

A Administrative

1. **Title:** Arabic Ligature Rial
2. **Requester's name:** High Council of Informatics of Iran (HCI)
3. **Requester type:** Individual contribution
4. **Submission date:** 7 April 2001
5. **Requester's reference:**
6. **(Choose one of the following:)**
 - This is a complete proposal:** Yes
 - More information will be provided later:** No

B Technical — General

1. **(Choose one of the following:)**
 - a. **This proposal is for a new script:** No
Proposed name of script:
 - b. **The proposal is for addition of characters to an existing block:** Yes
Name of the existing block: Arabic Presentation Forms-A
2. **Number of characters in proposal:** 1 (One)
3. **Proposed category:** A
4. **Proposed Level of Implementation:** 1
 - Is a rationale provided for the choice?** Yes
If Yes, reference: The proposed character is like similiar compatiblity characters in the Arabic Presentation Forms blocks.
5. **Is a repertoire including character names provided?** Yes
 - a. **If Yes, are the names in accordance with the 'character naming guidelines'?** Yes
 - b. **Are the character shapes attached in a reviewable form?** Yes
6. **Who will provide the appropriate computerized font for publishing the standard?**
Roozbeh Pournader, Sharif University of Technology (roozbeh@sharif.edu)
If available now, identify sources for the font: A PNG image is attached. A PostScript font will be prepared.
7. **References:**
 - a. **Are references (to other character sets, dictionaries, descriptive texts etc.) provided?** Yes
 - b. **Are published examples (such as samples from newspapers, magazines, or other sources) of use of proposed characters attached?** No
8. **Special encoding issues:**
Does the proposal address other aspects of character data processing such as input, presentation, sorting, searching, indexing, transliteration etc? Yes,
Unicode character properties is included.

C Technical — Justification

1. **Has this proposal for addition of characters been submitted before?** No
If Yes, explain:
2. **Has contact been made to members of the user community?** Yes
If Yes, with whom? Iranian national body (ISIRI), Persian Academy for Language and Literature, FarsiWeb Project Group
If Yes, available relevant documents?
3. **Information on the user community for the proposed characters is included?** Yes
Reference: All users of Iranian character set standards; some users of Iranian standard keyboards
4. **The context of use for the proposed characters (type of use; common or rare):** It's a character for the Iranian currency unit Rial; Common
Reference:
5. **Are the proposed characters in current use by the user community?** Yes
If Yes, where? Reference: On applications that support the Iranian character set standards
6. **After giving due considerations to the principles in “Principles and Procedures” document, must the proposed characters be entirely in the BMP?** Yes
If Yes, is a rationale provided? Yes
If Yes, reference: It should be kept with other characters in the “Arabic Presentation Forms-A” block.
7. **Should the proposed characters be kept together in a contiguous range?** N/A
8. **Can any of the proposed characters be considered a presentation form of an existing character or character sequence?** Yes
If Yes, is a rationale for its inclusion provided? Yes
If Yes, reference: It is encoded as a character in the Iranian national character set standards ISIRI 2900:1989 and ISIRI 3342:1993.
9. **Can any of the proposed characters be considered to be similar to an existing character?** No
If Yes, is a rationale for its inclusion provided?
If Yes, reference:
10. **Does the proposal include use of combining characters and/or use of composite sequences?** No
If Yes, is a rationale for such use provided?
If Yes, reference:
Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?
If Yes, reference:
11. **Does the proposal contain characters with any special properties such as control function or similar semantics?** No
If Yes, describe in detail:

D SC 2/WG 2 Administrative

- 1. Relevant SC 2/WG 2 document numbers:**
- 2. Status (list of meeting number and corresponding action or disposition):**
- 3. Additional contact to user communities, liaison organizations etc:**
- 4. Assigned category and assigned priority/time frame:**



Figure 1: Example character shape for Arabic Ligature Rial

Proposal: Arabic Ligature Rial

This is a proposal for encoding the Iranian Rial sign in Unicode and ISO/IEC 10646 standards. It is an Arabic compatibility character, needed for one-to-one mapping from Iranian 7-bit and 8-Bit character set standards ISIRI 2900 [1] and ISIRI 3342 [2]. In those standards, it is encoded in positions **2/4** and **A/4**, respectively. It is also on the Iranian keyboard standard ISIRI 2901 [3] on the **Shift+4** position.

This character has been available as a key on Persian typewriters before computers were deployed in Iran. The character shape is usually a little bit narrower than normal writing of the word Rial in the Arabic script (possibly because of space restrictions on places like price tags and typewriter wheels).

This ligature can be encoded as a sequence of six existing characters, namely 200C 0631 06CC 0627 0644 200C, but we believe that because of round-trip compatibility of UCS with ISIRI 2900 and ISIRI 3342, and the character's special meaning as a currency sign (as used in Iranian software), it is needed in ISO/IEC 10646 and Unicode. (Also, because some technologies, like X, do not support assigning a sequence of characters to a single keyboard key, and this character is present on the Iranian standard keyboard, there is a need for encoding it.)

