

Proposal to encode the Grantha script in Unicode
Ministry of Communications and Information Technology,
Government of India
2011-July-22

L2/11-284R

Government of India earlier submitted a proposal L2/10-426 to encode Grantha in the Unicode Standard. Based on the recommendations of the High Level Committee constituted by Govt of Tamil Nadu (Reference: Annexure-I to this proposal), Government of India submits this revised proposal to encode the Grantha script in Unicode.

1. Official Proposal Summary Form

A. Administrative

1. Title

Proposal to encode the Grantha script in Unicode

2. Requester's name

Ministry of Communications and Information Technology, Government of India.

3. Requester type (Member body/Liaison/Individual contribution)

Member body.

4. Submission date

2011-July-22

5. Requester's reference (if applicable)

6. Choose one of the following: This is a complete proposal (or) More information will be provided later

This is a complete proposal.

B. Technical – General

1. Choose one of the following:

1a. This proposal is for a new script (set of characters), Proposed name of script

Yes. Grantha.

1b. The proposal is for addition of character(s) to an existing block, Name of the existing block

2. Number of characters in proposal

82 (Eighty Two)

3. Proposed category

Category A contemporary.

4. Is a repertoire including character names provided?

Yes.

4a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?

Yes.

4b. Are the character shapes attached in a legible form suitable for review?

Yes.

5. Fonts related:

a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?

Mr. Elmar Kniprath

b. Identify the party granting a license for use of the font by the editors (include address, e-mail etc.)

kniprath – at – online – dot – de

6a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

Yes (in L2/09-372 and L2/10-048).

6b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?

Yes (in L2/09-372 and L2/10-048).

7. Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?

Yes (in L2/09-372 and L2/10-048).

8. Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script.

See L2/09-372 and L2/10-048.

C. Technical – Justification

1. Has this proposal for addition of character(s) been submitted before? If YES, explain.

Yes. Separate proposals were previously submitted by various parties including the Govt of India. Ref: L2/10-426, L2/09-372 and L2/10-048.

2a. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?

Yes.

2b. If YES, with whom?

Prof Brij Bihari Chaubey, Shri Vrindavan Goswami, Dr R Krishnamurti Shastri, Dr Kirtikant Sharma, Ms Amba Kulkarni, Dr Girish Jha, Dr T Ganesan, Dr Santosh Kumar Shukla, Shriramana Sharma, and many scholars. The proposal has also been examined by the High level committee constituted by Govt. of Tamil Nadu, India. Based on GoTN recommendations, Govt. of India has revised the proposal.

2c. If YES, available relevant documents

A separate summary document of the Grantha Unicode meeting held on 2010-Sep-06 at Ministry of Communications & IT, Govt of India has also been submitted before. Ref. : L2/10-409.

3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?

Yes (in L2/09-372 and L2/10-048).

4a. The context of use for the proposed characters (type of use; common or rare)

Used for writing Sanskrit (including Vedic) both independently and as part of Tamil Manipravalam.

4b. Reference

See L2/09-372 and L2/10-048.

5a. Are the proposed characters in current use by the user community?

Yes.

5b. If YES, where?

Vedic and Sanskrit community of Tamil Nadu and some parts of Kerala. Also some parts of Sri Lanka. Manuscript scholars all over the world.

6a. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?

No, since although this is not a “historic” script, there is no space in the BMP.

6b. If YES, is a rationale provided?

6c. If YES, reference

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?

They should all be kept in a single block. The layout of the characters inside the block is intended to be isomorphic to the existing major Indic script blocks.

8a. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?

No.

8b. If YES, is a rationale for its inclusion provided?

8c. If YES, reference

9a. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?

No.

9b. If YES, is a rationale for its inclusion provided?

9c. If YES, reference

10a. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?

Some characters are similar to Tamil and Malayalam characters.

10b. If YES, is a rationale for its inclusion provided?

Yes.

10c. If YES, reference

Despite similarity in superficial appearance, the Grantha, Tamil and Malayalam scripts have their own distinct features that distinguish them from one another.

11a. Does the proposal include use of combining characters and/or use of composite sequences?

Yes.

11b. If YES, is a rationale for such use provided?

11c. If YES, reference

Indic vowel signs, chandrabindu, anusvara, visarga, svara markers are by nature combining marks.

11d. Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?

No. There are no composite sequences.

12a. Does the proposal contain characters with any special properties such as control function or similar semantics?

No.

12b. If YES, describe in detail (include attachment if necessary)

13a. Does the proposal contain any Ideographic compatibility character(s)?

If YES, is the equivalent corresponding unified ideographic character(s) identified?

