

Title: Preliminary Proposal to Encode the Gangga Malayu Script
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1 Introduction

The purpose of this document is to bring attention to the Gangga Malayu writing system. It provides brief background on the script, a code chart, names list, and a specimen. Additional research is required to determine the suitability of encoding Gangga Malayu in the Universal Character Set. The information presented here is subject to change. Any information on Gangga Malayu may be submitted to the author at the email address given above.

2 Background

Gangga Malayu is an abugida based upon the Arabic abjad. According to C. O. Blagden, it was used in the Malay peninsula until at least the early 20th century and is a ‘cipher alphabet’ or ‘secret script’.¹ In *A Dictionary of the Malay Language* (1894), Gangga Malayu is described as “[t]he name of an alphabet used in Pêrak which, however, is of modern origin and only employed for the purposes of intrigue.”² Additionally, Blagden writes that the script was used for writing *chiri*, the old coronation formula of the Malaya kings.

The origins of Gangga Malayu are uncertain. R. A. Kern believes that the letters are modified forms of Arabic letters used for writing Malay:

The greater part [of the script] can be traced back to the usual [Arabic] characters, being reversions of these in a vertical or horizontal direction, and by the replacing of the dots by short strokes variously attached to the character that forms the basis of the several letters, which are differentiated in the ordinary writing by the number of dots employed in each case.³

While the letters and signs may be derived from Arabic, the structure of the writing system appears to be based upon the Brahmi model with features adapted from other writing systems, such as Javanese. In fact, Blagden suggests that some “of the primary elements themselves might be of ancient date, and might go back to pre-Muhammadan days.”⁴

The shapes of certain letters adhere to Kern’s hypothesis of an Arabic origin, most obviously / ALIF (cf. Arabic ﻻ ALEF), but others markedly do not, eg. ◯◯ KAP (cf. Arabic ﻛﺎﻑ KAF). Moreover, Kern indicates that he is unable to see any correspondence between the Gangga Malayu and Arabic forms of eleven letters: ꦏ THA, ꦗ JIM, ꦕ CHA, ꦏ HA, ꦏ KHA, ꦏ PA, ꦏ KOP, ꦏ KAP, ꦏ GA, ꦏ NUN, ꦏ WAU.

Despite the descriptions of Gangga Malayu as a ‘cipher alphabet’ or ‘secret script’, the use of the script for recording royal coronation oaths, letters, and other materials in the Malay languages requires a means for representing these historical items in the UCS. Further research is required in order to understand the extent to which Gangga Malayu was used and to identify additional materials written in the script.

¹ Blagden in Kern 1908: 207 ² Clifford and Swettenham 1894: 458. ³ Kern 1908: 208. ⁴ Blagden in Kern 1908: 208

3 Writing System

Character Repertoire Gangga Malayu consists of 52 characters: 32 consonant letters, 3 vowel signs, 3 nasal signs, 4 other signs, and 10 digits. A preliminary code chart and names list is given in Figure 1.

Character Names Names for the characters are based upon those given in Kern (1908). As shown in Figure 2, the names of the Gangga Malayu consonant letters and signs are derived from Arabic names, eg. / ALIF, ↗ BA, ↘ TA, etc. The names of some signs show Javanese influence.

Directionality Although the letters may have Arabic origins, the script is written from left-to-right.

Joining Each letter is written separately and no letters possess any of the joining properties of Arabic letters.

Structure The underlying model is based upon Brahmi and uses a VIRAMA-like character for marking bare consonants and consonant conjuncts. Each consonant letter possesses the inherent vowel *a*. The phonological value of a consonant letter is the value of the Arabic letter + the inherent vowel *a*. The inherent vowel is changed by the use of vowel signs. The inherent vowel is silenced by the ◌ JAZMA.

Virama The ◌ JAZMA is derived from Arabic ◌ SUKUN. It is used for marking bare consonants and consonant conjuncts. It is explicit and always written.

Vowel Signs There are three vowel signs: ◌ SIGN AA, ◌ SIGN I, ◌ SIGN U. In the manner of Brahmi scripts, these vowel signs are always written, unlike the practice in Arabic. The diphthong /ai/ is written in the following manner: ◌↗ SIGN I + YA + JAZMA.

