41_U0E22> "<S0E22><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E22> % AE, YO YAK
<U0E42_U0E22> "<S0E22><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E22> % O, YO YAK
<U0E43_U0E22> "<S0E22><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E22> % AI MAIMUAN, YO YAK
<U0E44_U0E22> "<S0E22><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E22> % AI MAIMALAI, YO YAK
<U0E23> <S0E23>;<BASE>;<MIN>;<U0E23> % THAI CHARACTER RO RUA
<U0E40_U0E23> "<S0E23><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E23> % E, RO RUA
<U0E41_U0E23> "<S0E23><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E23> % AE, RO RUA
<U0E42_U0E23> "<S0E23><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E23> % O, RO RUA
<U0E43_U0E23> "<S0E23><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E23> % AI MAIMUAN, RO RUA
<U0E44_U0E23> "<S0E23><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E23> % AI MAIMALAI, RO RUA
<U0E24> <S0E24>;<BASE>;<MIN>;<U0E24> % THAI CHARACTER RU
<U0E40_U0E24> "<S0E24><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E24> % E, RU
<U0E41_U0E24> "<S0E24><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E24> % AE, RU
<U0E42_U0E24> "<S0E24><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E24> % O, RU
<U0E43_U0E24> "<S0E24><S0E43>";"<BASE><BASE>";"<MIN><MIN>";<U0E43_U0E24> % AI MAIMUAN, RU
<U0E44_U0E24> "<S0E24><S0E44>";"<BASE><BASE>";"<MIN><MIN>";<U0E44_U0E24> % AI MAIMALAI, RU
%%<U0E24_U0E45> <P0E24>;<BASE>;<MIN>;<U0E24_U0E45> % THAI CHARACTER RU, THAI CHARACTER LAKKHANGYAO not needed
<U0E25> <S0E25>;<BASE>;<MIN>;<U0E25> % THAI CHARACTER LO LING
<U0E40_U0E25> "<S0E25><S0E40>";"<BASE><BASE>";"<MIN><MIN>";<U0E40_U0E25> % E, LO LING
<U0E41_U0E25> "<S0E25><S0E41>";"<BASE><BASE>";"<MIN><MIN>";<U0E41_U0E25> % AE, LO LING
<U0E42_U0E25> "<S0E25><S0E42>";"<BASE><BASE>";"<MIN><MIN>";<U0E42_U0E25> % O, LO LING