If YES, reference:

No.

2. Code chart

	1130	1131	1132	1133	1134	1135	1136	1137
0		ன	ං	ආ	ී		ඃ	ූ
1	්		භ		ා		ඃ	ූ
2	ං		භ	ඔ	ච්		ඃ	ූ
3	ඃ	ඳ	ඃ	ඃ	ූ		ඃ	ූ
4		ඳ	ඃ		ූ			ූ
5	ූ	ූ	ඃ	ඃ				
6	ූ	ඃ	ඃ	ඃ			ං	
7	ඃ	ඃ	ඃ	ඃ	ඃ	ඃ	ඃ	
8	ඃ	ඃ	ඃ	ඃ	ඃ		ඃ	
9	ඃ	ඃ		ඃ			ඃ	
A	ඃ	ඃ	ඃ				ඃ	
B	ඃ	ඃ	ඃ		ඃ		ඃ	
C	ඃ	ඃ	ඃ	ඃ	ඃ		ඃ	
D		ඃ	ඃ	ඃ	ඃ			
E		ඃ	ඃ	ඃ		ඃ		
F	ඃ	ඃ	ඃ	ඃ		ඃ		

The suggested chart description complete with suggested annotations is given below.

Various Characters: (Total: 3)

11301	ँ	GRANTHA SIGN CANDRABINDU
11302	ं	GRANTHA SIGN ANUSVARA
11303	ः	GRANTHA SIGN VISARGA

Independent Vowels: (Total: 12)

11305	अ	GRANTHA LETTER A
11306	आ	GRANTHA LETTER AA
11307	इ	GRANTHA LETTER I
11308	ई	GRANTHA LETTER II
11309	उ	GRANTHA LETTER U
1130A	ऊ	GRANTHA LETTER UU
1130B	ऋ	GRANTHA LETTER VOCALIC R
1130C	ॠ	GRANTHA LETTER VOCALIC L
1130F	ए	GRANTHA LETTER EE
11310	ऐ	GRANTHA LETTER AI
11313	ॐ	GRANTHA LETTER OO
11314	ॡ	GRANTHA LETTER AU

Consonants: (Total: 34)

11315	क	GRANTHA LETTER KA
11316	ख	GRANTHA LETTER KHA
11317	ग	GRANTHA LETTER GA
11318	घ	GRANTHA LETTER GHA
11319	ङ	GRANTHA LETTER NGA
1131A	च	GRANTHA LETTER CA
1131B	छ	GRANTHA LETTER CHA
1131C	ज	GRANTHA LETTER JA
1131D	झ	GRANTHA LETTER JHA
1131E	ञ	GRANTHA LETTER NYA
1131F	ट	GRANTHA LETTER TTA

11320	○	GRANTHA LETTER TTHA
11321	⌚	GRANTHA LETTER DDA
11322	⌚	GRANTHA LETTER DDHA
11323	ᳵ	GRANTHA LETTER NNA
11324	த	GRANTHA LETTER TA
11325	த	GRANTHA LETTER THA
11326	டி	GRANTHA LETTER DA
11327	த	GRANTHA LETTER DHA
11328	ந	GRANTHA LETTER NA
1132A	ப	GRANTHA LETTER PA
1132B	ப	GRANTHA LETTER PHA
1132C	ப	GRANTHA LETTER BA
1132D	ஹ	GRANTHA LETTER BHA
1132E	ம	GRANTHA LETTER MA
1132F	ய	GRANTHA LETTER YA
11330	ர	GRANTHA LETTER RA
11332	ல	GRANTHA LETTER LA
11333	ல	GRANTHA LETTER LLA
11335	வ	GRANTHA LETTER VA
11336	ஸ	GRANTHA LETTER SHA
11337	ஸ்	GRANTHA LETTER SSA
11338	ஸ	GRANTHA LETTER SA
11339	ஹ	GRANTHA LETTER HA

Various Signs: (Total: 2)

1133C	◌̣	GRANTHA SIGN NUKTA
		* for extending the script to more consonants
1133D	◌̅	GRANTHA SIGN AVAGRAHA

Dependent Vowel Signs: (Total: 11)