Nasalization The nasalization signs appear to be based upon the Arabic *tanwīn* signs: ◌ SIGN AN, ◌ SIGN IN, ◌ SIGN UN.

Gemination The ◌ TASHDID is used for marking geminated consonants. The TASHDID is always written.

Other Signs The ◌ LAYAR indicates the sound /r/ at the end of a syllable. The ◌ CHECHAQ indicates the sound /ŋ/ at the end of a syllable. These signs are apparently of Javanese origin.

Digits The digits 0 ZERO and 1 ONE resemble Arabic-Hindu digits. The digits 3 THREE, 4 FOUR, 5 FIVE are based upon a common glyph shape, while 2 TWO, 6 SIX, 7 SEVEN, 8 EIGHT, 9 NINE are based upon another common pattern.

Punctuation Punctuation is not attested.

4 Character Properties


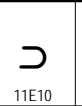


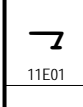
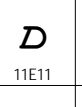
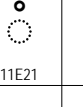
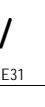
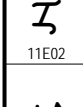
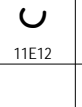
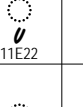
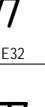
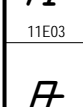
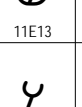
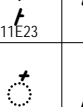
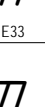
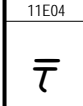
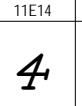
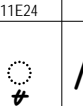

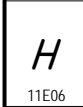
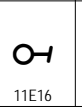


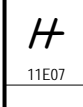
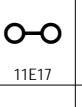
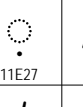

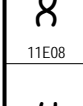
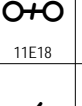
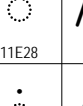
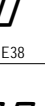
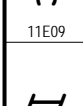
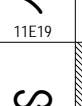


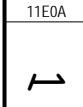



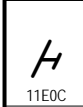
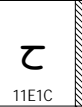
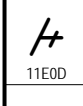
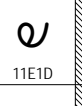
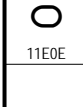