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<U0E43_U0E25> "<S0E25><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E25> % AI MAIMUAN, LO LING
 <U0E44_U0E25> "<S0E25><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E25> % AI MAIMALAI, LO LING
<U0E26> <S0E26>;<BASE>;<MIN>;<U0E26> % THAI CHARACTER LU
 <U0E40_U0E26> "<S0E26><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E26> % E, LU
 <U0E41_U0E26> "<S0E26><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E26> % AE, LU
 <U0E42_U0E26> "<S0E26><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E26> % O, LU
 <U0E43_U0E26> "<S0E26><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E26> % AI MAIMUAN, LU
 <U0E44_U0E26> "<S0E26><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E26> % AI MAIMALAI, LU
%%<U0E26_U0E45> <P0E26>;<BASE>;<MIN>;<U0E26_U0E45> % THAI CHARACTER LU, THAI CHARACTER LAKKHANGYAO not needed
 <U0E27> <S0E27>;<BASE>;<MIN>;<U0E27> % THAI CHARACTER WO WAEN
 <U0E40_U0E27> "<S0E27><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E27> % E, WO WAEN
 <U0E41_U0E27> "<S0E27><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E27> % AE, WO WAEN
 <U0E42_U0E27> "<S0E27><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E27> % O, WO WAEN
 <U0E43_U0E27> "<S0E27><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E27> % AI MAIMUAN, WO WAEN
 <U0E44_U0E27> "<S0E27><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E27> % AI MAIMALAI, WO WAEN
 <U0E28> <S0E28>;<BASE>;<MIN>;<U0E28> % THAI CHARACTER SO SALA
 <U0E40_U0E28> "<S0E28><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E28> % E, SO SALA
 <U0E41_U0E28> "<S0E28><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E28> % AE, SO SALA
 <U0E42_U0E28> "<S0E28><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E28> % O, SO SALA
 <U0E43_U0E28> "<S0E28><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E28> % AI MAIMUAN, SO SALA
 <U0E44_U0E28> "<S0E28><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E28> % AI MAIMALAI, SO SALA
 <U0E29> <S0E29>;<BASE>;<MIN>;<U0E29> % THAI CHARACTER SO RUSI
 <U0E40_U0E29> "<S0E29><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E29> % E, SO RUSI
 <U0E41_U0E29> "<S0E29><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E29> % AE, SO RUSI
 <U0E42_U0E29> "<S0E29><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E29> % O, SO RUSI
 <U0E43_U0E29> "<S0E29><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E29> % AI MAIMUAN, SO RUSI
 <U0E44_U0E29> "<S0E29><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E29> % AI MAIMALAI, SO RUSI
 <U0E2A> <S0E2A>;<BASE>;<MIN>;<U0E2A> % THAI CHARACTER SO SUA
 <U0E40_U0E2A> "<S0E2A><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E2A> % E, SO SUA
 <U0E41_U0E2A> "<S0E2A><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E2A> % AE, SO SUA
 <U0E42_U0E2A> "<S0E2A><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E2A> % O, SO SUA
 <U0E43_U0E2A> "<S0E2A><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E2A> % AI MAIMUAN, SO SUA
 <U0E44_U0E2A> "<S0E2A><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E2A> % AI MAIMALAI, SO SUA
 <U0E2B> <S0E2B>;<BASE>;<MIN>;<U0E2B> % THAI CHARACTER HO HIP
 <U0E40_U0E2B> "<S0E2B><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E2B> % E, HO HIP
 <U0E41_U0E2B> "<S0E2B><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E2B> % AE, HO HIP
 <U0E42_U0E2B> "<S0E2B><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E2B> % O, HO HIP
 <U0E43_U0E2B> "<S0E2B><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E2B> % AI MAIMUAN, HO HIP
 <U0E44_U0E2B> "<S0E2B><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E2B> % AI MAIMALAI, HO HIP
 <U0E2C> <S0E2C>;<BASE>;<MIN>;<U0E2C> % THAI CHARACTER LO CHULA
 <U0E40_U0E2C> "<S0E2C><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E2C> % E, LO CHULA

<U0E41_U0E2C> "<S0E2C><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E2C> % AE, LO CHULA
 <U0E42_U0E2C> "<S0E2C><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E2C> % O, LO CHULA
 <U0E43_U0E2C> "<S0E2C><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E2C> % AI MAIMUAN, LO CHULA
 <U0E44_U0E2C> "<S0E2C><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E2C> % AI MAIMALAI, LO CHULA
 <U0E2D> <S0E2D>;<BASE>;<MIN>;<U0E2D> % THAI CHARACTER O ANG
 <U0E40_U0E2D> "<S0E2D><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E2D> % E, O ANG
 <U0E41_U0E2D> "<S0E2D><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E2D> % AE, O ANG
 <U0E42_U0E2D> "<S0E2D><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E2D> % O, O ANG
 <U0E43_U0E2D> "<S0E2D><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E2D> % AI MAIMUAN, O ANG
 <U0E44_U0E2D> "<S0E2D><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E2D> % AI MAIMALAI, O ANG
 <U0E2E> <S0E2E>;<BASE>;<MIN>;<U0E2E> % THAI CHARACTER HO NOKHUK
 <U0E40_U0E2E> "<S0E2E><S0E40>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E40_U0E2E> % E, HO NOKHUK
 <U0E41_U0E2E> "<S0E2E><S0E41>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E41_U0E2E> % AE, HO NOKHUK
 <U0E42_U0E2E> "<S0E2E><S0E42>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E42_U0E2E> % O, HO NOKHUK
 <U0E43_U0E2E> "<S0E2E><S0E43>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E43_U0E2E> % AI MAIMUAN, HO NOKHUK
 <U0E44_U0E2E> "<S0E2E><S0E44>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0E44_U0E2E> % AI MAIMALAI, HO NOKHUK