1133E	◌̄	GRANTHA VOWEL SIGN AA
1133F	◌̇	GRANTHA VOWEL SIGN I

11340	ꣳ	GRANTHA VOWEL SIGN II
11341	ꣴ	GRANTHA VOWEL SIGN U
11342	ꣵ	GRANTHA VOWEL SIGN UU
11343	ꣶ	GRANTHA VOWEL SIGN VOCALIC R
11344	ꣷ	GRANTHA VOWEL SIGN VOCALIC RR
11347	꣸	GRANTHA VOWEL SIGN EE
11348	꣹	GRANTHA VOWEL SIGN AI
1134B	꣺	GRANTHA VOWEL SIGN OO
		≡ 11347 ꣸ 1133E ꣻ
1134C	꣼	GRANTHA VOWEL SIGN AU
		* archaic form of the /au/ dependent vowel
		→ 11357 ꣾ GRANTHA AU LENGTH MARK
		≡ 11347 ꣸ 11357 ꣾ

Various Signs: (Total: 1)

1134D	ꣽ	GRANTHA SIGN VIRAMA
		* suppresses inherent vowel of consonants
		* may ligate with the base consonant in different ways

Dependent Vowel Sign: (Total: 1)

11357	ꣾ	GRANTHA AU LENGTH MARK
		* used alone to write the /au/ dependent vowel in modern texts
		→ 1134C ꣼ GRANTHA VOWEL SIGN AU

Various Characters: (Total: 2)

1135E	ꣿ	GRANTHA LETTER VEDIC ANUSVARA
1135F	꤀	GRANTHA LETTER VEDIC DOUBLE ANUSVARA

Additional Vowels: (Total: 4)

11360	ꣻ	GRANTHA LETTER VOCALIC RR
11361	꣼	GRANTHA LETTER VOCALIC LL
11362	ꣽ	GRANTHA VOWEL SIGN VOCALIC L
11363	ꣾ	GRANTHA VOWEL SIGN VOCALIC LL

Sama Vedic Svvara Markers: (Total: 12)

11366	ॐ	COMBINING GRANTHA DIGIT ZERO
11367	ॐ	COMBINING GRANTHA DIGIT ONE
11368	ॐ	COMBINING GRANTHA DIGIT TWO
11369	ॐ	COMBINING GRANTHA DIGIT THREE
1136A	ॐ	COMBINING GRANTHA DIGIT FOUR
1136B	ॐ	COMBINING GRANTHA DIGIT FIVE
1136C	ॐ	COMBINING GRANTHA DIGIT SIX
11370	ॐ	COMBINING GRANTHA LETTER A
11371	ॐ	COMBINING GRANTHA LETTER KA
11372	ॐ	COMBINING GRANTHA LETTER NA
11373	ॐ	COMBINING GRANTHA LETTER VI
11374	ॐ	COMBINING GRANTHA LETTER PA