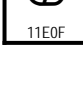



The tentative properties for Pau Cin Hau characters in the Unicode Character Database format are given below. The properties of tone marks are not accurate.

```
11E00;GANGGA MALAYU LETTER ALIF;Lo;0;L;;;;N;;;;;
11E01;GANGGA MALAYU LETTER BA;Lo;0;L;;;;N;;;;;
11E02;GANGGA MALAYU LETTER TA;Lo;0;L;;;;N;;;;;
11E03;GANGGA MALAYU LETTER THA;Lo;0;L;;;;N;;;;;
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11E04;GANGGA MALAYU LETTER JIM;Lo;0;L;;;;N;;;;;
 11E05;GANGGA MALAYU LETTER CHA;Lo;0;L;;;;N;;;;;
 11E06;GANGGA MALAYU LETTER HA;Lo;0;L;;;;N;;;;;
 11E07;GANGGA MALAYU LETTER KHA;Lo;0;L;;;;N;;;;;
 11E08;GANGGA MALAYU LETTER DAL;Lo;0;L;;;;N;;;;;
 11E09;GANGGA MALAYU LETTER ZAL;Lo;0;L;;;;N;;;;;
 11E0A;GANGGA MALAYU LETTER RA;Lo;0;L;;;;N;;;;;
 11E0B;GANGGA MALAYU LETTER ZE;Lo;0;L;;;;N;;;;;
 11E0C;GANGGA MALAYU LETTER SIN;Lo;0;L;;;;N;;;;;
 11E0D;GANGGA MALAYU LETTER SHIN;Lo;0;L;;;;N;;;;;
 11E0E;GANGGA MALAYU LETTER SOD;Lo;0;L;;;;N;;;;;
 11E0F;GANGGA MALAYU LETTER THOD;Lo;0;L;;;;N;;;;;
 11E10;GANGGA MALAYU LETTER TOH;Lo;0;L;;;;N;;;;;
 11E11;GANGGA MALAYU LETTER ZOH;Lo;0;L;;;;N;;;;;
 11E12;GANGGA MALAYU LETTER AIN;Lo;0;L;;;;N;;;;;
 11E13;GANGGA MALAYU LETTER RHIN;Lo;0;L;;;;N;;;;;
 11E14;GANGGA MALAYU LETTER NGA;Lo;0;L;;;;N;;;;;
 11E15;GANGGA MALAYU LETTER PA;Lo;0;L;;;;N;;;;;
 11E16;GANGGA MALAYU LETTER KOP;Lo;0;L;;;;N;;;;;
 11E17;GANGGA MALAYU LETTER KAP;Lo;0;L;;;;N;;;;;
 11E18;GANGGA MALAYU LETTER GA;Lo;0;L;;;;N;;;;;
 11E19;GANGGA MALAYU LETTER LAM;Lo;0;L;;;;N;;;;;
 11E1A;GANGGA MALAYU LETTER MIM;Lo;0;L;;;;N;;;;;
 11E1B;GANGGA MALAYU LETTER NUN;Lo;0;L;;;;N;;;;;
 11E1C;GANGGA MALAYU LETTER WAU;Lo;0;L;;;;N;;;;;
 11E1D;GANGGA MALAYU LETTER HA;Lo;0;L;;;;N;;;;;
 11E1E;GANGGA MALAYU LETTER YA;Lo;0;L;;;;N;;;;;
 11E1F;GANGGA MALAYU LETTER NYA;Lo;0;L;;;;N;;;;;
 11E20;GANGGA MALAYU VOWEL SIGN AA;Mn;0;NSM;;;;N;;;;;
 11E21;GANGGA MALAYU VOWEL SIGN I;Mn;0;NSM;;;;N;;;;;
 11E22;GANGGA MALAYU VOWEL SIGN U;Mn;0;NSM;;;;N;;;;;
 11E23;GANGGA MALAYU NASAL SIGN AN;Mn;0;NSM;;;;N;;;;;
 11E24;GANGGA MALAYU NASAL SIGN IN;Mn;0;NSM;;;;N;;;;;
 11E25;GANGGA MALAYU NASAL SIGN UN;Mn;0;NSM;;;;N;;;;;
 11E26;GANGGA MALAYU SIGN TASHDID;Mn;0;NSM;;;;N;;;;;
 11E27;GANGGA MALAYU SIGN JAZMA;Mn;0;NSM;;;;N;;;;;
 11E28;GANGGA MALAYU SIGN LAYAR;Mn;0;NSM;;;;N;;;;;
 11E29;GANGGA MALAYU SIGN CHECHAQ;Mn;0;NSM;;;;N;;;;;
 11E30;GANGGA MALAYU DIGIT ZERO;Nd;0;L;0;0;0;N;;;;;
 11E31;GANGGA MALAYU DIGIT ONE;Nd;0;L;1;1;1;N;;;;;
 11E32;GANGGA MALAYU DIGIT TWO;Nd;0;L;2;2;2;N;;;;;
 11E33;GANGGA MALAYU DIGIT THREE;Nd;0;L;3;3;3;N;;;;;
 11E34;GANGGA MALAYU DIGIT FOUR;Nd;0;L;4;4;4;N;;;;;
 11E35;GANGGA MALAYU DIGIT FIVE;Nd;0;L;5;5;5;N;;;;;
 11E36;GANGGA MALAYU DIGIT SIX;Nd;0;L;6;6;6;N;;;;;
 11E37;GANGGA MALAYU DIGIT SEVEN;Nd;0;L;7;7;7;N;;;;;
 11E38;GANGGA MALAYU DIGIT EIGHT;Nd;0;L;8;8;8;N;;;;;