%% Lao consonants:

<U0E81> <S0E81>;<BASE>;<MIN>;<U0E81> % LAO LETTER KO
 <U0EC0_U0E81> "<S0E81><S0EC0>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC0_U0E81> % E, KO
 <U0EC1_U0E81> "<S0E81><S0EC1>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC1_U0E81> % EI, KO
 <U0EC2_U0E81> "<S0E81><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0E81> % O, KO
 <U0EC3_U0E81> "<S0E81><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0E81> % AY, KO
 <U0EC4_U0E81> "<S0E81><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0E81> % AI, KO
 <U0E82> <S0E82>;<BASE>;<MIN>;<U0E82> % LAO LETTER KHO SUNG
 <U0EC0_U0E82> "<S0E82><S0EC0>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC0_U0E82> % E, KHO SUNG
 <U0EC1_U0E82> "<S0E82><S0EC1>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC1_U0E82> % EI, KHO SUNG
 <U0EC2_U0E82> "<S0E82><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0E82> % O, KHO SUNG
 <U0EC3_U0E82> "<S0E82><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0E82> % AY, KHO SUNG
 <U0EC4_U0E82> "<S0E82><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0E82> % AI, KHO SUNG
 <U0E84> <S0E84>;<BASE>;<MIN>;<U0E84> % LAO LETTER KHO TAM
 <U0EC0_U0E84> "<S0E84><S0EC0>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC0_U0E84> % E, KHO TAM
 <U0EC1_U0E84> "<S0E84><S0EC1>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC1_U0E84> % EI, KHO TAM
 <U0EC2_U0E84> "<S0E84><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0E84> % O, KHO TAM
 <U0EC3_U0E84> "<S0E84><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0E84> % AY, KHO TAM
 <U0EC4_U0E84> "<S0E84><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0E84> % AI, KHO TAM

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[illegible]

14

<U0EC2_U0EAA> "<S0EAA><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0EAA> % O, SO SUNG
 <U0EC3_U0EAA> "<S0EAA><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0EAA> % AY, SO SUNG
 <U0EC4_U0EAA> "<S0EAA><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0EAA> % AI, SO SUNG
 <U0EAB> <S0EAB>;<BASE>;<MIN>;<U0EAB> % LAO LETTER HO SUNG
 <U0EC0_U0EAB> "<S0EAB><S0EC0>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC0_U0EAB> % E, HO SUNG
 <U0EC1_U0EAB> "<S0EAB><S0EC1>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC1_U0EAB> % EI, HO SUNG
 <U0EC2_U0EAB> "<S0EAB><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0EAB> % O, HO SUNG
 <U0EC3_U0EAB> "<S0EAB><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0EAB> % AY, HO SUNG
 <U0EC4_U0EAB> "<S0EAB><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0EAB> % AI, HO SUNG

<U0EDC> "<S0EAB><S0E99>"; "<BASE><BASE>"; "<COMPAT><COMPAT>"; <U0EDC> % LAO HO NO
 <U0EC0_U0EDC> "<S0EAB><S0EC0><S0E99>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC0_U0EDC> % E, HO NO
 <U0EC1_U0EDC> "<S0EAB><S0EC1><S0E99>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC1_U0EDC> % EI, HO NO
 <U0EC2_U0EDC> "<S0EAB><S0EC2><S0E99>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC2_U0EDC> % O, HO NO
 <U0EC3_U0EDC> "<S0EAB><S0EC3><S0E99>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC3_U0EDC> % AY, HO NO
 <U0EC4_U0EDC> "<S0EAB><S0EC4><S0E99>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC3_U0EDC> % AI, HO NO
 <U0EDD> "<S0EAB><S0EA1>"; "<BASE><BASE>"; "<COMPAT><COMPAT>"; <U0EDD> % LAO HO MO
 <U0EC0_U0EDD> "<S0EAB><S0EC0><S0EA1>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC0_U0EDD> % E, HO MO
 <U0EC1_U0EDD> "<S0EAB><S0EC1><S0EA1>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC1_U0EDD> % EI, HO MO
 <U0EC2_U0EDD> "<S0EAB><S0EC2><S0EA1>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC2_U0EDD> % O, HO MO
 <U0EC3_U0EDD> "<S0EAB><S0EC3><S0EA1>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC3_U0EDD> % AY, HO MO
 <U0EC4_U0EDD> "<S0EAB><S0EC4><S0EA1>"; "<BASE><BASE><BASE>"; "<COMPAT><COMPAT><COMPAT>"; <U0EC4_U0EDD> % AI, HO MO