* the glyph is that of TAMIL LETTER PA despite usage in Grantha

3. Unicode character properties

The suggested Unicode character properties for UnicodeData.txt are:

```
11301;GRANTHA SIGN CANDRABINDU;Mn;0;NSM;;;;;N;;;;;
11302;GRANTHA SIGN ANUSVARA;Mc;0;L;;;;;N;;;;;
11303;GRANTHA SIGN VISARGA;Mc;0;L;;;;;N;;;;;
11305;GRANTHA LETTER A;Lo;0;L;;;;;N;;;;;
11306;GRANTHA LETTER AA;Lo;0;L;;;;;N;;;;;
11307;GRANTHA LETTER I;Lo;0;L;;;;;N;;;;;
11308;GRANTHA LETTER II;Lo;0;L;;;;;N;;;;;
11309;GRANTHA LETTER U;Lo;0;L;;;;;N;;;;;
1130A;GRANTHA LETTER UU;Lo;0;L;;;;;N;;;;;
1130B;GRANTHA LETTER VOCALIC R;Lo;0;L;;;;;N;;;;;
1130C;GRANTHA LETTER VOCALIC L;Lo;0;L;;;;;N;;;;;
1130F;GRANTHA LETTER EE;Lo;0;L;;;;;N;;;;;
11310;GRANTHA LETTER AI;Lo;0;L;;;;;N;;;;;
11313;GRANTHA LETTER OO;Lo;0;L;;;;;N;;;;;
11314;GRANTHA LETTER AU;Lo;0;L;;;;;N;;;;;
11315;GRANTHA LETTER KA;Lo;0;L;;;;;N;;;;;
11316;GRANTHA LETTER KHA;Lo;0;L;;;;;N;;;;;
11317;GRANTHA LETTER GA;Lo;0;L;;;;;N;;;;;
11318;GRANTHA LETTER GHA;Lo;0;L;;;;;N;;;;;
11319;GRANTHA LETTER NGA;Lo;0;L;;;;;N;;;;;
1131A;GRANTHA LETTER CA;Lo;0;L;;;;;N;;;;;
1131B;GRANTHA LETTER CHA;Lo;0;L;;;;;N;;;;;
1131C;GRANTHA LETTER JA;Lo;0;L;;;;;N;;;;;
1131D;GRANTHA LETTER JHA;Lo;0;L;;;;;N;;;;;
1131E;GRANTHA LETTER NYA;Lo;0;L;;;;;N;;;;;
1131F;GRANTHA LETTER TTA;Lo;0;L;;;;;N;;;;;
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11320;GRANTHA LETTER TTHA;Lo;0;L;;;;;N;;;;;
 11321;GRANTHA LETTER DDA;Lo;0;L;;;;;N;;;;;
 11322;GRANTHA LETTER DDHA;Lo;0;L;;;;;N;;;;;
 11323;GRANTHA LETTER NNA;Lo;0;L;;;;;N;;;;;
 11324;GRANTHA LETTER TA;Lo;0;L;;;;;N;;;;;
 11325;GRANTHA LETTER THA;Lo;0;L;;;;;N;;;;;
 11326;GRANTHA LETTER DA;Lo;0;L;;;;;N;;;;;
 11327;GRANTHA LETTER DHA;Lo;0;L;;;;;N;;;;;
 11328;GRANTHA LETTER NA;Lo;0;L;;;;;N;;;;;
 1132A;GRANTHA LETTER PA;Lo;0;L;;;;;N;;;;;
 1132B;GRANTHA LETTER PHA;Lo;0;L;;;;;N;;;;;
 1132C;GRANTHA LETTER BA;Lo;0;L;;;;;N;;;;;
 1132D;GRANTHA LETTER BHA;Lo;0;L;;;;;N;;;;;
 1132E;GRANTHA LETTER MA;Lo;0;L;;;;;N;;;;;
 1132F;GRANTHA LETTER YA;Lo;0;L;;;;;N;;;;;
 11330;GRANTHA LETTER RA;Lo;0;L;;;;;N;;;;;
 11332;GRANTHA LETTER LA;Lo;0;L;;;;;N;;;;;
 11333;GRANTHA LETTER LLA;Lo;0;L;;;;;N;;;;;
 11335;GRANTHA LETTER VA;Lo;0;L;;;;;N;;;;;
 11336;GRANTHA LETTER SHA;Lo;0;L;;;;;N;;;;;
 11337;GRANTHA LETTER SSA;Lo;0;L;;;;;N;;;;;
 11338;GRANTHA LETTER SA;Lo;0;L;;;;;N;;;;;
 11339;GRANTHA LETTER HA;Lo;0;L;;;;;N;;;;;
 1133C;GRANTHA SIGN NUKTA;Mn;7;NSM;;;;;N;;;;;
 1133D;GRANTHA SIGN AVAGRAHA;Lo;0;L;;;;;N;;;;;
 1133E;GRANTHA VOWEL SIGN AA;Mc;0;L;;;;;N;;;;;
 1133F;GRANTHA VOWEL SIGN I;Mc;0;L;;;;;N;;;;;
 11340;GRANTHA VOWEL SIGN II;Mn;0;NSM;;;;;N;;;;;
 11341;GRANTHA VOWEL SIGN U;Mc;0;L;;;;;N;;;;;
 11342;GRANTHA VOWEL SIGN UU;Mc;0;L;;;;;N;;;;;
 11343;GRANTHA VOWEL SIGN VOCALIC R;Mc;0;L;;;;;N;;;;;
 11344;GRANTHA VOWEL SIGN VOCALIC RR;Mc;0;L;;;;;N;;;;;
 11347;GRANTHA VOWEL SIGN EE;Mc;0;L;;;;;N;;;;;
 11348;GRANTHA VOWEL SIGN AI;Mc;0;L;;;;;N;;;;;
 1134B;GRANTHA VOWEL SIGN OO;Mc;0;L;11347 1133E;;;;;N;;;;;
 1134C;GRANTHA VOWEL SIGN AU;Mc;0;L;11347 11357;;;;;N;;;;;