 11E39;GANGGA MALAYU DIGIT NINE;Nd;0;L;9;9;9;N;;;;;

5 References

- Clifford, Hugh and Frank A. Swettenham. 1894. *A Dictionary of the Malay Language: Malay–English*. Part I.—The Letter “A.” Taiping, Perak: Government Printing Office.
- Kern, R. A. 1908. “A Malay Cipher Alphabet”. Prefatory Note by C. O. Blagden. *Journal of the Royal Anthropological Institute of Great Britain and Ireland*, vol. 38 (Jan. - Jun. 1908), pp. 207–211.

	11E0	11E1	11E2	11E3
0	 11E00	 11E10	 11E20	 11E30
1	 11E01	 11E11	 11E21	 11E31
2	 11E02	 11E12	 11E22	 11E32
3	 11E03	 11E13	 11E23	 11E33
4	 11E04	 11E14	 11E24	 11E34
5	 11E05	 11E15	 11E25	 11E35
6	 11E06	 11E16	 11E26	 11E36
7	 11E07	 11E17	 11E27	 11E37
8	 11E08	 11E18	 11E28	 11E38
9	 11E09	 11E19	 11E29	 11E39
A	 11E0A	 11E1A		
B	 11E0B	 11E1B		
C	 11E0C	 11E1C		
D	 11E0D	 11E1D		
E	 11E0E	 11E1E		
F	 11E0F	 11E1F		

Consonant letters

- 11E00 / GANGGA MALAYU LETTER ALIF
- 11E01 ɿ GANGGA MALAYU LETTER BA
- 11E02 ʌ GANGGA MALAYU LETTER TA
- 11E03 ʰ GANGGA MALAYU LETTER THA
- 11E04 ʃ GANGGA MALAYU LETTER JIM
- 11E05 ̄ GANGGA MALAYU LETTER CHA
- 11E06 ɦ GANGGA MALAYU LETTER HA
- 11E07 ɣ GANGGA MALAYU LETTER KHA
- 11E08 ɣ GANGGA MALAYU LETTER DAL
- 11E09 ʁ GANGGA MALAYU LETTER ZAL
- 11E0A ɹ GANGGA MALAYU LETTER RA
- 11E0B ʒ GANGGA MALAYU LETTER ZE
- 11E0C ʃ GANGGA MALAYU LETTER SIN
- 11E0D ʃ GANGGA MALAYU LETTER SHIN
- 11E0E ɔ GANGGA MALAYU LETTER SOD
- 11E0F ɔ GANGGA MALAYU LETTER THOD
- 11E10 ɔ GANGGA MALAYU LETTER TOH
- 11E11 ɔ GANGGA MALAYU LETTER ZOH
- 11E12 ʊ GANGGA MALAYU LETTER AIN
- 11E13 ɤ GANGGA MALAYU LETTER RHIN
- 11E14 ɣ GANGGA MALAYU LETTER NGA
- 11E15 ʌ GANGGA MALAYU LETTER PA
- 11E16 ɔ GANGGA MALAYU LETTER KOP
- 11E17 ɔ GANGGA MALAYU LETTER KAP
- 11E18 ɔ GANGGA MALAYU LETTER GA
- 11E19 ʌ GANGGA MALAYU LETTER LAM
- 11E1A ɔ GANGGA MALAYU LETTER MIM
- 11E1B ɦ GANGGA MALAYU LETTER NUN
- 11E1C ɣ GANGGA MALAYU LETTER WAU
- 11E1D ɤ GANGGA MALAYU LETTER HA
- 11E1E ɿ GANGGA MALAYU LETTER YA
- 11E1F ʃ GANGGA MALAYU LETTER NYA

Dependent vowel signs

- 11E20 ɔ GANGGA MALAYU VOWEL SIGN A
- 11E21 ɔ GANGGA MALAYU VOWEL SIGN I
- 11E22 ɔ GANGGA MALAYU VOWEL SIGN U

Nasal signs

- 11E23 ɔ GANGGA MALAYU NASAL SIGN AN
- 11E24 ɔ GANGGA MALAYU NASAL SIGN IN
- 11E25 ɔ GANGGA MALAYU NASAL SIGN UN

Various signs

- 11E26 ɔ GANGGA MALAYU SIGN TASHDID
- 11E27 ɔ GANGGA MALAYU SIGN JAZMA
- 11E28 ɔ GANGGA MALAYU SIGN LAYAR
- 11E29 ɔ GANGGA MALAYU SIGN CHECHAQ

Digits

- 11E30 0 GANGGA MALAYU DIGIT ZERO
- 11E31 / GANGGA MALAYU DIGIT ONE
- 11E32 ʃ GANGGA MALAYU DIGIT TWO
- 11E33 ʃ GANGGA MALAYU DIGIT THREE
- 11E34 ʃ GANGGA MALAYU DIGIT FOUR
- 11E35 ʃ GANGGA MALAYU DIGIT FIVE
- 11E36 ʃ GANGGA MALAYU DIGIT SIX
- 11E37 ʃ GANGGA MALAYU DIGIT SEVEN
- 11E38 ʃ GANGGA MALAYU DIGIT EIGHT
- 11E39 ʃ GANGGA MALAYU DIGIT NINE

Figure 1: Proposed code chart and nameslist for Gangga Malayu