<U0EAD> <S0EAD>;<BASE>;<MIN>;<U0EAD> % LAO LETTER O
 <U0EC0_U0EAD> "<S0EAD><S0EC0>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC0_U0EAD> % E, O
 <U0EC1_U0EAD> "<S0EAD><S0EC1>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC1_U0EAD> % EI, O
 <U0EC2_U0EAD> "<S0EAD><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0EAD> % O, O
 <U0EC3_U0EAD> "<S0EAD><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0EAD> % AY, O
 <U0EC4_U0EAD> "<S0EAD><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0EAD> % AI, O
 <U0EAE> <S0EAE>;<BASE>;<MIN>;<U0EAE> % LAO LETTER HO TAM
 <U0EC0_U0EAE> "<S0EAE><S0EC0>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC0_U0EAE> % E, HO TAM
 <U0EC1_U0EAE> "<S0EAE><S0EC1>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC1_U0EAE> % EI, HO TAM
 <U0EC2_U0EAE> "<S0EAE><S0EC2>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC2_U0EAE> % O, HO TAM
 <U0EC3_U0EAE> "<S0EAE><S0EC3>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC3_U0EAE> % AY, HO TAM
 <U0EC4_U0EAE> "<S0EAE><S0EC4>"; "<BASE><BASE>"; "<MIN><MIN>"; <U0EC4_U0EAE> % AI, HO TAM

After all scripts, among the Hangul vowels and other Indic vowels

Thai (dependent) vowels:

<U0E30> <S0E30>;<BASE>;<MIN>;<U0E30> % THAI CHARACTER SARA A
 <U0E31> <S0E31>;<BASE>;<MIN>;<U0E31> % THAI CHARACTER MAI HAN-AKAT
 <U0E32> <S0E32>;<BASE>;<MIN>;<U0E32> % THAI CHARACTER SARA AA
 <U0E4D_U0E32> <S0E33>;<BASE>;<MIN>;<U0E33> % THAI CHARACTER NIKHAHIT, THAI CHARACTER SARA AA
 <U0E33> <S0E33>;<BASE>;<COMPAT>;<U0E33> % THAI CHARACTER SARA AM
 <U0E34> <S0E34>;<BASE>;<MIN>;<U0E34> % THAI CHARACTER SARA I
 <U0E35> <S0E35>;<BASE>;<MIN>;<U0E35> % THAI CHARACTER SARA II
 <U0E36> <S0E36>;<BASE>;<MIN>;<U0E36> % THAI CHARACTER SARA UE
 <U0E37> <S0E37>;<BASE>;<MIN>;<U0E37> % THAI CHARACTER SARA UEE
 <U0E38> <S0E38>;<BASE>;<MIN>;<U0E38> % THAI CHARACTER SARA U
 <U0E39> <S0E39>;<BASE>;<MIN>;<U0E39> % THAI CHARACTER SARA UU

Thai would-be reordering (dependent) vowels:

<U0E40> <S0E40>;<BASE>;<MIN>;<U0E40> % THAI CHARACTER SARA E
 <U0E41> <S0E41>;<BASE>;<MIN>;<U0E41> % THAI CHARACTER SARA AE
 <U0E42> <S0E42>;<BASE>;<MIN>;<U0E42> % THAI CHARACTER SARA O
 <U0E43> <S0E43>;<BASE>;<MIN>;<U0E43> % THAI CHARACTER SARA AI MAIMUAN
 <U0E44> <S0E44>;<BASE>;<MIN>;<U0E44> % THAI CHARACTER SARA AI MAIMALAI

Logical place is after some consonants (plural!), after any nikhahit, before
 any tone mark applied to the syllable. Ordering pretends that the vowel is
 just after the next consonant, while it may actually be pronounced even later.
 The weighting for these are moved to after a following Thai consonant by
 the contractions above.