 1134D;GRANTHA SIGN VIRAMA;Mc;9;L;;;;;N;;;;;
 11357;GRANTHA AU LENGTH MARK;Mc;0;L;;;;;N;;;;;
 1135E;GRANTHA LETTER VEDIC ANUSVARA;Lo;0;L;;;;;N;;;;;
 1135F;GRANTHA LETTER VEDIC DOUBLE ANUSVARA;Lo;0;L;;;;;N;;;;;
 11360;GRANTHA LETTER VOCALIC RR;Lo;0;L;;;;;N;;;;;
 11361;GRANTHA LETTER VOCALIC LL;Lo;0;L;;;;;N;;;;;
 11362;GRANTHA VOWEL SIGN VOCALIC L;Mc;0;L;;;;;N;;;;;
 11363;GRANTHA VOWEL SIGN VOCALIC LL;Mc;0;L;;;;;N;;;;;
 11366;COMBINING GRANTHA DIGIT ZERO;Mn;230;NSM;;;;;N;;;;;
 11367;COMBINING GRANTHA DIGIT ONE;Mn;230;NSM;;;;;N;;;;;
 11368;COMBINING GRANTHA DIGIT TWO;Mn;230;NSM;;;;;N;;;;;
 11369;COMBINING GRANTHA DIGIT THREE;Mn;230;NSM;;;;;N;;;;;
 1136A;COMBINING GRANTHA DIGIT FOUR;Mn;230;NSM;;;;;N;;;;;
 1136B;COMBINING GRANTHA DIGIT FIVE;Mn;230;NSM;;;;;N;;;;;
 1136C;COMBINING GRANTHA DIGIT SIX;Mn;230;NSM;;;;;N;;;;;
 11370;COMBINING GRANTHA LETTER A;Mn;230;NSM;;;;;N;;;;;
 11371;COMBINING GRANTHA LETTER KA;Mn;230;NSM;;;;;N;;;;;
 11372;COMBINING GRANTHA LETTER NA;Mn;230;NSM;;;;;N;;;;;
 11373;COMBINING GRANTHA LETTER VI;Mn;230;NSM;;;;;N;;;;;
 11374;COMBINING GRANTHA LETTER PA;Mn;230;NSM;;;;;N;;;;;

**P.W.C. DAVIDAR, IAS
PRINCIPAL SECRETARY
TO GOVERNMENT**



**INFORMATION TECHNOLOGY
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D.O. Letter No.4593/IT(B1)/2010

Date: 29.4.2011

Dear Shri Ravi Shanker,

Sub: Proposal to encode Grantha script in Unicode by Government of India – Recommendations of High Level Committee constituted by Government of Tamil Nadu – Forwarded – Regarding.

Ref: 1) Government of Tamil Nadu Letter No.4593/IT(B1)/2010-3 dated 21.1.2011
2) From the Joint Secretary, Department of Information Technology, Ministry of Communications and Information Technology, Government of India, New Delhi 110 003 D.O.Letter No.13(1)2009-HCC(TDIL) Dated 11.04.2011

I am to invite your kind attention to the references cited. In keeping with the recommendations of the High Level Committee constituted by Government of Tamil Nadu on the proposal to encode Grantha script in Unicode, the proposal to encode Grantha script in Unicode is acceptable subject to the following modifications:

a. The encoding may include all but the following seven Tamil/Draavidian characters:

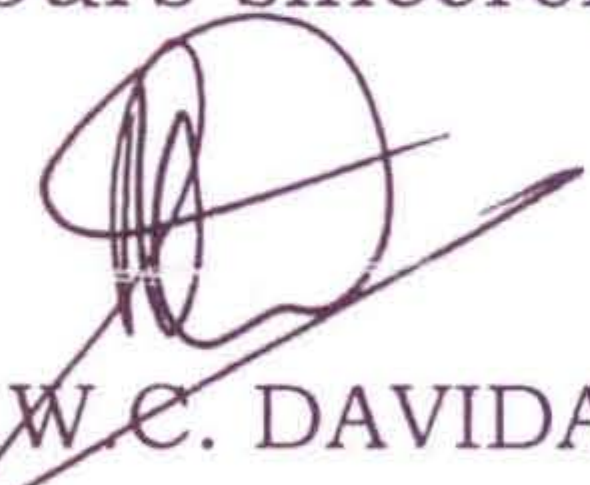
- I. 1130E Letter E (Tamil Letter எ)
- ii. 11312 Letter O (Tamil Letter ஓ)
- iii. 11329 Letter NNNA (Tamil Letter ண)
- iv. 11331 Letter RRA (Tamil Letter ற)
- v. 11334 Letter LLLA (Tamil Letter ள)
- vi. 11346 Letter Vowel Sign E
- vii. 1134A Letter Vowel Sign O

(ie the above seven Tamil letters should not be utilized)

b. Should the above characters be required in Grantha text, they may be used from the Unicode Tamil block.

With kind regards,

Yours sincerely,


(P.W.C. DAVIDAR)

To
Shri.N.Ravi Shanker,
Joint Secretary,
Department of Information Technology,
Ministry of Communication and Information
Technology, Government of India,
Electronics Niketan,
6, C.G.O. Complex,
New Delhi - 110 003.

Hoo (hec)

*NM
30-5-2011*

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30/5/11
AD (M5)*