Recommended Unicode Character Properties

Character Name: ARABIC LIGATURE RIAL

General Category: Sc (Symbol, Currency)

Canonical Combining Class: 0 (spacing)

Bidirectional Category: AL (Right-to-Left Arabic)

Character “Compatibility” Decomposition Mapping:

⟨isolated⟩ 0631 06CC 0627 0644

Mirrored: No

Currently, it seems that all characters of general category **Sc** have a bidirectional category of **ET** (European Terminator). But it is especially important for this character to have the bidirectional category **AL**. It should be in the **AL** category, not only because it should be

treated the same as the four Arabic letters forming the ligature, but also because in its usual context, when it is used after a sequence of Persian digits in a right-to-left context, it should appear to the left of the number, and not to the right. Making it a European Terminator, will cause the character be displayed to the right of the sequence. (Persian uses Eastern Arabic-Indic digits, U+06F0..U+06F9, which are considered European Numbers in the bidirectional algorithm.)

If categorizing it as both **AL** and **Sc** cannot be met, it is much better to put the character in the general category **Lo** (Letter, Other) rather than putting it in the bidirectional category **ET**. Since the character will be marked as deprecated, and will only be used in a transition period, this should not create a problem for Unicode applications.

References

- [1] Institute of Standards and Industrial Research of Iran, Iranian Standard No. 2900. “Code for Information Interchange in Persian Language,” August 1989.
- [2] Institute of Standards and Industrial Research of Iran, Iranian Standard No. 3342, “Persian Standard Code for 8-bit Information Interchange,” May 1993.
- [3] Institute of Standards and Industrial Research of Iran, Iranian Standard No. 2901 (revised), “Standard for Arranging Persian Language Letters and Symbols on Computer Keyboards,” October 1994.

				b7	۰	۰	۰	۰	۱	۱	۱	۱
				b6	۰	۰	۱	۱	۰	۰	۱	۱
				b5	۰	۱	۰	۱	۰	۱	۰	۱
				ستون								
b4	b3	b2	b1	ردیف	۰	۱	۲	۳	۴	۵	۶	۷
0	0	0	0	0	NUL	DLE	SP	۰	؛	د	ض	گ
0	0	0	1	1	SOH	DC1	!	۱	ب	د	ض	گی
0	0	1	0	2	STX	DC2	"	۲	پ	ذ	ط	ل
0	0	1	1	3	ETX	DC3	=	۳	پ	ذ	ط	ل
0	1	0	0	4	EOT	DC4	ریال	۴	ز	ر	ظ	م
0	1	0	1	5	ENQ	NAK	x	۵	ن	ر	ظ	م
0	1	1	0	6	ACK	SYN	:	۶	ن	ز	ع	ن
0	1	1	1	7	BEL	ETB	؟	۷	ث	ز	ع	ن
1	0	0	0	8	BS	CAN	(	۸	ب	ز	غ	و
1	0	0	1	9	HT	EM	)	۹	ج	ز	غ	و
1	0	1	0	10	LF	SUB	x	آ	ب	م	ف	ه
1	0	1	1	11	VT	ESC	+	!	ج	س	ف	ه
1	1	0	0	12	FF	FS	،	ء	ب	س	ف	ی
1	1	0	1	13	CR	GS	-	ه	ج	س	ف	ی
1	1	1	0	14	SO	RS	.	ؤ	ب	س	ک	NA
1	1	1	1	15	SI	US	/	ئ	ب	س	ک	DEL

Figure 2: A picture of the character table in the ISIRI 2900 standard. (This table should not be used as a reference for creating a conversion table to or from ISIRI 2900.)

جدول شماره ۱۲. جدول کد تبادل اطلاعات ۸ بیتی فارسی (G2)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0											SP	۰	آ	س	۰	۰
1											PSP	۱	ا	ش	ی	۰
2											PCN	۲	ء	ص	[	۰
3											!	۳	ب	ض	}	۰
4											ریال	۴	پ	ط	{	۰
5											%	۵	ت	ظ	}	۰
6											.	۶	ث	ع	«	۰
7											,	۷	ج	غ	»	۰
8											(	۸	چ	ف	»	ا
9											)	۹	ح	ق	-	ؤ
A											x	:	خ	ک	|	!
B											+	؛	د	گی	|	ئی
C											,	>	ذ	ل		ة
D											-	=	ر	م		ك
E											/	<	ز	ن		ي
F											/	؟	ژ	و		

Figure 3: A picture of the character table in the ISIRI 3342 standard. (This table should not be used as a reference for creating a conversion table to or from ISIRI 3342.)