<U0E45> <S0E45>;<BASE>;<MIN>;<U0E45> % THAI CHARACTER LAKKHANGYAO	Mn	right, long stem AA, vowel (??)
%<U0E47> <S0E47>;<BASE>;<MIN>;<U0E47> % THAI CHARACTER MAITAIKHU	Mn	above, vowel (??)
%<U0E3A> IGNORE;<D0E3A>;<MIN>;<U0E3A> % THAI CHARACTER PHINTHU	Mn	below, virama, silent vowel (??)

%% Lao (dependent) vowels:

```
<U0EB0> <S0EB0>;<BASE>;<MIN>;<U0EB0> % LAO VOWEL SIGN A
<U0EB1> <S0EB1>;<BASE>;<MIN>;<U0EB1> % LAO VOWEL SIGN MAI KAN
<U0EB2> <S0EB2>;<BASE>;<MIN>;<U0EB2> % LAO VOWEL SIGN AA
<U0ECD_U0EB2> <S0EB3>;<BASE>;<MIN>;<U0EB3> % LAO NIGGAHITA, LAO VOWEL SIGN AA
<U0EB3> <S0EB3>;<BASE>;<COMPAT>;<U0EB3> % LAO VOWEL SIGN AM
<U0EB4> <S0EB4>;<BASE>;<MIN>;<U0EB4> % LAO VOWEL SIGN I
<U0EB5> <S0EB5>;<BASE>;<MIN>;<U0EB5> % LAO VOWEL SIGN II
<U0EB6> <S0EB6>;<BASE>;<MIN>;<U0EB6> % LAO VOWEL SIGN Y
<U0EB7> <S0EB7>;<BASE>;<MIN>;<U0EB7> % LAO VOWEL SIGN YY
<U0EB8> <S0EB8>;<BASE>;<MIN>;<U0EB8> % LAO VOWEL SIGN U
<U0EB9> <S0EB9>;<BASE>;<MIN>;<U0EB9> % LAO VOWEL SIGN UU
<U0EBB> <S0EBB>;<BASE>;<MIN>;<U0EBB> % LAO VOWEL SIGN MAI KON
<U0EBC> <S0EBC>;<BASE>;<MIN>;<U0EBC> % LAO SEMIVOWEL SIGN LO
<U0EBD> <S0EBD>;<BASE>;<MIN>;<U0EBD> % LAO SEMIVOWEL SIGN NYO
```

%% Lao would-be reordering (dependent) vowels:

```
<U0EC0> <S0EC0>;<BASE>;<MIN>;<U0EC0> % LAO VOWEL SIGN E
<U0EC1> <S0EC1>;<BASE>;<MIN>;<U0EC1> % LAO VOWEL SIGN EI
<U0EC2> <S0EC2>;<BASE>;<MIN>;<U0EC2> % LAO VOWEL SIGN O
<U0EC3> <S0EC3>;<BASE>;<MIN>;<U0EC3> % LAO VOWEL SIGN AY
<U0EC4> <S0EC4>;<BASE>;<MIN>;<U0EC4> % LAO VOWEL SIGN AI
```

%%%%%%%% Logical place is after some consonants (plural!), after any niggahita, before
%%%%%%%% any tone mark applied to the syllable. Ordering pretends that the vowel is
%%%%%%%% just after the next consonant, while it may actually be pronounced even later.
%%%%%%%% The weighting for these are moved to after a following Lao consonant by
%%%%%%%% the contractions above.

Suggested changes to UTS 10

Apart from the implied data file changes, section 3.1.3 in UTS 10 on *Rearrangement* can be removed, as these rearrangements are now instead handled by the contractions mechanism, as listed above.

This further implies that section 3.2.1 should not deal with any 'rearrangement lines', which are already(!) obsolete. Likewise should step S1.2 be removed, and conformity clause C3 should not mention rearrangement.